KOPPERS INDUSTRIES

APPROPRIATION REQUEST FOR ITEMS REQUIRING PRIOR APPROVAL

DIVISION Carbon Materials and Chemicals Division		APPROPRIATION NUMBER	
PLANT OR LOCATION Portland, Oregon		CLASS	DEGREE OF RISK Low
TITLE (Summarize to one line) Liquid Pitch Unloading Terminal		ESTIMATED BEGIN DATE 4th Quarter, 1998	
		ESTIMATED START UP DATE 4th Quarter, 1999	
REQUESTED BY Kevin J Fitzgerald	APPROVED BY 2/25	DATE OF REQUEST May 20, 1998	

1. DESCRIPTION OF PROPOSED ASSET Dock and unloading pipeline, fume system, heating system and one 7,000 ton pitch storage tank with related material handling and instrumentation.

COSTS		AMOUNT
2. CASH EXPENDITURE		$4,310,000
3. TRADE-IN, SALVAGE OR SCRAP VALUE		
4. EQUIPMENT ON HAND NOT PREVIOUSLY CAPITALIZED		
5. TOTAL OF THIS REQUEST	(2 + 3 + 4)	$4,310,000
6. EQUIPMENT ON HAND PREVIOUSLY CAPITALIZED		
7. ESTIMATED TOTAL COST OF CAPITAL ITEM	(5 + 6)	$4,310,000
8. ESTIMATED WORKING CAPITAL REQUIREMENTS AVERAGE FIVE YEARS	(L22 ADS-230)	
EARNINGS - AVERAGE OF FIRST FIVE YEARS		
9. ESTIMATED INCOME BEFORE INTEREST AND TAXES	(L9 ADS-230)	$2,936,000
10. ESTIMATED NET INCOME AFTER INTEREST AND TAXES	(L13 ADS-230)	$1,604,000
11. % RETURN BEFORE INTEREST AND TAXES ON AVERAGE NET INVESTMENT	(L15 ADS-230)	57.0%
12. % NET RETURN ON AVERAGE NET INVESTMENT	(L16 ADS-230)	31.2%
PAYOUT PERIOD	(L28 ADS-230)	31 months
13. EXPIRATION DATE OF LEASE IF ON LEASED LAND		2008
14. PRESENT AGE IF USED EQUIPMENT		
15. SOURCE OF FUNDS FROM CAPITAL PROGRAM - 1999 expenditures will be included in the 1999 program. 1998 expenditures are included in current capital expenditure forecast.		$0

16. JUSTIFICATION SUMMARY

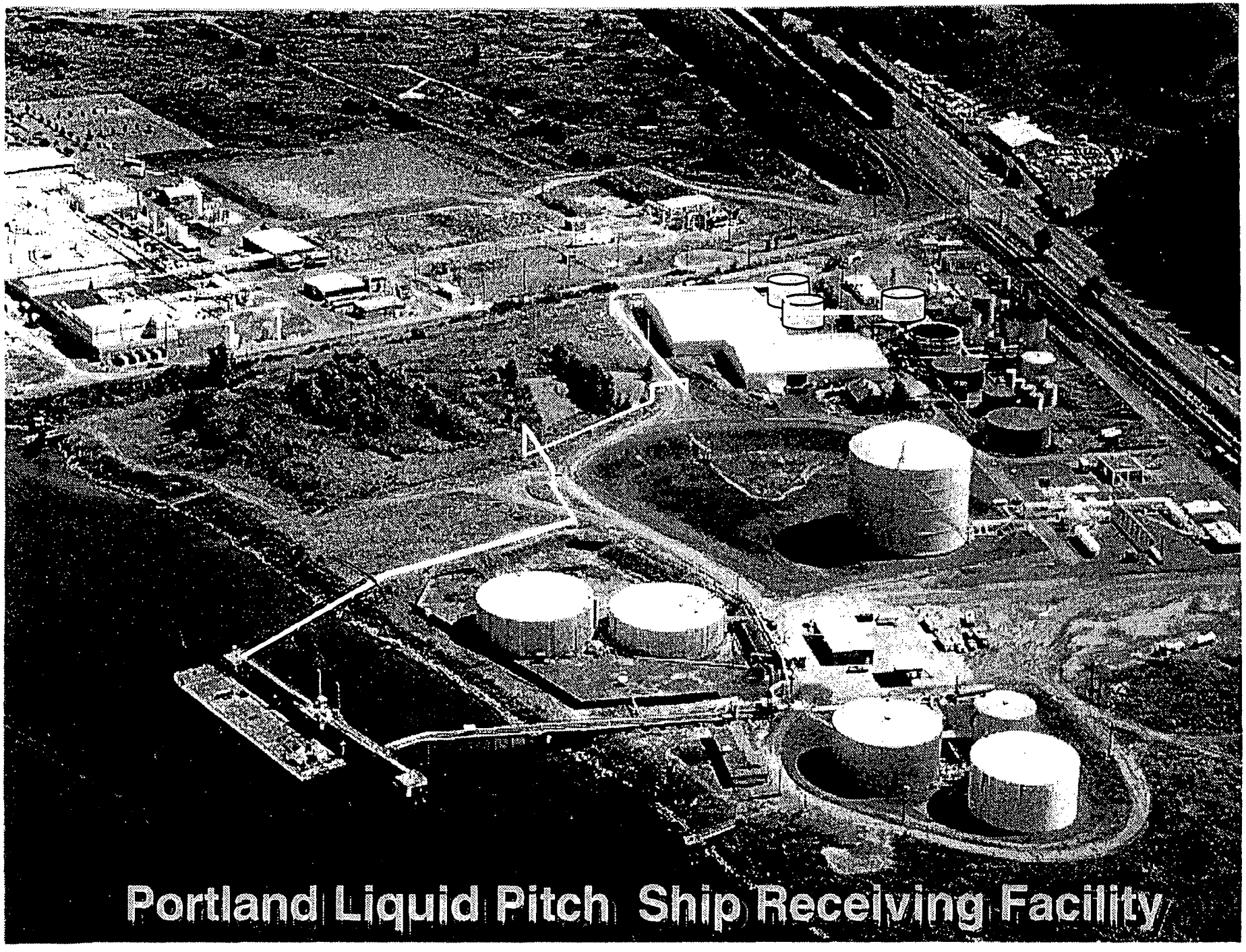
WHY DO THIS AT ALL? To participate in future aluminum growth in the Northwest as well as protect current pitch profitability.

WHY DO THIS THIS WAY? Current Portland infrastructure is in place and strategically located in center of Northwest aluminum market.

WHY DO THIS NOW It is anticipated that in the near future there will be no unloading facilities for solid pencil pitch.

		BOARD APPROVAL DATE

KII-2.0/vjl 6/93



Koppers005011

Statement of Request

The Carbon Materials and Chemicals Division requests $4,310,000 for the conversion of Koppers' existing solid pitch melting facility at Portland, Oregon to a liquid pitch unloading terminal to retain existing business in the Pacific Northwest and to pursue future growth opportunities in this region.

Source of Funds

Funds will be provided in the 1999 capital expenditure program. The 1998 expenditures will be covered through the deferral of other 1998 capital projects.

Marketing Review

The United States aluminum industry has a current primary aluminum production capacity of 4.2 million metric tons of which 1.6 million metric tons is located in the Northwest (Washington, Oregon and Montana), or a total of 38%. In terms of carbon pitch demand for this industry in the Northwest, there is a demand of 191,000 metric tons at capacity.

We are projecting that the aluminum industry in the Northwest will be operating at 100% of capacity in 1999. Koppers will at that time be supplying 32% of this pitch requirement (15% of our total business). 35%

As we look forward, we are projecting the following changes in the Northwest:

- **It is anticipated that the aluminum industry capacity will remain at 100% over the next ten plus years. With the retail wheeling of power and continued cooperation with the Bonneville Power Authority, we see the smelters located in the Northwest being healthy and viable operations and operating at high capacity levels. Furthermore, there have been announcements of construction plans for 2 new smelters in the region for which feasibility studies are being conducted.**

- **The handling of solid pitch at the port facilities and at the smelters is becoming a very serious issue from both an environmental and worker health areas. Hall-Buck, the contractor we have been using at the Port of Portland for the past 12 years, has notified us that they are ceasing their operation as of June 1998 and will no longer be handling the pitch product because of environmental issues. The only other facility that is currently handling solid pitch in the Northwest is the Port of Longview, Washington facility. It is difficult to say how long the Longview Port will be operating. In fact, they only have an operating permit good through July 2001.**

We are planning to utilize the Longview facility once Hall-Buck is out of business; but at a higher cost for unloading and transporting the pitch to the Portland

Koppers005012

terminal. The current costs for unloading and transportation from Portland are $29.31 per ton, $11.44 per ton less than the Longview cost of $40.75 per ton.

The KII pitch melter tank at Portland was constructed in 1992 at a cost of $1.2 million and has provided Koppers the ability to service the Northwest market with import pitch. Plant gross profit over the last 5 years has averaged $1.0 million.

- The trend to convert to liquid pitch by the aluminum industry continues onward. Over the past four years, we have converted the Alcoa Wenatchee Washington and Intalco Washington smelters. The only Northwest smelters remaining on solid pitch are Vanalco, Goldendale Aluminum, Northwest Aluminum and Reynolds, Troutdale. Goldendale and Northwest Aluminum are now under the same ownership. We believe that Goldendale, Northwest and Troutdale will convert to liquid pitch within the next two years. In fact, all three locations have asked us for a proposal to terminal their pitch when they do their conversion. Vanalco will probably hang in until they are forced to do so.

- Smelters are also converting to liquid pitch in other parts of the world. Alba in Bahrain and Dubai in Dubal are converting to liquid this year and Alumar and Albras in Brazil have sent in serious inquiries. All future new smelters such as the one in South Africa (Alusaf) will have liquid tanks to receive their pitch in liquid form.

- Keopyung Steel Co. (KOSCO), in Korea, one of our suppliers of import pitch in the Northwest, and the 100% supplier to the Goldendale and Northwest smelters, has informed us that once these two smelters convert to liquid, they will no longer supply solid pitch – liquid only.

- Our current import program for this year is 53,000 metric tons but because of the decline of crude tars here in North America, our 1999 import pitch program will include a minimum of 68,000 metric tons with a marketing plan to go to 85,000 tons in the year 2000. This is the only way we will be able to protect and maintain our market share. Our major source for import pitch will be KOSCO in Korea who is presently supplying 25,000 tons and an option for another 25,000 tons. Currently discussions are going forward on a seven-year contract extension. In addition, with the assistance of Koppers Australia, we are negotiating a joint venture with TISCO in China that we hope to complete by the end of 1998 for 40,000 tons and are working with Sumitomo in Japan for an additional 15,000 - 20,000 tons.

The primary justification for this project is maintaining our current pitch business and further growing our business through the terminaling of other pitches in the Northwest. As mentioned above, Goldendale, Northwest Aluminum and Reynolds, Troutdale will be in need of a terminaling facility when they convert to liquid. We feel confident that this project will make it very difficult for others to justify a greenfield terminal and will offer Koppers the opportunity to market our terminal

services.

This appropriation is an important foundation for our future pitch business, not only in the Northwest, but our overall total business. Over the next two to three years, the total pitch requirements in the Northwest will be supplied from offshore sources and will be in liquid form. Koppers, as a global company with various growth initiatives in the pitch area, especially in the Asian market, should be the leader of this transition from solid to liquid pitch handling.

Operations Summary

The proposed project at the Portland terminal includes a 1,400 foot liquid pitch unloading line that will discharge the pitch directly from the ocean vessel into storage tanks. We will construct one new tank, approximately 7,000 metric tons in size, and build future additional tanks as needed. Portland is the ideal location for a liquid pitch terminal, as it is easily accessible by tank truck and rail to all of the smelter locations in the Northwest. We already have the melter tank and a shipping tank in place that have a combined capacity of 4,500 metric tons. Also, we have the necessary workforce and support facilities to operate the proposed facility.

The Portland terminal property is leased from Northwest Natural Gas with the current lease expiring at the end of this year. Koppers and Northwest Gas have agreed on a ten-year lease agreement that is awaiting signature.

The net logistics cost of receiving liquid pitch will be approximately $20.00 per metric ton less than the freight and handling costs of solid pitch. The increased liquid freight costs of approximately $20.00 are offset by the $40.00 per ton savings from unloading and transportation costs for solid pitch resulting in the net savings of $20.00 per ton. We have negotiated a ten-year agreement with Gearbulk Shipping Canada, Ltd. for transportation of liquid pitch from Asia to the Pacific Northwest pending Board approval of this project.

Environmental Statement

An environmental risk assessment has been completed for the pipeline and unloading terminal facilities. Design features have been included to address potential scenarios that will minimize any potential environmental impacts if such worst case incidents do occur. For example, quick acting hot oil shut-off valves are located on land near where the pipe begins its route over water. The valves will be provided to shut off both the pitch and heating oil pipes, and can be remotely operated from the terminal. The pipe construction will include only the absolute minimum number of flanges, with most joints being welded.

Necessary environmental air permits for this installation as well as future expansion have been obtained. The required state waterway permit has also been obtained.

Financial Summary

In analyzing this project, two cases were developed. The first case, requiring no capital investment, anticipates the closure of Longview to solid pitch unloading upon the expiration of their current permit in July 2001. Closure of the Portland facility would follow with estimated shutdown and clean-up costs of $5.7 million. Solid pitch volume during this period is estimated to be 60,000 metric tons. This material would be sourced from Korea and Japan. Because of the poor quality and resulting environmental problems caused by the Chinese pitch, it will no longer be available without a substantial capital investment. Gross profit would average approximately $1.9 million per year until shutdown.

The second scenario presented is one with the capital investment of $4.3 million and Portland converting to 100% liquid pitch by the year 2002. The facility will start up during the fourth quarter of 1998 and handle both liquid and solid pitch until 2002. Projected volumes are estimated to reach 72,000 metric tons in 2002. This is a conservative estimate in that we already have 63,000 tons of the business and a marketing plan is in place to reach 85,000 tons per year. Gross profit for the Portland facility will average approximately $3.5 million per year.

Construction of the terminal will result in an increase over the shutdown case of earnings before interest and taxes of $2.9 million. Increased net income over the shutdown case will be $1.6 million. The payback period is 31 months.

Equipment List

See attached.

Schedule of Expenditures

Fourth quarter 1998	$300,000
First quarter 1999	950,000
Second quarter 1999	1,000,000
Third quarter 1999	1,000,000
Fourth quarter 1999	1,060,000
Total	$4,310,000

Koppers005015

Dock & Unloading Pipeline:		
Pipeline		$490,295
Dock		$149,134
Dock Access & Bridge		$154,123
Switchgear		$103,000
Instrumentation		$51,500
Lighting		$77,250
Motor Control Center/Components		$15,450
Fire Protection		$77,250
Permitting		$55,826
Paving		$20,600
	Total	$1,194,428
Fume System Piping:		$150,000
Heating System:		
Hot Oil Heater, Piping & Circ. Pumps		$350,000
Instrumentation		$35,000
Motor Control Components		$15,000
	Total	$400,000
Tank:		
Pitch Tank-7000 MT		$378,296
Foundation		$175,077
Yard Slab & Curbing		$78,629
Insulation		$152,955
Instrumentation		$80,179
Valves		$7,314
	Total	$872,450
Material Handling & Loadout:		
Pitch Pumps		$60,000
Motor Control Components		$20,000
Piping		$240,000
	Total	$320,000
Fume Recovery Upgrade:		$90,000
Level Instrumentation:		$30,000
Shop Relocation		$87,550
Future Pitch Tank Piling:		$115,000
	Subtotal	$3,259,428
Engineering (15%)		$488,914
Contingency (15%)		$562,251
	TOTAL PROJECT	$4,310,594

Portland Facility
Summary of Terminal Options
($000)

	1999	2000	2001	2002	2003	2004	6 Year Average	ROI *	Payback Period (Months)
Net Income									
Most Likely	$ 1,356	$ 1,750	$ 1,898	$ 2,105	$ 2,138	$ 2,170	$ 1,903	37.0%	31
Shutdown 2001	1,153	1,104	(2,922)	-	-	-	(111)	-3.9%	
Cash Flow									
Most Likely	$ (2,697)	$ 2,427	$ 2,575	$ 2,782	$ 2,815	$ 2,847	$ 1,791		
Shutdown 2001	1,393	1,344	(2,802)	-	-	-	(11)		

* ROI calculated on total Portland investment.

Portland Pitch Facility
Scenario One - Most Likely
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	21,306	7,950	4,770			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	2,544	17,490	20,670	25,440	25,440	25,440
Total Pitch Sales	Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	23,850	25,440	25,440	25,440	25,440	25,440
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	23,850	25,440	25,440	25,440	25,440	25,440

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,947	4,458	2,675			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,082	1,150	690			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32
	M$	1,427	9,808	11,591	14,266	14,266	14,266
Ocean Freight	$/Ton	66.00	66.00	66.00	66.00	66.00	66.00
	M$	528	3,630	4,290	5,280	5,280	5,280
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	670	250	150			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,943	725	435			
Total Pitch Material Cost	S Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 261.29	$ 250.26	$ 247.88	$ 244.32	$ 244.32	$ 244.32
	M$	19,597	20,021	19,831	19,546	19,546	19,546

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	377	377	377	377
Fuel & Utilities	M$	375	400	400	400	400	400
Maintenance	M$	100	190	190	190	190	190
Other Operating	M$	300	300	300	300	300	300
Depreciation	M$	247	677	677	677	677	677
Existing Investment		247	247	247	247	247	247
New Capital Expenditure		-	430	430	430	430	430
Other Fixed	M$	300	300	300	300	300	300
Total Operating Cost	M$	1,699	2,244	2,244	2,244	2,244	2,244
Operating Cost per Ton		$ 22.65	$ 28.05	$ 28.05	$ 28.05	$ 28.05	$ 28.05
Operating Cost per Ton - Excl. Depr.		$ 19.36	$ 19.59	$ 19.59	$ 19.59	$ 19.59	$ 19.59
Cost of Sales	M$	21,296	22,265	22,075	21,790	21,790	21,790
Gross Profit	M$	2,554	3,175	3,365	3,650	3,650	3,650
Provision for Interest	8%	324	297	243	189	135	81
Income before Taxes		2,230	2,878	3,122	3,462	3,516	3,570
Provision for Income Taxes	39.2%	874	1,128	1,224	1,357	1,378	1,399
Net Income	M$	$1,356	$1,750	$1,898	$2,105	$2,138	$2,170

Portland Pitch Facility
Scenario Two - Shutdown 2001
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	66,000	66,000	33,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	20,988	20,988	10,494			
Liquid Pitch	S Tons		-	-			
	$/Ton		$ 318.00	$ 318.00			
	M$		-	-			
Total Pitch Sales	Tons	66,000	66,000	33,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	20,988	20,988	10,494			
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	20,988	20,988	10,494			

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	66,000	66,000	33,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,769	11,769	5,885			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,036	3,036	1,518			
Liquid Pitch	S Tons		-	-			
	$/Ton		$ 178.32	$ 178.32			
	M$		-	-			
Ocean Freight	$/Ton		66.00	66.00			
	M$		-	-			
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	660	660	330			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,914	1,914	957			
Total Pitch Material Cost	S Tons	66,000	66,000	33,000			
	$/Ton	$ 263.32	$ 263.32	$ 263.32			
	M$	17,379	17,379	8,690			

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	189			
Fuel & Utilities	M$	330	330	165			
Maintenance	M$	100	190	95			
Other Operating	M$	300	300	150			
Depreciation	M$	240	240	120			
Existing Investment		240	240	120			
New Capital Expenditure							
Other Fixed	M$	300	300	150			
Terminal Shutdown Charges							
Severance	M$			400			
Cleanup & Dismantling	M$			5,300			
Total Operating Cost	M$	1,647	1,737	6,569	-		
Operating Cost per Ton		$ 24.95	$ 26.32	$ 199.05			
Operating Cost per Ton - Excl. Depr.		$ 21.32	$ 22.68	$ 195.41			
Cost of Sales	M$	19,026	19,116	15,258	-	-	
Gross Profit	M$	1,962	1,872	(4,764)	-	-	
Provision for Interest	8%	66	56	42			
Income before Taxes		1,896	1,815	(4,806)			
Provision for Income Taxes	39.2%	743	712	(1,884)			
Net Income	M$	$1,153	$1,104	($2,922)			

Please Expedite

KOPPERS INDUSTRIES

CARBON MATERIALS & CHEMICALS DIVISION

CAPITAL EXPENDITURE REQUEST (CER) – CIRCULATION

		Initials	Date
James T. Dietz	UPARC – Engineering		5/13/98
Joseph J. Calfe	UPARC – Purchasing		5-17-98
John J. Kunkle	K – 1600		5/14/98
Kevin J. Fitzgerald	K – 1600		5/17/98
Kathleen Roberts	K – 1726		
Donald Davis	K – 1700		5/18/98

PORTLAND

LEASE 67 mos CURRENT
~~95~~ mos FROM DEC '04

CONTRACTS - KAISER CONTRACT

ENVIRONMENTAL - i) CLEAN SITE

FAS-143 - DISMANTLING?

		KOPPERS?
INITIAL	1) SHUTDOWN	MAYBE
	2) BOT. TRANS. @ TO END LEASE	NO
	3) BUILD OWN (NOT)	MAYBE
	4) LONGVIEW MELTER	MAYBE
	5) LEASE & OPERATE	NO

1) S/D COST

2) LONGVIEW MELTER SOLID SUPPLY, TRAIN, OFFLOADING MELTER, TRUCK

GW International

cc: J. Dietz
B. Meiningen

FAX COVER SHEET

Date: 06/06/01

To: Amos

Fax #: (503) 285-2831

From: Jay Johnston

Ext.:

Number of pages including this cover sheet: 10

Comments:

FYI

Huntington Beach Branch 2124 Main St. Suite 200 Huntington Beach, CA 92648 USA
tel: (714) 374-7003 *fax:* (714) 374-7063

Material Safety Data Sheet

The Dow Chemical Company
Midland, Michigan 48674

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

24-Hour Emergency Phone Number: 517-636-4400

Product: CAUSTIC SODA SOLUTION 50%, COMMERCIAL GRADE

Product Code: 15216

Effective Date: 04/14/99 Date Printed: 10/26/99 MSD: 005120

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

2. COMPOSITION/INFORMATION ON INGREDIENTS

Sodium hydroxide (NaOH)	CAS# 001310-73-2	49-51%
Sodium chloride (NaCl)	CAS# 007647-14-5	1% max
Water	CAS# 007732-18-5	BAL

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Colorless liquid. Odorless. May react violently with water. Causes severe eye burns. Causes severe skin burns. Causes respiratory tract irritation.

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Mists may cause eye irritation.

SKIN: Classified as corrosive according to DOT. Short single exposure may cause severe skin burns. A single prolonged exposure is not likely to result in absorption of harmful amounts.

INGESTION: May cause severe burns of the mouth and throat. Ingestion may cause gastrointestinal irritation or ulceration.

INHALATION: Mists may cause severe irritation of the upper respiratory tract (nose and throat).

(Continued on page 2 , over)
(R) Indicates a Trademark of The Dow Chemical Company

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MATERIAL SAFETY DATA SHEET

ELF ATOCHEM NORTH AMERICA
BASIC CHEMICALS
2000 MARKET STREET
PHILADELPHIA, PA 19103

EMERGENCY PHONE NUMBERS
BUSINESS HRS: 215-419-7695
BUSINESS HRS: 215-419-7704
OTHER: 503-238-7230
CHEMTREC: 1-800-424-9300

PRODUCT IDENTIFICATION

PRODUCT NAME: CAS NO.: 7782-50-5
CHLORINE
SYNONYMS:
NONE
CHEMICAL NAME:
CHLORINE
MOLECULAR FORMULA:
CL2
CHEMICAL FAMILY: HALOGEN

INGREDIENTS-----HAZARD CLASSIFICATIONS

COMPONENTS-HAZARDOUS	CAS NO.	%	COMMENTS
CHLORINE	7782-50-5	>99.5	EXPOSURE LIMITS: TWA = 0.5 PPM, 1.5 MG/M3 STEL= 1 PPM, 3 MG/M3 * POISON * CORROSIVE * COMPRESSED GAS * OXIDIZER * LISTED SARA SECTION 313 * NFPA RATING: 4-0-0-OXY * SUPERFUND RQ = 10 LBS

SHIPPING INFORMATION

RQ CHLORINE, 2.3 TOXIC GAS, UN 1017, (B), POISON-INHALATION HAZARD, ZONE B, MARINE POLLUTANT, PLACARDED TOXIC GAS.
DOT REPORTABLE QUANTITY (RQ) IS 10 LBS.

PHYSICAL PROPERTIES

BOILING POINT/RANGE:	MELTING POINT:	FREEZING POINT:
-34 C (-29.3 F)	-101 C (-149.8 F)	NA
MOLECULAR WEIGHT:	SPECIFIC GRAVITY(H2O=1):	VAPOR PRESSURE(MM HG):
70.9	1.467 @ 0 C	85 PSIG @ 21.1 C
VAPOR DENSITY(AIR=1):	SOLUBILITY IN H2O:	% VOLATILES BY VOLUME:
2.5	.71@ @ 1 ATM, 21 C	100

APPEARANCE AND ODOR:
GREENISH-YELLOW GAS, SHARPLY PENETRATING ODOR, SIMILAR TO BLEACH-PUNGENT

NA - NOT APPLICABLE NE - NOT ESTABLISHED
(R) - INDICATES REGISTERED TRADEMARK OF ELF ATOCHEM NORTH AMERICA

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: No relevant information found.

CANCER INFORMATION: No relevant information found.

TERATOLOGY (BIRTH DEFECTS): No relevant information found.

REPRODUCTIVE EFFECTS: No relevant information found.

4. FIRST AID

EYE:
Wash eyes immediately and continuously until assistance arrives for transport to medical facility; wash enroute, if possible. If medical assistance is not immediately available, wash for 30 minutes and seek medical attention immediately.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: May cause tissue destruction/stricture. If lavage is performed, suggest endotracheal and/or esophageal control. Material is strong alkali. If burn is present, treat as any thermal burn, after decontamination. For burns of skin only. Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES
FLASH POINT: None
METHOD USED: Not applicable
AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABILITY LIMITS

(Continued on page 3)
(R) Indicates a Trademark of The Dow Chemical Company

LFL: Not applicable
UFL: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: Not applicable.

OTHER FLAMMABILITY INFORMATION: Product reacts with water. Reaction may produce heat and/or gases. This reaction may be violent. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. This material does not burn.

EXTINGUISHING MEDIA: This material does not burn. If exposed to fire from another source, use suitable fire extinguishing agent for that fire.

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. This material does not burn. Fight fire for other material that is burning.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants boots and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant clothing with SCBA. This will not provide sufficient fire protection, consider fighting fire from a remote location. For protective equipment in post-fire or non-fire clean up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Evacuate area. Clear non-emergency personnel from area. Ventilate area of spill or leak. See MSDS, Section 10, for information on Stability and Reactivity.

PROTECT THE ENVIRONMENT: Contain material to prevent contamination of soil, surface water or ground water.

CLEANUP: Dike spills immediately. Carefully flush small spills of caustic soda solution with water. Attempt to neutralize final traces of caustic soda with dilute acid, preferably acetic acid.

7. HANDLING AND STORAGE

HANDLING:

(Continued on page 4 , over)
(R) Indicates a Trademark of The Dow Chemical Company

Product: CAUSTIC SODA SOLUTION 50%, COMMERCIAL GRADE
Product Code: 15216

Effective Date: 04/14/99 Date Printed: 10/26/99 MSD: 005120

SPECIAL PRECAUTIONS FOR DILUTING CAUSTIC SODA SOLUTION:
1. ALWAYS add caustic soda solution to water with constant agitation. NEVER add water to the caustic soda solution.
2. The water should be lukewarm (80-100F). NEVER start with hot or cold water.

The addition of caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in DANGEROUS mists, boiling or spattering which may cause an immediate VIOLENT ERUPTION.

STORAGE: Store away from incompatible materials. Store in a dry place. Keep containers tightly closed when not in use. See Stability & Reactivity, Section 10, of this MSDS. Store above 60F (16C).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION:
Use chemical goggles. Wear a face-shield which allows use of chemical goggles, or wear a full-face respirator to protect face and eyes when there is any likelihood of splashes. Eye wash fountain should be located in immediate work area.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full-bodysuit will depend on operation. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Contaminated leather items, such as shoes, belts and watchbands, should be removed and destroyed.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. If respiratory irritation is experienced, use an approved air-purifying respirator.

(Continued on page 5)
(R) Indicates a Trademark of The Dow Chemical Company

Product: CAUSTIC SODA SOLUTION 50%, COMMERCIAL GRADE
Product Code: 15216

Effective Date: 04/14/99 . Date Printed: 10/26/99 MSD: 005120 .

EXPOSURE GUIDELINE(S): Sodium hydroxide: OSHA PEL and ACGIH TLV are 2 mg/m3 Ceiling.

PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless to slightly hazy.
ODOR: Odorless.
VAPOR PRESS: 1.5 mmHg, 0.2kPa @ 20C
VAPOR DENSITY: Not applicable
BOILING POINT: Approximately 293F, 145C
SOLUBILITY IN WATER: Water solution
SPECIFIC GRAVITY: @ 20C (Dens.) 1.52 g/ml
FREEZING POINT: Approximately 58F, 14C
PH: 14

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions. See storage section.

CONDITIONS TO AVOID: Avoid temperature below 85f.

INCOMPATIBILITY WITH OTHER MATERIALS: Heat is generated when mixed with water. Spattering and boiling can occur. Flammable hydrogen may be generated from contact with metals such as: aluminum, brass, tin, zinc. Avoid contact with acids, halogenated organics, organic nitro compounds, glycols. Caustic soda solution reacts readily with various reducing sugars (i.e. fructose, galactose, maltose, dry whey solids) to produce carbon monoxide. Precautions should be taken including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel.

HAZARDOUS DECOMPOSITION PRODUCTS: Does not decompose.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The dermal LD50 has not been determined.

(Continued on page 6 , over)
(R) Indicates a Trademark of The Dow Chemical Company

INGESTION: Single dose oral LD50 has not been determined.

MUTAGENICITY: No relevant information found.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING: Based on information for sodium hydroxide. No bioconcentration is expected because of the relatively high water solubility. Partitioning from water to n-octanol is not applicable.

DEGRADATION & PERSISTENCE: Based on information for sodium hydroxide. Biodegradation is not applicable.

ECOTOXICITY: Based on information for sodium hydroxide. Material is slightly toxic to aquatic organisms on an acute basis (LC50 between 10 and 100 mg/L in most sensitive species). May cause pH shifts outside the range of 5-10; this change may be toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 517-832-1556 for further details.

14. TRANSPORT INFORMATION

(Continued on page 7)
(R) Indicates a Trademark of The Dow Chemical Company

Product: CAUSTIC SODA SOLUTION 50%, COMMERCIAL GRADE
Product Code: 15216

Effective Date: 04/14/99 Date Printed: 10/26/99 MSD: 005120

U.S. DOT Classification/Description:
For DOT regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

CANADIAN INFORMATION:
For TDG regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A reactive hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be

(Continued on page 8 , over)
(R) Indicates a Trademark of The Dow Chemical Company

Product: CAUSTIC SODA SOLUTION 50%, COMMERCIAL GRADE
Product Code: 15216

Effective Date: 04/14/99 Date Printed: 10/26/99 MSD: 005120

REGULATORY INFORMATION (CONTINUED)

listed on the TSCA inventory.

The CAS number(s) for TSCA is(are):
CAS# 001310-73-2
CAS# 000497-19-8
CAS# 007647-14-5
CAS# 007732-18-5

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
SODIUM HYDROXIDE (SOLUTION)	001310-73-2	NJ1 NJ3 PA1 PA3

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).
NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND):

This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:
Category:

Chemical Name	CAS#	RQ	% In Product

(Continued on page 9)
(R) Indicates a Trademark of The Dow Chemical Company

Product: CAUSTIC SODA SOLUTION 50%, COMMERCIAL GRADE
Product Code: 15216

Effective Date: 04/14/99 Date Printed: 10/26/99 MSD: 005120

REGULATORY INFORMATION (CONTINUED)

Sodium hydroxide	001310-73-2	1000	49-51%

CANADIAN REGULATIONS

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

E - corrosive to metal or skin
Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program.

CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

COMPONENTS:	CAS #	AMOUNT (%w/w)
Sodium hydroxide	CAS# 001310-73-2	49-51%

16. OTHER INFORMATION

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	3
Flammability	0
Reactivity	1

MSDS STATUS: Revised Section 2.

(R) Indicates a Trademark of The Dow Chemical Company
The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

KOSCO

KOREA STEEL CHEMICAL CO.,LTD.
12, 13TH FLOOR, SAMDO BLDG., 1-170,
SUNHWA-DONG, CHUNG-GU, SEOUL, KOREA
TEL : (02) 3705-7000 FAX : (02) 771-0741-8

FAX No.	1 412 227 2202	DATE	21 December, 1999
TO	Mr. Kevin J. Fitzgerald Division Vice President	From	J. W. Lee General Manager
SUBJECT	The Density of Liquid Pitch for Koppers and Intalco		
TOTAL NUMBER OF PAGE(S) (5), INCLUDING COVER SHEET			

Dear Mr. Fitzgerald,

I wish you and your family a very mery Christmas and the happiest of the New Year.

In response to your e-mail of 17 December sent to Mr. C. Kim / General Manager of our Kwangyang plant, as you requested we send copy of e-mail of 15 December by facsimile. Please find attached detail explanation on the density of 1st liquid pitch cargo.

Best regards,

J. W. Lee

Copies to:
Jim Dietz -1650
Wayne Plovic - 1650
Amos Kamerer - Portland
Don Evans - 1600

Attached : Copy of E-mail of 15 December (4 sheets)

We acquired ISO 9002 and ISO 14001 certification

12-21 15:53 TUE FROM:KOSCO TAR 82-2-7710745 TO:412 227 2202 PAGE:01

Subject: RE : The Density of Liquid Pitch for Koppers and Intalco
Date: Wed, 15 Dec 1999 16:22:16 +0900
From: 김철 <ckim@web.kosco.co.kr>
To: "Amos Kamerer" <amos_kamerer@koppers.com>
CC: <kevin_fitzgerald@koppers.com>, <david_evans@intalco.com>, <jslee@web.kosco.co.kr>, <jwlee@web.kosco.co.kr>

Dear Mr. A. Kamerer :

I wish you and your family of merry christmas and happiest new year in 2000. J. W. Lee transmitted your E-mail on Dec. 6 to me, and I would like to explain our results related to the shipment and the density of liquid pitch.

I think that you already completed the installation of receiving tank for liquid pitch which we shipped to you on Dec. 8. Our facility have worked satisfactorily and didn't show any problem. We could feed normally 170~190 ㎥/hr with one pump, which means that our pumping capacity is almost 460~500 MT/hr for liquid pitch with 2 pumps. Actually, there was only one bottleneck in the fume scrubber of the MV Osprey Arrow which limited the flow rate of the liquid pitch. Due to malfunctionings of the fume scrubber in the MV Osprey Arrow, there was some environmental problem which may threaten to prohibit the shipment of liquid pitch at POSCO's pier. I would like to advise you that the MV Osprey Arrow should upgrade the capacity of the fume scrubber so as to treat at least 400 ㎥/hr of fumes. I expect that they can do better next time because that was the first shipment on the MV Osprey Arrow.

Regarding to the density of liquid pitch, I would like to make some comments on the measuring method and describe our results in detail. The correlation curve of the density vs. the temperature could be applicable only to limited range of temperature in which there must be no phase transition. That is, this curve should not be extrapolated to the range of the solid pitch. And, the actual measurement by the experimental method is very difficult and tends to be lacking in the reproducibility and the repeatability. The buoyancy method is practically an unique technique to measure experimentally the density of liquid pitch (refer to the attachment which describes the method used in KOSCO R & D Center in detail), and it is accurate for a newtonian fluid with low viscosity. Hence, the measurement of liquid pitch density favors high temperature (>250℃), in which the liquid pitch behaves more like as a newtonian fluid. Fig.1 (A) shows the correlation curve for Koppers liquid pitch measured by KOSCO R & D Center in the range of 240~300℃, which line could be extrapolated to the range of 180~240℃ because the density profile agrees well with a first-order regressional equation of the temperature based on linear thermal expansion. But, I would like to measure directly the density in a practical range, 180~220℃, in which it was very difficult to measure accurately the density due to high viscosity, low convection, non-uniform temperature and high temperature gradient. Fig. 1 (B) plotted real experimental data measured by the buoyancy method for the real liquid pitch cargo shipped to you in the range of 180~240℃. Although the real measurement showed a little bit lower density than that of the extrapolated results(Fig.1 (A)), we decided to choose the correlation curve, Fig. 1 (B), obtained by the real measurement because we thought the real measurement to be more important than the estimation or the extrapolation.

I hope that you can find out the answer and be convinced of it. Thank you !

Best Regards,

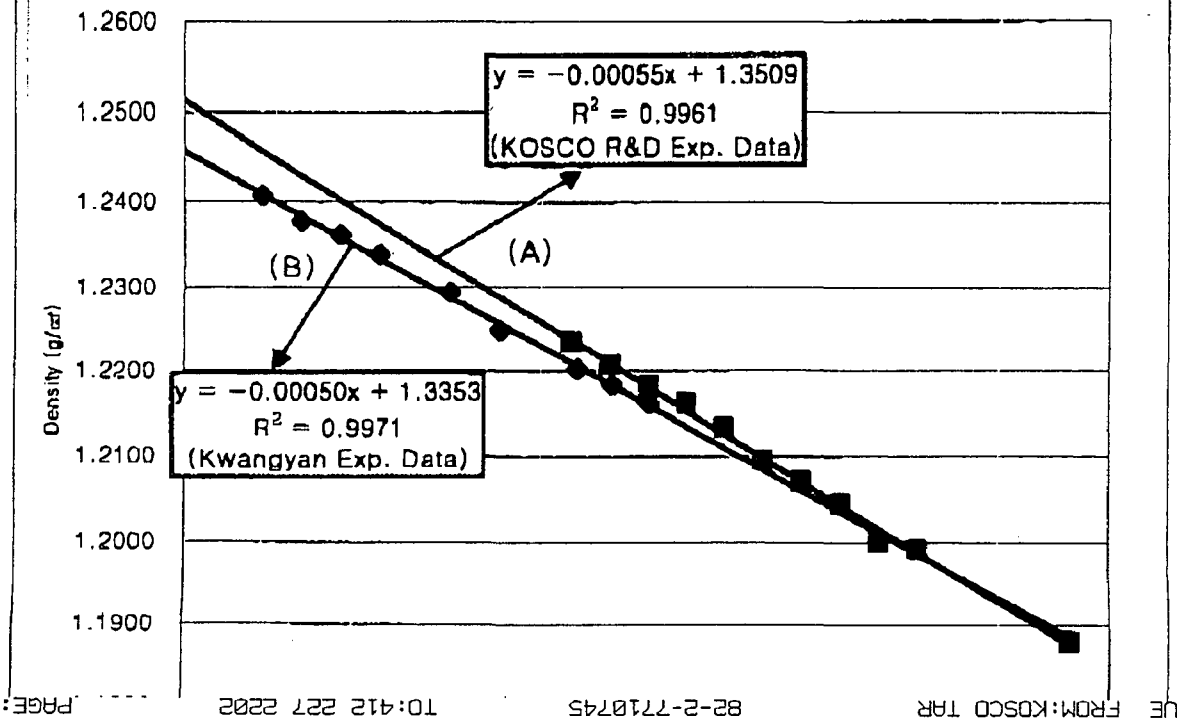
Cheol Kim
General Manager, KOSCO Kwangyang Plant

* cc. : Mr. A. Topper, David Evans, J.W. Lee, J.S. Lee

* The Measurement of the Density of Koppers Liquid Pitch *

TEMP.	Kwangyang Exp. Data	Kwangyang Regression	KOSCO R&D Exp. Data	KOSCO R&D Regression
180.0		1.2453		1.2514
185.0		1.2428		1.2486
190.0	1.2407	1.2403		1.2458
195.0	1.2378	1.2378		1.2431
200.0	1.2362	1.2353		1.2403
205.0	1.2339	1.2328		1.2375
210.0		1.2303		1.2348
214.3	1.2294	1.2282		1.2324
220.7	1.2248	1.2250		1.2288
230.0		1.2203	1.2233	1.2237
230.8	1.2202	1.2199		1.2233
235.0		1.2178	1.2206	1.2209
235.3	1.2183	1.2177		1.2208
240.0		1.2153	1.2181	1.2182
240.1	1.2162	1.2153		1.2181
245.0		1.2128	1.2162	1.2154
250.0		1.2103	1.2133	1.2126
255.0		1.2078	1.2095	1.2099
260.0		1.2053	1.2070	1.2071
265.0		1.2028	1.2045	1.2043
270.0		1.2003	1.1999	1.2016
275.0		1.1978	1.1991	1.1988
295.0		1.1878	1.1880	1.1878

Fig. 1. Density of Koppers Liquid Pitch vs. Temp.



12-21 15:53 TUE FROM:KOSCO TAR 82-2-771074S TO:412 227 2202 PAGE:03

<Attachment : KOSCO Method to measure the density of liquid pitch>

The Measurement of the Density of Liquid Pitch at High Temperature

1. The Principle of the Measurement of Liquid Density by Measuring the Buoyancy Effect.

The weight decrease of a solid by buoyant force immersed in a liquid is the same as the weight of a liquid displaced by the solid (Archimedean Principle). Thus, the density of unknown liquid could be calculated by a following equation if we measure accurately the buoyancy effect :

$$\Delta M = M - M_1 = \rho V \quad \longrightarrow \quad \rho = \Delta M / V$$

where ΔM = the weight decrease of a solid immersed in unknown liquid,

M = the weight of a solid in the air,

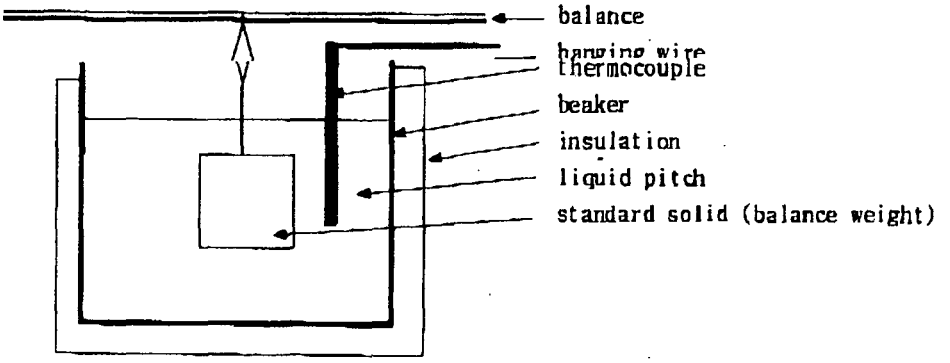
M_1 = the weight of a solid immersed in unknown liquid,

ρ = the density of unknown liquid

V = the volume of a solid.

But, the thermal expansion coefficient of the solid must be extremely low so as not to affect the measurement at high temperature

2. The Apparatus : Electric Densimeter SD-120C (MIRAGE, Japan)



12-21 15:53 TUE FROM:KOSCO TAR 82-2-7710745 TO:412 227 2202 PAGE:04

Koppers005036

In the "Liquid Mode" of the densimeter the weight of a standard solid is converted to the density of the liquid if the weight and the volume of the standard solid are inputted beforehand. The density of a liquid being tested could be read directly by measuring the weight of the standard solid immersed in test liquid.

3. Experimental Procedure

① The weight and the volume of a standard solid are inputted into the liquid mode of the Densimeter SD-120C.

② The beaker and the solid standard attached to the hanging wire are pre-heated in the Convection oven at 260℃.

③ Hot liquid pitch (~300℃) is poured into the pre-heated beaker containing the pre-heated standard solid attached to the hanging wire.

④ The weight of the standard solid in the hot liquid pitch is measured by the balance previously tared with the hanging wire.

⑤ Since the Densimeter shows the density of the liquid pitch as it is measuring the weight of the standard solid, the density profile of the liquid pitch vs. the temperature could be plotted by monitoring the tempeature of liquid pitch.

⑥ Extrapolating the density profile to applicable range will get the density of liquid pitch at 180~220℃.

4. Comments

① The thermal expansion coefficient of the standard solid is extremely small so as to neglect volume change of the standard solid in the range of experimental temperature.

② Because of high viscosity and low convection, the measurement tends to be erroneous in low temperature range, 180~240℃ and deviates a little from the regression line extrapolated from high temperature range.

③ The beaker containing liquid pitch must be well insulated in order to minimize the variation of temperature and the effect of temperature gradient. Typically, the temperature gradient vs. time should be lower than 0.5℃/min and the temperature gradient within liquid pitch shall be negligible. "END"

12-21 15:54 TUE FROM:KOSCO TAR 82-2-7710745 TO:412 227 2202 PAGE:05

Koppers005037

KOSCO 99 F

RE : The Density of Liquid Pitch for Koppers and Intalco

Subject: RE : The Density of Liquid Pitch for Koppers and Intalco
Date: Wed, 15 Dec 1999 16:22:16 +0900
From: 김철 <ckim@web.kosco.co.kr>
To: "Amos Kamerer" <amos_kamerer@koppers.com>

KOSCO

KOREA STEEL CHEMICAL CO.,LTD
12, 13TH FLOOR, SAMOO BLDG., 1-170,
SUNHWA-DONG, CHUNG-GU, SEOUL, KOREA
TEL : (02) 3705-7000 FAX : (02) 771-0741-6

FAX NO.	1 514 697 7381	DATE	15 Dec 1999
TO	Dr. A. Topper A. Topper Carbon Ltd.	From FAX NO.	J. W. Lee General Manager 82-2-771 -0745
SUBJECT	Density of Koppers / Intalco Liquid Pitch		
TOTAL NUMBER OF PAGE(S) (5), INCLUDING COVER SHEET			

Dear Dr. Topper,

Attached please find the e-mail prepared by expert in Kwangyang plant and sent to Mr. Fitzerald and Mr. Kamerer in Koppers and Mr. Evans in Intalco, which is explaining the meaning of and determination procedure for the density of liquid pitch at high loading temperature.

If you have any question please contact me.

Best regards,

J. W. Lee

20/12/99

Attached : Copy of E-mail (4 sheets)

CC: Dietz (2)
Plovic
Evans (2)

To Koppers : Attn.:
Mr. Kevin Fitzgerald
As discussed I am sending you herewith the Kosco reply.
Rgds
T. Topper

We acquired ISO 9002 and ISO 14001 certification

12-15 18:13 WED FROM:KOSCO TAR 82-2-771074S TO:0011514697738I PAGE:01

<Attachment : KOSCO Method to measure the density of liquid pitch>

The Measurement of the Density of Liquid Pitch at High Temperature

1. The Principle of the Measurement of Liquid Density by Measuring the Buoyancy Effect.

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$$\Delta M = M - M_l = \rho V \quad \longrightarrow \quad \rho = \Delta M / V$$

where ΔM = the weight decrease of a solid immersed in unknown liquid,

M = the weight of a solid in the air,

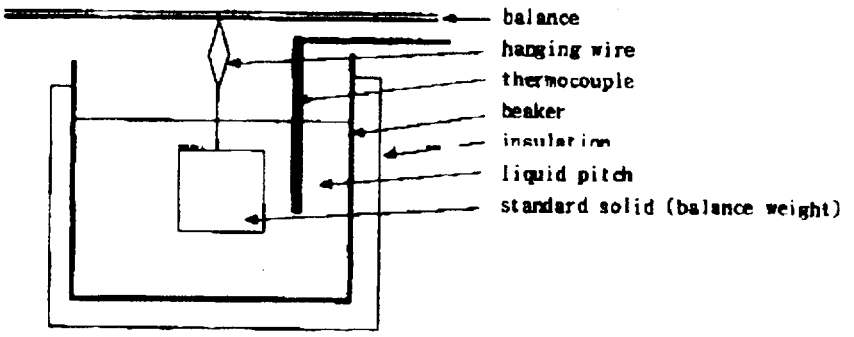
M_l = the weight of a solid immersed in unknown liquid,

ρ = the density of unknown liquid

V = the volume of a solid

But, the thermal expansion coefficient of the solid must be extremely low so as not to affect the measurement at high temperature

2. The Apparatus : Electric Densimeter SD-120C (MIRAGE, Japan)



Koppers005039

In the "Liquid Mode" of the densimeter the weight of a standard solid is converted to the density of the liquid if the weight and the volume of the standard solid are inputted beforehand. The density of a liquid being tested could be read directly by measuring the weight of the standard solid immersed in test liquid.

3. Experimental Procedure

① The weight and the volume of a standard solid are inputted into the liquid mode of the Densimeter SD-120C.

② The beaker and the solid standard attached to the hanging wire are pre-heated in the Convection oven at 260℃.

③ Hot liquid pitch (~300℃) is poured into the pre-heated beaker containing the pre-heated standard solid attached to the hanging wire.

④ The weight of the standard solid in the hot liquid pitch is measured by the balance previously tared with the hanging wire.

⑤ Since the Densimeter shows the density of the liquid pitch as it is measuring the weight of the standard solid, the density profile of the liquid pitch vs. tempearature could be plotted by monitoring the tempeature of liquid pitch.

⑥ Extrapolating the density profile to applicable range will get the density of liquid pitch at 180~220℃.

4. Comments

① The thermal expansion coefficient of the standard solid is extremely small so as to neglect the volume change of the standard solid in the range of experimental temperature.

② Because of high viscosity and low convection, the measurement tends to be erroneous in low temperature range, 180~240℃ and deviates a little from the regression line extrapolated from high temperature range.

③ The beaker containing liquid pitch must be well insulated in order to minimize the variation of temperature and the effect of temperature gradient. Typically, the temperature gradient vs. time should be lower than 0.5℃/min and the temperature gradient within liquid pitch shall be negligible.

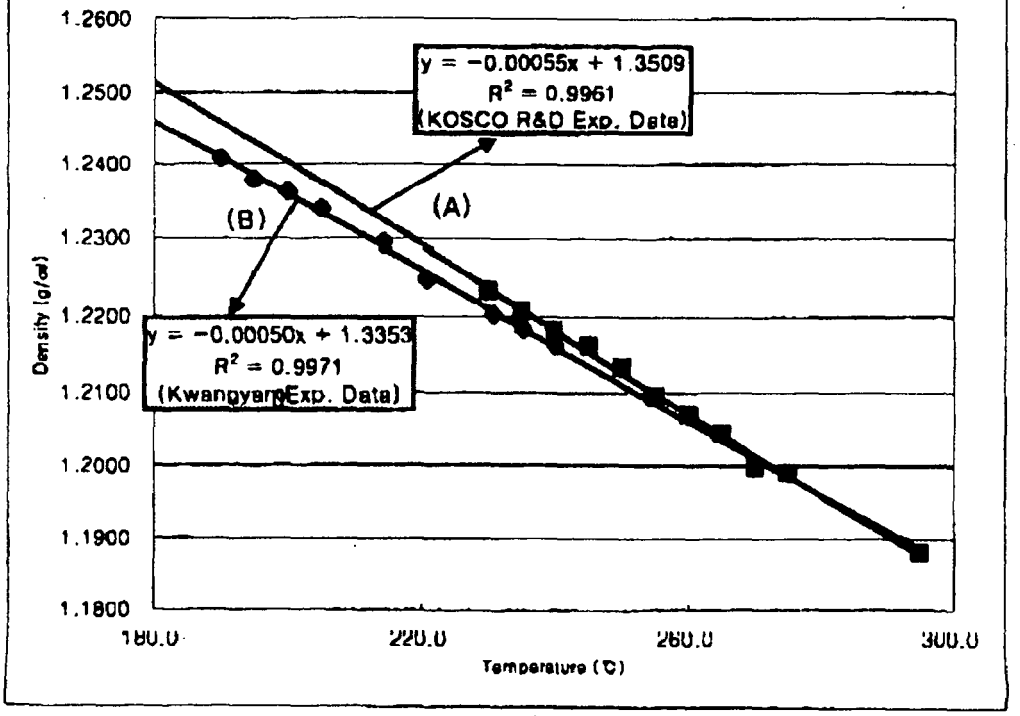
"END"

Koppers005040

* The Measurement of the Density of Koppers Liquid Pitch *

TEMP.	Kwangyang Exp. Data	Kwangyang Regression	KOSCO R&D Exp. Data	KOSCO R&D Regression
180.0		1.2453		1.2514
185.0		1.2428		1.2486
190.0	1.2407	1.2403		1.2458
195.0	1.2378	1.2378		1.2431
200.0	1.2362	1.2353		1.2403
205.0	1.2339	1.2328		1.2375
210.0		1.2303		1.2348
214.3	1.2294	1.2282		1.2324
220.7	1.2248	1.2250		1.2288
230.0		1.2203	1.2233	1.2237
230.0	1.2202	1.2199		1.2233
235.0		1.2178	1.2206	1.2209
235.3	1.2183	1.2177		1.2208
240.0		1.2153	1.2181	1.2182
240.1	1.2162	1.2153		1.2181
245.0		1.2128	1.2162	1.2154
250.0		1.2103	1.2133	1.2126
255.0		1.2078	1.2095	1.2099
260.0		1.2053	1.2070	1.2071
265.0		1.2028	1.2045	1.2043
270.0		1.2003	1.1999	1.2016
275.0		1.1978	1.1991	1.1988
295.0		1.1878	1.1880	1.1878

Fig. 1. Density of Koppers Liquid Pitch vs. Temp.



To John Kunkel / Jim Dietz

Author: Walter Turner at PITT
Date: 8/3/97 3:07 PM
Priority: Normal
TO: Donna Kissel at PITT
TO: John Kunkle at PITT
Subject: Portland Liquid Terminal

---------- Message Contents ----------

PORTLANT LIQUID FACILITY

PROJECT OVERVIEW

The US Aluminum industry has a current production capacity of 4.1 million metric tons, of which, 1.5 million metric tons is located in the Northwest(Washington, Oregon and Montana) or a total of 37%. In terms of carbon pitch demand for this industry in the Northwest, there is a demand of 180,000 metric tons at capacity.

The industry today is operating at 90% requiring 153,000 metric tons of carbon pitch. Koppers is supplying 58% of this pitch requirement today. Of the 88,000 metric tons we are supplying, approximately 45% is being supplied from our domestic plants and 55% is being imported from Asia (China and Korea) in solid form and being melted into liquid form at our Portland terminal.

As we look forward into the future we are projecting the following changes in the Northwest:

* The aluminum industry capacity will remain solid over the next ten plus years. With the retail wheeling of power and continued cooperation with the Bonneville Power Authority we see the smelters located in the Northwest being healthy and viable operations and operating at high capacity levels. In the past few years we were projecting at least one or two smelters closing because of the high cost operations vs the new smelters being built off shore.

* The handling of solid pitch at the port facilities and at the smelters is becoming a very serious issue from both an environmental and worker health areas. Hull Buck, the contractor we have been using at the Port of Portland for the past 12 years, has notified us that they are ceasing their operation as of June 1998 and will no longer be handling the pitch product because of enviormental issues. The only other facility who is currently handling solid pitch in the Northwest is the Port of Longview, Washington facility. It is difficult to say how long the Longview Port will be operating. The port has recently upgraded their facility and does not forsee a problem at this time but this could change in the near future.

  We are planning to utilize the Longview facility once Hull Buck is out of business but at a higher cost for unloading and transporting the pitch to the Portland terminal, $13.00 per metric ton. Unfortunately, one of our competitors in the Northwest, Allied Signal, operates a pitch melter at the Port of Longview.

  The pitch melter tank at Portland was constructed in 1994 at a cost of $1.4 million as an insurance policy and a back-up for our domestic operations and off-shore competition.

* The trend to convert to liquid pitch by the aluminum industry continues onward. Over the past four years, we have converted the Alcoa Wenatchee Wa and Intalco Wa smelters. The only smelters remaining on solid pitch are Vanalco, Goldendale Aluminum and Northwest Aluminum. Goldendale and Northwest Aluminum are now under the same ownership and they have indicated that they will

convert to liquid pitch within the next two years. In fact, they have asked us for a proposal to terminal their pitch when they do their conversion. Vanalco will probably hang in until they are are forced to do so.

Smelters are also converting to liquid pitch in other parts of the world. Alba in Baharain and Dubai in Dubai are converting to liquid this year and serious inquiries have been sent in by Alumar and Albras in Brazil. All future new smelters such as the one in South Africa (Alusaf) will have liquid tanks to receive their pitch in liquid form.

* Poscochem, one of our suppliers of import pitch in the Northwestand the 100% supplier to the Goldendale and Northwest smelters, has informed us that once these two smelters convert to liquid, they will no longer supply solid pitch. ..

* Our current import program for this year and next year is 40,000 metric tons but because of the decline of crude tars here in North America, our import pitch program is going to increase to a minimum of 65,000 metric tons. This is only way we will be able protect and maintain our market share. Our major source for our import pitch will be Anshan Steel in China. We are in the process of negociating a ten year contract to supply 40,000 metric tons per year. As a part of the negociations, we would be required to construct a liquid terminal facility at a nearby port to load vessels. The cost of this project is still being engineered and our best guess at this time is $7-8 million. Koppers would be required to fund this project and pay for it through the pitch price over the ten year period. It would give us a secure longterm source of supply of pitch for the Northwest. The remaining requirements would come from Korea, other sources in China and possibly Japan. Koppers Australia is playing a major part in assisting us to secure our import pitch requirements.

Our proposed project at the Portland terminal includes a liquid pitch unloading line which would discharge the pitch directly from the ocean vessel into storage tanks. We would construct one new tank, approximately 6500 metric tons, and build additional tanks as needed. Portland is the ideal location for a liquid pitch terminal as it is easily acccessible to all of the smelter locations in the Northwest. We already have the melter tank and a shipping tank in place which has a capacity of 4500 metric tons. We also have the workforce and support facilities in place to operate proposed facility.

The primary justification for this project is maintaining our current pitch business and hopefully growing our business through the terminaling of other pitches in the Northwest. Negociations are currently going forward with Intalco (Alumax) to terminal their pitch for a ten year period and as mentioned above, Goldendale and Northwest Aluminum will be in need of a terminaling facility when they convert to liquid. I feel confident that if Koppers builds the first liquid facility, it will be very difficult for others to justify a greenfield terminal. Given this, the tonnage through the proposed smelter could grow to 125,000 metric tons over the next three years.
line

The Portland terminal property is leased from Northwest Natural Gas with the current lease expiring the end of this year. They have agreed to sign a ten year lease

Fume recovery Operating Hours- Maximum Case
Koppers Industries, Inc., Portland Tar Plant, Portland, Oregon

Assumptions:

All Pitch comes in as solid pitch		
Total Annual Pitch Production:	150,000	tons/yr
Pitch laoding from barges	1,100	gallons/min
% Pitch loaded into trucks from T-68:	60	% of total pitch production
Pitch loading pumping rate into trucks from T-68:	55.5	tons/hr, based on 37 tons loaded per 40 minutes
% Pitch loaded into railcar from T-65:	40	% of total pitch production
Pitch loading pumping rate into railcars from T-65:	58.0	tons/hr, based on 87 tons loaded per 90 minutes **Phase 1**
Loading rate for 2 racks	116.0	tons/hr **Phase II** added a rack
% Pitch transferred from T-65 to T-68	60.0	% of total pitch production
Pitch transfer pumping rate from T-65 to T-68	70.0	tons/hr
Heavy oil pumping rate:	23	tons/hr, based on 1,200 gal/15min, and a density of 9.6 lbs/gal
Heavy Oil Annual Usage:	375	tons/yr, based on 1997 actual heavy oil usage of 42,421 gal times the ratio of potential pitch production (70,000 tons) over 1997 actual pitch production (38,000 tons)

Calculations:

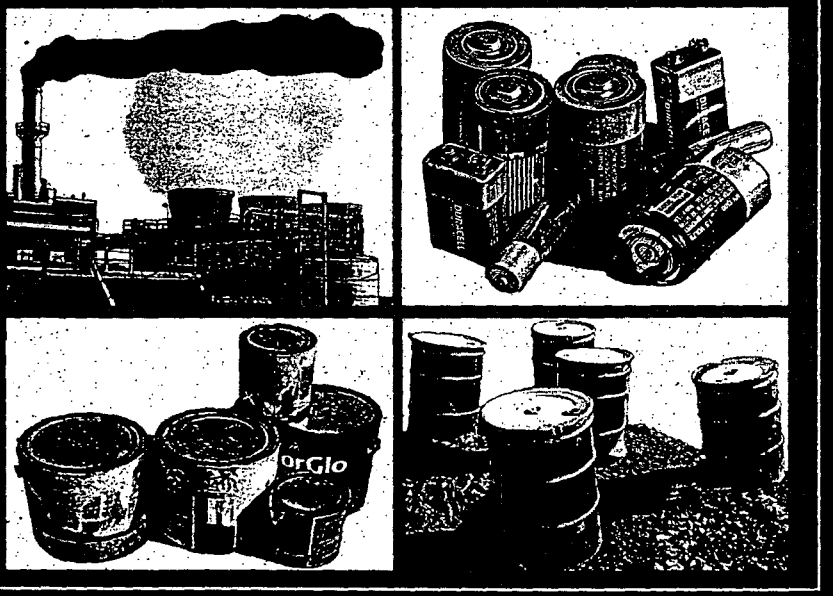
Transfer Description	Amount per Charge (tons)	Pumping Rate (ton/hr)	Annual Amount Transferred (tons/yr)	Annual Transfer Time (hours)	Annual Number of Transfers	T-65 fume hours	T-68 fume hours	Total hours
Pitch loading from Docks	NA	297	150,000	505	NA	621		621
From T-68 to trucks	37	55.5	90,000	1,622	2,432		6486	6,486
From T-65 to rail	87	116.0	60,000	517	690	1,897		1,897
From T-65 to T-68	1200	70.0	90,000	1,286	75		1436	1,436
Heavy Oil transfer	5.76	23	375	16	65	73	73	146
TOTALS:				**3,946**	**3,262**	**2,591**	**7,995**	**10,586**

Assume all transfers are done independently and that the fume recoverys are at high capacity (1,050 scfm). Assume one hour before and after each transfer, 2 start/stop sequences. Therefore, the total fume recovery operating hours can be calculated as follows:

Actual case: fume recovery will run almost all of the time, many transfers will be done together.

Annual Operating Time: 100 % annual operating time

ZERO



TOLERANCE

Persistent Poisons in Oregon

Sources and Solutions

OREGON ENVIRONMENTAL COUNCIL

Koppers005045

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February 2000

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Figure 2: Known or Expected Sources of Persistent Pollutants in Oregon

EXECUTIVE SUMMARY

Decades after learning about the dangers posed by persistent poisons like DDT, mercury and dioxin, we are still allowing the release of many of these dangerous and long-lived chemicals in Oregon. In response to this public health and environmental threat, Governor John Kitzhaber recently signed an Executive Order directing the Oregon Department of Environmental Quality (DEQ)to eliminate the release of all persistent, bioaccumulative and toxic pollutants by the year 2020.

Persistent poisons remain in the environment for decades and concentrate in the bodies of humans and wildlife. As a result, when they are discharged into the air and water, or onto the land, they leave a legacy of toxic contamination, posing serious threats to public health and the environment, and causing expensive cleanup sites. For example:

- Some 700 miles of streams and rivers throughout Oregon do not meet standards for safe fish consumption because of persistent poisons such as mercury, dioxin, PCBs and pesticides.
- Nearly three decades after it was banned, DDT is still being found in streams at levels that violate the Clean Water Act, from suburban Portland to Malheur County in southeastern Oregon.
- On the Columbia River, exposure to dioxins/furans, PCBs and certain pesticides is linked to problems with reproductive tract development in young male otters. The more heavily contaminated males were found to have smaller penile bones and testicles.
- The Portland Harbor qualifies as a federal Superfund site because of contamination by a toxic alphabet soup of persistent poisons, including DDT, PCBs, PAHs and TCDD to name a few.

Despite this evidence and the tremendous potential harm from persistent poisons, we have done little or nothing to stop the flow of these pollutants in Oregon. For several decades, our environmental programs have focused on managing toxic discharges at "safe" levels. However, persistent poisons by their very nature cannot be "managed." We must implement strategies that lead quickly to their elimination.

In addition, inadequate government programs to track persistent poisons have left an alarming gap in our knowledge about the sources of these chemicals here in Oregon. For example, DEQ has not required most industrial facilities which are likely sources of persistent poisons to monitor for those pollutants, nor does it track permitted air and water discharges by chemical in a centralized database, thereby making it impossible to measure progress toward zero discharge.

This report by the Oregon Environmental Council (OEC) provides a first-ever, in-depth look at 12 of the most dangerous and persistent poisons found in Oregon. The report describes where they are coming from, how they are affecting our environment and our health, and how we can get rid of them. Key elements of this report include:

- A first-ever list of 64 industrial and municipal sources throughout Oregon that are known or expected to be discharging persistent poisons, many of them without adequate testing or permit conditions.
- An inventory of scattered "non-point" sources of persistent poisons, such as mercury in fluorescent light bulbs, heavy metals and dioxins in fertilizers, and pollutants from burning of household trash in barrels.
- A review of 12 of the worst persistent poisons and their health effects.
- More than a dozen recommendations for voluntary, market-based and regulatory strategies to begin phasing out persistent poisons, such as a new "toxics" tax and strengthened air and water permit requirements.

INTRODUCTION

When the bathtub is overflowing onto the floor, you don't just start mopping up the mess – you turn off the tap first! Unfortunately we have yet to learn this simple lesson when it comes to toxic chemicals.

For example, it will cost millions of dollars to clean up contaminated sediments that qualify the Willamette River's Portland Harbor to be listed as a federal Superfund site. The area is contaminated with a long-lasting, toxic alphabet soup of chemicals, including DDT, PCBs, PAHs and TCDD, to name just a few. These and other persistent poisons pollute Oregon's air and water statewide, and many are still being legally discharged every day.

Yet Oregon has done little to stop the flow of many of these pollutants into the environment. Until now. On September 24, 1999, Governor John Kitzhaber signed Executive Order 99-13. This Executive Order directs the Oregon Department of Environmental Quality (DEQ) to eliminate the release of all persistent, bioaccumulative toxic (PBT) pollutants by the year 2020 (see page 2 for complete text of this order).

One of the first steps in reaching the goal of zero discharge is identifying the many sources of these persistent poisons. This report provides the first assessment of PBT sources ever in the state of Oregon. The next step is taking action to protect public health by eliminating these persistent poisons from the environment. This report recommends a number of regulatory and non-regulatory strategies to move Oregon in that direction.

THE HEALTH AND ENVIRONMENTAL IMPACTS OF PERSISTENT POISONS

Every day, Oregonians may be exposed to persistent poisons (or more formally, "persistent, bioaccumulative toxics or PBTs"), including toxic chemicals such as dioxin, mercury, lead and PCBs. Persistent poisons pose a significant threat because they:

- remain in the environment for long periods of time,
- build up (or "bioaccumulate") to higher concentrations in humans and wildlife, and
- are highly toxic even in very small concentrations.

These pollutants cause health problems including cancer, birth defects, and disruption of hormone and reproductive systems. Even small amounts can have profound impacts on both wildlife and people, as a growing body of research is documenting. Yet many of these persistent poisons are still legally discharged into our air and water every day. They come from a range of sources – from mercury used in thermometers and fluorescent light bulbs to dioxin from pulp and paper bleaching and waste incineration.

"Hand-me Down" Poisons

Numerous scientific studies have linked persistent poisons to cancer and other serious health problems in both people and wildlife. Many of these pollutants become "hand-me-down" poisons by lodging themselves in body fat, entering embryos and fetuses through the umbilical cord, and contaminating breast milk.

One of the more troubling characteristics of persistent poisons is their ability to disrupt the hormone system,

Children are more vulnerable to the toxic effects of persistent poisons, and mounting scientific evidence shows these poisons may be altering our children's ability to learn, to resist disease, and even their ability to have their own healthy children one day.

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even at extremely low doses, leading to an array of reproductive problems. Several studies of wildlife and laboratory animals link prolonged low-level exposure to these poisons to breast cancer, deformed genitals, abnormal sexual development, aberrant mating behavior, and sterility (Colborn, 1997; Guillette, 1994).

In addition, several human and animal studies link prenatal exposure to these poisons to learning and behavioral impairments as well as lower IQ levels. Exposure to dioxin, one of the more toxic chemicals still being legally discharged, can impair immune system function, neurological development, learning behavior, and reproductive systems (Schettler, 1999).

Disturbing Health Trends

An ever-growing body of evidence from the laboratory and the field indicates that a variety of disturbing trends in wildlife and human health are linked to exposure to persistent poisons:

- Cancer is the second leading cause of death in the U.S. Several types of cancer involving hormone-sensitive tissues are either among the most common (like breast and prostate cancer), or are on the rise (such as testicular cancer) (Ries, 1998).
- Multiple problems associated with reproduction in fish is linked to environmental contamination (Orlando, 1999).
- A genital birth defect known as hypospadias in boys nearly doubled between 1970 and 1993, and may be linked to fetal exposures to hormone-disrupting chemicals (Schettler, 1999).
- Genital birth defects and related reproductive problems in alligators, otters and other species are linked to persistent pollutants (Guillette, 1996; Henny 1996).
- Sperm counts are declining in the U.S. and Western Europe, which many scientists attribute to environmental estrogens (Jones, 2000).

These and other health trends indicate that precaution is essential. PBTs by their nature cannot be managed. Eliminating their use and production is the best course of action.

EXECUTIVE ORDER NO. 99 - 13

ELIMINATION OF PERSISTENT, BIOACCUMULATIVE, AND TOXIC POLLUTANTS

WHEREAS, the quality of Oregon's environment today is the result of many years of combined efforts by the public, government agencies, and industry;

WHEREAS, recent international studies have concluded that contaminants that are persistent, bioaccumulative, and toxic present the greatest risk to human health and the environment, and are not adequately addressed;

WHEREAS, these persistent, bioaccumulative, and toxic pollutants (PBTs) are associated with a broad range of adverse human health impacts such as cancer, effects on the nervous system, reproductive and development problems and hormonal disruption;

WHEREAS, PBTs accumulate in the tissues of plants and animals and become increasingly concentrated as they move up the food chain;

WHEREAS, PBTs remain an environmental and health concern long after they are used, generated as waste, or released into the environment;

THEREFORE, IT IS HEREBY ORDERED AND DIRECTED:

1) In order to address the presence of the most threatening chemical substances in Oregon's environment, the Oregon Department of Environmental Quality shall lead a state-wide effort to eliminate the releases of PBTs into the environment.

2) Oregon's initial goals in this effort shall be to:

- Outline a range of approaches that might be undertaken in Oregon to identify, track and eliminate the release of PBTs into the environment by the year 2020;
- Evaluate state, national, and international efforts to eliminate PBTs;
- Use available information to identify which PBTs are generated in Oregon, determine what activities generate PBTs, estimate the amounts being generated, and identify missing data; and
- Identify ways to utilize education, technical assistance, pollution prevention, economic incentives, government procurement policies, compliance, and permitting activities to eliminate PBT releases.

3) All Oregon citizens, businesses, and governments are encouraged to participate in efforts to implement this Executive Order.

Done at Salem, Oregon, this 24 day of September, 1999.

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PERSISTENT POISONS IN OREGON

Here in Oregon, we see several manifestations of the problem:

- State health officials have identified over 700 miles of rivers and streams throughout Oregon that do not meet minimum standards of safety for fish consumption due to persistent poisons (DEQ, 1998a). Rivers and streams are contaminated by:
  - mercury (435 miles)
  - dioxin (463 miles)
  - pesticides (153 miles)
  - PCBs (133 miles)
- On the Columbia River, exposure to dioxins/furans, PCBs and certain pesticides is linked to problems with reproductive tract development in young male otters. The more heavily contaminated males were found to have smaller penile bones and testicles (Henny, 1996).
- Although DDT was banned over 25 years ago, a toxic breakdown product of the pesticide was one of the most commonly detected compounds in Willamette Basin sediments, fish and shellfish, as recently as 1995 (USGS, 1998).
- It will cost millions of dollars to clean up contaminated sediments in Portland Harbor, which are laden with PCBs, dioxins, DDT, mercury and a host of other persistent pollutants.
- Studies of contaminants in the Columbia River show that bald eagles and other birds of prey nesting along the river are exposed to unsafe levels of DDE, PCBs and dioxins and furans because they consume contaminated prey (Buck, 1999).

METHODOLOGY

There are dozens of chemicals that could be defined as persistent, bioaccumulative and toxic (see Beyond the Dirty Dozen, page 8). The 12 PBTs we focused on for this report were identified as priority chemicals for the Great Lakes Binational Strategy and subsequently adopted by the U.S. Environmental Protection Agency (EPA) as their highest priority PBTs nationwide. Of these 12, five are pesticides that have been banned or otherwise taken off the market. Of the remaining seven, two are heavy metals and five are organic compounds that are used or discharged by industrial sources and certain non-point sources.

EPA's Top Priority Persistent Bioaccumulative Toxic Pollutants

aldrin/dieldrin	lead
benzo(a)pyrene	mercury
chlordane	mirex
DDT	octachlorostyrene
dioxins/furans	PCBs
hexachlorobenzene	toxaphene

After identifying the chemicals, we searched the literature for the types of industries and non-point sources that are associated with each chemical. Most of the information is from national studies done by EPA and independent research institutes such as the Pollution Prevention Resource Center (PPRC, 1999), as well as data from individual states.

Once we identified the source categories, we searched for specific companies here in Oregon that fit into those categories. We relied primarily on the 1999 Oregon Manufacturers Register (Oregon Manufacturers Register, 1999) and interviews with DEQ officials and permit managers.

To determine which facilities have permits to release these compounds, we reviewed air and water permits, as well as discharge monitoring reports for air and water for many of the facilities. We also relied on the Fire Marshal's Hazardous Substance Information System, as well as the federal Toxics Release Inventory (TRI) (see sidebar on Sources of Information, next page). We did not include information from toxic cleanup sites, except for a few locations where a

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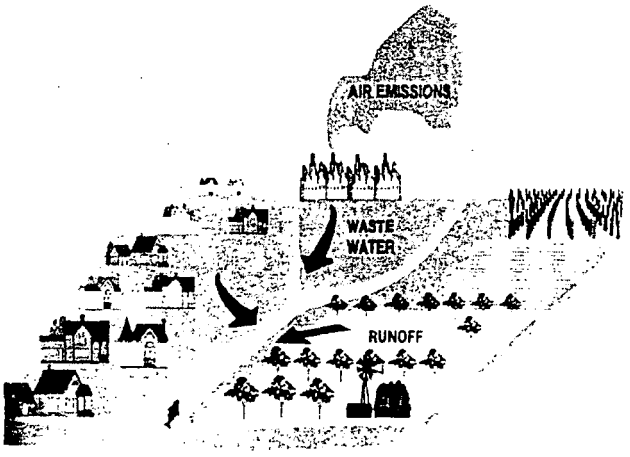
particular company is undergoing cleanup and is still in operation. We did not attempt to quantify any of the releases; as zero discharge is the goal, the amount of pollution currently released is of lesser concern.

We made every attempt to be as inclusive as possible in our review. Nonetheless, it is possible that there are PBT sources we missed. In part, this is due to the fact that our current system of tracking chemical releases into the environment is woefully inadequate. For example, while DEQ issues permits for chemical releases into air and water for hundreds of sources across the state, they do not maintain any system to track these permitted releases by chemical. In addition, both the state and the federal chemical tracking systems are limited in scope and are therefore full of holes.

For example, only four of the 12 chemicals we focused on in this report are required to be reported under the TRI (mercury, lead, PCBs and hexachlorobenzene). However, a search of the TRI database showed that the only chemical that is reported in Oregon is lead.



Persisten: pollutants come from a variety of sources, including air and water emissions from industrial facilities, municipal waste water discharges, and "non-point" sources such as certain pesticides and fertilizers, residential burning and certain consumer products.

Key Sources of Information

Air and Water Permits

National Pollutant Discharge Elimination System (NPDES) permits are required for facilities that discharge pollutants to surface waters, and include both state and federal requirements. Approximately 3,800 water quality permits are issued in Oregon.

Under Title V of the Clean Air Act, permits are issued to all "major" sources that emit 10 tons of any hazardous air pollutant (HAP), 25 tons of any combination of HAPs, or 100 tons of criteria pollutants. Title V permits for 132 facilities have been issued in Oregon.

Oregon's Hazardous Substance Information System

The Office of the State Fire Marshal annually surveys businesses and requires them to report the **storage** of hazardous substances if they have more than either 50 gallons of a liquid or 500 pounds of a solid material. Businesses with these quantities of hazardous substances are required to report specific information including the chemical name, maximum amount and storage location, as well as basic information about the business itself.

The Federal Toxics Release Inventory (TRI)

The TRI was established under section 313 of the Emergency Planning and Community Right to Know Act of 1986. It requires manufacturing facilities which meet certain thresholds to report estimated releases and transfers of listed toxic chemicals to the U.S. EPA and, in Oregon, to the State Fire Marshal. Reporting thresholds for TRI involve manufacturing or processing quantities greater than 25,000 pounds or other use in quantities greater than 10,000 pounds per year. The industrial sectors required to report are those with Standard Industrial Classification (SIC) codes 20-39 (i.e., manufacturing). As of January 1, 2000, EPA lowered the reporting thresholds for 18 PBTs and added seven PBTs to the list of TRI chemicals.

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A CLOSER LOOK AT 12 PERSISTENT POISONS

For each chemical or chemical category (described below in alphabetical order), the toxicity and environmental problems associated with it are briefly described, followed by a short discussion of the sources of the chemical. Table 1 provides a more detailed description of the specific sources, listed by chemical.

BANNED PESTICIDES

Background

Five of the 12 PBTs identified by EPA as their top priority are pesticides that have been banned or otherwise taken out of commerce in the United States. These are aldrin/dieldrin, chlordane, DDT, mirex and toxaphene. All of these pesticides are highly chlorinated compounds and have been linked to cancer and numerous environmental problems. The most well-known problem is DDT's ability to cause egg shell thinning in fish-eating birds, such as bald eagles and herons.

Though banned from use in the U.S., these pesticides still contaminate the air, water, land, and even our bodies. For example, detectable levels of the DDT metabolite DDE are found in the breast milk of virtually all women in the U.S. (Schettler, 1999). Throughout the Willamette River Basin, researchers found DDT (and its breakdown products DDD and DDE), chlordane, and dieldrin in both sediments and aquatic life. Concentrations of these chemicals in sediments exceeded EPA guidelines for protection of aquatic life at 10 of 47 sites (USGS, 1998). In addition, dieldrin was found at levels up to 10 times higher than Clean Water Act standards in Johnson Creek, in southeast Portland (DEQ, 1998b).

Sources

In general, the remaining sources of these pesticides come from unused stockpiles, atmospheric transport and deposition, and contaminated media such as sediments, soil and localized contaminated industrial sites. For example, the chemical manufacturer Elf Atochem, located in Portland, is in the midst of cleaning up DDT contamination from past chemical production.

These chemicals continue to be produced and used in

Spotlight on Endosulfan: A Persistent Pesticide

While five of the 12 PBTs discussed in this report are now banned, it is important to note that at least four pesticides identified as PBTs by several government agencies are registered for regular use in Oregon.

For example, endosulfan is an organochlorine insecticide registered for use in Oregon on a wide variety of crops, from fruits and nuts to Christmas trees. Organochlorine chemicals are generally toxic to the nervous and reproductive systems, are slow to break down in the environment and tend to bioaccumulate.

People can be exposed to endosulfan through inhalation, dermal contact, or ingestion of contaminated food. Pesticide applicators and families in areas where endosulfan is used are at greatest risk for exposure to high levels of endosulfan.

Exposure to high levels of endosulfan can result in convulsions, nausea, vomiting, hyper-activity, shortness of breath and death (ATSDR, Extoxnet). Endosulfan also functions as an endocrine disruptor and has been shown to stimulate the growth of estrogen sensitive human breast cancer cells in culture (Schettler, 1999; Soto, 1994). In rats, low doses of endosulfan have been shown to inhibit hormone synthesis and cause shrinkage of testicles (Schettler, 1999).

Endosulfan breaks down more quickly in the environment than some other organochlorines (e.g., DDT, chlordane). However it still has a half life of anywhere from 4-200 days (Schettler, 1999). It binds easily to soils particles and can remain bound in soils for much longer periods of time (Extoxnet). Contamination of streams and ponds near fields sprayed with endosulfan can occur when contaminated soil particles are transported by surface runoff (Extoxnet). Numerous studies have found endosulfan to be acutely toxic to fish (Shafiei and Costa 1990; Ernst, 1991; Gill, 1991). In the Columbia Slough, endosulfan was found above the detection limit in three of 17 samples (U.S. Army Corps of Engineers, 1999).

A 1987 survey of pesticide use in Oregon found that over 55,500 pounds of endosulfan was used to treat almost 33,000 acres of cropland in the state (Rinehold and Witt, 1989). Endosulfan was sprayed on over 18 different crops, with the greatest amounts used on filberts, apples, Christmas trees and pears. In national samples of fresh and processed fruits and vegetables the USDA found endosulfan residues on seven out of 11 commodities tested (USDA, 1997).

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other countries, contributing to atmospheric deposition. In fact, DDT and its metabolites have been detected in arctic air, water and organisms and is generally believed to be ubiquitous throughout the world (Ritter, 1995).

BENZO(A)PYRENE

Background

Benzo(a)pyrene (B(a)P) has long been known to cause cancer. It belongs to a class of chemicals known as polycyclic aromatic hydrocarbons (PAHs). It is usually found in smoke and soot, as it is formed when gasoline, garbage, or any animal or plant material burns. In addition to being considered a probable human carcinogen, B(a)P is also mutagenic and has been linked to developmental and reproductive problems (New Jersey Department of Health).

Major Industrial Point Sources

Aluminum Smelters: There are two aluminum smelters in Oregon, both of which are permitted to discharge B(a)P. In 1997, one of the smelters (NW Aluminum) was found in violation of their permit for discharge of the chemical.

Steel Mills: The two steel mills in Oregon are likely sources of B(a)P. While neither facility is required to test for B(a)P specifically, Cascade Steel's air quality permit includes estimates for the release of "polycyclic organic matter," which would likely include B(a)P.

Wood Preservers Using Creosote: Creosote is a wood-preserving chemical that contains benzo(a)pyrene. Four companies and one government agency report to the Fire Marshal that they store (and therefore presumably use) creosote.

Tar/Asphalt Production: Benzo(a)pyrene is generally associated with tar and asphalt (NJ Hazardous Substance Fact Sheet). There are 15 companies that manufacture asphalt paving mixture, according to the Oregon Manufacturers Register. They are listed in Table 1.

Non-Point Sources

Benzo(a)pyrene is probably one of the most ubiquitous persistent poisons, as it is a byproduct of most burning processes, including charcoal briquette use, automotive exhaust, residential wood combustion, and cigarette smoke.

DIOXINS/FURANS

Background

Dioxins (a term that includes all polychlorinated dibenzo-p-dioxins and dibenzofurans) are the most toxic "man-made" compounds ever studied (EPA, 1994b). Dioxins do not occur naturally and are not intentionally manufactured; but they are produced as a by-product of several industrial and other non-point processes. Dioxins are potent carcinogens and hormone disrupters, and cause a range of health effects at levels hundreds or thousands of times lower than most chemicals. Even average "background" dioxin levels in the environment can cause adverse health effects in the general population (EPA, 1999a).

Dioxins have been shown to cause a variety of health effects in animals, such as weight loss, liver damage, and disruption of the endocrine system. In many species of animals, it weakens the immune system and causes a decrease in the system's ability to fight bacteria and viruses. Several studies suggest that exposure to the most toxic form of dioxin – 2,3,7,8-TCDD – increases the risk of several types of cancer in people. The World Health Organization and other government agencies agree that 2,3,7,8-TCDD is a human carcinogen (ATSDR).

Dioxins cross the placenta; thus children can be exposed to dioxins pre-natally. Extensive animal data and a few human studies indicate that dioxins cause serious problems in the offspring of exposed mothers (EPA, 1994b). Some animal species exposed to dioxins during pregnancy had miscarriages and the offspring of animals exposed to 2,3,7,8-TCDD during pregnancy often had severe birth defects including skeletal deformities, kidney defects, and weakened immune responses (ATSDR).

In a laboratory study, even a single low dose of dioxin given to a pregnant rat at a critical moment in pregnancy did permanent damage to the reproductive systems of her male offspring (Schettler, 1999). The most disturbing part of this study is that the dose used

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in the experiment is very near the levels of dioxin and related compounds reported in people's bodies here in the U.S.

Dioxins are turning up in the Willamette Basin. A study by the U.S. Geological Survey in the mid-1990s found dioxins in sediments and fish tissue throughout the basin. The highest concentrations in sediments were found in areas where industrial or urban inputs were likely. Potential toxicity at these sites was high enough to be associated with increased risk to sensitive wildlife (Bonn, 1997).

In another study, dioxins and furans were found in all 16 fish tissue samples taken from the mainstem and tributaries of the Willamette River between 1988 and 1990. The concentrations in all of the samples exceeded EPA's recommended levels for water quality criteria (DEQ, 1994).

Dioxins and furans were found in all 16 fish tissue samples taken from the mainstem and tributaries of the Willamette River between 1988 and 1990.

Major Industrial Point Sources

According to a Washington State Department of Ecology (WDOE) study (1998), the primary industrial sources of dioxin are:

Bleached Pulp and Paper: Three pulp and paper mills in Oregon bleach with some form of chlorine, which contributes dioxin to the environment. All of them have permits for discharge of dioxins (although the Boise Cascade plant discharges to the city of St. Helens wastewater treatment plant, so the permit is actually held by the city).

Cement Kilns: Neither of the two cement kilns in Oregon are currently required to test for dioxin, although several studies have shown cement kilns to be a source of dioxin (EPA, 1994a: WDOE. 1998).

Steel Mills: A study of fertilizer in Washington state indicates that steel foundry dust used as an amendment to fertilizer contains dioxins (WDOE, 1999). Though Oregon's two steel mills are possible sources of dioxin, neither one is required to monitor for the chemical.

Waste Incinerators: The two municipal solid waste incinerators in Oregon are permitted to discharge dioxin in their air emissions, and both have found measurable dioxin levels coming from their incinerator stacks, albeit below their permit limit.

Wood Preservers Using Pentachlorophenol: There are four wood treating facilities in Oregon that use pentachlorophenol (which tends to be contaminated with dioxin). Three of these facilities are in the midst of cleaning up contamination from past practices; only two have NPDES permits that include dioxin.

Wood Waste ("Hogged Fuel") Boilers: According to DEQ, there are over 200 hogged fuel boilers in Oregon. These are facilities that burn wood waste and sometimes other materials, and are generally associated with the pulp and paper industry, including sawmills. Although EPA and Washington state have identified hogged fuel boilers as a source of dioxin, none of Oregon's boilers have sampled for dioxin (personal communication with DEQ staff).

Municipal Point Sources

Municipal Wastewater Treatment Plants: Also known as "publicly owned treatment works (or POTWs)," municipal wastewater treatment plants are a potential source of dioxins and furans. We did not survey all Oregon municipalities; instead we looked at test results from two of the largest POTWs in Oregon, the city of Portland and the Unified Sewerage Agency (USA).

The city of Portland tests for dioxins and furans four times a year at their Columbia Boulevard Wastewater Treatment Plant. While their testing shows no dioxins or furans above the detection limit in the wastewater, they do find measurable levels in the sewage sludge ("biosolids").

The Unified Sewerage Agency, which serves 370,000 residents, tests their sewage sludge for dioxins, furans and PCBs annually at their two facilities. Results from 1998 showed measurable levels of dioxins and furans at both facilities.

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Beyond the "Dirty Dozen"

In addition to EPA's top 12 PBTs, there are many other chemicals that fit the definition of persistent, bioaccumulative and toxic. In fact, the Great Lakes Strategy identified 20 additional substances as "Level II" substances that are of concern:

- cadmium and cadmium compounds
- 1,4-dichlorobenzene
- 3,3'-dichlorobenzidine
- endrin
- heptachlor and heptachlor epoxide
- hexachlorobutadiene
- hexachloro-1,3-butadiene
- hexachlorocyclohexane (includes Lindane)
- 4,4'-methylenebis(2-chloroaniline)
- pentachlorobenzene
- pentachlorophenol
- 1,2,3,4-tetrachlorobenzene
- 1,2,3,5-tetrachlorobenzene
- PAHs (including anthracene, benzo(a)anthracene, benzo(ghi)perylene, perylene and phenanthrene)

As part of its initiative to eliminate PBTs, the Washington State Department of Ecology is focusing on a list of 27 PBTs that were originally identified by the Ontario Ministry of Environment and Energy as a top priority. These are:

Banned pesticides
- aldrin
- chlordane
- DDT (DDE, DDD)
- dieldrin
- endrin
- heptachlor
- lindane
- mirex
- toxaphene

Registered pesticides
- endosulfan
- pentachlorophenol
- tributyltin
- trifluralin

Polycyclic Aromatic Hydrocarbons (PAHs)
- anthracene
- benzo(a)pyrene
- benzo(g,h,i)perylene
- benz(a)anthracene
- phenanthrene
- perylene

Metals
- cadmium
- mercury

Others
- 1,4-dichlorobenzene
- 3,3'-dichlorobenzidine
- hexachlorobenzene
- PCBs
- Polychlorinated dibenzo-p-dioxins and furans

Non-Point Sources

Small amounts of dioxins/furans can also come from vehicle fuel combustion, wood burning, coal combustion, and residential oil combustion (EPA, 1994a). A recent EPA study found relatively high levels of dioxin from burning household trash in barrels (Lemieux, 2000). In addition, fertilizers supplemented with certain industrial wastes have been shown to be contaminated with dioxin, making fertilizers another potential non-point source of dioxin in the environment (WDOE, 1999).

HEXACHLOROBENZENE (HCB)

Background

Although there are no commercial uses of hexachlorobenzene (HCB) in the U.S., it is formed as a by-product in various waste streams, manufacturing processes, and combustion operations. In the past, it was used as a fungicide on the seeds of onion, sorghum, wheat and other grains.

Long-term, low level exposure to HCB may damage a developing fetus, cause cancer, lead to liver and kidney damage, and fatigue, and cause skin irritation (U.S. EPA and Environment Canada, 1999b). Studies in animals show that HCB can damage the liver, thyroid, nervous system, bones, kidneys, blood, and immune and endocrine systems (ATSDR). In addition, the

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International Agency for Research on Cancer considers it to be a possible human carcinogen.

Under the federal Clean Air Act, there are 188 air toxics specifically listed and subject to regulation. Of these 188 "hazardous air pollutants (HAPs)," seven are PBTs. Although HCB is on the list of HAPs, it appears that few if any facilities in Oregon are required to test for it.

Major Industrial Point Sources

The primary industrial processes expected to generate HCB in Oregon are (EPA/Environment Canada, 1999b):

Chlor-Alkali Manufacturing: Only one facility in Oregon manufactures chlor-alkali, and it is not testing for HCB.

Burning of Chlorinated Substances: This includes burning of municipal waste, medical waste, hazardous waste and sewage sludge, as well as cement and aggregate kilns, none of which are testing for HCB.

Wood Preservation with Pentachlorophenol: HCB has been identified as a contaminant in the wood preservative pentachlorophenol (PCP). Four companies report storage of PCP to the Fire Marshal, but none of them is required to test for HCB.

Aluminum Degassing with Hexachloroethane in Secondary Aluminum Production: We were not able to identify which facilities in Oregon use this particular process (see "Data Gaps and Uncertainties" section on page 13).

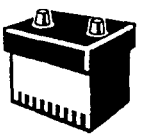
Non-Point Sources

The only non-point source of HCB we identified is the use of certain pesticides, primarily chlorothalonil, dimethyl tetrachloro-terephthalate, pentachloronitrobenzene, and picloram (EPA/Environment Canada, 1999b). All of these pesticides are registered for use in Oregon.

LEAD

Background

Lead is used in the production of batteries; metal products, such as sheet lead, solder and pipes; and in gasoline additives, ammunition, cable covering, roofing, devices to shield x-rays and other products. Lead also gets into the environment through activities such as mining, certain manufacturing processes, and the burning of fossil fuels. Because of health concerns, lead in gasoline, paints and ceramic products, caulking, and pipe solder have been dramatically reduced in recent years (ATSDR).



Children are especially vulnerable to lead poisoning because they absorb and retain more lead in proportion to their body weight, and because their brains are still developing. While lead can affect almost every organ and system in the body, the central nervous system is the most sensitive, particularly in children.

Lead causes irreversible nervous system damage and decreases intelligence at extremely low doses. Lead can also cause premature births, smaller babies, decreased mental ability in infants, learning difficulties, and reduced growth in young children. Studies have shown increased risk of low birth weight and slowed postnatal neurobehavioral development in the developing fetus from maternal lead exposure (EPA. Office of Air Quality Planning and Standards Fact Sheet).

In adults, lead exposure may decrease reaction time, cause weakness in fingers, wrists, or ankles, and affect the memory. It can also cause anemia, a disorder of the blood, as well as damage to the male reproductive system (ATSDR).

Major Industrial Point Sources

Based on a search of the TRI database from 1995 and 1997, a total of 15 manufacturing facilities in Oregon reported releases of lead for those two years combined. Four of these reported that they transferred their lead off-site to another facility, such as a disposal facility or metal reclamation facility. Another eight reported releases directly to air, water or land, and three simply filed a statement, as permitted by law, that releases and waste for lead were less than 500 pounds. In addition,

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one Portland chemical manufacturer has a permit to discharge lead.

In addition to the facilities reporting under TRI, other sources of lead are:

Cement Kilns: Of the two cement kilns in Oregon, one is a known source of lead, according to their Title V air permit. The other is likely to be a source, as they are permitted to burn waste oil that contains lead.

Waste Incineration: Lead is also discharged from both waste incinerators in Oregon, although both emit significantly less than their permits allow.

Municipal Point Sources

We looked at test results of wastewater and sewage sludge from the city of Portland Columbia Boulevard Wastewater Treatment Plant and the Unified Sewerage Agency (USA). Both the city of Portland's water discharge monitoring and their sewage sludge show measurable levels of lead. Sewage sludge results from USA also show measurable levels of lead, as well as other metals. Lead was not found above the detection limit in tests of USA's wastewater. Lead levels in the sludge from both municipalities are below EPA's regulatory limit. The city of St. Helens also has lead in its wastewater discharge. Based on this sample, it is likely that most municipal wastewater and sludge contain some lead.

Non-Point Sources

Lead-based paints were commonly used for many years, and flaking paint, paint chips, and weathered paint powder may be a major source of lead exposure, particularly for children.

Lead in drinking water is due primarily to the presence of lead in certain pipes, solder and fixtures. Certain gasoline products and batteries with lead represent other non-point sources.

In fact, a search of the Fire Marshal's database shows that hundreds of businesses across the state report storage of lead acid batteries. In addition, fertilizers that are amended with industrial waste are a potential source of lead (WDOE, 1999).

MERCURY

Background

While all forms of mercury are considered poisonous, the organic form of mercury, known as methylmercury, is of most concern. Methylmercury accumulates in fish, posing a health risk to people and wildlife who consume fish. In fact, mercury is the most frequent basis for fish advisories in the United States (EPA, 1998). Nationally, EPA estimates that 870 pounds of mercury is added to the atmosphere *each day* from human sources.

Mercury is well known and long established as a neurotoxin that slows fetal and child development and causes irreversible deficits in brain function (EPA, 1999b). Because the developing nervous system is more vulnerable to mercury toxicity, children exposed through their mothers are particularly at risk.

The harmful effects of mercury that may be passed from the mother to the developing fetus include brain damage, mental retardation, blindness, seizures, and an inability to speak. Children poisoned by mercury may develop nervous and digestive systems problems and kidney damage (ATSDR).

Fish consumption advisories have been issued for seven waterbodies in Oregon, including the entire Willamette River, due to mercury contamination (OHD).

Fish consumption advisories have been issued for seven waterbodies in Oregon, including the entire Willamette River, due to mercury contamination.

Major Industrial Point Sources

Many of the industrial point sources for mercury were identified via the Fire Marshal's database.

Four pulp and paper mills, three government agencies and several electronics-oriented companies reported storage of mercury in some form. Other known or potential sources of mercury are:

Cement and/or Lime Manufacturing: Although cement kilns are recognized as a source of mercury (Great Lakes United, 1999), neither of the two cement kilns in

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Oregon is required to test for mercury emissions. Only the facility in Durkee predicts that it emits mercury.

Utilities: The PGE power plant in Boardman, which is the only coal-burning power plant in Oregon, is a source of mercury. In addition, Pacificorp reports that they have mercury gauges in fenced substations on older, very large transformers. They may also use mercury in flow meters at power plants. It is possible other utilities also have mercury-based equipment still in use.

Waste Incineration: Both of Oregon's waste incinerators are permitted to release mercury into the air, and both have measurable levels of mercury, albeit below permit levels, in their emissions.

Municipal Point Sources

Sewage sludge monitoring from the city of Portland and the Unified Sewerage Agency's treatment plant show measurable levels of mercury, although both are approximately 10 times below EPA's regulatory limit. It is likely that other municipal wastewater treatment plants in Oregon also contain mercury in their sewage sludge.

Non-Point Sources

Hospitals, medical facilities and chemistry labs are a likely source of mercury, since mercury is found in medical devices such as thermometers and blood pressure cuffs. In addition, many household items like fluorescent lights, lamps and thermostats, and some batteries contain mercury. When these items are discarded and burned, the residual mercury is emitted into the atmosphere.

In addition, mercury may be emitted during the collection and recycling of fluorescent light bulbs.

Dentists use mercury in dental amalgam. The Oregon Dental Association (ODA), in cooperation with the city of Portland, recently developed a Best Management Practices program for dentists that encourages recycling of waste amalgam and other wastes. While they have no data to support the claim, the ODA believes that the vast majority of dental offices in Oregon are recycling their mercury-based wastes.

Fertilizer that has been amended with industrial waste has also been shown to contain measurable levels of mercury (WDOE, 1999).

Mercury also occurs naturally in the environment in several forms. Mercury mines and naturally-occurring cinnabar deposits in Oregon soils and volcanic rocks contribute mercury to surface waters (Newell, 1996; OHD, 1997). Researchers have reported elevated mercury levels in watersheds where there are abandoned mines, a history of gold mining, surficial cinnabar deposits, or geothermal activity (Newell, 1996).

OCTACHLOROSTYRENE

Background

Octachlorostyrene (OCS) is a toxic compound that causes liver, thyroid and kidney damage in laboratory animals (EPA, 1998c). It is probably the least well-studied of EPA's top 12 PBTs, particularly in terms of its ability to cause health and environmental damage.

Industrial Point Sources

EPA reports that generally whenever hexachlorobenzene and chlorinated dibenzodioxins are formed, there is potential that OCS is also formed. (EPA, 1998b). More specifically, EPA reports that OCS is generated by the following industrial processes:

Aluminum Degassing with Hexachloroethane in Secondary Aluminum Production: We were unable to identify which facilities in Oregon use this particular process (see "Data Gaps and Uncertainties" section below).

Aluminum Plasma Etching in the Semi-Conductor Industry: We were unable to identify which facilities in Oregon use this particular process (see "Data Gaps and Uncertainties" section below).

Chlorine and Chlorinated Solvent Production: There is one chlor-alkali plant in Oregon, but it is not required to test for OCS.

Incineration of PVC and Plastics: Neither of the incinerators in Oregon is required to test for OCS, although both accept some plastics and therefore would be expected to emit OCS.

Non-Point Sources

We were not able to identify any non-point sources of OCS.

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POLYCHLORINATED BIPHENYLS (PCBS)

Background

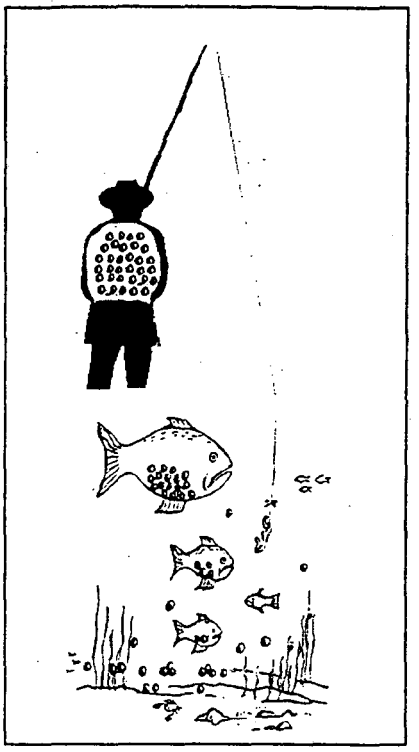
Before being banned in the U.S. in 1976, PCBs were widely used as coolants and lubricants in electrical equipment, especially in transformers and capacitors. In addition, PCBs were used in many other products including fluorescent lighting fixtures, electrical devices and appliances, and hydraulic fluids. Although no longer produced in the U. S., they are still commonly found in the environment.

By 1976, industry had already produced 3.4 billion pounds of PCBs nationwide. The ban on manufacturing therefore did little to address those PCBs already in use. Although utilities have slowly been upgrading old equipment, transformers and capacitors continue to be a source of PCBs. PCBs are also turning up in public buildings. At Wilsonville High School, for example, a fire in an old fluorescent light ballast in 1999 caused the release of PCBs. Ballasts of this kind can be found throughout Oregon.

PCBs have consistently been documented as extremely dangerous to human and wildlife health. Emerging research suggests that PCBs impair neurological development in the womb and early in life by disrupting thyroid hormones. Exposure has been linked with endometriosis, miscarriage, and neurological damage including learning disabilities, hyperactivity and attention problems. Laboratory animals exposed to PCBs in the womb and during youth show behavioral abnormalities as adults. These abnormalities include motor impairment, depressed reflexes, and learning and memory deficits (Colborn, 1997).

A recent study found Orca whales in the waters around Washington state and British Columbia to be severely contaminated with PCBs. Researchers took samples from 47 killer whales and found that they are 400 to 500 times more contaminated than humans. These levels are expected to weaken the animals' immune systems and hamper reproduction (Lyke, 1999).

Several studies conducted by U.S. Geological Survey, Oregon DEQ, and others have found PCBs in tissue samples from fish and other aquatic life in the Willamette Basin (USGS, 1997; DEQ, 1998). The USGS found PCB levels in fish in Beaverton Creek that exceed the National Academy of Science/National Academy of Engineering guidelines for fish tissue (Bonn, 1999).



Bioaccumulation occurs when pollutants increase in concentration as they move up the food chain. This presents serious problems as studies have shown that babies born to women who consumed PCB-contaminated fish had problems with their nervous systems at birth.

Major Industrial Point Sources

There are dozens of utilities in Oregon, ranging in size. We did not survey all Oregon utilities; instead we looked at three of the largest utilities that supply over 75% of the power for the state (PGE, Pacificorp and EWEB), as well as the Bonneville Power Administration (BPA) and two smaller utilities randomly chosen from around the state.

Each of the utilities we interviewed still has at least some transformers, capacitors or other PCB-laced equipment in service. All also have programs to reduce or eliminate their PCB-based equipment. They dispose of PCB-contaminated material in a number of ways – for example, several send it to an incinerator in Utah, while others send materials with lower concentrations to a cement or lime kiln (including Ash Grove Cement).

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Following is a brief summary of the status of the PCB replacement programs for the six utilities we surveyed:

- Since 1977, Portland General Electric has disposed of all transformers containing more than 500 parts per million (ppm) PCBs, and are in the process of replacing PCB capacitors.
- Pacificorp has PCBs in capacitors in fenced substations and they still have thousands of transformers that haven't been tested. However, the vast majority of those tested have less than 50 ppm PCBs. If greater than 50 ppm, the transformer is replaced. Those with less than 50 ppm may stay in service.
- The Eugene Water and Electric Board (EWEB) has changed out all equipment with more than 50 ppm of PCBs. Any equipment put back into service must be less than 1 ppm. They have a contract with General Electric to dispose of their PCB waste.
- The Bonneville Power Administration has replaced about 65% of their PCB capacitors, representing 90% of PCB equipment BPA has in service. The other 10% occurs in other electrical equipment in substations throughout the state.
- Emerald PUD has replaced about 11,000 transformers in the last 15 years. They still have PCB transformers that supply power to residential customers that they estimate will take another five years to replace.
- Salem Electric has tested and replaced all transformers and capacitors with PCB-contaminated oil. They now have only a few transformers in service that have between two and 38 ppm PCBs. Salem Electric's policy is to only use oil-filled equipment with a maximum level of 1 ppm PCB.

Non-Point Sources

Unfortunately, there are likely to be many smaller sources of PCBs, as any company or agency using transformers made before 1977 is a potential source of PCBs.

For example, there are a number of small energy co-ops, municipalities and rural electric authorities that may be smaller sources of PCBs. In addition, a number of mills and other big industrial facilities have their own transformers and other electrical equipment. Some colleges and universities may also have their own equipment. Military installations and other government agencies may also have PCBs. In addition, older fluorescent light ballasts may contain PCBs.

DATA GAPS AND UNCERTAINTIES

In conducting the research for this report, it became clear that identifying sources of these 12 PBTs is more complicated than one might expect. There are several gaps in our knowledge about many of the sources of these chemicals. For example, we identified most of the sources of lead via the TRI database, which misses many sources due to the high thresholds for reporting and other loopholes in reporting requirements.

For example, lead may be used in certain types of plastics manufacturing and certain electronic devices (California Department of Health Services, 1998). While there are dozens of plastic manufacturers and electronic device manufacturers in Oregon, there is no easy way to determine if any of them are using lead in their processes without conducting an exhaustive survey of every facility.

Certain processes used in secondary aluminum production can lead to the release of hexachlorobenzene and octachlorostyrene. However, we were unable to discern which facilities in Oregon engage in these processes.

In addition, EPA recently issued a new rule for air emissions from secondary aluminum production facilities, in which dioxin is identified as a potential pollutant. There are 34 smaller facilities in Oregon that are involved to varying degrees in the production of aluminum, in addition to Oregon's two large aluminum smelters. DEQ has issued air permits for only five of these 36 facilities (including the two large smelters), but none of these require testing for dioxins. Therefore, it is not clear how many (if any) are sources of dioxins. DEQ plans to adopt the new federal rules in July 2000, and this may result in more information about these sources.

In addition, EPA data show that the semi-conductor industry may be a potential source of octachlorostyrene. However, information was unavailable to determine if the companies in Oregon use the processes that could produce that chemical.

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International Joint Commission Calls for PBT Phase-Out

The Great Lakes basin was once one of the most notoriously polluted regions of the world.

By the early 1970s, the effects of this contamination on fish and wildlife species, as well as its impact on humans, could no longer be ignored. In 1972, recognizing the need for a serious effort to restore the health of the region, Canada and the United States signed the Great Lakes Water Quality Agreement (the Agreement), under which both sides agreed, among other things, that:

> ***"...it is the policy of the Parties that...the discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated;..." and "the philosophy adopted for control of inputs of persistent toxic substances shall be zero discharge;..."***

Progress under the Agreement is overseen by the International Joint Commission (IJC), a group charged with advising the two nations in resolving disputes over boundary waters. In 1994, the IJC concluded:

> ***"...that persistent toxic substances are too dangerous to the biosphere and to humans to permit their release in any quantity."***

In 1998, in their Ninth Biennial Report, the IJC further concluded that:

> ***"The evidence is overwhelming: certain persistent toxic substances impair human intellectual capacity, change behavior, damage the immune system and compromise reproductive capacity. The people most at risk are children, pregnant women, women of childbearing age and people who rely on fish and wildlife as a major part of their diet. Particularly at risk are developing embryos and nursing infants."***

In 1997, the governments of the U.S. and Canada finally heeded the warnings of the IJC and signed the Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes Basin, better known as the Binational Toxics Strategy (BNS).

The BNS outlines specific challenge goals for each of twelve, persistent bioaccumulative toxic chemicals (the same twelve covered in this report), setting timeframes for significant reductions in their release. For example, the U.S. challenge on mercury is to seek by 2006 a 50% reduction nationally in the deliberate use of mercury and a 50% reduction in the release of mercury from sources resulting from human activity.

More detailed information on the BNS and progress toward achieving the challenge goals can be found in USEPA's 1999 BNS Progress report (www.epa.gov/glnpo/bns/) and in progress reports produced by the Commission of Great Lakes Industries (www.cgli.org). More info on the IJC and its biennial reports is available at www.ijc.org.

SOLUTIONS

A new effort to phase out the discharge of PBTs began here in Oregon in late September 1999, when Governor Kitzhaber signed an Executive Order directing the Oregon DEQ to reach zero discharge of PBTs by 2020.

Efforts Around the Globe

As Oregon embarks on this new effort, it is helpful to know that we are not alone. On the contrary, worldwide, there are numerous efforts to phase out these toxic substances:

- Under a mandate from the United Nations, the countries of the world, including our own, are negotiating an internationally binding treaty to phase out 12 persistent organic pollutants and to establish procedures for identifying and phasing out other persistent pollutants.
- In 1992, the International Joint Commission on the Great Lakes, an independent, binational body, called for phase-outs of all persistent bioaccumulative pollutants (see box above). States and provinces of that region are working to implement that recommendation. The commission made specific recommendations regarding

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classes of PBTs of particular concern. For example, it recommended that the Great Lakes states and provinces "develop timetables to sunset the use of chlorine and chlorine-containing compounds as industrial feedstocks" in order to prevent the creation and release of organochlorines, including but not limited to dioxins and furans.

- Countries or provinces have taken individual actions to phase out particular substances or classes of substances. British Columbia, for example, has a regulation requiring pulp mills to achieve zero discharge of organochlorines by the year 2002.
- EPA has designated PBTs as its top pollution prevention priority and is developing action plans to address these pollutants.
- Closer to home, the state of Washington recently launched an initiative to eliminate PBT releases. The Washington Department of Ecology proposed a timeline that would eliminate PBT releases from new sources by 2005, by existing sources by 2020, and from toxic cleanup sites by 2025.
- Several other states are developing and instituting new programs to reduce and ultimately phase out particular persistent poisons, such as mercury (MCPA, 1999).

Voluntary Efforts in Oregon

A number of Oregon firms are already leading the way by phasing out their use of persistent poisons. They realize that preventing pollution is always easier and cheaper than controlling unwanted contaminants after they have been created. For example, Nike is phasing out their use of polyvinyl chloride (PVC), a chemical that contributes to dioxin pollution when it is manufactured and incinerated as waste. In addition, Mattel recently announced a new initiative to find "environmentally friendly, organically based materials" to replace PVC in its products.

Nike is phasing out their use of polyvinyl chloride (PVC), a chemical that contributes to dioxin pollution when it is manufactured and incinerated as waste.

In another example, the American Hospital Association, Healthcare Without Harm, and the U.S. EPA agreed to a goal of virtually eliminating mercury-containing waste from hospital waste streams by the year 2005. Here in Oregon and elsewhere, Kaiser-Permanente has eliminated mercury thermometers and is phasing out other equipment made with mercury. Other medical facilities in Oregon may also be phasing out mercury-based equipment.

Additional efforts by Oregon businesses may be occurring without public attention, and should be publicized, supported and lauded.

Non-Regulatory Strategies to Eliminate PBTs

Toxic Taxes and Fees

As this report has documented, PBTs impose major long-term costs on Oregonians in several ways. Those who use and discharge PBTs do not have to pay these costs, however. Instead, most of the costs are shifted onto society as a whole, which faces a lower quality of life, higher health care costs and serious tolls on fish and wildlife, and is also stuck with much of the bill for cleaning up these pollutants from our water, air and land.

By phasing in higher permit fees and taxes on the discharge or use of PBTs, we can reflect these costs efficiently and create strong incentives to use them less and find alternatives.

By phasing in higher permit fees and taxes on the discharge or use of PBTs, we can reflect these costs efficiently and create strong incentives to use them less and find alternatives. Furthermore, such fees can provide funding for PBT phaseout programs. Several programs use variations on this approach. For example, the state of Louisiana sets water pollution permit fees based on the actual volume and toxicity of the pollutants discharged, with more toxic pollutants requiring higher fees. Some municipal treatment facilities, notably East Bay Municipal Utility District in California, charge industrial customers "pre-treatment" fees that are also

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based on the actual volume and toxicity of discharge. Both models should be copied and more widely implemented in Oregon.

Declining Cap and Trade Systems

One approach to phasing out PBT discharges might be to require each major source of a certain PBT to reduce discharges by 10% a year for 10 years, to a final level of zero. However, in many cases, phasing out PBT discharges will not be a gradual, linear process for a particular facility. Instead, it may require major changes in production technology or processes, and potentially a major financial investment. These investments will be more efficient if they can be timed to coincide with other major investments and process improvements.

One alternative, therefore, would be to require 10% annual reductions in *total* discharges of a certain PBT from a defined set of sources, but allow those sources to trade "reduction credits" among themselves. Under this kind of system, the facilities that can most cost-effectively reduce emissions would tend to make their investments first. Other facilities with more difficulty phasing out PBTs could help finance investments initially where they are easier and cheaper, giving themselves more time to develop alternatives. In theory, the result should be the same at the end of ten years, but with lower costs and less economic disruption.

The U.S. successfully used this system to phase out the use of lead as an additive in gasoline, with substantial economic savings. However, this approach requires careful design and enforcement to ensure that reductions are real and enforceable. To protect against localized "toxic hot spots," it also requires safeguards to ensure that no facility *increases* its PBT discharges above current levels.

Voluntary Collection Programs

A number of local governments, as well as Oregon DEQ, have established collection programs for household hazardous waste, banned pesticides, etc. In some areas, consumer products with toxic components have been targeted as well. For example, Marion County recently collected 3,000 mercury thermometers as a part of a household hazardous waste collection event. In some cases, these programs may gain additional support through bans on landfill disposal of particular products. While promising, these programs rely on voluntary participation, and generally suffer from a chronic lack of funding unless a dedicated funding source is identified.

Marion County recently collected 3,000 mercury thermometers as a part of a household hazardous waste collection event.

Extended Product Responsibility: Deposit/Refund Programs and More

One way to ensure dedicated resources for product collection is to make the producer of a product responsible for its safe collection and reuse or recycling. Such programs are sometimes referred to as "extended product responsibility" programs, and can be implemented in a number of ways. The most visible and successful of such programs is Oregon's five-cent bottle deposit, which has produced extremely high recycling rates and keeps bottles out of landfills or incinerators.

One example is a "pre-disposal" fee charged at the point of purchase. Until a few years ago, for example, Oregon charged a fee on all sales of new tires, which was used to fund programs to collect used tires for recycling or proper disposal. A bill proposed recently in South Carolina would have imposed a $5 fee on the sale of products with a cathode ray tube (i.e., computer monitors) to fund a recycling program for those products. Similar programs could be used to collect toxic consumer products, such as thermometers or fluorescent bulbs, and keep them out of the waste stream.

Labeling and Information Programs

Knowledge is powerful and important. As the federal Toxic Release Inventory and other "right to know" laws have demonstrated over the past decade, making the public and industry aware of their own use and exposure to toxic chemicals can spark major changes. Many industries have begun voluntary programs to reduce their use of toxic chemicals because "right to know"

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data showed them – and the public – just how high their use of such chemicals was.

Programs that provide more information to household and industrial consumers also hold promise. Several states have considered legislation requiring labeling of products that contain mercury, for example, which would be a good public education tool as well as an important precursor to any collection/recycling program.

Regulatory Approaches to Eliminate PBTs

For several decades, our environmental regulatory programs have focused primarily on managing toxic discharges at "safe" levels. For example, the system for regulating discharges into water – the National Pollution Discharge Elimination System (NPDES) – has institutionalized pollution, rather than eliminated it. Furthermore, the transfer of pollutants from air to water, a critical pathway for most PBTs, has largely been ignored. Because these pollutants tend to last for decades and concentrate when discharged into the environment, we need to re-think our approach so that elimination, not simply management, is the goal.

While voluntary efforts are crucial, they are not enough. Our regulatory system must be designed to both encourage and, where necessary, require a PBT phase-out. With the goal of zero discharge within 20 years, we will need short-term benchmarks. Below is a list of a ten approaches the state of Oregon should take both in the short-term and long-term to begin implementing the Governor's Executive Order and move us toward *zero*.

1. Use Air and Water Permits to Get to Zero

Air and water permits provide an obvious opportunity to use an existing program to begin the phase-out process. As the agency that implements both the Clean Water Act and the Clean Air Act, DEQ has clear authority and responsibility to end PBT discharges to air and water. In fact, the Clean Water Act established a national goal of ending *all* discharges to water by 1985.

There is new precedent from EPA for zero discharge of PBTs. In late 1999, EPA announced that it objected to continued permission for the Tosco Corporation oil refinery to discharge waste water into San Francisco Bay unless Tosco's discharge of dioxin and related chemicals were restricted to an enforceable discharge limit of zero. EPA's November 1999 letter, from Alexis Strauss, Director of the Water Division, EPA Region 9, formally objected to a draft proposal by the State Regional Water Quality Control Board and could result in the first Clean Water Act permit mandating zero dioxin in the nation (EPA, 1999d).

Under the federal Clean Air Act, 188 air toxics are specifically listed and subject to regulation. Of these 188 "hazardous air pollutants (HAPs)," seven are PBTs. EPA has prioritized the sources of these seven HAPs and plans to complete regulations for these sources by the year 2003. However, DEQ must take this a step further and use its authority to adopt categorical air toxics rules that set zero as the emissions limits for identified source categories.

DEQ can regulate air toxics in a manner that is more stringent than the federal guidelines if DEQ can show that it is scientifically defensible. Rules that require zero discharge of PBTs over time would be scientifically defensible given the long-lived nature and high toxicity of these chemicals.

DEQ can also regulate new air toxics sources on a case-by-case basis, and the agency should apply this standard to these new sources as well.

In addition, DEQ is making plans to expand its air toxics program. Under the expanded program, there is the potential to set zero as an acceptable emission limit for certain HAPs. The program should be structured in such a way to ensure that zero emissions for certain source categories can be realized.

2. Phase Out Mixing Zones

Mixing zones are areas where discharges of toxic chemicals are allowed to mix with receiving waters and dilute. As this report has documented, PBTs do not dilute – they persist in the environment and build up over time. The EPA has proposed to phase out the discharges of PBTs into mixing zones in the Great Lakes. The states of Indiana, Michigan, Minnesota and Wisconsin have already eliminated mixing zones for PBTs in the Great Lakes Basin. This mandate must be applied here in Oregon.

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3. Fill Major Gaps in Permits

A major finding of this report is that there are some huge gaps in air and water permits. That is, several major facilities with DEQ permits are not required to even monitor for the release of PBTs even though these pollutants would be expected from those industries. In order to develop a phase-out strategy, DEQ must begin by ensuring that permits are comprehensive and do not miss any PBTs.

For example, pulp and paper facilities that bleach with chlorine dioxide are only testing for 2,3,7,8-TCDD and TCDF, but several studies show that these facilities are likely to be discharging several dioxin congeners.

In addition, although hexachlorobenzene is listed as a hazardous air pollutant, none of the major industrial sources of this chemical are required to test for it. In fact, this is true for most PBTs that are also HAPs, including mercury, dioxins and benzo(a)pyrene. DEQ must require complete testing of all facilities that are expected to release persistent pollutants.

Several major facilities with DEQ permits are not required to test for the release of PBTs even though these pollutants would be expected from those industries.

4. Improve Reporting and Chemical Tracking

As of January 1, 2000, EPA lowered the reporting thresholds for 18 PBTs and added seven PBTs to the list of TRI chemicals. This will be important for providing the public better information about toxics in our environment. However, DEQ can and should do even more. At present, DEQ has no central database that tracks permitted chemical discharges or a centralized system to track actual emissions. A database that tracks air and water releases, both permitted and actual, would also help the agency get a better handle on chemical discharges in general, and would provide the public with a vehicle for tracking discharges by chemical.

5. Give Greater Attention to Cross-Media Issues

While our regulatory programs are divided by environmental media (i.e., air vs. water), most PBTs do not honor these distinctions. Many of these pollutants are discharged into the air and ultimately end up in water. In fact, a Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program convened by EPA recognized that atmospheric deposition of toxic pollutants may contribute to water quality impairments in many water bodies. Federal and state regulatory programs must acknowledge this fact and regulate chemical releases accordingly. For example, when setting TMDLs for water, it is essential to take sources of air deposition into account.

Many of these pollutants are discharged into the air and ultimately end up in water.

6. Educate State Employees

In conducting research on PBTs, we found that many DEQ employees were entirely unaware of the Executive Order (EO). DEQ management needs to ensure that all DEQ employees know about the EO and are solicited for ideas and strategies on how to reach zero discharge.

7. Use the Green Permit Program to Encourage Zero Discharge

DEQ's Green Permit Program provides another unique opportunity to encourage voluntary efforts by Oregon businesses. One of the major goals of the Green Permit Program is to encourage facilities to go beyond compliance. Those facilities that take the initiative to eliminate their discharge of any PBT pollutants should be given high priority.

8. Incorporate a Zero Discharge Strategy into all State Programs

DEQ must work closely with other state agencies to ensure that a zero discharge strategy is incorporated into all regulatory programs. For example, the Oregon Department of Agriculture (ODA) is currently reviewing the state's fertilizer regulations. As this report has

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highlighted, fertilizers laden with heavy metals such as lead and mercury and organic chemicals like dioxins, are being spread directly on land used to grow food or graze cattle. As ODA looks at making changes to the existing fertilizer rules, the state must take the opportunity to prohibit the addition of PBT-containing waste to fertilizer.

DEQ must also work with ODA on implementing a zero discharge strategy for pesticides that persist and bioaccumulate. DEQ and ODA must use their authorities to phase out persistent pesticides.

A recent poll of 500 Oregonians shows that 87% support a ban on the discharge of toxic chemicals into the Willamette River.

9. Keep PBT-Containing Waste Out of the Waste Stream

DEQ needs to identify consumer products that contain or contribute to the production of PBTs, educate product users and handlers, develop recycling programs and, most importantly, encourage and promote the development and use of alternatives.

For example, DEQ can help keep mercury-containing wastes out of the waste stream by using innovative programs, such as a trade-in program for mercury thermometers, as the state of Florida has done.

10. Implement Sustainable Government Procurement Practices

DEQ must work with the governor's office to ensure that state agencies adopt and implement procurement and other policies that set a good example. State lands should be managed without pesticides. State agencies should use recycled, non-chlorine-bleached paper. Least toxic cleaning products should be used in state buildings. DEQ must play the lead role in ensuring that these measures are implemented.

CONCLUSION

Just like DDT, persistent, bioaccumulative and toxic pollutants are simply too dangerous to be allowed into our rivers, our air or our bodies. As we learn more about the health damage these compounds can cause for both humans and wildlife, even at minute levels, it is becoming clear that there is simply no "safe" level of exposure. We must end all discharges of these chemicals, or our children will be left with a legacy of health problems and a growing list of toxic sites.

The public strongly supports PBT bans and phase-outs. Polls consistently show that the public cares deeply about clean water and a clean environment. In fact, a recent poll of 500 Oregonians shows that 87% support a ban on the discharge of toxic chemicals into the Willamette River. Support for banning toxics in the Willamette River was consistent across the state (LCVEF, 1999).

The handwriting is on the wall. Phase-outs are coming sooner or later, and Oregon is poised to take a leadership position. Eliminating and reducing toxics use will benefit all Oregonians by reducing costs associated with handling hazardous wastes, preventing injury to workers from toxic exposures, and eliminating the long-term costs of coping with a legacy of toxic contamination and cleanup sites.

The Oregon Environmental Council (OEC) is committed to supporting policies and programs that achieve zero discharge. This report marks the beginning of our effort to ensure an end to persistent poisons. Working together with those responsible for the pollution, state and local agencies, the public health community, and other key stakeholders, we will continue this effort by forging consensus around a comprehensive long-term strategy that includes a series of specific short-term steps.

Ending our use and discharge of these persistent poisons will not be easy, or quick. While it may take 10 or 20 years to get to zero, we can be sure of two things: first, it will be easier and less expensive than waiting until more of Oregon's rivers, or Oregon's children, are loaded with toxic contaminants. And second, the sooner we start, the sooner we're done.

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Banned Pesticides						
Chemical Manufacturing						
	Elf Atochem	Portland	known	Remedial Investigation Interim Data Report	water	Plant used to manufacture DDT. Now in cleanup phase.
Benzo(a)pyrene						
Aluminum Smelters						
	Reynolds Aluminum	Troutdale	expected	Permit limit for water & test results	air & water	Discharge Monitoring Report (DMR) shows B(a)P is below the detection limit. There are no air data for B(a)P.
	Northwest Aluminum Co.	The Dalles	known	Permit limit for water & test results	air & water	Exceeded their permit limit for B(a)P in waste water in 1997.
Steel Mills						
	Cascade Steel	McMinnville	expected	EPA/Environment Canada, 1999a	air	Air permit includes estimates for the release of polycyclic organic matter.
	Oregon Steel	Portland	expected	EPA/Environment Canada, 1999a	air	
Wood Preservers Using Creosote						
	JH Baxter	Eugene	expected	Fire Marshal – creosote storage	unknown	
	Kerr McGee	The Dalles	expected	Fire Marshal – creosote storage	unknown	
	Koppers	Portland	expected	Fire Marshal – creosote storage	unknown	
	Taylor Lumber & Treating	Sheridan	expected	Fire Marshal – creosote storage	unknown	
Tar/Asphalt Production						
	Albina Asphalt	Madras	expected	Oregon Manufacturers Register	air	
	Bend Aggregate & Paving Co	Bend	expected	Oregon Manufacturers Register	air	
	Blue Mountain Asphalt	Hermiston	expected	Oregon Manufacturers Register	air	

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
	Blue Mountain Asphalt	Baker City	expected	Oregon Manufacturers Register	air	
	Blue Mountain Asphalt	Pendleton	expected	Oregon Manufacturers Register	air	
	Golden Bear Oil Specialties	Klamath Falls	expected	Oregon Manufacturers Register	air	
	Lakeside Industries	Portland	expected	Oregon Manufacturers Register	air	
	Morse Brothers	Sherwood	expected	Oregon Manufacturers Register	air	
	Mt. Hood Asphalt	Welches	expected	Oregon Manufacturers Register	air	
	Oregon Asphaltic Paving Co	Troutdale	expected	Oregon Manufacturers Register	air	
	Owens Corning	Portland	expected	Oregon Manufacturers Register	air	
	Chevron Products	Portland	expected	Oregon Manufacturers Register	air	
	SC Paving Co	Tillamook	expected	Oregon Manufacturers Register	air	
	Salem Black Top & Asphalt Paving Co	Salem	expected	Oregon Manufacturers Register	air	
	Pioneer Construction	Pendleton	expected	Oregon Manufacturers Register	air	
	Road & Driveway	Newport	expected	Oregon Manufacturers Register	air	
	Porter W. Yett Co	Portland	expected	Oregon Manufacturers Register	air	
Non-Point Sources						
	Residential wood burning	state-wide	expected	EPA/Environment Canada, 1999a	air	
	Open barrel trash burning	state-wide	expected	EPA/Environment Canada, 1999a	air	
	Vehicle exhaust	state-wide	expected	EPA/Environment Canada, 1999a	air	
	Charcoal briquette combustion	state-wide	expected	EPA/Environment Canada, 1999a	air	
	Forest fires	state-wide	expected	EPA/Environment Canada, 1999a	air	

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Dioxins/Furans						
Bleached Pulp and Paper Plants						
	Fort James	Wauna	expected	Permit limit & DMRs	water & sludge	DMRs show dioxin levels below detection limit (testing is only for 2,3,7,8-TCDD & TCDF).
	Boise Cascade	St. Helens	known	Permit limit & DMRs	water & sludge	Permit is via city of St. Helens. Tests showed measurable levels of dioxin in the bleach plant sewer in May 1999.
	Pope & Talbot	Halsey	known	Permit limit & DMRs	water & sludge	Test results show measurable dioxin levels in sludge.
Cement Kilns						
	Ash Grove Cement	Portland	expected	EPA, 1994a	air	Air permit does not address toxic emissions, except for a few metals.
	Ash Grove Cement	Durkee	expected	EPA, 1994a	air	Have a Title V permit. Not permitted to burn hazardous waste, but they do burn tires.
Steel Mills						
	Oregon Steel Mills	Portland	expected	Washington DOE, 1998	air & dust	WA state Source Assessment shows steel foundry dust has significant levels of dioxins/furans.
	Cascade Steel	McMinnville	expected	Washington DOE, 1998	air & dust	WA state Source Assessment shows steel foundry dust has significant levels of dioxins/furans.
Waste Incineration						
	Brooks Municipal Solid Waste (MSW) Incinerator	Brooks	known	Permit limit & test results	air	Permitted to burn MSW from Marion County and hospital waste from all over the state. Baghouse dust and ash go to the ash landfill near Woodburn.
	Beaver Hill MSW Incinerator	Coos Bay	known	Permit limit & test results	air	Do not receive any medical waste at this incinerator.

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Wood Preservation with Pentachlorophenol						
	JH Baxter	Eugene	known	PCP in Fire Marshal dbase and EPA, 1994a	water	Have contaminated groundwater from past practices and are treating the groundwater. Also discharge stormwater.
	McFarland	Eugene	known	PCP in Fire Marshal dbase and EPA, 1994a	water	Have contaminated groundwater from past practices and are treating the groundwater. Also discharge stormwater.
	Permapost	Hillsboro	expected	PCP in Fire Marshal dbase and EPA, 1994a	water	No dioxin testing is required by their NPDES permit.
	Taylor Lumber	Sheridan	expected	PCP in Fire Marshal dbase and EPA, 1994a	water	They are in the process of cleaning up past spills under the direction of the U.S. EPA. Have groundwater contamination. No dioxin testing required by their NPDES permit.
Wood Waste ("Hogged Fuel") Boilers		over 200 across the state	expected	Washington DOE, 1998 and EPA, 1994a	air	Both EPA and WA DOE studies indicate hogged fuel boilers are a source of dioxins/furans.
Municipalities (only two surveyed)						
	City of Portland	Portland	known	Test results	sewage sludge	Sludge from Columbia Blvd plant have detectable dioxin levels.
	Unified Sewerage Agency	Hillsboro and Tigard	known	Test results	sewage sludge	Sludge from both plants have detectable dioxin levels.
Non-Point Sources						
	Residential wood and oil burning	state-wide	expected	EPA, 1994a	air	
	Vehicle fuel combustion	state-wide	expected	EPA, 1994a	air	
	Coal combustion	state-wide	expected	EPA, 1994a	air	
	Forest fires	state-wide	expected	EPA, 1994a	air	
	Fertilizer	state-wide	expected	Washington DOE, 1999	land	
	Burning household trash in barrels	state-wide	expected	Lemieux, 2000	air	

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Hexachlorobenzene						
Cement Kilns						
	Ash Grove Cement	Portland	expected	EPA/Environment Canada, 1999b	air	Has an Air Contaminant Discharge Permit which only addresses criteria pollutants, not toxic emissions, except a few metals.
	Ash Grove Cement	Durkee	expected	EPA/Environment Canada, 1999b	air	No estimates for HCB releases in their Title V permit.
Chlor-Alkali Production						
	Elf-Atochem	Portland	expected	EPA/Environment Canada, 1999b	air & water	Neither air nor water permit addresses HCB.
Waste Incineration						
	Beaver Hill MSW Incinerator	Coos Bay	expected	EPA/Environment Canada, 1999b	air	Air permit does not include HCB.
	Brooks MSW Incinerator	Brooks	expected	EPA/Environment Canada, 1999b	air	Air permit does not include HCB.
Wood Preservation with Pentachlorophenol						
	JH Baxter	Eugene	expected	EPA/Environment Canada, 1999b; and PCP in Fire Marshal dbase	air, water & land	
	McFarland	Eugene	expected	EPA/Environment Canada, 1999b; and PCP in Fire Marshal dbase	air, water & land	
	Permapost	Hillsboro	expected	EPA/Environment Canada, 1999b; and PCP in Fire Marshal dbase	air, water & land	
	Taylor Lumber	Sheridan	expected	EPA/Environment Canada, 1999b; and PCP in Fire Marshal dbase	air, water & land	
Non-Point Sources						
	Application of certain pesticides	state-wide	expected	EPA/Environment Canada, 1999b	air, land & water	All four pesticides identified by EPA are registered for use in Oregon.

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Lead						
Cement Kilns						
	Ash Grove Cement	Portland	expected	Permit conditions allow some oil contaminated with lead to be burned	air	Not required to test for lead in air emissions
	Ash Grove Cement	Durkee	known	Permit limit & test results	air	
Metal Fabrication						
	Nosler Inc	Bend	known	TRI	metals recovery	"Metals recovery" indicates that under TRI the facility reported sending lead off-site to a metals recovery facility.
	Stanley Hydraulic Tools	Milwaukie	known	TRI	metals recovery	
Primary Metal Production						
	Cascade Steel	McMinnville	known	TRI	air, water & metals recovery	
	Oregon Steel	Portland	known	TRI	air, water, land & metals recovery	
Printed Circuit Board Manufacture						
	Fujitsu Computer Products	Hillsboro	known	TRI	water & metals recovery	
	Intel	Hillsboro & Aloha	known	TRI	water & metals recovery	
	Merix Corporation	Forest Grove	known	TRI	metals recovery	
	Praegitzer Industries	Dallas	known	TRI	air & water	
	Yamamoto Manufacturing	Beaverton	known	TRI	water	
Stone, Clay and Glass Products Manufacture						
	Bullseye Glass	Portland	known	TRI	unknown	

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Others						
	Freightliner	Portland	known	TRI	air, land & metals recovery	
	Johnson Controls	Canby	known	TRI	air, water & metals recovery	
	Joseph Bronze	Joseph	known	TRI	unknown	
	Morton Traffic Markings	Salem	known	TRI	unknown	
	Elf Atochem	Portland	known	Permit limit & test results	water	
Waste Incineration						
	Beaver Hill MSW Incinerator	Coos Bay	known	Permit limit & test results	air	Lead emissions are well below their permit levels.
	Brooks MSW Incinerator	Brooks	known	Permit limit & test results	air	Lead emissions are well below their permit levels
Municipalities (only three surveyed)						
	City of Portland	Portland	known	Permit limit & test results	water & sludge	
	Unified Sewerage Agency	Tigard & Hillsboro	known	Permit limit & test results	water & sludge	Lead is detected in the sludge; below detection limit in wastewater.
	City of St. Helens	St. Helens	known	Permit limit & test results	water	
Non-Point Sources						
	Lead paint	state-wide	expected	EPA, Air Quality Fact Sheet	paint chips & soil	
	Lead pipes, faucets & plumber solder	state-wide	expected	EPA, Air Quality Fact Sheet	drinking water	
	Fertilizer	state-wide	expected	Washington DOE, 1999	land	
	Battery disposal	state-wide	expected	EPA, Air Quality Fact Sheet	land	
	Certain gasoline products	state-wide	expected	EPA, Air Quality Fact Sheet	air	

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Mercury						
Cement and/or Lime Manufacturing						
	Ash Grove Cement	Portland	expected	EPA, 1998	air	Permit does not include mercury.
	Ash Grove Cement	Durkee	expected	EPA, 1998	air	The facility estimates that it emits mercury, although no testing is required.
Electrical Apparatus Manufacturing						
	Fujitsu Micro Electronics	Gresham	known	Fire Marshal	waste	Reported as waste mercury debris - solid.
	Merix Corporation	Forest Grove	known	Fire Marshal	waste	Reported as waste mercury - liquid.
	Tektronix	Beaverton	known	Fire Marshal	waste	Reported as waste mercury lamps and thermometers - liquid.
Government						
	BPA	The Dalles	known	Fire Marshal and direct contact with company	unknown	Waste mercury is generated during with maintanence. BPA sends most mercury off-site to be recycled, but some is disposed of as hazardous waste.
	DEQ	Portland	known	Fire Marshal	unknown	Reported as mercury - solid.
	VA Medical Center	Portland	known	Fire Marshal	unknown	Reported as mercury - liquid.
	City of Portland	Portland	known	Test results	sewage sludge	Mercury is 10x below their permit limit.
	Unified Sewerage Agency	Hillsboro and Tigard	known	Test results	sewage sludge	Mercury is 10x below their permit limit.
Pulp and Paper Production						
	Georgia Pacific	Philomath	known	Fire Marshal	unknown	Reported as mercury 1000 - liquid.
	International Paper	Gardiner	known	Fire Marshal	unknown	Reported as used fluorescent/mercury vapor bulbs - solid.
	Seneca Sawmill Co	Eugene	known	Fire Marshal	unknown	Reported as mercury 1000 Grinding Fluid - liquid.
	Willamette Industries	Eugene	known	Fire Marshal	unknown	Reported as mercury 1000 Grinding Fluid - liquid.

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Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Utilities						
	Boardman PGE Plant	Boardman	known	EWG, 1999	water, air & land	
	Pacificorp	state-wide	known	Direct contact with company	unknown	Have mercury gages on older, large transformers in fenced substations.
Waste Incineration						
	Brooks MSW Incinerator	Brooks	known	Permit limit & test results	air	
	Beaver Hill MSW Incinerator	Coos Bay	known	Permit limit & test results	air	
Other Industries						
	Boeing	Portland	known	Fire Marshal	waste	Reported as waste lab pack - solid.
	Sulzer Bingham Pump Inc	Portland	known	Fire Marshal	unknown	Reported as mercury - solid.
Universities with Chemical Labs		state-wide	expected	DEQ	unknown	
Non-Point Sources						
	Fluorescent light recycling and disposal	state-wide	expected	Oregon DEQ	unknown	Two companies in Oregon collect the bulk of the fluorescent bulbs sent for recycling – Earth Protection Services in Lake Oswego and NFF Environmental, in Springfield.
	Dentists and other medical facilities	state-wide	expected	Oregon Dental Association	wastewater	ODA has a program to strongly encourage dentists to recycle all their mercury. There are about 2,300 licensed, practicing dentists; 2,000 are ODA members.
	Mining activities	state-wide	known	Oregon DEQ	water	
	Disposal of measuring devices (thermometers, barometers, etc.)	state-wide	expected	EPA, 1998	unknown	
	Fertilizers	state-wide	expected	Washington DOE, 1999	land	

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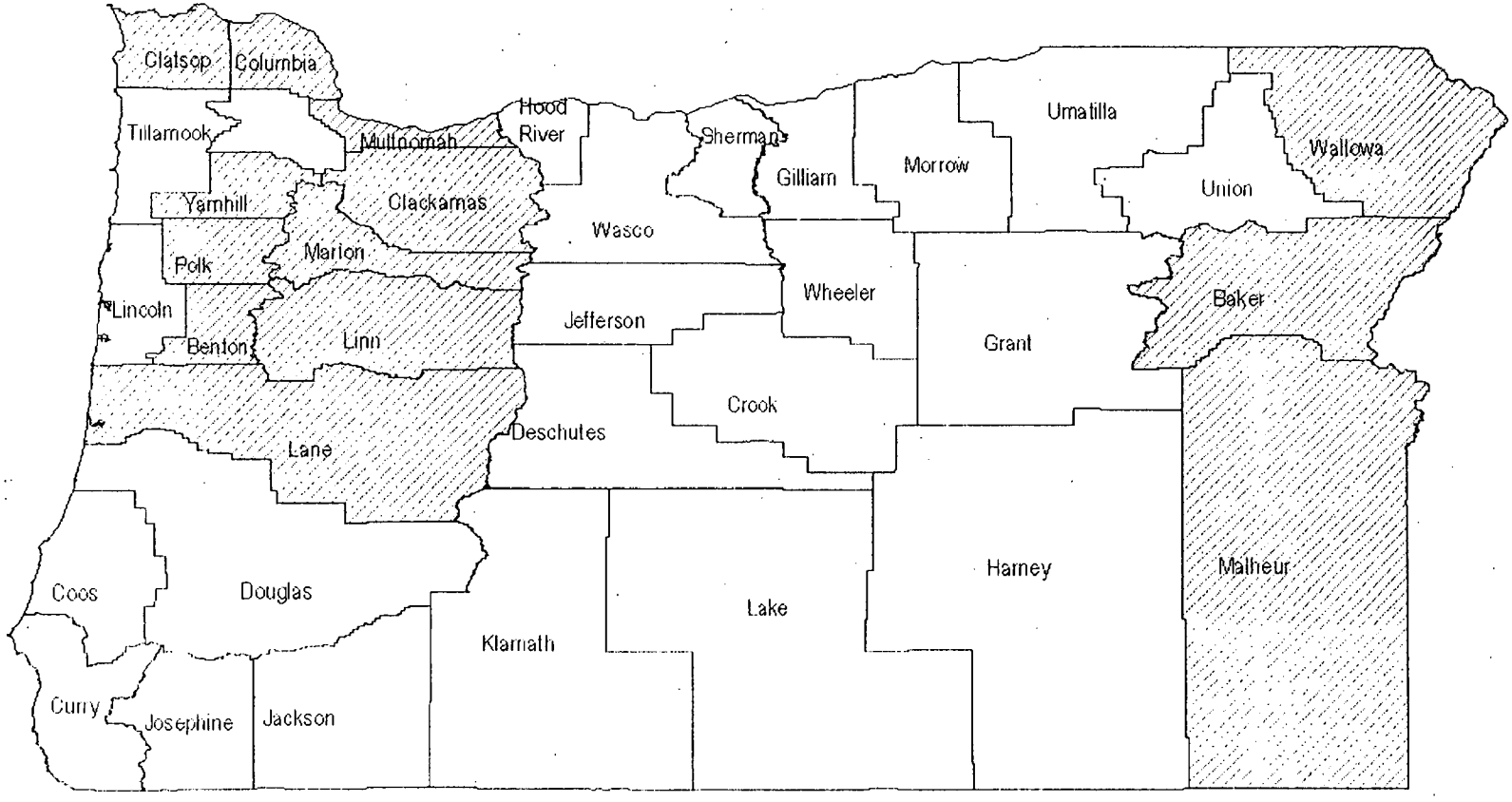
Table1: Known or Expected Sources of Persistent, Bioaccumulative, Toxic Pollutants in Oregon

Source Category	Facility Name	Location	Known or Expected[1]	Basis for Listing	Media of Concern	Other Notes
Octachlorostyrene						
Chlor-Alkali Production						
	Elf Atochem	Portland	expected	EPA, 1998b	air	
Incineration of PVC and Plastics						
	Brooks MSW Incinerator	Brooks	expected	EPA, 1998b	air	
	Beaver Hill MSW Incinerator	Coos Bay	expected	EPA, 1998b	air	
PCBs						
Utilities (these six represent a subset of the dozens of utilities in Oregon)						
	PGE	state-wide	known	Direct contact with company	air, water & land	
	BPA	state-wide	known	Direct contact with company	air, water & land	
	PacificCorp	state-wide	known	Direct contact with company	air, water & land	
	EWEB	Eugene	known	Direct contact with company	air, water & land	
	Emerald PUD	Lane County	known	Direct contact with company	air, water & land	
	Salem Electric	Salem	known	Direct contact with company	air, water & land	
Other Sources						
	Small utilities	state-wide	expected	EPA, 1999c	air, water & land	
	Industrial sources	state-wide	expected	EPA, 1999c	air, water & land	
	Colleges/universities	state-wide	expected	EPA, 1999c	air, water & land	
	Government agencies	state-wide	expected	EPA, 1999c	air, water & land	
Non-Point Sources						
	Fluorescent light ballasts	state-wide	expected	ATSDR	air, water & land	

[1] ***"Known" indicates that the listed facility has reported and/or measured the pollutant in its air or water emissions and/or as a waste. "Expected" indicates that, although a particular facility hasn't measured the pollutant in its emissions, data from other studies indicate it is likely to be a source.***

Koppers005080

Figure 1: Oregon Counties with Water Exceeding Water Quality Standards Due to Persistent Poisons



Note: Based on DEQ's 303(d) list for 1998. Persistent poisons which exceed water quality standards are dieldrin, DDT, dioxin, lead, mercury and PCBs.

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Oregon Environmental Council

Clean air
Clean water
Clear thinking

The Oregon Environmental Council (OEC), founded in 1968, is the oldest statewide environmental group in Oregon. We are a nonpartisan membership organization, working to restore and protect Oregon's clean air and water, now and for future generations. We bring Oregonians together to create and promote socially just and economically sound environmental policies.

For more information about OEC's work on persistent poisons, contact:

Laura Weiss, MPH
503-222-1963 ext. 111
laura@orcouncil.org
www.orcouncil.org

KOPPERS INDUSTRIES

APPROPRIATION REQUEST FOR ITEMS REQUIRING PRIOR APPROVAL

DIVISION Carbon Materials and Chemicals Division		APPROPRIATION NUMBER 9270.46	
PLANT OR LOCATION Portland, Oregon		CLASS IB	DEGREE OF RISK Low
TITLE (Summarize to one line) Liquid Pitch Unloading Terminal		ESTIMATED BEGIN DATE 4th Quarter, 1998	
		ESTIMATED START UP DATE 4th Quarter, 1999	
REQUESTED BY Kevin J Fitzgerald	APPROVED BY 2/2 Turner	DATE OF REQUEST May 20, 1998	

1. DESCRIPTION OF PROPOSED ASSET Dock and unloading pipeline, fume system, heating system and one 7,000 ton pitch storage tank with related material handling and instrumentation.

15156900 - 8713

(PAR attached) COSTS		AMOUNT
2. CASH EXPENDITURE		$4,310,000
3. TRADE-IN, SALVAGE OR SCRAP VALUE		
4. EQUIPMENT ON HAND NOT PREVIOUSLY CAPITALIZED		
5. TOTAL OF THIS REQUEST	(2 + 3 + 4)	$4,310,000
6. EQUIPMENT ON HAND PREVIOUSLY CAPITALIZED		
7. ESTIMATED TOTAL COST OF CAPITAL ITEM	(5 + 6)	$4,310,000
8. ESTIMATED WORKING CAPITAL REQUIREMENTS AVERAGE FIVE YEARS	(L22 ADS-230)	
EARNINGS - AVERAGE OF FIRST FIVE YEARS		
9. ESTIMATED INCOME BEFORE INTEREST AND TAXES	(L9 ADS-230)	$2,936,000
10. ESTIMATED NET INCOME AFTER INTEREST AND TAXES	(L13 ADS-230)	$1,604,000
11. % RETURN BEFORE INTEREST AND TAXES ON AVERAGE NET INVESTMENT	(L15 ADS-230)	57.0%
12. % NET RETURN ON AVERAGE NET INVESTMENT	(L16 ADS-230)	31.2%
PAYOUT PERIOD	(L28 ADS-230)	31 months
13. EXPIRATION DATE OF LEASE IF ON LEASED LAND		2008
14. PRESENT AGE IF USED EQUIPMENT		
15. SOURCE OF FUNDS FROM CAPITAL PROGRAM - 1999 expenditures will be included in the 1999 program. 1998 expenditures are included in current capital expenditure forecast.		$0

16. JUSTIFICATION SUMMARY

WHY DO THIS AT ALL? To participate in future aluminum growth in the Northwest as well as protect current pitch profitability.

WHY DO THIS THIS WAY? Current Portland infrastructure is in place and strategically located in center of Northwest aluminum market.

WHY DO THIS NOW It is anticipated that in the near future there will be no unloading facilities for solid pencil pitch.

		BOARD APPROVAL DATE

/vjl 6/93

Portland Liquid Pitch Ship Receiving Facility

Statement of Request

The Carbon Materials and Chemicals Division requests $4,310,000 for the conversion of Koppers' existing solid pitch melting facility at Portland, Oregon to a liquid pitch unloading terminal to retain existing business in the Pacific Northwest and to pursue future growth opportunities in this region.

Source of Funds

Funds will be provided in the 1999 capital expenditure program. The 1998 expenditures will be covered through the deferral of other 1998 capital projects.

Marketing Review

The United States aluminum industry has a current primary aluminum production capacity of 4.2 million metric tons of which 1.6 million metric tons is located in the Northwest (Washington, Oregon and Montana), or a total of 38%. In terms of carbon pitch demand for this industry in the Northwest, there is a demand of 191,000 metric tons at capacity.

We are projecting that the aluminum industry in the Northwest will be operating at 100% of capacity in 1999. Koppers will at that time be supplying 32% of this pitch requirement (15% of our total business).

As we look forward, we are projecting the following changes in the Northwest:

- It is anticipated that the aluminum industry capacity will remain at 100% over the next ten plus years. With the retail wheeling of power and continued cooperation with the Bonneville Power Authority, we see the smelters located in the Northwest being healthy and viable operations and operating at high capacity levels. Furthermore, there have been announcements of construction plans for 2 new smelters in the region for which feasibility studies are being conducted.

- The handling of solid pitch at the port facilities and at the smelters is becoming a very serious issue from both an environmental and worker health areas. Hall-Buck, the contractor we have been using at the Port of Portland for the past 12 years, has notified us that they are ceasing their operation as of June 1998 and will no longer be handling the pitch product because of environmental issues. The only other facility that is currently handling solid pitch in the Northwest is the Port of Longview, Washington facility. It is difficult to say how long the Longview Port will be operating. In fact, they only have an operating permit good through July 2001.

We are planning to utilize the Longview facility once Hall-Buck is out of business; but at a higher cost for unloading and transporting the pitch to the Portland

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terminal. The current costs for unloading and transportation from Portland are $29.31 per ton, $11.44 per ton less than the Longview cost of $40.75 per ton.

The KII pitch melter tank at Portland was constructed in 1992 at a cost of $1.2 million and has provided Koppers the ability to service the Northwest market with import pitch. Plant gross profit over the last 5 years has averaged $1.0 million.

- The trend to convert to liquid pitch by the aluminum industry continues onward. Over the past four years, we have converted the Alcoa Wenatchee Washington and Intalco Washington smelters. The only Northwest smelters remaining on solid pitch are Vanalco, Goldendale Aluminum, Northwest Aluminum and Reynolds, Troutdale. Goldendale and Northwest Aluminum are now under the same ownership. We believe that Goldendale, Northwest and Troutdale will convert to liquid pitch within the next two years. In fact, all three locations have asked us for a proposal to terminal their pitch when they do their conversion. Vanalco will probably hang in until they are forced to do so.

- Smelters are also converting to liquid pitch in other parts of the world. Alba in Bahrain and Dubai in Dubal are converting to liquid this year and Alumar and Albras in Brazil have sent in serious inquiries. All future new smelters such as the one in South Africa (Alusaf) will have liquid tanks to receive their pitch in liquid form.

- Keopyung Steel Co. (KOSCO), in Korea, one of our suppliers of import pitch in the Northwest, and the 100% supplier to the Goldendale and Northwest smelters, has informed us that once these two smelters convert to liquid, they will no longer supply solid pitch – liquid only.

- Our current import program for this year is 53,000 metric tons but because of the decline of crude tars here in North America, our 1999 import pitch program will include a minimum of 68,000 metric tons with a marketing plan to go to 85,000 tons in the year 2000. This is the only way we will be able to protect and maintain our market share. Our major source for import pitch will be KOSCO in Korea who is presently supplying 25,000 tons and an option for another 25,000 tons. Currently discussions are going forward on a seven-year contract extension. In addition, with the assistance of Koppers Australia, we are negotiating a joint venture with TISCO in China that we hope to complete by the end of 1998 for 40,000 tons and are working with Sumitomo in Japan for an additional 15,000 - 20,000 tons.

The primary justification for this project is maintaining our current pitch business and further growing our business through the terminaling of other pitches in the Northwest. As mentioned above, Goldendale, Northwest Aluminum and Reynolds, Troutdale will be in need of a terminaling facility when they convert to liquid. We feel confident that this project will make it very difficult for others to justify a greenfield terminal and will offer Koppers the opportunity to market our terminal

Koppers005086

services.

This appropriation is an important foundation for our future pitch business, not only in the Northwest, but our overall total business. Over the next two to three years, the total pitch requirements in the Northwest will be supplied from offshore sources and will be in liquid form. Koppers, as a global company with various growth initiatives in the pitch area, especially in the Asian market, should be the leader of this transition from solid to liquid pitch handling.

Operations Summary

The proposed project at the Portland terminal includes a 1,400 foot liquid pitch unloading line that will discharge the pitch directly from the ocean vessel into storage tanks. We will construct one new tank, approximately 7,000 metric tons in size, and build future additional tanks as needed. Portland is the ideal location for a liquid pitch terminal, as it is easily accessible by tank truck and rail to all of the smelter locations in the Northwest. We already have the melter tank and a shipping tank in place that have a combined capacity of 4,500 metric tons. Also, we have the necessary workforce and support facilities to operate the proposed facility.

The Portland terminal property is leased from Northwest Natural Gas with the current lease expiring at the end of this year. Koppers and Northwest Gas have agreed on a ten-year lease agreement that is awaiting signature.

The net logistics cost of receiving liquid pitch will be approximately $20.00 per metric ton less than the freight and handling costs of solid pitch. The increased liquid freight costs of approximately $20.00 are offset by the $40.00 per ton savings from unloading and transportation costs for solid pitch resulting in the net savings of $20.00 per ton. We have negotiated a ten-year agreement with Gearbulk Shipping Canada, Ltd. for transportation of liquid pitch from Asia to the Pacific Northwest pending Board approval of this project.

Environmental Statement

An environmental risk assessment has been completed for the pipeline and unloading terminal facilities. Design features have been included to address potential scenarios that will minimize any potential environmental impacts if such worst case incidents do occur. For example, quick acting hot oil shut-off valves are located on land near where the pipe begins its route over water. The valves will be provided to shut off both the pitch and heating oil pipes, and can be remotely operated from the terminal. The pipe construction will include only the absolute minimum number of flanges, with most joints being welded.

Necessary environmental air permits for this installation as well as future expansion have been obtained. The required state waterway permit has also been obtained.

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Financial Summary

In analyzing this project, two cases were developed. The first case, requiring no capital investment, anticipates the closure of Longview to solid pitch unloading upon the expiration of their current permit in July 2001. Closure of the Portland facility would follow with estimated shutdown and clean-up costs of $5.7 million. Solid pitch volume during this period is estimated to be 60,000 metric tons. This material would be sourced from Korea and Japan. Because of the poor quality and resulting environmental problems caused by the Chinese pitch, it will no longer be available without a substantial capital investment. Gross profit would average approximately $1.9 million per year until shutdown.

The second scenario presented is one with the capital investment of $4.3 million and Portland converting to 100% liquid pitch by the year 2002. The facility will start up during the fourth quarter of 1998 and handle both liquid and solid pitch until 2002. Projected volumes are estimated to reach 72,000 metric tons in 2002. This is a conservative estimate in that we already have 63,000 tons of the business and a marketing plan is in place to reach 85,000 tons per year. Gross profit for the Portland facility will average approximately $3.5 million per year.

Construction of the terminal will result in an increase over the shutdown case of earnings before interest and taxes of $2.9 million. Increased net income over the shutdown case will be $1.6 million. The payback period is 31 months.

Equipment List

See attached.

Schedule of Expenditures

Fourth quarter 1998	$300,000
First quarter 1999	950,000
Second quarter 1999	1,000,000
Third quarter 1999	1,000,000
Fourth quarter 1999	1,060,000
Total	$4,310,000

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Dock & Unloading Pipeline:		
Pipeline		$490,295
Dock		$149,134
Dock Access & Bridge		$154,123
Switchgear		$103,000
Instrumentation		$51,500
Lighting		$77,250
Motor Control Center/Components		$15,450
Fire Protection		$77,250
Permitting		$55,826
Paving		$20,600
	Total	$1,194,428
Fume System Piping:		$150,000
Heating System:		
Hot Oil Heater, Piping & Circ. Pumps		$350,000
Instrumentation		$35,000
Motor Control Components		$15,000
	Total	$400,000
Tank:		
Pitch Tank-7000 MT		$378,296
Foundation		$175,077
Yard Slab & Curbing		$78,629
Insulation		$152,955
Instrumentation		$80,179
Valves		$7,314
	Total	$872,450
Material Handling & Loadout:		
Pitch Pumps		$60,000
Motor Control Components		$20,000
Piping		$240,000
	Total	$320,000
Fume Recovery Upgrade:		$90,000
Level Instrumentation:		$30,000
Shop Relocation		$87,550
Future Pitch Tank Piling:		$115,000
	Subtotal	$3,259,428
Engineering (15%)		$488,914
Contingency (15%)		$562,251
	TOTAL PROJECT	$4,310,594

Portland Facility
Summary of Terminal Options
($000)

	1999	2000	2001	2002	2003	2004	6 Year Average	ROI *	Payback Period (Months)
Net Income									
Most Likely	$ 1,356	$ 1,750	$ 1,898	$ 2,105	$ 2,138	$ 2,170	$ 1,903	37.0%	31
Shutdown 2001	1,153	1,104	(2,922)	-	-	-	(111)	-3.9%	
Cash Flow									
Most Likely	$ (2,697)	$ 2,427	$ 2,575	$ 2,782	$ 2,815	$ 2,847	$ 1,791		
Shutdown 2001	1,393	1,344	(2,802)	-	-	-	(11)		

* ROI calculated on total Portland investment.

Portland Pitch Facility
Scenario One - Most Likely
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	21,306	7,950	4,770			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	2,544	17,490	20,670	25,440	25,440	25,440
	Tons	75,000	80,000	80,000	80,000	80,000	80,000
Total Pitch Sales	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	23,850	25,440	25,440	25,440	25,440	25,440
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	23,850	25,440	25,440	25,440	25,440	25,440

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,947	4,458	2,675			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,082	1,150	690			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32
	M$	1,427	9,808	11,591	14,266	14,266	14,266
Ocean Freight	$/Ton	66.00	66.00	66.00	66.00	66.00	66.00
	M$	528	3,630	4,290	5,280	5,280	5,280
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	670	250	150			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,943	725	435			
Total Pitch Material Cost	S Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 261.29	$ 250.26	$ 247.88	$ 244.32	$ 244.32	$ 244.32
	M$	19,597	20,021	19,831	19,546	19,546	19,546

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	377	377	377	377
Fuel & Utilities	M$	375	400	400	400	400	400
Maintenance	M$	100	190	190	190	190	190
Other Operating	M$	300	300	300	300	300	300
Depreciation	M$	247	677	677	677	677	677
Existing Investment		247	247	247	247	247	247
New Capital Expenditure		-	430	430	430	430	430
Other Fixed	M$	300	300	300	300	300	300
Total Operating Cost	M$	1,699	2,244	2,244	2,244	2,244	2,244
Operating Cost per Ton		$ 22.65	$ 28.05	$ 28.05	$ 28.05	$ 28.05	$ 28.05
Operating Cost per Ton - Excl. Depr.		$ 19.36	$ 19.59	$ 19.59	$ 19.59	$ 19.59	$ 19.59
Cost of Sales	M$	21,296	22,265	22,075	21,790	21,790	21,790
Gross Profit	M$	2,554	3,175	3,365	3,650	3,650	3,650
Provision for Interest	8%	324	297	243	189	135	81
Income before Taxes		2,230	2,878	3,122	3,462	3,516	3,570
Provision for Income Taxes	39.2%	874	1,128	1,224	1,357	1,378	1,399
Net Income	M$	$1,356	$1,750	$1,898	$2,105	$2,138	$2,170

Portland Pitch Facility
Scenario Two - Shutdown 2001
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	66,000	66,000	33,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	20,988	20,988	10,494			
Liquid Pitch	S Tons		-	-			
	$/Ton		$ 318.00	$ 318.00			
	M$		-	-			
Total Pitch Sales	Tons	66,000	66,000	33,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	20,988	20,988	10,494			
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	20,988	20,988	10,494			

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	66,000	66,000	33,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,769	11,769	5,885			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,036	3,036	1,518			
Liquid Pitch	S Tons		-	-			
	$/Ton		$ 178.32	$ 178.32			
	M$		-	-			
Ocean Freight	$/Ton		66.00	66.00			
	M$		-	-			
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	660	660	330			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,914	1,914	957			
Total Pitch Material Cost	S Tons	66,000	66,000	33,000			
	$/Ton	$ 263.32	$ 263.32	$ 263.32			
	M$	17,379	17,379	8,690			

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	189			
Fuel & Utilities	M$	330	330	165			
Maintenance	M$	100	190	95			
Other Operating	M$	300	300	150			
Depreciation	M$	240	240	120			
Existing Investment		240	240	120			
New Capital Expenditure							
Other Fixed	M$	300	300	150			
Terminal Shutdown Charges							
Severance	M$			400			
Cleanup & Dismantling	M$			5,300			
Total Operating Cost	M$	1,647	1,737	6,569	-		
Operating Cost per Ton		$ 24.95	$ 26.32	$ 199.05			
Operating Cost per Ton - Excl. Depr.		$ 21.32	$ 22.68	$ 195.41			
Cost of Sales	M$	19,026	19,116	15,258	-	-	
Gross Profit	M$	1,962	1,872	(4,764)	-	-	
Provision for Interest	8%	66	56	42			
Income before Taxes		1,896	1,815	(4,806)			
Provision for Income Taxes	39.2%	743	712	(1,884)			
Net Income	M$	$1,153	$1,104	($2,922)			

Please Expedite

KOPPERS INDUSTRIES

CARBON MATERIALS & CHEMICALS DIVISION

CAPITAL EXPENDITURE REQUEST (CER) – CIRCULATION

		Initials	Date
James T. Dietz	UPARC – Engineering		5/13/98
Joseph J. Calfe	UPARC – Purchasing		5-17-98
John J. Kunkle	K – 1600		5/14/98
Kevin J. Fitzgerald	K – 1600		5/17/98
Kathleen Roberts	K – 1726		5/20/98
Donald Davis	K – 1700		5/18/98

KOPPERS INDUSTRIES

INTEROFFICE CORRESPONDENCE

To: M.H. MURRAY
Location: K-1650, PITTSBURGH
Subject: CAPITAL EXPENDITURE PRE-AUTHORIZATION

From: AMOS S. KAMERER
Location: PORTLAND, OR
Date: MARCH 26, 1997

REQUESTING DIVISION (Circle One)	WOOD (TAR) COKE ADMINISTRATIVE
REQUESTING LOCATION	PORTLAND, OR - 9270
REQUEST DATE	MARCH 26, 1997
PROJECT TITLE	IMPORT LIQUID PITCH DOCK, UNLOADING LINE AND TANKS
AMOUNT OF REQUEST NOTE: THIS AMOUNT SHOULD BE FOR THE PRELIMINARY SCOPE OF THE WORK ONLY.	$80,000.00
TEMPORARY APPROPRIATION NUMBER ASSIGNED IB	GL DET SUB LOC DEPT 4210 - X - X - 9270 - P027
DESCRIPTION OF THE PROJECT SCOPE TO MODIFY AN EXISTING DOCK TO PERMIT THE RECEIPT OF IMPORT LIQUID PITCH. TO CONSTRUCT A 2000 FT. LONG PIPELINE FROM THE DOCK TO 3 NEW 6,000 METRIC TON CAPACITY STORAGE TANKS. WORK WILL INCLUDE A NEW HOT OIL HEATING SYSTEM AND FUME COMBUSTOR, TRANSFORMER AND SWITCHGEAR, INSTRUMENTATION, PUMPS, VALVES, CONTROL / MCC HOUSES, LIGHTING, PAVING, ETC.	4210 - X - X - 9270 - 46
AUTHORIZED SIGNATURE	
COPY TO: REQUESTING LOCATION MANAGER	A.S. KAMERER
REQUESTING DEPARTMENT	J.T. DIETZ
DIVISION CONTROLLER	J.W. KUNKLE
DIVISION GENERAL MANAGER	W.W. TURNER 4/4/97

KOPPERS INDUSTRIES

Koppers Industries, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Telephone: (412) 227-2001
FAX: (412) 227-2202

TAR AND CHEMICAL DIVISION

418/651-9765

TO: Mike Mancione

COMPANY: _____

FROM: John Kunkle

DATE: 5/5/98

NUMBER OF PAGES TO FOLLOW: 8

Comments: Mike - Please see that Jim Detz receives this capital request tomorrow. Thanks

Jim - Please advise as soon as possible if you have changes/comments.

JK

If you did not receive all material transmitted, please call 1(800)321-9876 or (412)227-2260.

KOPPERS INDUSTRIES

APPROPRIATION REQUEST FOR ITEMS REQUIRING PRIOR APPROVAL

DIVISION Carbon Materials and Chemicals Division		APPROPRIATION NUMBER	
PLANT OR LOCATION Portland, Oregon		CLASS	DEGREE OF RISK Low
TITLE (Summarize to one line) Liquid Pitch Unloading Terminal		ESTIMATED BEGIN DATE 4th Quarter, 1998	
		ESTIMATED START UP DATE 4th Quarter, 1999	
REQUESTED BY Kevin J Fitzgerald	APPROVED BY	DATE OF REQUEST May 20, 1998	

1. DESCRIPTION OF PROPOSED ASSET Dock and unloading pipeline, fume system, heating system and one 7,000 ton pitch storage tank with related material handling and instrumentation.

COSTS		AMOUNT
2. CASH EXPENDITURE		$4,310,000
3. TRADE-IN, SALVAGE OR SCRAP VALUE		
4. EQUIPMENT ON HAND NOT PREVIOUSLY CAPITALIZED		
5. TOTAL OF THIS REQUEST	(2 + 3 + 4)	$4,310,000
6. EQUIPMENT ON HAND PREVIOUSLY CAPITALIZED		
7. ESTIMATED TOTAL COST OF CAPITAL ITEM	(5 + 6)	$4,310,000
8. ESTIMATED WORKING CAPITAL REQUIREMENTS AVERAGE FIVE YEARS	(L22 ADS-230)	
EARNINGS - AVERAGE OF FIRST FIVE YEARS		
9. ESTIMATED INCOME BEFORE INTEREST AND TAXES	(L9 ADS-230)	$2,375,000
10. ESTIMATED NET INCOME AFTER INTEREST AND TAXES	(L13 ADS-230)	$1,346,000
11. % RETURN BEFORE INTEREST AND TAXES ON AVERAGE NET INVESTMENT	(L15 ADS-230)	46.1%
12. % NET RETURN ON AVERAGE NET INVESTMENT	(L16 ADS-230)	26.1%
PAYOUT PERIOD	(L28 ADS-230)	36 months
13. EXPIRATION DATE OF LEASE IF ON LEASED LAND		10-year lease being negotiated
14. PRESENT AGE IF USED EQUIPMENT		
15. SOURCE OF FUNDS FROM CAPITAL PROGRAM - 1999 expenditures will be included in the 1999 program. 1998 expenditures are included in current capital expenditure forecast.		$0

16. JUSTIFICATION SUMMARY

WHY DO THIS AT ALL? To participate in future aluminum growth in the Northwest as well as protect current pitch profitability.

WHY DO THIS THIS WAY? Current Portland infrastructure is in place and strategically located in center of Northwest aluminum market.

WHY DO THIS NOW It is anticipated that in the near future there will be no unloading facilities for solid pencil pitch.

		BOARD APPROVAL DATE

KII-2.0/vjl 6/93

Statement of Request

The Carbon Materials and Chemicals Division requests $4,310,000 for the conversion of Koppers' existing solid pitch melting facility at Portland, Oregon to a liquid pitch unloading terminal to retain existing business in the Pacific Northwest and to pursue future growth opportunities in this region.

Source of Funds

Funds will be provided in the 1999 capital expenditure program. The 1998 expenditures will be covered through the deferral of other 1998 capital projects.

Marketing Review

The United States aluminum industry has a current production capacity of 4.2 million metric tons of which 1.6 million metric tons is located in the Northwest (Washington, Oregon and Montana), or a total of 38%. In terms of carbon pitch demand for this industry in the Northwest, there is a demand of 191,000 metric tons at capacity.

We are projecting that the aluminum industry in the Northwest will be operating at 100% of capacity in 1999. Koppers will at that time be supplying 32% of this pitch requirement (15% of our total business). Of the 49,000 metric tons we are currently supplying, approximately 24% is being supplied from our domestic plants, and 76% is being imported from Asia (China and Korea) in solid form through our Portland terminal. The pitch is then melted and shipped to our customers in liquid form from the terminal.

As we look forward, we are projecting the following changes in the Northwest:

- It is anticipated that the aluminum industry capacity will remain at 100% over the next ten plus years. With the retail wheeling of power and continued cooperation with the Bonneville Power Authority, we see the smelters located in the Northwest being healthy and viable operations and operating at high capacity levels. In the past few years we were projecting at least one or two smelters closing because of the high cost operations versus the new smelters being built off shore, but this concern has now changed. Recently there have been announcements of construction plans for 2 new smelters in the region for which feasibility studies are being conducted.

- The handling of solid pitch at the port facilities and at the smelters is becoming a very serious issue from both an environmental and worker health areas. Hull Buck, the contractor we have been using at the Port of Portland for the past 12 years, has notified us that they are ceasing their operation as of June 1998 and will no longer be handling the pitch product because of environmental issues.

pipe begins its route over water. The valves will shut off both the pitch and heating oil pipes, can be remotely operated from the terminal, ~~and will automatically shut on loss of pressure.~~ The pipe construction will include only the absolute minimum number of flanges, with most joints being welded.

Necessary environmental permitting has been considered. Engineering and plant personnel met in April with the Oregon Department of Environmental Quality about air permitting and the necessary air permit has been obtained.

Financial Summary

In analyzing this project, two cases were developed. The first case, requiring no capital investment, anticipates the closure of Longview to solid pitch unloading upon the expiration of their current permit at the end of 2002. Closure of the Portland facility would follow with estimated shutdown and clean-up costs of $5.7 million. Solid pitch volume during this period is estimated to be 60,000 metric tons. This material would be sourced from Korea and Japan. Because of the poor quality and resulting environmental problems caused by the Chinese pitch, it would no longer be available without a substantial capital investment. Gross profit would average approximately $1.6 million per year until shutdown.

The second scenario presented is one with the capital investment of $4.3 million and Portland converting to 100% liquid pitch by the year 2002. The facility will start up during the fourth quarter of 1998 and handle both liquid and solid pitch until 2002. Projected volumes are estimated to reach 72,000 metric tons in 2002. This is a conservative estimate in that we already have 63,000 tons of the business and a marketing plan is in place to reach 85,000 tons per year. Gross profit for the Portland facility will average approximately $2.9 million per year.

Construction of the terminal will result in an increase in earnings before interest and taxes and net income over the shutdown case of $2.3 million and $1.3 million respectively. The payback period will be 36 months.

Equipment List

See attached.

Schedule of Expenditures

Fourth quarter 1998	$300,000
First quarter 1999	950,000
Second quarter 1999	1,000,000
Third quarter 1999	1,000,000
Fourth quarter 1999	1,060,000
Total	$4,310,000

Koppers005098

additional 15,000 - 20,000 tons.

The primary justification for this project is maintaining our current pitch business and further growing our business through the terminaling of other pitches in the Northwest. We are, however, negotiating with Intalco (Alumax) to terminal their pitch for a ten-year period and, as mentioned above, Goldendale, Northwest Aluminum and Reynolds, Troutdale will be in need of a terminaling facility when they convert to liquid. We feel confident that this project will make it very difficult for others to justify a greenfield terminal.

This appropriation is an important foundation for our future pitch business, not only in the Northwest, but our overall total business. Over the next two to three years, the total pitch requirements in the Northwest will be supplied from offshore sources and will be in liquid form. Koppers, as a global company with various growth initiatives in the pitch area, especially in the Asian market, should be the leader of this transition from solid to liquid pitch handling.

Operations Summary

The proposed project at the Portland terminal includes a 1,400 foot liquid pitch unloading line that will discharge the pitch directly from the ocean vessel into storage tanks. We will construct one new tank, approximately 7,000 metric tons in size, and build future additional tanks as needed. Portland is the ideal location for a liquid pitch terminal, as it is easily accessible by tank truck and rail to all of the smelter locations in the Northwest. We already have the melter tank and a shipping tank in place that have a combined capacity of 4,500 metric tons. Also, we have the necessary workforce and support facilities to operate the proposed facility.

The Portland terminal property is leased from Northwest Natural Gas with the current lease expiring at the end of this year. They have agreed to sign a ten-year lease agreement.

The net logistics cost of receiving liquid pitch will be approximately $20.00 per metric ton less than the freight and handling costs of solid pitch. The increased liquid freight costs of approximately $20.00 are offset by the $40.00 per ton savings from unloading and transportation costs for solid pitch resulting in the net savings of $20.00 per ton. Liquid pitch vessels do, however, require a minimum commitment of ten years.

Environmental Statement

Engineering of the pipeline and unloading terminal facilities has considered the various environmental conditions and accident scenarios that could reasonably be expected. Design features have been included to address potential scenarios that will minimize any potential environmental impacts if such worst case incidents do occur. For example, quick acting shut-off valves are located on land near where the

HOT OIL

The only other facility that is currently handling solid pitch in the Northwest is the Port of Longview, Washington facility. It is difficult to say how long the Longview Port will be operating. In fact, they only have an operating permit good through 2002. The port will be upgrading their facility and does not foresee a problem at this time, but this could change in the near future.

We are planning to utilize the Longview facility once Hull Buck is out of business; but at a higher cost for unloading and transporting the pitch to the Portland terminal. The current costs for unloading and transportation from Portland are $29.31 per ton compared to $40.75 per ton from Longview.

The KII pitch melter tank at Portland was constructed in 1992 at a cost of $1.2 million as an insurance policy to back-up for our domestic operations and offshore competition.

- The trend to convert to liquid pitch by the aluminum industry continues onward. Over the past four years, we have converted the Alcoa Wenatchee Washington and Intalco Washington smelters. The only Northwest smelters remaining on solid pitch are Vanalco, Goldendale Aluminum, Northwest Aluminum and Reynolds, Troutdale. Goldendale and Northwest Aluminum are now under the same ownership. We believe that Goldendale, Northwest and Troutdale will convert to liquid pitch within the next two years. In fact, all three locations have asked us for a proposal to terminal their pitch when they do their conversion. Vanalco will probably hang in until they are forced to do so.

- Smelters are also converting to liquid pitch in other parts of the world. Alba in Bahrain and Dubai in Dubai are converting to liquid this year and Alumar and Albras in Brazil have sent in serious inquiries. All future new smelters such as the one in South Africa (Alusaf) will have liquid tanks to receive their pitch in liquid form.

- Poscochem (Korea), one of our suppliers of import pitch in the Northwest, and the 100% supplier to the Goldendale and Northwest smelters, has informed us that once these two smelters convert to liquid, they will no longer supply solid pitch – liquid only.

- Our current import program for this year is 53,000 metric tons but because of the decline of crude tars here in North America, our 1999 import pitch program will include a minimum of 68,000 metric tons with a marketing plan to go to 85,000 tons in the year 2000. This is the only way we will be able to protect and maintain our market share. Our major source for import pitch will be Poscochem in Korea who is presently supplying 25,000 tons and an option for another 25,000 tons. Currently discussions are going forward on a seven-year contract extension. In addition, with the assistance of Koppers Australia, we are negotiating a joint venture with TISCO in China that we hope to complete by the end of 1998 for 40,000 tons and are working with Sumitomo in Japan for an

Dock & Unloading Pipeline:		
Pipeline		$490,295
Dock		$149,134
Dock Access & Bridge		$154,123
Switchgear		$103,000
Instrumentation		$51,500
Lighting		$77,250
Motor Control Center/Components		$15,450
Fire Protection		$77,250
Permitting		$55,826
Paving		$20,600
	Total	$1,194,428
Fume System Piping:		$150,000
Heating System:		
Hot Oil Heater, Piping & Circ. Pumps		$350,000
Instrumentation		$35,000
Motor Control Components		$15,000
	Total	$400,000
Tank:		
Pitch Tank-7000 MT		$378,296
Foundation		$175,077
Yard Slab & Curbing		$78,629
Insulation		$152,955
Instrumentation		$80,179
Valves		$7,314
	Total	$872,450
Material Handling & Loadout:		
Pitch Pumps		$60,000
Motor Control Components		$20,000
Piping		$240,000
	Total	$320,000
Fume Recovery Upgrade:		$90,000
Level Instrumentation:		$30,000
Change Room & Shop Relocation:		$87,550
Future Pitch Tank Piling:		$115,000
	Subtotal	$3,259,428
Engineering (15%)		$488,914
Contingency (15%)		$562,251
TOTAL PROJECT		$4,310,594

Portland Facility
Summary of Terminal Options
($000)

	1999	2000	2001	2002	2003	2004	6 Year Average	ROI *	Payback Period (Months)
Net Income									
Most Likely	$ 1,356	$ 1,750	$ 1,898	$ 2,105	$ 2,138	$ 2,170	$ 1,903	37.0%	36
Shutdown 2002 Year End	1,153	1,104	1,115	(3,846)	-	-	(79)	-2.6%	
Cash Flow									
Most Likely	$ (2,687)	$ 2,427	$ 2,575	$ 2,782	$ 2,815	$ 2,847	$ 1,791		
Shutdown 2002 Year End	1,393	1,344	1,355	(3,606)	-	-	81		

* ROI calculated on total Portland Investment.

Portland Pitch Facility
Scenario One - Most Likely
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	21,306	7,950	4,770			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	2,544	17,490	20,670	25,440	25,440	25,440
Total Pitch Sales	Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	23,850	25,440	25,440	25,440	25,440	25,440
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	23,850	25,440	25,440	25,440	25,440	25,440

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,947	4,458	2,675			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,082	1,150	690			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32
	M$	1,427	9,808	11,591	14,266	14,266	14,266
Ocean Freight	$/Ton	66.00	66.00	66.00	66.00	66.00	66.00
	M$	528	3,630	4,290	5,280	5,280	5,280
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	670	250	150			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,943	725	435			
Total Pitch Material Cost	S Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 261.29	$ 250.26	$ 247.88	$ 244.32	$ 244.32	$ 244.32
	M$	19,597	20,021	19,891	19,546	19,546	19,546

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	377	377	377	377
Fuel & Utilities	M$	375	400	400	400	400	400
Maintenance	M$	190	190	190	190	190	190
Other Operating	M$	300	300	300	300	300	300
Depreciation	M$	247	677	677	677	677	677
Existing Investment		247	247	247	247	247	247
New Capital Expenditure		-	430	430	430	430	430
Other Fixed	M$	300	300	300	300	300	300
Total Operating Cost	M$	1,899	2,244	2,244	2,244	2,244	2,244
Operating Cost per Ton		$ 22.86	$ 28.05	$ 28.05	$ 28.05	$ 28.05	$ 28.05
Operating Cost per Ton - Excl. Depr.		$ 19.38	$ 19.59	$ 19.59	$ 19.59	$ 19.59	$ 19.59
Cost of Sales	M$	21,296	22,265	22,075	21,790	21,790	21,790
Gross Profit	M$	2,554	3,176	3,365	3,650	3,650	3,650
Provision for Interest	8%	324	297	243	189	135	81
Income before Taxes		2,230	2,878	3,122	3,462	3,516	3,570
Provision for Income Taxes	39.2%	874	1,128	1,224	1,357	1,378	1,399
Net Income	M$	$1,356	$1,750	$1,898	$2,105	$2,138	$2,170

Portland Pitch Facility
Scenario Two - Shutdown 2002 Year End
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	66,000	66,000	66,000	66,000		
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00		
	M$	20,988	20,988	20,988	20,988		
Liquid Pitch	S Tons		-	-	-		
	$/Ton		$ 318.00	$ 318.00	$ 318.00		
	M$		-	-	-		
Total Pitch Sales	Tons	66,000	66,000	66,000	66,000		
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00		
	M$	20,988	20,988	20,988	20,988		
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	20,988	20,988	20,988	20,988		

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	66,000	66,000	66,000	66,000		
	$/Ton	$ 178.32	$ 178.32	$ 178.32	$ 178.32		
	M$	11,769	11,769	11,769	11,769		
Ocean Freight	$/Ton	46.00	46.00	46.00	46.00		
	M$	3,036	3,036	3,036	3,036		
Liquid Pitch	S Tons		-	-	-		
	$/Ton		$ 178.32	$ 178.32	$ 178.32		
	M$		-	-	-		
Ocean Freight	$/Ton		66.00	66.00	66.00		
	M$		-	-	-		
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00	10.00		
	M$	660	660	660	660		
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00	29.00		
	M$	1,914	1,914	1,914	1,914		
Total Pitch Material Cost	S Tons	66,000	66,000	66,000	66,000		
	$/Ton	$ 263.32	$ 263.32	$ 263.32	$ 263.32		
	M$	17,379	17,379	17,379	17,379		

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	377	377		
Fuel & Utilities	M$	330	330	330	330		
Maintenance	M$	190	190	190	190		
Other Operating	M$	300	300	300	300		
Depreciation	M$	240	240	240	240		
Existing Investment		240	240	240	240		
New Capital Expenditure							
Other Fixed	M$	300	300	300	300		
Terminal Shutdown Charges							
Severance	M$				400		
Cleanup & Dismantling	M$				5,300		
Total Operating Cost	M$	1,847	1,737	1,737	7,437		
Operating Cost per Ton		$ 24.85	$ 26.32	$ 26.32	$ 25.11		
Operating Cost per Ton - Excl. Depr.		$ 21.32	$ 22.68	$ 22.68	$ 109.06		
Cost of Sales	M$	19,026	19,116	19,116	24,816		
Gross Profit	M$	1,962	1,872	1,872	(3,828)		
Provision for Interest	8%	66	56	37	18		
Income before Taxes		1,896	1,815	1,835	(3,846)		
Provision for Income Taxes	39.2%	743	712	719	-		
Net Income	M$	$1,153	$1,104	$1,116	($3,846)		

KOPPERS INDUSTRIES

FAX TRANSMITTAL

7540 N.W. Saint Helens Rd.
Portland, Oregon 97210-3663
Phone: (503) 286-3681
Fax: (503) 285-2831
Web Page: www.koppers.com

TO: T. Dietz, T. Self, B. McGinnis DATE: 6/24/99

FROM: Amos TOTAL # OF PAGES: 6

The attached F. Y. I.

IF THIS TRANSMITTAL IS IN ERROR, PLEASE CALL 503-286-3681 FAX # 503-285-2831

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT

RECEIVED
JUN 23 1999
KOPPERS INDS, INC.
PORTLAND OR

June 21, 1999

Mr. Eric Blischke
Oregon Department of Environmental Quality
Voluntary Cleanup and Site Assessment Section
811 SW 6th Avenue
Portland, Oregon 97204

HAI Project No. 2708

SUBJECT: Proposed Monitoring Well Installation Activities, Koppers Lease Area, Northwest Natural-Gasco Facility, 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Blischke:

As documented in correspondence dated May 24, 1999 (Blischke to Hart), the Oregon Department of Environmental Quality (DEQ) has expressed concerns regarding the location of groundwater monitoring wells as originally proposed for installation down-gradient of the new Koppers coal tar pitch tank supports at the Northwest Natural – Gasco facility. These wells were initially proposed for installation in a work plan submitted to the DEQ dated May 13, 1999 (Ede to Blischke), with the proposed installation of a bedrock and an alluvial unit well located approximately 100 feet down-gradient of the tank supports, immediately north of the Koppers Pencil Pitch Storage Building.

The DEQ has requested that the proposed location of the wells be revised such that they would instead be installed as close as possible to the tank foundation supports (on the down-gradient side). As discussed during a site meeting with the DEQ on June 9, 1999, it has been concluded that installation of a well within the adjacent pencil pitch storage building (to the north-northeast) would not be feasible due to drill rig mast height restrictions, and that installation immediately east would not be ideal due to the possibility of construction within that area over the next several of years. Based on the preceding, the DEQ agreed that, assuming drill rig access is possible, then installation of the wells immediately to the north of the tank foundation supports would adequately satisfy DEQ's objectives for these wells. Follow-up evaluation indicates that by removing overhead piping and by placing a granular fill foundation suitable for the drill rig, access, although limited, would be sufficient for the installation of the proposed wells at the DEQ-desired location. The proposed wells, tentatively designated as MW-15-50 and MW-15-65, based on their anticipated depths, are depicted on Figures 1 and 2. The final well designations will be modified based upon their actual depths.

Additionally, as requested by DEQ, instead of the installation of one alluvial zone well and one bedrock well as originally proposed, the scope has been revised such that two alluvial unit wells would be installed. Specifically, one well would be installed at the top of the alluvial zone (immediately below the silt unit), while the second well would be installed at the base of the alluvial zone (immediately above the bedrock surface). Both wells would be constructed and double-cased through the silt unit as per the May 13, 1999 Work Plan. As per DEQ's request, the shallow well will be constructed with a 10-foot section of screen, while the deep well will be installed with a 5-foot section of screen. Based on available data for the area (geotechnical boring G-2 and tank foundation support data), it is estimated that the shallow well will be constructed to a depth of approximately 50 feet below ground surface (bgs), while the deep well will be constructed to a depth of approximately 65 feet bgs.

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All borehole drilling and well installation work will be performed with air rotary drilling methodology as indicated in the May 13, 1999 Work Plan. Continuous soil core sampling will be conducted with a hydraulic push probe sampling device through the silt unit in order to verify appropriate surface casing placement. Below the silt unit, soil samples will be collected at approximate 5-foot intervals via split spoon sampling methodology. Soil samples will be collected for lithologic descriptive purposes only unless field screening results indicate the presence of contamination at locations that do not correlate with the site conceptual model.

With the approval of DEQ, drilling will be scheduled to commence the week of June 28, 1999. Subsequent to that week, access to the proposed well locations cannot be guaranteed.

If there are any comments or questions, please contact either the undersigned.

Sincerely,

Robert Ede
Project Manager

c: Ms. Sandra Hart, Northwest Natural
Mr. Amos Kamerer, Koppers Industries
Mr. Richard Bach, Stoel Rives, LLP
Mr. Frank Selker, Decision Focus, LLC

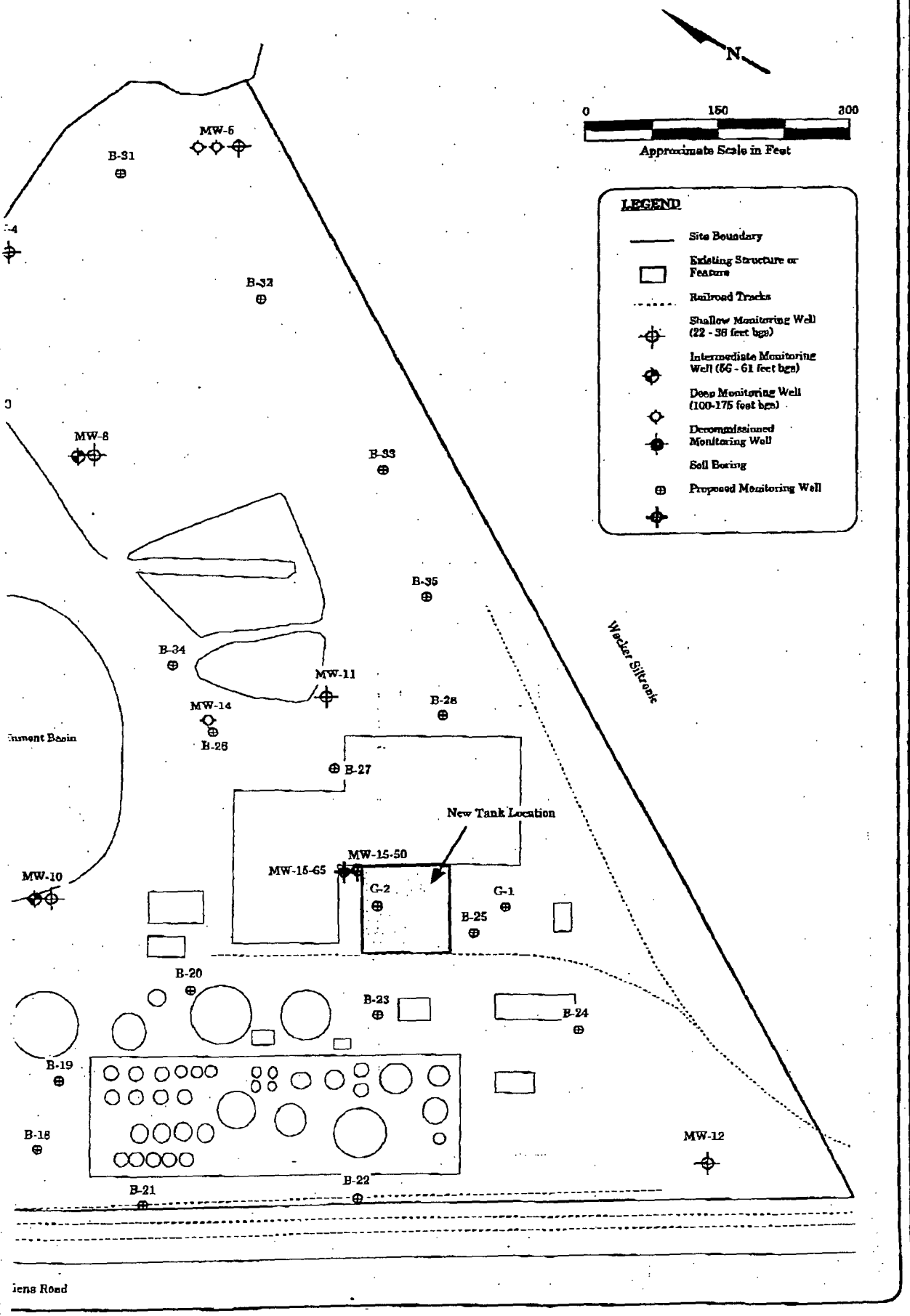


Figure 1

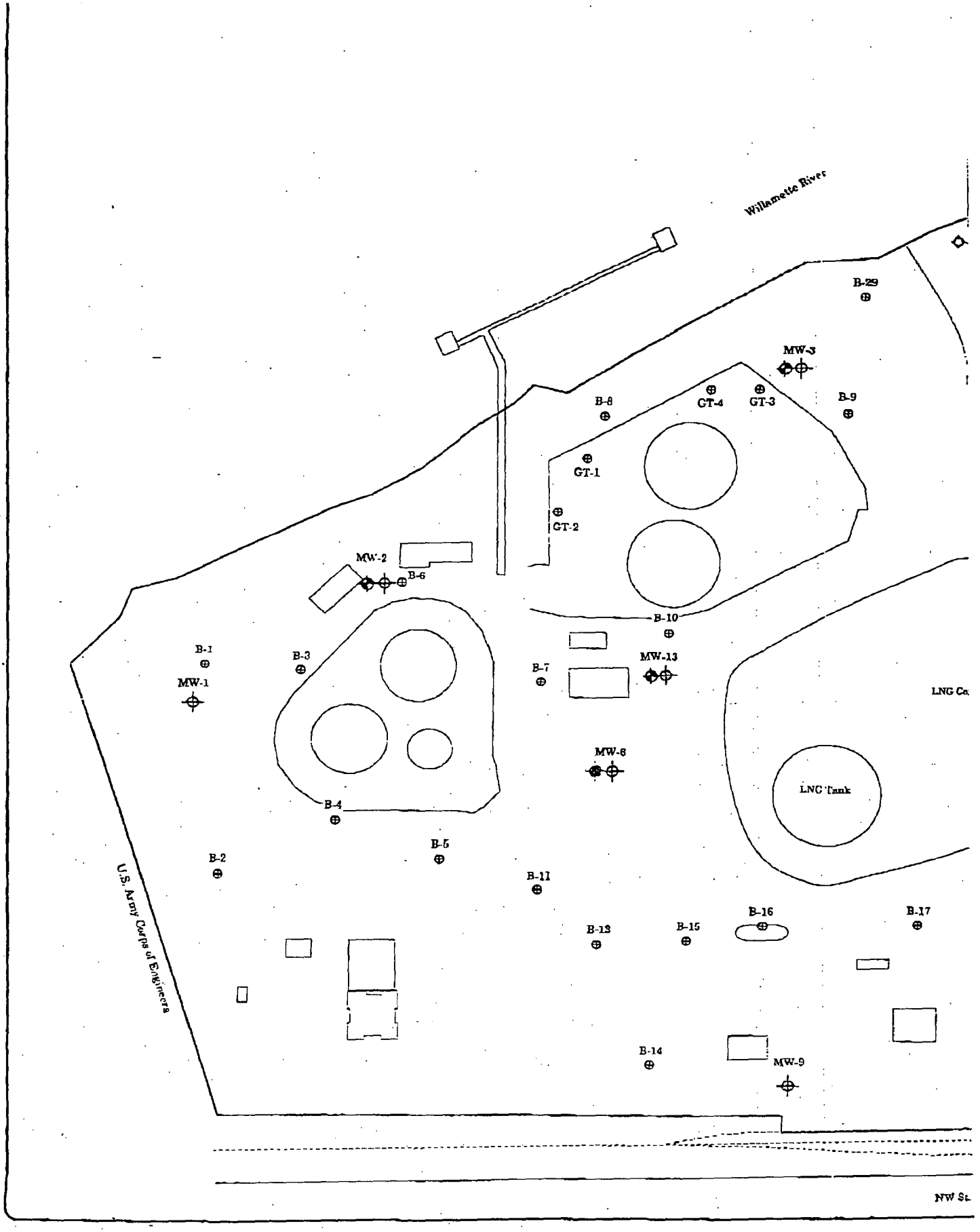
Proposed Kopper's Area Well Location Map

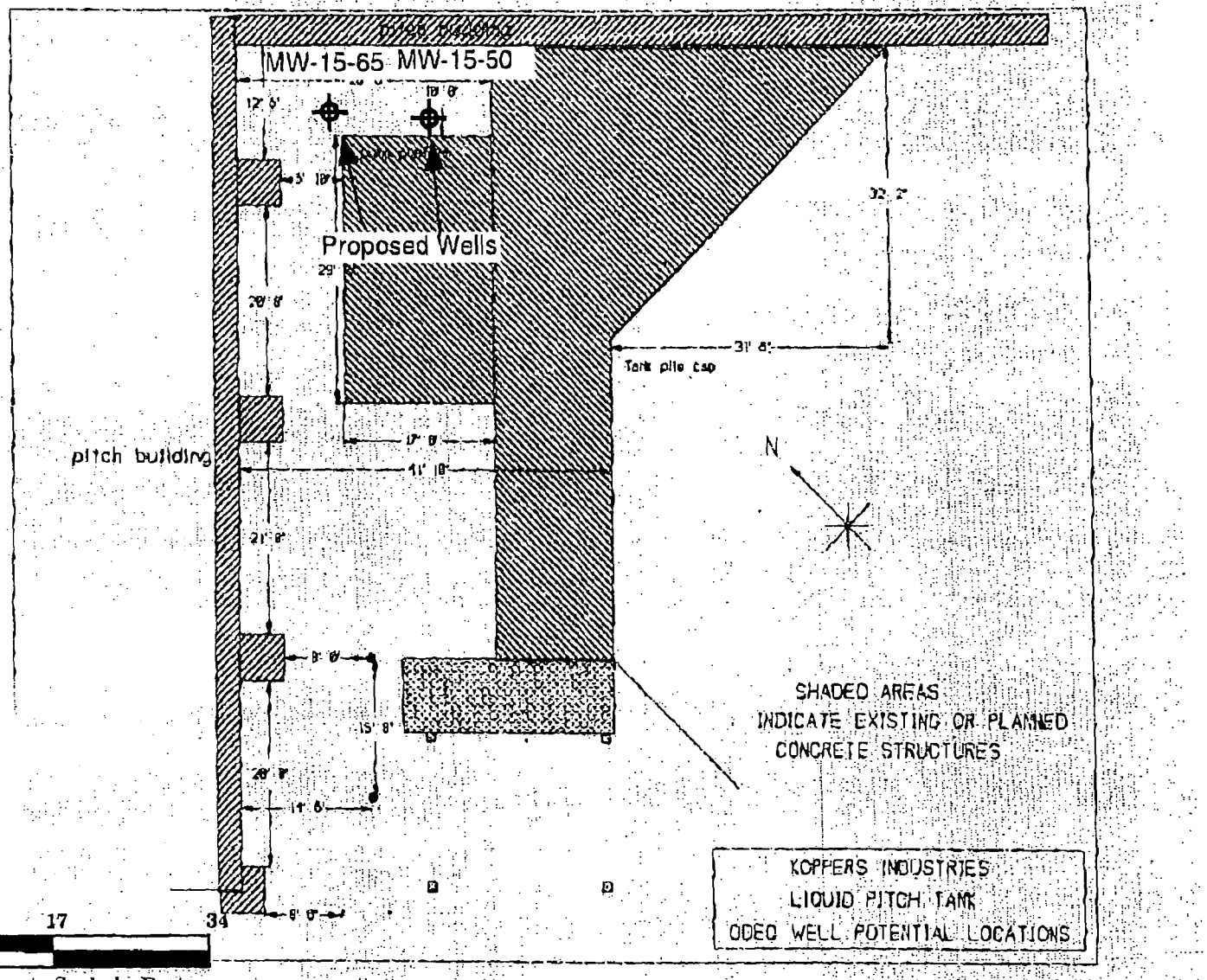
Remedial Investigation
Northwest Natural - Gasco Facility
7900 NW St. Helens Road
Portland, Oregon

HAHN & ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT
434 NW SIXTH AVENUE, SUITE 203
PORTLAND, OREGON 97209
503/796-0717

May 1999

Project No. 2708


Willamette River
B-29
MW-3
B-8
GT-4
GT-3
B-9
GT-1
GT-2
MW-2
B-6
B-10
B-1
MW-1
B-3
B-7
MW-13
LNG Ca
MW-8
LNG Tank
B-4
B-5
B-2
B-11
B-16
B-17
B-13
B-15
U.S. Army Corps of Engineers
B-14
MW-9
NW St



Project No. 2708	**HAHN AND ASSOCIATES** INCORPORATED	**Proposed Well Locations and Surrounding Features: Koppers Pitch Tank**	FIGURE 2
June 1999	ENVIRONMENTAL MANAGEMENT 434 NW SIXTH AVENUE, SUITE 203 PORTLAND, OREGON 97209 (503) 796-0717	Remedial Investigation Northwest Natural - Gasco Facility 7900 NW St. Helens Road Portland, Oregon	

FROM :KOPPERS INDUSTRIES, INC. 286 3681 1999-05-24 08:03 #608 P.05/05
Koppers005110

KOPPERS INDUSTRIES

FAX TRANSMITTAL

7540 N.W. Saint Helens Rd.
Portland, Oregon 97210-3663
Phone: (503) 286-3681
Fax: (503) 285-2831
Web Page: www.koppers.com

TO: J. Dietz, B. Messinger DATE: 4/9/99

FROM: Amos TOTAL # OF PAGES: 6

I have faxed this same document to Stilwell & Harden and their new excavator, R.M. Cat. I sent Jack a full copy of the Report via UPS, Next day service.

IF THIS TRANSMITTAL IS IN ERROR, PLEASE CALL 503-286-3681 FAX # 503-285-2831

DISPOSAL PROFILING AND SOLID/HAZARDOUS WASTE DETERMINATION: PLANNED TANK FOUNDATION EXCAVATION

Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon

April 9, 1999

Prepared for:
Northwest Natural
Portland, Oregon

Prepared by:

Hahn and Associates, Inc.
Portland, Oregon

HAI Project No. 2708-99

HAHN AND ASSOCIATES, INC.
ENVIRONMENTAL MANAGEMENT

April 9, 1999

Ms. Sandra Hart
Northwest Natural
220 NW Second Avenue
Portland, Oregon 97209

HAI Project No. 2708-99

SUBJECT: Hazardous Waste Determination and Disposal Profiling, Soils to be Excavated for Construction of New Tank Foundation, Koppers Industries, Northwest Natural – Gasco Site, 7540 and 7900 NW St. Helens Road, Portland, Oregon

Dear Mr. Hart:

At your request and at the request of Koppers Industries, Inc. (Koppers), Hahn and Associates, Inc. (HAI) has completed soil sampling activities at the above referenced site necessary such that a Hazardous Waste Determination and Soil Disposal Profiling could be completed for soils that are located within an area of planned soil excavation. The excavation is necessary such that supports for a new tank foundation may be appropriately placed.

The planned excavation will extend to within 6 feet below ground surface (bgs) across an area measuring approximately 100 feet by 100 feet near the existing Koppers-area tank farm, generating an estimated 2,000 cubic yards of soil. Figure 1 is a Site Map depicting the location of the proposed tank foundation excavation, as well as the location of soil borings and monitoring wells that have been installed as part of ongoing Remedial Investigation (RI) activities at the site. Figure 2 depicts soil probe boring locations that were installed within the planned area of excavation such that soil samples could be collected for disposal profiling / hazardous waste determination purposes.

A brief description of site background, as well as soil sampling procedures and the results of the analytical testing, are provided below. The specific scope of the sampling event (number of samples and analytical testing requirements) was pre-approved by the intended disposal facility (Waste Management, Inc.) during a telephone conversation on April 2, 1999 (Mr. Rob Ede to Ms. Kristin Clayton).

General Site History

The site was the former location of the Portland Gas and Coke Company manufactured gas plant oil gasification facility from 1913 to 1956. Manufacturing processes at the site have involved the generation of town gas and pressed lampblack briquettes, aromatic generation and light oil recovery, tar recovery and refining, and the production of electrode grade coke and high Btu gas. Northwest Natural began construction of a liquefied natural gas (LNG) plant at the site in the late 1960's, at which time a majority of the old gasification plant facilities were demolished.

Koppers operated a coal tar pitch manufacturing facility at the southern portion of the former gasification facility from 1966 to 1973. Koppers currently uses the facility as a terminal for the distribution of coal tar oils. It is within the Koppers portion of the site that the proposed tank foundation excavation will take place. The area surrounding the proposed tank foundation excavation also corresponds to the area of the Light Oil Plant for the former Portland Gas and Coke Company manufactured gas plant oil gasification facility.

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Soil Sample Collection

On April 5, 1999, depth discrete soil samples were collected within the area of planned excavation at each of the twelve soil probe locations indicated on Figure 2. All soil probe borings were installed to a depth of 6 feet bgs, corresponding to the depth of the planned excavation activities. Three soil samples were collected from each soil probe boring, with the collected samples corresponding to depths of approximately 1.5 feet bgs, 3.5 feet bgs, and 5.5 feet bgs.

The soil probes were installed by Geo-Tech Explorations, Inc. of Portland, Oregon, and were installed with a 1.5-inch outside diameter (OD) hydraulically-driven steel rod. Soil samples were collected using a 1.5-inch OD stainless steel split-spoon device with a disposable plastic liner that was advanced into the undisturbed soils 2 to 4 feet ahead of the probe tip. The soil probe was used to collect continuous soil cores to the bottom of each boring.

All soil samples collected were immediately placed in 4-ounce sample jars and capped with teflon-lined lids. The sample jars were then labeled and transferred to a chilled container for shipment to the analytical laboratory. Standard sampling protocols, including the use of chain-of-custody documentation, were followed for all sampling procedures.

The properties of each soil sample were noted by an HAI geologist in the field. Boring logs that describe the soils encountered via the soil probe borings as part of the investigation are included in Appendix A. An estimate of the Unified Soil Classification System (USCS) soil type designation is shown on the boring logs. The USCS designation was a field estimate only and was not confirmed by laboratory analyses.

All soil samples were field-screened for the presence of organic vapors by the headspace method using a Photovac MicroTip model MP-1000 equipped with a 10.6 ev lamp and photoionization detector (PID). Immediately following the collection of the sample, approximately 4 ounces of soil were placed in a quart size plastic bag and sealed. The sample was then set aside for a minimum 20-minute stabilization period, whereupon the detector probe was inserted through the seal into the bag. The results of the headspace screening are recorded on the boring logs in parts per million (ppm). The headspace method results should be considered qualitative and should be used for comparison purposes only.

Abandonment Procedures

Following completion of each soil probe boring installation, each boring was backfilled with granular bentonite.

Decontamination Procedures

All soil probe sampling equipment was decontaminated with a detergent solution wash followed by a double rinse with potable water between boring locations to prevent cross-contamination. Additionally, all non-disposable sampling equipment was similarly decontaminated prior to the collection of each sample.

Laboratory Analyses

Each of the three soil samples collected from an individual soil probe boring were composited by the analytical laboratory to produce one overall sample for each boring. As such, twelve composited soil samples, each representing average soil conditions within each of the twelve soil probe borings, were prepared for laboratory analysis.

Each of the twelve composited soil samples was analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX) constituents via U.S. Environmental Protection Agency (EPA) Method 8020; for diesel and oil range petroleum hydrocarbons via Northwest (NW) Method TPH-Dx; and for gasoline range petroleum hydrocarbons via NW Method TPH-G. Additionally, four of the composited samples were selected for expanded analyses to include polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270 SIM, and for total cyanide by EPA Method 9010.

Based on the results of the above-identified benzene analyses, the soil sample collected from soil probe boring P-12 was further analyzed for leachable benzene via EPA Toxicity Characteristic Leaching Procedure (TCLP) Method 1311/8020.

A summary of analytical results from the above-identified analyses are provided in Tables 1a and 1b. Additionally, as requested by Waste Management, Inc, historical phenol data collected at the site as part of ongoing RI activities, have been provided in Table 2. Laboratory data sheets and chain-of-custody documentation are provided in Appendix B.

Analytical Results

Petroleum hydrocarbons, predominantly in the diesel and heavy oil range, were identified in soil samples representing all but two of the soil probe locations, with concentrations of up to 46,700 parts per million (ppm) combined total diesel and heavy oil range hydrocarbons being identified (P-8 location). Only low levels of gasoline-range petroleum hydrocarbons were identified in the soil, with the maximum identified concentration being 216 ppm (P-2 location).

Concentrations of total PAHs identified in the four samples selected for expanded analyses (P-2, P-6, P-9, and P-12) ranged from 80 ppm at the P-6 probe location, to 1,300 ppm at the P-2 probe location. Total cyanide concentrations in these same four samples were found to range from 1.6 ppm (P-6) to 57 ppm (P-2).

BTEX constituents were identified at low concentrations at numerous soil probe locations, with the maximum identified concentrations being identified at the P-12 probe location. With regard to benzene, the most significant detection was identified at the P-12 location, where a

concentration of 9.65 ppm was identified. The concentration of leachable (TCLP) benzene identified at the P-12 location was 0.119 ppm.

The results of the leachable benzene analysis (TCLP) indicated that soils represented by the P-12 soil probe boring do not exceed the characteristic hazardous waste regulatory level of 0.5 ppm for this constituent. As total benzene concentrations from all other probe locations (P-1 through P-11) did not exceed the leachable criteria, the possibility that leachable benzene exists at a concentration greater than the regulatory level at these locations, does not exist.

Solid / Hazardous Waste Determination

A Solid / Hazardous Waste Determination Worksheet is attached (Appendix C) for the soils proposed to be excavated. The worksheet identifies the source of the waste, sample identification numbers (if applicable), and the analyses that were performed for characterization purposes. The purpose of preparing the worksheet is to identify the waste stream as either a hazardous or non-hazardous solid waste.

The soils described here in could not be considered a "listed hazardous waste" because the material is not from a:

- Non-specific listed sources or process (F-listed)
- Specific listed industrial source or process (K-listed)
- Discarded commercial chemical product (U- or P-listed)

Based on a review of the analytical results described herein, combined with a review of historical soil quality data for the site, it appears that sufficient information exists such that soils within the proposed excavation area would be classified as petroleum contaminated non-hazardous solid waste. Specifically, the decision regarding the designation of the soil as non-hazardous was based on the toxicity characteristic data for leachable benzene, in conjunction with field observations and the extensive analytical database that has been generated as part of the RI for soils at the site.

The above-described waste-determination is pertinent only to soils within the planned excavation described herein. A separate waste determination would be necessary for soils located beyond the limits (laterally or vertically) of the proposed area of excavation.

Conclusions and Recommendations

Based analytical results from this investigation as well as from the RI, and knowledge of the process that generated the contamination (i.e., wastes), it appears that no additional analyses are necessary for waste determination purposes for the proposed tank foundation excavation at the Koppers portion of the Gasco facility. The results of the waste determination described herein indicate that the characterized soils would not meet the criteria for a hazardous waste classification upon removal.

Based on this determination, it appears appropriate that soils from the proposed excavation may be managed by a facility permitted to dispose of or treat non-hazardous petroleum-contaminated soils.

Please contact the undersigned with any questions. Thank you for the opportunity to be of service to Northwest Natural and Koppers Industries, Inc.

Sincerely,

Robert B. Ede
Sr. Project Manager, R.G.

c. Mr. Amos Kamerer, Koppers Industries, Inc.
Mr. Michael Hayward, Northwest Natural

3 August 1998

6526T011

Meeting Report

Koppers Industries, Portland Plant

July 27-29 1998

1. Participants

Koppers	Amos Kamerer	T.J. Turner	Bill Meisinger
ChemTech	Ted Andersen	Dave Logan	Blake Housam
28 July only:	Geo Engineers	Jack Tuttle	
	KPFF	Grant Davis, P.E., S.E.	
	Cameron McKernan, Engineer, Naval Architect		
29 July only	Ponder Burner	Dick Law	
	Performance Pumps Inc.	Rich Furness	

2. Purpose

- Inspect Liquid Pitch Storage Site for terminal installation; take measurements and choose tiepoints.
- Conduct land survey of storage tank area (subcontract to Minister-Graeser).
- Conduct electrical load survey.
- Evaluate existing hot oil heating system and recommend improvement and tie in of new system.
- Meet and establish efficient working relationships with all project team members.
- Identify and resolve technical interface issues.

3. Summary

- Site measurements were taken to locate all major equipment.
  Electronic photo files were emailed to Koppers on 31 July.
- General locations for tiepoints were identified by ChemTech and approved by Koppers.
- The land survey was completed;
  a preliminary survey drawing was delivered electronically 31 July to all team members.
- All field data were obtained for the electrical load survey.
- Piping and temperature control improvements were proposed for the existing hot oil system and tie in of the new system. Koppers approved the concepts.

3.1.1. Good working relationships were established.

- ChemTech will arrange to meet all structural engineering certification requirements with KPFF
- TarTech drawings and specifications were found in plant files. Koppers will compare to the information already distributed and provide and additions. **ACTION: Bill Meisinger**
- Drawings will be prepared in AutoCAD, up to and including release 14.
  Standard Koppers drawing blocks shall be used with nominal paper size of 24 x 36".
  Alphabetic revs will be used until drawings are submitted for permit application.

- Koppers will provide drawing numbers for use. **ACTION: Bill Meisinger.**
- Permit Application drawings will be designated as the first numerical rev: 0 (zero).
- True North, per surveyor drawings, will be shown on all plan drawings.

3.1.2. Technical issues and resolutions included:

- Design Temperatures:
  - Liquid Pitch piping shall be designed for 500 F; Koppers will approve slightly lower values on a case basis where necessary for optimal design.
  - Hot oil heater outlet temperatures will vary from 500 to 550 F, necessitating a design temperature of at least 550F for hot oil piping.
  - Liquid Pitch Storage tanks shall be designed for 450 F maximum temperature with normal operation expected to be at 400 F.
  - The existing steam system normally runs at 110-120 psig but is designed for 175 psig.
- Maximum T-200 and T-210 tank diameters were laid out within clearance requirements and examined for constructability. Design features approved by Koppers to eliminate or minimize seismic anchoring requirements for ongoing design are:
  - 79' shell diameter,
    51' straight-wall height.
    Self-supporting dome roof with blow out panel overpressure protection.
  - 83' OD ringwall foundation and pile cap.
    The ringwall will accommodate a sloped tank bottom, with a minimum height of 20" above grade at the outlet nozzle.
  - ChemTech will specify 3 clips for bolt-on unloading pipe supports up the tank walls. Each clip will be designed for 1000# load, to be confirmed. . **ACTION Cameron McKernan**
- 1997 Oregon UBC Site Seismic Classification requirements and relationship to API 650 design will be finalized after discussion with local authorities. **ACTION: Grant Davis, Jack Tuttle.**
- Unloading line
  - Insulation will be maintained at 6" to enable use of design details established on TarTech drawings, including 1.5" pipe tracing (to be reconfirmed) **ACTION Ted Andersen**
  - Confirm total centerline length for hydraulic and thermal design.
    ACTION: Cameron McKernan
  - Confirm maximum lengths of piping which can be reduced from 10" to 8" for arrangement efficiency at the pier and tanks. **ACTION Ted Andersen**
  - Define Conduit size, number and weight for support design. . **ACTION Blake Housam**
  - Approval action on suggested impedance heating of over-water piping section.
    ACTION: Bill Meisinger.
- Plant Preferred Equipment Suppliers identified by T.J. Turner.
  - Fired Hot Oil Heater – American Heating / Ponder Burner
  - Finned Pipe Tank Heater Assemblies – Ponder Burner
  - Pitch Pumps – Rotan (Was Roper)
  - Hot Oil Pumps – Dean (Was SIHI / KSB)

3.1.3. Preliminary Drawings for Koppers Lease Negotiation

- Provide best available drawings by 12 August 1998.
  ACTION Cameron McKernan, Jack Tuttle, Dave Logan

Discussion Details are attached. Please respond with any corrections.

Theodore S. Andersen,
Project Manager.

Details of Plant Inspection and Meeting Discussion, 27-29 July 1998

1. Storage Area General Arrangement

1.1. Liquid Pitch Storage Tanks

1.1.1. Tank Size:

- Design features approved by Koppers to eliminate or minimize seismic anchoring requirements for ongoing design are:
  - Working capacity, 8000 metric tons, between 3' heel and 3.5' freeboard.
  - 79' shell diameter,
    51' straight-wall height.
    Self-supporting dome roof can not provide frangible roof to wall connection
    Blow out panel overpressure protection is required.
  - 83' OD ringwall foundation and pile cap.
    The ringwall will accommodate a sloped tank bottom, with a minimum height of 20" above grade at the outlet nozzle.
- 1997 Oregon UBC Site Seismic Classification requirements and relationship to API 650 design will be finalized after discussion with local authorities. **ACTION: Grant Davis, Jack Tuttle.**
- 83' OD ringwall foundation and pile cap
  The ringwall will accommodate a sloped tank bottom, with a minimum height of 20" above grade at the outlet nozzle.
- ChemTech will specify 3 clips for bolt-on unloading pipe supports up the tank walls. Each clip will be designed for 1000# load, to be confirmed. **ACTION Cameron McKernan**

1.2. Tank Center Locations:

- T-200 53' from pitch building, 53' from closest concrete column on rail car loading platform.
- T-210 53' from pitch building, 95' center to center from T-210
- Clearance of tank wall to structures is 1/6 tank diameter
- Clearance of ringwall to RR track is the same as existing structures,
  The typical clearance standard is 8' 6" pus 1.5" per degree of curve from the track centerline.
  This is expected to satisfy the Portland Western R.R. (successor to Burlington Northern)
  The survey measured a nearly 22 degree curve.
  The required clearance is thus 11' 3" to track centerline or 9' to nearest rail.

1.3. Pumps

1.3.1. New pitch transfer pumps P-220, P-225 and future P-230

- Locate between T-200 and T-210 toward the railroad tracks.
- Consider Rotan as the design basis (was Roper)
  ChemTech will compare to its standard – Viking.

1.3.2. New Secondary hot oil pumps P-275, 280, 285, 290, & 295?

- Locate between T-200 and T-210 toward the pitch storage building.
- Consider Dean air cooled models as the design basis (was KSB / SIHI)

1.4. Piping and Tiepoints

- Route Pitch transfer piping on new supports from P-225 between T-200 and the RR track to a refurbished tie-point manifold at the rail car loading station. Existing pitch piping will be used to transfer pitch across the RR track to T-65 and T-68. The Viking car-unloading pump will be reconnected to this manifold so as to eliminate manual blind flange manipulations.
- Route new Hot Oil circulation header supply and return along side the pitch piping.
- Route Fume vent piping from T-200 and T-210 across the RR track over the existing hoist / bridge to a tie point near an elbow on the existing fume line to the scrubber. Steam will be taken from an existing header on that same rack to trace the new fume line.

1.5. Miscellaneous Structures

- Locate new nitrogen storage pad between the corner of the pitch storage building and the future T-210.
- Remove concrete pad and structural steel at and near the railcar heating station as required to excavate and place the foundation for T-210. Reinstall the car heating station in approximately its current location; use new pad and steel as required.
- Remove existing sump near the railcar heating station as required to excavate and place the foundation for T-210. Reinstall the sump in approximately its current location, reconnecting to existing discharge piping if capacity is adequate.
- The sump near the pitch storage building will be protected during construction and not used for the new storage tank area.
- 1' oil containment curbing will surround a concrete paved area around the tanks and pumps.
- Structural Steel will be galvanized.

2. Unloading line interfaces:

Separate risers to each tank. Interface at tank nozzles. 2" drain and 4" "over the top" recirculation path connections on tank side of isolation valves by ChemTech. Internal dip tube below top entry to be specified by ChemTech, bottom supported and guided from shell.

2.1. Unloading Line Centerline Length:

Estimates to be confirmed. **ACTION Cameron McKernan**

- 40' ship to pier hose
- 1730' pier flange to base of tanks per Cameron by telephone 7/31/98
- 80' rise on two road crossings, est. by ChemTech
- 180' allowance for six expansion loops, est. by ChemTech
- 75' 20' lateral, 51' rise, 4' gooseneck at each tank.
- 2105' Total hydraulic design basis.

2.2. Unloading line Sizing

To be confirmed: **ACTION Ted Andersen:**

- 8" 40' ship to pier hose
- 8" 400' pier flange, isolation valves, past walkway crossover for tight layout on pier.
- 10" 1490' to reducer before tee at base of tanks.
- 8" 75' tee, isolation valves, and risers to each tank

2.3. Unloading line features based on preliminary hazards assessment:

- Motor operated (Class I Div 1) tight sealing isolation valve on dock operable from dock, shore, and MCC. Fail as Is.
- Similar manual valve on shore to allow isolation from a safe distance in case dock valve fails or dock operation is compromised by a hose failure.
  ChemTech agreed to provide typical cut sheets to Cameron McKernan. **ACTION Dave Logan**
- 2" drain connections at all low points with elbows, 12" pipe extension, and flange with drain plug for draining of hydro test and unforeseen maintenance.
  Drain Valves would not be reliable or cost effective in such infrequent service.
  Horizontal pipe extension is to allow "freezing" of pitch before attachment of temporary hose for draining to mobile tanker.
- 4/0 grounding cable to be provided from shore ground rod for attachment to ship

2.4. Unloading Line Design Details

2.4.1. Unloading Line Insulation / Heating

- ChemTech completed the standard analysis of "economic" piping insulation thickness for the Koppers fuel cost of $2.65 per Dth and calculated a 2"thickness requirement.
- This thickness is incompatible with the TarTech Standard details selected for the project which specify and require a 4" layer over a 2" layer which is cut in many places to fit over pipe clamps, etc.

- 2" insulation allows ~ 800,000 Btu / hr heat loss over the 1800' line length, which translates to 80 gpm HTF flow and 3" tracer lines to keep head loss below 200'. TarTech insulation and support design details provide for only up to 1.5" piping tracers.
- By mutual agreement the 6" two layer insulation design will be retained for the unloading line to avoid substantial reengineering.

2.4.2. Pipe Support Details

- TarTech drawings showed two inconsistent details for supporting traced pipes with pipe clamps;
  - The best thermal design employed a lower clamp shaped to enclose both the pitch pipe and two tracing lines.
  - The less efficient encloses only the pitch pipe and requires the tracer lines to stand off by the 0.5" clamp thickness.
  - Bill Meisinger agreed to consult with TarTech and advise Cameron of an economic source of the superior design. **ACTION: Bill Meisinger**
- T.J Turner requested at least 30% margin in installed heating capacity to enable recovery of cooled lines. This will be included in final ChemTech calculations unless otherwise directed by Koppers.
- ChemTech suggested use of removable segments of insulation (such as supplied by Topcap) on the ship unloading hose. Koppers will determine further details with Cameron and the Ship operator.
- Considerable discussion focused on heating isolation valves at and near the pier. Selection of the 6" insulation cuts necessary HTF flow to 27 gpm which may be within the capabilities of clamp on jackets (as supplied by Trainer and Controls Southeast).

2.4.3. Impedance Heating Suggestion

- ChemTech suggested consideration of impedance heating for the final ~400' of unloading line near the pier.
  - This could be done with a single 60-70 kva unit with maximum operating voltage of 30v. SCR control would allow close temperature control.
  - All HTF piping over water could be eliminated.
  - Possibly specialized clamp on jackets for valves would be eliminated, heating being provided by electrical current through the valves.
  - Shortening of the HTF loop by 2x 400' would enable a combination of increased heat recovery margin, decreased tracer diameter, or lower pump head and power. This is especially important given the 230' increase in estimated pipe length provided by Cameron McKernan following the meeting.
- Detailed design of the unloading line, including valves, fittings, and heating appliances remains with J. Cameron McKernan.

2.4.4. Electrical Routing along unloading line

- Cameron McKernan will design pipe supports at16' intervals with provisions for conduits to be defined by ChemTech.
- Additional lighting loads were defined for each road crossing and a six place (15' x 50') parking lot near the mooring dolphin access.
- The welding outlet on the dock was deleted. USCG hot work permits are required for all welding over water; Koppers will use their diesel powered welding unit if required.
- ChemTech will define Conduit size, number and weight for support design.
  ACTION Blake Housam

Site Elevations per Cameron McKernan:

- 4' Extreme Low water
- 8' Normal water level
- 15' Maximum unloading water level
- 30' Top of dock
- 32' Grade at Koppers office building and tank area (Confirmed by Survey)
- 32' Gearbulk discharge nozzle above water (to be confirmed by ChemTech / Gearbulk

3. Maintenance Building

- Show the new maintenance building as 40' x 80'; narrow end parallel to the RR track and long side set back 5' from the edge of asphalt alongside the pitch storage building.

4. New Hot Oil Heating System / MCC

4.1. General Arrangement

- Locate new Fired heater adjacent to the existing unit with burner ends aligned.
- Enclose, with new primary pump in concrete paved & curbed oil containment area.
- Extend existing frame MCC building as necessary for new equipment.
  Frame construction is generally accepted in the northwest.
  Show on plans without questions to the permitting authority.

4.1.1. New Primary hot oil pump P-250

- Locate "behind" the new fired heater, adjacent to P-2.
- Consider Dean air cooled models as the design basis (was KSB / SIHI)

4.2. Process Design

- Heat transfer fluid in use at Portland is Exxon Caloria HT-43; not Therminol-66 as previously reported.
- Fume line tracing from tanks T-200 and T-210 will be changed to steam, consistent with the existing header.
- Two Finned Pipe Heating assemblies will be installed in each tank, T-200 and T-210, each sufficient to maintain full tank contents at 400F. This will allow recovery from a one week heating outage in approximately one-week operation of both units in a tank.
- Koppers approved adding Pumps and temperature control valves to tank heating circuits to provide operating capability similar to the trace circuits.
- The new fired heater will be installed in parallel with the existing heater. Isolation and cross-connect valves will enable separate or combined operation of both systems.
- Dick Law of Ponder Burner met with us to describe the finned pipe heating unit successfully backfit in T-68 and the American Heating fired heater. He will provide a technical proposal for both based on preliminary specifications. **ACTION Dick La**

5. Existing Hot Oil System Improvements

T.J. Turner identified two symptoms with the existing system: hydraulic cavitation, and insufficient heating capacity. The following paragraphs report the data obtained and conclusions drawn both during and subsequent to the meeting.

5.1. Hydraulic Cavitation of Secondary Pumps

- Primary pump,
- P-2 SIHI ZTNY 06520: 440 gpm @ 225'
  Nameplate P.O. 002.1B.2
  Serial 193742, 1996
- Secondary Pumps, Nominal Total Capacity 1060 gpm:
  - P-1 SIHI ZTN 6520: 440 gpm @ 225' Serves T-65 Floor coils
  - P-3 SIHI ZTN 6516: 440 gpm @ 130' Serves T-65 Wall coils
  - P-4 SIHI ZTN 4013: 100 gpm @ 100' Serves T-68 Floor coils
  - P-5,6 SIHI ZTN 4020: 40 gpm @ 281' Serves Tracing Circuits (Always on)
  - Cavitation was observed on the primary pump before the head tank connection was moved from its discharge to its suction.

5.1.1. ANALYSIS:

- The total secondary flow demand exceeds twice the available primary flow.
- Operators now avoid Cavitation by limiting the number of secondary pumps in operation.

5.1.2. SOLUTION:

- Convert at least the circuits on P-1 and P-3 to the independent loop configuration planned for the new system.
- Replace the fixed orifice between P-2 Discharge and Suction sections of the primary header with a bypass line with an active flow control valve set to assure constant rated flow through the fired heater.
- Modification requires only relatively short cross connect piping at the pump area and temperature control and isolation valves. A Flow meter is required for primary circuit flow control. Additional control wiring runs from the MCC are short.
- Existing Temperature displays already include the necessary controller functionality.

5.2. Thermal Capacity

T.J. Turner identified the heat-up requirements as follows:

- Nominal Installed Fired Heater Capacity: 8 MMBtu/hr.
  - Recent system test by the vendor cited by vendor (Dick Law) as demonstrating rated performance.
  - Koppers is not fully satisfied with the testing rigor.
- T-65 Melter Thermal Design Load
  - Start with up to 1400 short tons of liquid at 390 F (Typical start on Thursday)
  - Add, up to 1400 short tons of solid at 50 F, over two days
  - Soak two days, (typically the weekend)
  - Heat and circulate two more days for discharge at 400 F.
  - Total active heat input time: 3 days, 72 hours.
- T-68 Mix / Heat-Up tank Thermal Design Load
  - Heat up to 1100 short tons of liquid
  - from 380 to 430 F
  - In 24-30 hours.
- Total

5.2.1. Preliminary ANALYSIS:

- T-65 Melter Thermal Design Load: Heat-up Plus Heat Loss
  - Heat Loss
    61' OD x 29'h tank w 2" insulation and 500 F hot oil coils on the inner wall
    Calculated Loss: 1×10^6 Btu / hr
  - Heat-up
    Average C_P for pitch between 100 and 400 F is 0.4
    Total m Δ T = 2.8 million lb. * (10 F liquid + 350 F solid) = 1×10^9 lb. F.
    Q = C_P m Δ T = 4×10^8 Btu
  - Total Required heat rate = 5×10^8 Btu / 72 hr = 7×10^6 Btu / hr
  - Required HTF flow P-1 & P-3:
    50 F Δ T
    Average C_P for HT-43 at 500 F is 0.6
    G = 7×10^6 / (50 x 0.6) = 2.33×10^5 lb./hr = 650 gpm
- T-68 Mix / Heat-Up tank Thermal Design Load
  - Heat Loss
    Estimated at 0.6×10^6 Btu / hr
  - Heat-up
    Average C_P for pitch at 400 F is 0.45
    Total m Δ T = 2.2 million lb. * (50 F liquid) = 1.1×10^8 lb. F.
    Q = C_P m Δ T = 5×10^7 Btu
  - Total Required heat rate = 5.6×10^7 Btu / 24 hr = 2.3×10^6 Btu / hr
  - Required HTF flow P-4
    50 F Δ T.

Average C_P for HT-43 at 500 F is 0.6
$G = 2.3 \times 10^6 / (50 \times 0.6) = 7.7 \times 10^4$ lb./hr = 215 gpm

- Pipeline Tracer and Hot Oil Piping Loss Heat Load
  - Estimated 1,000' pipe w 2" insulation
  - Calculated heat loss of 180 Btu/hr ft for average 4" line w 1" tracers.
  - Estimate Total miscellaneous losses of 200 MBtu/hr, including losses to supports, etc.
  - Required HTF flow P-5 & P-6: ~ 20 gpm total.
- Primary Loop Energy Balance
  - Heat Load ~ 8 MMBtu/hr
  - Nominal P-2 Pump Flow, 440 gpm = 160,000 lb./hr.
  - Corresponding Δ T = 85 F.
  - Maximum Loop capacity at 50 F Δ T = 4.7 MMBtu/hr

5.2.2. EVALUATION:

- The Total Heat Load of 9.5 MMBtu/hr. exceeds the nominal 8 MMBtu/hr heater capacity
- Alternating heat-up operations in T-65 and T-68 as described are within the system thermal capacity.
- All secondary loops have more than sufficient nominal pumping capacity to operate with 50 F Δ T or less. The hydraulic imbalances noted above, however, compromise useful capacity.
- It is likely that heat transfer surfaces in T-65 and T-68 are designed for minimum hot oil exit temperatures ~ 450 F.
- The primary loop flow provided by P-2 appears to barely more than half that required to remove the full rated output of the heater with just 50 F Δ T, roughly corresponding to a 500F maximum heater output.
- Achievement of full system output requires either, operation at 550F design temperature or supplemental primary loop flow. Additional pump and valving is not recommended in anticipation of reduced need for melting quantity once liquid pitch arrives by ship.
- The hydraulic improvement recommended above will allow simultaneous operation of all loops and reduce operator work load for temperature control.
  The thermal capacity to maintain temperature in T-68 while heating-up in T-65 at the maximum rate, however, is marginal.

GeoEngineers

August 13, 1997

Consulting Engineers and Geoscientists
Offices in Washington, Oregon, and Alaska

Koppers Industries
1005 William Pitt Way
Pittsburgh, Pennsylvania 15238

Attention: Mr. James Dietz

Evaluation of Environmental Concerns
Pile Foundations for Coal Tar Pitch Storage Tanks
Koppers Industries, Inc. Facility
7540 Northwest St. Helens Road
Portland, Oregon
File No. 5823-001-43

INTRODUCTION

GeoEngineers' evaluation of environmental concerns related to pile foundations proposed for three new coal tar pitch storage tanks at the Koppers Industries, Inc. (Koppers) facility is presented in this letter. The site is located on a leased portion of Northwest Natural Gas Company's Gasco facility at 7540 Northwest St. Helens Road in Portland, Oregon. The environmental issues addressed in this letter were initially discussed between representatives of the Oregon Department of Environmental Quality (DEQ), Northwest Natural Gas Company, Hahn and Associates (HAI), Koppers and GeoEngineers in a meeting on May 12, 1997.

Koppers proposes to construct three above-ground storage tanks at the site for bulk storage of imported coal tar pitch. The proposed tanks will be 70 feet in diameter, 50 feet high and will each be capable of storing approximately 6,200 metric tons of coal tar pitch. Each tank will be constructed on a 4-foot-thick insulated concrete pad. A concrete spill containment enclosure will be constructed around each tank. The tanks, concrete pads and enclosures will be supported on driven steel pile foundations. The foundation of each tank will consist of approximately 80 end-bearing piles driven to the competent bearing stratum defined by our 1997 explorations at a depth of approximately 50 to 60 feet below the ground surface.

The Koppers site is mantled by a stratum of generally fine to medium sand and silty sand to approximate depths of 15 to 20 feet below grade. The upper portion of this unit may be hydraulic dredge fill. A unit of moderately compressible silt, clayey silt and silty clay underlies

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the upper sand unit to depths of approximately 30 to 40 feet. Some lenses of sand were observed in the clayey silt unit. The clayey silt unit is likely an aquitard. A silty sand with sandy silt unit underlies the clayey silt unit to approximate depths of 48 to 58 feet at the Koppers site. A dense unit is present at depths of between 53 and 58 feet below the site; the nature of the unit indicates that it is either basalt bedrock or cemented coarse sediments of the Troutdale Formation. This unit is the proposed bearing surface for the pile foundations. Ground water was observed at depths of approximately 6 to 14 feet in explorations completed near the proposed tank locations.

Manufactured gas plant residues are known to be present in the subsurface of the Gasco facility, including the portion leased by Koppers, based on a 1996 study by HAI for Northwest Natural Gas Company. The contaminants are reported to include constituents that are more dense than water, and thus may have a significant gravity-controlled or vertical component of flow. Subsurface contamination at the Koppers site appears to extend into the clayey silt unit to approximate depths of between 17 and 27 feet below grade. Dense, nonaqueous-phase liquid (DNAPL) was observed in the upper sand unit and in the clayey silt unit to depths of 27 feet in explorations completed at the proposed locations of the aboveground storage tanks.

IDENTIFIED ISSUES

Northwest Natural Gas is currently conducting a remedial investigation/feasibility study (RI/FS) at the Gasco facility under an agreement with the DEQ Voluntary Cleanup Program. DEQ and Northwest Natural Gas have requested that the potential effects driven pile foundations have on subsurface contamination and future remediation at the site be evaluated. Specific issues that Koppers was requested to evaluate in the May 12, 1997 meeting include:

1. Potential effects that construction of the tanks may have on future remediation of subsurface contamination detected at the site;
2. The potential for driven-steel pile foundations to result in cross-contamination of deeper zones at the site. In particular, the possibility of contamination being introduced into the lower sand unit by the piles was identified as an issue.

Our evaluation of each of these issues is summarized below.

EVALUATION OF ISSUES

EFFECTS ON POSSIBLE REMEDIES

Construction of the tanks and associated containment and foundation structures will preclude implementation of a remedy in the vicinity of the proposed tanks that involves excavation of contaminants unless the tanks were removed. However, it is our opinion that construction of the tanks will not significantly interfere with available in-situ remedial technologies or removal technologies such as DNAPL recovery and pump and treat. Construction of the tanks may affect

the cost of implementing certain technologies. This is because designing a system that will hydraulically influence the entire area overlain by the tanks and concrete pads may require a different design than if the tanks were not constructed.

POTENTIAL CROSS-CONTAMINATION FROM PILE DRIVING

We have identified two potential mechanisms that could introduce contaminants into deeper strata by driving piles at the site. These include (1) driving contaminated soil ahead of a pile, and/or (2) creating a conduit or preferential pathway for vertical flow of contaminants that are heavier than water. These are discussed below.

Driving Contaminated Material Ahead of Piles

It is our opinion that the volume of contaminated material that could be pushed ahead of a pile is minimal, based on the exposed cross-sectional area of the pile. We believe it is probable that all contaminated material would be pushed aside prior to the pile completely penetrating the clayey silt unit. However, in order to force the displacement of soil from under the pile tips, we recommend that cone-shaped end plates be welded to all piles to minimize the likelihood of contaminants being pushed ahead of the piles. This technique was used during construction of the Pacific Gas Transmission Company (PGT) headquarters because of the potential presence of subsurface contamination associated with the former Lincoln Steam Plant and other industries in the South Waterfront Redevelopment Area in southwest Portland.

Creation Of A Preferential Flow Pathway Next to Piles

The possibility of creating a preferential flow pathway through the clayey silt unit for downward migration of DNAPL along the piles was identified as an issue to be evaluated prior to construction of the tanks. The hypothesized mechanism for creation of a preferential flow pathway would be disturbance of the soil by fracturing or creation of void space next to the pile during driving activities such that the hydraulic conductivity of the soil would be increased. Offsetting this potential fracturing is the compression which occurs in the surrounding soils as the piles is forced through the soil. In order to minimize the potential for creation of a flow path along the sides of piles, the conical closure plates will be fabricated to allow welding of the plate to the pile without protrusion of the weld beyond the edge of the piles. Full penetration welds will be used to provide a watertight joint between the closure plate and the pile walls.

Displacement piles driven through saturated fine grain soils (silts and clays), such as those which exist at depths from about 20 to between 35 and 40 feet at the tank locations, create a supersaturated condition (excess pore pressure) in the zone of soil surrounding the pile. As this excess pressure diminishes, an increased adhesion develops between the soil and the pile wall. The extent to which this "bond" develops can be demonstrated by test-pile driving. The resistance to penetration (blows per foot) is recorded when the pile is initially driven. After a

waiting period 12 to 24 hours or more, the pile is redriven and the number of blows required to break the bond between soil and pile is recorded. The extent to which a bond develops is demonstrated by the change in blow counts during the initial driving and the blow counts required to restart the pile. In our opinion, the adhesion of the clayey silt to the piles will result in permeability characteristics along the sides of the piles which are comparable to the vertical permeability characteristics of the undisturbed soil stratum.

CONCLUSIONS

We have, as part of this evaluation, made numerous inquiries and researched sources (as has the Koppers staff) for possible documentation of monitoring the effects of installing piles in contaminated ground conditions such as at this site. Other than limited personal experience, we have not found any documented tests or studies that address this issue. We do have direct experience on a number of projects where piles were driven through relatively impermeable layers into water bearing strata under artesian pressure. In this situation, flow could develop upward along any pathways created around the piles. We have not, however, observed any upward flow of water around piles even in situations where the artesian pressure exceeded the depth to the top of the aquifer. We consider this a good indication of the sealing which occurs around a pile driven through fine grain soils such as exists on the Koppers site.

We conclude, therefore, that the likelihood of cross-contamination of deeper soil strata as the result of pile driving is remote and that this likelihood is too small to be quantified based on current experience. We believe, further, that the measures which will be taken in preparing the piles for driving and during driving will reduce the potential for cross-contamination to a level below that which exists in the normal test drilling and hole closure procedures required by DEQ.

If you have any questions about this letter, please contact either Jack Tuttle or Walter Burt at (503) 624-9274.

Yours very truly,

GeoEngineers, Inc.

Walter C. Burt, R.G.
Senior Hydrogeologist

Jack K. Tuttle, P.E.
Principal

WCB:JKT:mln
Document ID: 58230011.deq

Four copies submitted

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KOPPERS INDUSTRIES

APPROPRIATION REQUEST FOR ITEMS REQUIRING PRIOR APPROVAL

DIVISION Carbon Materials and Chemicals Division		APPROPRIATION NUMBER	
PLANT OR LOCATION Portland, Oregon		CLASS	DEGREE OF RISK Low
TITLE (Summarize to one line) Liquid Pitch Unloading Terminal		ESTIMATED BEGIN DATE 4th Quarter, 1998	
		ESTIMATED START UP DATE 4th Quarter, 1999	
REQUESTED BY Kevin J Fitzgerald	APPROVED BY 2/25 Turner	DATE OF REQUEST May 20, 1998	

1. DESCRIPTION OF PROPOSED ASSET Dock and unloading pipeline, fume system, heating system and one 7,000 ton pitch storage tank with related material handling and instrumentation.

COSTS		AMOUNT
2. CASH EXPENDITURE		$4,310,000
3. TRADE-IN, SALVAGE OR SCRAP VALUE		
4. EQUIPMENT ON HAND NOT PREVIOUSLY CAPITALIZED		
5. TOTAL OF THIS REQUEST	(2 + 3 + 4)	$4,310,000
6. EQUIPMENT ON HAND PREVIOUSLY CAPITALIZED		
7. ESTIMATED TOTAL COST OF CAPITAL ITEM	(5 + 6)	$4,310,000
8. ESTIMATED WORKING CAPITAL REQUIREMENTS AVERAGE FIVE YEARS	(L22 ADS-230)	
EARNINGS - AVERAGE OF FIRST FIVE YEARS		
9. ESTIMATED INCOME BEFORE INTEREST AND TAXES	(L9 ADS-230)	$2,936,000
10. ESTIMATED NET INCOME AFTER INTEREST AND TAXES	(L13 ADS-230)	$1,604,000
11. % RETURN BEFORE INTEREST AND TAXES ON AVERAGE NET INVESTMENT	(L15 ADS-230)	57.0%
12. % NET RETURN ON AVERAGE NET INVESTMENT	(L16 ADS-230)	31.2%
PAYOUT PERIOD	(L28 ADS-230)	31 months
13. EXPIRATION DATE OF LEASE IF ON LEASED LAND		2008
14. PRESENT AGE IF USED EQUIPMENT		
15. SOURCE OF FUNDS FROM CAPITAL PROGRAM - 1999 expenditures will be included in the 1999 program. 1998 expenditures are included in current capital expenditure forecast.		$0

16. JUSTIFICATION SUMMARY

WHY DO THIS AT ALL? To participate in future aluminum growth in the Northwest as well as protect current pitch profitability.

WHY DO THIS THIS WAY? Current Portland infrastructure is in place and strategically located in center of Northwest aluminum market.

WHY DO THIS NOW It is anticipated that in the near future there will be no unloading facilities for solid pencil pitch.

		BOARD APPROVAL DATE

KII-2.0/vjl 6/93

Portland Liquid Pitch Ship Receiving Facility

Statement of Request

The Carbon Materials and Chemicals Division requests $4,310,000 for the conversion of Koppers' existing solid pitch melting facility at Portland, Oregon to a liquid pitch unloading terminal to retain existing business in the Pacific Northwest and to pursue future growth opportunities in this region.

Source of Funds

Funds will be provided in the 1999 capital expenditure program. The 1998 expenditures will be covered through the deferral of other 1998 capital projects.

Marketing Review

The United States aluminum industry has a current primary aluminum production capacity of 4.2 million metric tons of which 1.6 million metric tons is located in the Northwest (Washington, Oregon and Montana), or a total of 38%. In terms of carbon pitch demand for this industry in the Northwest, there is a demand of 191,000 metric tons at capacity.

We are projecting that the aluminum industry in the Northwest will be operating at 100% of capacity in 1999. Koppers will at that time be supplying 32% of this pitch requirement (15% of our total business). 35%

As we look forward, we are projecting the following changes in the Northwest:

- It is anticipated that the aluminum industry capacity will remain at 100% over the next ten plus years. With the retail wheeling of power and continued cooperation with the Bonneville Power Authority, we see the smelters located in the Northwest being healthy and viable operations and operating at high capacity levels. Furthermore, there have been announcements of construction plans for 2 new smelters in the region for which feasibility studies are being conducted.

- The handling of solid pitch at the port facilities and at the smelters is becoming a very serious issue from both an environmental and worker health areas. Hall-Buck, the contractor we have been using at the Port of Portland for the past 12 years, has notified us that they are ceasing their operation as of June 1998 and will no longer be handling the pitch product because of environmental issues. The only other facility that is currently handling solid pitch in the Northwest is the Port of Longview, Washington facility. It is difficult to say how long the Longview Port will be operating. In fact, they only have an operating permit good through July 2001.

We are planning to utilize the Longview facility once Hall-Buck is out of business; but at a higher cost for unloading and transporting the pitch to the Portland

Koppers005137

terminal. The current costs for unloading and transportation from Portland are $29.31 per ton, $11.44 per ton less than the Longview cost of $40.75 per ton.

The KII pitch melter tank at Portland was constructed in 1992 at a cost of $1.2 million and has provided Koppers the ability to service the Northwest market with import pitch. Plant gross profit over the last 5 years has averaged $1.0 million.

- The trend to convert to liquid pitch by the aluminum industry continues onward. Over the past four years, we have converted the Alcoa Wenatchee Washington and Intalco Washington smelters. The only Northwest smelters remaining on solid pitch are Vanalco, Goldendale Aluminum, Northwest Aluminum and Reynolds, Troutdale. Goldendale and Northwest Aluminum are now under the same ownership. We believe that Goldendale, Northwest and Troutdale will convert to liquid pitch within the next two years. In fact, all three locations have asked us for a proposal to terminal their pitch when they do their conversion. Vanalco will probably hang in until they are forced to do so.

- Smelters are also converting to liquid pitch in other parts of the world. Alba in Bahrain and Dubai in Dubal are converting to liquid this year and Alumar and Albras in Brazil have sent in serious inquiries. All future new smelters such as the one in South Africa (Alusaf) will have liquid tanks to receive their pitch in liquid form.

- Keopyung Steel Co. (KOSCO), in Korea, one of our suppliers of import pitch in the Northwest, and the 100% supplier to the Goldendale and Northwest smelters, has informed us that once these two smelters convert to liquid, they will no longer supply solid pitch – liquid only.

- Our current import program for this year is 53,000 metric tons but because of the decline of crude tars here in North America, our 1999 import pitch program will include a minimum of 68,000 metric tons with a marketing plan to go to 85,000 tons in the year 2000. This is the only way we will be able to protect and maintain our market share. Our major source for import pitch will be KOSCO in Korea who is presently supplying 25,000 tons and an option for another 25,000 tons. Currently discussions are going forward on a seven-year contract extension. In addition, with the assistance of Koppers Australia, we are negotiating a joint venture with TISCO in China that we hope to complete by the end of 1998 for 40,000 tons and are working with Sumitomo in Japan for an additional 15,000 - 20,000 tons.

The primary justification for this project is maintaining our current pitch business and further growing our business through the terminaling of other pitches in the Northwest. As mentioned above, Goldendale, Northwest Aluminum and Reynolds, Troutdale will be in need of a terminaling facility when they convert to liquid. We feel confident that this project will make it very difficult for others to justify a greenfield terminal and will offer Koppers the opportunity to market our terminal

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services.

This appropriation is an important foundation for our future pitch business, not only in the Northwest, but our overall total business. Over the next two to three years, the total pitch requirements in the Northwest will be supplied from offshore sources and will be in liquid form. Koppers, as a global company with various growth initiatives in the pitch area, especially in the Asian market, should be the leader of this transition from solid to liquid pitch handling.

Operations Summary

The proposed project at the Portland terminal includes a 1,400 foot liquid pitch unloading line that will discharge the pitch directly from the ocean vessel into storage tanks. We will construct one new tank, approximately 7,000 metric tons in size, and build future additional tanks as needed. Portland is the ideal location for a liquid pitch terminal, as it is easily accessible by tank truck and rail to all of the smelter locations in the Northwest. We already have the melter tank and a shipping tank in place that have a combined capacity of 4,500 metric tons. Also, we have the necessary workforce and support facilities to operate the proposed facility.

The Portland terminal property is leased from Northwest Natural Gas with the current lease expiring at the end of this year. Koppers and Northwest Gas have agreed on a ten-year lease agreement that is awaiting signature.

The net logistics cost of receiving liquid pitch will be approximately $20.00 per metric ton less than the freight and handling costs of solid pitch. The increased liquid freight costs of approximately $20.00 are offset by the $40.00 per ton savings from unloading and transportation costs for solid pitch resulting in the net savings of $20.00 per ton. We have negotiated a ten-year agreement with Gearbulk Shipping Canada, Ltd. for transportation of liquid pitch from Asia to the Pacific Northwest pending Board approval of this project.

Environmental Statement

An environmental risk assessment has been completed for the pipeline and unloading terminal facilities. Design features have been included to address potential scenarios that will minimize any potential environmental impacts if such worst case incidents do occur. For example, quick acting hot oil shut-off valves are located on land near where the pipe begins its route over water. The valves will be provided to shut off both the pitch and heating oil pipes, and can be remotely operated from the terminal. The pipe construction will include only the absolute minimum number of flanges, with most joints being welded.

Necessary environmental air permits for this installation as well as future expansion have been obtained. The required state waterway permit has also been obtained.

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Financial Summary

In analyzing this project, two cases were developed. The first case, requiring no capital investment, anticipates the closure of Longview to solid pitch unloading upon the expiration of their current permit in July 2001. Closure of the Portland facility would follow with estimated shutdown and clean-up costs of $5.7 million. Solid pitch volume during this period is estimated to be 60,000 metric tons. This material would be sourced from Korea and Japan. Because of the poor quality and resulting environmental problems caused by the Chinese pitch, it will no longer be available without a substantial capital investment. Gross profit would average approximately $1.9 million per year until shutdown.

The second scenario presented is one with the capital investment of $4.3 million and Portland converting to 100% liquid pitch by the year 2002. The facility will start up during the fourth quarter of 1998 and handle both liquid and solid pitch until 2002. Projected volumes are estimated to reach 72,000 metric tons in 2002. This is a conservative estimate in that we already have 63,000 tons of the business and a marketing plan is in place to reach 85,000 tons per year. Gross profit for the Portland facility will average approximately $3.5 million per year.

Construction of the terminal will result in an increase over the shutdown case of earnings before interest and taxes of $2.9 million. Increased net income over the shutdown case will be $1.6 million. The payback period is 31 months.

Equipment List

See attached.

Schedule of Expenditures

Fourth quarter 1998	$300,000
First quarter 1999	950,000
Second quarter 1999	1,000,000
Third quarter 1999	1,000,000
Fourth quarter 1999	1,060,000
Total	$4,310,000

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Dock & Unloading Pipeline:		
Pipeline		$490,295
Dock		$149,134
Dock Access & Bridge		$154,123
Switchgear		$103,000
Instrumentation		$51,500
Lighting		$77,250
Motor Control Center/Components		$15,450
Fire Protection		$77,250
Permitting		$55,826
Paving		$20,600
	Total	$1,194,428
Fume System Piping:		$150,000
Heating System:		
Hot Oil Heater, Piping & Circ. Pumps		$350,000
Instrumentation		$35,000
Motor Control Components		$15,000
	Total	$400,000
Tank:		
Pitch Tank-7000 MT		$378,296
Foundation		$175,077
Yard Slab & Curbing		$78,629
Insulation		$152,955
Instrumentation		$80,179
Valves		$7,314
	Total	$872,450
Material Handling & Loadout:		
Pitch Pumps		$60,000
Motor Control Components		$20,000
Piping		$240,000
	Total	$320,000
Fume Recovery Upgrade:		$90,000
Level Instrumentation:		$30,000
Shop Relocation		$87,550
Future Pitch Tank Piling:		$115,000
	Subtotal	$3,259,428
Engineering (15%)		$488,914
Contingency (15%)		$562,251
	TOTAL PROJECT	$4,310,594

Portland Facility
Summary of Terminal Options
($000)

	1999	2000	2001	2002	2003	2004	6 Year Average	ROI *	Payback Period (Months)
Net Income									
Most Likely	$ 1,356	$ 1,750	$ 1,898	$ 2,105	$ 2,138	$ 2,170	$ 1,903	37.0%	31
Shutdown 2001	1,153	1,104	(2,922)	-	-	-	(111)	-3.9%	
Cash Flow									
Most Likely	$ (2,697)	$ 2,427	$ 2,575	$ 2,782	$ 2,815	$ 2,847	$ 1,791		
Shutdown 2001	1,393	1,344	(2,802)	-	-	-	(11)		

* ROI calculated on total Portland investment.

Portland Pitch Facility
Scenario One - Most Likely
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	21,306	7,950	4,770			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	2,544	17,490	20,670	25,440	25,440	25,440
Total Pitch Sales	Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00	$ 318.00
	M$	23,850	25,440	25,440	25,440	25,440	25,440
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	23,850	25,440	25,440	25,440	25,440	25,440

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	67,000	25,000	15,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,947	4,458	2,675			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,082	1,150	690			
Liquid Pitch	S Tons	8,000	55,000	65,000	80,000	80,000	80,000
	$/Ton	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32	$ 178.32
	M$	1,427	9,808	11,591	14,266	14,266	14,266
Ocean Freight	$/Ton	66.00	66.00	66.00	66.00	66.00	66.00
	M$	528	3,630	4,290	5,280	5,280	5,280
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	670	250	150			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,943	725	435			
Total Pitch Material Cost	S Tons	75,000	80,000	80,000	80,000	80,000	80,000
	$/Ton	$ 261.29	$ 250.26	$ 247.88	$ 244.32	$ 244.32	$ 244.32
	M$	19,597	20,021	19,831	19,546	19,546	19,546

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	377	377	377	377
Fuel & Utilities	M$	375	400	400	400	400	400
Maintenance	M$	100	190	190	190	190	190
Other Operating	M$	300	300	300	300	300	300
Depreciation	M$	247	677	677	677	677	677
Existing Investment		247	247	247	247	247	247
New Capital Expenditure		-	430	430	430	430	430
Other Fixed	M$	300	300	300	300	300	300
Total Operating Cost	M$	1,699	2,244	2,244	2,244	2,244	2,244
Operating Cost per Ton		$ 22.65	$ 28.05	$ 28.05	$ 28.05	$ 28.05	$ 28.05
Operating Cost per Ton - Excl. Depr.		$ 19.36	$ 19.59	$ 19.59	$ 19.59	$ 19.59	$ 19.59
Cost of Sales	M$	21,296	22,265	22,075	21,790	21,790	21,790
Gross Profit	M$	2,554	3,175	3,365	3,650	3,650	3,650
Provision for Interest	8%	324	297	243	189	135	81
Income before Taxes		2,230	2,878	3,122	3,462	3,516	3,570
Provision for Income Taxes	39.2%	874	1,128	1,224	1,357	1,378	1,399
Net Income	M$	$1,356	$1,750	$1,898	$2,105	$2,138	$2,170

Portland Pitch Facility
Scenario Two - Shutdown 2001
Earnings Statement

Net Sales		1999	2000	2001	2002	2003	2004
Melted Pitch	S Tons	66,000	66,000	33,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	20,988	20,988	10,494			
Liquid Pitch	S Tons		-	-			
	$/Ton		$ 318.00	$ 318.00			
	M$		-	-			
Total Pitch Sales	Tons	66,000	66,000	33,000			
	$/Ton	$ 318.00	$ 318.00	$ 318.00			
	M$	20,988	20,988	10,494			
Intalco							
Terminal Fee @ $50,000 Month	M$						
Handling Fee @ $21 MT	M$						
Total Net Sales	M$	20,988	20,988	10,494			

Material Cost		1999	2000	2001	2002	2003	2004
Solid Pitch	S Tons	66,000	66,000	33,000			
	$/Ton	$ 178.32	$ 178.32	$ 178.32			
	M$	11,769	11,769	5,885			
Ocean Freight	$/Ton	46.00	46.00	46.00			
	M$	3,036	3,036	1,518			
Liquid Pitch	S Tons		-	-			
	$/Ton		$ 178.32	$ 178.32			
	M$		-	-			
Ocean Freight	$/Ton		66.00	66.00			
	M$		-	-			
Freight - Longview to Portland	$/Ton	10.00	10.00	10.00			
	M$	660	660	330			
Stevedore & Inland Freight	$/Ton	29.00	29.00	29.00			
	M$	1,914	1,914	957			
Total Pitch Material Cost	S Tons	66,000	66,000	33,000			
	$/Ton	$ 263.32	$ 263.32	$ 263.32			
	M$	17,379	17,379	8,690			

Operating Costs		1999	2000	2001	2002	2003	2004
Labor Costs	M$	377	377	189			
Fuel & Utilities	M$	330	330	165			
Maintenance	M$	100	190	95			
Other Operating	M$	300	300	150			
Depreciation	M$	240	240	120			
Existing Investment		240	240	120			
New Capital Expenditure							
Other Fixed	M$	300	300	150			
Terminal Shutdown Charges							
Severance	M$			400			
Cleanup & Dismantling	M$			5,300			
Total Operating Cost	M$	1,647	1,737	6,569	-		
Operating Cost per Ton		$ 24.95	$ 26.32	$ 199.05			
Operating Cost per Ton - Excl. Depr.		$ 21.32	$ 22.68	$ 195.41			
Cost of Sales	M$	19,026	19,116	15,258	-	-	
Gross Profit	M$	1,962	1,872	(4,764)	-	-	
Provision for Interest	8%	66	56	42			
Income before Taxes		1,896	1,815	(4,806)			
Provision for Income Taxes	39.2%	743	712	(1,884)			
Net Income	M$	$1,153	$1,104	($2,922)			

Please Expedite

KOPPERS INDUSTRIES

CARBON MATERIALS & CHEMICALS DIVISION

CAPITAL EXPENDITURE REQUEST (CER) - CIRCULATION

		Initials	Date
James T. Dietz	UPARC - Engineering		5/13/98
Joseph J. Calfe	UPARC - Purchasing		5-14-98
John J. Kunkle	K - 1600		5/14/98
Kevin J. Fitzgerald	K - 1600		5/17/98
Kathleen Roberts	K - 1726		
Donald Davis	K - 1700		5/18/98

J & J TRUCKING

7117 NE 47th Ave. • Vancouver, WA 98661

DATE 9-1-05 OREGON MILES 200 OFFROAD MILES 8 WASHINGTON MILES 14

MATERIAL HAULED Cold Tar CUSTOMER Koppers JOB NO.

PICKUP SITE Koppers DELIVERY SITE Hillsboro landfill

FUEL TRK # 970 TRLR # 9702P OR PUC# TARE WT

START SITE 530 LUNCH non END SITE 4 15 JOB HRS 10 3/4

YARD START 5 YARD END 5 TOTAL HRS 12

DELIVERED TO	PLANT TIME IN	PLANT TIME OUT	DUMP TIME IN	DUMP TIME OUT	DOWN TIME OR STANDBY	NET TONS HAULED	NET YARDS HAULED	REMARKS OR HAUL TKT #
1	530	555	640	705			1803	915214
2	805	825	920	940			2308	915311
3	1035	1055	1150	1205			2240	915428
4	1	2	3	315			2195	915539
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
TOTALS								

A NEW FORM MUST BE USED FOR EACH JOB

OWNER/OPERATOR RESPONSIBLE FOR ALL INSURANCE AND ANY/ALL PROPERTY DAMAGE. **TICKETS MUST BE SIGNED AND SUBMITTED AT THE END OF EACH DAY FOR PAYMENT.**

RECORD YOUR TIME TO THE NEAREST 1/4 HOUR ON TOTAL HOURS ONLY. IT IS YOUR RESPONSIBILITY TO GET ALL TICKETS SIGNED. CHARGE STANDBY TIME FOR ANYTHING OVER 15 MINUTES. IF YOU DON'T GET IT ON YOUR TICKET YOU WILL NOT BE PAID FOR IT.

CONTRACTING COMPANY SIGNATURE X

DRIVER NAME Joe Woodrow (PRINTED) DRIVER SIGNATURE X

INVOICE NO.

JOB #

PREVAIL WAGE ☐ YES ☐ NO

RATE

6560

WHITE - BILLING • CANARY - BILLING • PINK - CUSTOMER • GREEN - FUEL TAX • BLUE - PAYROLL • GOLDENROD - DRIVER

Koppers005146

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915214

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 9/1/2005 Vehicle# 104 Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	6:45 AM	Inbound 1	TMM	Gross	78640	LBS
Out	7:02 AM	Outbound	tmm	Tare	42580	LBS
				Net	36060	LBS
				Tons		18.03

Comments HLD BY J & J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	18.03	Tons	39.21000	484.89	$706.96	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $484.89
Total Ticket $1194.85

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915214

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 9/1/2005 Vehicle# 104 Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	6:45 AM	Inbound 1	TMM	Gross	78640	LBS
Out	7:02 AM	Outbound	tmm	Tare	42580	LBS
				Net	36060	LBS
				Tons	18.03	

Comments HLD BY J & J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	18.03	Tons	39.21000	484.89	$706.96	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $484.89
Total Ticket $1194.85

Driver's Signature
403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915311

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier J & J TRUCKING DUMP TRUCKS
Ticket Date 9/1/2005 Vehicle# 000 Volume
Payment Type Credit Account Container
Manual Ticket# Driver
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	9:15 AM	Manual	BML	Gross	88740	LBS
Out	9:15 AM	Manual	BML	Tare	42580	LBS
				Net	46160	LBS
				Tons	23.08	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	23.08	Tons	39.21000	620.70	$904.97	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $620.70
Total Ticket $1528.67

Driver's Signature
403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915311

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/1/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# 000 Volume
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator
In	9:15 AM	Manual	BML
Out	9:15 AM	Manual	BML

Gross	88740	LBS
Tare	42580	LBS
Net	46160	LBS
Tons	23.08	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	23.08	Tons	39.21000	620.70	$904.97	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $620.70
Total Ticket $1528.67

Driver's Signature
403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915428

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/1/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# JR
Container
Driver JOE WOODCOCK
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator			
In	11:46 AM	Inbound 1	JLR	Gross	87380	LBS
Out	11:46 AM		JLR	Tare	42580	LBS
				Net	44800	LBS
				Tons	22.40	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.40	Tons	39.21000	602.41	$878.30	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $602.41
Total Ticket $1483.71

Driver's Signature
403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915428

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/1/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# JR
Container
Driver JOE WOODCOCK
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator			
In	11:46 AM	Inbound 1	JLR	Gross	87380	LBS
Out	11:46 AM		JLR	Tare	42580	LBS
				Net	44800	LBS
				Tons	22.40	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.40	Tons	39.21000	602.41	$878.30	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $602.41
Total Ticket $1483.71

Driver's Signature

403WM

Koppers005152

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915539

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/1/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# 000 Volume
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator			
In	2:57 PM	Manual	BML	Gross	86480	LBS
Out	2:57 PM		BML	Tare	42580	LBS
				Net	43900	LBS
				Tons	21.95	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.95	Tons	39.21000	590.31	$860.66	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $590.31
Total Ticket $1453.97

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915539

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/1/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# 000 Volume
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator
In	2:57 PM	Manual	BML
Out	2:57 PM		BML

Gross	86480	LBS
Tare	42580	LBS
Net	43900	LBS
Tons	21.95	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.95	Tons	39.21000	590.31	$860.66	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax	$590.31
Total Ticket	$1453.97

Driver's Signature

403WM

J & J TRUCKING

7117 NE 47th Ave. • Vancouver, WA 98661

DATE 9-2-05 OREGON MILES _____ OFFROAD MILES _____ WASHINGTON MILES _____

MATERIAL HAULED Cold Pitch CUSTOMER Koppers JOB NO. _____

PICKUP SITE Koppers DELIVERY SITE Hills bore land fill

FUEL _____ TRK # 9702 TRLR # 9702P OR PUC# _____ TARE WT _____

START SITE 5-30 LUNCH none END SITE 145 JOB HRS 8½

YARD START 5 YARD END _____ TOTAL HRS _____

DELIVERED TO	PLANT TIME IN	PLANT TIME OUT	DUMP TIME IN	DUMP TIME OUT	DOWN TIME OR STANDBY	NET TONS HAULED	NET YARDS HAULED	REMARKS OR HAUL TKT #
1	530	6	645	710		14 47		915600
2	750	815	905	930		22 57		915666
3	1020	11 10	1205	1235		14 21		915780
4								
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17								
18								
19								
20								
21								
22								
TOTALS								

A NEW FORM MUST BE USED FOR EACH JOB

OWNER/OPERATOR RESPONSIBLE FOR ALL INSURANCE AND ANY/ALL PROPERTY DAMAGE. **TICKETS MUST BE SIGNED AND SUBMITTED AT THE END OF EACH DAY FOR PAYMENT.**

RECORD YOUR TIME TO THE NEAREST 1/4 HOUR ON TOTAL HOURS ONLY. IT IS YOUR RESPONSIBILITY TO GET ALL TICKETS SIGNED. CHARGE STANDBY TIME FOR ANYTHING OVER 15 MINUTES. IF YOU DON'T GET IT ON YOUR TICKET YOU WILL NOT BE PAID FOR IT.

CONTRACTING COMPANY SIGNATURE X

DRIVER NAME Joe Woodcock (PRINTED) DRIVER SIGNATURE X

INVOICE NO.

JOB #

PREVAIL WAGE ☑ YES ☐ NO

RATE

6561

WHITE - BILLING • CANARY - BILLING • PINK - CUSTOMER • GREEN - FUEL TAX • BLUE - PAYROLL • GOLDENROD - DRIVER

Koppers005155

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915666

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/2/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest na
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# truck
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator
In	9:03 AM	Inbound 2	tmm
Out	9:03 AM		tmm

Gross	87700	LBS
Tare	42560	LBS
Net	45140	LBS
Tons	22.57	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1. Special Misc-Ton	100	22.57	Tons	39.21000	606.98	$884.97	MULT-IN
2. EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $606.98
Total Ticket $1494.95

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915666

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier J & J TRUCKING DUMP TRUCKS
Ticket Date 9/2/2005 Vehicle# truck Volume
Payment Type Credit Account Container
Manual Ticket# Driver
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest na State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	9:03 AM	Inbound 2	tmm	Gross	87700	LBS
Out	9:03 AM		tmm	Tare	42560	LBS
				Net	45140	LBS
				Tons	22.57	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.57	Tons	39.21000	606.98	$884.97	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $606.98
Total Ticket $1494.95

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915780

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 9/2/2005 Vehicle# 00 Volume
Payment Type Credit Account Container
Manual Ticket# Driver joe woodcock
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest na State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	12:06 PM	Manual	hdg	Gross	70980	LBS
Out	12:06 PM		hdg	Tare	42560	LBS
				Net	28420	LBS
				Tons	14.21	

Comments j&j trking

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	14.21	Tons	39.21000	382.15	$557.17	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $382.15
Total Ticket $942.32

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915600

Customer Name WASHCOFACILI WASH CO FACILITIE
Carrier J & J TRUCKING DUMP TRUCKS
Ticket Date 9/2/2005
Vehicle# 135
Volume
Payment Type Credit Account
Container
Manual Ticket#
Driver JOE
Hauling Ticket#
Check#
Route
Billing # 0001188
State Waste Code
Gen EPA ID NA
Manifest NA
State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	6:46 AM	Inbound 1	TMM	Gross	71500	LBS
Out	7:00 AM	Outbound	tmm	Tare	42560	LBS
				Net	28940	LBS
				Tons		14.47

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	14.47	Tons	39.21000	389.14	$567.37	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $389.14
Total Ticket $959.51

403WM
Driver's Signature

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 915600

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 9/2/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier J & J TRUCKING DUMP TRUCKS
Vehicle# 135
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator
In	6:46 AM	Inbound 1	TMM
Out	7:00 AM	Outbound	tmm

Gross	71500	LBS
Tare	42560	LBS
Net	28940	LBS
Tons	14.47	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	14.47	Tons	39.21000	389.14	$567.37	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $389.14
Total Ticket $959.51

403WM
Driver's Signature

Koppers005160

J & J TRUCKING

7117 NE 47th Ave. • Vancouver, WA 98661

DATE 8-30-05 OREGON MILES 199 OFFROAD MILES 8 WASHINGTON MILES 14

MATERIAL HAULED Cold Tar Tank Bottoms CUSTOMER Koppers JOB NO.

PICKUP SITE Koppers DELIVERY SITE Hillsboro landfill

FUEL TRK # 9702 TRLR # 9702P OR PUC# TARE WT

START SITE 530 LUNCH none END SITE 4 JOB HRS 10½

YARD START 5 YARD END 445 TOTAL HRS 11¾

DELIVERED TO	PLANT TIME IN	PLANT TIME OUT	DUMP TIME IN	DUMP TIME OUT	DOWN TIME OR STANDBY	NET TONS HAULED	NET YARDS HAULED	REMARKS OR HAUL TKT #
1	530	610	655	725			2136	914615
2	815	850	940	10			2154	914675
3	1040	11	1155	1220			2291	914747
4	105	125	215	305			2287	914818
5								
6								
7								
8								
9								
10								
11								
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13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
TOTALS								

A NEW FORM MUST BE USED FOR EACH JOB

OWNER/OPERATOR RESPONSIBLE FOR ALL INSURANCE AND ANY/ALL PROPERTY DAMAGE. **TICKETS MUST BE SIGNED AND SUBMITTED AT THE END OF EACH DAY FOR PAYMENT.**

RECORD YOUR TIME TO THE NEAREST 1/4 HOUR ON TOTAL HOURS ONLY. IT IS YOUR RESPONSIBILITY TO GET ALL TICKETS SIGNED. CHARGE STANDBY TIME FOR ANYTHING OVER 15 MINUTES. IF YOU DON'T GET IT ON YOUR TICKET YOU WILL NOT BE PAID FOR IT.

CONTRACTING COMPANY SIGNATURE X

DRIVER NAME Joe Haddock (PRINTED) DRIVER SIGNATURE X

INVOICE NO.

JOB #

PREVAIL WAGE ☑ YES ☐ NO

RATE

6558

WHITE - BILLING • CANARY - BILLING • PINK - CUSTOMER • GREEN - FUEL TAX • BLUE - PAYROLL • GOLDENROD - DRIVER

Koppers005161

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Pb: (503)-640-9427

Original
Ticket# 914615

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/30/2005 Vehicle# 129 Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	6:56 AM	Inbound 1	tmm	Gross	85040	LBS
Out	7:19 AM	Outbound	tmm	Tare	42320	LBS
				Net	42720	LBS
				Tons	21.36	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.36	Tons	39.21000	574.44	$837.53	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $574.44
Total Ticket $1414.97

Driver's Signature
403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Rh: (503)-640-9427

Original
Ticket# 914615

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/30/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# 129 Volume
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator
In	6:56 AM	Inbound 1	tmm
Out	7:19 AM	Outbound	tmm

Gross	85040	LBS
Tare	42320	LBS
Net	42720	LBS
Tons	21.36	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.36	Tons	39.21000	574.44	$837.53	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax	$574.44
Total Ticket	$1414.97

Driver's Signature
403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914675

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/30/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest na
PO na
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# 137 Volume
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator			
In	9:44 AM	Inbound 1	bml	Gross	85400	LBS
Out	9:44 AM		bml	Tare	42320	LBS
				Net	43080	LBS
				Tons	21.54	

Comments hld by j & j

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.54	Tons	39.21000	579.28	$844.58	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $579.28
Total Ticket $1426.86

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914675

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/30/2005 Vehicle# 137 Volume
Payment Type Credit Account Container
Manual Ticket# Driver
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest na State Gen ID
PO na
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	9:44 AM	Inbound 1	bml	Gross	85400	LBS
Out	9:44 AM		bml	Tare	42320	LBS
				Net	43080	LBS
				Tons	21.54	

Comments hld by j & j

Consumer Comments? We want to know. Please call.

WASTE MANAGEMENT

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.54	Tons	39.21000	579.28	$844.58	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $579.28
Total Ticket $1426.86

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914747

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/30/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# 131 Volume
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator			
In	12:02 PM	Manual	hdg	Gross	88140	LBS
Out	12:02 PM		hdg	Tare	42320	LBS
				Net	45820	LBS
				Tons	22.91	

Comments HLD BY J&J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.91	Tons	39.21000	616.13	$898.30	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $616.13
Total Ticket $1517.43

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914747

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/30/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# 131 Volume
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator
In	12:02 PM	Manual	hdg
Out	12:02 PM		hdg

Gross	88140	LBS
Tare	42320	LBS
Net	45820	LBS
Tons	22.91	

Comments HLD BY J&J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.91	Tons	39.21000	616.13	$898.30	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $616.13
Total Ticket $1517.43

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914818

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/30/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# J & J TRKG Volume
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator
In	2:15 PM	Inbound 2	TMM
Out	2:15 PM		TMM

Gross	88060	LBS
Tare	42320	LBS
Net	45740	LBS
Tons	22.87	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.87	Tons	39.21000	615.05	$896.73	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $615.05
Total Ticket $1514.78

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914818

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/30/2005 Vehicle# J & J TRKG Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	2:15 PM	Inbound 2	TMM	Gross	88060	LBS
Out	2:15 PM		TMM	Tare	42320	LBS
				Net	45740	LBS
				Tons	22.87	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1. Special Misc-Ton	100	22.87	Tons	39.21000	615.05	$896.73	MULT-IN
2. EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $615.05
Total Ticket $1514.78

Driver's Signature

403WM

J & J TRUCKING

7117 NE 47th Ave. • Vancouver, WA 98661

DATE 8-29-05 OREGON MILES _____ OFFROAD MILES 8 WASHINGTON MILES 14

MATERIAL HAULED Cold Tar Tank bottoms CUSTOMER Koppers JOB NO. _____

PICKUP SITE Koppers DELIVERY SITE Hillsboro land Fill

FUEL _____ TRK # 9702 TRLR # 9702P OR PUC# _____ TARE WT _____

START SITE 545 LUNCH none END SITE 415 JOB HRS 10½

YARD START 5 YARD END 5 TOTAL HRS 12

DELIVERED TO	PLANT TIME IN	PLANT TIME OUT	DUMP TIME IN	DUMP TIME OUT	DOWN TIME OR STANDBY	NET TONS HAULED	NET YARDS HAULED	REMARKS OR HAUL TKT #
1	545	625	715	745		2294		914295
2	905	940	1025	1045		2195		914433
3	1130	12	1245	105		2152		914476
4	150	215	305	330		2138		
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16								
17								
18								
19								
20								
21								
22								
TOTALS								

A NEW FORM MUST BE USED FOR EACH JOB

OWNER/OPERATOR RESPONSIBLE FOR ALL INSURANCE AND ANY/ALL PROPERTY DAMAGE. **TICKETS MUST BE SIGNED AND SUBMITTED AT THE END OF EACH DAY FOR PAYMENT.**

RECORD YOUR TIME TO THE NEAREST 1/4 HOUR ON TOTAL HOURS ONLY. IT IS YOUR RESPONSIBILITY TO GET ALL TICKETS SIGNED. CHARGE STANDBY TIME FOR ANYTHING OVER 15 MINUTES. IF YOU DON'T GET IT ON YOUR TICKET YOU WILL NOT BE PAID FOR IT.

CONTRACTING COMPANY SIGNATURE X _____

DRIVER NAME Joe Woodcock (PRINTED) DRIVER SIGNATURE X _____

INVOICE NO.

JOB #

PREVAIL WAGE ☐ YES ☐ NO

RATE

6557

WHITE - BILLING • CANARY - BILLING • PINK - CUSTOMER • GREEN - FUEL TAX • BLUE - PAYROLL • GOLDENROD - DRIVER

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914295

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/29/2005 Vehicle# 131 Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	7:21 AM	Inbound 1	tmm	Gross	88100	LBS
Out	7:40 AM	Outbound	tmm	Tare	42220	LBS
				Net	45880	LBS
				Tons	22.94	

Comments HLD BY J & J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.94	Tons	39.21000	616.94	$899.48	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $616.94
Total Ticket $1519.42

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914295

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/29/2005 Vehicle# 131 Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	7:21 AM	Inbound 1	tmm	Gross	88100	LBS
Out	7:40 AM	Outbound	tmm	Tare	42220	LBS
				Net	45880	LBS
				Tons	22.94	

Comments HLD BY J & J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	22.94	Tons	39.21000	616.94	$899.48	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $616.94
Total Ticket $1519.42

Driver's Signature

403WM

Koppers005172

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914433

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/29/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# JR
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator			
In	11:16 AM	Inbound 1	JLR	Gross	86100	LBS
Out	11:16 AM		JLR	Tare	42200	LBS
				Net	43900	LBS
				Tons	21.95	

Comments FRM HAND TICKET 4195
HLD By J & J TRK

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.95	Tons	39.21000	590.31	$860.66	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $590.31
Total Ticket $1453.97

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914433

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/29/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO NA
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# JR
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator		
In	11:16 AM	Inbound 1	JLR	Gross	86100 LBS
Out	11:16 AM		JLR	Tare	42200 LBS
				Net	43900 LBS
				Tons	21.95

Comments FRM HAND TICKET 4195
HLD By J & J TRK

Consumer Comments? We want to know. Please call.

WASTE MANAGEMENT

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.95	Tons	39.21000	590.31	$860.66	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $590.31
Total Ticket $1453.97

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914476

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/29/2005 Vehicle# jr Volume
Payment Type Credit Account Container
Manual Ticket# Driver joe
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest na State Gen ID
PO na
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	12:47 PM	Inbound 2	jlr	Gross	85260	LBS
Out	12:47 PM		jlr	Tare	42220	LBS
				Net	43040	LBS
				Tons	21.52	

Comments hld by j&j trking

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.52	Tons	39.21000	578.74	$843.80	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $578.74
Total Ticket $1425.54

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914476

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/29/2005 Vehicle# jr Volume
Payment Type Credit Account Container
Manual Ticket# Driver joe
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest na State Gen ID
PO na
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	12:47 PM	Inbound 2	jlr	Gross	85260	LBS
Out	12:47 PM		jlr	Tare	42220	LBS
				Net	43040	LBS
				Tons	21.52	

Comments hld by j&j trking

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.52	Tons	39.21000	578.74	$843.80	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $578.74
Total Ticket $1425.54

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914538

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/29/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest na
PO na
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# 000 Volume
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator			
In	3:07 PM	Inbound 1	bml	Gross	84980	LBS
Out	3:07 PM		bml	Tare	42220	LBS
				Net	42760	LBS
				Tons	21.38	

Comments hld by j & j

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.38	Tons	39.21000	574.97	$838.31	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $574.97
Total Ticket $1416.28

Driver's Signature

403WM

Koppers005177

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914538

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/29/2005 Vehicle# 000 Volume
Payment Type Credit Account Container
Manual Ticket# Driver
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest na State Gen ID
PO na
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	3:07 PM	Inbound 1	bml	Gross	84980	LBS
Out	3:07 PM		bml	Tare	42220	LBS
				Net	42760	LBS
				Tons	21.38	

Comments hld by j & j

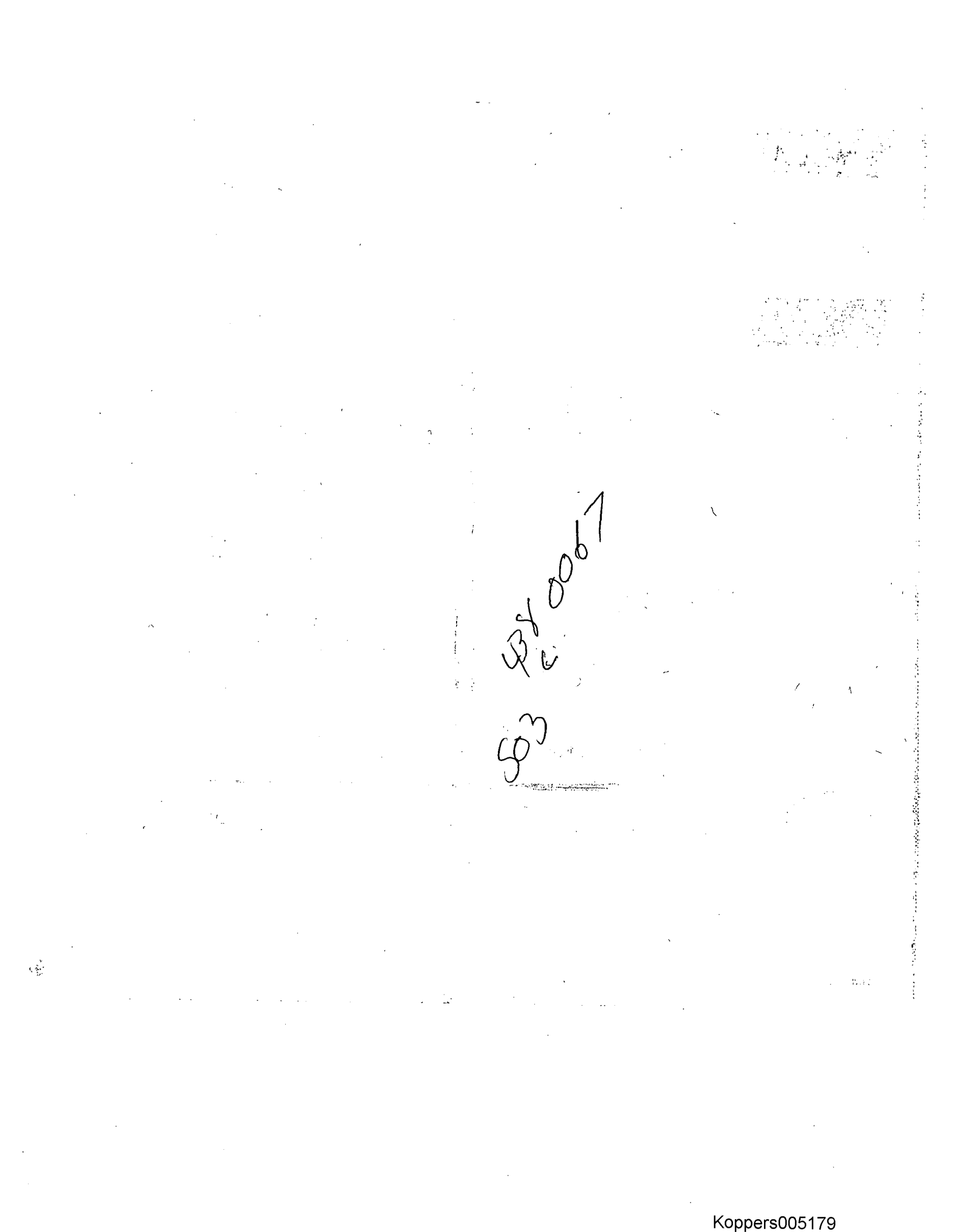
Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	21.38	Tons	39.21000	574.97	$838.31	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $574.97
Total Ticket $1416.28

Driver's Signature

403WM



4380067

503

J & J TRUCKING

7117 NE 47th Ave. • Vancouver, WA 98661

DATE 8-31-05 OREGON MILES 200 OFFROAD MILES 8 WASHINGTON MILES 14

MATERIAL HAULED Cold Pitch Bottoms CUSTOMER Koppers JOB NO.

PICKUP SITE Koppers DELIVERY SITE Hillsboro Landfill

FUEL TRK # 9702 TRLR # 9702P OR PUC# TARE WT

START SITE 530 LUNCH none END SITE 345 JOB HRS 10¼

YARD START 5 YARD END 490 TOTAL HRS 11½

DELIVERED TO	PLANT TIME IN	PLANT TIME OUT	DUMP TIME IN	DUMP TIME OUT	DOWN TIME OR STANDBY	NET TONS HAULED	NET YARDS HAULED	REMARKS OR HAUL TKT #
1	530	550	635	7		17 65		914905
2	750	815	905	930		24 15		914924
3	1015	1045	1135	12		22 37		4299
4	1255	110	215	240		22 15		4380
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
TOTALS								

A NEW FORM MUST BE USED FOR EACH JOB

OWNER/OPERATOR RESPONSIBLE FOR ALL INSURANCE AND ANY/ALL PROPERTY DAMAGE. **TICKETS MUST BE SIGNED AND SUBMITTED AT THE END OF EACH DAY FOR PAYMENT.**

RECORD YOUR TIME TO THE NEAREST 1/4 HOUR ON TOTAL HOURS ONLY. IT IS YOUR RESPONSIBILITY TO GET ALL TICKETS SIGNED. CHARGE STANDBY TIME FOR ANYTHING OVER 15 MINUTES. IF YOU DON'T GET IT ON YOUR TICKET YOU WILL NOT BE PAID FOR IT.

CONTRACTING COMPANY SIGNATURE X

DRIVER NAME Ted Woodcock (PRINTED) DRIVER SIGNATURE X

INVOICE NO.

JOB #

PREVAIL WAGE ☐ YES ☐ NO

RATE

6559

WHITE - BILLING • CANARY - BILLING • PINK - CUSTOMER • GREEN - FUEL TAX • BLUE - PAYROLL • GOLDENROD - DRIVER

Koppers005180

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914905

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/31/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# 135 Volume
Container
Driver JOE
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

	Time	Scale	Operator
In	6:34 AM	Inbound 1	TMM
Out	6:52 AM	Outbound	TMM

Gross	77900	LBS
Tare	42600	LBS
Net	35300	LBS
Tons	17.65	

Comments HLD BY J & J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	17.65	Tons	39.21000	474.67	$692.06	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $474.67
Total Ticket $1169.73

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914905

Customer Name WASHCOFACILI WASH CO FACILITIE Carrier SELFHLD SELF HAULED
Ticket Date 8/31/2005 Vehicle# 135 Volume
Payment Type Credit Account Container
Manual Ticket# Driver JOE
Hauling Ticket# Check#
Route Billing # 0001188
State Waste Code Gen EPA ID NA
Manifest NA State Gen ID
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

	Time	Scale	Operator			
In	6:34 AM	Inbound 1	TMM	Gross	77900	LBS
Out	6:52 AM	Outbound	TMM	Tare	42600	LBS
				Net	35300	LBS
				Tons	17.65	

Comments HLD BY J & J

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	17.65	Tons	39.21000	474.67	$692.06	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax $474.67
Total Ticket $1169.73

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914974

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/31/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# J & J
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator
In	9:05 AM	Inbound 2	TMM
Out	9:05 AM		TMM

Gross	90900	LBS
Tare	42600	LBS
Net	48300	LBS
Tons	24.15	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1. Special Misc-Ton	100	24.15	Tons	39.21000	649.48	$946.92	MULT-IN
2. EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax	$649.48
Total Ticket	$1599.40

Driver's Signature

403WM

WASTE MANAGEMENT

Hillsboro Landfill, I
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 914974

Customer Name WASHCOFACILI WASH CO FACILITIE
Ticket Date 8/31/2005
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest NA
PO
Profile 2560 (SOLID COAL TAR PITCH, OFF-SPEC CHEMICALS, PITCH COKE)
Generator 168-KOPPERSIN KOPPERS INDUSTRIES

Carrier SELFHLD SELF HAULED
Vehicle# J & J
Container
Driver
Check#
Billing # 0001188
Gen EPA ID NA
State Gen ID

Volume

	Time	Scale	Operator
In	9:05 AM	Inbound 2	TMM
Out	9:05 AM		TMM

Gross	90900	LBS
Tare	42600	LBS
Net	48300	LBS
Tons	24.15	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1.Special Misc-Ton	100	24.15	Tons	39.21000	649.48	$946.92	MULT-IN
2.EVL-Env Fee Lg.	100	1.00	Load	3.00000		$3.00	

Total Tax	$649.48
Total Ticket	$1599.40

Driver's Signature

403WM

WASTE MANAGEMENT

Commercial Weight Form

Hillsboro Landfill
A Subsidiary of Waste Management
3205 SE Minter Bridge Rd
Hillsboro, OR 97123
503-640-9427

NC 4299

Hauler J & J Trking Date 8/31/05 Time _____

Metro: ☒ In ☐ Out Address Mult

Drivers Name: (Please Print) Joe Woodcock

Truck #

PO or Job Number _____ Box Size _____ Box # _____

Material Type:

1. Construction & Demolition Debris ☐
2. Special Waste ☒
3. Yard Debris or Wood ☐
4. Clean (Brite) Wood ☐

Gross Weight 87340 42600

Permit # 2560

Yards _____

Yards _____

Driver's Signature: _____

Koppers005185

WASTE MANAGEMENT

Commercial Weight Form

Hillsboro Landfill
A Subsidiary of Waste Management
3205 SE Minter Bridge Rd
Hillsboro, OR 97123
503-640-9427

№ 4380

Hauler J & J TRKing Date 8/31 Time _____

Metro: ☐ In ☐ Out Address mutt

Drivers Name: (Please Print)	Truck #

PO or Job Number _____ Box Size _____ Box # _____

Material Type:

1. Construction & Demolition Debris ☐
2. Special Waste ☒
3. Yard Debris or Wood ☐
4. Clean (Brite) Wood ☐

Gross Weight 86900 / 42600

Permit # 2560

Yards _____

Yards _____

Driver's Signature: _____

Koppers005186

Invoice

211-717161 900524045 381292 853470

KOPPERS

Koppers Inc. 0483
436 Seventh Avenue
Pittsburgh, Pa. 15219-1800
Telephone (412) 227-2001
Fax (412) 227-2202

Important
Make checks payable to Koppers Inc. and mail to:
Koppers Inc.
P.O. Box 73438
Cleveland OH 44193

Invoice Number	Invoice Date	Customers Purchase Order or Contract Number	Salesmans Name
0060-01845	06/24/04	DIANE	INDUSTRIAL P

Sold To
KOPPERS INC.
7450 N W ST. HELENS RD
(FR FOLL)
PORTLAND OR 97229

Shipped To
KOPPERS INC.
7450 N W ST. HELENS RD
PORTLAND OR 97229

Shipped From	Date Shipped Mo. Day Yr.	Bill of Lading Number	Routed Via
CHICAGO, IL	06/24/04	SEE BELOW	CN- (CHGO) -BNSF

Title Passes F.O.B. Shipping Point	Freight Terms	Freight Basis
	FOB SHIPPING PLANT	PREPAID

Payment Terms	Car or Vehicle Initials and Number
INTERPLANT	SEE BELOW

Commodity Description	Price	Uni	Quantity Shipped	Amount
1 TC COAL TAR DISTILLATE DH	.0815	LB	99900	814185
70119 17200001 02 055 0099900.000				
OF 0060 CF 0000 OT 9270 CT 0000				
PLUS PREPAID FREIGHT	4067.0000	XX		406700
99101 05000000 02 000 0000000.000				
OF 0000 CF 0000 OT 9270 CT 0000				
IF THERE IS A PROBLEM WITH THIS INVOICE				
OR THE UNDERLYING SHIPMENT PLEASE CALL				
800-321-9876				
CAR/VEH# GROSS TARE NET B/L				
GATX 23286 226600 126700 99900 0060079419				
YOU MAY WIRE FUNDS TO NATIONAL CITY BANK A/C 967079214 ABA #043000122				

#5002

The current Material Safety Data Sheet(s) for Koppers Inc. products are available on the Internet at www.koppers.com. If Internet access is not available, please dial toll free 1-866-852-5239 and request the MSDSs you need.

Payment Discount Amount	If Paid By	Net Due	Total
		62404	1220885

Seller represents that the goods or services covered by this invoice have been produced or rendered in full compliance with the requirements of the Fair Labor Standards Act of 1938, as amended, including Section 12(A).

Seller warrants that all goods or services furnished or supplied under this order were produced in full compliance with the Civil Rights Act of 1964, Executive Order 11246, and related Regulations as the same may have been amended.

KOP-F-1251

ORIGINAL INVOICE

TERMS AND CONDITIONS

1. **GENERAL** The terms and conditions as hereinafter written shall supersede the terms and conditions of Buyer's order in the event of contradiction or inconsistency herewith, and no understanding agreement term, condition, or trade custom at variance herewith shall be binding on the Seller. Acceptance of delivery of any shipment hereunder shall constitute acceptance of Seller's terms and conditions.

2. **POINT OF ORIGIN** Quotations and sales are F.O.B. point of shipment unless otherwise expressly stipulated. This proposal is based on current freight rates and the price for goods is subject to adjustment in the event that a change in such rates affects Seller's cost of performance hereunder.

3. **CREDIT AND TERMS OF PAYMENT** Unless otherwise specified, terms of payment are net cash, thirty (30) days after shipment. Interest at the highest rate permitted by law, but in no event more than 1% per month, will be charged on past due accounts commencing after the last day of the first calendar month following the date of invoice. Seller may suspend credit and refuse shipment whenever Seller believes Buyer's credit is impaired and unless Buyer then makes arrangements for payment, satisfactory to Seller, Seller may cancel unfilled orders.

4. **TAXES** Seller's published prices do not include sales, use, manufacture, excise or similar taxes or duties. Any such taxes shall be paid by Buyer, or in lieu thereof, Buyer shall provide Seller with tax exemption certificates acceptable to the taxing authorities. Buyer shall indemnify and defend Seller for and against any such taxes claimed against or paid by Seller on account of any sales to Buyer.

5. **DELAYS AND FORCE MAJEURE** Seller's shipping dates are approximate. Seller will not be responsible for loss or damage arising from delays caused by lack of correct or complete data from Buyer, by changes in or tardy approval of drawings by Buyer, by inability to obtain transportation or raw materials, or by strikes, fires, floods, storms, or any other circumstances beyond Seller's reasonable control. Should Seller be delayed by any of the above causes, Seller shall be given a reasonable extension of time for performance hereunder. Seller may, during any period of shortage due to any of said causes, prorate its supply of such goods among all its Buyers in such manner as may be deemed equitable in the sole judgement of Seller.

6. **UNLOADING AND DEMURRAGE** All unloading shall be done by Buyer, unless otherwise mutually agreed upon. All demurrage for delays in unloading and responsibility for damages to persons or property resulting from such unloading shall be for Buyer's account.

7. **CANCELLATION AND DELAY CHARGES** Orders may not be cancelled, reduced, changed or suspended without Seller's written consent and payment of reasonable and proper cancellation charges.

   When materials are ready to ship per purchase agreement and shipment is delayed by Buyer for any reason, an appropriate carrying charge not to exceed 1% of invoice price will be applicable for each month or fraction thereof as long as material is held for Buyer.

8. **WARRANTY** Subject to the notice requirements of paragraph 9, Seller warrants that all products sold under this Agreement shall meet the specifications set forth in the latest edition prior to shipment of its publication "Technical Specifications" for the product. The Technical Specifications publication may be amended from time to time during the term of this Agreement to reflect changes in the specifications of the product. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IT IS SUBJECT TO THE MAXIMUM LIABILITY AND EXCLUSIVE REMEDY PROVISIONS SET FORTH IN PARAGRAPHS 9 AND 10 OF THIS MASTER SALES AGREEMENT.

9. **EXCLUSIVE REMEDY** Buyer shall notify Seller in writing of any claim against Seller no later than 10 days after it learns or should have learned of the facts supporting its claim. If the claim is based on a latent product defect, Buyer shall return, on Seller's request, a sample of the defective product, charges prepaid, for testing. In the event that Seller confirms the defect or a failure to meet specifications, Seller will, at Seller's sole election, return the purchase price for or replace, F.O.B. Seller's plant, the portion of the product that is defective or does not meet specifications, but only in the event that such defect or failure to meet specifications becomes evident within six months after the date of shipment.

10. **MAXIMUM LIABILITY** Maximum liability, if any, of Seller including all consequential and incidental damages, due to failure of materials to meet specifications, short count, defects, delays, failure to ship, loss or damage to materials, damage or injury caused by said materials or from any other cause whatsoever, shall not exceed the price or service fee received by Seller with respect to the nonconforming shipment.

11. **EMPLOYMENT LAWS** Seller certifies that goods of its manufacture covered hereby are produced in compliance with the Fair Labor Standards Act, as amended, the Fair Employment Practice Law, as amended, and the regulations and orders issued pursuant thereto.

12. **LIMITATION PERIOD** Any action for breach of this Agreement or related in any way to the product must be commenced within one year after the cause of action has accrued.

13. **LAW APPLICABLE** This Agreement shall be construed according to the laws of Commonwealth of Pennsylvania, without regard for its conflicts of laws provisions. The invalidity of any provision of this Agreement shall not invalidate the remaining provisions.

14. **MODIFICATION AND WAIVER** No waiver or modification of any provision of this Agreement shall be effective unless in writing and signed by authorized officers of Buyer and Seller.

15. **ACCEPTANCE** This Agreement may be accepted by placement of an order, request for a quotation or proposal, or acknowledgment, or by Seller's invoice.

HDO CAR

KOPPERS INC.
436 Seventh Avenue
Pittsburgh, Pa. 15219-1800

DATE: 6/25/20 4

NOTICE OF SHIPMENT

Shipped To:
KOPPERS INC.
7450 N W ST. HELENS RD
PORTLAND OR 97229

Attention: AMOS KAMERER
Fax: 5032852831

Shipped From: Cicero, Il. 60804
Telephone: (708)656-5900
Fax: (708)656-6079

Ship Date: 06/24/2004
Routing: CN-(CHGO)-BNSF
Vehicle: GATX 23286

Bill of Lading: 0060079419

GROSS WEIGHT	TARE WEIGHT	NET WEIGHT
226600	126700	99900

Customer Purchase Order Number
DIANE

GROSS WEIGHT	STENCIL TARE WEIGHT	RAIL NET WEIGHT
226600	66600	160000

Material Shipped:	Sales Quantity:
1 TC COAL TAR DISTILLATE DH	99900.000 LB

Comments:

BNSF-C-304431 - $4067/CAR FULL MILEAGE

TRANSFER

From GATX 23286 To T-33

USE MILITARY TIME

PRODUCT TRANSFER REPORT

RECEIVING TANK MEASUREMENTS

STARTED BY: PRODUCT: MEASURED BY: (circle one) INNAGE OUTAGE

1) Fill in:
a) started by
b) date
c) tank no.
d) product
e) measurement
f) safe fill height
g)

2) Du
(re
a)
b)
c)

3) Ca
a)
b)
c)

4) St
tl
wi

5) Sig

6) Wh

DATE PUMPED 7/20/04 PUMPINGS AND TRANSFERS NO.

FROM			TO		
TANK NO.	MATERIAL	OUTAGE OR INNAGE	TANK NO.	MATERIAL	OUTAGE OR INNAGE
GATX 23286	HDO		T-33	HDO	99,900 lbs

REMARKS -

PUMPED BY 7/20/04

KI-181

SF

DISCHARGE TANK MEASUREMENTS

START GUAGE

TEMP

END GAUGE

TEMP

Finish
Start
Total 165

Hvy oil Transfer T-33 To
Gals 165.

PUMPED BY: COMPLETED BY:

DATE: DATE:

Invoice

211-717161 900524045 381292 853470

KOPPERS

Koppers Inc. 0483 1
436 Seventh Avenue
Pittsburgh, Pa. 15219-1800
Telephone (412) 227-2001
Fax (412) 227-2202

Important
Make checks payable to Koppers Inc. and mail to:
Koppers Inc.
P.O. Box 73438
Cleveland OH 44193

Invoice Number	Invoice Date	Customers Purchase Order or Contract Number	Salesmans Name
0060_00025	01 05 04	DIANE	INDUSTRIAL P

Sold To	Shipped To
KOPPERS INDUSTRIES, INC. 7450 N W ST. HELENS RD (FR FOLL) PORTLAND OR 97229	KOPPERS INDUSTRIES, INC. 7450 N W ST. HELENS RD PORTLAND OR 97229

Shipped From	Date Shipped (Mo. Day Yr.)	Bill of Lading Number	Routed Via
CHICAGO, IL	01 05 04	SEE BELOW	BNSF

Title Passes F.O.B. Shipping Point	Freight Terms	Freight Basis
	FOB SHIPPING PLANT	PREPAID

Payment Terms	Car or Vehicle Initials and Number
INTERPLANT	SEE BELOW

Commodity Description	Price	Unit	Quantity Shipped	Amount
1 TC COAL TAR DISTILLATE DH	.0815	LB	112700	918505
70119 17200001 02 055 0112700.000				
OF 0060 CF 0000 OT 9270 CT 0000				
PLUS PREPAID FREIGHT	4067.0000	XX		406700
99101 05000000 02 000 0000000.000				
OF 0000 CF 0000 OT 9270 CT 0000				
IF THERE IS A PROBLEM WITH THIS INVOICE				
OR THE UNDERLYING SHIPMENT PLEASE CALL				
800-321-9876				
CAR/VEH# GROSS TARE NET B/L				
TLDX223046 230200 117500 112700 0060074548				
YOU MAY WIRE FUNDS TO NATIONAL CITY BANK A/C 967079214 ABA #043000122				

Received 2/20/04 #5001

The current Material Safety Data Sheet(s) for Koppers Inc. products are available on the Internet at www.koppers.com. If Internet access is not available, please dial toll free 1-866-852-5239 and request the MSDSs you need.

Payment Discount Amount	If Paid By	Net Due	Total ▶
	10504		1325205

Seller represents that the goods or services covered by this invoice have been produced or rendered in full compliance with the requirements of the Fair Labor Standards Act of 1938, as amended, including Section 12(A).

Seller warrants that all goods or services furnished or supplied under this order were produced in full compliance with the Civil Rights Act of 1964. Executive Order 11246, and related Regulations as the same may have been amended.

KOP-F-1251

ORIGINAL INVOICE

TERMS AND CONDITIONS

1. **GENERAL** The terms and conditions as hereinafter written shall supersede the terms and conditions of Buyer's order in the event of contradiction or inconsistency herewith, and no understanding agreement term, condition, or trade custom at variance herewith shall be binding on the Seller. Acceptance of delivery of any shipment hereunder shall constitute acceptance of Seller's terms and conditions.

2. **POINT OF ORIGIN** Quotations and sales are F.O.B. point of shipment unless otherwise expressly stipulated. This proposal is based on current freight rates and the price for goods is subject to adjustment in the event that a change in such rates affects Seller's cost of performance hereunder.

3. **CREDIT AND TERMS OF PAYMENT** Unless otherwise specified, terms of payment are net cash, thirty (30) days after shipment. Interest at the highest rate permitted by law, but in no event more than 1% per month, will be charged on past due accounts commencing after the last day of the first calendar month following the date of invoice. Seller may suspend credit and refuse shipment whenever Seller believes Buyer's credit is impaired and unless Buyer then makes arrangements for payment, satisfactory to Seller, Seller may cancel unfilled orders.

4. **TAXES** Seller's published prices do not include sales, use, manufacture, excise or similar taxes or duties. Any such taxes shall be paid by Buyer, or in lieu thereof, Buyer shall provide Seller with tax exemption certificates acceptable to the taxing authorities. Buyer shall indemnify and defend Seller for and against any such taxes claimed against or paid by Seller on account of any sales to Buyer.

5. **DELAYS AND FORCE MAJEURE** Seller's shipping dates are approximate. Seller will not be responsible for loss or damage arising from delays caused by lack of correct or complete data from Buyer, by changes in or tardy approval of drawings by Buyer, by inability to obtain transportation or raw materials, or by strikes, fires, floods, storms, or any other circumstances beyond Seller's reasonable control. Should Seller be delayed by any of the above causes, Seller shall be given a reasonable extension of time for performance hereunder. Seller may, during any period of shortage due to any of said causes, prorate its supply of such goods among all its Buyers in such manner as may be deemed equitable in the sole judgement of Seller.

6. **UNLOADING AND DEMURRAGE** All unloading shall be done by Buyer, unless otherwise mutually agreed upon. All demurrage for delays in unloading and responsibility for damages to persons or property resulting from such unloading shall be for Buyer's account.

7. **CANCELLATION AND DELAY CHARGES** Orders may not be cancelled, reduced, changed or suspended without Seller's written consent and payment of reasonable and proper cancellation charges.

   When materials are ready to ship per purchase agreement and shipment is delayed by Buyer for any reason, an appropriate carrying charge not to exceed 1% of invoice price will be applicable for each month or fraction thereof as long as material is held for Buyer.

8. **WARRANTY** Subject to the notice requirements of paragraph 9, Seller warrants that all products sold under this Agreement shall meet the specifications set forth in the latest edition prior to shipment of its publication "Technical Specifications" for the product. The Technical Specifications publication may be amended from time to time during the term of this Agreement to reflect changes in the specifications of the product. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IT IS SUBJECT TO THE MAXIMUM LIABILITY AND EXCLUSIVE REMEDY PROVISIONS SET FORTH IN PARAGRAPHS 9 AND 10 OF THIS MASTER SALES AGREEMENT.

9. **EXCLUSIVE REMEDY** Buyer shall notify Seller in writing of any claim against Seller no later than 10 days after it learns or should have learned of the facts supporting its claim. If the claim is based on a latent product defect, Buyer shall return, on Seller's request, a sample of the defective product, charges prepaid, for testing. In the event that Seller confirms the defect or a failure to meet specifications, Seller will, at Seller's sole election, return the purchase price for or replace, F.O.B. Seller's plant, the portion of the product that is defective or does not meet specifications, but only in the event that such defect or failure to meet specifications becomes evident within six months after the date of shipment.

10. **MAXIMUM LIABILITY** Maximum liability, if any, of Seller including all consequential and incidental damages, due to failure of materials to meet specifications, short count, defects, delays, failure to ship, loss or damage to materials, damage or injury caused by said materials or from any other cause whatsoever, shall not exceed the price or service fee received by Seller with respect to the nonconforming shipment.

11. **EMPLOYMENT LAWS** Seller certifies that goods of its manufacture covered hereby are produced in compliance with the Fair Labor Standards Act, as amended, the Fair Employment Practice Law, as amended, and the regulations and orders issued pursuant thereto.

12. **LIMITATION PERIOD** Any action for breach of this Agreement or related in any way to the product must be commenced within one year after the cause of action has accrued.

13. **LAW APPLICABLE** This Agreement shall be construed according to the laws of Commonwealth of Pennsylvania, without regard for its conflicts of laws provisions. The invalidity of any provision of this Agreement shall not invalidate the remaining provisions.

14. **MODIFICATION AND WAIVER** No waiver or modification of any provision of this Agreement shall be effective unless in writing and signed by authorized officers of Buyer and Seller.

15. **ACCEPTANCE** This Agreement may be accepted by placement of an order, request for a quotation or proposal, or acknowledgment, or by Seller's invoice.

KOPPERS INC.
436 Seventh Avenue
Pittsburgh, Pa. 15219-1800

DATE: 1/ 8/20 4

NOTICE OF SHIPMENT

Shipped To:
KOPPERS INDUSTRIES, INC.
7450 N W ST. HELENS RD
PORTLAND OR 97229

Attention: AMOS KAMERER
Fax: 5032852831

Shipped From: Cicero, Il. 60804
Telephone: (708)656-5900
Fax: (708)656-6079

Ship Date: 01/05/2004
Routing: BNSF
Vehicle: TLDX223046

Bill of Lading: 0060074548

GROSS WEIGHT	TARE WEIGHT	NET WEIGHT
230200	117500	112700

Customer Purchase Order Number
DIANE

GROSS WEIGHT	STENCIL TARE WEIGHT	RAIL NET WEIGHT
230200	76600	153600

Material Shipped:

1 TC COAL TAR DISTILLATE DH

Sales Quantity:

112700.000 LB

Comments:

CONTRACT BNSFC-304431

211-717161 900524045 381292 853470 0483 1

Invoice

Important
Make checks payable to Koppers Inc. and mail to:
Koppers Inc.
P.O. Box 73438
Cleveland OH 44193

Koppers Inc.
436 Seventh Avenue
Pittsburgh, Pa. 15219-1800
Telephone (412) 227-2001
Fax (412) 227-2202

Invoice Number	Invoice Date	Customers Purchase Order or Contract Number	Salesmans Name
0060_02702	102303	DIANE	INDUSTRIAL P

Sold To	Shipped To
KOPPERS INDUSTRIES, INC. 7450 N W ST. HELENS RD (FR FOLL) PORTLAND OR 97229	KOPPERS INDUSTRIES, INC. 7450 N W ST. HELENS RD PORTLAND OR 97229

Shipped From	Date Shipped (Mo. Day Yr.)	Bill of Lading Number	Routed Via
CHICAGO, IL	102303	SEE BELOW	BNSF

Title Passes F.O.B. Shipping Point	Freight Terms	Freight Basis
	FOB SHIPPING PLANT	PREPAID

Payment Terms	Car or Vehicle Initials and Number
INTERPLANT	SEE BELOW

Commodity Description	Price	Unit	Quantity Shipped	Amount
1 TC COAL TAR DISTILLATE DH	.0815	LB	124500	10146.75
70119 17200001 02 055 0124500.000				
OF 0060 CF 0000 OT 9270 CT 0000				
PLUS PREPAID FREIGHT	4067.0000	XX		4067.00
99101 05000000 02 000 0000000.000				
OF 0000 CF 0000 OT 9270 CT 0000				
IF THERE IS A PROBLEM WITH THIS INVOICE				
OR THE UNDERLYING SHIPMENT PLEASE CALL				
800-321-9876				
CAR/VEH# GROSS TARE NET B/L				
GATX 23286 240000 115500 124500 0060072989				
YOU MAY WIRE FUNDS TO NATIONAL CITY BANK A/C 967079214 ABA #043000122				

The current Material Safety Data Sheet(s) for Koppers Industries products are available on the Internet at www.koppers.com. If Internet access is not available, please dial toll free 1-866-852-5239 and request the MSDSs you need.

Payment Discount Amount	If Paid By	Net Due	Total
		102303	14213.75

Seller represents that the goods or services covered by this invoice have been produced or rendered in full compliance with the requirements of the Fair Labor Standards Act of 1938, as amended, including Section 12(A).

Seller warrants that all goods or services furnished or supplied under this order were produced in full compliance with the Civil Rights Act of 1964, Executive Order 11246, and related Regulations as the same may have been amended.

K-1251 S 1/03

ORIGINAL INVOICE

TERMS AND CONDITIONS

1. **GENERAL** The terms and conditions as hereinafter written shall supersede the terms and conditions of Buyer's order in the event of contradiction or inconsistency herewith, and no understanding, agreement term, condition, or trade custom at variance herewith shall be binding on the Seller. Acceptance of delivery of any shipment hereunder shall constitute acceptance of Seller's terms and conditions.

2. **POINT OF ORIGIN** Quotations and sales are F.O.B. point of shipment unless otherwise expressly stipulated. This proposal is based on current freight rates and the price for goods is subject to adjustment in the event that a change in such rates affects Seller's cost of performance hereunder.

3. **CREDIT AND TERMS OF PAYMENT** Unless otherwise specified, terms of payment are net cash, thirty (30) days after shipment. Interest at the highest rate permitted by law, but in no event more than 1% per month, will be charged on past due accounts commencing after the last day of the first calendar month following the date of invoice. Seller may suspend credit and refuse shipment whenever Seller believes Buyer's credit is impaired and unless Buyer then makes arrangements for payment, satisfactory to Seller. Seller may cancel unfilled orders.

4. **TAXES** Seller's published prices do not include sales, use, manufacture, excise or similar taxes or duties. Any such taxes shall be paid by Buyer, or in lieu thereof, Buyer shall provide Seller with tax exemption certificates acceptable to the taxing authorities. Buyer shall indemnify and defend Seller for and against any such taxes claimed against or paid by Seller on account of any sales to Buyer.

5. **DELAYS AND FORCE MAJEURE** Seller's shipping dates are approximate. Seller will not be responsible for loss or damage arising from delays caused by lack of correct or complete data from Buyer, by changes in or tardy approval of drawings by Buyer, by inability to obtain transportation or raw materials, or by strikes, fires, floods, storms, or any other circumstances beyond Seller's reasonable control. Should Seller be delayed by any of the above causes, Seller shall be given a reasonable extension of time for performance hereunder. Seller may, during any period of shortage due to any of said causes, prorate its supply of such goods among all its Buyers in such manner as may be deemed equitable in the sole judgement of Seller.

6. **UNLOADING AND DEMURRAGE** All unloading shall be done by Buyer, unless otherwise mutually agreed upon. All demurrage for delays in unloading and responsibility for damages to persons or property resulting from such unloading shall be for Buyer's account.

7. **CANCELLATION AND DELAY CHARGES** Orders may not be cancelled, reduced, changed or suspended without Seller's written consent and payment of reasonable and proper cancellation charges.

   When materials are ready to ship but purchaser agreement and shipment is delayed by Buyer, a storage charge not to exceed ½% of invoice price will be applicable for each month or fraction thereof as long as material is held for buyer.

8. **WARRANTY** Subject to the notice requirements of paragraph 9, Seller warrants that all products sold under this Agreement shall meet the specifications set forth in the latest edition prior to shipment of its publication "Technical Specifications" for the product. The Technical Specifications publication may be amended from time to time during the term of this Agreement to reflect changes in the specifications of the product. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IT IS SUBJECT TO THE MAXIMUM LIABILITY AND EXCLUSIVE REMEDY PROVISIONS SET FORTH IN PARAGRAPHS 9 AND 10 OF THIS MASTER SALES AGREEMENT.

9. **EXCLUSIVE REMEDY** Buyer shall notify Seller in writing of any claim against Seller no later than 10 days after it learns or should have learned of the facts supporting its claim. If the claim is based on a latent product defect, Buyer shall return, on Seller's request, a sample of the defective product, charges prepaid, for testing. In the event that Seller confirms the defect or a failure to meet specifications, Seller will, at Seller's sole election, return the purchase price for or replace, F.O.B. Seller's plant, the portion of the product that is defective or does not meet specifications, but only in the event that such defect or failure to meet specifications becomes evident within six months after the date of shipment.

10. **MAXIMUM LIABILITY** Maximum liability, if any, of Seller including all consequential and incidental damages, due to failure of materials to meet specifications, short count, defects, delays, failure to ship, loss or damage to materials, damage or injury caused by said materials or from any other cause whatsoever shall not exceed the price or service fee received by Seller with respect to the nonconforming shipment.

11. **EMPLOYMENT LAWS** Seller certifies that goods of its manufacture covered hereby are produced in compliance with the Fair Labor Standards Act, as amended, the Fair Employment Practice Law, as amended, and the regulations and orders issued pursuant thereto.

12. **LIMITATION PERIOD** Any action for breach of this Agreement or related in any way to the product must be commenced within one year after the cause of action has accrued.

13. **LAW APPLICABLE** This Agreement shall be construed according to the laws of Commonwealth of Pennsylvania, without regard to its conflicts of law provisions. The invalidity of any provision of this Agreement shall not invalidate the remaining provisions.

14. **MODIFICATION AND WAIVER** No waiver, modification or amendment of this Agreement shall be effective unless in writing and signed by authorized representatives of Buyer and Seller.

15. **ACCEPTANCE** The agreement shall become binding upon Seller upon its acceptance of Buyer's request for quotation or upon Seller's acknowledgment of Buyer's order.

KOPPERS INC.
436 Seventh Avenue
Pittsburgh, Pa. 15219-1800

DATE: 10/24/20 3

NOTICE OF SHIPMENT

Shipped To:
KOPPERS INDUSTRIES, INC.
7450 N W ST. HELENS RD
PORTLAND OR 97229

Attention: AMOS KAMERER
Fax: 5032852831

Shipped From: Cicero, Il. 60804
Telephone: (708)656-5900
Fax: (708)656-6079

Ship Date: 10/23/2003
Routing: BNSF
Vehicle: GATX 23286

Bill of Lading: 0060072989

GROSS WEIGHT	TARE WEIGHT	NET WEIGHT
240000	115500	124500

Customer Purchase Order Number
DIANE

GROSS WEIGHT	STENCIL TARE WEIGHT	RAIL NET WEIGHT
240000	66600	173400

Material Shipped:

1 TC COAL TAR DISTILLATE DH

Sales Quantity:

124500.000 LB

Comments:

CONTRACT BNSFC-304431

Koppers Industries, Inc.
Pittsburgh, Pa. 15219

KOPPERS INDUSTRIES

Local Purchase Requisition

Location: Portland

To Vendor
West Coast Marine Cleaning, Inc.
455 "C" Street
Washougl, WA 98671

Ship To
Koppers Industries, Inc.
7540 NW Saint Helens Road
Portland, OR 97210

Koppers requests that Seller furnish the goods and/or services listed below, subject to the terms on the reverse side of this order.

Invoice To:
same as ship to

Date Ordered	Date Required	Requisition No.	Order Number
8/6/01	as needed		01-04

Please Invoice in Triplicate

Quantity	Description	Price	Discount•Terms•F.O.B.	Account Number
	"Confined Space" tank cleaning, using one vacuum truck unit.			
1	Guzzler Vacuum Truck	$78.00	per hour of operation	
1	CDL Operator	$34.00	per hour [redacted], including travel time	
2	Technician	$32.00	" " " " "	
as needed	ADS Flex Hose	$125.00 per 100 feet		
1	Pressure Supplied Respirator	$30.00 per unit, per day		
	Koppers to supply miscellaneous safety gear such as: Tyvek suits, skin barrier cream, ear plugs, etc.			

Approvals

Invoice Date	Invoice Number	Audit Number	Date Trans to Pgh.	Ordered By
				Amos S. Kamerer
				Approved By:
				Received By / Date Received

Distribution ☐ Vendor ☐ Originating Location ☐ Originator ☐ Buyer or _____

KI-75 Rev. 1 15M 7/89

ORIGINATOR

West Coast Marine Cleaning INCORPORATED
Marine & Industrial Cleaning
455 "C" Street Washougal, Washington 98671
(503) 285-2485 • (360) 835-3780 • Toll Free 877-WCMCINC • Fax (360) 835-7534

FACSIMILE TRANSMITTAL

Date: **Aug. 16, 2001**

Total Pages: _1_ (including this page)

Send to Fax.: **503-285-2831**

Please Deliver to: **Amos Kramerer**
Company: **Koppers**

From: **Allan Ramsey**

RE: Pricing for vacuum project at your terminal

As quoted by Robbie;

CDL Operator:	$ 34.00 per hour	
Technician:	$ 32.00 per hour	
Guzzler vacuum truck:	$ 78.00 per hour	(only billed while in use)
ADS flex hose, consumable:	$ 125.00 per hundred ft.	(billed at cost)
6" hard pipe:	N/C	
WCMCI supplied PPE:	N/C	(incidental PPE)
Pressure supplied respirator	$ 30.00 per unit, per day	(cost of filter cartridges)

Thanks and have a good day.

Confidentiality Notice:
The documents accompanying this facsimile transmission may contain information which is legally privileged. The information is intended only for the individual or entity named above. If you are not the intended recipient or the person responsible for delivering it to the intended recipient, you are hereby notified that any disclosure, distribution, copying or use of this document is strictly prohibited.

If you received this transmission in error, please notify us immediately, collect at 1-360-835-3780 and mail the transmission back to us at the above address. We will reimburse you for postage.
Thank you.

7-25-01

Robby - W. Co Marine
#360 - 835 - 3780

To: Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Or. 97210-3663

$112
Trk. & oper.
78/34
2 guys $32 ea. 64
$176/hr.
Guys - inc. travel time ½ hr. each way
Truck - billed for actual work time
$125

Attn: T.J. Turner
Phone: 1-503-286-3681
Fax: 1-503-285-2831

Re: Pumping Coal Tar Pitch

T.J.,
After our subsequent site walk and conversation about cleaning your two tanks located at the above referenced address, Cowlitz Clean Sweep is pleased to submit the following cost estimate.

The prices will be straight time and work will be performed as to fit your schedule.

Prices are as follows:

Robby?

1 vac truck = $102.50 per hr
1 operator = $40.00 per hr
3 techs = $40.00 per hr each
100 ft. 6 inch hose = $135.00
Confined space gear = $200.00 per day

8" 6 ?
can do 8"
usually use 6"
entry permit

Please keep in mind safety gear will be billed as per use. Tyveks, goggles, etc.

CCS appreciates this opportunity to be of assistance to Koppers Industries and looks forward to working with you on this project. If you have any questions feel free to contact me anytime at 1-888-423-6316.

Use their Meter & permit

Respectively,

Barney Hoyt
Manager CCS Inc.

Robby
Alum. hard pipe
Flex on the ends only
will leave Truck here
8 hr. Stine - 7 hr. work (½ travel)
Crew only - Truck @ 7 hr/day
Will use our Tyvec + Cream
TP train
their tester + permit form.

only PPE/contractor

KOPPERS

Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270-
Division	TAR	Location	N. W. PLANT	Request Date	10 /26 /92
Request Initiated By	J.A. OXFORD	Approved By			
Title	NEW TRUCK LOADING LINE FOR LIQUID PITCH				
Amount of Request	$ 30,000.00	Depreciation Life	YRS	Estimated Life	YRS
Approval Date	MO. 19 92 YEAR				
Class of Expenditure	See Reverse A 12 0	Depreciation Acct. No.			

Specification & Description: 200 FT OF NEW LOADING LINE 4" DIAMETER. PLUS 2 - 1" HOT OIL TRACERS. 110 FT OF 6" FUME LINE, PLUS 160 ' 2" STEAM LINE. STANTIONS, STAIRS, LOADING PLATFORM, PLUS CONCRETE PAD FOR UNLOADING PUMP. ELECTRICAL AND MECHANICAL LABOR TO CONSTRUCT.

Summary of Justification:
NEW LOADING SYSTEM IS NECESSARY FOR THE LOADING OF TRUCKS WITH HOT PITCH. ALSO, SHOULD TRUCKS OVERLOAD, A PUMP - OFF LINE IS NEEDED TO PUMP AWAY EXCESS HOT PITCH BACK TO THE TANK.

ENGINEERING: By J A OXFORD Approval _____ **COSTS:** Cash Expenditure (1) 30,000.00

Trade-In or Salvage (2) _____

ESTIMATE: By J A OXFORD Approval _____ Amt. of Requests(1) + (3) 30,000.00

Type of Investment	Building	%	Equipment	%	Land	%	Type of Equipment	New	X	Used		Age		For Use On	Owned Property		Leased Property	X
				100														

EARNINGS OR COST: *(5 -Yrs. Average)*

Division Income Before Interest & Taxes _____

% Return On Net Investment _____

Added Working Capital Required If Any _____

RETIREM 10/27 **CONSTRUCTION BY:** Est. Schedule of Expense 4TH QTR

(PDA) At

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Larry Flaherty	From John Oxford
Co. K-1750	Co. Koppers
Dept.	Phone #
Fax #	Fax #

Est. Start - Up Date 11/2/92

Est. Close to Property 12/92

Referral to Insurance _____

APPROV

Capital Planning	_____	DATE
Environmental & Safety	_____	DATE
Engineering	_____	DATE
Division Controller	_____	DATE
Group Controller	_____	DATE
Other	_____	DATE

KI - 405 Rev. 5

KOPPERS

Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270 -
Division	Tar	Location	N. W. Plant	Request Date	10/26/92
Request Initiated By	Ja Offord	Approved By			
Title	New Truck Loading Line for Liquid Pitch				
Amount of Request	$ 30,000.00	Depreciation Life	YRS	Estimated Life	YRS
Approval Date	MO. 19 YEAR 92				
Class of Expenditure	See Reverse A 2 0	Depreciation Acct. No.			

Specification & Description: 200 ft of New loading line 4" diameter. plus 2 1" Hot oil Tracers. 110 ft of 6" Fume line, Plus 160 ft 2" steam line. Stations, Stairs & loading platform, plus concrete Pad for unloading pump, electrical and mechanical labor to construct

Summary of Justification: New loading system is necessary for the loading of trucks with Hot pitch. also should trucks overload, a pump off line is needed to. Pump away excess Hot Pitch Back to the tank

ENGINEERING: By Ja Offord Approval _____

ESTIMATE: By Ja Offord Approval _____

COSTS: Cash Expenditure (1) 30,000.
Trade-In or Salvage (2) _____
Amt. of Requests(1) + (3) 30,000

Type of Investment	Building	%	Equipment	100 %	Land	%	Type of Equipment	New	X	Used		Age		For Use On	Owned Property		Leased Property	X

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____
% Return On Net Investment _____
Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____
Years Acquired _____
Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense 4th qtr
Est. Start - Up Date 11-2-92
Est. Close to Property 12-92
Referral to Insurance _____

APPROVAL:

Production Manager _____ DATE
Capital Planning _____ DATE
Environmental & Safety _____ DATE
Engineering _____ DATE
Division Controller _____ DATE
Group Controller _____ DATE
Other _____ DATE

KI - 405 Rev. 5

CLASSIFICATION OF APPROPRIATION REQUESTS AND CAPITAL EXPENDITURES

Each capital item shall be classified according to the following codes. This does not preclude the use of more than one classification code for a single request.

A - 1 - 0	Non-Revenue producing additions such as service facilities, fire protection equipment, laboratories, etc.
A - 1 - 1	Non-Revenue producing additions for pollution, effluent and OSHA facilities.
A - 1 - 2	Non-Revenue producing additions for energy conservation items.
A - 2 - 0	Additions for increased savings and profit.
A - 2 - 2	Additions for energy conservations items resulting in increased savings and profit.
A - 2 - 3	Additions for energy conservations items resulting in increased savings and profits and also resulting in a 20% Investment Tax Credit.
A - 3 - 0	Investments such as the whole or partial purchase of a going business, existing plants, processes of others, joint venture, and foreign investments.
R - 1 - 0	Replacement of items which can be identified on the property records and which will eventually be retired from the property account.
R - 1 - 1	Replacement of pollution, effluent and OSHA related items which can be identified on the property records and which will eventually be retired from the property account.
R - 1 - 2	Replacement of energy conservation items which can be identified on the property records and which will eventually be retired from the property account.
R - 2 - 0	Major repair to all items except pollution, effluent, OSHA, and energy conservation items. Also shall include replacement of items which cannot be specifically identified on the property records.
R - 2 - 1	Major repairs to pollution, effluent and OSHA items.
R - 2 - 2	Major repairs to energy conservation items.

KOPPERS
Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

RECEIVED
JAN 1998
KOPPERS INDS., INC.
PORTLAND, OR

Division	TAR	Location	N. W. PLANT	Request No. 1998	9270- 19
Request Initiated By	J.A. OXFORD	Approved By		Request Date	10 /26 /92
Title	NEW TRUCK LOADING LINE FOR LIQUID PITCH				
Amount of Request	$ 30,000.00	Depreciation Life	10 YRS	Estimated Life	10 YRS
Approval Date	MO. 19 YEAR 92				
Class of Expenditure (See Reverse)	A 12 0	Depreciation Acct. No.	305 969 X 9220 910		

Specification & Description: 200 FT OF NEW LOADING LINE 4" DIAMETER. PLUS 2 - 1" HOT OIL TRACERS. 110 FT OF 6" FUME LINE, PLUS 160 ' 2" STEAM LINE. STANTIONS, STAIRS, LOADING PLATFORM, PLUS CONCRETE PAD FOR UNLOADING PUMP. ELECTRICAL AND MECHANICAL LABOR TO CONSTRUCT.

Summary of Justification:
NEW LOADING SYSTEM IS NECESSARY FOR THE LOADING OF TRUCKS WITH HOT PITCH. ALSO, SHOULD TRUCKS OVERLOAD, A PUMP - OFF LINE IS NEEDED TO PUMP AWAY EXCESS HOT PITCH BACK TO THE TANK.

ENGINEERING: By J A OXFORD Approval _____ **COSTS:** Cash Expenditure (1) 30,000.00

Trade-In or Salvage (2) _____

ESTIMATE: By J A OXFORD Approval _____ Amt. of Requests(1) + (3) 30,000.00

Type of Investment	Building	%	Equipment	%	Land	%	Type of Equipment	New		Used		Age		For Use On	Owned Property		Leased Property	
				100					X									X

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____

% Return On Net Investment _____

Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____

Years Acquired _____

Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense 4TH QTR

Est. Start - Up Date 11/2/92

Est. Close to Property 12/92

Referral to Insurance _____

APPROVAL:

Production Manager		DATE
Capital Planning		DATE
Environmental & Safety		DATE
Engineering		DATE
Division Controller	James L Chan 11/12/92	DATE
Group Controller		DATE
Other		DATE

KI - 405 Rev. 5

Koppers005203

KOPPERS

Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270-15
Division	TAR	Location	N W PLANT	Request Date	1 / 15 / 92
Request Initiated By	JOHN A OXFORD	Approved By			
Title	CONCRETE CONTAINMENTS FOR CREOSOTE PUMPS				
Amount of Request	$ 4,900.00	Depreciation Life	10 YRS	Estimated Life	10 YRS
Approval Date	MO.	19 YEAR			
Class of Expenditure	See Reverse: A 1 1	Depreciation Acct. No.	305 969 X 9270 910		

Specification & Description:

INSTALL SEALED CONCRETE CONTAINMENTS AROUND THE MAIN CREOSOTE PUMPS AND THE CREOSOTE TRANSFER PUMP AT 67 TANK

Summary of Justification:

THIS ACTION LESSENS THE POSSIBILITY OF A SPILL OF HAZARDOUS MATERIAL, WHICH WOULD PUT THE COMANY AT RISK OF FINES OR PENALITIES.

ENGINEERING: By JOHNA OXFORD Approval _____

ESTIMATE: By JOHN A OXFORD Approval _____

COSTS: Cash Expenditure (1) _____

Trade-In or Salvage (2) _____

Amt. of Requests(1) + (3) _____

Type of Investment	Building	%	Equipment	100%	Land	%	Type of Equipment	New	X	Used		Age		For Use On	Owned Property		Leased Property	X

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____

% Return On Net Investment _____

Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____

Years Acquired _____

Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense 1ST QTR

Est. Start - Up Date 1/92

Est. Close to Property 1ST QTR

Referral to Insurance _____

APPROVAL:

Production Manager		DATE
Capital Planning		DATE
Environmental & Safety		DATE
Engineering	7-30-92	DATE
Division Controller	07/07/92	DATE
Group Controller		DATE
Other		DATE

KI - 405 Rev. 5

KOPPERS

Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270
Division	TAR	Location	N W PLANT	Request Date	1 / 15 / 92
Request Initiated By	JOHN A OXFORD	Approved By			
Title	CONCRETE CONTAINMENTS FOR CREOSOTE PUMPS				
Amount of Request	$ 4,907.00	Depreciation Life	YRS	Estimated Life	YRS
Approval Date	MO. 19 YEAR				
Class of Expenditure (See Reverse)	A 1 1	Depreciation Acct. No.			

Specification & Description:

INSTALL SEALED CONCRETE CONTAINMENTS AROUND THE MAIN CREOSOTE PUMPS AND THE CREOSOTE TRANSFER PUMP AT 67 TANK

Summary of Justification:

THIS ACTION LESSENS THE POSSIBILITY OF A SPILL OF HAZARDOUS MATERIAL, WHICH WOULD PUT THE COMANY AT RISK OF FINES OR PENALITIES.

ENGINEERING: By JOHNA OXFORD Approval _____

ESTIMATE: By ~~JOHN A OXFORD~~ Approval _____

COSTS: Cash Expenditure (1) _____

Trade-In or Salvage (2) _____

Amt. of Requests(1) + (3) _____

Type of Investment	Building	%	Equipment	100 %	Land	%	Type of Equipment	New	X	Used		Age		For Use On	Owned Property		Leased Property	X

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____

% Return On Net Investment _____

Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____

Years Acquired _____

Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense 1ST QTR

Est. Start - Up Date 1/92

Est. Close to Property 1ST QTR

Referral to Insurance _____

APPROVAL:

Production Manager _____ DATE

Capital Planning _____ DATE

Environmental & Safety _____ DATE

Engineering _____ DATE

Division Controller _____ DATE

Group Controller _____ DATE

Other _____ DATE

KI - 405 Rev. 5

KOPPERS
Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270
Division	Tar	Location	N.W. Plant	Request Date	1/15/92
Request Initiated By	Joo Ford	Approved By			
Title	Concrete Containments for Creosote Pumps				
Amount of Request	$ 4907.00	Depreciation Life	YRS	Estimated Life	YRS
Approval Date	MO. 19 YEAR				
Class of Expenditure	See Reverse A 1 1	Depreciation Acct. No.			

Specification & Description:
Install Sealed concrete Containments around the main creosote pumps and the creosote Transfer pump ~~in~~ at 67th.

Summary of Justification:
This action ~~[illegible]~~ lessens the possibility of a spill of hazardous material, which would put the Company at risk of fines or penalty's

ENGINEERING: By Jao Ford Approval _____

ESTIMATE: By Jao Ford Approval _____

COSTS: Cash Expenditure (1) _____
Trade-In or Salvage (2) _____
Amt. of Requests(1) + (3) _____

Type of Investment	Building	%	Equipment	100 %	Land	%	Type of Equipment	New	X	Used		Age		For Use On	Owned Property		Leased Property	X

EARNINGS OR COST:
(5 Yrs. Average)
Division Income Before Interest & Taxes _____
% Return On Net Investment _____
Added Working Capital Required If Any _____

RETIREMENTS:
(PDA) Attached
Total Original Value _____
Years Acquired _____
Total Book Value _____

CONSTRUCTION BY:
Est. Schedule of Expense 1st qtr
Est. Start - Up Date 1/92
Est. Close to Property 1st qtr
Referral to Insurance _____

APPROVAL:
Production Manager _____ DATE
Capital Planning _____ DATE
Environmental & Safety _____ DATE
Engineering _____ DATE
Division Controller _____ DATE
Group Controller _____ DATE
Other _____ DATE

KI - 405 Rev. 5

CLASSIFICATION OF APPROPRIATION REQUESTS AND CAPITAL EXPENDITURES

Each capital item shall be classified according to the following codes. This does not preclude the use of more than one classification code for a single request.

A - 1 - 0	Non-Revenue producing additions such as service facilities, fire protection equipment, laboratories, etc.
A - 1 - 1	Non-Revenue producing additions for pollution, effluent and OSHA facilities.
A - 1 - 2	Non-Revenue producing additions for energy conservation items.
A - 2 - 0	Additions for increased savings and profit.
A - 2 - 2	Additions for energy conservations items resulting in increased savings and profit.
A - 2 - 3	Additions for energy conservations items resulting in increased savings and profits and also resulting in a 20% Investment Tax Credit.
A - 3 - 0	Investments such as the whole or partial purchase of a going business, existing plants, processes of others, joint venture, and foreign investments.
R - 1 - 0	Replacement of items which can be identified on the property records and which will eventually be retired from the property account.
R - 1 - 1	Replacement of pollution, effluent and OSHA related items which can be identified on the property records and which will eventually be retired from the property account.
R - 1 - 2	Replacement of energy conservation items which can be identified on the property records and which will eventually be retired from the property account.
R - 2 - 0	Major repair to all items except pollution, effluent, OSHA, and energy conservation items. Also shall include replacement of items which cannot be specifically identified on the property records.
R - 2 - 1	Major repairs to pollution, effluent and OSHA items.
R - 2 - 2	Major repairs to energy conservation items.

KOPPERS INDUSTRIES

CAPITAL EXPENDITURE REQUEST

CER NO. 9270.60

Included in Capital Program	
YES	NO - X

Date: 11/13/01

Division: Carbon Materials & Chemicals

Estimated Completion Date: 12/31/01

Plant Location No./ Name: 9270 Portland, Oregon

CLASS (choose one)			
Maintenance	Acquisition	Environmental	Productivity
X			

RISK (choose one)		
Low	Medium	High
X		

Requested By	Approved By	Date	Amount of Request
A. S. Kamerer	Kevin J. Appold	11/14/01	$35,000.00

Description of Proposed Asset (attach additional pages if necessary)

Maintenance repairs to tank T-65, the original melter tank, and the replacement of 2 suction valves on tank T-68, the liquid pitch truck-shipping tank.

Summary of Justification (attach additional pages)

Why do this project, at all? The following repairs are needed to tank T-65 before it can be put back into service and they include; the broken brackets and replacement of 2 temperature thermal couple units, the cutting out and replacement of 3 known breaches in the 4" dia. floor coil hot oil supply piping, re-attachment and straighten 2 of the side-wall hot oil heating coils, re-attach of two 4" dia. stand pipes of the liquid pitch circulation system, perform non-penetrating welds to gouges in the 4" dia. hot oil supply piping, as needed. Also, to replace the 2 leaking "old style" Fitz suction valves on tank T-68, with jacketed gate valves. All of this work will be done under KII's Confined Space Entry and Fire Watch Procedures.

Why do this project, this way? This work requires that the welders have a type R certification for pressure vessel work. No in-plant KII personal has such certification. These repairs are needed for current and future business, for either liquid pitch and/or asphalt.

Why do this project, now? First, tank T-65 cannot be put back into service until these repairs are completed and this tank will be needed in the coming months to once again perform the melting function of solid pitch into liquid pitch, to meet the shipping requirements of our last existing customer.

Financial Justification (complete attached schedules for requests greater than $125,000)

Return on Capital Employed _____

Payback _____

Authorization

DIVISIONAL LEVEL
REVIEWED BY _____ DATE 11/13/01
(GM/Operations Manager)

CONTROLLER
REVIEWED BY John W Kunkle DATE 11/14/01

ENGINEERING
REVIEWED BY _____ DATE _____

PURCHASING
REVIEWED BY _____ DATE 11/15/01

OTHER
REVIEWED BY _____ DATE _____

CHIEF FINANCIAL OFFICER
(if request is greater than $50,000)
REVIEWED BY _____ DATE _____

CHIEF EXECUTIVE OFFICER
(if request is greater than $125,000, but less than $1,000,000)
REVIEWED BY _____ DATE _____

TREASURY DEPARTMENT
(if request is greater than $125,000)
REVIEWED BY _____ DATE _____

CORPORATE SECRETARY (BOD APPROVAL)
(if request is in program and greater than $1,000,000 or Not in the program and greater than $500,000)
REVIEWED BY DATE _____

RECEIVED
NOV 26 2001
KOPPERS INDS, INC.
PORTLAND OR

McDowell Welding & Pipe Fitting, Inc.

9000 NW St. Helens Rd., Portland, OR 97210
503-241-2410 • Fax 503-241-2767

Proposal

November 6, 2001 Proposal No: 1364

KOPPERS Industries
7540 N.W. St. Helens Road
Portland, OR 97219-3663

Attention: Amos Kamerer

Phone: 503 286 3681 Fax: 503 286 2831

McDowell Welding & Pipe Fitting, Inc. is pleased to offer the following proposal in accordance with your furnished information:

Project:	T65 & T68	
Scope of Work:	T65 Straighten and reattach 2 wall coils Fab and install 2 thermacouple supports Install three 2' long pipe section in existing coils Cut openings in wide flange coils supports Cover pass weld gouges in coils (no complete penatration). Pressure test coils, additional repaires found after pressure test at T&M rates. T68 Modify piping to accept new gate valves	
Bid item/qty:		**Price:** T65 - $27,009.00 T68 - $ 4,072.00
Delivery:		**FOB:** Job Site
	McDowell Sales Contact:	

Terms & Conditions:

1. This quotation if firm for thirty (30) days from date of proposal.
2. This bid is subject to review, and revision if necessary, at time of order to reflect any modification, adds or deducts from original bid package.
3. This bid excludes all permits, taxes or fees not specifically agreed on at time of order.
4. This bid excludes handling or disposal of any hazardous material; any work required due to unidentified obstructions in any excavation or installation or any water removal, earthwork or shoring, or other work associated with unstable underground soil.
5. Our terms of sale are net 30 on approval of our credit department. Special terms and conditions are to be agreed on at time of order.
6. We reserve the right to withdraw this proposal based on prior sale of shop or field capacity; changes in scope of work, or client terms and conditions not acceptable to McDowell Welding & Pipefitting.
7. This quotation is based on a forty (40) hour week eight (8) hour shift unless otherwise specified.

Thank you for the opportunity to submit this proposal to you. We look forward to a mutual beneficial relationship between our firms. If we can be of any further service, please do not hesitate to contact us immediately.

Sincerely,

Steve Tidyman
Project Mgr.

McDowell Welding & Pipe Fitting, Inc.

4000 NW St. Helens Rd., Portland, OR 97210
503-241-2410 • Fax 503-241-2767

November 7, 2001

T.J Turner
Koppers Industries, Inc.
7540 N.W. St. Helens Rd.
Portland, OR 97210-3663

Subject: Clarifications for quote #01364

T-65

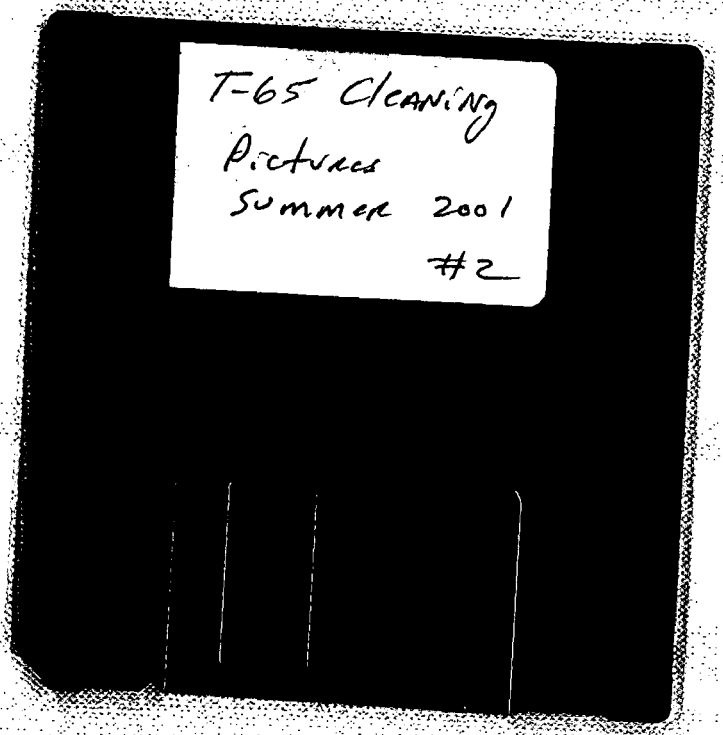
1. Material and labor to reattach two 4" dia. return pitch standpipes is included in the quote.
2. Nonpenentrating welds are the most difficult to quantify, I have allowed 2 men and a confined space attendant for a duration of 24 hrs(total of 72 mhrs) to make these repairs. We could do this part of the job on a T&M basis if you like.
3. Confined space responsibilities by MWP are included in the quote.
4. The tank and are will be cleaned up to the same condition as found when project commences.
5. Modification of the hot oil lines for testing is included
6. Project Timeline: our intent would be to start work November 19, 2001 and complete by December 21, 2001.

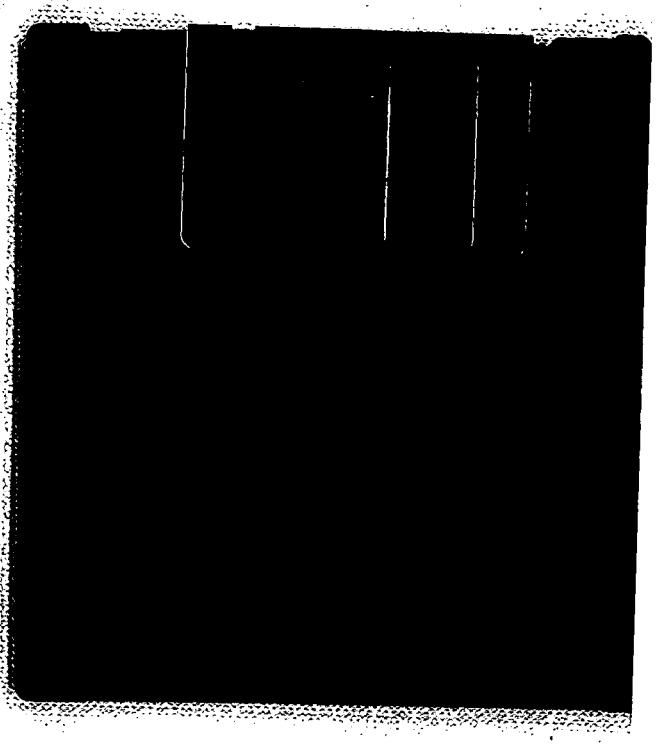
T-68

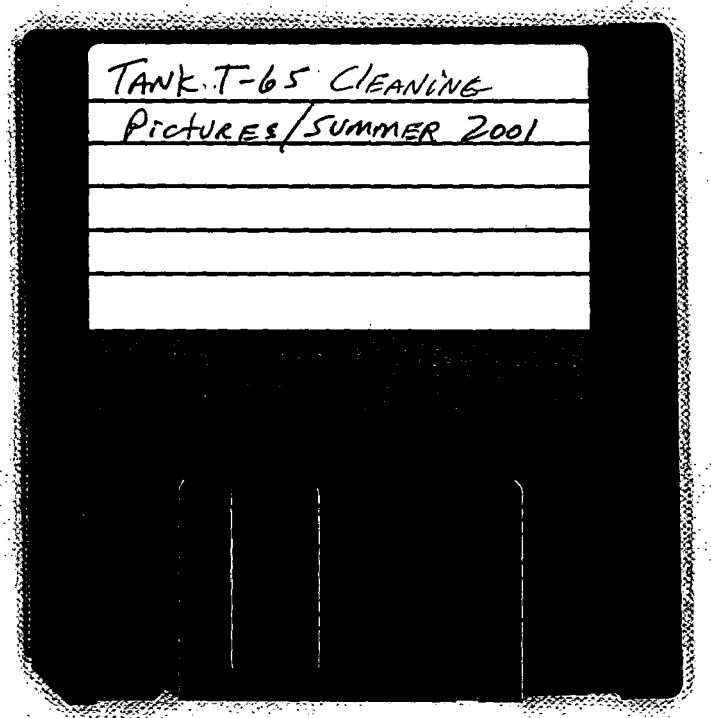
1. Labor and material for the piping modifications, installing owner furnished gate valves and hot oil tracing lines are included in the quote. Heat transferring compound, insulation and lagging are not included.

Sincerely,

Steve Tidyman
Project Manager


T-65 Cleaning
Pictures
Summer 2001
#2




TANK T-65 CLEANING
PICTURES/SUMMER 2001

Koppers Industries, Inc.
Pittsburgh, Pa. 15219

KOPPERS INDUSTRIES

Local Purchase Requisition

Location Portland, OR

To Vendor
Petro Chem Insulation, Inc.
2119 SE Columbia Way #310
Vancouver, WA 98661-8037

Ship To
Koppers Industries, Inc.
7540 NW Saint Helens Rd.
Portland, Oregon 97210

Koppers requests that Seller furnish the goods and/or services listed below, subject to the terms on the reverse side of this order.

Invoice To:
Same as Ship TO

Date Ordered	Date Required	Requisition No.	Order Number
3/16/00	April 2000	9270-54	00-12

Please Invoice in Triplicate

Quantity	Description	Price	Discount•Terms•F.O.B.	Account Number
	"Insulation Repairs tanks T-65 and T-68"			
	To repair the side wall insulation on			
	tank T-68 and roof insulation on tank			
	T-65 per your quotation #1808 A & B			
	Lump Sum Price	$1,400.00		

Approvals

Invoice Date	Invoice Number	Audit Number	Date Trans to Pgh.	Ordered By	Approved By	Received By	Date Received

Distribution ☐ Vendor ☐ Originating Location ☐ Originator ☐ Buyer or _____

KI-75 Rev. 1 15M 7/89

ORIGINATOR

Koppers005212

Koppers Industries, Inc.
Pittsburgh, Pa. 15219

KOPPERS INDUSTRIES

Local Purchase Requisition

Location Portland, OR

To Vendor
Chandler Electric, Inc.
P. O. Box 80696
Portland, OR 97280-1696

Ship To
Koppers Industries, Inc.
7540 NW Saint Helens Road
Portland, OR 97210

Koppers requests that Seller furnish the goods and/or services listed below, subject to the terms on the reverse side of this order.

Invoice To:

Date Ordered	Date Required	Requisition No.	Order Number	Please Invoice in Triplicate
	01/31/2000	00-04		

Quantity	Description	Price	Discount•Terms•F.O.B.	Account Number
	"Radar Level Indicators Tanks T-65 & T-68"			
	Install wiring and conduit from the top of tanks T-65 & T-68 to the control room. Plus, mount the monitors for each, in the control room.			
	Lump sum price per Chandler quotation dated 1/19/2000.	$9,238.25	lump sum	

Approvals

Invoice Date	Invoice Number	Audit Number	Date Trans to Pgh.	Ordered By	Approved By	Received By	Date Received

Distribution ☐ Vendor ☐ Originating Location ☐ Originator ☐ Buyer or _____

KI-75 Rev. 1 15M 7/89

ORIGINATOR

Koppers005213

Koppers Industries, Inc.
Pittsburgh, Pa. 15219

KOPPERS INDUSTRIES

Local Purchase Requisition

Location Portland, OR

To Vendor
McDowell Welding & Pipe Fitting, Inc.
4000 NW Saint Helens Road
Portland, OR 97210

Ship To
Koppers Industries, Inc.
7540 NW Saint Helens Road
Portland, OR 97210

Koppers requests that Seller furnish the goods and/or services listed below, subject to the terms on the reverse side of this order.

Invoice To:

same as ship to

Date Ordered	Date Required	Requisition No.	Order Number
	week of 3/6/2000	00-05	

Please Invoice in Triplicate

Quantity	Description	Price	Discount•Terms•F.O.B.	Account Number
	"Radar Level Indicators Tanks T-65 & T-68"			
	Supply all labor, materials and equipment			
	to install radar level indicators on			
	tanks T-65 and T-68. Including items			
	covered in the McDowell work order numbers			
	01015 & 02029.			
	Total price not to exceed	$8,957.00		

Approvals

Invoice Date	Invoice Number	Audit Number	Date Trans to Pgh.

Ordered By

Approved By

Received By

Date Received

Distribution ☐ Vendor ☐ Originating Location ☐ Originator ☐ Buyer or

KI-75 Rev. 1 15M 7/89

ORIGINATOR

KOPPERS
Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

delay to 2000

Request No.	9270-54
Request Date	7 / 14 / 99

Division	Carbon Materials & Chemicals	Location	Portland, Oregon
Request Initiated By	A.S. Kamerer	Approved By	
Title	Pitch tank Radar level Indicators		

Amount of Request	Depreciation Life	Estimated Life	Approval Date
$ 29,000	5 YRS	YRS	MO. 19 YEAR

Class of Expenditure	See Reverse	Depreciation Acct. No.				
	1 B	305	969	X	9270	925

Specification & Description:

2 Radar Level Transmitters manufactured by TN Tecnologies. Plus, the cost to install these on pitch tanks T-65 and T-68, the cost to provide eletrical service and to repair insulation, after they are installed.

Summary of Justification:

To provide accurate measurement of the pitch in these tanks and to reduce the possibility of having a pitch spill, as we did in January 1998 when a float ball level indicator became stuck.

ENGINEERING: By A.S. Kamerer Approval _____ **COSTS:** Cash Expenditure (1) 29,500

Trade-In or Salvage (2) _____

ESTIMATE: By A.S. Kamerer Approval _____ Amt. of Requests(1) + (3) 29,500

Type of Investment	Building	%	Equipment	%	Land	%	Type of Equipment	New		Used		Age		For Use On	Owned Property		Leased Property
				100					X								

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____

% Return On Net Investment _____

Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____

Years Acquired _____

Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense Sept. 99

Est. Start - Up Date _____

Est. Close to Property _____

Referral to Insurance _____

APPROVAL:

Production Manager	_____	DATE
Capital Planning	_____	DATE
Environmental & Safety	_____	DATE
Engineering	_____	DATE
Division Controller	_____	DATE
Group Controller	_____	DATE
Other	_____	DATE

KI - 405 Rev. 5

Location Portland, OR

To Vendor

Petro Chem Insulation, Inc.

2119 SE Columbia Way #310

Vancouver, WA 98661-8037

Ship To

Koppers Industries, Inc.

7540 NW Saint Helens Ave.

Portland, OR 97210

Koppers requests that Seller furnish the goods and/or services listed below, subject to the terms on the reverse side of this order.

Invoice To:

Same as ship to

Date Ordered	Date Required	Requisition No.	Order Number
3/16/00	April 2000	9270-50	00-13

Please Invoice in Triplicate

Quantity	Description	Price	Discount•Terms•F.O.B.	Account Number
	"Reinsulate the roof of tank T-68"			
	Remove existing insulation and replace			
	with 3" thick 6# mineral wool insulation,			
	secured with pins and washers. Jacket			
	with, 032 Stucco Embossed Alum. Gore			
	Segments, having standing seams. All per			
	your quotation #1808.			
	Lump Sum Price	$17,400000		

Approvals

Invoice Date	Invoice Number	Audit Number	Date Trans to Pgh.

Ordered By

Approved By

Received By

Date Received

Distribution ☐ Vendor ☐ Originating Location ☐ Originator ☐ Buyer or

KI-75 Rev. 1 15M 7/89

ORIGINATOR

KOPPERS
Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

Delay to 2000

				Request No.	9270-50
Division	Carbon Materials & Chemicals	Location	Portland, Oregon	Request Date	7 / 14 / 99
Request Initiated By	A.S. Kamerer	Approved By	[signature] 7/29/99		
Title	T-68 Pitch tank Top Insulation Removal & Repair				

Amount of Request	Depreciation Life	YRS	Estimated Life	YRS	Approval Date	MO.	YEAR
$ 17,000		5					19

Class of Expenditure	See Reverse	Depreciation Acct. No.					
1	B	305	969	X	9270	925	

Specification & Description:

To remove existing deteriorating insulation on tank # T-68 and replace with 3 inch mineral wool and jacket with aluminum sheeting.

Summary of Justification:

See memo attached

ENGINEERING: By A.S. Kamerer Approval _____ **COSTS:** Cash Expenditure (1) 17,000

Trade-In or Salvage (2) _____

ESTIMATE: By A.S. Kamerer Approval _____ Amt. of Requests(1) + (3) 17,000

Type of Investment	Building	%	Equipment	%	Land	%	Type of Equipment	New	X	Used		Age		For Use On	Owned Property		Leased Property	
				100%														

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____

% Return On Net Investment _____

Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____

Years Acquired _____

Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense Oct. 99

Est. Start - Up Date _____

Est. Close to Property _____

Referral to Insurance _____

APPROVAL:

Production Manager	[signature]	7/29/99 DATE
Capital Planning		DATE
Environmental & Safety		DATE
Engineering		DATE
Division Controller	John W Kunkle	7/29/99 DATE
Group Controller		DATE
Other		DATE

KI - 405 Rev. 5

RECEIVED

AUG - 2 1999

KOPPERS INDS, INC.
PORTLAND OR

Koppers Industries
Interoffice Memo

To: Amos Kamerer
Re: T-68, Tank Top Insulation

July 8, 1999

In 1990 through 1992 during the final stages of the T–65 melter project it was decided to take a creosote tank (T-68) and retrofit it as a pitch-shipping tank for trucks. Due to financial difficulties being experience by the project at the time, it was decided to patchwork repair the top of the tank roof insulation and readdress it at a later date.
Last week a representative from a local insulation company and I went up on the roof to address the situation and found the following.

This tank had a 3-inch mineral wool covering held down with wire netting and an asphalt sealer. The asphalt coating and netting has deteriorated, exposing 20% of the roof insulation to the elements. With the heat of the tank and the frequent rains, this has broken down the composition of the insulation causing a reduction of its insulating value by 30% to 40%, at best and up to 70% during inclement weather. This is not taking into account the further damage being caused to the rooftop.

This situation has been further complicated by the rooftop itself. The roof has a normal shallow slope of 9-inches from peak to edge.

The roof has a large area that has been warped and dished in. This dished area which comprises approximately 35% of the tank roof is recessed in about 9 to 10-inches from where the slope should be. This condition has added to the worsing condition of the roof insulation by having a low point in the roof that is lower than the roof edge.

Obviously, this situation cannot continue without the possibility of serious consequences. At a minimum I wish for you to consider this proposal unless there is a more viable alternative unknown at this time.

Respectfully yours,

T.J. Turner

RECEIVED

AUG - 2 1999

KOPPERS INDS, INC.
PORTLAND OR

KOPPERS
Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270-
Division	Carbon Materials & Chemicals	Location	Portland, Oregon	Request Date	7 / 14 / 99
Request Initiated By	A.S. Kamerer	Approved By			
Title	T-68 Pitch tank Top Insulation Removal & Repair				

Amount of Request	Depreciation Life	Estimated Life	Approval Date	
$ 17,000	5 YRS	YRS	MO. 19 YEAR	

Class of Expenditure (See Reverse)	Depreciation Acct. No.				
1 B	305	969	X	9270	925

Specification & Description:

To remove existing deteriorating insulation on tank # T-68 and replace with 3 inch mineral wool and jacket with aluminum sheeting.

Summary of Justification:

See memo attached

ENGINEERING: By A.S. Kamerer Approval _____

ESTIMATE: By A.S. Kamerer Approval _____

COSTS: Cash Expenditure (1) 17,000
Trade-In or Salvage (2) _____
Amt. of Requests(1) + (3) 17,000

Type of Investment	Building	%	Equipment	%	Land	%	Type of Equipment	New		Used		Age		For Use On	Owned Property		Leased Property	
				100					X									

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____
% Return On Net Investment _____
Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____
Years Acquired _____
Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense Oct. 99
Est. Start - Up Date _____
Est. Close to Property _____
Referral to Insurance _____

APPROVAL:

Production Manager	_____	DATE
Capital Planning	_____	DATE
Environmental & Safety	_____	DATE
Engineering	_____	DATE
Division Controller	_____	DATE
Group Controller	_____	DATE
Other	_____	

KI - 405 Rev. 5

Koppers Industries
Interoffice Memo

To: Amos Kamerer
Re: T-68, Tank Top Insulation

July 8, 1999

In 1990 through 1992 during the final stages of the T–65 melter project it was decided to take a creosote tank (T-68) and retrofit it as a pitch-shipping tank for trucks. Due to financial difficulties being experience by the project at the time, it was decided to patchwork repair the top of the tank roof insulation and readdress it at a later date.
Last week a representative from a local insulation company and I went up on the roof to address the situation and found the following.

This tank had a 3-inch mineral wool covering held down with wire netting and an asphalt sealer. The asphalt coating and netting has deteriorated, exposing 20% of the roof insulation to the elements. With the heat of the tank and the frequent rains, this has broken down the composition of the insulation causing a reduction of its insulating value by 30% to 40%, at best and up to 70% during inclement weather. This is not taking into account the further damage being caused to the rooftop.

This situation has been further complicated by the rooftop itself. The roof has a normal shallow slope of 9-inches from peak to edge.

The roof has a large area that has been warped and dished in. This dished area which comprises approximately 35% of the tank roof is recessed in about 9 to 10-inches from where the slope should be. This condition has added to the worsing condition of the roof insulation by having a low point in the roof that is lower than the roof edge.

Obviously, this situation cannot continue without the possibility of serious consequences. At a minimum I wish for you to consider this proposal unless there is a more viable alternative unknown at this time.

Respectfully yours,

T.J. Turner

Petrochem insulation, inc.

2119 SE Columbia Way, Suite #310
Vancouver, Washington 98661-8037
Ph. (360) 695-3226 • Fax (360) 695-3180

License #PETROCI 110MQ
Unified I.D. #601 116 909
www.petrocheminc.com

July 2, 1999 Quote No. 1808

Koppers Industries
Mr. T.J.Turner
7540 NW St. Helens Rd.
Portland, OR 97210

SUBJECT: INSULATION QUOTATION

RE: #68 Tank Top Insulation Removal and New Install & #68 Tank Top Repair

Dear T.J.:

Petrochem is pleased to provide herewith our pricing for the above referenced project. Our price is based upon the following clarifications:

1.) Strict accordance with our job walk on 7-1-99.
2.) Insulation to be 3" thick 6# Mineral Wool secured with pins.
3.) Jacket to be .032 Stucco Embossed Aluminum Gores with standing seams.
4.) Gores to be secured with #14 x 1" S.S. Tek Screws to a welded 1/8"x2"x2" Carbon Steel Angle radial support system.
5.) Angle support system designed to smooth out the contour of roof.
6.) Removal and disposal of existing insulation is included.
7.) A manlift is included
8.) Tank #68 top repair to match existing.
9.) Our terms are 1/2% ten days, net 30. Late charges in the amount of 1% per month will be charged on all invoices past 45 days.

Our pricing is as follows:

OUR TOTAL LUMP SUM PRICE IS . . . $16,800.00

Please call if you have any questions or need additional information.

Sincerely,

Matt Seifert
Estimator

ACandS *Portland Office*

2151 NW Wilson • Portland, OR 97210 • TEL: (503) 227-6444 • FAX: (503) 227-0418

Koppers Industires
7540 NW St. Helens Rd.
Portland, OR 97210

2/7/00

Fax: (503) 285-2831

Attn: Amos

Subject: 38' Diameter Tank Top
Insulation and Jacket
Our Proposal No. PDX-DP-0200-II-021

Dear Sir:

We submit the following price for the removal and replacement of the tank-top insulation on the 38' diameter tank as reviewed by Ron Peterson of our Portland office. ACandS will remove existing insulation and jacketing from the tank-top and replace it with new jacket and insulation.

Price . . . . $ 50,515

Clarifications:

1. Price includes scaffold.
2. Price includes labor to remove existing insulation from top to a Koppers provided dumpster; landfill disposal costs are not included.
3. Tank-top steel must of sufficient thickness to support the spot-welding of insulation pins.
4. Tank-top steel irregularities will create a irregular finish surface of the aluminum jacket.
5. Insulation thickness will be 3".
6. Aluminum thickness will be .024".
7. Insulation pads for nozzles or manways are not included.
8. Work will be accomplished on a regular 40-hour workweek.

Total Quality in Specialty Contracting

If you have any further questions, please contact Ron Peterson at (503) 227-6444, Ext. 123.

Sincerely,

Dan Pridemore

Dan Pridemore

REMIT TO:

WESTERN POWER & EQUIPMENT
4601 NE 77th Ave Ste 200
Vancouver, WA 98662-6730

WESTERN POWER & EQUIPMENT

ocation: West Portland OR
1-800-638-9941

INVOICE

INVOICE NO.:	A15042
CUSTOMER NO.:	116040
DATE:	8/09/99
AMOUNT DUE:	11,005.72

TERMS: NET 30

SHIP TO:
T.J.
286-3681

KOPPERS INDUSTRIES INC
7540 NW SAINT HELENS RD
PORTLAND OR 97210-3663

DETACH AND RETURN THIS PORTION WITH YOUR PAYMENT

RK	MAKE	MODEL	SERIAL	EQUIPMENT	METER	SLS	CUSTOMER PO
	WL	821	JAK0023609		5,438	726	T.J.

SHIP	B/O	DESCRIPTION	EACH	AMOUNT
		Closed	8/09/99	
		REPAIR OF MACHINE		
		CAUSE: 5438 HOURS OF COAL TAR DUST WORKING ENVIRONMENT		
		CORRECTION: R & R ENGINE REPLACED WITH REMAN UNIT. R & R PARTS FROM OLD ENGINE THAT WERE NEEDED TO INSTALL NEW ONE. CLEANED TAR FROM MACHINE. R & R RADIATOR & ALL COVERS NECESSARY TO DO THE JOB.		
1		R & R ENGINE WORK	11,005.72	11,005.72
		NON-TAX OREGON		.00

THANK YOU FOR YOUR BUSINESS.
WE LOOK FORWARD TO SERVING YOU AGAIN.

RECEIVED
AUG 13 1999
KOPPERS INDS, INC.
PORTLAND OR

UR SHOP — Total 11,005.72

308

PARTS & SERVICE: NET 30 DAYS • **RENTALS:** PAYMENT IN ADVANCE • **MACHINERY SALES:** IN FULL UPON DELIVERY
These are standard terms for all established Western Power & Equipment credit accounts in good standing at time of purchase.
Purchases are subject to terms and conditions set forth on reverse side.

/ 2 6M 6/90

CIRCLE TERMS ON INVOICE

DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
		9270	49	0362			11006 -

INV # 15042 DATE 08/09/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 7 1 2 2 0 2 3

TERMS CODE: 045 DUE DATE: / /

GROSS AMOUNT	11005 72
DISCOUNT $	

DIVISION	MONTH	AUDIT NUMBER
483	08	92700454

PORTANT: CIRCLE TERMS ON INVOICE

TERMS AND CONDITIONS

A 1.5% SERVICE CHARGE WILL BE IMPOSED ON ALL PAST DUE BALANCES.

UNIT PRICES ARE BASED UPON SELLING PRICES IN EFFECT AT TIME OF SHIPMENT NOT AT DATE OF YOUR ORDER

NO PARTS MAY BE RETURNED WITHOUT PERMISSION FROM WESTERN POWER AND EQUIPMENT AND IN NO CAS
WILL ANY RETURNED PARTS BE ACCEPTED IF RETURN DATE IS IN EXCESS OF 10 DAYS FROM PURCHASE DATE. Al
PARTS ARE SUBJECT TO 15% RESTOCKING CHARGE. PARTS WHICH ARE NON-RETURNABLE TO THE FACTORY AR
NON-RETURNABLE TO WESTERN POWER AND EQUIPMENT. IT IS THE RESPONSIBILITY OF THE PURCHASER T
NOTIFY WESTERN POWER AND EQUIPMENT IN WRITING OF ANY DAMAGES OR DEFECTIVE MERCHANDISE WITH
10 DAYS OF DELIVERY OR PICKUP. IF NOTIFICATION IS NOT RECEIVED IN WRITING WITHIN 10 DAYS OF DELIVEF
WESTERN POWER AND EQUIPMENT SHALL NOT BE HELD LIABLE FOR ANY CLAIMS.

KOPPERS

Koppers Industries, Inc.

CAPITAL EXPENDITURE REQUEST

				Request No.	9270- 99
Division	Carbon Materials & Chemicals	Location	Portland, Oregon	Request Date	7 / 14 / 99
Request Initiated By	A.S. Kamerer	Approved By	Kenneth Fitzgerald 7/29/99		
Title	Engine Rebuild - Case Front End Loader				

Amount of Request	$ 10,000	Depreciation Life	YRS	Estimated Life	YRS	Approval Date	MO.	19 YEAR		
Class of Expenditure	See Reverse 1 8	Depreciation Acct. No.	305	969	X	9270	925			

Specification & Description:

Engine rebuild and installation for Case 821 front end loader.
One year warranty.

Summary of Justification:

This equipment is used for melter loading and vessel unloading purposes.

ENGINEERING: By A.S. Kamerer Approval _____

ESTIMATE: By A.S. Kamerer Approval _____

COSTS: Cash Expenditure (1) 10,000
Trade-In or Salvage (2) 0
Amt. of Requests(1) + (3) 10,000

Type of Investment	Building	%	Equipment	%	Land	%	Type of Equipment	New		Used		Age		For Use On	Owned Property		Leased Property	

EARNINGS OR COST: *(5 Yrs. Average)*

Division Income Before Interest & Taxes _____
% Return On Net Investment _____
Added Working Capital Required If Any _____

RETIREMENTS: *(PDA) Attached*

Total Original Value _____
Years Acquired _____
Total Book Value _____

CONSTRUCTION BY:

Est. Schedule of Expense July 99
Est. Start - Up Date _____
Est. Close to Property _____
Referral to Insurance _____

APPROVAL:

Production Manager		7/29/99 DATE
Capital Planning		DATE
Environmental & Safety		DATE
Engineering		DATE
Division Controller		7/29/99 DATE
Group Controller		DATE
Other		DATE

KI - 405 Rev. 5

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE

March 2, 2000

NO: PI00-09

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(McKernan File No. P97-10)

Continuing service to do engineering tasks to support construction as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank.

CHARGES:

This invoice covers the work previously discounted in the period from 12/1-31/99 - Invoice No. PI00-05 dated 1/28/00.

TOTAL AMOUNT DUE (Additional billing per Amos Kamerer) $3,368.16

TERMS: Net cash

RECEIVED

MAR - 3 2000

KOPPERS INDS, INC.
PORTLAND OR

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE NO: PI00-05 January 28, 2000

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

COPY

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 12/01/99 through 12/31/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks to support construction as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Services are listed on the following page.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	41½ man-hours @ $79.00 per man-hour	$3,278.50	
Senior Engineer:	2½ man-hours @ $52.50 per man-hour	131.25	
Junior Drafter:	75¼ man-hours @ $27.00 per man-hour	2,031.75	
Labor Total	119¼ man-hours	$5,441.50	$5,441.50

DISCOUNT TO AGREE WITH PURCHASE ORDER..... <3,368.16>

TOTAL AMOUNT DUE $2,073.34

TERMS: Net cash

Cont'd . . .

Koppers Industries, Inc (Attention: WM. Meisinger) January 28, 2000
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI00-05

DESCRIPTION AMOUNT

SERVICES:

COPY

1. Visited site on 12/3/99:
   - Met with Amos Kamerer. Deliver literature and discussed the U. S. Coast Guard's Y2K policies.
   - Looked at the dock walkway connection, located emergency fire fighting equipment, noted pipe temperature and marked location of sliding pipe support feet.
2. Made revisions to the Operating Procedure as requested by the U. S. Coast Guard. Delivered the revised pages of the procedure to the U. S. Coast Guard on 12/8/99.
3. Visited site on 12/9/99:
   - Met with Bill Meisinger. Discussed spreader modifications and electrical hazard requirements.
   - Met with Gray Johnson. Discussed the spreader modifications.
   - Marked trough to show modifications needed to resolve interference with the hot oil pipe
4. Prepared the Structural Observation Report for the hydrostatic test of the pitch tank. Submitted Report to the City of Portland on 12/10/99.
5. Completed the following drawings:

	Plan No.	Rev.	List
	97010-SK65	-	Bridge/Walkway Tie Plate
*	97010-SK66	-	Ship Unloading Hose Arrangement Normal Low Water
*	97010-SK67	-	Ship Unloading Hose Arrangement Flood Level
	97010-SK70	-	Bridge/Walkway Corner Addition Arrangement
	97010-SK71	-	Bridge Walkway Corner Addition Details
	97010-SK75	-	Pier Fire Protection & Safety Equipment

   * Drawings also formatted to 8½" x 11" and sent to Gearbulk's ship by FAX on 12/20/99.
6. Visited site on 12/16/99:
   - Met with Bill Meisinger. Reviewed and delivered the bridge cross over drawings.
   - Met with Charlie Norris. Reviewed and sorted all the Special Inspection Reports from various agencies involved in the project.
   - Did a walkthrough of the whole plant. Plant was basically at the operating temperature. Particularly checked that the expanded pipe pedestals and guides were at their expected places.
7. Visited site on 12/22/99:
   - Met with Bill Meisinger. Reviewed and discussed handrail requirements.
   - Did a final inspection prior to ship arrival.
8. Visited site on 12/23/99. Participated in the first ship arrival, connection, and unloading process.
9. Visited site on 12/24/99. Participated in the first ship disconnection and hose stowage process.

END

Vendor Name J. Cameron McKernon

G/L	Detail	Subdetail	Location	Department	Tax	Emp No.	Move No./ PO No.	Amount	Inv No.	Date
5015			9270		0362			$3,368		
									PI00-09	3/2/00
									Vendor Number	
									006565016	

Gross Amount	$ 3,368.16	**Terms**	**Due**
Discount		**Code**	**Date**
Net	$ 3,368.16	055	4/2/00
	Division	**Month**	**Audit No.**
	483	3	9270003013

Authorization

Koppers005232

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE NO: PI00-05 January 28, 2000

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 12/01/99 through 12/31/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks to support construction as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Services are listed on the following page.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	41½ man-hours @ $79.00 per man-hour	$3,278.50	
Senior Engineer:	2½ man-hours @ $52.50 per man-hour	131.25	
Junior Drafter:	75¼ man-hours @ $27.00 per man-hour	2,031.75	
Labor Total	119¼ man-hours	$5,441.50	$5,441.50

DISCOUNT TO AGREE WITH PURCHASE ORDER ..... <3,368.16>

TOTAL AMOUNT DUE $2,073.34

TERMS: Net cash

OK to PAY
Capital #46

Cont'd . . .

RECEIVED
JAN 31 2000
KOPPERS INDS, INC.
PORTLAND OR

Koppers Industries, Inc. (Attention: WM. Meisinger) January 28, 2000
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI00-05

DESCRIPTION AMOUNT

SERVICES:

1. Visited site on 12/3/99:
   - Met with Amos Kamerer. Deliver literature and discussed the U. S. Coast Guard's Y2K policies.
   - Looked at the dock walkway connection, located emergency fire fighting equipment, noted pipe temperature and marked location of sliding pipe support feet.
2. Made revisions to the Operating Procedure as requested by the U. S. Coast Guard. Delivered the revised pages of the procedure to the U. S. Coast Guard on 12/8/99.
3. Visited site on 12/9/99:
   - Met with Bill Meisinger. Discussed spreader modifications and electrical hazard requirements.
   - Met with Gray Johnson. Discussed the spreader modifications.
   - Marked trough to show modifications needed to resolve interference with the hot oil pipe
4. Prepared the Structural Observation Report for the hydrostatic test of the pitch tank. Submitted Report to the City of Portland on 12/10/99.
5. Completed the following drawings:

	Plan No.	Rev.	List
	97010-SK65	-	Bridge/Walkway Tie Plate
*	97010-SK66	-	Ship Unloading Hose Arrangement Normal Low Water
*	97010-SK67	-	Ship Unloading Hose Arrangement Flood Level
	97010-SK70	-	Bridge/Walkway Corner Addition Arrangement
	97010-SK71	-	Bridge Walkway Corner Addition Details
	97010-SK75	-	Pier Fire Protection & Safety Equipment

   * Drawings also formatted to 8½" x 11" and sent to Gearbulk's ship by FAX on 12/20/99.
6. Visited site on 12/16/99:
   - Met with Bill Meisinger. Reviewed and delivered the bridge cross over drawings.
   - Met with Charlie Norris. Reviewed and sorted all the Special Inspection Reports from various agencies involved in the project.
   - Did a walkthrough of the whole plant. Plant was basically at the operating temperature. Particularly checked that the expanded pipe pedestals and guides were at their expected places.
7. Visited site on 12/22/99:
   - Met with Bill Meisinger. Reviewed and discussed handrail requirements.
   - Did a final inspection prior to ship arrival.
8. Visited site on 12/23/99. Participated in the first ship arrival, connection, and unloading process.
9. Visited site on 12/24/99. Participated in the first ship disconnection and hose stowage process.

END

Koppers Industries, Inc. (Attention: WM. Meisinger) January 28, 2000
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI00-05

LABOR SUMMARY:
(9/24/99 to 11/30/99)

Period ending:	12/15	12/31	Total
Principal Engineer:			
McKernan	20½	21	41½
Senior Engineers:			
Parham	0	2½	2½
Junior Drafter:			
Krug	56¼	19	75¼
			119¼ man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING DEC. 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-2	1½	Reviewed the drawings for the bridge walkway corner connection. Pretty much completed the review. Marked them up for Rob to correct.
	½	Rather lengthy telephone conversation with Bill Meisinger about the electrical inspector and some of the issues regarding the hazardous areas for the electrical installation.
12-3	3	Did a final check on the bridge to walkway corner connection. Checked the splice plate drawing. Went over to the pier. Met with Amos briefly and gave him some information on Y2K Coast Guard requirements. Went out on the service platform and checked the locations of the fire nozzles and stuff so we can get that on our drawings and the fire extinguishers. Marked with a lumber crayon the sliding feet of the pipe supports so that we can check when we get the system up to temperature how much things moved. Noted that the temperature out on the pitch pipe at the end of the dock was 175 degrees by the thermometer.
12-6	3½	Operating Manual: Reviewed the Coast Guard comments. Marked up the copy to incorporate their comments. Added some inserts. Instructed Mary on typing it and making the pages. Worked with Rob on changing the illustrations particularly making a new illustration for the fire and safety equipment. Later in the day visited the site to check the location of the new siamese hose fitting on the upstream dolphin. While I was there they were loading the hose troughs onto the dock. Noted some interference.
12-7	2½	Proof read the typed work that Mary did on the Operating Procedure. Worked with Rob editing the two illustrations some more. Instructed him to revise the 2nd illustration.
12-8	2	Completed the review of the revised Operating Procedure. Mary completed the typing of it and the typing of a forwarding letter and she took it over to the Coast Guard Base. Worked with Rob on getting the two illustrations up to date.
12-9	2½	Went over to the plant and met with Bill Meisinger. Discussed the spreader. Discussed the electrical requirements for hazardous areas particularly the tank area. Went out on the dock and marked the end of the trough for modification where the trough interferes with the hot oil pipe. Met with Gray Johnson. Discussed the spreader bar changes of the addition of two more pad eyes and one shackle. Also discussed how the carts and the shackles and the ropes are to be used.
12-10	1½	Worked with Rob on the corner cross over. Recalculated the size of the gratings and the stringers because of the increase span as a result of moving the walkway closer to shore to clear the fire hose connections at the corner. Quickly checked his drawings. Instructed him to add one more stringer so that there are now 5 stringers instead of 4.
	½	Prepared the structural observation report on the hydrostatic test of the pitch tank.
	17½	

CONT'D . . .

SIGNED JCMK DATE 12-21-99

20½ mh (2 sheets) (½)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING DEC. 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-13	1	Tried to get the vendor that I had talked to earlier about spray shields to give them to me. He is just not interested I gave up on him. Reviewed with Rob the drawings for the corner cross over. Pretty much got that done now.
12-14	1½	Finished the checking and rechecking of the bridge walkway corner cross over. Signed the plan and had Mary run prints so I can deliver them to Koppers in the morning.
12-15	½	Went through the files and gathered all the information on special inspections. Put it all in a package so I can take it over to Koppers for a meeting tomorrow morning.
	3	

SIGNED [signature] DATE 12-2-99

(8½)

ACTIVITY LOG

NAME ROBERT KRUG PERIOD ENDING 12-15-99

JOB NO: 97010-10 NAME KOPPERS CORNER ADDITON

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-1-99	5	DISCUSSED WITH CAM ON DRAWING SK 70 WHERE TO PLACE THE CORNER ADDITON AND WHAT MATERIALS TO USE, STARTED PRELIMINARY SKETCHES
12-2-99	1	FINISHED FINAL IDEAS ON WHAT TO DRAW
12-3-99	8	DEVELOPED SK 70 USING DECISIONS DISCUSSED THE 1ST & 2ND OF DEC. REPOSISIONED HANDRAIL STACHIONS AND STARTED DETAILS DWG.
12-6-99	8¾	WORKED ON SK 71 DETAILS DWG. DEVELOPED THE PLATE VIEWS AND SECTIONS
12-7-99	8	SUBMITTED FOR APPROVAL THE DWGS, CAM FINDS THAT SIAMESE HYDRANT IS ON THE WRONG SIDE, CAUSING REDESIGNING OF CORNER ADDITION, WE DISCUSS WHAT TO DO (MOVE UNIT DWN
12-8	7	MOVE ADDITION DOWN 4" IN POSITION AND MAKE ALL VIEWS AGGREE ON BOTH SHEET, TAKS ALL DAY
12-9	4	STAGGER FLAT BARS TO CLEAR WIDE FLANGES AND SHOW DIMENSIONS ON DETAIL SHEET, STRETCH OUT HAND RAILS.
	41¾	

SIGNED [signature] DATE 12-16-99

56¼ m-h (2 sheets) (½)

ACTIVITY LOG

NAME PE/KRUG PERIOD ENDING 12-15-99

JOB NO: 9710 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-10	6	HAD CAM CHECK PLANS, HE ADDS A 5th MEMBER
12-13	4	I UP DATE PLAN WITH 5th MEMBER ON BOTH DRAWINGS ADD DIMENSIONS ON SK 71 AND LINE UP VIEWS TO MAKE SURE THEY ARE ACCURATE
12-14	4½	GO THROUGH FINAL REVISION, MADE SOME EDITING CHANGES SO THE DRAWINGS LOOKED CLEAN. MADE PRINTS
	14½	

SIGNED [signature] DATE 12-16-99

2/2

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING DEC. 31, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-16	5	Went over to the plant. Met briefly with Bill Meisinger. Gave him the drawing for the corner cross over bridge. Met with Charlie Norris. Worked with him for several hours sorting out the Special Inspection Reports and making bundles of them for PSI and the other agencies that did special inspections. Had Jerome come over and we did a walk through of the whole plant checking the movements of the hot piping. The piping was up to 440 degrees out at the dock by the thermometer in the pipe at the end of the pier. It looked like the piping expanded pretty much like we had hoped it would. All the pipe supports and guides were about centered on their pedestals. Looked at all the other things like the pipe cross over bridges and the details out at the end of the dock on the piping.
12-17	~~2~~	Prepared sketch for flange connection spray shields. Took sketch to Schmeer Sheet Metal and ordered 3 spray shields.
12-21	~~1~~ N/C ½	Went over to Schmeer Sheet Metal and picked up the spray shields. Went out on the dock and fitted them onto the one flange to see how it fits. It fits pretty good except that the cut outs for the bolts aren't big enough. (2 hours) Took Mary down on the dock and kind of made a tour with her to show her what was happening on the dock and pipe line area and all the things we did on the plans. Reviewed the OSHA Regulations to find out the heights of handrails and for stairways. Found the OSHA Regulations and the API 650. I'll take them over and confer with Bill Meisinger tomorrow morning.
12-22	1½	Visited Koppers. Met with Bill Meisinger. Did a final site inspection prior to ship arrival. Discussed handrails.
12-23	10½	Went down to the plant about 2:30 am to attend the first unloading of the ship and filling of the pitch tank. Was there until about 2:30 pm. So that's 10 ½ hours.
12-24	3½	Went to Koppers early in the morning. Was there about 5:00. Was there only ½ hour. Went back home. Returned to Koppers about 11:30 and returned about 2:00. They finished off loading the ship and I was there while they disconnected the hoses and stowed the hoses in the hose troughs. Everything went all right except that the ship didn't disconnect the pennant from the gib crane that held their end of the hose and we fought that all the way down until we got the hose stowed in the hose rack. While we were fighting it into the hose rack the cable from the head sheave at the end of the hose rack jumped out of the sheave and I couldn't get it back in.

SIGNED [signature] DATE 1-5-00

~~2~~ mh (3 mh spray shields) 21 mh

ACTIVITY LOG

NAME Robert PERIOD ENDING 12-31-99

JOB NO: P9710 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-16-99	4	WORKED ON THE SCHEMATIC FOR THE JURISDITION BOUNDRIES FOR THE USCG, IS AN 8½ x11 BUT DWG # IS 97010-SK76
12-17-99	6	MADE CHANGES FROM LAST DISCUSSION WITH CAM ABOUT DWG.S SK66 & SK67 ABOUT PRESENTATION OF THE DWGS I.E. LINE WTS, POSITION OF TEXT, ETC.
12-20-99	½	DISCUSSED TOUCHING UP EDITORIALLY BRIEFLY ON DWG: SK66 & SK67
12-21-99	7½	WENT THROUGH A DISCUSSION ON LAST MIN CHANGES OF DWG.S SK 66 & SK 67 FOR THE HEIGHTS ON THE SHIP AT VARIOUS DRAFT MARKS AND WATER LEVELS, FINISHED UP THE HOSE HANDLING DRAWINGS (66 & 67) AND MODIFIED THEM TO FIT ON A 8½ x11 SHEET.
12-23-99	1	MADE EXTRA PRINTS

SIGNED [signature] DATE 1-3-00

19 mh

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 31 Dec 1999

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
1-16	2½	Went to Koppers & made quick inspection of pipe line & check pipe support movements

SIGNED Jerome J. Parham DATE 1-3-00

2½ mh

Vendor Name J. Cameron McKernon

G/L	Detail	Subdetail	Location	Department	Tax	Emp No.	Move No./ PO No.	Amount	Inv No.	Date
5015			9270		0362			$2,073		
									PI00-05	1/28/00
									Vendor Number	
									006565016	

	Gross Amount	$ 2,073.34	Terms / Due
	Discount		Code / Date
Authorization	Net	$ 2,073.34	055 / 2/28/00
		Division	Month / Audit No.
		483	2 / 9270002O012

Koppers005243

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE NO: PI99-68 December 8, 1999

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 9/24/99 through 11/30/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks to support construction as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	105	man-hours @ $79.00 per man-hour	$ 8,295.00	
Senior Engineers:	63½	man-hours @ $52.50 per man-hour	3,333.75	
Senior Drafter:	72¾	man-hours @ $40.00 per man-hour	2,910.00	
Junior Drafter:	264	man-hours @ $27.00 per man-hour	7,128.00	
Labor Total	504¼	man-hours	$21,666.75	$21,666.75

TOTAL AMOUNT DUE $21,666.75

TERMS: Net cash

Cont'd . . .

OK
GVM
12-20-99

Koppers Industries, Inc. (Attention: WM. Meisinger) December 9, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-68

DESCRIPTION AMOUNT

SERVICES:

1. Visited site on 9-30-99. Met with Bill Meisinger and Amos Kamerer. Witnessed hydrostatic testing of pitch tank and toured the yard.
2. Visited site on 10-6-99. Met with Bill Meisinger and Amos Kamerer. Discussed project and toured the yard.
3. Prepared and delivered the following sketches for the hose trough on 10-8-99:

Plan No.	Rev.	Title
97010-SK60	PRELIM	Hose Trough Arrangement
97010-SK61	PRELIM	Hose Trough Handrail Arrangement
97010-SK62	PRELIM	Hose Winch Arrangement

4. Visited site on 10-13-99:
   - Picked up the existing PTSI Terminal Operations Manual.
   - Discussed hose trough plans.
5. Visited site on 10-14-99. Participated in telephone conference with Koppers and PTSI personnel in connection with revising the Terminal Operations Manual and Spill Response Plan.
6. Revised the following drawings:

Plan No.	Rev.	Title
97010-22	A	Fire and Safety Plan
97010-22A	A	Fire Mains & Hydrants (Existing)

7. Visited McDowell Welding on 10-18-99. Met with Gray Johnson to review the hose handling winch drawings.
8. Visited site on 10-20-99. Met with Bill Meisinger and Amos Kamerer. Delivered the following plans:

Plan No.	Rev.	Title
97010-SK60	-	Hose Trough Arrangement
97010-SK61	-	Hose Trough Handrail Arrangement
97010-SK62	-	Hose Winch Arrangement
97010-SK63	PRELIM	Hose Handling Dolley & Ramp Details
97010-SK64	PRELIM	Hose Trough Misc. Details & Material List

   Reviewed the plans with them.
9. Revised the Terminal Operations Manual. Delivered a preliminary copy to Bill Meisinger on 10-25-99.
10. Visited site on 10-27-99. Met with Bill Meisinger to review the revised Terminal Operations Manual.

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) December 9, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-68

DESCRIPTION AMOUNT

SERVICES (continued):

11. Visited site on 10-28-99. Met with Bill Meisinger:
    - Reviewed changes to Terminal Operations Manual. In particular, incorporation of his comments.
    - Reviewed hose handling plans.
12. Visited the Fire Bureau on 11/3/99. Reviewed revised firemain plans. They approved the plans immediately.
13. Visited site on 11/4/99. Met with Bill Meisinger and Gray Johnson (McDowell Welding) to discuss new firemain installation.
14. Completed revising the Terminal Operating Procedure Manual.
15. Prepared Supplement to the Terminal Oil Spill Response Plan.
16. Visited Coast Guard on 11/12/99. Met with Coast Guard, Koppers, and PTSI personnel. Reviewed and submitted the revised Operating Procedure Manual and the Supplement to the Oil Spill Response Plan.
17. Visited site on 11/15/99. Met with Bill Meisinger, Amos Kamerer, and T. J. Turner. Discussed the hose handling system. Delivered copies of the following drawings:

Plan No.	Rev.	List
97010-SK66	PRELIM	Ship Unloading Hose Arrangement Normal Low Water
97010-SK67	PRELIM	Ship Unloading Hose Arrangement Flood Level

18. Prepared two applications for the following new tank installations. Delivered the applications to the Fire Bureau on 11/23/99:
    - Hot Oil Expansion Tank
    - Liquid Nitrogen
19. Visited Coast Guard on 11/29/99. Reviewed with them their comments on the Operating Procedure Manual and agreed to make revisions to suit their comments.
20. Started developing new sketches as follows for hose handling and walkway cross connection at dolphin. Work not completed.

Plan No.	Rev.	List
97010-SK65	PRELIM	Bridge/Walkway Tie Plate
97010-SK70	PRELIM	Bridge/Walkway Corner Addition Arrangement
97010-SK71	PRELIM	Bridge Walkway Corner Addition Details
97010-SK75	PRELIM	Pier Fire Protection & Safety Equipment

END

Koppers Industries, Inc. (Attention: WM. Meisinger) December 9, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-68

LABOR SUMMARY:
(9/24/99 to 11/30/99)

Period ending:	9/30	10/15	10/31	11/15	11/30	Total
Principal Engineer:						
McKernan	4	25½	29½	37	9	105
Senior Engineers:						
Parham	4	30	26	2½	1	63½
Senior Drafter:						
Kincaid	0	41½	31¼	0	0	72¾
Junior Drafter:						
Krug	18½	83¾	55½	60	46¼	264
						504¼ man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPT. 30, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-16	2	Prepared some structural observation reports on the tank. Prepared a forwarding letter for the test and inspection data from Morris Tank to send to the City.
9-17	2½	Went over to the site. Met with Charlie Norris on the flow meter and the hot oil control valves. Looked at the control valves and the thermometer wells. Reviewed the P & ID drawing and the isometrics for the hot oil system. Worked out how we are going to modify the flow meter piping. Came back to the office and started to mark up a print for revision.
	1½	Prepared a draft of a letter to Russ Sill about the firemain system. Went through a couple edit/revisions with Mary retyping it each time.
9-21	1	Checked Jerome's plot of the revision to the meter piping. Marked it up for a little further revision and rechecked it. Stamped the plan after the final plot. Had Mary make forwarding letters for it.
	½	Marked up a print for Jerome to follow in revising the hot oil expansion tank plan to add a nozzle. Checked his revision. Stamped the plan. Had Mary make forwarding letters for Jerome to hand deliver.
	1½	Made a sketch for Koppers of the roof personnel tie off (3 sheets). Sent it by FAX over to Charlie Norris.
9-22	½	Reviewed with Jerome the changes he made to the hot oil piping to make a new connection to the bottom of the hot oil tank for start up. Asked Jerome whether Charlie Norris had received the sketch on the personnel tie off. Jerome said he had.
9-23	½	Reviewed jerome's plan revision for adding the 4" hot oil pipe to the bottom of the tank. Had him make a XEROX copy of that part of the plan and send it off to Bill Meisinger to review.
9-24	½	Worked with Jerome and Rob instructing them on developing the hose trough plans.
9-28	½	Checked Rob drawing to see that he is getting off on the right start.
9-29	1	Checked Rob's prelim drawings. Visit Koppers.
9-30	2	Visit Koppers. Meet with Amos and Bill. Witness hydrostatic tank testing. Tour yard.

Previously Provided

SIGNED JCMK DATE 10-5-99

4 mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 SEPT 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-20	4	ADD CONTROL VALVES & TEMP TRANSMITTERS TO DWG-59
9-21	8	PLOT DWG OF FLOW METER & CHECK WITH CAM & ADD MORE DETAILS & REPLOT. CORRECT TANK DWG & ADD NOZZLE. TAKE DWGS TO CHARLIE & LOOK AT PIPE ROUTING TO NOZZLE
9-22	6	MAKE CHANGES TO 6526-005 & 008 TO SHOW NEW PIPING & MAKE REV 1 TO DWGS & REPLOT
9-23	3	PLOT/CHECK PRINTS OF NEW 4" HOT OIL TO EXP. TANK REVIEW W/CAM PLOT 8½x11 SKETCHES FOR BILL M. PLOT FINAL ON VELLUM
9-24	2	DISCUSS HOSE TROUGH DESIGN WITH CAM & ROB
9-27	2	GO TO KOPPERS WITH ROB TO CHECK WALKWAY FOR TROUGH PLACEMENT

PREVIOUSLY INVOICED

SIGNED Jerome J. Parham DATE 10-1-99

4 mh

ACTIVITY LOG

NAME Rob Krug PERIOD ENDING 9-30-99

JOB NO: P-9710 NAME Koppers Hose Trough

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-24	1	Discussed Design of Trough
9-27	(2)	Went to Koppers to Survey for Location of Trough took Dimensions.
9-28	6	Drafted Prelminary Views and Drawings using original prints from -23, -51 made a plot
9-29	7 1/2	Refined Drawing, Put in Bracing, Winch, Put on Frontal Lip, Put new walkway midsection view on, Made plot for Cam.
9-30	2	Started Puting on Bracing, Fixed Background

SIGNED [signature] DATE

18 1/2 hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCT. 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-1	1	Instructed Rob further on the trough drawings.
10-4	1	Worked with Rob developing his drawings.
10-5	1	Worked with Rob on his drawings.
10-6	2	Stopped by Koppers on way to work. Visit with Amos and Bill. Toured the site.
	½	Briefly checked Rob's drawings.
10-6	½	Discuss with Mike the dolly system for the new hose bridge.
10-7	4	Worked with Rob to get the hose rack geometry correct and the drawing correct. Did several iterations of check, re-check, revise, recheck, etc. Worked out a scheme for making the thermometer accessible and for attaching handrails to the inboard side.
10-8	3	Worked with Rob checking and rechecking and completed the 2 sketches for the trough and the handrail on the trough. Got them printed by Mary and hand delivered them to Koppers. Briefed Jerome, Michael, & Rob on the hand winch installation for handling the hose in the trough and for handling it from and to the ship.
10-13	2	Went over and met with Bill Meisinger and Dave Weible and Amos. Discussed the hose trough. Also discussed the requirements for the Operation Manual and the approval by the Coast Guard of it. Obtained a copy of the hazardous Spill Recovery Manual. They did not have the Operations Manual.
	1	Got back tot he office and researched the Code of Federal Regulations. Found the sections referring to hazardous materials and facility requirements. Had Mary make copies of those and send them by FAX over to Koppers.
	1	Reviewed the work that the crew did while I was gone for the last two days. Was very disappointed in what they accomplished.
	17	

CONT'D . . . .

SIGNED JCMK DATE 10-19-99

25½ mh (2 sheets) (½)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCT. 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-14	2	Reviewed the terminal operating procedure. Flagged items for revision. Started to review the spill response plan in the same way.
	2½	Went over to Koppers and met with Meisinger and Kamerer. Reported my findings on the review of the spill response information. Telephone conversation with George Clarke the terminal operator. Outlined with him the plan for revising the manuals. Also telephone conversation with a Koppers person from the East discussing who the operator was actually going to be and who was going to do what.
	2	Reviewed the plans for the winch at the ends of the trough and for the hose handling including the dollies and the bridge. Marked up the plans for revisions, estimated the weights of the parts, gave instructions for people to revise the drawings per the mark up and to do an accurate weight estimate on the pieces.
10-15	½	Checked the revised drawing that Mike did and had him make on minor change in it.
	½	Telephone conversation with Amos regarding the winch installation on the hose rack and telephoned Gray Johnson and told him I would bring the drawing over.
	1	Worked with Jerome on the cut off plank for the hose handling at the corner of the pier.
	8½	

SIGNED J. Cameron McKernan DATE 10-19-99

1/2

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 OCT 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-8	1	REVIEW DESIGN OF HOSE WINCH, LADDER, CROSSOVER BRIDGE, LADDER & STRONGBACK WITH ROB, CAM & MIKE
10-11	6	WORK WITH ROB ON HOSE HANDLING WINCH - MAKE A SKETCH OF BLOCKS & FRAMES AT END OF TROUGH FOR HIM TO MAKE A DRAWING
10-12	1	REVIEW ROB'S WINCH BLOCK DWG & MAKE SOME CORRECTIONS
10-13	6	REVIEW ROB'S WINCH & BLOCK DWGS & CORRECT, REVIEW WITH CAM, WORK WITH MIKE TO CORRECT DWGS AS NECESSARY. CHECK & MARK-UP LADDER AND DOLLY SKETCHES FOR ROB, WORK ON HOSE BRIDGE PAN
10-14	9	WORKED WITH MIKE & ROB ON WINCH SHEAVE DETAILS. REVISED BRIDGE SKETCH FOR ROB TO MAKE DWG. CORRECTED DOLLY AND LADDER DETAILS CHECK & REPLOT. REVIEW ALL DWGS WITH CAM TO MAKE DESIGN CHANGES
10-15	7	TAKE CARE OF CAM'S COMMENTS ON DWGS, WIDEN HOSE BRIDGE & WORK WITH ROB TO GET WEIGHT ESTIMATE TO MAKE IT PORTABLE - STILL A LITTLE HIGH. REVISE LADDER TO MAKE IT'S SIDES WIDER & GET ITS WEIGHT.

SIGNED Jerome D. Parham DATE 10-16-99

30 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING OCTOBER 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10/6/99	1	HAD A DISCUSSION w/ CAM ABOUT THE DOLLIES FOR THE HOSE AND BRIDGE THAT CONNECTS THE BRIDGE TO SHORE AND THE WALKWAY (FOR THE HOSE WHEN MOVED FROM SHORE TO THE SERVICE PLATFORM)
10/7/99	4½	WENT TO KOPPERS TO LOOK AT SOME EXISTING DOLLIES AND TO TAKE SOME MEASUREMENTS. STARTED TO WORK ON THE DESIGN OF THE DOLLIES.
10/8/99	4½	FINISHED THE DRAWING OF THE DOLLIES AND HAD A DISCUSSION w/ CAM ABOUT THE HOSE BRIDGE. LATER ON IN THE DAY HAD A DISCUSSION w/ CAM (AND JEROME) ABOUT SOME OTHER ASPECTS OF THE HOSE HANDLING SYSTEM (THE WINCH PLATFORM, THE LADDER FOR THE HOSE TROUGH, AND THE SHEAVE SUPPORTS)
10/11/99	4	WORKED ON FORMING THE DESIGN OF THE BRIDGE. STARTED TO LAYOUT THE DESIGN OF THE LADDER FOR THE TROUGH. DISCUSSED THIS DESIGN w/ ROB. REVIEWED HIS FIRST PLOT OF THE LADDER
10/12/99	4½	WORKED ON THE BRIDGE. DISCUSSED THE BRIDGE w/ ROB SO HE COULD WORK ON THE DETAILS OF IT. REVIEWED THE LADDER DETAILS.
10/13/99	8	HAD A DISCUSSION w/ JEROME ABOUT THE PROJECT. DECIDED THAT I WOULD TAKE OVER THE WINCH & SHEAVE DETAIL SHEET (BECAUSE OF THE AMOUNT OF WORK IT NEEDED), AND JEROME WOULD SUPERVISE ROB ON THE BRIDGE, LADDER, AND DOLLY SHEET. PROCEEDED TO WORK ON 97010-SK62 (SHEAVE AND WINCH SUPPORT DETAILS).
10/14/99	9	WORKED ON 97010-SK62. PLOTTED THE DRAWING SO IT CAN BE REVIEWED BY CAM. WORKED ON 97010-22 AND 97010-22A (REV 1). PLOTTED THE DRAWINGS FOR CAM TO REVIEW. REVIEWED 97010-SK62 w/ CAM & JEROME. WORKED ON THE DRAWING AFTERWARD.
10/15/99	6	FINISHED WORKING ON 97010-SK62. PLOTTED A COUPLE OF SHEETS FOR CAM. HAD ROB DO SOME SMALL CHANGES TO 97010-22 & 97010-22A. PLOTTED THEM ON VELLUM.

SIGNED [signature] DATE OCTOBER 15, 1999

41 ½ mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 10-15-99

JOB NO: 97010 NAME Koppers Hose Trough

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-1	5	Discussed Overall Discription of what needs to be Drawn and began initial sketches.
10-4	8	Finished 1st Draft of Drawing implementing sketches, made first plots, drew using backgrounds of previos drawings. Discussed how to brace lateral direction
10-5	8	Up dated bracing and added intermidate stiffengers and lateral bracing Discussed next phase w/Cam
10-6	8	Cleaned up Drawing Background, worked on lining objects up properly and created 3 new sectioned details
10-7	10	Raised trough 3" and Attemted to make all views fit, worked on balancing SK60 Discussed with Cam addition of handrailing
10-8	8¾	Finished SK60 and made prints, Did preliminary drawings of handrailing, backgrounds etc. added flatbars for stanchions
10-11	7	Discussed addition of winch and sheave assembly and started preliminary views. working w/Gerome Came up with basic concepts
10-12	9	Took Geromes notes for the sheave assembly and made them dwgs, Drew access ladder.
10-13	6	worked on ladder detail, changed Alum sq stock to flat bar
10-14	6	Worked on bridge detail for temp bridge & ladder, (scaling adding Details, and fixing linetypes
	75¾	

SIGNED _____ DATE 9-16-99

83¾ mh (2 sheets) (1/2)

ACTIVITY LOG

NAME R. KRUG PERIOD ENDING 10-15-99

JOB NO: 9710 NAME KOPPERS (TROUGH)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-15	8	MADE ADJUSTMENTS TO THE TEMPORARY BRIDGE, ADDED BOLTS TO THE CASTERS, TWEEKED THE LADDER WHERE IT CONNECTS TO THE HOSE TROUGH

SIGNED [signature] DATE 10-16-99

2/2

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCT. 31, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-18	2½	Visited with Gray Johnson at McDowell Welding and reviewed with him the drawing for the winch installation. Went over to the pier and looked at the gratings and the arrangements of the pipe supports and other things to see if our plan installation is feasible. Decided that it was. Reviewed Michael's plan on the installation of the winch. Marked it up for some additional revision. Talked with Gray Johnson on the telephone later in the day. Confirmed that he had received the disk we sent on the trough and confirmed that he agrees with me that the way we show the trough on the plan is feasible to do it.
10-20	1½	Checked the drawing for the hose handling and the hose handling winch installation. Marked it up for revision. Briefly went over the small revisions that are on Mike's drawing. Delivered the plans that Bill Meisinger requested to Amos at his office and reviewed with Amos the cart and the hose handling details.
10-21	2	Brief telephone conversation with Russ Sill about the letter and wanting to have a meeting. He said the letter was fine. Worked with Rob on the review of the drawings for the hose handling details. Briefly reviewed Mary's retype of the operating procedure.
10-22	2	Worked with Rob to check the revisions he made to the drawings.
10-23	8	Worked on the dock operations manual. Completed the mark-up of the existing manual and got it ready for Mary type.
10-25	½	Reviewed the text of the operations manual with Mary so she could type it more easily.
	2	Proof read the typed draft of the operations manual. Marked up some corrections, did some editing, and had Mary retype it and make copies of it.
	1	Went over to Koppers and met with Bill Meisinger. Gave him the operations manual. Just gave him an outline preview of what is in the manual. Reviewed with him the plans for the cross over bridge and the ladder and the dollies. Went from there directly home.
10-26	3	Worked with Rob on the hose handling detail. Sketched out and worked up the details for the spreader bar, all the various combinations of shackles and hooks.
	½	Briefed Jerome on what I wanted done on the hose handling arrangement plan.
10-27	1	Reviewed Rob's plan. Marked it up for a few additional minor revisions. Rechecked it.
	1½	Went over for a meeting at Koppers. Met with Bill Meisinger. Briefly reviewed the plan with Bill. He called a fellow some place back east and we did a telephone review of the comments he had on the operating manual.
	1	Worked with Rob on making a new cross over bridge for the hose handling utilizing a piece of grib strut plank.

SIGNED JCMK DATE 10-4-99

29½ hrs (2 sheets) (1/2)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCT. 31, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-28	2	Met with Bill Meisinger. Reviewed the changes in the facility operating manual. Reviewed the plans for the hose handling with him.
10-29	1	Had Rob revise the hose handling drawings to remove the cross over ramp for the hose handling and to adjust the bolt holes for the covers for the hoses.

SIGNED _____ DATE 11-4-99

(2/2)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 OCT 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-18	6	WORKED ON HOSE PULLER DETAIL - MADE CONCEPT SKETCH W/MIKE. CALLED WASHINGTON CHAIN FOR SPELTER SOCKET INFO START SKETCH DWG. REVIEW ROB'S BRIDGE DWG & CORRECT ERRORS
10-19	8	CHECK ROB'S LATEST DWG & MADE MAT'L LIST & HOSE PULLER LINE DETAIL & MADE MISC. DETAILS + MATL. LIST
10-20	2	FINISH LINE PULLER & MAT'L LIST & PLOTTED
10-25	3	CALCULATE VOLUMES IN 8" & 10" PITCH PIPES FROM TANK TO SHORE & 2" & 1" HEAT TRACES. CALC. BARRELS IN PIPE.
10-26	1	REVIEW SHIP UNLOADING HOSE HANDLING W/CAM START NEW DWG SHOWING HOSE, SHIP, CRANES & TROUGH
10-27	4	WORKED ON HOSE ARRGT FOR SHIP MAKE BLOCKS FOR TROUGH & SHIP FROM emailed DWGS. TURN OVER TO MIKE
10-28	2	WORK WITH MIKE ON HOSE ARRGT DRAWINGS

SIGNED Jerome J. Parham DATE 10-31-99

26 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING OCTOBER 31, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10/18/99	5	WORKED ON 97010-SK62. MADE A PLOT FOR CAM TO REVIEW. HAD TO MAKE SOME CHANGES TO THE SHEAVE STRUCTURE AND FIX SOME OVERSIGHTS ON THE DRAWING. HAD A DISCUSSION w/ CAM ABOUT THE DRAWING (A REVIEW).
10/19/99	4	WORKED ON THE CHANGES CAM WANTED ME TO MAKE. MADE A PLOT FOR CAM TO REVIEW.
10/21/99	2½	AFTER CAM'S REVIEW MADE THE CHANGES TO 97010-SK62. PLOTTED IT TO GIVE TO CAM.
10/22/99	½	MADE TWO CHANGES ON 97010-SK62 AND PLOTTED IT ON VELLUM.
10/25/99	3	CREATED AN 8½ x 11 OF THE KOPPERS SITE THAT SHOWS THE WHOLE PIPELINE AND ANY OUTSTANDING FEATURES. PRINTED THE DRAWING AND GAVE IT TO CAM. (FILE NAME OF DWG IS "REVISED 9710-SH2").
10/27/99	4	WORKED ON DRAWING THAT SHOWS THE ARRANGEMENT OF THE SHIP WHEN IT'S READY TO UNLOAD. NAME IS CURRENTLY 97010-76. HAD DISCUSSIONS w/ JEROME ABOUT THE PROJECT.
10/28/99	7¼	WORKED ON 97010-76. WORKED w/ JEROME ON THE DRAWING. WE TOOK TIME TRYING TO FIGURE OUT THE GEOMETRY OF THE HOSE HANDILING SYSTEM. MADE A PLOT FOR JEROME TO REVIEW. TOOK HIS MARKUP AND STARTED TO WORK ON IT.
10/29/99	5	WORKED ON 97010-76. MADE A PLOT FOR A REVIEW.

SIGNED [signature] DATE OCTOBER 31, 1999

31¼ mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 10-31-99

JOB NO: P9710 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-18-99	6	DID WORK ON SK63, WORKED ON GETTING THE PORTABLE CROSSOVER DESIGN CORRECT.
10-19-99	3	REVISED PORTABLE LADDER ON SK63, SEVERAL DESIGN CHANGES AND MAKING ALL VIEWS AGREE, WORKED ON DOLLEY DESIGN
10-21-99	3	MORE WORK ON SK63. FINISHED UP SMALLER DETAILS, CHANGED DOLLEY PLATE THICKNESS
10-22-99	9	CHANGE AGAIN PORTABLE BRIDGE, CHANGED DIMENSIONS AND ESSENTIALY REDESIGNED IT. MADE NEW HANDRAIL DETAIL TO ALLOW HOSE TO PASS UNDER Lower RAIL, DISCUSSION w/CAM SPREADER BAR
10-25-99	4.5	TOOK OVER JEROMES DWG. # SK-64, STARTED WORK ON THE SPREADER BAR, BASED OFF OF BASIC DIMENSIONS CAM GAVE
10-26-99	8	DEVELOPED SLING BACK, DISCUSSED WORK ON MORE WORK ON SPREADER BAR
10-27-99	8	WENT BACK TO SK. 63 AND DID REVISIONS AGAIN ON ENTIRE DRAWING, MAINLY ON THE LADDER AND DOLLEY
10-28-99	8	BACK TO 64 DID CAMS MARK UPS, GOT RID OF BRIDGE ON G3 AND STARTED DWG. 65, MAKING BRIDGE DETAILS THERE
10-29-99	6	FINISHED UP 65, CONNECTION OF BRIDGE TO PERMANENT WALK WAY

SIGNED [signature] DATE 11-1-99

55½ mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOV. 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (1 of 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-3	2½	Met with Rob & Jerome and reviewed the hose handling system. In particular, the way the hose is going to hang from the ship's gear on the dock. Instructed Rob to make some lay outs so we can see how this system is going to work.
	2	Worked with Mary-Anne on the Operations Manual. Reviewed with Mary-Anne the mark-ups from Bill Meisinger and did another proof read/edit session and basically finished the manual except some final touches.
	2	Visited Mike Rochat at the Fire Bureau. Discussed standpipe requirements and reviewed revised installation plans. He stamped the revised plans "approved" and exchanged them with the previously submitted plans.
11-4	2	Went over to the plant. Met with Bill Meisinger and Gray Johnson of McDowell Welding. The meeting was principally about having the fire modifications in the cross connection between the existing fire main and the new dry stand pipe. Went out on the dock and walked Gray through the whole system with Bill Meisinger and looked at everything. The stand pipe connection on the end of our new bridge where the new siamese connection is going to be on the corner of the walkway and where the connection and the cross connection for the new fire main is going to be.
11-5	1	Worked with Rob. Reviewed the hose handling and made some changes. Instructed him to revise the preliminary sketch.
		On the Operating Procedure Manual: did a final check and got it off by UPS to George Clark at Olympic Tug.
11-7	1	Reviewed the PTSI Oil Spill Response Plan. Drafted the opening introduction for the Supplement.
11-8	4	Made a pencil draft of the first part of the Supplement to the Oil Spill Response Plan. Followed the outline in the PTSI book.
	½	Proof read and marked up the typed draft. Had it retyped.
	1	Worked with Rob on the hose handling drawing. Had him plot and replot several times to see if we can get the hose hanging correctly.
11-9	3	Worked with Rob on the hose handling drawings. Completed the normal water levels and started the flood levels.
11-10	4	Continued the draft of the supplement for spill response. Got it 100% complete. Instructed Mary on typing it
	1	Reviewed the Fire Bureau's Forms. Drafted the permit application. Verified from Lynn Rossi the cost of the tank. That is the nitrogen tank.
	2	Worked with Rob on the hose arrangement. Got the arrangement for the hose with a 6 foot water level finished.

SIGNED ACMK DATE 12-8-99

37 mh (2 sheets) (½)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOV. 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL (2 of 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-11	3	Worked with Mary on completion of the supplement for the spill recovery plan. Proof read and edited a couple versions. Got it finally all put together.
	3	Worked with Rob to get the hose arrangement done for the flood stage 20 foot level. Basically got the lay out complete.
11-12	2	Went over to the U. S. Coast Guard to meet with Amos Kamerer and George Clark to review our submittal of the Operating Procedure and the Spill Recovery Plan. Had a satisfactory meeting. Met with Chris Baker and somebody Verlome of the Coast Guard.
	1	Worked with Rob to finish up the hose handling drawing. Got it finally checked and had Rob plot it on vellum and make some prints.
	1	Went over to the plant and met with Bill Meisinger, Amos, and T. J. and reviewed with them the hose handling arrangements. They asked me to revise it to show the ship picking up the hose with their long cargo handling booms out of the trough.
11-15	1	Telephone conversation with Bill Meisinger about the testing of the fire main. Worked with Rob on the new section of walkway to go between the two walkways. Marked-up prints and gave him some verbal instructions on how to carry on with the rest of the design.

SIGNED JCMK DATE 12-8-99

(2/2)

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 15 Nov. 1999

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-3	1	Review Hose Handling Dwgs. with Cam & Rob
11-8	1½	Worked with Rob on Drafting inclined Flanged elbows & with misc. problems on drawing

SIGNED Jerome J. Parham DATE 11-16-99

METALLICA.com

ACTIVITY LOG

NAME Rob Krug PERIOD ENDING 11-15-99

JOB NO: 97010 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-3	2	DICUSSED DWG SK66, BASIC OVERALL LAYOUT AND SK 65 CONNETON OF THE NEW PORTABLE BRIDGE TO EXISTING BRIDGE
11-4	7	PRIMARILY GETTING ALL VIEWS TO AGREE AND TO GET THE HOSES AND STRONG BACK IN THE DWG.
11-5	8	STRUGGLED TO GET THE PROPER SHAPE OF THE HOSE, CHANGED WATER LEVEL OF THE SHIP CHANGING AGAIN HOSE SHAPE, REDREW PROFILE ELEVATION.
11-8	8	DID MORE WORK ON SK66 MOVED SHIP FORWARD AND REDREW ALL 3 DRAWINGS AT THAT POSITION.
11-9	7	STILL WORKED ON COMPLETING DRAWING AT NEW POSITION (15') CHANGED HOSE SHAPE.
11-10	4	DID SOME WORK ON TEMP BRIDGE (DWG. 65) NEW REVISIONS AND TINKERED WITH DWG SK66, STARTED SK 67 (SAME DWG ONLY AT FLOOD STAGE.
11-11	8	WORKED W/CAM CLOSELY ON SK. 66 & SK67 GETTING THE DWGS. RIGHT
11-12	8	MADE PRINTS FOR SK66 & SK67 STARTED DWG FOR PORTABLE BRIDGE, AND REVIEWED w/CAM WHAT TO DO.
11-15	8	WORKED ON ARRANGEMENT, SECTIONS, AND STACHIONS FOR SK65

SIGNED [signature] DATE 11-16-99

60 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOV. 30, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-16	1	Worked with Rob on the drawing for the short cut ramp. Marked-up a print and gave him guidelines on what views he needs and how to arrange them.
11-18	1	Worked with Rob and reviewed his plans on the walkway/bridge connection.
	1	Reviewed Mary's draft of the tank permit applications for the nitrogen tank and the hot oil expansion tank.
11-19	~~1~~ N/C	Worked with Rob on the bridge walkway connection walkway.
		(1 hour) Stopped off at the plant and visited with Amos. Got him to sign the tank permit applications and prepare checks for the applications to the Fire Bureau. This is the N2 Tank and the Hot Oil Expansion Tank.
11-23	½	Pacific Tank Service: Reviewed the SPCC for the Pacific Tank Services Facility of Portland. Signed the Certification and stamped Approval on it.
11-29	~~1~~ 1½	Went over to the Coast Guard office. Met with BMC 3 Verlome. Reviewed all the comments they had on the Pier Operations Manual. Made notes. Agreed to submit only the changed pages after I incorporate the comments into the manual. Returned to the office.
	2	Reviewed Rob's plots of the sketches. Sheet 1, the Arrangement, was generally correct had a few minor comments. Sheet 2, suggested he expand it to another sheet and lay out sheet 2 a little differently to make it easier to read.
11-30	1½	Worked with Rob on the drawing for the corner connector. Marked up check prints. In particular, looked at the dimensioning that he put on the drawing. Changed some of the dimensions to round it to even numbers instead of odd fractions. Instructed Rob to make another lay out showing the structure of the corner at that dolphin with the idea of maybe we are going to tie the two walkways together with a bolted connection.
	9	

SIGNED JCMK DATE 12-8-99

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 30 Nov. 1999

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-18	1	Help Rob with Drafting Details on Cross-over Bridge Calculate Thermal Expansion Distance For Tank Side For Bill Meisinger

SIGNED Jerome J. Parham DATE 12-1-99

1 mh

ACTIVITY LOG

NAME Rob Krug PERIOD ENDING ~~12-1-99~~ 11-30-99

JOB NO: 9710 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-16-99	8	STEADILY WORKING DRAWING VIEWS, AND BEGAN THE DETAILS SHEET. FOR DWG G5
11-17-99	8	DID SOME TUNE UPON THE PLAN ARRANGEMENT ON DWG G5 AND STARTED THE ELEVATION
11-18	7	MADE SOME REVISIONS TO BASE PLATES THAT CONNECT TO STRINGERS (SKG5) AND MADE ALL VIEWS AGREE
11-19	6 1/4	FINISHED UP ON DETAILS DWG (SKG5A) AND CHANGED ARRANGEMENT OF STANCHIONS ON ARRANGEMENT
11-22	2	FINISHED UP DRAWINGS TO A POINT WHERE CAM AND MYSELF CAN DISCUSS THEM.
11-29	7	WENT THROUGH A REVISION W/CAM AND ADDED A DETAIL FOR LOCKING BAR ON DWG SKG5A
11-30	8	FINISHED REVISIONS, FOUND SOME PROBLEMS AND HAD TO REDRAW 60% OF THE DWG, SUBMITTED AND WENT THROUGH A REVISION

SIGNED [signature] DATE 12-1-99

46 1/4 mh

Vendor Name J. Cameron McKernan Company

G/L	Detail	Subdetail	Location	Department	Tax	Emp No.	Move No./ PO	Amount	Inv No.	Date
4210			9270	46	0362			$21,667		
									PI99-68	12/8/99
									Vendor Number	
									006565016	

	Gross Amount	$21,666.75	Terms / Due
	Discount		Code / Date
Authorization	Net	$21,666.75	055 / 1/7/99
		Division / Month / Audit No.	
		483 / 12 / 9270912007S	

Koppers005269

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE NO: PI99-58

October 22, 1999

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION — AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 7/1/99 through 9/23/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks to support construction as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	25½ man-hours @ $79.00 per man-hour ..	$2,014.50	
Senior Engineers:	11 man-hours @ $52.50 per man-hour ..	577.50	
Senior Drafters:	2 man-hours @ $40.00 per man-hour ..	80.00	
Labor Total	38½ man-hours	~~$2,693.00~~ $2,672.00	$2,693.00 $2,672.00

Material (Blue line copies):

Expansion Tank Revs	10 copies (for prospective contractors)	
P & ID Control Panels	31 copies (for Ponder Burner)	
Hot Oil Pipe Revs	4 copies (McDowell)	
Material Total	45 copies @ $.47/each.	21.15

TOTAL AMOUNT DUE $2,693.15

TERMS: Net cash

Cont'd . . .

OK to PAY

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			2693 00

INV # PI99-58 DATE 10/22/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 055 DUE DATE: 11/22/99

GROSS AMOUNT	2693 15
~~DISCOUNT~~ $	
NET $	

DIVISION	MONTH	AUDIT NUMBER
483	10	92709100108

OK TO PAY

IMPORTANT: CIRCLE TERMS ON INVOICE

Koppers Industries, Inc. (Attention: WM. Meisinger) October 22, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-58

DESCRIPTION AMOUNT

SERVICES:

1. Furnished plans to Ponder Burner to build the P & ID control panels with letters dated 6/28, 7/12, & 8/4.
2. Worked with Fire Bureau in support of application for Tank Permit. Received Tank Permit and delivered it to Koppers on 7/15/99.
3. Attended meeting at Koppers on 8/3/99. Met with Koppers & McDowell personnel to review change orders. Also discussed work in general.
4. Visited site on 8/30/99. Toured site, in particular the tank for preparation of special inspections report to the City of Portland.
5. Visited site on 9/2/99:
   - Conferred with Charlie Norris on the relocation of an electrical control panel on the pier.
   - Did a follow up inspection of the tank for items noted in inspection of 8/3/99.
6. Revised "Hot Oil Expansion Tank T-240" Plan No. 6526-A004, Rev. 1 as requested by Bill Meisinger to relocate inspection manhole, to raise the temperature, and to change the paint specification. Hand delivered copies of the revised plan to the following fabricators for quotes on 9/9/99:
   - Thompson Metal Fab
   - Industrial Alloy Fabrication
   - NW Koppers Works Inc.
   - C. H. Murphy
   - McDowell Welding
7. Prepared special inspections Structural Observation Report for the tank dated 9/10/99. Mailed report to the City of Portland and hand delivered copies to Koppers.
8. Visited site on 9/10/99. Did an exterior walk around inspection of the tank accompanied by Charlie Norris.
9. Attended meeting at Koppers with Bill Meisinger, Amos Kamerer, and Charlie Norris on 9/14/99:
   - Discussed hose handling on pier and other observations from a similar facility (Kimitat).
   - Discussed outstanding engineering work items.
   - Went out on the pier.
   - Received instructions from Bill Meisinger to prepare drawings for a hose handling system including a trough and a portable bridge.

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) October 22, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-58

DESCRIPTION AMOUNT

SERVICES: (continued)

10. Visited site on 9/15/99.
    - Met with Koppers and McDowell personnel to discuss outstanding work items pertaining to McDowell.
    - Did an inspection of the exterior of the tank, specifically the tank top and access to the tank top.
11. Prepared special inspections Structural Observations Report for the completed tank. Reviewed test and inspection data from Morris Tank. Submitted all to the City of Portland with letters dated 9/16/99.
12. Visited site on 9/17/99. Met with Charlie Norris to work out modifications to be made to the flow meter piping. (NO CHARGE)
13. Drafted letter to Fire Bureau responding to their new fire main request. Letter discussed plant expansion schedule incorporating new fire main system. Gave Amos Kamerer draft of letter by FAX and by email on 9/17/99.
14. Revised the following flow meter piping plans to add control valves, temperature transmitters and a nozzle. Parham delivered and reviewed the plans with Charlie Norris on 9/21/99. Also left copies for McDowell:
    - "Heat Trace Piping at Flow Meter" Plan No. 97010-59, Rev. 1 (NO CHARGE)
    - "Hot Oil Expansion Tank T-240" Plan No. 6526-A004, Rev. 2
15. Prepared sketch (3 = 8½" x 11" sheets) for roof personnel tie off on the tank top. Sent sketch by FAX to Charlie Norris on 9/21/99.
16. Revised the following Hot Oil Expansion Tank Piping plans to add a 4" hot oil pipe to the bottom of the tank. Sent PRELIM to Bill Meisinger by FAX on 9/23/99. Delivered copies to Charlie Norris on 9/23/99. Also left copies for McDowell:
    - "Plan & Section" Plan No. 6526-P005, Rev. 1
    - "Sections & Details" Plan No. 6526-P008, Rev.1

END

Koppers Industries, Inc. (Attention: WM. Meisinger) October 22, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-56

LABOR SUMMARY:
(7/1/99 to 9/23/99)

Period ending:	7/15	7/31	8/15	8/31	9/15	9/23	Total
Principal Engineer:							
McKernan	2½	0	3½	2½	6½	10	25½
Senior Engineers:							
Parham	0	0	0	0	0	11	11
Drafters:							
Kincaid	0	0	0	0	2	0	2
							38½ man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-13	1½	Telephone conversations with Russ Sill regarding the fire hydrant and dock standpipe, Doug Friant at the Fire Bureau regarding the approval of the tank plans. He said they were approved and they were being delivered to McDowell. Two other conversations with Russ Sill regarding the same issues. Telephone conversation with Amos to tell him we have the tank permit.
7-15	1	Hand delivered the drawings that Ponder Burner requested. From there I went over to the Koppers Plant and hand delivered the Fire Bureau's Permit for the Tank and gave Amos the stamped drawings and the stamped approved Specifications and Hazards Analysis.

SIGNED [signature] DATE 7-19-99

2½ hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-3	3½	At the meeting discussed all the change orders with the Gray Johnson of McDowell Welding. Then discussed the progress of the work. Discussed some small pending changes. Discussed my work and I was cautioned not to expend more time than was absolutely necessary.

SIGNED J. Cameron DATE 8-18-99

3½ hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-30	2½	Went over to the plant and did a inspection for the purpose of formalizing the special inspection report required on the tank.

SIGNED [signature] DATE 9-6-99

2½ hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPT. 15 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-2	1	Visited the site. Went with Charlie Norris out to the pier to look at the location for the control panel on the pier. Determined that where Dave Chandler wanted to put it would be okay. That is between the post and the dock office. While I was there I checked the center post of the tank and also checked with Leo and Charlie Norris. Determined that they had completed the weld that was partially complete on the center post.
9-7	1½	Reviewed my notes from telephone conversation with Bill. Reviewed the drawing. Marked it up for Michael to revise. Telephone conversation with Amos and also with Steve over at one of the tank vendors. After Mike changed the plan reviewed his revision, made copies of the pertinent sections of the drawing, and had Mary FAX them to Bill Meisinger for his review.
9-8	½	Telephone conversation with Bill Meisinger about the changes of the tank drawings. Briefed Michael on the additional changes of the tank drawing. Principally to relocate the inspection manhole, to change the design temperature to raise it up to 650, and to change the paint spec so the inside of the tank is bare and the outside is inorganic zinc painted. Seems that's all I did today.
9-10	2	Prepared my report on the structural observations on the pitch tank. Made a draft. Mary typed it and I proofed it. I signed the final, prepared forwarding letters for the report, went over to Koppers and hand delivered Amos' copy. Did an exterior walk around the tank with Charlie Norris. Checked the final course and its closure & the bottom of the tank and the nozzles.
9-14	3	Went over to Koppers and met with Bill Meisinger, Amos, and Charlie Norris. The principal discussion was about the hose handling and their observations at Kitimat. Went out and looked at the pier. Decided to put a hose rack up on the walkway over the top of the pipeline. Hose rack should hold 2 fifty-foot lengths of hoses and be fitted with a hand winch at one end. Discussed some outstanding engineering items like the operations manual on the pier and the dry pipe fire extinguishing system for the pier. Received instructions from Meisinger to make some drawings on the storage trough and for a little bridge that goes between the walkway and the shore bridge so they can wheel a hose out to the pier.
9-15	2½	Met with Bill Meisinger, Kurt & Gray & Steve from McDowell at Koppers. Discussed schedule of engineering left for McDowell to do on the structural drawings. While I was there I did an inspection of the tank on the top. Looked at the walkway and ladder going up to the top and the walkway platform at the top. Also looked at a gouge on the West Side of the tank on the lower course. Recommended that they grind it out and clad weld the ground out section that is below an eighth of an inch deep and then grind the clad welding smooth.

SIGNED JCMK DATE 9-17-99

pitch

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPT. 30, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-16	2	Prepared some structural observation reports on the tank. Prepared a forwarding letter for the test and inspection data from Morris Tank to send to the City.
9-17	2½ No charge	Went over to the site. Met with Charlie Norris on the flow meter and the hot oil control valves. Looked at the control valves and the thermometer wells. Reviewed the P & ID drawing and the isometrics for the hot oil system. Worked out how we are going to modify the flow meter piping. Came back to the office and started to mark up a print for revision.
	1½	Prepared a draft of a letter to Russ Sill about the firemain system. Went through a couple edit/revisions with Mary retyping it each time.
9-21	1 No charge	Checked Jerome's plot of the revision to the meter piping. Marked it up for a little further revision and rechecked it. Stamped the plan after the final plot. Had Mary make forwarding letters for it.
	½	Marked up a print for Jerome to follow in revising the hot oil expansion tank plan to add a nozzle. Checked his revision. Stamped the plan. Had Mary make forwarding letters for Jerome to hand deliver.
	1½	Made a sketch for Koppers of the roof personnel tie off (3 sheets). Sent it by FAX over to Charlie Norris.
9-22	½	Reviewed with Jerome the changes he made to the hot oil piping to make a new connection to the bottom of the hot oil tank for start up. Asked Jerome whether Charlie Norris had received the sketch on the personnel tie off. Jerome said he had.
9-23	½	Reviewed jerome's plan revision for adding the 4" hot oil pipe to the bottom of the tank. Had him make a XEROX copy of that part of the plan and send it off to Bill Meisinger to review.
9-24	½	Worked with Jerome and Rob instructing them on developing the hose trough plans.
9-28	½	Checked Rob drawing to see that he is getting off on the right start.
9-29	1	Checked Rob's prelim drawings. Visit Koppers.
9-30	2	Visit Koppers. Meet with Amos and Bill. Witness hydrostatic tank testing. Tour yard.

NOT this Invoice

SIGNED [signature] DATE 10-5-99

cmh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING SEPTEMBER 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9/7/99	1	MADE REV 1 CHANGES TO PLAN No. 6526A004. DISCUSSED WHAT HAD TO BE DONE w/ CAM.
9/8/99	1	MADE SOME SMALL CHANGES TO 6526A004. PLOTTED IT ON VELLUM.

SIGNED [signature] DATE SEPTEMBER 15, 1999

2 mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 SEPT 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-20	4	ADD CONTROL VALVES & TEMP TRANSMITTERS TO DWG -59
9-21	8	PLOT DWG OF FLOW METER & CHECK WITH CAM & ADD MORE DETAILS & REPLOT. CORRECT TANK DWG & ADD NOZZLE. TAKE DWGS TO CHARLIE & LOOK AT PIPE ROUTING TO NOZZLE
9-22	6	MAKE CHANGES TO 6526-005 & 008 TO SHOW NEW PIPING & MAKE REV 1 TO DWGS & REPLOT
9-23	3	PLOT CHECK PRINTS OF NEW 4" HOT OIL TO EXP. TANK REVIEW W/CAM PLOT 8½x11 SKETCHES FOR BILL M. PLOT FINAL ON VELLUM
~~9-24~~	~~2~~	~~DISCUSS HOSE TROUGH DESIGN WITH CAM & ROB~~ NOT THIS INVOICE
~~9-27~~	~~2~~	~~GO TO KOPPERS WITH ROB TO CHECK WALKWAY FOR TROUGH PLACEMENT~~

No charge this

SIGNED Jerome J. Parham DATE 10-1-99

11 mh

McDowell Welding
& Pipefitting, Inc.

4000 N.W. St. Helens Rd. • Portland, Oregon 97210
(503) 241-2410 • FAX (503) 241-2767

INVOICE

INVOICE DATE	CUSTOMER NO.	INVOICE NUMBER
10-15-99	203	11507
P.O. NUMBER	WORK ORDER NO.	SHIP DATE
	92070.03	

TO:

KOPPERS INDUSTRIES INC
7540 NW ST HELENS RD
PORTLAND, OR 97210-3663

JOB SITE:

203*LIQUID PITCH UNLOADING
KURT LIEBE

FIELD
PO# 3000-9-13024

NET 30

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	LUMP SUM BILLING FOR WORK DONE ON CHANGE ORDER #3 DIRT REMOVAL AND ROCK EXCAVATION	1.00	LOT	2017.00	2,017.00
	Grand Total				2,017.00

OK.
Glen
10-26-99

KI 37W REV 2 6M 6/90

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			2017 00

OK TO PAY

IMPORTANT: CIRCLE TERMS ON INVOICE

GROSS AMOUNT 2017 00
DISCOUNT $
NET $

CIRCLE TERMS ON INVOICE

INV # 11507 DATE 10/15/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 3 8 0 3 4 1 0 0 7

TERMS. CODE: 045 DUE DATE: / /

DIVISION	MONTH	AUDIT NUMBER
483	10	9270910016

FAX

McDowell Welding & Pipefitting, Inc.
4000 NW St. Helens Road
Portland, OR 97210

Date	04/23/99
Number of pages including cover sheet	2

To:	
	William Meisinger
	Koppers
Phone	**412-826-3962**
Fax Phone	**412-826-3999**
CC:	**Amos Kamerer**

From:	
	Gray Johnson
	McDowell Welding
Phone	**503-241-2410**
Fax Phone	**503-241-2767**

REMARKS:

☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

Bill;

The piling installation required two weeks, one more week than planned. We encountered unexpected underground conditions but the delay was not entirely caused by rocks. We were able to excavate rocks in five locations with our backhoe. In other locations we were able to pull the pile back up and relocate it to avoid rocks. Cameron McKernan allowed us a reduced depth on still other pilings to avoid underground rocks. We managed to install all the piles with no additional charges from the pile driver but we had to excavate rocks and assist them full time. We had not anticipated this labor so we are requesting an increase in the not to exceed budget to cover our expenses.

In addition, we have been collecting contaminated soils that we excavate from around the pilings in our dump truck and delivering it to the tank pad area. Amos has arranged for disposal of this soil with the soils that Harder is excavating from the tank foundation. Approximately one quarter of the charges in the attached change order request are for handling and hauling these soils.

Please call with any questions or comments.

Regards,

Gray Johnson

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

DATE OF NOTIFICATION: 04 / 23 / 99

TIME: 2:00 am (pm) SHFT: 1 2 3

ATTN: WILLIAM MEISINGER

APPROVAL REQ'D BY: ____ / ____ / ____

SUBJECT: ROCK AND DIRT HANDLING

MCDOWELL NUMBER: 92070 (Job no.) - 03 (Change no.)

CLIENT NUMBER: ____

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☐ VERBAL order issued by: ____

of ____ directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on ____, for the reason described in Item C below

C. REASON FOR THE CHANGE: ENCOUNTERED ROCKS IN 5 LOCATIONS THAT HAD TO BE EXCAVATED TO INSTALL PILINGS. OTHER PILINGS WERE RELOCATED TO AVOID DEEP ROCKS. LOADED SOIL EXCAVATED AROUND PILINGS IN TRUCK AND DELIVERED TO TANK SITE FOR DISPOSAL ☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $____. ☒ Per McDowell T & M Rates. ☐ See Attached. INCREASE THE NOT TO EXCEED CONTRACT BY $2017.00

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

GRAY JOHNSON 4-23-99

McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

4000 N.W. St. Helens Rd. • Portland, Oregon 97210
(503) 241-2410 • FAX (503) 241-2767

INVOICE

INVOICE DATE	CUSTOMER NO.	INVOICE NUMBER
10-15-99	203	11508
P.O. NUMBER	WORK ORDER NO.	SHIP DATE
	92070.05	

TO:

KOPPERS INDUSTRIES INC
7540 NW ST HELENS RD
PORTLAND, OR 97210-3663

JOB SITE:
203*LIQUID PITCH UNLOADING
KURT LIEBE

FIELD
PO# 3000-9-13024

NET 30

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	LUMP SUM BILLING FOR WORK DONE ON CHANGE ORDER #5 ADDITIONAL LOW POINT DRAIN	1.00	LOT	465.00	465.00
	Grand Total				465.00

OK.
Dan
10.26.99

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			465 00

INV # 11508 DATE 10/15/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 3 8 0 3 4 1 0 0 7

TERMS CODE 043 DUE DATE: / /

OK TO PAY

GROSS AMOUNT 465 00

DISCOUNT $

NET $

IMPORTANT: CIRCLE TERMS ON INVOICE

DIVISION	MONTH	AUDIT NUMBER
483	10	92709100105

Memorandum

To: William Meisinger

CC: Amos Kamerer
Jack Stephenson
Charlie Norse
Cameron McKernan

From: Gray Johnson

Date: 05/12/99

Subject: Change Order 92070-05

Bill,

Back in March during your first visit there was some discussion about installing an additional low point drain in the 10" cargo line in the expansion loop nearest the river. At that time, we thought we might have to install the pipe run that parallels the river at a slight decline so that the pipe support blocks would have sufficient soil bearing depth. Since that time we found that we were able to install the entire expansion loop at the riverside in a level plane. All elevation is gained in the straight run of pipe that runs perpendicular to the river. At that time the additional drain was thought to be a good idea but no official decision was made because the line elevations were not known. We now know that the first low point drain from the dock is at the first road cross over bridge and that there is a 25" elevation difference from the shore to the road cross over. The cargo line on the dock and shore, through the first road cross over bridge will not drain unless the 8" automatic plug valve is removed.

We can install the additional low point drain for a $465.00 increase to our "not to exceed" budget. Please approve the attached change order if you agree that it is necessary.

Remember that there is a 1" sample valve in the cargo line at the end of the dock that could be used to drain much of this pipe but that sample valve is located in the center of the pipe and will not drain the pipe completely.

Please call with any questions.

Regards

Gray Johnson

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS INC

ATTN: BILL MEISINGER

SUBJECT: ADDITIONAL LOW POINT DRAIN

DATE OF NOTIFICATION: 5 / 12 / 99

TIME: 4:00 am (pm) SHFT: 1 2 3

APPROVAL REQ'D BY: / /

MCDOWELL NUMBER: 92070 (Job no.) - 05 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☒ McDowell has received this date a ☐ WRITTEN ☐ VERBAL order issued by: _____

of _____ directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: ADD ONE LOW POINT DRAIN IN 10" PITCH PIPE

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☐ IS ☒ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☒ Lump Sum $ 46500. ☐ Per McDowell T & M Rates. ☐ See Attached.

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

McDowell Representative Date

Approval to Proceed:

Client Rep. Date

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

File No. P97-10
June 29, 1999

COPY

Permits
Portland Fire & Rescue
55 SW Ash
Portland, Oregon 97204

Attention: Doug Friant

Subject: Koppers Industries, Inc./Pacific Northern Oil Pier
7540 NW St. Helens Road, Portland
Permit Application for New Tank Installation

Enclosures: SEE ATTACHED LISTING (2 pages)

Gentlemen:

We submit Application for Permit to install a new tank & associated piping. We enclose the required plans and permit fees.

Very truly yours,

J. CAMERON MCKERNAN COMPANY
AGENT FOR KOPPERS INDUSTRIES, INC.

By: Cameron McKernan

J. Cameron McKernan, President

cc: Koppers Industries, Inc.

RECEIVED
JUN 30 1999
KOPPERS INDS, INC.
PORTLAND

Portland Fire & Rescue
Koppers Industries, Inc./Pacific Northern Oil Pier
Permit Application for New Tank Installation

File No. P97-10
June 29, 1999

MCKERNAN LETTER LIST OF ENCLOSURES:

1. Application for Permit to Install Tank
2. Check for Permit Fees
3. Process Description for Liquid Pitch Unloading
4. Engineering Specifications for Liquid Pitch Unloading
5. Material Safety Data Sheet: Carbon Pitch Liquid dated 6/95, 6 pages
6. Material Safety Data Sheet: Caloria HT 43 dated 02/22/95, 7 pages

7. "79'-0" Ø x 57'-0" API" Tank Dwg #: 23800101 (50 sheets) by Morse Construction Group, Inc.

8. McKernan Plans:

No.	Rev.	Title
97010-21	4	Site Plan
97010-22	-	Fire & Safety Plan
97010-22A	-	Fire Mains & Hydrants (existing)
97010-23	1	Walkway Pier to Dolphin: Arrangement
97010-29	1	Bridge to Shore: Arrangement
97010-38	-	Service Platform: Deck Plan
97010-42	0	Ship Transfer Pipe: Arrangement - Key Plan
97010-43	1	Ship Transfer Pipe: Segment 01
97010-44	0	Ship Transfer Pipe: Segment 02
97010-45	0	Ship Transfer Pipe: Segment 03
97010-46	0	Ship Transfer Pipe: Segment 04
97010-47	0	Ship Transfer Pipe: Segment 05
97010-48	0	Ship Transfer Pipe: Segment 06
97010-49	0	Ship Transfer Pipe: Segment 07
97010-50	0	Ship Transfer Pipe: Segment 08
97010-51	0	Ship Transfer Pipe: Segment 09
97010-52	0	Ship Transfer Pipe: Segment 10
97010-53	0	Ship Transfer Pipe: Segment 11
97010-54	0	Ship Transfer Pipe: Segment 12
97010-57	0	Ship Transfer Pipe: Ship Connection Drain Pump
97010-58	0	Heat Trace Piping: Expansion Loop Details
97010-59	0	Heat Trace Piping: At Flow Meter
97010-60	0	Heat Trace Piping On Pier: Schematic & Details
97010-67	0	Pipe: Miscellaneous Details, Sheet 1
97010-68	0	Pipe: Miscellaneous Details, Sheet 2
97010-69	1	Road Crossover Bridge: Plan & Elevations

Cont'd . . . .

MCKERNAN LETTER LIST OF ENCLOSURES (continued):

9. Chem Tech Plans:

No.	Rev.	Title
6526-G001	2	Drawing Index
6526-G002	0	General Arrangement Plan
6526-A001	0	T-200 Pitch Tank - 79' Dia. x 57' High - Plan, Elevation, Section & Detail
6526-A002	0	T-200 Pitch Tank - 79' Dia. x 57' High - Details
6526-D002	0	Mechanical Legend Sheet - Piping & Instrument Diagram
6526-D003	0	Instrument Legend Sheet - Piping & Instrument Diagram
6526-D004	0	Pitch Tanks T-200 & T-210 - Piping & Instrument Diagram
6526-D005	0	Hot Oil System - Piping & Instrument Diagram
6526-D006	0	Hot Oil Distribution - Piping & Instrument Diagram
6526-D007	0	Bulk Nitrogen System - Piping & Instrument Diagram
6526-D008	0	Miscellaneous utilities - Piping & Instrument Diagram
6526-D009	0	Existing Hot Oil Distribution Modifications - Piping & Instrument Diagram
6526-D0010	0	Ship Unloading - Piping & Instrument Diagram
6526-F001	0	Pitch Tanks T-200 & T-210 - Flow Diagram
6526-F002	0	Hot Oil System - Flow Diagram
6526-P001	1	Overall Piping - Plan
6526-P002	1	Pitch piping at Tank Outlet to Pumps, Hot Oil, Nitrogen, Steam Tracing & Pump Outline
6526-P003	1	Pitch Tank - Piping - Section
6526-P004	0	Pitch Tank Area - Piping - Sections
6526-P005	0	Hot Oil Expansion Tank Piping - Plan 7 Sections
6526-P006	1	Hot Oil Shed Piping - Plan & Sections
6526-P007	0	Hot Oil Shed Piping - Sections
6526-P008	0	Hot Oil Expansion Tank Area - Sections & Details
6526-P009	0	Hot Oil Shed Piping Isometrics
6526-P0010	1	Miscellaneous piping - Sections and Details
6526-P0011	0	Existing Hot Oil System - Piping Isometric - Revisions
6526-P0012	0	Hot Oil System - Tracing Details
6526-P0013	0	Hot Oil Tracing Isometrics @ Pitch Tank Area
6526-P0014	0	Modifications to hot Oil Heating system - Piping Isometric
6526-P0015	1	Pipe Supports/Anchors - Sheet 1 of 2
6526-P0016	1	Pipe Supports/Anchors - Sheet 2 of 2
6526-P0017	0	Steam to Maintenance Building - Isometric Piping & Details
6526-P0018	0	Heavy Oil Line - Isometric
6526-P0019	2	Typical Steam Purge and Dry Nitrogen (N2 Purge)

APPLICATION FOR PERMIT TO INSTALL/REMOVE TANKS, CYLINDERS, AND EQUIPMENT

Fire Prevention, City of Portland, Oregon
823-3700

For PFB Use Only
Permit Number

Amount Submitted with Application $_____ **Code:** _____

Amount Still Due **$**_____

TOTAL COST OF THIS PERMIT $_____ **Date:** _____

Plans must be submitted to the Fire Prevention Division & approved BEFORE installation.

NEW INSTALLATION X **ADDITION** _____ **REPAIR** _____ **ALTERATION** _____
ABANDONMENT: REMOVAL _____ **ABANDON** _____
LIQUIDS/TANKS X **L.P.G.** _____ **GASES** _____ **CRYOGENS** _____ **MED GAS** _____
JOB ADDRESS 7540 NW St. Helens Road, Portland, Oregon 97210-3663
BUILDING NAME ~ **OCCUPANCY** ~
OWNER Koppers Industries, Inc. **PHONE NO.** (503) 285-2831
CONTRACTOR MORSE/McDOWELL **PHONE NO.** _____
PLANS SUBMITTED Yes **SPECIFICATION** Yes **NUMBER OF SHEETS** _____
TOTAL VALUATION OF WORK **(Fee Based on this figure) $** 1,073,000

TANKS: PRODUCT TO BE STORED IN TANKS: Coal Tar Pitch Liquid
TANK LOCATION: UNDERGROUND _____ **ABOVEGROUND** X **INSIDE** _____ **OUTSIDE** X
TANK MATERIAL: Steel **TANK CAPACITIES : 1.** 2M g. **2.**_____ **3.**_____ **4.**_____
PIPING:MATERIAL: Steel **SINGLE-WALL** X **DOUBLE-WALL** _____
DISPENSING METHOD Pump **FOR ADDITIONAL TANK CAPACITIES** _____
LP GASES: CYL SIZE: ___ **USE: VAPOR/LIQUID** ___ **PUMP** ___ **GRAVITY** ___ **BARRICADES:** 0
COMPRESSED GASES: PRODUCT(S) 0 **NO. OF CYL'S** _____ **SIZE** _____
FOR ADDITIONAL CYLINDER CAPACITIES _____
DESCRIPTION OF WORK Install 2,000,000 gallon storage tank and associated heating, ship unloading, and truck and tank car loading pipe.

APPROVED permit includes only work described above and/or on plans and specifications bearing the same permit number and will comply with all applicable codes and ordinances of the City of Portland, Oregon.

NAME OF CONTRACTING COMPANY TANK: Morse Construction Group (425) 258-2731
PIPE: McDowell Welding (503) 241-2410 **PHONE**_____

ADDRESS MORSE: 5500 S First Ave., Everett, WA 98204-4116
McDOWELL: 4000 NW St. Helens Rd. Portland, OR 97210

NAME OF APPLICANT Koppers Industries, Inc.
Amos Kamerer /
(PLEASE PRINT) **SIGNATURE OF APPLICANT**

FIRE PREVENTION DIVISION: FIRE MARSHAL BY:_____ **INSPECTOR**

300.150 (Revised 06/97)

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Plan Submittal Requirements for Approval for Permit of Storage and Use of Hazardous Substances

1. Submit two sets of plans to include the following:
   a. A plot plan with project address located on first page.
   b. Location of buildings or structures, storage tanks, and relationships to other premises giving pertinent distances.
   c. Distances to piping and valves.
   d. Tank capacities.
   e. Diking volumes and dimensions.
   f. Details of design construction of storage areas.
   g. Fire protection criteria shall include:
      Sprinklers (if required), fire separation from other building uses, storage methods, and separation from other storage areas and products.
2. Types of products to be stored. (Material Safety Data Sheets may be required.)

3. Description of storage tanks, piping and associated equipment.
   a. Tank and piping specifications and listings such as UL or ANSI listing numbers.
   b. Venting: normal and emergency.
   c. Fill practices and methods.
   d. Containment, if required, double-wall, single-wall, and dikes.
   e. Safety devices required, such as exhaust scrubbers, explosion venting, treatment systems, etc.

4. Fuel storage tanks with pumps and dispensers, emergency safety devices.
   a. Method of dispensing.
   b. Emergency shut-off switches.
   c. Fuel fill break-aways.
   d. Overfill protection.
   e. Pump valve break-aways.

Suggested resources include Uniform Fire Code, Uniform Mechanical Code, Uniform Building Code, 1994 Editions, with Oregon Amendments, appropriate NFPA Pamphlets that relate to specific types of products and processes.

Twenty-four (24) hours notification required for inspections. Call between 7:30 am - 5:00 pm., Mon.-Thurs. at 823-3935. Ask for Inspector Doug Friant.

When construction starts, after approval, make sure to **obtain all necessary signatures** for each step of installation (see permit copy), a **final must be called for** and signed to make the permit complete.

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TO CALCULATE TOTAL FEE:

PERMIT FEE CALCULATION (refer to Table 40-A)

$ 1,336.85 (Base fee for first $ 100,000 of valuation.)

+ 7,492.10 ($ 7.70 per $1,000 beyond base fee)

= 8,828.95 (Subtotal A)

X 1.65 (Plan Review charge. If permit is to be doubled, use 2.65 as multiplier)

= 14,567.77 (Subtotal B)

+ 10.00 (Add microfilm charges)

+ 14,577.77 TOTAL DUE FOR THIS PERMIT

EXAMPLE

Install a 10,000 gallon above ground diesel tank and pumping system.

Contract value of work **$8,242**

PERMIT FEE CALCULATION (refer to Table 40-A

8,242
2,000
6,242 = 7 units

$ 101.30 (for the first $2,000 of valuation)

+ 129.50 ($ 18.50 per $1,000 beyond base fee) 18.50 x 7

= 230.80 (Subtotal A)

X 1.65 (Plan Review charge) (If permit is to be doubled, use 2.65 as multiplier)

= $380.82 (Subtotal B)

+ 1.00 (Add microfilm charges, 1 page)

= $ 381.82 TOTAL DUE FOR THIS PERMIT

PORTLAND BUREAU OF FIRE, RESCUE, and EMERGENCY SERVICES

TABLE 40-A - Effective Date 7/10/91

PERMIT FEE SCHEDULE FOR INSTALL & REMOVAL OF TANKS (GAS, DIESEL, HEATING OIL, LP GAS, CRYOGENS, COMPRESSED GASES, ETC)

TOTAL VALUATION OF WORK TO BE PERFORMED	FEES
$1 to $500	$30.80 minimum fee.
$501 to $2,000	$30.80 for the first $500, plus $4.70 for each additional $100 or fraction thereof, to and including $2,000.
$2001 to $25,000	$101.30 for the first $2,000, plus $18.50 for each additional $1,000 or fraction thereof, to and including $25,000.
$25,001 to $50,000	$526.80 for the first $25,000, plus 13.90 for each additional $1,000 or fraction thereof, to and including $50,000.
$50,001 to 100,000	$874.30 for the first $50,000, plus $9.25 for each additional $1,000 or fraction thereof, to and including $100,000.
$100,000 and Up	$1,336.85 for the first $100,000, plus $7.70 for each additional $1,000 or fraction thereof.

Plan Review Charges = 65% of Permit Fee.

Additional plan review required by changes, additions or revisions to approved plans: $35.00 per hour (minimum charge - one-half hour)

Microfilm Service Charge: For each application or address:

$1.00 for the first document .50 for each document thereafter

TO CALCULATE TOTAL FEE:

- **Step 1:** Determine the value of the work (i.e., time and material)
- **Step 2:** Convert value to fee using Table 40A.
- **Step 3:** Add Plan Review charges by multiplying fee by 1.65.
- **Step 4:** Add microfilm charges

***NOTE: On tank removal/abandonment: omit step 3, since plans are not submitted.**

(See back of this page for example)

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J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

May 17, 1999

INVOICE

NO: PI99-32

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION — AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 4/1/99 through 4/30/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 4/1/99 through 4/30/99. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	
34½ man-hours @ $79.00 per man-hour	$2,725.50
Senior Engineers:	
72½ man-hours @ $52.50 per man-hour	3,806.25
Senior Drafters:	
1 man-hours @ $40.00 per man-hour	40.00
TOTAL AMOUNT DUE (108 man-hours)	$6,571.75

TERMS: Net cash

Cont'd . . .

RECEIVED
MAY 19 1999
KOPPERS INDS, INC.
PORTLAND OR

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			6572 –

INV # 9932 DATE 05/17/99

▼ A/P DEPARTMENT USE ONLY ▼

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 055 DUE DATE: 06/17/99

OK TO PAY	GROSS AMOUNT	6571 75
	DISCOUNT $	
IMPORTANT: CIRCLE TERMS ON INVOICE	NET $	

DIVISION	MONTH	AUDIT NUMBER
483	06	92700283

Koppers Industries, Inc. (Attention: WM. Meisinger) May 17, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-32

DESCRIPTION AMOUNT

SERVICES:

1. Responded to the City of Portland's Building Permit Plan Review SECOND CHECK SHEET dated 4-2-99 as follows:

   - Had telephone conversations with City of Portland plan reviewers, Koppers, KPFF, & Morse Tank to coordinate resolving items in the check sheet.
   - Wrote letter to summarize actions responding to the check sheet. Letter was submitted by FAX and by mail on April 14, 1999.
   - Worked with Pacific Technical (testing company) to get them certified with the City of Portland.
   - Prepared and submitted the following new drawings:
     Plan No. 97010-69A, Rev. 0, Road Crossover Bridge Footing
     Plan No. 97010-70A, Rev. 0, Doorway Crossover Bridge Footing
   - Revised and submitted the following drawings:
     Plan No. 97010-21, Rev. 4 SITE PLAN
     Plan No. 97010-43, Rev. 1 SHIP TRANSFER PIPE SEGMENT 01
     Plan No. 97010-69, Rev. 2 ROAD CROSSOVER BRIDGE
     Plan No. 97010-70, Rev. 2 DOORWAY CROSSOVER BRIDGE
   - Reviewed the applicable Morse Tank drawings, "stamped" them reviewed by McKernan, and submitted them.
   - Visited the City of Portland and marked the miscellaneous steel drawing as not reviewed and not part of this permit.
   - Submitted the following drawings revised by KPFF:
     Plan No. 98567-S10, Rev. 3 STRUCTURAL FOUNDATIONS
     Plan No. 98567-S11, Rev. 3 STRUCTURAL DETAILS

2. Visited the City of Portland on 4/23/99. Picked up the Building Permit and approved plans, specifications and calculations. Delivered all to Koppers.

3. Reviewed many Requests for Information by McDowell Welding. Worked with McDowell Welding and Koppers to resolve them by telephone, FAX and in person.

4. Visited the site several times to check general progress of the pier and piping work.

5. Worked up specification for the ship unloading hose required. Started contacting hose vendors and searching for a suitable hose.

END

Koppers Industries, Inc. (Attention: WM. Meisinger) May 17, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-32

LABOR SUMMARY:

Period ending:	4/15	4/30	TOTAL	
Principal Engineer:				
McKernan	29½	5	34½	
Senior Engineers:				
Parham	13	42	55	72½
Jeffries	17½	0	17½	
Senior Drafter:				
Kincaid	1	0	1	
			108 man-hours	

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-1	½	Went through the files searching for information of things we transmitted or discussed with gas company personnel regarding the excavations. Found the Procedure of May '97 and had Mary FAX it over to Amos and later talked to Amos. Discussed what I had found in my files and he had pretty much the same things I have. The conclusion was we felt we had notified the gas company of what we were going to do and had never modified that.
4-2	½	Discussed with Jerome his findings on the hoses and trips out to the various piers to look at different hose installations with one of the hose vendors.
	3	Telephone conversation with Amit Kumar at the City of Portland discussing his additional comments on the plans. Telephone conversation with Sam Moss over at KPFF. Instructed Ben Jeffries on adding some more details to the concrete reinforcing on the pipe cross over bridges.
4-3	3	Reviewed the City of Portland SECOND CHECK SHEET. Wrote letter to inform Koppers of status and actions to be taken on the City of Portland SECOND CHECK SHEET. Wrote letter to Pacific Technical Industries instructing them to contact the City of Portland to get certified by the city for special inspections. Instructed Mary to FAX these letters on Monday. Reviewed/Instructed Mary-Anne on various tasks to be completed on the Koppers project during my few days' absence next week such as getting a stamp made, getting some revised blue prints to the City of Portland and to Koppers, and putting stickers on plans at the City stating not reviewed for permit.
4-8	2	Reviewed the accumulation of Requests for Information from MacDowell Welding. Had Mary make another copy of them. Telephoned Pacific Technical that is doing the X-Rays for the tank construction as a follow up on our request for them to send their information to the City of Portland. Talked to Doug Nalley. He said they had not sent anything yet and that they would do it on Friday, tomorrow. Had a brief telephone conversation with Amos Kamerer updating him regarding the actions on the City of Portland plan review sheet number 2. Also reviewed the concrete mix review that Sam Moss did. Reviewed Ben Jeffries' drawings on the rebar details for the pipe cross over bridge foundations and made a few suggestions for him to change.
4-9	1½	Telephone conversations with Doug Nalley at Pacific Industrial, the X-Ray people, concerning his getting data to the City of Portland. Later another conversation with him about not being able to get it out to the City today because he is going to have to get some more information from Ray Maw, the tank fabricator. Had Mary send him a FAX of the Morse Testing Program Check Off List. Telephone conversation with Amos Kamerer to update him on the actions on the City of Portland Plan Check No. 2 and to get an update on construction progress. Particularly the soils contamination issue that came up last week with the gas company.
	1	Reviewed Ben's plan on the footing for the cross over bridges. Had him make a few minor corrections. Had him print it and I stamped it. Marked up the Site Plan's Plan List to indicate the current revisions. Had Mike revise it and plot it and I stamped it. Instructed Mary on running the prints and getting the plans ready to insert in the City of Portland bundle.
	1	Went over to the site and drove around, took pictures, and dictated notes. Generally to observe the progress of the contractor and to see the completion of the walkways and bridge.

CONT'D . . .

SIGNED [signature] DATE 4/19/99

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-11	3½	Checked the structure on the miscellaneous steel on the Morse Tank plans. Did a pretty thorough check on one of the inclined stairways including calculating the weight. Worked through all the loads and calculated the bending stress in the stringers. Found generally everything satisfactory. Went and did a less thorough analysis of the landing platforms and particularly the top platform. Made a list of questions I want to ask Morse Tank.
4-12	2½	Went over to McDowell Welding and did a review of the structural sections they had completed. They had some of the guide plates for the pipe supports finished. They had some of the pipe supports in the tank area finished. They have not done any of the actual pipe support, that is the T Frames, some of them were cut out but not finished and the clamps weren't welded to them. Everything was okay and in fact it looked good. I cautioned them to break the corners on the inside of the guide plates so the T bar won't hang up on them. From there I went over to Koppers with Gray Johnson and Amos and we went through the outstanding requests for information and resolved all of them. I hand wrote the answers on each one and I later intend to send copies to McDowell Welding.
	1	Instructed Jerome on revising the Segment 1 pipe drawing to show the pipe supports on the side of the tank or to make that a detail. Later when he finished that I went back and reviewed the plan and compared all the references on that plan to make sure they were still valid. Found some discrepancies and marked up the plan and had Jerome make another revision.
	½	Telephone conversation with Ray Maw. Reviewed my comments on the miscellaneous steel parts of the tank structure.
4-13	4	Stamped the Morse Construction Group drawings for the tank. Marked them up with my comments. Finished the checking of the structure and particularly looked up the call outs on the Morse drawings for the gratings and the ladder treads to make sure they were adequate for the loads. Telephone conversation with Ray Nalley at the testing company. Told him we received the documents and confirmed he had sent a separate package to the City. Instructed Jerome to revise the plan list on our sheet 1 and checked his revision of the Segment 1 piping that showed the stools on the tank. Made a XEROX of his completed area and sent it by FAX to Ray Maw at Morse Tank. Also sent to Ray Maw a copy of my mark up of the drawing that shows the support for the upper platforms. Also discussed with him by telephone the question regarding the stair treads to make sure they are not grating but truly stair treads. Started the draft of the letter in response to the City of Portland 2nd plan review sheet.
4-14	3	Completed the draft of the letter for the second plan check to the City of Portland. Reviewed a couple of drafts and had Mary FAX it and mail it to the City of Portland. Telephone conversation with Tom Howell at Harder Mechanical requesting some more plans or making sure I got them over to him. Telephone conversation with Gray Johnson at McDowell. He wants to do some intermittent welding on the combination beam on the bridges going across the garage door in the roadways. Telephone conversation with Amos Kamerer about some problems in the plant. An interference with concrete containment with some existing concrete where their tank car loading facility is and some changes for the existing tower where the trailer cover hoist is. Told Amos we didn't need to put anymore concrete in that tower base structure there is plenty of concrete. Had Mary get some plan packages together for McDowell Welding and for Harder Mechanical. Checked those plan packages when she got them finished.

CONT'D . . .

SIGNED JCMK DATE 4/19/99

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-15	1	Kind of cleaned up the desk top and the files and looked at the drawings we have to give to Harder and McDowell. Ran some more prints of the revision notice on the foundations in the tank area.
	1½	Went over to Koppers and met with Jimmy on the pier. Took some measurements of the pilings, particularly the wood piling, to get the distance down to the mud line. Watched him put that last pipe clamp on that was missing on the fire stand pipe. While I was there I met with Gray Johnson. Gave him the set of plans that I was to deliver to him. Went over to Harder Mechanical and delivered the set of plans for Tom Howell and picked up some details that he left for me.

SIGNED JCMK DATE 4-19-99

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 APRIL 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-2	4	MET WITH Bob BAUER AT PETERSONS & WENT TO TEXACO, GATX & KOPPERS TO LOOK AT HOSE INSTALLATIONS
4-6	1	WENT TO KOPPERS TO MEASURE LOCATION OF UNDERGROUND PIPE IN WAY OF SEGMENT 05 BRIDGE
4-8	1	CALL MORE HOSE VENDORS FOR INFO & GET FAX FROM Bob BAUER
4-12	4	REVISE SEGMENT 01 ADD VALUE 234 & ADD STOOL DETAIL
4-13	3	CORRECT STOOL DETAILS ON SEG 01 PLOT ON VELLUM. REVISE & PLOT -21 SITE PLAN

SIGNED Jerome Q. Parham DATE 4-15-99

13 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-13-99	½	WORKED ON 6526-3002 REV 0. MADE A PLOT FOR CAM TO REVIEW
4-15-99	½	MADE SOME SMALL CHANGES TO 6526-3002 AND PLOTTED IT FOR CAM.

SIGNED [signature] DATE APRIL 15, 1999

1 mh

ACTIVITY LOG

NAME BEN JEFFRIES PERIOD ENDING 4-15-99

JOB NO: P97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-2	2½	STARTED 97010-69A, BRIDGE FOOTING
4-4	5	97010 @ HOME
4-5	2	CONTINUED ON 97010 @ HOME
4-8	5½	" " " @ WORK & HOME
4-9	2½	PLOTTED, CONFERRED W/ CAM, MADE CHANGES, REPLOTTED

SIGNED Benjamin Jeffries DATE

17½ hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 30, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-16	1	Telephone conversation with Amit Kumar at the City of Portland Plan Review Section. He said he signed off and he was the last one to sign off so the permit should be ready to issue. Had a couple telephone conversations with Amos Kamerer regarding the permit, a visit by Russ Sill of the Fire Bureau and about Jerome's searching for a hose. Briefly reviewed with Jerome about how he is going about finding vendors for the hose.
4-26	1½	Went over to McDowell Welding and did a shop check of the pitch building cross over bridge for the pipe. Couple of telephone conversations with Amos about some footing problems and the drawings from Harder Mechanical.
4-29	1½	Met with Amos and did a walk around the construction project. Answered some questions that Bill the Harder foreman had about locations of the concrete.
	1	Discussions with Jerome Bob Bauer, a hose vendor, about the metal hose for the unloading of the pitch. Asked him to send us some samples of the hose. Jerome went over to his shop and got the hose samples.

SIGNED JCMK DATE 5/4/99

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 APRIL 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-16	3	WENT TO KOPPERS TO SEE TJ - NOT THERE. MADE QUICK CHECK OF SITE
4-19	8	WENT ONLINE & SENT MULTIPLE REQUESTS FOR HOSE INFO & MADE PHONE CALLS TO MORE VENDORS. SEARCH WEB FOR MORE HOSE SUPPLIERS.
4-20	1	CALL HOSE VENDORS OUT OF STATE FOR INFO
4-22	7	CHECKED HOSE WEB SITES & SENT MORE e-mail / REQUESTS TO VARIOUS COMPANIES. Rec'd 1 ANSWER TALKED TO AEROQUIP
4-26	5	CONTACTED JIM MARTIN. AT DELAFIELD & SENT HIM FAX CHECKED WEB FOR DATA.
4-27	2	TALKED TO PETERSONS ON HOSE DESIGN. CHECKED WEB & e-mail
4-28	7	GOT FAX FROM PETERSONS ON NEW CONSTRUCTION/CONCERNS CHECKED WITH 8-10 VENDORS BY PHONE & GOT MORE INFO & REFS. CHECKED WEB FOR e-mail addresses & BUSINESSES FOR TAR TECH sent email to KOPPERS - AUSTRALIA
4-29	5	CALLED BACK VENDORS FOR FOLLOW-UP. WENT TO PETERSONS FOR HOSE SAMPLES. DISCUSS HOSE W/CAM & BOB BAUER
4-30	4	CHECK emails & telephone vendors for follow-up - NOT HELPFUL WENT TO DIVERSIFIED TO GET HOSE SAMPLES CUT

SIGNED Jerome J. Parham DATE 4-30-99

42 mfv

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

May 17, 1999

INVOICE

NO: PI99-32

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

COPY

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 4/1/99 through 4/30/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 4/1/99 through 4/30/99. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	
34½ man-hours @ $79.00 per man-hour	$2,725.50
Senior Engineers:	
72½ man-hours @ $52.50 per man-hour	3,806.25
Senior Drafters:	
1 man-hours @ $40.00 per man-hour	40.00
TOTAL AMOUNT DUE (108 man-hours)	$6,571.75

PAID

TERMS: Net cash

Cont'd . . .

RECEIVED
MAY 19 1999
KOPPERS INDS, INC.
PORTLAND OR

Koppers Industries, Inc. (Attention: WM. Meisinger) May 17, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-32

DESCRIPTION AMOUNT

COPY

SERVICES:

1. Responded to the City of Portland's Building Permit Plan Review SECOND CHECK SHEET dated 4-2-99 as follows:

   - Had telephone conversations with City of Portland plan reviewers, Koppers, KPFF, & Morse Tank to coordinate resolving items in the check sheet.
   - Wrote letter to summarize actions responding to the check sheet. Letter was submitted by FAX and by mail on April 14, 1999.
   - Worked with Pacific Technical (testing company) to get them certified with the City of Portland.
   - Prepared and submitted the following new drawings:
     Plan No. 97010-69A, Rev. 0, Road Crossover Bridge Footing
     Plan No. 97010-70A, Rev. 0, Doorway Crossover Bridge Footing
   - Revised and submitted the following drawings:
     Plan No. 97010-21, Rev. 4 SITE PLAN
     Plan No. 97010-43, Rev. 1 SHIP TRANSFER PIPE SEGMENT 01
     Plan No. 97010-69, Rev. 2 ROAD CROSSOVER BRIDGE
     Plan No. 97010-70, Rev. 2 DOORWAY CROSSOVER BRIDGE
   - Reviewed the applicable Morse Tank drawings, "stamped" them reviewed by McKernan, and submitted them.
   - Visited the City of Portland and marked the miscellaneous steel drawing as not reviewed and not part of this permit.
   - Submitted the following drawings revised by KPFF:
     Plan No. 98567-S10, Rev. 3 STRUCTURAL FOUNDATIONS
     Plan No. 98567-S11, Rev. 3 STRUCTURAL DETAILS

2. Visited the City of Portland on 4/23/99. Picked up the Building Permit and approved plans, specifications and calculations. Delivered all to Koppers.

3. Reviewed many Requests for Information by McDowell Welding. Worked with McDowell Welding and Koppers to resolve them by telephone, FAX and in person.

4. Visited the site several times to check general progress of the pier and piping work.

5. Worked up specification for the ship unloading hose required. Started contacting hose vendors and searching for a suitable hose.

END

Koppers Industries, Inc. (Attention: WM. Meisinger) May 17, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-32

LABOR SUMMARY:

Period ending:	4/15	4/30	TOTAL	
Principal Engineer:				
McKernan	29½	5	34½	
Senior Engineers:				
Parham	13	42	55	72½
Jeffries	17½	0	17½	
Senior Drafter:				
Kincaid	1	0	1	
			108 man-hours	

COPY

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-1	½	Went through the files searching for information of things we transmitted or discussed with gas company personnel regarding the excavations. Found the Procedure of May '97 and had Mary FAX it over to Amos and later talked to Amos. Discussed what I had found in my files and he had pretty much the same things I have. The conclusion was we felt we had notified the gas company of what we were going to do and had never modified that.
4-2	½	Discussed with Jerome his findings on the hoses and trips out to the various piers to look at different hose installations with one of the hose vendors.
	3	Telephone conversation with Amit Kumar at the City of Portland discussing his additional comments on the plans. Telephone conversation with Sam Moss over at KPFF. Instructed Ben Jeffries on adding some more details to the concrete reinforcing on the pipe cross over bridges.
4-3	3	Reviewed the City of Portland SECOND CHECK SHEET. Wrote letter to inform Koppers of status and actions to be taken on the City of Portland SECOND CHECK SHEET. Wrote letter to Pacific Technical Industries instructing them to contact the City of Portland to get certified by the city for special inspections. Instructed Mary to FAX these letters on Monday. Reviewed/Instructed Mary-Anne on various tasks to be completed on the Koppers project during my few days' absence next week such as getting a stamp made, getting some revised blue prints to the City of Portland and to Koppers, and putting stickers on plans at the City stating not reviewed for permit.
4-8	2	Reviewed the accumulation of Requests for Information from MacDowell Welding. Had Mary make another copy of them. Telephoned Pacific Technical that is doing the X-Rays for the tank construction as a follow up on our request for them to send their information to the City of Portland. Talked to Doug Nalley. He said they had not sent anything yet and that they would do it on Friday, tomorrow. Had a brief telephone conversation with Amos Kamerer updating him regarding the actions on the City of Portland plan review sheet number 2. Also reviewed the concrete mix review that Sam Moss did. Reviewed Ben Jeffries' drawings on the rebar details for the pipe cross over bridge foundations and made a few suggestions for him to change.
4-9	1½	Telephone conversations with Doug Nalley at Pacific Industrial, the X-Ray people, concerning his getting data to the City of Portland. Later another conversation with him about not being able to get it out to the City today because he is going to have to get some more information from Ray Maw, the tank fabricator. Had Mary send him a FAX of the Morse Testing Program Check Off List. Telephone conversation with Amos Kamerer to update him on the actions on the City of Portland Plan Check No. 2 and to get an update on construction progress. Particularly the soils contamination issue that came up last week with the gas company.
	1	Reviewed Ben's plan on the footing for the cross over bridges. Had him make a few minor corrections. Had him print it and I stamped it. Marked up the Site Plan's Plan List to indicate the current revisions. Had Mike revise it and plot it and I stamped it. Instructed Mary on running the prints and getting the plans ready to insert in the City of Portland bundle.
	1	Went over to the site and drove around, took pictures, and dictated notes. Generally to observe the progress of the contractor and to see the completion of the walkways and bridge.

CONT'D . . .

SIGNED [signature] DATE [illegible]

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-11	3½	Checked the structure on the miscellaneous steel on the Morse Tank plans. Did a pretty thorough check on one of the inclined stairways including calculating the weight. Worked through all the loads and calculated the bending stress in the stringers. Found generally everything satisfactory. Went and did a less thorough analysis of the landing platforms and particularly the top platform. Made a list of questions I want to ask Morse Tank.
4-12	2½	Went over to McDowell Welding and did a review of the structural sections they had completed. They had some of the guide plates for the pipe supports finished. They had some of the pipe supports in the tank area finished. They have not done any of the actual pipe support, that is the T Frames, some of them were cut out but not finished and the clamps weren't welded to them. Everything was okay and in fact it looked good. I cautioned them to break the corners on the inside of the guide plates so the T bar won't hang up on them. From there I went over to Koppers with Gray Johnson and Amos and we went through the outstanding requests for information and resolved all of them. I hand wrote the answers on each one and I later intend to send copies to McDowell Welding.
	1	Instructed Jerome on revising the Segment 1 pipe drawing to show the pipe supports on the side of the tank or to make that a detail. Later when he finished that I went back and reviewed the plan and compared all the references on that plan to make sure they were still valid. Found some discrepancies and marked up the plan and had Jerome make another revision.
	½	Telephone conversation with Ray Maw. Reviewed my comments on the miscellaneous steel parts of the tank structure.
4-13	4	Stamped the Morse Construction Group drawings for the tank. Marked them up with my comments. Finished the checking of the structure and particularly looked up the call outs on the Morse drawings for the gratings and the ladder treads to make sure they were adequate for the loads. Telephone conversation with Ray Nalley at the testing company. Told him we received the documents and confirmed he had sent a separate package to the City. Instructed Jerome to revise the plan list on our sheet 1 and checked his revision of the Segment 1 piping that showed the stools on the tank. Made a XEROX of his completed area and sent it by FAX to Ray Maw at Morse Tank. Also sent to Ray Maw a copy of my mark up of the drawing that shows the support for the upper platforms. Also discussed with him by telephone the question regarding the stair treads to make sure they are not grating but truly stair treads. Started the draft of the letter in response to the City of Portland 2nd plan review sheet.
4-14	3	Completed the draft of the letter for the second plan check to the City of Portland. Reviewed a couple of drafts and had Mary FAX it and mail it to the City of Portland. Telephone conversation with Tom Howell at Harder Mechanical requesting some more plans or making sure I got them over to him. Telephone conversation with Gray Johnson at McDowell. He wants to do some intermittent welding on the combination beam on the bridges going across the garage door in the roadways. Telephone conversation with Amos Kamerer about some problems in the plant. An interference with concrete containment with some existing concrete where their tank car loading facility is and some changes for the existing tower where the trailer cover hoist is. Told Amos we didn't need to put anymore concrete in that tower base structure there is plenty of concrete. Had Mary get some plan packages together for McDowell Welding and for Harder Mechanical. Checked those plan packages when she got them finished.

CONT'D . . .

SIGNED [signature] DATE 4/19/99

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING APRIL 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-15	1	Kind of cleaned up the desk top and the files and looked at the drawings we have to give to Harder and McDowell. Ran some more prints of the revision notice on the foundations in the tank area.
	1½	Went over to Koppers and met with Jimmy on the pier. Took some measurements of the pilings, particularly the wood piling, to get the distance down to the mud line. Watched him put that last pipe clamp on that was missing on the fire stand pipe. While I was there I met with Gray Johnson. Gave him the set of plans that I was to deliver to him. Went over to Harder Mechanical and delivered the set of plans for Tom Howell and picked up some details that he left for me.

SIGNED [signature] DATE 4-19-99

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 APRIL 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-2	4	MET WITH Bob BAUER AT PETERSONS & WENT TO TEXACO, GATX & KOPPERS TO LOOK AT HOSE INSTALLATIONS
4-6	1	WENT TO KOPPERS TO MEASURE LOCATION OF UNDERGROUND PIPE IN WAY OF SEGMENT 05 BRIDGE
4-8	1	CALL MORE HOSE VENDORS FOR INFO & GET FAX FROM Bob BAUER
4-12	4	REVISE SEGMENT 01 ADD VALVE 234 & ADD STOOL DETAIL
4-13	3	CORRECT STOOL DETAILS ON SEG 01 PLOT ON VELLUM. REVISE & PLOT -21 SITE PLAN

SIGNED Jerome O. Parham DATE 4-15-99

13 mth

ACTIVITY LOG

NAME BEH JEFFRIES PERIOD ENDING 4-15-99

JOB NO: P97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-2	2½	STARTED 97010-69A, BRIDGE FOOTING
4-4	5	97010 @ HOME
4-5	2	CONTINUED ON 97010 @ HOME
4-8	5½	" " " @ WORK & HOME
4-9	2½	PLOTTED, CONFERRED W/ CSM, MADE CHANGES, REPLOTTED

SIGNED Beh Jeffries DATE

17½ hrs

ACTIVITY LOG

NAME J CAMERON MCKERNAN PERIOD ENDING APRIL 30, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-16	1	Telephone conversation with Amit Kumar at the City of Portland Plan Review Section. He said he signed off and he was the last one to sign off so the permit should be ready to issue. Had a couple telephone conversations with Amos Kamerer regarding the permit, a visit by Russ Sill of the Fire Bureau and about Jerome's searching for a hose. Briefly reviewed with Jerome about how he is going about finding vendors for the hose.
4-26	1½	Went over to McDowell Welding and did a shop check of the pitch building cross over bridge for the pipe. Couple of telephone conversations with Amos about some footing problems and the drawings from Harder Mechanical.
4-29	1½	Met with Amos and did a walk around the construction project. Answered some questions that Bill the Harder foreman had about locations of the concrete.
	1	Discussions with Jerome Bob Bauer, a hose vendor, about the metal hose for the unloading of the pitch. Asked him to send us some samples of the hose. Jerome went over to his shop and got the hose samples.

SIGNED JCMK DATE 5/4/99

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 APRIL 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
4-16	3	WENT TO KOPPERS TO SEE TJ - NOT THERE. MADE QUICK CHECK OF SITE
4-19	8	WENT ONLINE & SENT MULTIPLE REQUESTS FOR HOSE INFO & MADE PHONE CALLS TO MORE VENDORS. SEARCH WEB FOR MORE HOSE SUPPLIERS.
4-20	1	CALL HOSE VENDORS OUT OF STATE FOR INFO
4-22	7	CHECKED HOSE WEB SITES & SENT MORE e-mail REQUESTS TO VARIOUS COMPANIES. Rec'd 1 ANSWER TALKED TO AEROQUIP
4-26	5	CONTACTED JIM MARTIN AT DELAFIELD & SENT HIM FAX CHECKED WEB FOR DATA.
4-27	2	TALKED TO PETERSONS ON HOSE DESIGN. CHECKED WEB & e-mail
4-28	7	GOT FAX FROM PETERSONS ON NEW CONSTRUCTION/CONCERNS CHECKED WITH 8-10 VENDORS BY PHONE & GOT MORE INFO & REFS. CHECKED WEB FOR e-mail addresses & BUSINESSE FOR TAR TECH sent email to KOPPERS - AUSTRALIA
4-29	5	CALLED BACK VENDORS FOR FOLLOW-UP. WENT TO PETERSONS FOR HOSE SAMPLES. DISCUSS HOSE W/CAM & BOB BAUER
4-30	4	CHECK emails & telephone vendors for follow-up - NOT HELPFU. WENT TO DIVERSIFIED TO GET HOSE SAMPLES CUT

SIGNED Jerome J. Parham DATE 4-30-99

42 mfv

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE NO: PI99-38

July 12, 1999

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

RECEIVED
JUL 13 1999
KOPPERS INDS, INC.
PORTLAND OR

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION — AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 5/1/99 through 6/30/99)
(McKernan File No. P97-10)

Continuing service to do engineering tasks support construction as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	59½ man-hours	@ $79.00 per man-hour	$4,700.50
Senior Engineers:	64½ man-hours	@ $52.50 per man-hour	3,386.25
Senior Drafters:	11 man-hours	@ $40.00 per man-hour	440.00

Labor Total ..... 135 man-hours ..... $8,526.75 ..... $8,526.75

Material (Blue line copies):

5/5	=	Insulation Bids	220 copies (for prospective contractors)
5/27	=	Electrical Permit	135 copies (for City of Portland)
6/9	=	Standpipe Permit	9 copies (for Fire Bureau)
6/22	=	Pump Revisions	22 copies (for McDowell & Harder)
6/29	=	Tank Permit	120 copies (for Fire Bureau)

Material Total ..... 506 copies @ $.47/each 237.82

TOTAL AMOUNT DUE $8,764.57

TERMS: Net cash

Cont'd . . .

ok per Bill Meisinger 7-28-99

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			8765-

INV # 99-38 DATE 7/12/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 055 DUE DATE: 8/12/99

DIVISION	MONTH	AUDIT NUMBER
483	07	92700402

OK TO PAY

GROSS AMOUNT 8764 57

DISCOUNT $

NET $

IMPORTANT: CIRCLE TERMS ON INVOICE

Koppers Industries, Inc. (Attention: WM. Meisinger) July 12, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-38

DESCRIPTION AMOUNT

SERVICES:

1. Visited Koppers on 5/5/99. Attended meeting with Koppers, GeoEngineers and Oregon DEQ personnel. Specifically to discuss DEQ concerns on pollution contamination during pile driving.

2. Continued ship hose selection and study. Obtained sample section of hose. Visited Koppers on 5/5/99. Met with Meisinger, Amos, and Norris. Brought sample hose section for them to inspect.

3. Made copies of plans for use of prospective contractors to bid on the insulation work. Hand delivered plans to Koppers on 5/5/99.

4. Visited site on 5/14/99:
   - Met with Norris to review and discuss McDowell questions
   - Met with Amos to discuss and deliver refund check from City of Portland for Building Permit
   - Did a brief tour of the pier and pipe foundations.

5. Visited site on 5/19/99:
   - Met with Norris and GeoEngineers personnel to inspect rebar on crossover bridge by shed and pipe support pedestals.
   - Participated in a teleconference with Meisinger regarding wedge plug valves and splicing of pilings.

6. Visited site on 5/26/99:
   - Inspected pipe crossover bridge by dock.
   - Inspected electrical work on dock.

7. Made copies of pertinent plans, wrote submittal letter to City of Portland for the plans and the Electrical Permit Application prepared by Chandler Electric. Delivered package to Koppers on 5/27/99.

8. Visited McDowell Welding shop on 6/4/99:
   - Inspected pipe clamps.
   - Inspected crossover stiles.
   - Met with Norris. Reviewed and discussed electrical drawings.

Cont'd . . .

DESCRIPTION AMOUNT

SERVICES (continued):

9. Visited site on 6/4/99:
   - Inspected rebar on cross over bridge by shed.
   - Inspected piping and lighting installations on pier.

10. Attended all day meeting at Koppers on 6/8/99 with Koppers personnel and contractor's representative for McDowell Welding and Harder Mechanical.

11. Visited site on 6/9/99:
   - Inspected forms and rebar for the hot oil meter spill containment.
   - Inspected interference between drain and conduit on the pipe bridge.

12. Prepared Standpipe Permit Application including calculating fees, made copies of plans, wrote submittal letter and delivered package to the Fire Bureau on 6/9/99.

13. Visited Koppers on 6/10/99. Met with Koppers and Morse Construction Group personnel. Reviewed and discussed tank installation plans, particularly, on site equipment access and set up.

14. Prepared preliminary "Drill Hole Location" plan for placement of study well.

15. Visited Koppers on 6/17/99. Met with Norris and Harder to discuss changes to be made to the pump detail plans.

16. Revised Chem Tech plans to incorporate the pump details shown on certified construction plans. Hand delivered the following revised plans to Koppers, McDowell, and Harder on 6/22/99:

PLAN NO.	REV.	TITLE
6526-C001	1	HOT OIL PUMP SHED FOUNDATION PLAN & SECTIONS
6526-C003	1	PIPE SUPPORT FOUNDATIONSPLANS, SECTIONS & DETAILS
6526-C005	1	STORAGE TANK AREA FOUNDATION LOCATION PLAN
6526-C006	1	STORAGE TANK AREA SECTIONS & DETAILS
6526-P001	1	OVERALL PIPING PLAN
6526-P002	1	PITCH PIPING AT TANK OUTLET TO PUMPS HOT OIL, N2, STM. TRACING & PUMP OULTINE
6526-P003	1	PITCH TANK - PIPING SECTION
6526-P006	1	HOT OIL SHED - PIPING PLAN & SECTIONS
6526-P0010	1	PITCH TANK PIPING MISCELLANEOUS DETAILS
6526-P0015	1	PIPE SUPPORTS/ANCHORS SHEET 1 OF 2
6526-P0016	1	PIPE SUPPORTS/ANCHORS SHEET 2 OF 2

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) July 12, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-38

DESCRIPTION AMOUNT

SERVICES (continued):

17. Composed questions to ask of the ship operators. Visited Koppers on 6/23/99. Met with Koppers personnel and the ship operator's representatives.

18. Visited site on 6/23/99. Went out on pier to mark locations for light standards. Prepared Plan No. 97010-SK29, Rev. 0 "Light Supports: Bridge." Delivered plan to DMI on 6/24/99.

19. Prepared Tank Permit Application including calculating fees, made copies of plans, wrote submittal letter and delivered package to the Fire Bureau on 6/29/29.

END

Koppers Industries, Inc. (Attention: WM. Meisinger) July 12, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-38

LABOR SUMMARY:
(5/1/99 to 6/30/99)

Period ending:	5/15	5/31	6/15	6/30	Total
Principal Engineer:					
McKernan	8½	6	21½	23½	59½
Senior Engineers:					
Parham	5	½	33½	25½	64½
Senior Drafter:					
Kincaid	0	0	3½	7½	11
					135 man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING MAY 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
5-3	1½	Couple telephone conversations with Amos about the NW Natural Gas and the DEQ meeting. Some discussion with Jerome about the metal hoses for unloading the ship. What I intended to do with these hoses is to have a meeting later in the week with the Koppers people. Showed Mary what additional plans we needed to get ready for the insulation bids for the Koppers project. Tagged the drawings so she could make 3 sets of prints later.
5-5	N/C	Took some plans over to Koppers and delivered them on the way to the GREEN MOUNTAIN STATE.
5-5	2½	Attended a meeting at the DEQ to discuss the driving of pilings and the pollution contamination and the pollution contamination problems associated with the driving of the pilings. Attended with DEQ staff and Bill Meisinger, Amos Kamerer, and David Telan from GeoEngineers.
	1½	Went over to the plant and met with Bill Meisinger, Charlie, and Amos. Discussed the current ship unloading hose. Brought along samples of the unloading hose and walked through a description of the construction of the hose. More or less concluded that the general construction is okay.
5-7	½	Telephone conversation with Gray at McDowell answering questions.
5-11	½	Telephone conversation with Bill Meisinger and Charlie Norris regarding the McDowell Welding change order request on the bolting of the pipe anchors. Later a brief conversation of Amos about the check from the City of Portland with the refund for the permit fee.
5-14	2	Went over to the plant and met with Charlie Norris. Discussed the outstanding McDowell items and some things about the permit on the structural from the City of Portland. After meeting with Charlie met briefly with Amos. Gave him the endorsed check from the City of Portland on the refund of the building permit. Made brief tour of the site going out to the pier and looking at the installation as it is existing. Looks like most of the pipe support foundations are in.

SIGNED JCMcK DATE 5/18/99

8½ mh

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 15 May 1999

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
5-3	4	Make (3) 8½x11 sketches showing Revision of ship connection for 8" elbow
5-4	1	Call 2 vendors for more hose info - mikroflex

SIGNED Jerome J. Parham DATE 5-15-99

5 mh

ACTIVITY LOG

NAME J CAMERON MCKERNAN PERIOD ENDING MAY 31, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
5-17	½	Telephone conversation with Gray Johnson regarding a couple of outstanding RFI's. Resolved them, particularly the corner block on the pitch building for the pipe support. Reviewed those plans I got from Chem Tech from Charlie Norris to see what they were.
5-18	½	Telephone conversation with Charlie Norris about the 8" wedge plug valves with regards to the Request for Information received from McDowell Welding. Had Jerome pull the file on the valves and trace out how we got our valve information. FAX'ed over a copy of the transmittal and cut sheet we received from Pacific Wedge Valve.
5-19	2½	Met over at the plant with Charlie Norris. Met Nicole from GeoEngineers. Inspected the footing rebar placement on the out cross over bridge in front of the pitch shed. Found it to be satisfactory and in accordance with the plans. Walked through the site. Observed that all the pipe support concrete pedestals are set and some of them in fact most of them have the concrete grout put in around the base plate. Went back to Charlie's office and telephoned Bill Meisinger. Had a lengthy discussion about the wedge plug valves and about some of the changes that Harder wants about splicing on some of the pilings. We're going to have to splice, Charlie says, about 60 pilings.
5-20	1	Telephone conversations with Bill Meisinger and Charlie Norris to discuss the splice weld inspection on the tank support pilings. Researched the Building Code about the inspection requirements. Found the section on special inspections. Studied it and sent by FAX a copy of that section to Charlie Norris. Discussed it with him by telephone later on.
5-26	1½	Went down to the site and inspected the rebar on the pipe road cross over bridge, the closest one to the dock. Met Charlie Norris and walked out on the dock and looked to see what the electricians doing in the way they are laying out their conduit runs.

SIGNED JCMcK DATE 6-3-99

6 mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 MAY 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
5-18	1/2	CHECK OUR DAOA OIX PLUG VALVE STEAM JACKETS & DISCUSS W/CAM

SIGNED Jerome J. Parham DATE 6-1-99

1/2 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JUNE 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 of 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-4	2½	Went to McDowell Welding and met with Gray Johnson. Looked at the clamps in the shop for the pipe but they didn't have the pipe in so couldn't check that they were the right size. They looked good. Also while I was there I looked at one of the cross over stiles that was welded. From McDowell I went over to the plant. I picked up the check for the fire bureau permit for the standpipe. I drove out into the yard and looked at the placement of the rebar on the last of the pipe cross over bridges. It's next to the pitch storage shed. Went out and walked on the pier to look at the general installations of the piping. Noticed the form is made for the meter shed and they've got the lower part of the rebar in. I walked out on the bridge to the pier. Tried to find out where we can have the light standards set on the bridge. Went back over to McDowell and they had the pipe clamps set up so I looked at how they fit. They seem to be all right. They have some trimming to do on the ends and the bolt sizes didn't seem to be quite right. While I was at McDowell earlier I reviewed the requirements for the motor control center building extension. Showed Gray where all the information was on the electrical drawings.
6-7	1	Telephone conversation with Charlie Norris about special inspections. Went and got a copy of our special inspections proposal and a copy of the City of Portland amendments to it and a copy of the Oregon Specialty code on Special Inspections and sent him these documents all by FAX.
	½	Sorted out all the correspondence with McDowell Welding to get ready for the meeting with them tomorrow morning with Bill Meisinger.
6-8	9½	All day meeting at Koppers with Amos Kamerer, Bill Meisinger, Jack Stephenson, Charlie Norris, and Contractor Representatives, particularly McDowell Welding's Kurt Leible and Gray Johnson and later on Dave Chandler, the electrical contractor. The meetings lasted until 6:30.
6-9	3	Went to the plant. Looked at the hot oil meter spill containment concrete forms and rebar. They looked all right to me. Went over to the first pipe bridge. Looked at the interference between the drain and the conduit. Talked to Eric Earnst. Called Charlie Norris and suggested that they cut off nozzle for the valve and re-weld it 180° the other way. Seemed like a cheap way to eliminate the interference. Sorted through my notes from the meetings yesterday. Sorted through the requests for information and the McDowell change orders and put them in order. Put my file on McDowell in order. Reviewed the pump drawings I received from Bill Meisinger yesterday and went and looked at the Chem Tech drawings. Pulled out copies of the Chem Tech piping drawings and the foundation plans. Reviewed with Mike and Jerome the pump drawings. Instructed Jerome to review all the pump drawings and to compare them with the Chem Tech drawings and our one drawing at the end of the dock to make sure that what is shown on the drawings agrees with the pump drawings. If not mark-up the Chem Tech drawings for revision and we will go ahead revise them.
6-10	3½	Reviewed my drawings with the tank interface. Had Mary make some prints of them. Also reviewed the Morse drawings that I had marked up and had her make some copies of those mark ups in preparation for a meeting with the man from Morse that was to arrive at Koppers at 6:30. Went down to the plant. Arrived there at 6:30. Met with Pat Morris and Charlie Norris. Kind of looked at the tanks and tried to figure out how he is going to bring his steel and stuff in to work the job. Reviewed with him my interface drawings the previously marked up drawings. Left Koppers about 7:30.
6-11	1	Worked with Jerome reviewing his mark ups for the changes required because the pump base plates are different than used on the Chem Tech drawings.

cont'd ...

SIGNED [signature] DATE 6/17/99

21½ hrs (2 sheets) 1/2

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JUNE 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 of 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-14	½	Reviewed briefly with Jerome what he is doing on these pump foundations and the changes in bolt size. Put a call in to Bill Meisinger to discuss it with him.

SIGNED JCMK DATE 6-17-99

2/2

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 JUNE 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-9	1½	DISCUSS PUMP FONS & PUMP CERT. DWGS w/CAM & CHECK AGAINST OUR PUMP DWGS
6-10	8	RUN BLUE LINES OF RANG + FONS FOR PITCH & HOT OIL & CHECK TO AGREE WITH PUMP CERT DWGS. IN CAD & CHECK DIM'S BY HAND
6-11	8	CONTINUE DWG CHANGES & REVISIONS MARK UP & DISCUSS w/CAM & TAKE CARE OF HIS COMMENTS
6-14	8	WORK ON FON DWG REVISIONS & DETAILS
6-15	8	CONTINUE DETAILS & WORK ON LAYOUT & CHECK OF PIPE ANCHORS @ P-225 ON SHTS P002 & P003

SIGNED Jerome J. Parham DATE 6-16-99

33½ mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING JUNE 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
6/9/99	2	SAT IN A DISCUSSION w/ CAM AND JEROME ABOUT THE FOUNDATIONS FOR THE PUMPS. AFTER THE DISCUSSION HAD A DISCUSSION w/ CAM ABOUT CREATING A DRAWING THAT SHOWS THE NEW TANK, PILINGS, PUMP FOUNDATION LOCATION, EXISTING BUILDINGS, AND WHATEVER ELSE IS IN THE AREA ON AN 8½ x 11 SHEET. THE DRAWING WILL BE USED TO STUDY WHERE TO PUT A STUDY WELL.
6/10/99	1½	WORKED ON THE DRAWING. CALLED IT "DRILL HOLE LOCATION". MADE A PRINT FOR CAM.

SIGNED [signature] DATE JUNE 15, 1999

3½ mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JUNE 30, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 of 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-16	2½	Worked with Jerome reviewing the piping and foundation drawings. Attempted to resolve some the discrepancies and interference's between the piping arrangement and the pump shed/piping supports. Pretty much resolved them and he is going to work them out on the drawings tomorrow.
	N/C	Went over to Koppers Plant and looked at the forming of the rebar in the piling caps structure.
6-17	1½	Went over to the plant and visited with Charlie Norris. Reviewed with him the changes we are making to the drawings to accommodate the pump bases as shown on their certified drawings. Bill from Harder came in during the discussion and he was concerned about some nozzle locations and cut out in the ring wall to accommodate those nozzles. Reviewed all the plans involved. Discussed it with Charlie and Bill. Decided to discuss it with Bill Meisinger to make sure we are correct. Later in the day Meisinger called Charlie and told him to go ahead and put the cut outs in the ring wall just to be sure that later on we can bolt back valves to the nozzles without interfering with the ring wall.
	1	Worked with Jerome and reviewed some of the changes he is making to the drawings and a couple of other interference's between the piping and the pump shed support structure. Called Charlie while we were reviewing the plans and discussed on of the items with him: the misfit between vertical support stanchion and the bracket that is cantilevered off of it.
6-18	3	Drafted a set of questions for the ship operator so when he comes on Wednesday morning he is prepared to answer the question that are posed. Worked with Jerome and checked all the drawings that he has revised to accommodate the new pump certified plan information. It involves 11 drawings to change all that information.
6-21	5	Stamped all the vellums for the revised foundation and piping drawings. Had Mary make the prints and signed the forwarding letters. Will hand carry them to Koppers in the morning. Started work on the tank permit to the Fire Bureau. Worked out the valuation of the tank and worked up the permit fee. Marked up the Chem Tech plan list for revision, marked up the McKernan Site Plan to add the street address. Instructed Michael to make these revisions. Instructed Michael to make a sketch for the light standards that are going on the bridge so that DMI can make these things. Checked Michael's sketch and marked it up. Particularly, for him to note that there are right hand and left hand angle brackets to support the light standards.
6-22	N/C	Hand delivered revised foundation and piping drawings to Kopper's Plant to Charlie Norris and Amos Kamerer. Also stopped at McDowell Welding and delivered them to Gray Johnson. Also went over to Harder Mechanical over on Union Avenue and delivered them to the desk.
	1	Checked the Chem Tech index drawing and the bridge lighting bracket drawing and the site plan that Michael had revised. Got ready for the meeting with the ship operator tomorrow. Got the file out on the study and the hoses.
	14	CONT'D . . .

SIGNED [signature] DATE 7-6-99

23½ hrs (2 sheets) (1/2)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JUNE 30, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 of 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-23	4	Met with ship operations people from Canada and Norway, the Gearbulk company representatives and discussed the unloading of the ship and in particular the hose handling.
	1½	Went out on the bridge. Checked the locations and sizes of light standard that haven't been installed yet. Put some ribbon flags up to indicate where the light standards are going to go. Marked up the drawing to show those locations.
6-24	2	Filled out the application for a tank permit. Recalculated the tank permit fee. Reviewed the package of plans and specs that Mary has put together. Also reviewed the McDowell drawing on the meter shed and tried to scheme up another way of doing it. Also took the plan for the light fixtures on the bridge over to DMI.
6-25	2	Took the tank permit over to Amos to have him sign the application. Telephone conversation with Bill Meisinger, rather lengthy conversation, with some things he wants me to revise on some drawings and deliver drawings to a vendor and other matters. Instructed Mike on making the drawing revisions.
	9½	

SIGNED [signature] DATE 7-6-99

2/2

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 JUNE 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-16	7	WORKED ON PITCH TRANSFER PUMP PLAN PIPING & PUT IN POSTS FOR ROOF - NOTE INTERFERENCES & DISCUSS WITH CAM
6-17	6 ½	CONTINUE DWG REVISIONS & CORRECT PIPING TO CLEAR RELOCATED SHED SUPPORTS & CHECK WITH CAM, ALSO DISCUSS PIPE SUPPORT DETAILS THAT NEED TO BE FIXED
6-18	6	FINISH REVISIONS TO ALL DRAWINGS & PLOT CHECK PRINTS AND REVIEW WITH CAM
6-21	4	CORRECT PLANS PER CAM'S REVIEW COMMENTS & PLOT ON VELLUM FOR CAM.
6-24	2	START WORKING ON HOSE LIST

SIGNED Jerome J. Parham DATE 7-1-99

25½ mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING JUNE 30, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
6/21/99	3½	HAD A DISCUSSION w/ CAM ABOUT THE LIGHT STANDARDS FOR THE BRIDGE. FORMED SHEET 97010-SK29. IT HAS THE DETAILS FOR THE LIGHTS ON THE BRIDGE. PLOTTED THE DRAWING FOR CAM TO REVIEW.
6/22/99	3	SAT DOWN w/ CAM TO REVIEW 6526-G001 REV 4, 97010-21 REV 2, AND 97010-SK29. MADE A CHANGE TO 97010-21 AND MANY CHANGES TO 97010-SK29. PLOTTED THE DRAWINGS ON VELLUM (EXCEPT -SK29) AND TRIMMED THEM FOR CAM TO STAMP
6/25/99	1	DID SOME CHANGES TO DRAWING 6526-1001 REV. 1. MADE A PLOT ON BOND.

SIGNED [signature] DATE JUNE 30, 1999

7½ mh

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

April 5, 1999

INVOICE

NO: PI99-17

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: Wm. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 1/1/99 through 3/31/99)
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 1/1/99 through 3/31/99. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	
109 man-hours @ $79.00 per man-hour	$ 8,611.00
Senior Engineers:	
64½ man-hours @ $52.50 per man-hour	3,386.25
Senior Drafters:	
10 man-hours @ $40.00 per man-hour	400.00
Drafter technicians:	
3 man-hours @ $31.50 per man-hour	94.50
TOTAL AMOUNT DUE (186½ man-hours)	$12,491.75

TERMS: Net cash

Cont'd . . .

4/7/99

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			12492 –

INV # 9917 DATE 04/05/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 055 DUE DATE: 05/05/99

DIVISION	MONTH	AUDIT NUMBER
483	04	92700172

OK TO PAY

GROSS AMOUNT 12491 75

DISCOUNT $

NET $

IMPORTANT: CIRCLE TERMS ON INVOICE

Koppers Industries, Inc. (Attention: WM. Meisinger) April 3, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-17

DESCRIPTION AMOUNT

SERVICES:

1. Visited the pier site on 1/11, 1/12, 1/13, & 1/14 to witness pile driving.

2. Attended meetings at Koppers with Amos Kamerer, Bill Meisinger and prospective contractor personnel on 1/18, 1/19, & 1/20. The purpose of these meetings was to figure ways to reduce costs on the project. In particular consulted with McDowell Welding and Tice Electric personnel.

3. Prepared the following preliminary plans for hose handling interface between pier and ship:

PLAN NO.	REV.	TITLE
97010-74	-	SHIP UNLOADING HOSE STUDY PLAN - HIGH WATER
97010-75	-	SHIP UNLOADING HOSE STUDY PLAN - LOW WATER

4. Visited pier site on 2/8, 2/10, & 2/12. Inspected work on the shore bridge foundation platform. In particular the rebar placement, setting of forms and concrete pour.

5. Visited DMI on 2/11. Inspected shop fabrication of the bridge sections.

6. Responded to the City of Portland "Check Sheets" in support of the new tank & piping building permit application. The following items were submitted to the City of Portland on 2/11/99:

   - Submitted four copies of the previously approved "ROADWAY & PARKING AREA ARRANGEMENT PLAN" Plan No. 97010-41, Rev. - 0 per Zoning Check Sheet dated 1/23/99.
   - Prepared and submitted Soils Special Inspections form per Site Development Plan Examination Sheet Review Date February 2, 1999.
   - Revised the "GENERAL ARRANGEMENT PLAN" No. G002, Rev. 1 to include notes on containment drains per telecon with Rondi Felton of the City Environmental Group.

7. Visited site on 2/16. Met with T.J. Turner, the Plant Superintendent. Did a walk through to review existing electrical systems against the new system changes.

8. Visited site on 2/16. Inspected the completed bridge foundation and looked at the walkways. Visited DMI also. Prepared sketches to change design of defective walkway kick plates.

Cont'd . . .

DESCRIPTION AMOUNT

SERVICES: (continued)

9. Visited site on 2/24. Inspected installation of concrete anchor bolts. Did some calculations to resolve discrepancy in the installation of the anchor bolts.

10. Revised the following plans. Plans were revised to show the reduction in the work scope of the project to only building one tank and one foundation. Submitted four copies of the plans to the City of Portland with letter dated 2/24/99.

PLAN NO.	REV.	TITLE
98567-S09	1	STRUCTURAL FOUNDATION PLAN
98567-S10	1	STRUCTURAL FOUNDATION PLAN
98567-S11	1	STRUCTURAL DETAILS

11. Prepared a letter to the City of Portland Chief Plan Examiner outlining the reduction in the work scope and requesting an adjustment of Plan Review Fee and the Building Permit Fee. Submitted letter dated 2/24/99.

12. Visited site on 2/25/99. Inspected progress of work such as the gangway ramps, the service platform rearrangement, the walkway, and the pilings.

13. Visited shore site on 3/8. Inspected completed work in particular the walkway details and the new gangway storage.

14. Received comments on the new tank and piping building permit application from the City of Portland Structural Department dated 3/5/99. Distributed pertinent comments to parties involved such as Koppers, KPFF, GeoEngineer, Roberts Engineers, & Morse Construction. . Coordinated with them by telephone and FAX.

15. Visited site on 3/15 & 3/16 to review pipe line lay out and staking. Met with Amos Kamerer and McDowell Welding personnel. Resolved interference's and adjusted pipe support locations to suit field conditions.

16. Visited DMI on 3/18/99. Inspected shop fabrication of the walkways.

17. Reviewed, approved and delivered McDowell pipe support plans to McDowell and Koppers on 3/19/99.

Cont'd . . .

DESCRIPTION AMOUNT

SERVICES: (continued)

18. Revised electrical plans to show "existing" and "new." Delivered and reviewed preliminary copy with T. J. Turner on 3/15/99. Delivered finished copies of revisions on 3/19/99.

19. Attended meeting at the plant with Koppers and McDowell Welding personnel on 3/23/99.

20. Visited shore site on 3/23. Inspected DMI work in progress.

21. Attended two meetings at the plant on 3/24/99: Koppers & Harder Mechanical and Koppers & electrician Dave Chandler.

22. Worked with other engineers involved in the project to resolve comments in the City of Portland Structural Plan Examination Sheet Review Date March 5, 1999 in support of the building permit application. The following items were prepared (as indicated) and submitted to the City of Portland on 3/26/99:

- Letter responding to the plan review comments. (prepared by McKernan)
- Structural Special Inspection and Observation Program (prepared by McKernan)
- GeoEngineers Letter to McKernan dated March 22, 1999
- KPFF Consulting Engineers Pitch Tank Design Calculations dated March 15, 1999
- Roberts Engineers Design Calculations for Pitch Tank T200 Updated 3/15/99
- Revised drawings:

PLAN NO.	REV.	TITLE	
97010-21	3	SITE PLAN	Revised by: McKernan
97010-69	1	ROAD CROSSOVER BRIDGE	
97010-70	1	DOORWAY CROSSOVER BRIDGE	
6526-G001	1	DRAWING INDEX	
6526-A006	1	SUPPORT CLIP DETAILS	
98567-S09	2	GENERAL STRUCTURAL NOTES	Revised by: KPFF
98567-S10	2	STRUCTURAL FOUNDATIONS	
98567-S11	2	STRUCTURAL DETAILS	
98567-S12	2	STRUCTURAL DETAILS	

- New Drawings:
  Morse No. 2380-P0-6158, 50 sheets, Dwg. #'s 23800101 through 28300149

Koppers Industries, Inc. (Attention: WM. Meisinger) April 3, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-17

DESCRIPTION AMOUNT

SERVICES: (continued)

23. Visited McDowell Welding on 3/29. Met with Gray Johnson to resolve the sequence of installing the piping and tracing.

24. Visited shore site on 3/29, 3/30, & 31. Inspected installation of the bridge and reviewed with DMI personnel items left to do to complete the job.

END

Koppers005336

Koppers Industries, Inc. (Attention: WM. Meisinger) April 5, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-17

LABOR SUMMARY:

Period ending:	1/15	1/31	2/15	2/28	3/15	3/31	TOTAL
Principal Engineer:							
McKernan	12½	15½	11½	12	11	46½	109
Senior Engineers:							
Parham	½	21	14	6	3	14½	59
Jeffries	0	0	0	0	0	5½	5½
Senior Drafter:							
Kincaid	0	0	1½	0	2	6½	10
Drafting technicians:							
O'Donnell	0	1	0	0	0	0	1
Krug	0	0	2	0	0	0	2
							186½ man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JANUARY 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
1-7	N/C	Went down to the office and met with Amos Kamerer. Returned to him a copy of the Geo Engineer's report. Also got from him another copy of the specifications. I seem to have misplaced my book some place.
1-11	1½	Went to construction site. Met with Jim Glad and Amos Kamerer and looked at the set up for driving the pilings. Looked at how they have the cable strung across from the dolphin over to the shore bridge footing. They had apparently attempted to drive a piling and it twisted on them so they are now making a driving frame so they can get the pilings in straight. I left there without them having done any pile driving.
1-12	4	Made one trip in the morning to the site. They had set up a driving frame to drive the two pilings on the inshore bent. While I was there they vibrated both those pilings into about 50' down with about 10' sticking up so they can make the splice. I didn't wait for them to set up on the other bent, the one closer to the dolphin. Went back later during the day. They had finished splicing one of the pilings, the one that is closest to the dolphin, the upstream one. They were working on the piling closest to shore, upstream one, and they finished that welding out while I was there. They are going to wait until tomorrow morning to drive those pilings. I conferred with Dave Davis while I was there and told him how I wanted to get the data for the driving and he is going to vibro one piling in far enough to get the hammer on it and then drive the remainder down with the hammer.
1-13	4½	Went to the bridge site. Was there to witness the driving of the pilings for the bridge.
1-14	2 ½	Went down to the pier first thing. It looked like they were finished with the steel pilings from the day before and they were just moving the rig over to the dock, the pier part, to drive the wood piling. Jim Glad called me a little later and said they were going to be driving the wood piling and I rushed down there to get there but they had already finished it. It apparently drove to refusal and didn't go any farther. Checked those drawing that we got from email by Bill Meisinger after they had been plotted and the plots looked all right.

SIGNED JCMcK DATE 1/19/99

12½ mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 JAN 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERM.

DATE	HOURS	DESCRIPTION OF ACTIVITY
1-13	½	WITNESS FIT-UP OF SPLICE PLATES OF 2ND & 3RD SECTIONS OF DOLPHIN TO WORK PIER BRIDGE

SIGNED Jerome J. Parham DATE 1-17-99

½ mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JANUARY 31, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
1-18	4½	Went over to Koppers offices. Met with Bill Meisinger, Jack Stephenson, and Amos Kamerer. Had a meeting with Kurt Leible and his estimator with McDowell Welding. Reviewed their bid and also did quite a bit of jawing back and forth about how we can redesign some of the things to make them less expensive to construct. Looked at the pipe supports and also looked at how we would install the support for the conduit runs.
1-19	8	Attended meeting at Koppers re: cutting costs.
1-20	2	Attended meeting at the St. Helens Road office with Bill Meisinger, Jack Stephens, and Amos Kamerer. Met with Tice Electric person and discussed his bid for things we can take out of his supply.
1-25	1	Marked up the Plan G002 and drafted some notes to incorporate the request of the City of Portland Environmental Services Group, Randi Felton. After marking up the print and making the notes reviewed the requirements with Mike so we could get the drafters to make the revisions.

SIGNED JCMK DATE 2/5/99

15½ mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 JAN 1999

JOB NO: 99-06 NAME KOPPERS - SHIP UNLOADING HOSE

DATE	HOURS	DESCRIPTION OF ACTIVITY
1-22	1/2	DISCUSS HOSE HANDLING W/CAM & START SKETCH FOR GEOMETRY
1-25	8	CONTINUE HOSE ARRGT FOR 2 W.L.'S @ ARRIVAL
1-26	8	PLOTTED & CHECKED DWG & STARTED NEW DWG FOR DEPARTURE DRAFT
1-27	2½	PLOT 2 DWGS & CORRECT HOSE LENGTH
1-28	2	DISCUSS BRIEFLY W/CAM & START CHANGES

S SIGNED Jerome J. Parham DATE 1-31-99

21 mh

ACTIVITY LOG

NAME KARON O'DONNELL PERIOD ENDING 1-31-99

JOB NO: 97010 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
1-28	1	REDONE MARKED UP 6526-G002 THINGS THAT ROB MISSED PLOTTED AND RAN BLUE LINE

SIGNED Karon O'Donnell lmb DATE 2/1/99

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING FEBRUARY 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
2-4	1	Telephone conversation with Bill Meisinger about plans and the need for us to have the Chem Tech protocol on line weights for plotting so that are plots look like theirs and other matters about the permits and the value of the contracts and so forth. Had a brief telephone conversation with Amos about the pit for the bridge footing on shore.
2-5	2	Worked with Jerome on ship unloading plans. Got them off in the mail to Bill Meisinger. Also sent him revised Chem Tech General Arrangement Plan revised as requested by "City."
2-8	1	Went over to the Pacific Northern Pier. Met with Jim Glad. Looked at the work platform where he has chipped out the concrete step. Also was up on the bank and looked at his excavation for his bridge footing and the making of the concrete forms and the setting of the concrete rebar.
2-10	1½	Went over to the site and inspected the placement of the rebar and the setting of the forms.
2-11	2½	Worked with Mary to get the City of Portland comments resolved. Had Mary make copies of the revised plan we are going to send and the landscaping plan. Had a telephone conversation with Don Fairbanks the City Building Inspector and discussed what we are doing over there and he was going to go over and look at the rebar and form work.
	½	Went over to DMI to inspect the bridge section. They had two sections basically fabricated without handrails, kick plates, or gratings. The first section that sits on the footing on shore and the next section out were completed.
2-12	2	Went over to the site and watched them pour the shore concrete foundation for the bridge. Reviewed the testing lab's preliminary report which indicated there was too much air in the concrete per spec. Told them to go ahead with it because it didn't make any difference for this concrete.
2-15	1	Worked up the cost for the different parts of the project so we can get the revision in the City of Portland Building fees or at least a redistribution of it. Also gathered up plans and some note pads and pencils so I can go over tomorrow and work with TJ Turner on understanding the electrical system.

SIGNED JCMcK DATE 2/17/99

11½ mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 FEB 1999

JOB NO: 97-10 NAME KOPPERS UNLOADING HOSE

DATE	HOURS	DESCRIPTION OF ACTIVITY
2-4	6	REDO LAYOUT OF HOSE, PLOT & CHECK W/CAM NEED TO FIX SLING & GEOMETRY
2-5	8	WORKED ON -74 & -75 TO DEVELOP HIGH & LOW WATER HOSE GEOMETRY. ADDED NEW SLING DESIGN & FIXED HOSE RUNS. MADE COPIES TO SEND TO KOPPERS

SIGNED Jerome J. Parham DATE 2-15-99

14 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING FEBRUARY 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
2-10-99	(1½)	WENT OVER TO KOPPERS TO SEE HOW THE PROJECT WAS GOING ALONG (AT THE TIME THEY WERE DOING THE CONCRETE PAD FOR THE BRIDGE)

SIGNED [signature] DATE FEBRUARY 15, 1999

1½ mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 2-15-99

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
2-3-99	½	fixed new revision note
2-10-99	(1½)	Went to job site to see new foundation for bridge.

SIGNED [signature] DATE 2-16-99

2mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING FEBRUARY 28, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
2-16	3	Went over and met with TJ Turner the Plant Superintendent and walked through all their existing electrical systems and walked through the new electrical systems using the plans. Became familiar with the installation that is actually there and what is going to be added and changed. Went out to the dock and inspected the foundation that is finished. They had done everything except place the final gravel and the rail road tie bulkhead at the sides. While I was there I also looked at the walkways that have the damaged kick plates. Took some photographs of them and inspected them pretty carefully. Also noted that two of the sections have the handrails in place although they have not been driven home yet. To me it looked like it was going to fit.
	1	Went over to DMI and met with Kurt Redd. Made some sketches of how to fix the defective or damaged kick plate and discussed a change on fixing the ones that have not been built or installed yet.
2-17	1	Made some telephone calls about pipe bending. Talked to George Riddle Cascade General and to E. M. Jones at a pipe vending company in Tacoma and tried to call Todd Shipyard in Seattle. Put a phone call in to Grant Davis at KPFF.
2-24	3	Had Jerome go over and inspect the concrete anchor bolts for support of the walkway between the service platform and the upstream dolphin. He found out the bolts had not been properly installed. The embedment was only about 3½" instead of the 5" specified on the drawing. Went back and reviewed my calculations and reviewed the literature from the bolt manufacturer. Determined that 3½" of embedment would be all right. Gave instructions to Jerome and Jim Glad, the Contractor's Supervisor, about installing the bolts. To make sure at least the top ones are installed to the 3½" embedment and that they develop the torque or the turn of the nut method called out in the bolt manufacturer's instructions.
	2	Prepared a letter to the City plan review chief regarding the fees for the building permit. Also prepared a letter to forward the revised foundation drawings. Mary made the prints and she will deliver these things tomorrow.
2-25	2	Went to the pier. Met with Jim Glad. Also talked with Mike of Pacific Northern Oil. Looked at the completion of the gangway ramp support ramp. Looked at the two posts that are anchor bolted into the concrete on the service platform and the upstream dolphin. Generally looked at the bolted up sections of the walkway. Looked at how he has cut off the wood piling and is going to set the new piling cap on top of the pilings. Also during the day reviewed the sheet Mary got back from the City showing the status of the plan review.

SIGNED [signature] DATE 3-9-99

12 mh

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 28 Feb 1999

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
2-24	6	Went to Koppers to witness installation of Anchor Bolts in service platform & U/S Dolphin Walkway & Bridge supports

SIGNED Jerome J. Parham DATE 2-28-99

6 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING MARCH 15, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-8	4	Went over and visited the Koppers site. Met with Amos Kamerer and Jim Glad. The fundamental problem is that the shore footing was off; that is, low by 3". Got that exact dimension later in the afternoon from Ed DeWild and a FAX he sent us. While I was there at the pier I went and inspected the other work that was done. The walkway between the service platform and the upstream dolphin has been set in place. It looks like everything came out the way we planned it. They haven't quite finished the bracing of the intermediate pilings. The water has been too high. All the hand rails and kick plates and the grating look good. The clearances at each end look okay. Looked at the ship gangway stowage. Talked about putting a small kevel cleat on the gangway so they can tie it down so the wind won't pick it up. Also talked to Mike about getting a longer sling so the sling can hang over and you don't have to have somebody stand up to hook onto it. Later in the day went back and re-analyzed the addition of the two inches of camber that were set into it and verified that was more or less ideal amount of camber to minimize the deflection of the walkway and the slope at the dolphin end. Had a couple telephone conversations with Sam Moss over at KPFF. He reported he has received The City of Portland comments. He later Faxed it to me. I had Mary-Anne send FAX copies to Amos, Bill Meisinger, Steve Adolphsen and Fai AuYoung at Roberts Engineers.
3-10	1½	Telephoned Morse Tank and talked to Steve Adolphsen about the City of Portland comments. Wanted to get from him a set of construction drawings to satisfy the City of Portland as far as plan requirements. They are looking for details but we need to be sure that these drawings are stamped by some Oregon Engineer. Telephone conversation with Sam Moss about getting the City of Portland comments resolved and in particular those that interface with the Roberts Engineering Calculations for Morse Tank. Asked him to coordinate that and work directly with the Morse Tank person to get that resolved.
3-12	2½	Quite a bit of coordination for the City of Portland plan review. Telephone conversations with Amos Kamerer, Bill Meisinger, Sam Moss, and attempted to get a hold of Jack Tuttle at GeoEngineers but was only able to leave a message at his office. Marked up four or five sheets of the electrical drawings for revision to show what is existing and what is new work.
3-15	3	Checked Michael's plots of the electrical revisions. Took the plots with me when I went over to Koppers and reviewed the revisions with T. J. Turner, the Foreman at Koppers. Met at Koppers with Amos and Gray Johnson, of McDowell Welding, and we reviewed their lay out on the ground of the pipe line traverse with locations of the pipe supports. Suggested they relocate Segments 6 and 7 so the corner between them does not land so far out into the roadway and it goes closer to the ponds just to the east of pipeline. Agreed to go back the next day and look at it again after they re-stake that portion of it.

SIGNED JCMK DATE 3-19-99

11 mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 MAR 1999

JOB NO: 97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-8	3	PULL OUT KOPPERS CALCS ON BRIDGE & DISCUSS W/CAM & MIKE. ANALYZE LOWER FDN END ON SHORE & CALC BENDING STRESSES FOR 2" CAMBER

SIGNED Jerome J. Parham DATE 3-16-99

3 mch

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING MARCH 15, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-15-99	2	REVIEWED 6526E001, 002, 003, 004, & 006 w/ CAM. PROCEEDED TO MAKE CHANGES ACCORDINGLY AND PLOT THEM OUT FOR CAM TO TAKE TO KOPPERS.

SIGNED [signature] DATE MARCH 15, 1999

2 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING MARCH 31, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 of 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-16	2	Met at the site with Amos and Gray Johnson. Looked at the re-staking of Segments 6 and 7. After they readjusted it there is a significant gap right at the corner in Segment 7 and indicated we will have to put another pipe support at that location. They way they are going to do that is by equaling up all the spacing on those support between the expansion joint and the corner where the anchor is.
3-17	½	Marked up electrical drawings for revision. Gave to Mike for revision.
3-18	1	On the way back from Hayden Island I stopped at DMI and inspected the two sections that were in the shop that were not quite complete. They have all the steel work fit up on these two sections and they were doing a final weld out. The hand rails were partially fit on one section. No gratings were fit and no hand rails fit on the second section.
	½	Reviewed final plot of electrical drawings and stamped them
	4	Marked up the pipe bridge plans per the City of Portland comments and instructed Ben to make those corrections. Reviewed the City of Portland comment letter dated March 5th and started writing the response to it. Got through the first 5 items.
3-19	2½	Checked Ben's revision of the piping cross over bridges. Checked Michael's revision of the pipe supports on the Chem Tech tank drawing. Telephone conversation with Sam Moss regarding the status of getting the plans revised and submitted to the City. He told me Monday we would be able to get the letters from Jack Tuttle of GeoEngineers. Instructed Mary to type the draft beginning of the letter in response to their comments.
	1½	Reviewed and approved McDowell Welding's pre-cast pipe support plan. Delivered pipe support plan to McDowell and to Koppers. Also delivered revised electrical plans to Koppers.
3-22	2½	Drafted the Special Inspections Program. Checked with Sam Moss about it and he said they will not do any special inspections, they will do the observations and we will have to hire somebody qualified with the City to do the special inspections. Redrafted it and had Mary retype it. Further telephone conversation with Sam Moss about the coordination of the City Building Permit. He said he had talked with Jack Tuttle and was going to receive the FAX from Jack on the letter from GeoEngineers. After the telephone conversation with Sam Moss about special inspections, called Braun Intertech to see if they would be able to do the special inspections and the dispatcher there said yes but he would have somebody in his firm telephone me and outline what they can do for us. Also tried to find Carlson Testing and I was finally able to locate them but it was past quitting time. Couple telephone conversations with Ray Maw at Morse Tank. Spent some time with him on the requirement for special inspections. He said he would hire Pacific Technical Industries to do the X Ray testing and I asked him to revise his test program and to send me a FAX copy of it which he did. Received Fax from Jack Tuttle with the response to the City of Portland's comments. Briefly read it.
3-23	½	Made several telephone calls trying to get information for the special inspections. Got a hold of psi and got a hold of Ray Maw at Morse to find out who their special inspection people were. Contacted them and got the contact person and the address.
	15	Cont'd . . .

SIGNED JCMcK DATE 4-3-99

46½ max (3 sheets) 1/3

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING MARCH 31, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 of3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-23	2	Went over to the plant and met with Bill Meisinger and Amos Kamerer and met with McDowell Welding.
	1	Came back from lunch with Amos. Toured the outside plant. When we finished that I went over to the pier and just looked at the pier to see how far along they were and I was particularly was looking at the light standards whether they had some brackets made they could put up.
3-24	1½	Attended morning meeting at Koppers with Bill Meisinger and the people from Harder Mechanical. Discussed some of the administrative things on the contract and who is going to do what. Met the foreman Bill and discussed how the HAZOP personnel will work on this project.
	3	Went to another meeting later in the afternoon. Met with Dave Chandler, the electrical contractor, and discussed some of the issues regarding the bonding of the bridge, the pipe line, his running the cables on the dock, and also discussed getting the electrical permit on this project. He agreed to take it and fill it out. I would supply him with the plans.
3-25	6 ½	Hand delivered drawings for the tank brackets to Bill Meisinger at the Koppers office. Worked on preparing the City of Portland Special Inspections and Structural Observations listing and contractors that will do them. Sent a copy of it over to Sam Moss by FAX. Continued drafting the reply and responses to the City of Portland Plan Review Letter dated March 5th. Completed the draft and sent it to Sam Moss by FAX. All items completed except for number 16. Started making a list of enclosures for the response letter. Marked up the Site Plan and the Chem Tech drawing index for revision to update the revisions on the plan list. Pretty much got everything ready to go.
3-26	4	Hand delivered to Amos Kamerer the schedule of Special Inspections and Structural Observations. Had him sign it. Came back to the office. Had a telephone conversation with Sam Moss regarding the FAXes I sent him yesterday. He said that KPFF doesn't want to do the structural observations on the miscellaneous steel. Other than that they agreed with what I put down for special inspections. Discussed the responses to the City of Portland comments. In particular Item 16 and he gave me the information I needed to fill that in. Sam said those were the only comments he had on our responses. Helped Mary get the packs ready to take up to the City. Signed the forwarding letter. Checked the revised drawings that Michael had done. Marked up for further revision. That is the G001 plan and the McKernan site plan. Michael went back and revised and plotted them on vellum. I went back stamped the site plan.
	½	Instructed Jerome in getting a hose for our ship unloading. Talked to one of the vendors about it. Asked Jerome to revise the drawing so it shows how we are going to handle part of it with the crane and also to make a new drawing showing the stowage of the hose.

Cont'd . . .

SIGNED JCMK DATE 4-3-99

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING MARCH 31, 1999

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 of 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-29	3	Went over to the dock in anticipation that DMI would be lifting the last bridge section onto the upstream dolphin. Waited around through a rain squall and heavy wind and Jim Glad, DMI Superintendent, decided he didn't want to lift it with such strong wind. Went and visited Gray Johnson over at McDowell welding to discuss the communication I got from him last week regarding the sequence of installing the piping and the tracing. After quite a bit of discussion and his consultation with his production people they decided they would not change the design or change the sequence, ~~that~~ They would set up temporary supports to hold the piping as they progressed. Went back to the pier conferred with Amos and Jim Glad and decided the wind was still too strong then returned to the office.
	½	Went over to look at the pier on the way home. Noted they had landed the last section, that it was partially bolted up and that it tipped a little bit at the dolphin but the levels of the walkway and the bridge intersection were almost perfect.
3-30	N/C	Went over to the plant and looked at the bridge on the way in from home. Didn't stop very long because nobody was working there.
	2 ½	Made replies to McDowell's inquiries regarding another substitution on rebar and suitability or changes of the cargo pipe support clamp and system. Also prepared a FAX and sent it about a fire main on the east side of the pitch building along side the fence to warn them of a possible interference with the cross over bridge foundation.
	4	Went through all the Koppers papers that I have scattered about the office. Collected them together and sorted them into different files and filed them chronologically so I can keep track of what is going on and I can find things when I need to.
	½	Worked with Jerome on the ship shore connection hose. Reviewed the proposals he has received. Noted that some of them were offering corrugated metal. Told Jerome that was basically unacceptable unless there is some kind of liner that will keep it from getting the corrugations packed with product.
3-31	2	Went to the pier and met with Jim Glad. Went over the things that need to be done for completion: getting the anchor bolts in and that end of the plate grouted, remodeling the little walkway section that is on the service platform at the end of the walkway, adding the five lights on the bridge or just the post and stanchions for them, extending the dry fire pipe out to the end of the bridge, getting the fire pipe tested and witnessed by the fire bureau, getting the grating clips down and adding more studs to replace the ones that were broken off. Telephone conversation with Amit ~~Kamir~~ KUMAR at the City of Portland plan review section. Telephone conversation with Amos Kamerer about the gas company and their changed stance about excavating in way of the tanks.
	½	Read FAX from Harder Electric and forwarded to KPFF and GeoEngineers by FAX.
	13	

SIGNED JCMK DATE 4-3-99

(3/5)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 MAR 1999

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-26	5	WORK ON SHIP UNLOADING HOSE - CALL VENDORS FOR INFO & FAX SKETCH TO VENDOR, START ARRGT DWG - 76 W/ DOCK CRANE
3-30	6½	TALK W/ HOSE VENDORS TO SET UP MEETING CONTINUE WORK ON HOSE DWG.
3-31	3	WORK ON ARRGT DWG & PLOT

SIGNED Jerome J. Parham DATE 3-31-99

14½ mh

ACTIVITY LOG

NAME BEN JEFFRIES PERIOD ENDING 3/31/99

JOB NO: 97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-18	3 1/2	REVISIONS TO 9710-69, -70 FOR CITY OF PORTLAND
3-19	2	FINISHING REVISIONS & PLOTTING

9:30-330

6

SIGNED Benjamin Jeffries DATE 3-31-99

Smh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING MARCH 31, 1999

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
3-16-99	1	WORKED ON PLANS 6526E001, 2, 3, 4, & -6. PLOTTED THEM OUT FOR CAM TO HAVE.
3-17-99	1	MADE SOME SMALL CHANGES TO PLANS 6526E004 & 6526E006. MADE PLOTS ON VELLUM.
3-19-99	1½	WORKED ON PLAN No. 6526A006. ADDED WELDS AND CALLOUTS TO THE DETAILS. PLOTTED THE DRAWING ON BOND FOR CAM TO REVIEW.
3-25-99	1½	WORKED ON PLAN NO 6256G001 AND 97010-21. ADDED PLAN CALLOUTS ON 6526G001 AND REV SYMBOLS. ADDED REVS TO 97010-21. PLOTTED THE DRAWINGS FOR CAM TO REVIEW.
3-26-99	1	WORKED ON 6526G001. MADE THE CHANGES THAT I MISSED ON THE PREVIOUS MARKUP. PLOTTED BOTH 6526G001 AND 97010-21 ON VELLUM.
3-30-99	½	DISCUSSED CHANGES THAT NEEDS TO BE MADE TO PLAN 65269002 W/ CAM.

SIGNED Michael H. DATE MARCH 31, 1999

6½ mh

Diversified Marine, Inc.
(503) 289-2669 / Fax 289-2825
P.O. Box 83723 / Portland, OR 97283-0723

Invoice

No. 2247-002

Post-it® Fax Note 7671	Date 1.27.99	# of pages ▶ 1
To AMOS KAMERER	From BILL MEISINGER	
Co./Dept. KII	Co. KII	
Phone #	Phone #	
Fax #	Fax #	

Bill To: Jack L Stephenson
Koppers Industries
1005 William Pitt Way
Pittsburg PA 15238-1362

Date: Jan 15th, 1999

Please pay from this invoice.

Terms: Net 45 days

JOB #2247
PO # 3000-8-13022

40% PROGRESS BILLING FOR MODIFICATION OF PIER FOR LIQUID PITCH UNLOADING PROJECT:

ORIGINAL QUOTAITON..... $ 259,725.00

40% COMPLETION	$ 103,890.00
❖ All piling driven	
❖ All materials purchased	
❖ 1-100 ft. section fabricated	

Less initial 15% deposit invoice #2247-001 $ <39,000.00>

TOTAL AMOUNT DUE ..... $ 64,890.00

OK to pay
[signature]
1-27-99

RECEIVED
JAN 25 1999
KOPPERS INDS. INC.
PORTLAND OR

INV-R.DOT

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			64890 -

INV # 2247002 DATE 1/15/99

↓ A/P DEPARTMENT USE ONLY ↓

VENDOR NUMBER 3824030099

TERMS CODE 045 DUE DATE / /

OK TO PAY [signature]

GROSS AMOUNT 64890 -
DISCOUNT $
NET $

DIVISION	MONTH	AUDIT NUMBER
483	01	92700042

IMPORTANT: CIRCLE TERMS ON INVOICE

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

December 10, 1998

INVOICE

NO: PI98-86

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: WM. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION — AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 10/16/98 through 11/15/98)
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 10/16/98 through 11/15/98. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	
84 man-hours @ $79.00 per man-hour	$ 6,636.00
Senior Engineers:	
269 man-hours @ $52.50 per man-hour	14,122.50
Senior Drafters:	
283¾ man-hours @ $40.00 per man-hour	11,350.00
Drafter "Trainee":	
128¼ man-hours @ $21.00 per man-hour	2,693.75
TOTAL AMOUNT DUE (765 man-hours)	$34,801.25

TERMS: Net cash

Cont'd . . .

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			34801 –

INV # 9841 DATE 12/10/98

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 055 DUE DATE: 01/10/99

DIVISION	MONTH	AUDIT NUMBER
483	12	92700552

OK TO PAY

GROSS AMOUNT 34801 25

DISCOUNT $

NET $

IMPORTANT: CIRCLE TERMS ON INVOICE

Koppers Industries, Inc. (Attention: WM. Meisinger) December 10, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-86

DESCRIPTION AMOUNT

SERVICES:

1. Visited Koppers on 10/21/98. Met with Amos Kamerer. Toured project site. Particularly piping cross over bridge locations along side the buildings, the berm drain tanks, and the dock lighting arrangements.

2. Visited Koppers on 10/23/98. Met with Amos Kamerer and Mike Hayward of NW Natural Gas. Toured project site. Discussed requirement for Contractors to have Hazmat training.

3. Visited Koppers on 10/26/98. Met with Amos Kamerer. Had a Telecon with Bill Meisinger to discuss the Gas Company's Hazmat training requirements.

4. Visited Koppers on 10/27/98. Went to the Pacific Northern Oil Dock to meet with the Superintendent. Discussed electrical, lighting and other rearrangements to be made to the existing pier.

5. Visited Koppers on 10/30/98. Staked out the approximate pipeline locations.

6. Prepared SPECIFICATION: PIER ACCESS ROAD AND SITE PREPARATION. Contacted qualified Contractors, assembled request for bid packages and distributed to prospective Contractors as follows:

   C. Wark Environmental Contracting - via FAX and mail on 11/5/98
   Lies Brothers Construction - via FAX and mail on 11/5/98
   BK West Inc. - via FAX and mail on 11/6/98

7. Revised PIER MODIFICATION SPECIFICATION to include Hazmat requirements, Kopper's Terms & Conditions and Safety Regulations for Contractors.

8. Revised the following plans as part of the Pier Modification Specification package to show the re-use of the existing electrical fixtures on the walkway.

PLAN NO.	REV.	TITLE
97010-21	1	SITE PLAN
97010-23	1	WALKWAY PIER TO DOLPHIN – ARRANGEMENT
97010-25	1	WALKWAY PIER TO DOLPHIN – SEGMENT W1 ASSEMBLY
97010-26	1	WALKWAY PIER TO DOLPHIN – SEGMENT W2 ASSEMBLY
97010-27	1	WALKWAY PIER TO DOLPHIN – SEGMENT W3 ASSEMBLY
97010-28	1	WALKWAY PIER TO DOLPHIN – SEGMENT W4 ASSEMBLY
97010-29	1	BRIDGE TO SHORE – ARRANGEMENT
97010-31	1	BRIDGE TO SHORE – SEGMENT B1 ASSEMBLY

Cont'd . . .

DESCRIPTION AMOUNT

SERVICES:

9. Prepared the following plan to include in the Pier Modification Specification

PLAN NO.	REV.	TITLE
97010-38	-	SERVICE PLATFORM: DECK PLAN

10. Assembled request for bid packages for the Pier Modification and distributed to prospective Contractors as follows:

    Advanced American Diving - hand delivered on 11/4/98
    Diversified Marine Inc. - hand delivered on 11/4/98
    Fred Divine Diving & Salvage - hand delivered 11/4/98
    General Construction via UPS Next Day Air 11/4/98
    Hickey Marine Enterprises 11/4/98
    M Cutter Company 11/4/98

11. Continued work on the ship transfer piping flexibility stress analysis and piping arrangement lay outs. Started plans for heat trace flow meter installation and heat trace on pier.

12. Visited Koppers several times to tour site with prospective Contractors for both the Access Road and the Pier Modifications. Also had several telephone conversations with the prospective Contractors.

Koppers Industries, Inc. (Attention: WM. Meisinger) December 10, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-86

LABOR SUMMARY:

Period ending:	10/31	11/15	TOTAL
Principal Engineer:			
McKernan	42½	41½	84
Senior Engineers:			
Parham	98½	89½	188
Jeffries	20½	60½	81
Senior Drafters:			
Kincaid	33½	58¾	92¼
O'Donnell	81	66	147
Towers	14	30½	44½
Drafter "Trainee":			
Krug	64½	63¾	128¼
TOTAL			765 man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCTOBER 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-16	2½	Went back and rechecked the splices on the bridge and walkway sections. That is I went back and rechecked the calculations and did some additional calculations for the splices and decided they were still okay.
	5	Worked with Mary to get the package ready to take over to the City Building Bureau. Hand carried the plans and package over to the City Building Bureau and met with Bill Quillin. Reviewed the plans, calculations, and other parts of the submittal with him in some detail.
	1	Spent some time with Jerome reviewing the piping drawings and the status of the piping drawings.
10-19	½	Checked with Jerome on where we are at with the piping drawings and had some discussion with him about the design of the cross over bridge at the road way.
10-20	N/C	(1 hour) Went over to the library to get some information on road building. Reviewed the Civil Engineer's Handbook and checked out a book: Construction Manual for Highway Construction.
10-21	2½	Went with Jerome over to the Terminal. Met with Amos Kamerer and looked at the area where the piping cross over bridge is going to go right along side the pitch storage building. Tried to lay out that area on the ground. Also looked at the area on the ground where the berm drain inspection tanks are located with the idea of trying to miss those areas. After meeting with Amos went over to the dock. Met briefly with Mike and looked at the areas where the electrical switches are for the dock lighting and briefly looked at the dock lighting.
10-22	4	Prepared a spec for the construction of the road from the existing road to the end of the new access bridge. Marked up a partial plot that Mike gave me of the area for him to convert into a sketch of the road to show the area of the road we want to be graded and graveled as referenced in the spec. Did two rounds of mark up and revision with Mike.
	2	Worked with Jerome to work out and complete the flexibility analysis for the piping around the pitch storage building. Reviewed with him the 2" heat trace flexibility analysis he has done. Worked out a scheme for the pitch piping around the building that works.
10-23	3	Met over at the Koppers plant with Amos Kamerer and Mike Hayward of Northwest Natural. We did a walk of the pipeline routing and the shore end of the pier and the roadway. Mike reviewed with us briefly Northwest Natural's requirements for instructing our Contractors about hazardous materials and making sure the Contractor has sufficient training. He referenced part in 29 CFR about hazardous materials operations. He showed us some areas where there was contamination like tar laying on the top of the ground. He said it always softens up in the summer sun. Spent 3 hours there with Amos and Mike.
	3	Reviewed the 29 CFR Section 1910.120 on hazardous materials operation and incorporated a couple of paragraphs in the spec for the road. Also incorporated into the spec the Koppers Terms and Conditions and Safety Requirements. Obtained from Mike the completed drawing for the road improvement. Had him change one thing on it about the curve in the road and got it completed. Had Mary run 3 copies of the completed spec and plan for me to meet with Amos on Monday morning. Had a rather lengthy telephone conversation with Amos about the requirements in 29 CFR 1910.20. Set up a meeting to have with him on Monday morning. Worked with Jerome reviewing his flexibility analysis on the expansion bends around the pitch building and completed the flexibility analysis for that area.

CONT'D.

SIGNED [signature] DATE 11-4-98

42½ mh (3 sheets) (1/3)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCTOBER 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 of 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-26	2½	Met with Amos Kamerer at the Koppers office. Discussed the Hazmat OSHA Regulations. Had telephone conversation Michael Hayward of Northwest Natural about the OSHA Regulations particularly the requirement for having some procedures for the site. Agreed that was his responsibility and all we need to do in our spec is to make sure our Contractors have trained personnel and just invoke the training requirement. Also discussed with Amos the possibility of changing the design of the pipe supports so we end up with less excavation. While I was at Amos' office he telephoned Bill Meisinger and we discussed this business of the hazardous materials on site and the requirements that Northwest Natural Gas Co. was laying on us. Also discussed the possible redesign of the pipe supports and we agreed that that is what we should do. I told Bill I would go ahead and make the drawing changes. Also walked out to the end of the pitch storage building, at the corner where the rail car siding is, and walked over the ground with Amos. Discussed the location of the pitch pipe and the expansion bend and decided the pitch pipe shouldn't be any farther than the building on the upstream side than 15 feet. If it was any ~~closer~~ more than that it would end up interfering with the access by the gate by automobiles and light trucks.
	1½	Worked with Rob Krug on some pipe lay outs, that is cross sectional lay outs showing insulation and lagging. Also studied the Chem Tech spec for insulation and lagging. Rob did some cross section lay outs of the piping so I could visualize how to handle the insulation with the larger size heat traces on the 10" pipe. Worked up a tentative solution. Composed an email to Ted Andersen to request some information on some vendors that he has in his specs and to discuss the insulation and lagging requirements.
	1	Worked with Jerome. Had him lay out the segment there at the corner of the pitch storage building and to do a flexibility analysis on it. Reviewed the results of the flexibility analysis and suggested a couple more changes to get some more length for bending.
10-27	½	Reviewed with Mike the pipe insulation requirements and asked him to have the drawing revised to show the insulation as spelled out in the Chem Tech spec. Reviewed with Rob Krug his completed sketch for the 10" pipe. Asked him to make a few smaller changes in it and I'll look at it again tomorrow.
	3	Went over to the plant, met with Amos and we went over to the Pacific Northern Oil Dock and met with Mike, the Superintendent at the dock. Reviewed the lay out of the dock, the plans on the dock, and addressed how we are going to move some things around on the dock so we can a little better working arrangement out there on the dock. Kind of worked out a tentative scheme to put the gangway over by the Pacific Northern entrance to the platform and to move the ~~bet~~ a little bit and remove one piece of equipment and relocate the dock office. This will give us a lot more working room on the pier.
	½	Reviewed with Jerome that he's got for the pipe at the end of the dock and asked him to make some plots so I can take them with me when I go down to the Pacific Northern Dock.
10-28	½	Reviewed Jerome's anchor loads at the Big T and sent that information off to Dave Logan by FAX.
	1	Worked with Michael instructing him on how to make the drawing for the service platform and the modifications we need to make for the service platform.
	½	Instructed Michael on making a new drawing for the pipe base redesign using a steel H beam stake. Marked up a print to show what I wanted revised.

SIGNED JCMcK DATE 11-4-98 CONT'D...

(2/3)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCTOBER 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 of 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-29	3	Worked with Jerome to outline and make sketches for all the other things we need to add to the pipeline system. After Jerome and I finished that we went over the same listing and asked him to make a list and to figure out what we need to do to get it done. Rather comprehensive list. For example: Install the vent pipes on the pitch pipe, install the drains on the drain pipe and make details for the same, install the flow meters down by the dock, install the spill catchment around the flow meters, and install the little weather tight shed over the flow meters and the spill catchment. Got ready with Jerome to go out and stake the pipeline tomorrow so we know what we're going to do in going around the ponds there at the side of the road behind the pitch storage building.
10-30	3	Went with Jerome down to the plant and staked out approximately the pipeline locations from where it crosses the road behind the pitch storage building down to the dock. Located the corners and the expansion bends.
	2	Worked with Michael to check the drawings for the service platform arrangement. Checked where we are going to locate the electrical panels and how we are going to divide the electrical panel up so we have the operating panel with the push buttons for the drain pump and the valves and the power panel for the drain pump and lighting. Reviewed the preliminary drawing for the lay out of the flow meter installation and the shed covering the flow meters that Ben Jeffries is working on. I also briefly checked the drawing for installation of the drain valves and the vent valves and the pitch piping.

SIGNED JCMcK DATE 11-4-98

(3/3)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 OCT 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-16	8	CONTINUED TO REVIEW ROB'S 49 & 50 & KARON'S SEG. 05 & 06. TRY TO RESOLVE PIPE STRESS PROBLEMS DUE TO LAYOUT OF 05 BRIDGE & TRY NEW LINE MODS ON IT. PICK OFFSETS FROM CAD DWG & INPUT INTO AUTOPIPE.
10-18	3	ADD DIMENSIONS TO SEG 3 CAD DWG. INPUT GEOMETRY INTO AUTOPIPE & INPUT SE
10-19	9	WORK WITH KARON & ROB ON THEIR OLD DWGS. SET UP NEW DWGS FOR THEM ON -51 ROB & -52 KARON. INPUT SEG 04 INTO AUTOPIPE & CALL STRESSES, MODIFY C IN AUTOPIPE TO GET NEW AUTO PIPE GEOMETRY FROM CAM'S COMMENTS
10-20	8	GO OVER ANCHOR COORDINATES W/ROB & KARON & RESOLVE DISCREPANCIES REVIEW ALL PLANS & MAKE CORRECTIONS. MODEL NEW 05 IN AUTOPIPE CHECK MY -45 ADD SOME DIMENSIONS & REPLOT
10-21	9	WENT TO KOPPERS TO MEET CAM & DO WALK THRU W/AMOS ON SITE GET DWGS DONE W/ROB & KARON & INCORPORATE SURVEY COMMENTS ON THEIR DWGS. WORK ON MODELS OF 04, 05, 02, & 09 IN AUTO PIPE
10-22	10	WORK ON AUTOPIPE MODELS 03, 04, 05 & PRINT. CALL HEAT TRACE 2" & 1 1/2" TO GET MAX L. WORK W/ROB & KARON ON DWG REV'S. GET ROB TO MAKE SEG. 12 & CORRECTED 06 FOR KARON TO REDO. DISCUSS SEGMENT CALCS W/CAM DO CALCS TO CHECK GAPS & STRESS
10-23	10	WORK WITH DRAFTERS ON ALL DWGS TO GET THEM READY FOR CAM'S REVIEW. GET ROB TO FIX MY DWGS. PRINT OUT AUTOPIPE CALCS FOR 03 & 05 W/NEW SPRING SETT. CALL LOADS ON ANCHOR @ 03, 14 & 02
10-26	9	GIVE MARKUPS TO ROB & KARON. MAKE SUMMARY OF ANCHOR RXN. WORKED ON MARKUP OF HEAT TRACE LAYOUT FOR KARON. WORK ON PIPING LAYOUTS W/KARON FOR UNUSED FEATURES ON-42. CALC. STRES FOR REVISED LEG 04-SHORTEN TO CLEAR ROAD, DISCUSS W/CAM
10-27	6 1/2	WORKED ON -45 W/ KARON ON ADDING CURBS. DISCUSSED 2" H.T. LOOP & GOT HER STARTED. PLOTTED SHIP CONN. SKETCH FOR CAM. WORKED ON NEW SEG 04 W/LARGER "SPRING" & 45° JOG MADE AUTOPIPE MODEL & PRINTED. ADDED GR TO ANCHOR SUMM + VAL

SIGNED Jerome J. Parham DATE 11-1-98

98 1/2 mh (2 sheets) 1/2

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 OCT 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-28	8	CHECK AUTOPIPE CALCS ON SEG 04. WORK W/KARON ON H.T. LOOP & WORKED ON FIXING SEG 02 & 03 TO SHOW CORRECT SUPPORT IN PLAN. TRANSFER ALL DWGS TO MY COMPUTER
10-29	9	LOOK AT KARON'S H.T. PLOT & DISCUSS FIXES. GET KARON TO WORK ON SEG 03 FIXES & DETAILS. WORKED ON 02 DETAIL DISCUSS NEXT CHANGES TO DWGS W/CAM. GET MIKE & BEN TO GET STARTED ON FLOWMETER & DRAIN + VENT DETAILS GO BACK & FIX SEG 04 & 05 IN AUTO PIPE
10-30	9	MET CAM @ KOPPERS FOR SURVEY OF SITE & STAKE OUT PIPE ANCHOR LOCATIONS, START LAYOUT OF NEW SEGMENT LOCATIONS ON -42. DISCUSS HEAT TRACE LOOP W/MIKE & KARON

SIGNED Jerome L Parham DATE 11-1-98

2/2

ACTIVITY LOG

NAME BEN JEFFRIES PERIOD ENDING 10-31-98

JOB NO: P97-10 NAME HOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
10/29	2½	FLOW METER SHED FOR HOT OIL
10/30	8	" " " " " "
10/31	5½	" " " " " "
10/20	4½	UPDATES TO BRIDGE DWGS (97010-60,61 AT TIME) (ADDED DIMENSION DETAIL TO SLIDER PLATES, REMOVED CALLOUT TO DETAIL DWG.)

SIGNED Benjamin J Jeffries DATE 11/2/98

20½ mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING OCTOBER 31, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-20-98	3	WORKED ON PLAN No's 97010-24, -25, & -31. MADE MODIFICATIONS TO THE TYPICAL LIGHT DETAIL. ADDED LIGHT DETAIL TO 97010-31. MADE PRINTS OF THE DETAILS
10-21-98	3	MADE A PRINT OF THE PARKING & ROAD AREA ADJACENT TO THE BRIDGE. ALSO HAD A DISCUSSION w/ CAM & JEROME ABOUT THE PROJECT. ALSO HAD A DISCUSSION w/ CAM ABOUT THE LIGHT STANDS.
10-22-98	3¼	WORKED ON "PIER ACCESS ROAD" DRAWING ON 11x17. MADE PRINT FOR CAM REVIEW.
10-23-98	3¼	MADE SOME CHANGES TO "PIER ACCESS ROAD". MADE FINAL PRINT FOR CAM
10-26-98	1½	ANSWERED SOME MISCELLANEOUS QUESTIONS FROM KARON, ROB, & JEROME
10-27-98	1	HAD DISCUSSION w/ KARON & JEROME ON "HOT-OIL" LOOP PIPING (PLAN No. 97010-57)
10-28-98	3½	HAD DISCUSSION w/ JEROME & KARON ON 97010-57. HAD DISCUSSION w/ CAM ABOUT THE REDESIGN OF 97010-59 (PIPE SUPPORT SHORESIDE AND ABOUT THE DRAWING OF THE SERVICE PLATFORM.
10-29-98	7	HAD A DISCUSSION w/ CAM AND JEROME ABOUT THE PROJECT. ASSIGNED VARIOUS JOBS TO ROB & GINGER. HELPED KARON & JEROME w/ VARIOUS QUESTIONS. DISCUSSED SERVICE PLATFORM ARRANGEMENT w/ CAM.
10-30-98	8	WORKED ON SERVICE PLATFORM ARRANGEMENT. WORKED ON DESIGN OF CROSSOVER STILE. DISCUSSED CROSSOVER STILE w/ GINGER REVIEWED PIPE DETAILS OF VENTS & DRAINS w/ CAM. STARTED TO REVIEW PLAN No 97010-59.

SIGNED [signature] DATE OCTOBER 31, 1998

33½ mh

ACTIVITY LOG

NAME Karon O'Donnell PERIOD ENDING 10-31-98

JOB NO: 97010 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-16	8	97010-47 97010-48 Design Layout
10-19	8	97010-48 & -52 Design Layout (8-5)
10-20	8	Reworked Layout Dims -48 -52 (8-6)
10-21	8	Redsign of 46 per Field Trip (9-6)
10-22	8	Redsign of -47 per Field Trip (8:30/6:30
10-23	8	Redsign of 48 per field trip updating 42 layout of existing piping 6" vinyl cords
10-26	6	Redsign of 46 - checking Rob checking min
10-27	8	Heat Strip on 10" Pipe Design - Rework
10-28	7	Heat Strip on 10" Pipe
10-29	7	97010-45
10-30	5	(2) 97010-45/97010-57

SIGNED Karon O'Donnell DATE 11/2/98

81 mh

ACTIVITY LOG

NAME Ginger Towers PERIOD ENDING

JOB NO: 9710 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-29	6	2 drawings PIPE add valves for 1 pressure relief @ [No Dwg #'s] 97-010-Sheet 14
10-30	8	Pipe Bridge 97010-Sheet 3

SIGNED 11-2-98 DATE

14 w

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 10-31-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-16-98	6	Worked on dwg. 97010-49
10-19-98	9	Fixed revisions on dwg. 97010-49 and started dwg.50
10-20-98	7.5	Finished Dwg. 50 and submitted for revision, and started dwg.51
10-21-98	7.5	Finished Dwg. 51 and submitted for revision, and started dwg.54
10-22-98	7	Finished Dwg. 54 and submitted for revision, and started dwg.53
10-23-98	8	Finished up dwg. 53 submitted for approval and fixed revisions in 49 and 50
10-26-98	7.5	Fxed revisions in Dwg. 49 and 50, and fixed revisions in Dwg. 51 and dwg 54
10-27-98	6	Revised 53 and made sure that all dwg.s agreed with eachother and with Karons
10-29-98	6	Re-worked durawing No. 97010-58 to accomodate for new typ of insulating

SIGNED [signature] DATE 11-1-98

64 1/2 hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOVEMBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-2	2	Marked up the walkway plan showing the location of the light fixtures using the existing light standards. Reviewed Michael's first draft of the service platform arrangement. Marked it up for some revisions. Reviewed with Jerome the progress on the redraw of the piping and checked with Ben about the spill catchment and the house over the flow meters drawing.
11-3	8	Revised the pier modification specification to add updated plans, hazardous material requirements, and existing service platform requirements. Also drafted a letter for the request for quotations. Marked up the plans to be revised and reviewed the mark ups with Michael. There are about ½ dozen drawings that need revision, principally for reusing the existing electrical fixtures on the existing walkway. Went with Michael over to the Koppers site and did a check on the pier, particularly where we are going to put the gangway support platform. We took quite a few pictures. It started to get pretty dark. Stopped in to see Amos and reviewed with him the work we are doing for the request for proposal. Sent FAX to Bill Meisinger about the revisions in the specification. Reviewed with Jerome and Ben the flow meter installation and what we're doing about that area.
11-4	2	Reviewed the tank calculations done by consultant for Morse Tank. Compared the calculations with the API 650. Was not able to make them agree with my hand calculations. Called Steve Adolphson at Morse Tank. Renewed out past acquaintance by telephone. Asked him if I could contact his consulting engineer with some questions and he assured me yes. He sent me copies of other people's comments on the calculations. None of those comments were anything I was interested. Will contact him tomorrow.
	2	Worked with Mary-Anne and Mike to get the bid package out on the waterfront work. Checked the drawings that had been revised. Checked and rechecked the service platform drawing. Checked the ~~forwarding letter~~ request for quotation letter.
	1	Made some telephone calls to try to locate some contractors that had people with hazardous material experience or certifications or at least the 40 hour training certification. Found some. Have to do some more phone calls in the morning.
11-5	3	Telephoned some more people for the roadwork. Got some names and sent some specifications out. Drafted the letter forwarding the specification and requesting bids from those folks I contacted. Reviewed the calculations from Roberts Engineering on the pitch tank. Telephone Fai Au Young at Roberts Engineering and asked him some questions regarding the allowable stresses and how he calculated them. He will get back to me and answer my questions. Spent some time with Jerome and Mike reviewing progress on the completion of the drawings. Asked them to get prepared to do a complete review tomorrow, that is Friday.

CONT'D . . .

SIGNED JCMK DATE 11-18-98

41½ mh (3 sheets) (1/3)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOVEMBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-6	4½	Started the review of the piping drawings with Jerome. Reviewed the pipe supports drawings. That is the guided supports and the anchors and generally reviewed the piping arrangement drawings from the tanks down to the first bridge over the road. Did not complete this review. Marked up the prints for revision and corrections.
	½	Reviewed the plan list and the general plans that we have completed and made a list of the few plans we have yet to do. Talked with Jerome about how we are going to get that done. Marked up the plan list to show some additional drawings.
11-9	3	Continued the review of the piping drawings with Jerome. Marked up the rest of the prints. Pretty much finished that review.
	½	Worked with Ben and also with Jerome. Instructed Ben to make a calculation of the pipe reaction forces as a result of the velocity going around the bend. Wanted to see what order of magnitude is of that force and weather it is significant.
	½	Telephone conversations with prospective bidders. Particularly Brian Lies of Lies Construction, Kurt Redd and his crew of DMI, Fred Countryman at BK West.
11-10	1½	Met over at the plant with DMI people. Did a walk through on the pier and reviewed the work that had to be done. Particularly the modifications on the pier deck.
	1½	Met a little late at the plant with Lies Brothers and walked through the road requirements with them.
	½	Telephone conversation Fai Au Young of Roberts Engineering about my review of his computer output on the tank design. He had not gotten back to me so I telephoned him again and I showed him on his computer print out what my concerns were on understanding the computer calculations.
	½	Reviewed with Ben Jeffries his design of the headers for the piping transition from the 2" to the 4 1" pipes on the heat trace out on the dock.
	1	Worked with Jerome reviewing the pipe flexibility analysis, particular of the segment that goes over the road just along side the pitch storage building. The analysis he did indicates that the piping is slightly over stressed and we're trying to determine what is wrong with the model that he's got.
	½	Had several telephone conversations with prospective bidders. In particular General Construction Company. Set up a meeting for Wednesday morning. Heil Electric: set up a meeting for after the General Construction meeting. Thompson Metal Fab: Set up to get him a copy of the drawings. Asked Mary to make another set and she will probably deliver them tomorrow.

CONT'D . . .

SIGNED JCMK DATE 11-18-98

(2/3)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOVEMBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-11	3	Went over to the Koppers Plant. Did a tour of the dock with Hugel of General Construction and an electrician from Heil Electric. Also did a tour with a man from C Wark for the road.
	½	Phone calls from prospective bidders: from DMI about the materials for holding down the gratings, and from Advanced American Diving's sub-contractor the steel work, Willamette Industries, particular questions about welding.
	½	Telephone conversation with Ted Andersen regarding some piping drawings and his request to send some more piping supports. Had Jerome get the drawings ready to send him.
	1	Worked with Jerome to check those drawings that he is sending to ChemTech after he plotted them. Worked with Ben on the design of the header. Did some research in the [redacted] piping code and the boiler code for materials that we can use for an internal stay to keep the size of plate down.
11-12	1½	Went over to the plant and met with Fred Countryman of BK Excavating and gave him a site tour of the road project.
	2	Reviewed with Michael and Jerome the piping drawings and the problems we're having with getting the drafting done and getting it done accurately. I was appraised of dimensional errors on the drawings that effect locations of foundations.
11-13	½	Checked with Jerome on the progress he is making on getting the one segment pipe stress analysis resolved. Telephone conversations with prospective contractors for the pier. Talked with Advanced American Diving and also Hickey Marine.

SIGNED [signature] DATE 11-18-98

3/3

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 NOV. 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-1	6	Make online layout of new pipe runs on -42 for drafting
11-2	9	Work on -42 arrgt & make a few changes. Get drafting started on new segments. Discuss flowmeter shed w/Ben
11-3	5	Work on site plan. Fixes from new layouts from drafting check & review plots & discuss changes. Layout some new segments
11-4	5½	Work on plots w/Rob & Karon & check their changes, give & for corrections. Transfer dwgs to server. Work on flowmeter with Ben
11-5	8	Fix -42 and review all drafting dwgs & get changes done
11-6	10	Go over last minute changes to dwgs & get plotted for cam's review & do comments
11-8	3	Do autopipe models of 05 & 09 by picking offsets from cad di
11-9	8	Get drafting going on changes from Cam. Resume review w Cam. Discuss changes with Mike Karon & Rob
11-10	8	Discuss header design w/Ben. Check pipe layout inconsistencies w/Mike & work on dwgs w/Karon & Rob. Start modeling segment 49 into autopipe. Discuss seg 05 & 09 w/Cam on autopipe & work on pipe reaction problem.
11-11	9	Work on model of seg 05 gapsett. & new seg 06 and printout. Review segments w/Mike to fix alignment errs
	7½	Get dwg 44, 45, 58, 59, 60 & 61 ready for e-mail to chemtech & correct them w/drafting

SIGNED Jerome J. Parham DATE 11-16-98

89½ hrs (2 sheets) 1/2

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 15 Nov. 1998

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-12	8	Talk to Dave @ Koppers about support forces. Calc loads & make summary. Work on new details of guard post & thermom. wells for drafting & check w/Mike. Discuss job progress w/Cam & Mike
11-13	8	Start corrections to -43 seg 01 to fix nozzle locations. Make sketch of thermom. well. Call Rebis tech support to resolve pipe support deflection & gravity error.
11-15	2	Modeled new segments 01 & 11 in Autopipe
	18	

SIGNED Jerome J Parham DATE 11-16-98

2/2

ACTIVITY LOG

NAME BEN JEFFRIES PERIOD ENDING 11/1/95

JOB NO: P97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
11/2	8½	HOT OIL FLOW METER SHED
11/3	8½	" " " "
11/4	5½	" " " "
11/5	8½	" " " " REGICHED PIPE HANGERS
11/6	10	" " " " CHANGED PIPE HANGERS
11/9	3½	" " " "
11/10	2	" " " "
11/10	2	HOT OIL HEADER BOX
11/11	9	" " " "
11/12	3	" " " "

SIGNED Benjamin Jeffries DATE 11/13/95

60½ mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING NOVEMBER 15, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-2-98	9	WORKED ON PLAN No. 97010-38 (SERVICE PLATFORM ARRANGEMENT). MADE PLOT AND REVIEWED IT w/ CAM. HELPED GINGER w/ PLAN No. 97010-65. HELPED JEROME w/ SOME QUESTIONS.
11-3-98	(5½)	WORKED ON PLAN No. 97010-38. WENT OVER TO KOPPERS w/ CAM TO TAKE MEASUREMENTS TO VERIFY THAT THE DRAWING IS CORRECT.
11-4-98	6	MADE CHANGES TO PLAN No. 97010-21, -23, -24, -25, -26, -27, -28, -29, -31. MADE PLOTS OF THEM DISCUSSED CHANGES TO BE MADE TO PLAN No. 97010-38 w/ ROB. ALL DRAWINGS PLOTTED ON VELLUM FOR BID PACKAGE.
11-5-98	4	DISCUSSED THE PROJECT w/ JEROME. MARKED UP PLAN No. 97010-65 AND REVIEWED THE MARK-UP w/ GINGER
11-6-98	5	MARKED UP PLAN No. 97010-65 AND REVIEWED IT w/ GINGER. ANSWERED QUESTIONS AND REVIEWED SOME DRAWINGS.
11-9-98	3	HAD A LENGTHY REVIEW w/ JEROME, KARON, & RCB
11-10-98	8¾	WORKED w/ JEROME ON CERTAIN QUESTIONS ABOUT THE PROJECT. REVIEWED 97010-45. ANSWERED QUESTIONS FROM GINGER, ROB, & KARON
11-11-98	7	HAD A LENGTHY DISCUSSION w/ JEROME ON THE DESIGN OF SEGMENT 11. WORKED ON MARKING UP PLAN No. 97010-49 (SEG 7). HELPED OUT KARON w/ PLAN No. 97010-47. DID SOME CHANGES TO PLANS No 97010-59, -60, -61, & -62.
11-12-98	7½	WORKED ON MARKING UP 97010-47. HAD DISCUSSIONS w/ ROB AND KARON ABOUT THE PROJECT. HAD NUMEROUS DISCUSSIONS w/ JEROME ON THE PROJECT. HAD A REVIEW w/ CAM (& JEROME)
11-13-98	3	WORKED ON MARKING UP PLAN No. 97010-46. HAD SOME DISCUSSIONS w/ JEROME ABOUT THE PROJECT. HAD A TALK w/ CAM

SIGNED [signature] DATE NOVEMBER 15, 1998

58¾ hrs

ACTIVITY LOG

NAME KARON O'DONNELL PERIOD ENDING NOV 15-98

JOB NO: 97010 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-2	8	WORKED ON MOVING SUPPORTS / ANCHORS PER Jerome
11-3	8	WORKED ON REDESIGN OF SUPPORT LOCATIONS
11-4	7	WORKED ON REDSIGN OF SUPPORTS / ANCHORS RELOCATION OF Bridge AND HEAT LOOPS
11-5	8	WORKED ON 48/47/52/57
11-6	5	checking layout - final update before Cam's checking
11-9	6	reworked dwgs per checking
11-10	8	reworked dwgs per checking
11-11	8	worked on dwgs per checking
11-12	3	Detail Bollard
11-13	5	Bollard Delail #47

SIGNED Karon O'Donnell DATE 11/16/98

66 nlh

ACTIVITY LOG

NOV 15 1998

NAME Ginger Towers PERIOD ENDING

JOB NO: 9710 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
~~10-02~~	8	Pipe drawings Sheet 1/2
11-5	7	9710-65
11-6	9	9710-66
11-9	2	Review of Changes & Starting Changes
11-10	4.5	97010-63, 66, 67

SIGNED JS DATE 11-16-98

30½ hrs

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 11-15-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-2-98	8	Worked on dwg. 97010-49, 50, 51, 53, 54 to make dwgs agree
11-3-98	8	More work doing the same on 49-54
11-4-98	8.5	Came back to Dwg. 62 foundation support dwg and changed the style of foot
11-5-98	7	Did revisions on all my drawings from Mike
11-6-98	5	Went back and updated 8" clamp so as to be current with 10" clamp on Dwg. 59
11-9-98	8.5	Finished up dwg. 53 submitted for approval and fixed revisions in 49 and 50
11-10-98	7.75	Fxed revisions in Dwg. 49 and 50, and fixed revisions in Dwg. 51 and dwg 54
11-11-98	6	Re-drew 53 as to make current with the site plan
11-12-98	5	Fxed mark-ups that came from Mike

SIGNED [signature] DATE 11-16-98

63 3/4 mh

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

January 7, 1999

INVOICE

NO: PI99-01

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: WM. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 11/16/98 through 12/31/98)
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 11/16/98 through 12/31/98. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	
79½ man-hours @ $79.00 per man-hour	$ 6,280.50
Senior Engineers:	
135 man-hours @ $52.50 per man-hour	7,087.50
Senior Drafters:	
237¾ man-hours @ $40.00 per man-hour	9,510.00
Drafter "Trainee":	
98 man-hours @ $21.00 per man-hour	2,058.00
TOTAL AMOUNT DUE (550¼ man-hours)	$24,936.00

TERMS: Net cash

Cont'd . . .

OK to PAY 1/14/99

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			24936 —

INV # 9901 DATE 1/7/99

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 055 DUE DATE: 2/7/99

DIVISION	MONTH	AUDIT NUMBER
483	01	92700015

OK TO PAY

IMPORTANT: CIRCLE TERMS ON INVOICE

GROSS AMOUNT	24936 —
DISCOUNT $	
NET $	

Koppers Industries, Inc. (Attention: WM. Meisinger) January 7, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-01

DESCRIPTION AMOUNT

SERVICES:

1. Toured the site several times and answered questions from prospective bidders on the Pier Modification work.

2. Completed work on the ship transfer piping flexibility stress analysis and piping arrangement plans.

2A. Completed the following plans for heat trace flow meter installation and heat trace on pier including rain shed:

PLAN NO.	REV.	TITLE
97010-59	0	HEAT TRACE PIPING: EXPANSION LOOP DETAILS
97010-60	0	HEAT TRACE PIPING: AT FLOW METER
97010-73	0	RAIN SHED & CONTAINMENT FOR FLOW METER

3. Completed the following miscellaneous plans:

PLAN NO.	REV.	TITLE
97010-67	0	PIPE: MISCELLANEOUS DETAILS, SHEET 1
97010-68	0	PIPE: MISCELLANEOUS DETAILS, SHEET 2
97010-71	0	PIPE CROSSOVER STILE: AT SHORESIDE
97010-72	0	PIPE CROSSOVER STILE: AT DOLPHIN

4. Assembled bid packages of plans for the Structural & Mechanical work. Prepared General Instructions to prospective Contractors of Koppers' Terms & Conditions and Safety & Hazmat training requirements. Delivered 10 copies of the bid package to Koppers on 12/1/98

5. Visited Koppers on 12/4/98. Met with Bill Meisinger, Amos Kamerer and DMI personnel, the contractor awarded the pier contract, to review plans and specifications.

6. Reviewed Chem Tech Specifications. Had teleconference with Bill Meisinger on 12/8/98 to discuss comments.

7. Reviewed all plans and specifications from other engineers and contractors (Morse Tank/Roberts Engineers, Geo Engineers/KPFF, & Chem Tech) working on the mechanical & structural projects and coordinated resolutions of comments. McKernan "stamped" drawings and specifications as appropriate.

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) January 7, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-01

DESCRIPTION AMOUNT

SERVICES: (continued)

8. Responded to City of Portland's request for more information in support of the Building Permit for the Pier Work as follows:

   - Prepared Plan 97010-41 Rev. 0 "Roadway Parking Area Arrangement" to show landscape information requested by the Zoning Department. Submitted Plan on 12/2/98.
   - Filled in Structural special Inspection Program Form as requested by the Structural Department. Form submitted on 12/15/98.
   - Wrote letter and revised Plan 97010-40 Rev. 1 "Piling Plan" to show added pile driving information requested by the Site Development Department. Plan and letter were submitted on 12/17/98.
   - Filled in Soils Special Inspections Form as requested by the Site Development Department. Form was submitted on 12/17/98.
   - Furnished copies of the State of Oregon letter saying no permit required and the Corps of Engineers Permit as requested by the Site Development Department. Letter and Permit were submitted on 12/17/98.

9. Contacted City several times for status of Building Permit Application for the pier work. Informed of approval and cost for the Permit on 12/23/98. Obtained check from Koppers and picked up the Building Permit on 12/23/98.

10. Prepared Building Permit Application for structural and mechanical work. Assembled required packages of plans, calculations, specifications, and soils reports. Visited City of Portland and submitted packages on 12/23/98. Obtained cost of plan review. Informed Bill Meisinger of cost for plan review.

Koppers Industries, Inc. (Attention: WM. Meisinger) January 7, 1999
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI99-01

LABOR SUMMARY:

Period ending:	11/30	12/15	12/31	TOTAL
Principal Engineer:				
McKernan	52	16	11½	79½
Senior Engineers:				
Parham	118	12	0	130
Jeffries	5	0	0	5
Senior Drafters:				
Kincaid	99¾	0	0	99¾
O'Donnell	81	0	0	81
Towers	57	0	0	57
Drafter "Trainee":				
Krug	80	18	0	98
TOTAL				550¼ man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOVEMBER 30, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-16	2	Went over to the plant and met with the Advanced American Diving people. Gave them a tour of the dock and road area so they can put together their bid.
11-17	1	Several telephone calls from prospective contractors. In particular a call from Ken Preston of General Construction announcing they weren't going to bid the job because they didn't have enough equipment during the fish window. A call from Bob Jendro at M. Cutter. I called Heil Electric to get their FAX number to send them the bidder's list. Telephone conversation with Ray Griffith at Morse Tank about the plan requirements to be submitted with the Building Permit. Talked to Advance American Diving to get their FAX number to send the surveyor's name and address to them so they can contact them for bidding.
11-19	4	Worked with Jerome. Started the final review of the piping drawing. Went through all the pipe support drawing and through segment 4 of the main run.
11-20	5½	Continued the review of the drawings. Reviewed piping segments 5, 6, & 7. Marked up some check prints for the pipe support foundations, that is drawing – 60 in order to eliminate the bolded connections and to use the welded connection. Instructed Mike and Rob on how to revise that drawing. There are several drawings involved. The pipe support and the anchor drawing – 62.
11-23	5	Reviewed with Michael and Jerome the status of all the plans. Identified and took out plan numbers for the few plans that are not finished. Particular work items during the day were: Worked with Rob on getting the sway brace drawn, worked with Jerome getting the status of the piping drawings, met with Jerome and Michael to get the status of the plans that were previously reviewed and establish the status of the review, met with Jerome and Michael to get the priorities for completing the drawing package, worked with Michael and Rob to lay out the heat trace piping and to finish the drawing for the header on the end of the pipe out at the end of the dock where we have to branch from a single supply line down to 4 four supplies lines, worked with Jerome to make some sketches of the sliding support at the end of the pipe where the ship connection is and made several sketches of how that sliding support is going to be using some ultra poly and worked up the pump mounting, met with Michael to complete or separate Ben's drawing with the flow meter installation and make a new drawing of the rain shed and spill containment. Also had several brief telephone conversations with Amos about the bids for the dock and the road contract which has been awarded to C Wark.
11-25	6	Worked with Rob Krug on the heat trace and header drawing. Went through 3 sets of mark ups and revisions. Pretty well have it done. Reviewed the drawing packages received from Chem Tech and kfpp and had Mary figure out how much paper we needed and how much it was going to take to get the drawings printed. Pretty much decided to trim the drawings and send them out for printing. Reviewed Jerome's drawing for the ship connection support and the drain pump support.
		CONT'D . . .

SIGNED [signature] DATE 12-4-98

52 mh (2 sheets) (1/2)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING NOVEMBER 30, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-27	5½	Reviewed with Jerome the drawings for the ship connection and discussed it with him at some length and made some mark ups on the arrangements. Worked with the individual draftsmen on the various parts of the project that were being worked on. Ginger's working on the cross over stiles. Rob was working mostly on the heat trace piping and Mike was working on the rain shelter for the meters. Went through several mark ups and revisions during the course of the day.
11-28	9½	Worked on checking drawings and rechecking drawings, marking up for revisions and checking revisions.
11-29	5½	Continued checking drawings and rechecking drawings. Got about ½ the drawings down to the point where they were final and were ready to be plotted.
11-30	8	Checked and rechecked drawings and plots and made new mark ups and rechecked new plots and corrections. Got all the drawings done except the stile over pipe on bridge. All the drawing were plotted except that one and started printing our piping drawings. Rob got about 3 sets of the drawings finished by the time I left the office. Sorted out the Chem Tech and kpff drawings and stamped those drawings that needed stamping. Had Mary make arrangements to come in and take those drawings and blue print them.

SIGNED JCMK DATE 12-4-98

(2/2)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 NOV. 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-16	10	FIX MODEL SEG 05 FROM REBIS e-mail & PRINT. MODEL SEGMENTS 11 & 01 IN AUTOPIPE & PRINT. WORK ON ACAD DWGS -43 & 44 & PLOT FOR CHECK. FIX DWGS -42 & -58 & e-mail WITH -23, 24, 25, 29, 30, 31 & 38 TO CHEMTECH. WORK WITH GINGER ON CROSSOVER BRIDGES
11-17	9	ADDED BKTS TO SEG 02 & PLOTTED 01 & 02 FOR REVIEW GO BACK & CALC NEW AUTOPIPE MODELS OF 03, 05 & 09 W/CAMS & PRINT. WORK WITH GINGER ON CROSSOVER STILES
11-18	9	MODEL SEG 07 BUT NOT CALC'D. CHECK & CORRECT GINGER'S SHORE CROSSOVER. START MODS TO BRIDGE CROSSOVER V.L. GET PLANS - 42, 43 & 44 FOR CAM'S CHECK W/PIPE FDNS. CALL FOR HEX VALVE INFO. CONTACT WEDGE PLUG REP MR. STELL FOR INFO. DO SOME MINOR CORRECTIONS TO SITE PL
11-19	8	WORK ON CHECKING HP/LP VENT DWGS. REVIEW PLANS W/CAM & DO COMMENTS.
11-20	8	CONTINUE DWG REVIEW W/CAM, E-MAIL MODEL QUESTION TO REBIS. DISCUSS DWG CHANGES W/MIKE. USE AUTOPIPE TO MODEL 08 FROM CAD DWG. RUN SEG 07 IN AUTOPIPE.
11-22	2	CALC CASES 8 & 10 IN AUTOPIPE & SAVE FOR MARY-ANN
11-23	10	DISCUSS SHIP CONN. PIPE FDN DESIGN W/CAM REC'D HEX SAMPLE VALVE FAX. WORK ON TANK SWAY BRACE DETAIL W/ROB. WORK ON SHIP CONNECTION LAYOUT TO DETERMINE PIPE CLEARANCES ABOVE PIER. PRINT OUT AUTOPIPE CASES FOR SEG. 8, 10, & 07

1/2

SIGNED Jerome J. Parham DATE 11-30-98

118 mh (2 sheets)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 NOV. 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-24	11	WORKED ON SWAY BRACE LOCATION & CHECKED ROB'S DWG. STARTED ACAD SHIP CONN. DWG-63
11-25	10	TALKED TO REGIS ABOUT GAP/V-STOP PROBLEM & FIXED 03 & PRINTED. WORKED WITH MIKE ON REMAINING FIXES TO DWGS. CONTINUED PIPE SUPPORT DWG. AT PIER
11-27	12	CONTINUED PIPE SUPPORT DWG. REVIEW REMAINING PIPE SEGMENTS W/CAM ON LAYOUT OF PIPE FOR COLD OFFSETS. PRINT OUT SEG 05 & 09 CASES
11-28	12	FINISHED PIPE SUPPORT @ SHIP CONN & PLOT FOR CHECKING. START -57 DRAIN PUMP @ SHIP CONN.
11-29	9	FINISHED PRELIM PITCH DRAIN PUMP & PLOT FOR REVIEW. START & FINISH CHANGES FROM CAM'S COMMENTS
11-30	8	WORKED ON SHIP CONN, FDN & DRAIN PUMP TO TAKE CARE OF COMMENTS FROM CAM & PLOT FINAL

2/2

SIGNED Jerome J. Parham DATE 11-30-98

ACTIVITY LOG

NAME BEN JEFFRIES PERIOD ENDING 11/30/98

JOB NO: P97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
11/16	1½	HEAT PIPE HEADER BOX, DUCTILOCK ATTACHMENTS
11/17	2	" " " " " "
11/20	1	" " "
11/23	½	REVIEW OF HEADER, TRANSFER OF DRAWING TO ROB

SIGNED Benjamin T Jeffries DATE 11/30/98

5 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING NOVEMBER 30, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-16-98	2½	WORKED ON REVIEWING PLAN No. 97010-46 & WORKED ON REVIEWING PLAN No. 97010-48
11-17-98	2	WORKED ON REVIEWING 97010-48 AND ANSWERED SOME QUESTIONS FROM KARON ABOUT 97010-46
11-18-98	8	REVIEWED PLAN No's 97010-45, -46, -48. DISCUSSED CHANGES OF 97010-45 w/ KARON. DISCUSSED OTHER DRAWINGS w/ KARON
11-19-98	9	WORKED ON REVIEWING PLANS 97010-45 THROUGH 97010-50. SUBMITTED SEGMENTS 3 THROUGH 7 FOR CAM TO REVIEW. HAD A DISCUSSION w/ CAM ABOUT PLAN No. 97010-60 AND HELPED OUT ROB ON THE DRAWING. WORKED ON PLAN No. 97010-46 AFTER CAM'S REVIEW
11-20-98	6	WORKED w/ ROB AND KARON ON PLAN No's 97010-45, -51, -52. DISCUSSED PLAN No. 97010-46 w/ JEROME. SAT IN THE DISCUSSION w/ CAM AND ROB ON THE GUIDE SUPPORT DRAWING FOR THE PIPE ON THE TANK
11-21-98	4¾	WORKED ON MARKING UP PLAN No. 97010-49, -50, & -51. WORKED ON PLAN No. 97010-45
11-23-98	8½	HAD DISCUSSIONS w/ CAM & JEROME ABOUT THE PROJECT. DISCUSSED THE HEADERS w/ CAM & ROB. WORKED ON REVIEWING 97010-52. MADE CHANGES TO THE PLAN LIST
11-24-98	10	WORKED ON REVIEWING 97010-45, -46, -51 & -53. HELPED OUT KARON w/ THE DRAWINGS. WORKED w/ ROB ON PLAN No. 97010-60 AND 97010-62.
11-25-98	10¼	WORKED ON EITHER REVIEWING, DOING, OR DISCUSSING w/ ONE OF THE DRAFTERS PLANS 97010-43 THROUGH 97010-53

SIGNED [signature] DATE NOVEMBER 30, 1998

993¾ mh (2 sheets) 1/2

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING NOVEMBER 30, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-27-98	9¾	WORKED ON PLAN No's 97010-45 THROUGH 97010-54. DISCUSSED PLANS 97010-49 & -51 w/ GINGER. WORKED w/ ROB & KARON ON VARIOUS DRAWINGS. HAD A DISCUSSION w/ CAM ABOUT THE PROJECT. STARTED TO WORK ON PLAN No. 9701-73.
11-28-98	10½	WORKED ON PLAN No 97010-73. HAD A DISCUSSION w/ CAM ABOUT THE PROJECT.
11-29-98	10½	WORKED ON PLAN No. 97010-59 & -73. WORKED ON MARKUPS OF DRAWINGS THAT CAM REVIEWED (FINALIZED DRAWINGS)
11-30-98	8	WORKED ON VARIOUS DRAWINGS (97010-45 THROUGH 97010-73) MAKING SMALL CHANGES TO SOME, ANSWERING QUESTIONS ABOUT OTHERS AND SO FORTH. MADE VELLUM PLOTS.

SIGNED [signature] DATE NOVEMBER 30, 1998

2/2

ACTIVITY LOG

NAME Karon O'Donnell PERIOD ENDING 11/30/98

JOB NO: 97010 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
11/18	3	reworking Dwgs
11/18	11½	reworking Dwgs
11/19	9½	reworking Dwgs
11/20	6½	reworking Dwgs
11/23	9	reworking Dwgs
11/24	10½	reworking Dwg
11/25	8½	reworking Dwg
11/27	5	reworking Dwg
11/28	9½	reworking Dwg
11/30	8	reworking Dwg plotting/trimming/Bluelines

SIGNED Karon Donnell DATE 11-30-98

81 mh

ACTIVITY LOG

NAME Ginger Towers PERIOD ENDING 11-21-98

JOB NO: 97-010 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-16	4	mark up of 97-010-66
11-17	8	97-010-66 & 97-010-67
11-18	3	97-010-66 & 67
11-19	2	97-010-63
11-24	8	49, 52
11-25	8	68, 46
11-26	3	97-010-54,
11-27	10	50, 46, 53, 52, 66
11-30	11	Drawing 72 & Helping out with cutting & trimming
~~11-31~~ 12-1	5	~~Putting together packages for Cam~~

SIGNED [signature] DATE 12-1-98

57 mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 11-30-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
11-19-98	10	Worked on dwg. 97010-49, 50, 51, 53, 54 to make dwgs agree.
11-20-98	7	More work doing the same on 49-54.
11-23-98	10	Started and finished work on the first version of the sway brace on misc. sheet 1.
11-24-98	10	Discussed with Mike what to do about miscelaneous sheets, then made changes.
11-25-98	11.5	Went back and updated 8" clamp so it could support 1" multiple traces on misc. sheet 2 dwg. 68.
11-27-98	10	Went through revisions of Dwg. I am responsible for, and fixed.
11-28-98	6	Discussed and started the header box that I recieved from Ben Jeffreis submitted for revision to Cam and went through first and second round revisions.
11-29-98	5.5	Redid Misc. sheet 2 (8" support for the heat traces) and started the detail on it started to finish up header box, and started the schematic for the flow meter she
11-30-98	10	Finished up all Drawings, trimmed and started running prints.

SIGNED [signature] DATE 12-1-98

80 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING DECEMBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-1	6 ½	Worked with Mike on the drawing for the cross over stile out on the pier. Got it finished and stamped. Helped coordinate getting all the prints and copies made for sending out the package for bid and for the Koppers personnel to review. Telephone conversation with Sam Moss over at kpff about the foundation drawings and another conversation with him later when we got the pile driving specifications. Helped run copies of those specifications for insertion in the instruction spec book. Drafted some general instructions to the Contractors to include the Kopper's Terms and Conditions, the Safety Regulations, and the NW Natural Gas requirement for 40 hours training. Had Mary make 10 copies for insertion into the bid package. Late in the afternoon took 10 copies of all the drawings individually separated with the different drawing groups. Met with Bill Meisinger and Amos Kamerer. Reviewed with them the drawing for the landscaping plan and what we were going to say about watering the plants.
12-4	2	Met with Bill Meisinger, Amos Kamerer, Kurt Redd and Jim Glad to review the bid that DMI submitted. Reviewed the specs and the bid and made sure that DMI understood the requirements.
12-7	2½	Reviewed Chem Tech construction specification. Made notes of comments. Got through the mechanical portions up to the start of the electrical.
	½	Telephone conversations with Amos Kamerer about the testing and start ups of the systems and in particular about disposal of the water after the hydro test on the tank. Telephone conversation with Bill Meisinger to set up a telephone conference tomorrow to discuss my comments on the specs.
12-8	2	Long telephone conference with Bill Meisinger to review the comments I have on the mechanical portion of the construction specifications.
12-14	1	Reviewed the communication from the City of Portland Bureau of Building Structural Reviewer. Marked up a copy of the Special Inspections Report and got it ready for Amos to sign. Had Mary draft a forwarding letter to the City of Portland for it.
12-15	1½	Went over and visited Amos briefly. Delivered the City's plan review sheet. Brief telephone conversation with Jim Glad at Diversified. He was asking about the status of the Building Permit. He also discussed that he wanted to get in next week to drive those pilings. Discussed with him getting a surveyor down there to put in the marks on the dolphin end and staking out the foundation.

SIGNED JCMcK DATE 12-18-98

16 mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 DEC 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-4	1	START WORKING ON NEW MODEL FOR SEG 01 FOR HP/CT, HP/HT, CP, HT
12-7	6	RUN CASES FOR SEG 01-2B & 01-3B. GO THROUGH ALL SEGMENT CALCS & PUT INTO BOOK & MAKE SUMMARY
12-8	5	FINISH UP BOOK & MAKE QUICK CHECK ALL CALC. CASES TO SEE IF STILL OK

SIGNED Jerome J. Parham DATE 12-16-98

12 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING DECEMBER 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-18	2	Sorted through the engineering construction specifications. Particularly the documents from KPFF and Geo Tech regarding the foundations for the tank and the pile driving. Tried to figure out what we are going to submit and how it's going to be submitted so it's split up into the parts the City of Portland wants. They want the Geotechnical and soil reports as sort of a separate document. Made a pencil draft of the application for building permit. Reviewed it with Mary-Anne. Couple brief telephone conversations with Amos Kamerer regarding the status of the permit for the dock and the road work by C Wark. Couple telephone conversations with Elaine Brotherton at Farwest Steel regarding the steel shaped and cut outs for Diversified.
12-21	1½	Couple telephone conversations with Amos about the status of the plan review at the City of Portland for the pier. C Wark came and started their work today. Went down to the City Building up to the 9th floor to the plan check section. Attempted to see Irwin Jones but he wasn't in. Checked the status of the pier drawing review. Everybody is finished except the forester. Went downstairs and got an application for an electrical permit. Got the name of the electrical plan reviewer.
	½	Worked with Mary to sort out the electrical from the mechanical and structural specifications and plans so they can be submitted separately to the City of Portland.
12-22	3	Telephone conversation with Irwin Jones the City Plan Examiner. Set up an appointment with him for tomorrow afternoon at 1:30 to submit the mechanical and structural drawings. Worked with Mary-Anne to assemble the package to go to the City. Worked up a list of enclosures and made sure we had each one properly stamped
	½	Reviewed the application for electrical permit. Decided to wait until after we get the structural mechanical application in before we start tackling the whole problem with the electrical plans.
	1	Lengthy telephone conversation with Jim Glad concerning some of the details on the walkway. He has cut all the steel to the lengths shown on all the drawings and neglected to measure the existing walkway and check out the distances between the service platform and the dolphin first. It appears like the walkway is a foot short based on the dimensions he is using. I told him he should fix it and before he figures out how he is going to fix it he should go back and recheck the measurements.
12-23	3	Went with Mary to the City Building Bureau. Met with Irwin Jones, gave him the request for Building Permit for the mechanical and structural, got from him the invoice for how much it's going to cost for plan review. Got the final approval noted on the pier permit and got the fee invoice for it. Went over to Kopper's office got a check from them. Took the check back to the Portland Building, picked up the stamped approved plans, took them down to the cashier and plan office and gave the check to them and got the permit.

SIGNED [signature] DATE 1-6-98

11½ mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 12-15-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
12-1-98	7	Worked on dwg. 97010-49, 50, 51, 53, 54 to make dwgs agree.
12-3-98	8	More work doing the same on 49-54.
12-8-98	3	Started and finished work on the first version of the sway brace on misc. sheet 1.

SIGNED [signature] DATE 12-16-98

18 mh

Author: BILL MEISINGER at TECHCTR
Date: 1/14/99 9:29 AM
Priority: Normal
TO: AMOS KAMERER at PITT
Subject: Re: McKernan

---------- Message Contents ----------

Amos,

Invoices arrived yesterday P.M. from Cameron. Go ahead and process for payment.

Thanks, Bill

_____ Reply Separator _____

Subject: McKernan
Author: AMOS KAMERER at PITT
Date: 1/13/99 5:00 PM

Bill, any sign of Cam's invoices? If not I can fax you copies. I would just like to get them entered into the AP system, so he can get paid.

Amos

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

October 30, 1998

INVOICE

NO: PI98-79

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: WM. Meisinger

COPY

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 10/1/98 through 10/15/98)
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 9/1/98 through 9/30/98. Services are listed on the following pages.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:	
73 man-hours @ $79.00 per man-hour	$ 5,767.00
Senior Engineers:	
97½ man-hours @ $52.50 per man-hour	5,118.75
Senior Drafters:	
128¼ man-hours @ $40.00 per man-hour	4,977.00
Drafter "Trainee":	
74½ man-hours @ $21.00 per man-hour	1,564.50
TOTAL AMOUNT DUE (373¼ man-hours)	$17,427.25

TERMS: Net cash

Cont'd . . .

Amos,
O.K. Wm 11-6-98

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

October 30, 1998

INVOICE

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74½ man-hours @ $21.00 per man-hour	1,564.50
TOTAL AMOUNT DUE (373¼ man-hours)	$17,427.25

TERMS: Net cash

Cont'd . . .

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			17427 -

INV # 19879 DATE 10/30/98

▼ A/P DEPARTMENT USE ONLY ▼

VENDOR NUMBER 0 0 0 5 6 5 0 1 6

TERMS. CODE: 055 DUE DATE: 11/29/98

DIVISION	MONTH	AUDIT NUMBER
483	11	92700488

OK TO PAY

GROSS AMOUNT 17427.25

DISCOUNT $

NET $

IMPORTANT: CIRCLE TERMS ON INVOICE

Koppers Industries, Inc. (Attention: WM. Meisinger) October 30, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-79

DESCRIPTION AMOUNT

SERVICES:

1. Edited Specification for the Pier Modification incorporating comments from meeting at Koppers on 9-28-98. Visited Koppers on 10-1-98. Reviewed Specification with Bill Meisinger.

2. Did formal calculations including a narrative for the pier modification of the bridge & walkways for the following loads based on the Oregon Structural Specialty Code:

   - live load
   - wind load
   - snow load
   - seismic load

3. Visited Koppers on 10-6-98. Obtain the fire main drawing and walked the site to verify locations of hydrants and hose stations for use in preparing a fire & safety plan.

4. Visited the City of Portland with Amos Kamerer on 10-9-98. Had a pre-submittal Building Permit Application meeting with the Bureau of Buildings personnel.

5. Continued work on the ship transfer piping flexibility stress analysis and lay outs. Completed the following plans:

PLAN NO.	REV.	TITLE
97010-45	-	SHIP TRANSFER PIPE: SEGMENT 03
97010-46	-	SHIP TRANSFER PIPE: SEGMENT 04
97010-47	-	SHIP TRANSFER PIPE: SEGMENT 05
97010-48	-	SHIP TRANSFER PIPE: SEGMENT 06
97010-49	-	SHIP TRANSFER PIPE: SEGMENT 07
97010-50	-	SHIP TRANSFER PIPE: SEGMENT 08
97010-51	-	SHIP TRANSFER PIPE: SEGMENT 09
97010-52	-	SHIP TRANSFER PIPE: SEGMENT 10

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) October 30, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-79

DESCRIPTION AMOUNT

SERVICES (continued)

6. Continued plan development (completing or updating plans) for the pier modification.

7. Filled in the application, wrote the forwarding letter, and assembled the Building Permit Application Package. McKernan visited the City of Portland Bureau of Buildings on 10-16-98. Submitted the following application and supporting documents.

   - Commercial Building Permit Application
   - Specification – Modification of Pier for Liquid Pitch Unloading
   - Calculations: Pier Modification – Walkway & Bridge
   - Plans:

PLAN NO.	REV.	TITLE
97010-21	-	SITE PLAN
97010-22	-	FIRE & SAFETY PLAN
97010-22A	-	FIRE MAINS & HYDRANTS (EXISTING)
97010-23	-	WALKWAY PIER TO DOLPHIN – ARRANGEMENT
97010-24	-	WALKWAY PIER TO DOLPHIN – STRUCTURAL SECTIONS
97010-25	-	WALKWAY PIER TO DOLPHIN – SEGMENT W1 ASSEMBLY
97010-26	-	WALKWAY PIER TO DOLPHIN – SEGMENT W2 ASSEMBLY
97010-27	-	WALKWAY PIER TO DOLPHIN – SEGMENT W3 ASSEMBLY
97010-28	-	WALKWAY PIER TO DOLPHIN – SEGMENT W4 ASSEMBLY
97010-29	-	BRIDGE TO SHORE – ARRANGEMENT
97010-30	-	BRIDGE TO SHORE – STRUCTURAL SECTIONS
97010-31	-	BRIDGE TO SHORE – SEGMENT B1 ASSEMBLY
97010-32	-	BRIDGE TO SHORE – SEGMENT B2 ASSEMBLY
97010-33	-	BRIDGE TO SHORE – SEGMENT B3 ASSEMBLY
97010-34	-	BRIDGE TO SHORE – SEGMENT B4 ASSEMBLY
97010-35	-	BRIDGE TO SHORE – SEGMENT B5 ASSEMBLY
97010-36	-	BRIDGE TO SHORE – SHORE FOOTING
97010-37	-	WALKWAY & BRIDGE: MISCELLANEOUS DETAILS
97010-40	-	PILING PLAN END OF PLAN LIST

Koppers Industries, Inc. (Attention: WM. Meisinger) October 30, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-79

LABOR SUMMARY:

Period ending:	10/15
Principal Engineer:	
McKernan	73
Senior Engineers:	
Parham	97½
Senior Drafters:	
Kincaid	110¼
O'Donnell	18
Drafter "Trainee":	
Krug	74½
TOTAL	373¼ man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCTOBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-1	1½	Edited the typed specification for the pier modification. Went through 2 edit proof reading sessions. Got it final typing ready to deliver.
	1	Went over to the Koppers Plant. Met with Bill Meisinger. Gave him a copy of the specification. He briefly reviewed it. Also discussed with him some of the things we are doing with our part of the work.
10-2	3	Worked with Jerome and reviewed the piping design he worked on the last 3 days. Found he didn't quite do it the way I had hoped it would be done. Asked him to make some revisions to the arrangements and redo the flexibility analysis. Worked with Mike and reviewed the bridge and the walkway detail design. That is the sections for each one of the bridge elements. Also had Mike go back and do a study of the 10" pipe with a 2" heat trace on it so we know what kind of insulation to put on it.
10-3	7	Started formal calculations for the bridges and walkways for the submittal to the City of Portland. Did a weight estimate for the structures. Worked it out to be in pounds per foot of linear length.
10-5	7	Continued the calculations using the Oregon Structural Specialty Code. Worked up the various load combinations required by the Code and went through with a simplified bending moment calculation for the structure to determine the required sections modulus. In the first round discovered we didn't have quite enough section modulus. Changed member sizes, recalculated the weights and redid the required section modulus. Got it to work out. Marked up a set of plans for Michael to make the changes.
	1	Worked with Jerome. Reviewed his calculations of the pipe around the big tanks.
10-6	3	Continued working on the calculations. Worked up the bolting load calculations. Reviewed the Oregon Structural Specialty Code for earth quake loads to make sure what I had done earlier is more or less in compliance. Reviewed part of the Code for anchor bolts.
	2½	Went with Mike down to the Terminal. Picked up the fire main drawing from the office. Toured the plant and located all the hydrants and hose stations. Went down to the dock and inspected the dry pipe going out onto the dock. Looked at the set up inside the building for the control valve and the air compressor. Also checked out the entrances to the facility. Instructed Mike to incorporate this information on our fire and safety plan but don't include there the piping just show where the hydrants and the hose stations are.
	2	Worked with Jerome on the pipes at the tanks. Reviewed all the calculations he has done and advised him on how to present the tank connection details to the vendor of the tank. Had a telephone conversation with Dave Logan. We will be sending the tank drawings to him by email via Ted Andersen.
	(28)	

CONT'D . . .

SIGNED JCMK DATE 10-20-98

73 mh (3 sheets) (1/3)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCTOBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-7	4	Worked with Jerome on the pipe arrangements at the tanks. Checked the flexibility analysis and the loads on the tanks. Gave Jerome some instruction about putting the information for the tank vendor about the nozzles and the pipe supports and pipe anchors on the tank.
	1	Later in the day went and checked Jerome's latest plots and reviewed again his flexibility analysis and discussed with him the whole arrangement of the piping there at the tank.
10-8	5	Worked at home on the engineering calculations. Calculated the strengths of the anchor bolts on the walkway. Worked up the calculations for the piling supports and the walkway. Worked up the calculations for the piping supports on the bridge. Included the seismic loads on those calculations.
	2	Reviewed plans on the walkway and bridge with Michael. Gave him some instructions on how I was changing things. Particularly the piling supports for the bridge. Reviewed with Michael the fire and safety plan and briefly checked his drawing.
10-9	1½	Worked at home on calculations. Worked up the calculations for the spread footing at the end of the bridge. Included the static and the seismic loads.
	2	Got ready for the meeting with the City of Portland. Gathered the presentation materials and put everything in a box in an organized way.
	2½	Went to a meeting at the City of Portland and made a pre-submittal presentation of the project to the Building Bureau.
	2	Worked on the drawing for the spread footing. Checked it and reviewed my check with Rob Krug. Instructed him to make some changes. Came back and rechecked it after he had made those changes and gave him further instructions for revising the drawings.
10-12	4	Continued on with the calculations. Got the bridge dolphin end calculations completed and for the change in stringer sections at that end including calculations the stress and moment where the change in stringer section takes place. Reviewed Rob Krug's drawing of the concrete footing. Did a final mark up on it.
10-13	5	Continued working on the calculations for submittal. Made a computer model of the bridge on paper. Had Jerome input the data and analyze the bridge support forces, bending moments, and maximum stresses. It agreed well with the simplified methodology used to pick the structural members. Did a final review of Rob's shore end concrete footing drawing and reviewed some of Mike's bridge structural drawings.
10-14	8 (37)	Reviewed the calculations, sorted all the pages, got all the different sections assembled, made a table of contents, prepared a narrative for the calculations. Reviewed the construction specification for the pier modifications and made some changes. Did one final check of all the drawings. Reviewed the mark ups with Mike. Gave him instructions on revising the drawings. Drafted a forwarding letter for the transmittal of the building permit request and supporting documents. Asked Jerome to go back and do the bridge stress analysis over again using a condition where we raise the two mid supports 2 inches.

CONT'D . . .

SIGNED JC McKernan DATE 10-20-98

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING OCTOBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-15	8	Worked with Mike. Did a final review of all the drawings for the walkway and bridge. Marked-up a set of plans for him to correct. Checked the final set of drawings, trimmed them, stamped them and signed them. Set them out to be printed the following morning.

SIGNED [signature] DATE 10-20-98

3/3

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 OCT 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-1	8	INPUT REVISED MODEL OF LEG 02 INTO AUTOPIPE. FINISH LAYOUT IN ACAD OF LEG 14. PICKOFF OFFSETS FOR INPUT INTO AUTOPIPE & MAKE PRELIM PLOT. FIX DRAFTING ERRORS IN 01 & 02 & REPLOT
10-2	10	FINISHED -36 & -37 DETAILS W/REVISED PIPE RUNS & STOOL ON TANK & PLOTS SEGMENT -14 PRELIM FOR CAM'S REVIEW & CALCED PIPE STRESSES. REVIEW W/CAM & SHORTEN STOOL BY 6" & LOWER PIPE BY ±3' & START CORRECTIONS ON -36 & -37
10-3	6	MADE CORRECTIONS TO PIPE SEG. 01, 02 & 14 & CORRECTED PER CAM'S COMMENTS. MODELED ALL IN AUTO PIPE FOR VARIOUS HT/CP etc.
10-5	8	PLOT & CHECK DWGS FOR 01, 02 & 14 DISCUSS W/CAM & FIX. PRINTOUT 01, 02 & 14 AUTOPIPE STRESSES & REVIEW W/CAM. START SUMMARY OF FORCES & MOMENTS ON STOOLS & NOZZLES.
10-6	8	CALC STRESSES FOR COMBINED 01 & 02 LEGS. TABULATE FORCES & MAKE TABLE ON CAD DWG. DISCUSS RXN FORCES W/CAM
10-7	9	WORK ON FIXES FOR CAM'S COMMENTS ON DWGS & CORRECTED TABLE OF FORCES REPLOT & DISCUSS W/CAM & FIX SHT 43 FROM CAM. START LAYOUT OF SEGMENT 03 IN CAD
10-8	9½	REPLOTTED FIXES FOR REVIEW BY CAM. GET HIS COMMENTS & CORRECTED. CONVERTED FILES @ ½ & PURGED & MADE COPY FOR E-mail TO CHEMTECH c/o MR. ANDERSON -43 & 44
	58½	CONTINUED DWG SEG 03 (45)

½

SIGNED Jerome J. Parham DATE 10-16-98

97½ mh (2 sheets)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 OCT 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-9	10	CONTINUED SEG. 03 IN CAD & PLOTTED CHECK PRINT STARTED LAYOUT OF SEG. 04 (SHT 46) ON ACAD
10-11	2	FINISHED UP PREP OF DWG SEG 04 FOR KARON MADE SOME CHANGES TO 45
10-12	7	WORK WITH KARON ON NEW SEG 04 & CONTINUE WORK ON BASE DWGS FOR REMAINING PIPE SEGMENTS
10-13	5	CONTINUED WORK ON BASE DWGS FOR KARON & ROB DWGS WORKED W/KARON ON SEG. 04. CALC STRESSES & MOMENTS ON WALKWAY FOR CAM & PRINT USING BEAM II
10-14	8	MADE MORE BASE DWGS FOR ROB & FINISH. GET ROB STARTED ON SEGMENT 07. GET HIS PLOT & CHECK. WORK WITH KARON ON SEG. 05. CALCULATE NEW WALKWAY BENDING STRESSES FOR 1" VERT DISPL. on MIDDLE SUPPORTS & PRINT
16-15	7	WORKED WITH KARON & ROB ON THEIR DWGS & CHECKED PROGRESS IN CAD & ON CHECK PRINTS. MADE BASE DWG -50 FOR ROB. ADD NEW DIMENSIONS TO MY SEGMENT 03
	39	

2/2

SIGNED Jerome J. Parham DATE 10-16-98

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING OCTOBER 15, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-1-98	9½	WORKED ON THE INDIVIDUAL DRAWINGS OF THE BRIDGE PIECES (NO DRAWING NUMBERS YET). ALSO WORKED ON THE MISCELLANEOUS DETAILS OF THE BRIDGE & WALKWAY. WORKED ON THE DESIGN OF THE CONCRETE PAD AND DISCUSSED THE DRAWING w/ ROB.
10-2-98	9½	ESTABLISHED PLAN NUMBERS FOR SOME MORE SKETCHES. WORKED w/ ROB ON PLAN No. 97010-36. DISCUSSED THE DRAWING w/ CAM. WORKED ON PLAN No's 97010-24 THROUGH 97010-38. MADE SOME PLOTS
10-3-98	7¾	WORKED ON PLAN No's 97010-29 THROUGH 97010-38 EXCEPT FOR 97010-36. PLOTTED THE DRAWINGS FOR REVIEW
10-5-98	8¾	WORKED ON PLAN No's 97010-23 THROUGH 97010-28. MADE SOME PLOTS OF THE DRAWINGS.
10-6-98	(6)	WORKED ON PLAN No's 97010-25 & -28. MADE PLOTS OF THEM. DISCUSSED PLAN No. 97010-22 w/ CAM. STARTED TO WORK ON IT THEN WENT OVER TO KOPPERS w/ CAM TO FIELD STUDY WHERE THE FIRE HYDRANTS AND ANY OTHER FIRE FIGHTING SYSTEMS WERE LOCATED ON THE SITE.
10-7-98	9	HAD A DISCUSSION w/ CAM ABOUT THE DESIGN OF THE BRIDGE. THE BRIDGE WENT THROUGH MAJOR STRUCTURAL REDESIGN. WORKED ON PLAN No's 97010-22, -23, & -24. HAD A DISCUSSION w/ ROB ABOUT 97010-36. DISCUSSED w/ CAM THE DEISGN OF THE PIPE ANCHORS.
10-8-98	5½	WORKED ON PLAN No's 97010-21, -23, -24, & -27. MADE PLOTS OF THEM SO THEY COULD GO w/ CAM FOR BUILDING PERMITS
10-9-98	9½	WORKED ON PLANS No. 97010-21 THROUGH 97010-40. MADE PLOTS OF THE ONES THAT I MODIFIED.
10-10-98	5¼	REVIEWED PACKAGE. STARTED TO MAKE CHANGES TO THE DRAWINGS THAT I MARKED UP. (97010-21, -23, -29, -30, -37)
10-11-98	4	WORKED ON THE MARK-UPS I MADE. MADE SOME PLOTS
	74 3/4	

SIGNED [signature] DATE OCTOBER 15, 1998

110¼ m-h (2 sheets) (½)

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING OCTOBER 15, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-12-98	6¼	WORKED ON PLAN No's 97010-23, -24, & -25. WORKED Ow/ ROB SOME ON PLAN No 97010-59.
10-13-98	7½	WORKED ON PLAN No's 97010-24, -25, -26, -35, & -37. HAD A DISCUSSION w/ CAM ABOUT PLAN No. 97010-59. HELPED OUT ROB w/ SOME QUESTIONS.
10-14-98	8	WORKED ON PLAN No's 97010-21, -22, -22A, & -24. HAD A LONG REVIEW w/ CAM OVER 97010-21 THROUGH 97010-40
10-15-98	13¾	WORKED ON PLAN No's 97010-21 THROUGH 97010-40 EXCEPT FOR PLAN No's 97010-38 & -39. MADE PLOTS OF THE PACKAGE FOR CAM TO REVIEW. MADE CHANGES TO THE WHOLE PACKAGE AFTER MARKUPS AND PLOTTED THEM ON VELLUM.
	35½	

SIGNED [signature] DATE OCTOBER 15, 1998

2/2

ACTIVITY LOG

NAME Koppers PERIOD ENDING 10-15-98

JOB NO: 97010 NAME KAREN O'DONNELL

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-12	2	Dwg 46 – WORKED W/Jerome
10-13	4	Dwg 46 – LAYOUT OF DESIGN W/Jerome
10-14	6	Dwg 47 – LAYOUT & DWG 47
10-15	6	Dwg 47-48 – RECOVERY-IO ERROR W/WINDOWS 98

SIGNED Karen O'Donnell DATE

18 mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 10-15-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
10-1-98	7¾	Started development of the bridge foot rebar arrangement
10-2-98	7¾	Worked all day making various velws and developing the arrangment of the
10-3-98	2	Came in to finish the first round revisions, and to submit to Mike Kincaid
10-7-98	3½	The style of the representaion of the rebar was to busy so started to con all views to a schematic representaion
10-8-98	7½	Kept pluggin away on making rebar schematic style.
10-9-98	9¾	Changed overall dimensions of the footing, so started updating rebar arr to accomodate
10-11-98	2	Finished up second round of revisions for submittal to Cam
10-12-98	11	Worked with Cam on how he wanted drawings to be represented.
10-13-98	7½	Finished up Shore footing Drawing and started the anchor Dwg.
10-14-98	7½	Finished up anchor drawing and started dwg. 49 and almost finished
10-15-98	8.25	Finished dwg. No. 49 and started 50.

SIGNED [signature] 74½ mlw DATE 10-16-98

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE
NO: PI98-72

October 7, 1998

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: WM. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION — AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from 9/1/98 through 9/30/98)
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 9/1/98 through 9/30/98. Services are listed on the following pages.

CHARGES:

OK. Wm 10.15.98

Labor (Summary & Activity Logs attached):

Principal Engineer:		
106½ man-hours @ $79.00 per man-hour	$ 8,413.50	
Senior Engineers:		
229½ man-hours @ $52.50 per man-hour	12,048.75	
Senior Drafter:		
118¾ man-hours @ $40 00 per man-hour	4,750.00	
Drafter "Trainee":		
56¼ man-hours @ $21.00 per man-hour	1,181.25	
Labor Total (511 man-hours)	$26,393.50	$26,393.50

Material:

AutoPIPE Program rental and shipping charges (1 – 50 use package) ... 712 52

TOTAL AMOUNT DUE ... $27,106 02

TERMS: Net cash

Cont'd ..

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	46	0362			27106 —

INV # 9872 DATE 10/07/98

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 045 DUE DATE: / /

OK TO PAY

GROSS AMOUNT 27106 02

DISCOUNT $

NET $

DIVISION	MONTH	AUDIT NUMBER
483	10	92700456

IMPORTANT: CIRCLE TERMS ON INVOICE

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

File No. P97-10
October 7, 1998

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, Pennsylvania 15238-1362

Attention: William Meisinger

COPY

Subject: Portland Pitch Ship Terminal

Reference: Purchase Order No. 300-8-13016

Enclosure: McKernan Invoice No. PI98-72 (original & 2 copies)

Dear Bill,

We send an original and two copies of our invoice (for the period 9-1-98 through 9-30-98) as required by the Referenced Purchase Order.

Very truly yours,

J. CAMERON MCKERNAN COMPANY

By: J. Cameron McKernan, President

RECEIVED
- 9 1998
KOPPERS INDS. INC.
PORTLAND OR

cc: Jack L. Stephenson (w/copy of invoice)
Amos S. Kamerer (w/copy of invoice)

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE
NO: PI98-72

October 7, 1998

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: WM. Meisinger

COPY

Reference: Purchase Order # 300-8-13016

DESCRIPTION		AMOUNT
ENGINEERING SERVICES (Portland Pitch Ship Terminal)		
(INTERIM INVOICE for the period from 9/1/98 through 9/30/98)		
(McKernan File No. P97-10)		
Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from 9/1/98 through 9/30/98. Services are listed on the following pages.		
CHARGES:		
Labor (Summary & Activity Logs attached):		
Principal Engineer:		
106½ man-hours @ $79.00 per man-hour	$ 8,413.50	
Senior Engineers:		
229½ man-hours @ $52.50 per man-hour	12,048.75	
Senior Drafter:		
118¾ man-hours @ $40.00 per man-hour	4,750.00	
Drafter "Trainee":		
56¼ man-hours @ $21.00 per man-hour	1,181.25	
Labor Total (511 man-hours)	$26,393.50	$26,393.50
Material:		
AutoPIPE Program rental and shipping charges (1 – 50 use package)		712.52
TOTAL AMOUNT DUE		$27,106.02

TERMS: Net cash

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) October 7, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-72

DESCRIPTION AMOUNT

SERVICES:

1. Visited Pacific Northern Oil Pier on 9-9-98 to take measurements off the existing walkway.

2. Prepared the following PRELIMINARY plans and sent them by email to Ted Andersen at Chem Tech on 9-18-98:

COPY

PLAN NO.	REV.	TITLE
97010-35	PRELIM	PIPING KEY PLAN
97010-45	PRELIM	SHORE TO BRIDGE PIPING SEGMENT
97010-47	PRELIM	TYPICAL PIPE SUPPORT ON SHORE
97010-48	PRELIM	PIPE SUPPORT FOUNDATION ON SHORE SIDE

3. Continued work on piping flexibility stress analysis. Developed the following plans:

PLAN NO.	REV.	TITLE
97010-36	A	SHIP TRANSFER PIPE ARRANGEMENT SEGMENT 01
97010-37	A	SHIP TRANSFER PIPE ARRANGEMENT SEGMENT 02
97010-46	B	SHIP TRANSFER PIPE ARRANGEMENT SEGMENT 11

4. Completed or revised (updated) the following plans:

PLAN NO.	REV.	TITLE
97010-21	C	SITE PLAN
97010-23	B	WALKWAY PIER TO DOLPHIN ARRANGEMENT
97010-24		WALKWAY PIER TO DOLPHIN SECTIONS
97010-27	B	BRIDGE TO SHORE – ARRANGEMENT
97010-28		BRIDGE TO SHORE – SECTIONS
97010-33		PILING PLAN
97010-34	B	ROADWAY & PARKING AREA ARRANGEMENT
97010-35	B	SHIP TRANSFER PIPING ARRANGEMENT KEY PLAN
97010-50	A	PIPE SUPPORT TYPICAL

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) October 7, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-72

DESCRIPTION AMOUNT

COPY

SERVICES (continued):

4. Completed or revised (updated) the following plans (continued):

PLAN NO.	REV.	TITLE
97010-51	A	PIPE SUPPORT FOUNDATION: SHORESIDE
97010-53		ROAD CROSSOVER BRIDGE PLAN, ELEVATION & SECTION
97010-54		DOORWAY CROSSOVER BRIDGE PLAN, ELEVATION & SECTION

5. Prepared "SPECIFICATION – MODIFICATION OF PIER FOR LIQUID PITCH UNLOADING."

6. McKernan attended meeting at the Koppers Portland Terminal on 9-28-98. Presented completed plans to date and the specification for the pier modifications. Also reviewed Chem Tech plans and discussed the whole project during an all day meeting.

7. McKernan attended meetings at the Koppers Portland Terminal on 9-28 & 29-98. Continued reviewing project in particular the Hazmat review of the plans.

End of this Invoice

Koppers Industries, Inc. (Attention: WM. Meisinger) October 7, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-72

LABOR SUMMARY:

Period ending:	9/15	9/30	Total
Principal Engineer:			
McKernan	27	79½	106½
Senior Engineers:			
Parham	69	111½	180½
Jeffries	0	49	49
Senior Drafter:			
Kincaid	28	90¾	118¾
Drafter "Trainee":			
Krug	27¾	28½	56¼
			511 man-hours

COPY

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPTEMBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-1	2	Worked with Mike on the bridge structure and the walkways between the work platform and the upstream dolphin. Worked with Jerome and reviewed the thermal piping flexibility analysis at the pier end and tentatively worked out a procedure for analyzing our flexible guides. Worked up a spring stiffness for our flexible guide that Jerome's going to put into his calculations.
9-2	4	Reviewed with Michael Kincaid the drawing for the 2 bridges and went through the plans list and got some plan numbers assigned for our own use. Made sure our drawings are somewhat organized in logical groups. Worked with Jerome. Reviewed his latest flexibility calculations that included the lateral stiffness of the guides so we make sure the guides are not over stressed.
9-3	6	Worked with Jerome to get a lay out of our piping arrangement. Had him try several different scales and ways of laying it out. Finally settled on making a small scale key plan that references larger scale piping arrangements for the individual pipe sections. The total will be the large arrangements will be ¼" to 1'. Telephone conversation with Bartell's insulation Sales Rep about the insulation to use on the pipeline. He's going to call back tomorrow and we'll discuss it further. Worked up a sketch in detail for the splice plates on the main walkway bridges. Reviewed with Mike the progress and status of the bridge arrangements.
9-4	N/C	Took some plans down to Amos Kamerer at Koppers.
9-8	1	Worked with Jerome and reviewed the piping lay out and the piping key plan and got him to get a key plan plotted.
9-9	2½	Reviewed Jerome's piping drawing, the start of his key plan, and the way he is going to do the segment arrangement drawings and location of pipe supports and anchors. Went with Jerome down to the Pacific Northern Oil Pier. Did a walk around the pier. Took some measurements off the existing walkway at each end and took some photographs. Gave Jerome the tour of the site so he can see everything we're doing. Dictated some notes on the measurements.
9-10	2½	Got Mike and Rob started with typical pipe support drawings. Marked up TarTech's sketch and asked them to make a new drawing with similar details. Reviewed with Jerome his piping arrangement. Especially the key plan showing the segments and how he is going to lay out some of the segments.
9-11	2½	Calculated the requirements for the pipe support concrete so that the pedestal won't fall over when it has the design side force on it. Made a sketch of the concrete foundation. Reviewed the sketch with Rob and instructed him to start making the drawing for it.
	½	Worked with Jerome and Mike on how we are going to control the different drawings and how there is a person assigned to each drawing that is going to do the revisions so that we maintain some continuity and no overlap and hopefully it will reduce the errors.
	½	Sorted through all my loose papers on my desk and got the calculations separated from the correspondence and telephone memos. Tried to organize the file so we can find things.
	21½	

CONT'D . . .

SIGNED [signature] DATE 9-18-98

39 mh (2 sheets) (1/2)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPTEMBER 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-14	3	Worked with Rob in getting some plans for the pipe supports. Particularly the shore side foundations. Worked up a rebar scheme with Rob. Laid out how I wanted the drawings formatted and the number of drawings that we need to draw. Brief telephone conversation with Bill Meisinger about the schedule for the design review meeting and the hazards evaluation meeting. Brief telephone conversation with Ted Andersen. He returned my phone call from the previous week.
9-15	2½	Worked with Rob on the pipe support and the foundation details.
	5½	

SIGNED [signature] DATE 9-18-98

2/2

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 SEPT 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-1	4	WORKED ON LAYOUT OF STRIPPING PUMP & MAKE SMALL PLOT & DISCUSS W/CAM. GO OVER PIPE SUPPORT CALCS W/CAM AND DETERMINE "SPRING RATE" OF PIPE SUPPORT FOR USE IN AUTOPIPE LATERAL FORCES.
9-2	6	MODIFY LEG 09 TO SHOW TRANSITION FROM 8" TO 10" ADD VALVE & CALC NEW STRESSES & DISCUSS W/CAM
9-4	8	WORKED ON LEG 09 ARRANGEMENT AT 1/4"=1'-0", DISCUSS W/CAM & MIKE & DISCUSS METHOD TO GET ALL DWGS TO AGREE. GET UPDATED SITE PLAN FROM MIKE & INPUT INTO MY DWG TO CORRECT MY LEG 09 PIPE SUPPORT LOCATIONS. LAYOUT 8" PIPE ON PIER & LOCATE STRIP PUMP & DISCUSS W/CAM.
9-3	8	BREAK UP PIPELINE INTO 10 LEGS & MAKE INTO ARRGT PLAN. STAK ARRGT PLAN FOR LEG 09.
9-8	8	FINISHED UP SITE PLAN WITH CORRECT PIPELINE FOR MIKE. FINISH LEG 09 @ 1/4" & MADE 1"=50' APELINE ARRGT DWG. DISCUSS W/CAM
9-9	8	WORK ON ARRGT PLAN & FIX ANCHORS & SUPPORTS & CORRECT MIKE'S PLAN. PICK OFF NEW SUPPORT STA'S FOR LEG 09 @ 1/4" WENT TO KOPPERS W/CAM TO SURVEY SITE & MEAS. WALKWAY
9-10	8	DISCUSS PIPELINE ARRGT PLAN (-35) W/CAM & MAKE CHANGE & REPLOT. ALSO FIX DETAILS ON LEG 09 & REPLOT START BACK ON AUTOPIPE ANALYSIS FOR 1½" HEAT TRACE LOOP.
	50	

SIGNED Jerome J. Parham DATE 9-16-98

69 mh (2 sheets) (1/2)

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 15 Sept 1998

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-11	8	Work on heat trace loop & do calcs on various span lengths to check stresses make a few dwg development changes to 09 arrgt. & get Mike to fix roadway on site plan & import into my pipe arrgt dwg. Add 8" pipe segment & reducer to 01-A
9-14	7	Corrected some details on pipe arrgt key plan & re plotted. Worked on new layout of stripp pump with pump underneath pipe. Worked on heat trace calcs & plotted HT-01-C & HT-01-B
9-15	4	Continued work on stripp pump layout & corrected leg 01 in autopipe to show 8" pipe & new reducer
	19	

SIGNED Jerome J. Parham DATE 9-16-98

(2/2)

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING SEPTEMBER 15, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-1-98	6	WORKED ON 9710-S12 & S13 (BRIDGE TO SHORE & BRIDGE TO SERVICE PLATFORM)
9-2-98	8	HAD A DISCUSSION w/ CAM ABOUT THE PROJECT. WORKED ON 97010-2 97010-23, 97010-27, & 97010-34. MADE PLOTS OF THEM
9-3-98	4½	WORKED ON PLAN No's 97010-24 & 97010-28
9-4-98	5	WORKED ON PLAN No's 97010-21, 24, & 28. HAD DISCUSSION w/ JEROME ON 97010-21 & THE PIPING DRAWINGS.
9-8-98	½	HAD A DISCUSSION w/ JEROME ABOUT KEY PLAN DRAWING
9-14-98	2¾	WORKED ON PLAN No. 97010-21, -23, -27 & -33.
9-15-98	1¼	WORKED ON PLAN No. 97010-33

SIGNED [signature] DATE SEPTEMBER 15, 1998

28 mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 9-15-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-14-98	5	Discussed with Cam the project in general, and started up the rebar drawing (9710-
9-14-98	3.5	Started Pipe mount drawing (dwg 9710-47)
9-14-98	8	Printed first version of the rebar drawing, and worked on the pipe mount details
9-15-98	11.25	Implemented changes that Cam had marked up, and cleaned the drawing up a bit

SIGNED [signature] DATE 9-16-98

27 3/4 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPTEMBER 30, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-16	3	Worked with Jerome. Reviewed the pipe arrangement drawing for the segment from the bridge to shore. Worked with Jerome on doing an analysis on the flexibility of the heat trace line. Worked with Rob on the pipe supports. Pretty much got his drawing finished.
9-17	4	Tried to call an insulation supplier to obtain information on insulation specifications. Continued working with Jerome on the heat trace lay out. Pretty much decided on how we are going to handle that heat trace with only a few expansion bents here and there. Worked with Mike to develop the walkway connections at the service platform and the upstream dolphin and made some sketches of the connections and reviewed in detail the interface of the walkway with the service platforms and dolphins. Did another review with Rob about the pipe support foundations.
9-18	2½	Worked with Rob and did the more or less final review on the pipe support shore side foundations. Marked up plans for him to revise. Worked with Jerome to get a preliminary piping arrangement and supporting drawings to send to Chem Tech so they could know how to run their electrical conduits in a typical way. Worked with Jerome to start to lay out the piping run to cross over the cross over bridges. Asked him to run some of the stress analysis for those conditions.
9-19	7	Worked with Jerome looking at piping problems, particularly, the road way cross over bridges. Worked out a scheme for the first road way cross over bridge which resulted in making another horizontal expansion loop in that run. Started looking at the problem at the storage tank and tried to determine the elevation of the nozzle on top of the storage tank. Got a number for that and Jerome is going to start working that problem next. Worked with Mike on the walkway and the bridge. Checked his walkway drawings. Filled in a few things in the way of specifications for the walkway, that is, bolting, piling requirements, and pressure treating the wood pile. Made some notes to be put on the drawing at the appropriate places for making sure we have got a good spec for everything.
9-21	1	Gave Ben a briefing on the project to he can help us with the drafting beginning tomorrow with the pipe road cross over bridge.
	1	Reviewed the plans we got from Chem Tech, particularly trying to locate the nozzles and the general configuration of the run of pipe. Had Mike plot those drawings and Mary run a print for us to work off of.
	2	Worked with Jerome on the pipe run to the top of the tank. Figured out the height of the nozzle and the distance from the nozzle up to our anchor. Calculated the movement of the tank nozzle when you just heat up the tank. He laid out a sketch of the run of that pipe and how it is anchored at the bottom of the run with the top of the tank. Came up with thermal growth conditions where we're going to analyze the pipe at.
	~~20½~~	

SIGNED J. Cameron McKernan DATE 10-7-98

79½ mh (3 sheets) (1/3)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPTEMBER 30, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-22	2½	Worked up the sizes for the road cross over bridges for the pipe. Made some sketches of the bridge itself. Worked with Ben to get him started doing the drawing for the bridges. Checked with Ben several times during the day to see how he is progressing and to check how we are going to work up the connections to the diagonal braces to the beam across the end.
	2	Worked with Jerome on the pipe arrangement at the tank and we laid out a possible scheme and started him doing the flexibility analysis. Did not complete before I left.
9-23	6	Worked with Jerome intensively on doing the flexibility analysis and analyzing the results on the pipe connection to the tank. Got that all worked out and instructed Jerome to start making a drawing of so that I have that drawing to take with me to the meeting on Monday. Further worked with him to work out an arrangement of the piping from the side of the building to the base of that tank. Tried several analysis of several schemes. Continued work on that segment of the piping, that is from the building to the base of the tank.
9-25	6	Worked with Jerome on the piping system at the storage tanks. On the previous work we had an error in the height of the piping at the tank and had to go back and revise our piping arrangement and to redo the flexibility analysis. Got that worked out. Went back and rechecked the dimensions of the pipe as it ran along side the pencil pitch storage building and located our pipe more accurately. Had to redo the flexibility analysis for that sector of piping also. Jerome started to make the drawings for those pieces of pipe. During the day reviewed with Ben the bridge drawings, in particular the bridge over the doorway of the pencil pitch storage building. Reviewed with Mike the walkway and bridge arrangement drawings and noted an inconsistency in how we run the support stringers and the foundation for the piping on the bridge section, in particular had to revise the lengths of each individual bridge section. That took quite a bit of time to redraw that part of it and rework it. Worked out a very crude sketch for a standard pipe anchor detail.
9-26	8½	Cleaned up the files. Put things in the files in proper order. Reviewed/checked all the drawings 2 times during the day. All the drawings Mike's working on, the bridge and the walkways out in the water; the piping drawings Jerome's working on; and the pipe cross over bridges that Ben's working on. Made a pencil draft of the construction specifications for the modifications of the pier. That is the in water work. Completed the specification.
9-27	4 ½	Edited my pencil draft of the specification for the construction of the waterside pier facility. Got the spec ready for Mary-Anne to type. Worked with Mike to make sure our pier drawings were ready for the meeting the next day. Worked with Ben to check the pipe cross over bridges and he completed those drawings. Got together 3 sets of the preliminary completed drawings ready for the meeting on the following day.
9-28	9	All day meeting at Koppers. Basically reviewed all the plans. Both the foundation drawings, the Chem Tech drawings and my drawings. Before the meeting I went out and got some measurements off the pitch storage building for the location of the door and some other things. Also took some pictures.
	38½	

SIGNED [signature] DATE 10-7-98

2/3

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING SEPTEMBER 30, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (3 OF 3)

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-29	2	Worked with Jerome reviewing the piping system and showing him how I wanted the changes in the dimensions of the pipe around the pitch storage shed and at the top of the tank to clear interference's and to open up the space. Spent some time with Mike to make some progress on the pier drawings. That is, get him started doing the individual sections of the bridges.
	7½	Attended meeting at Koppers. Started the haz-mat review of the plans that was chaired by Deborah Cosmack.
9-30	11	Went to meeting at Koppers. Didn't get to the plant until almost 9:00am. There was a terrible traffic snarl and when I got to the plant the power was off but we did continue the haz-mat review. It was an all day process. Didn't leave the plant until 9:00pm.
	20½	

SIGNED JCMcK DATE 10-7-98

3/3

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 30 SEPT. 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERM.

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-16	9	CONTINUE PUMP LAYOUT WORKED ON SEGMENT 09 LAYOUT PER CAM's COMMENTS. ROTATE VIEW & ADD DETAILS & REPLOT, CALC STRESSES FOR HEAT TRACE.
9-17	9	WORKED ON DEVELOPING HEAT TRACE LOOP - RAN VARIOUS CASES TO GET STRESS OK USING SCH 40 & SCH 80 PIPE & VARY LOOP DIA. MOVED VALVE LOCATION ON SEG. 09 CLOSER TO SUPP. & REPLOT & DIS
9-18	8	WORKED ON REVISED ALIGNMENT OF STRIPPING PUMP ARRGT. DISCUSS PIPE SUPPORT FON's W/ROB & CAM. CHECK ROB's REVISION WORK C SCREEN & GO MAKE SMALL CHANGES ON SEG. 09 ARRGT PLA GET SHTS 35, 45 & ROB's 47 & 48 & e-mail TO CHEMTECH
9-19	5½	REVIEW PIPELINE BRIDGE DESIGN W/CAM CALC SEGMENT 07 STRESSES W/VARIOUS SUPPORT SPACINGS & ADD HORIZ. EXP. B
9-21	9½	CALLED PLUG VALVE PEOPLE FOR INFO & GET FAX. REC'D ZIP D. FROM CHEMTECH & GAVE TO MIKE FOR PLOTTING. WORKED ON LEG 01-A LAYOUT & IMPORTED ACAD TANK INTO PIPE DWG TO GET OFFSETS FOR AUTOPIPE. DISCUSS LAYOUT & DESIGN OF PI W/CAM & DETERMINE FORCES TO USE ON MODEL & REVIEW CHEM TECH PLANS.
9-22	9	LAYOUT LEG ON TANK SIDE IN ACAD & GET OFFSETS & ENTER INTO AUTOPIPE & CALC STRESSES FOR SEG. 01A FOR 3 CASES & PRINTOUT
9-23	9	WORKED ON SEG 01 ON TANK SIDE & CORRECTED FOR RIGHT LENGTH. MODELED CONDITIONS FOR HOT PIPE/COLD TANK. DISCUSS PIPE DESIGN W/CAM. ANALYZED PIPE FROM TANK TO MAIN & MADE MODEL.

(59)

SIGNED Jerome J. Parham DATE 10-1-98

111½ mh (2 sheets)

(1/2)

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 30 Sept. 1998

JOB NO: 92-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-24	9	Worked on Dwg for Seg 01 on side of tank Plotted Dwg 36 Prelim to check pipe layout.
9-25	11	Continued Dwg Seg 01 Arrgt. Discussed pipe models w/Cam. Ran new calcs to correct lengths on Seg. 01 & 02 & started Seg 02 Dwg Tank to main line.
9-26	10	Worked on Revisions to all of my Dwgs as necessary
9-27	3½	Review my 4 Dwgs w/Cam & make final changes & plot on vellum.
9-28	5	Start modeling Seg 14 between Future tank and main line & input offsets into Auto Pipe
9-29	6	Worked on Seg 03 & 14 model to fix short leg & add valve & flanges. Talk to Cam about the new elevation of Seg 02 @ ≈ 3' from tank & redraw in CAD.
9-30	8	Finish up Pipe support stool detail in CAD Fix minor errors & start re-input of Seg 02 in Auto Pipe.
	52½	

SIGNED Jerome J. Parham DATE 10-1-98

2/2

ACTIVITY LOG

NAME BEN JEFFRIES PERIOD ENDING 9/30/97

JOB NO: P97-10 NAME KOPPERS

DATE	HOURS	DESCRIPTION OF ACTIVITY
9/22	5½	PIPE BRIDGE, 97010-50, DRAFTING & 1ST PLOT
9/23	9½	" " " DRAFTING
9/24	9½	" " " " & PLOT
9/25	10	PIPE BRIDGES, DOORWAY BRIDGE
9/26	9	" ", DOORWAY BECOME 97010-54, ROAD BRIDGE → 97010-53
9/27	5½	DOORWAY & ROAD BRIDGES, CAM'S LAST REVIEW, PLOTTING

SIGNED Benjamin Jeffries DATE 10/1/98

49 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING SEPTEMBER 30, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-17-98	8½	WORKED ON PLAN No's 97010-23, -24, -27, & -33. HAD SEVERAL DISCUSSIONS w/ CAM ABOUT THE DESIGN OF THE PROJECT
9-18-98	5	WORKED ON PLAN No. 97010-23 & -24.
9-19-98	6½	WORKED ON PLAN No. 97010-24. PLOTTED DRAWING FOR CAM TO REVIEW. SAT DOWN w/ HIM TO REVIEW THE DRAWING.
9/21/98	8¼	WORKED ON PLAN No. 97010-23, -24, & -28. MADE A PLOT OF 97010-24 FOR CAM TO REVIEW.
9/22/98	8½	WORKED ON PLAN No.'s 97010-22, -23, -24, -27, & -28. MADE PLOTS OF THE DRAWINGS AND STARTED TO REVIEW THEM AND MARK THEM UP.
9/23/98	8½	WORKED ON PLAN No's 97010-24 & -28. PLOTTED THE DRAWINGS FOR CAM TO REVIEW
9/24/98	6	WORKED ON PLAN No's 97010-47 & -48. MADE PLOTS OF THEM ALSO STARTED TO WORK ON PLAN No. 97010-34
9/25/98	9½	WORKED ON PLAN No's 97010-34. AFTER PLOTTING HAD A REVIEW w/ CAM ABOUT THE PROJECT. AFTER THE REVIEW STARTED TO WORK ON THE CHANGES.
9/26/98	12½	WORKED ON PLAN No's 97010-21, -23, -24, -27, -28, -34, -50, & -51. MAD PLOTS OF THEM FOR CAM TO REVIEW. MADE THE CHANGES TO THE DRAWINGS AND PLOTTED THEM ON VELLUM.
9/28/98	5	STARTED TO WORK ON THE INDIVIDUAL BRIDGE DETAIL DRAWINGS. NO DRAWING No's FOR THEM YET.
9/29/98	3	BRIDGE DETAIL DRAWINGS.
9/30/98	9½	WORKED ON MISCELLANEOUS DETAIL SHEET (OF BRIDGE). CONTINUED TO WORK ON THE INDIVIDUAL BRIDGE DETAILS. WORKED w/ ROB ON THE DRAWING OF THE CONCRETE FOOTING FOR THE BRIDGE.

SIGNED [signature] DATE SEPTEMBER 30, 1998

90¾ mh

ACTIVITY LOG

NAME Robert Krug PERIOD ENDING 9-30-98

JOB NO: P97-10 NAME Koppers

DATE	HOURS	DESCRIPTION OF ACTIVITY
9-16-98	9	Implemented changes that Cam had marked up, prepared for next revision
9-17-98	5.5	Implemented changes that Cam had marked up
9-18-98	6	Revisied 8" clamps prepped the footing drawing, and prepped for e-mailing
9-30-98	8	Started work on bridge footing, mainly preliminary rebar setup.

SIGNED Robert Krug DATE 10-1-98

28½ mh

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE
NO: PI98-62

September 3, 1998

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

Attention: WM. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from "start" to 8/31/98
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from "start" through 8/31/98. Services are listed on the following page.

CHARGES:

Labor (Summary & Activity Logs attached):

Principal Engineer:		
66 man-hours @ $79.00 per man-hour	$ 5,214.00	
Senior Engineer:		
143½ man-hours @ $52.50 per man-hour	7,533.75	
Senior Drafter:		
93½ man-hours @ $40.00 per man-hour	3,740.00	
Labor Total (303 man-hours).....	$16,487.75	$16,487.75

Material:

AutoPIPE Program rental and shipping charges (2 – 50 use packages) .. 1,425.04

TOTAL AMOUNT DUE $17,912.79

TERMS: Net cash

Cont'd . . .

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	416	0362			17913 —

INV # 9862 DATE 09/03/98

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE: 05 DUE DATE: 09/30/98

OK TO PAY

GROSS AMOUNT	17912 79
DISCOUNT $	
NET $	

DIVISION	MONTH	AUDIT NUMBER
483	09	92700427

IMPORTANT: CIRCLE TERMS ON INVOICE

Koppers005436

Koppers Industries, Inc. (Attention: WM. Meisinger) September 3, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-62

DESCRIPTION AMOUNT

SERVICES:

1. Visited Koppers in Portland on 7/28/98. Met will all the different engineering principals involved in the project to get coordinated.

2. Began piping flexibility stress analysis. Obtained computer software "AutoPIPE" and began running calculations.

3. .Visited Koppers in Portland on 8/13/98. Met with Amos Kamerer and toured the facility. Discussed the lay out of the piping runs and the arrangement at the ship connection.

4. Prepared the following plans incorporating previously developed site plans with new Koppers' drawing format and including new pipeline lay out. Delivered 3 copies of the plans to Amos Kamerer and sent a copy via UPS Next Day Air to Bill Meisinger on 8/17/98

PLAN NO.	REV.	TITLE
9710-S10	A	SITE PLAN – PIER & PIPE LINE
9710-S11	A	PIER & BRIDGE – ARRANGEMENT PLAN
9710-S12	A	PIER – WALKWAY & PIPE ARRANGEMENT
9710-S13	A	BRIDGE – SHORE TO PIER PLAN & ELEVATION
9710-S14	A	BRIDGE – SHORE END & PARKING AREA

5. Started work on the bridge design. Did calculations for strength and support to meet AISC Requirements. Prepared the following plans:

PLAN NO.	REV.	TITLE
97010-23	PRELIM	WALKWAY PIER – DOLPHIN ARRANGEMENT
97010-24	PRELIM	WALKWAY PIER – STRUCTURAL DETAILS
97010-27	PRELIM	BRIDGE TO SHORE ARRANGEMENT
97010-28	PRELIM	BRIDGE TO SHORE STRUCTURAL DETAILS

Koppers Industries, Inc. (Attention: WM. Meisinger) September 3, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-62

LABOR SUMMARY:

Period ending:	7/31	8/15	8/31	Total
Principal Engineer:				
McKernan	20	19½	26½	66
Senior Engineer:				
Parham	38	62	43½	143½
Senior Drafter:				
Kincaid	0	21¾	71¾	93 ½
				303 man-hours

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-16	1½	Instructed Mike to obtain info on piping stress analysis programs so we can make arrangements to rent one of the programs so we can do our analysis. Telephone conversation with Bill Meisenger who asked that I send him the information on the surveyor we used for the project.
7-24	1	Pulled out the files to see what we got. We received the pipe stress analysis program and instructed Jerome to install it. Reviewed our files on what we got for the design of the piping system.
7-27	2½	Worked with Jerome trying to understand the new pipe stress analysis program and helped him set up a test problem and reviewed the test problem with him and instructed him to revise the test problem to be a little more realistic to our situation.
7-28	9	Attended a meeting at Koppers St. Helens Road with all the engineering people that are involved in the pitch terminal project. Arrived there just shortly after 10:00 am and left there at 8:00 pm. Took an hour off for lunch. That was a total of 9 hours.
7-29	2	Worked with Jerome learning about the pipe stress program. Reviewed his model that he had run and worked out how we wanted to put more pipe supports in there and what combinations we wanted to run.
7-30	1	Worked with Jerome again trying to get the computer program output and to understand exactly what they are doing.
7-31	3	Worked with Jerome on the autoPIPE Program sample calculations. We finally got it to be modeled and worked up with him what we're going to do Monday with it.

SIGNED JCMcK DATE 8-5-98

20 mh

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 JULY 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-24	2	READ AUTOPIPE MANUALS & INSTALL ON MY WORKSTATION
7-27	8	CONTINUE READING MANUAL & DO TUTORIAL PROBLEM INPUT DATA FOR 2 SAMPLE PROBLEMS FROM CAM & PRINT RESULTS FOR 1 PROBLEM
7-28	6	CALC MORE LOAD CASES AND WORK ON MODELLING PIPING SYSTEMS
7-29	8	CALC LOAD CASES & REVIEW W/CAM & TROUBLESHOOT RESULTS & ANALYSE W/CAM
7-30	6	CORRECT SUPPORTS IN MODEL PROGRAM & CALL TECH SUPPORT. RECALC CASE WITH NEW P, T & GR COMBINATIONS & PRINT OUT
7-31	8	MODEL NEW PIPE RUN WITH CORRECT SUPPORTS DISCUSS W/CAM & FIX WT DISTRIB. PRINT OUT OK CASE

SIGNED Jerome J. Parham DATE 8-3-98

38 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-3	1½	Worked with Jerome to review the computer print outs on the piping flexibility analysis.
8-4	2	Worked with Jerome reviewing the pipe flexibility analysis on our simplified model and got out our General Arrangement Plan and laid out on the plan where the expansion bends are going to be. Also worked out how we are going to make the first expansion bend at the shore end of the bridge and instructed Jerome on how to make that model.
8-10	1	Worked with Mike to get our title block modifications and had Mike email it back east to the title people. Reviewed with Jerome some of the pipe stress analysis that he is doing. Not in very great depth though. More or less checked to see if he was progressing.
8-11	2	Worked with Jerome reviewing pipe stress analysis output especially the problem at the end of the dock bridge and suggested that he divide it up into two pieces and rerun the flexibility analysis.
8-12	1½	Worked with Jerome reviewing the flexibility calculations. Revised the run coming off the pier to make it so we're not so over stressed. We put an anchor right at the end of the pier.
8-13	1½	Worked with Jerome reviewing the flexibility analysis. Worked out some tentative arrangements at the end of the bridge.
	2½	Went over to St. Helens Road Plant. Met with Amos Kamerer. Did a check out on the pier and tried to lay out things the way we wanted to. Moved the pipe from the way we had shown on the original drawings.
	½	Worked with Mike to get the preliminary drawings started and laid out and outlined what we're going to give Amos on Monday morning.
8-14	4	Marked up some plans for Mike to revise and went with Mike over to the St. Helens Plant and gave him a tour of the dock and the dolphins and where the bridge is going to end and traced the whole pipe line from one end to the other. Came back and marked up some more drawings.
8-15	3	Working on Koppers. Marked up original site plans and general arrangements to reflex the changes Amos wanted made in the location of the pipe line and other things for the drawings he need for his lease.

SIGNED J. Cameron McKernan DATE 8/18/98

19½ mh

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 15 Aug 1998

JOB NO: 97-10 NAME Koppers Pitch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-3	7	Print out & Analyze Test cases Model 1A, 1B, 1C errors w/#2 & Re input from scratch. Review with Cam. Print out cases for review.
8-4	8	Fix model 2 & review w/Cam. Do models 2B, 2C & 2D & Print Get AutoCAD site Plan & Layout Reference Points for use in Auto Pipe
8-5	8	Alter layout of Pipe in AutoCAD & Pick off support points & input into new Model Leg 09 in Autopipe & calc stresses
8-6	7	Check inputs for PL09 for T1 Pmax calcs & Printout. Remodel 1½" coil loop to account for offset.
8-7	7	Layout all remaining Pipe Leg Runs in ACAD & indicate support Points & spacings for Pickoff
8-10	7	Pick off offsets in XYZ from ACAD Plan for runs 8, 7, 6, 5 & 4 Input model for Runs 8 & 6
8-11	7	Continue Pickoff of Points on some Legs. Review Leg 09 w/Cam made mods to reduce reactions for model 09A, made changes to other legs as Cam commented Re run new model 09A
8-12	6	Reviewed New cases w/Cam on 9A & make changes for 9B & added Leg 10 w/Exp Loop to Dock. Calc stresses & Print Briefly check w/Cam. Made Plot of Arrgt Plan & continued work on Leg Models
8-13	5	Made Prelim. Plan & Sketches of Pipe Runs for Cam's meeting w/Koppers. Modeled Legs 3, 4 & 5 & Put into Auto Pipe

SIGNED Jerome J. Parham DATE 8-17-98

62 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING AUGUST 15, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-10-98	2	HAD DISCUSSION w/ CAM ABOUT THE TITLE BLOCK. MADE MODIFICATIONS TO THE TITLE BLOCK AFTER DISCUSSION. SENT AN E-MAIL OF TITLE BLOCK TO KOPPERS
8-12-98	3¼	WORKED ON MODIFING THE TITLE BLOCKS FOR THE PROJECT. STARTED TO PUT TOGETHER DRAWINGS 9710-S10, -S11, -S12, & -S13
8-13-98	3½	WORKED ON PLAN No. 9710-S12, -13, & -14.
8-14-98	6½	WORKED ON PLAN No's 9710-S10 THROUGH 9710-S14. MADE PLOTS OF THEM FOR CAM TO REVIEW. WORKED ON 9710-S10 & S11 DOING CHANGES MADE BY CAM. PLOTTED THEM FOR REVIEW. VISITED SITE W/CAM
8-15-98	6½	HAD A DISCUSSION w/ CAM ABOUT THE DRAWINGS (A REVIEW). WORKED ON PLAN No's 9710-S10 THROUGH 9710-S14. AND PLOTTED THEM AFTER DOING THE CHANGES THE CAM MARKED UP.

SIGNED [signature] DATE AUGUST 15, 1998

21 3/4 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-16	3	Went over the mark ups with Mike and he finished the drawings. I checked them, made a few minor mark ups and helped get the drawings plotted, printed and folded for delivery to Amos on Monday morning.
8-17	1	Visited Amos and delivered the prints. Reviewed the prints with him and he had basically no comments and I had a couple of changes I was going to make.
	1	Worked with Mike. Marked up a set of prints to make the small changes and he made the changes. Mary got the drawings plotted, I signed and stamped all the drawings, and Mary delivered them over to Amos in the afternoon.
	1	Telephone conversation with Ted Andersen. Sent him an email with the pipe lengths including expansion bends. Worked with Mike to get the bridge drawings started.
8-18	2	Worked with Mike on the bridge drawings. Figured out how to make the connections at the mid span of the bridge and generally the whole bridge scheme.
8-21	2	Reviewed with Michael the design of the preliminary drawing of the bridge from the dolphin to the shore. Telephone conversation with Dave Logan about some data he is going to send me by overnight mail. Reviewed with Jerome the continuance of the pipe flexibility analysis and some deflections and stresses. Especially the piping at the shore end of the bridge.
8-24	2	Worked with Mike on the bridge. Telephone conversations with galvanizing plants to determine the size of the tanks they can dip the pieces in. Called Amos and discussed the limitations on the dipping. Discussed maybe not having to galvanize the bridges. He and Bill Meisinger called back later and said they wanted to go ahead with the galvanizing. I went back with Mike and told him we have to put some splices in the bridge sections and to get them set up so we can make them not longer than 40 feet. We worked out a scheme for framing the bridge and relocating the pilings.
8-25	3	Asked Mike to work up the weights for the bridge. Asked Mike to work out sections of the bridge so we can bolt it together in sections that are no longer than 40' and discussed some of the design details so he can proceed with that part of it. Started to do the preliminary calculations to re-verify the bridge strength but did not finish them. Telephone conversations with Dave Lurch over at Bartells, an insulation contractor, and sent them over copies of some plans for the piping.
8-26	2 (17)	Telephone conversation with Dave Logan at Chem Tech. He wanted to know the pipe sizes of the structure that held the hoist we designed a few years back. Had Mary pull the file and we made some XEROX copies of parts of it and I marked them up to show the pipe sizes that I determined from the check and sent the marked up drawings pieces and a photograph by FAX to Dave Logan. Worked with Mike some more on the bridge. Got the details of the bridge fairly well fixed and decided to increase the span between the new pilings from 60' to 70' so that we can accommodate the limitations on the 40' lengths.

CONT'D . . .

SIGNED JCMK DATE 9/2/98

26½ wh = 2 sheets (½)

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-27	3	Completed the preliminary calculations. Verified that the beams are non compact sections and made some provisions for chocks and brackets to stiffen the flanges so they meet the requirements of the AISC specification. Instructed Mike to go ahead with the detail bridge design to incorporate those things that I worked up.
	1	Worked with Jerome and reviewed where we were with the piping design.
8-28	2	Worked with Mike on the bridge design and decided to make an additional length so that the bridge ends up on the bank far enough so that the foundation won't squish out through the bank. The last section will be 2 – 24' lengths. So we lengthened the bridge by 8 feet. We now have 4 – 40' sections and 2 – 24' sections for a total of 208' of fabricated length. Instructed Mike about the diagonal bracing on the bridge and how we're going to put that in underneath the bridge. Worked with Jerome on the piping design and explained to him what the piping at the end of the dock is going to look like. Gave him the information I received from Chem Tech about the pipe sizes and the valves and asked him to find out about the heating jackets that are going on the valves and generally got ready to do the detail design of the pipe connections at the end of the pier.
8-31	3½	Worked with Mike on the lay out of the walkway from the service platform to the upstream mooring dolphin. Figured out the frame spacing and how we're going to attach that walkway to the existing dolphin and service platform structures. Made a number of sketches. Revised the way we are going to handle the connection of the grating supports where they cross the main splice plates for the stringers.
	9½	

SIGNED [signature] DATE 9/2/98

(2/2)

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 AUG 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-17	4	PICK OFF NEW OFFSETS FOR MODIFIED PIPE RUN TO DOCK - 9C FROM MIKE & INPUT INTO AUTOPIPE
8-18	3 1/2	FIX DOCK LEG OFFSETS & RE-INPUT INTO MODEL 9-C. CALC STRESSES & HAVE MARY INPUT
8-19	4 1/2	CALC STRESSES FOR MODELS 8 THRU 3
8-20	2	WORK ON FIX FOR MODEL 1 ON CAD & INPUT OF MODEL #2
8-21	7	PRINT OUT MODELS 8-3 & INPUT REST OF #2 & PRINT. WORK ON MODEL 1
8-25	2	FINISH INPUT OF LEG 01 & CHECK
8-26	4	CALC STRESSES ON LEG 01 & MOVE SUPPORTS TO REDUCE STRESS & RECALC & PRINT
8-27	6	BACKUP OLD DATA RERUN #1 LOAD CASE & CHECK OTHERS & FIX SOME CALCS MAKE QUICK PLOT OF LEG TO CORRECT
8-28	6	MEET WITH CAM DISCUSS SHIP CONN LINE & PUMP CALL VALVE VENDOR FOR INFO. LAYOUT 365' OF 8" PIPE ON DOCK RUN TO CHECK VALVE LOCATION CHECK STRESS ON OLD CASE
8-31	4 1/2	START ACAD LAYOUT OF PIPE DRAIN PUMP AT SHIP CONNECTION.

SIGNED Jerome J. Parham DATE 9-1-98

43 1/2 mh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING AUGUST 31, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-16-98	3	WORKED ON 9710-S10 THROUGH 9710-S14 AFTER CAM'S REVIEW. MADE PLOTS OF THEM FOR CAM TO TAKE OVER TO AMOS ON THE 17th
8-17-98	3½	MADE CHANGES TO PLAN No's 9710-S11, -S12, & -S13. DISCUSSED w/ CAM THE DETAILS OF THE BRIDGE TO SHORE.
8-18-98	8	WORKED ON 9710-S15 & -S16 (BRIDGE CONNECTION AT DOLPHIN, BRIDGE CONNECTION AT PILES)
8-19-98	7	WORKED ON 9710-S15 & 9710-S16. HAD A DISCUSSION w/ CAM ABOUT THE BRIDGE. DID SOME REVIEWING ON THE INTERNET FOR SOME BOLTS.
8-20-98	3	WORKED ON 9710-S15 & 9710-S16
8-21-98	3½	WORKED ON 9710-S15 (ACTUALLY THE DEVELOPMENT OF THE BRIDGE FROM PIER TO SHORE). HAD A DISCUSSION w/ CAM ABOUT THE PROJECT.
8-24-98	7¼	DISCUSSED w/ CAM A REDESIGN IN THE BRIDGE FROM THE EXISTING PIER TO SHORE. CHANGED FROM (3) 60' PANELS TO (5) 40' PANELS. WORKED ON 9710-S10 (SITE PLAN) BY CHANGING COORIDINATES SO THEY MATCH THE SURVEY FROM MINISTER/GRAESER.
8-25-98	5	WORKED ON THE BRIDGE DESIGN & THE CONCRETE PAD SUPPORTING THE PIER
8-26-98	8	WORKED ON THE WEIGHTS OF THE BRIDGE. WENT THROUGH SOME MODIFICATIONS DURING THE PROCESS OF CALCULATIONS. DID SOME WORK ON PLAN No. 9710-S10 AND EMAILED IT TO CHEMTECH.
8-27-98	7	WORKED ON OVERALL DRAWINGS OF THE BRIDGE. DISCUSSED SOME DESIGN CHANGES w/ CAM. WORKED ON SOME OF THE DESIGN CHANGES
8-28-98	8½	HAD DISCUSSIONS w/ CAM ABOUT DESIGN CHANGES TO THE BRIDGE TO SHORE. WORKED ON THE CHANGES AND MADE A PLOT OF THE BRIDGE FOR CAM TO REVIEW. WORKED ON IT MORE.
8-31-98	8	DISCUSSED THE DESIGN OF THE BRIDGE FROM THE PIER TO THE SERVICE PLATFORM w/ CAM. WORKED ON 9710-S13 (PLAN & PROFILE OF THE BRIDGE TO SHORE)

SIGNED [signature] DATE AUGUST 31, 1998

71 3/4 mh

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

INVOICE
NO: PI98-62

September 3, 1998

Koppers Industries, Inc.
1005 William Pitt Way
Pittsburgh, PA 15238-1362

COPY

Attention: WM. Meisinger

Reference: Purchase Order # 300-8-13016

DESCRIPTION	AMOUNT

ENGINEERING SERVICES (Portland Pitch Ship Terminal)
(INTERIM INVOICE for the period from "start" to 8/31/98
(McKernan File No. P97-10)

Service to do engineering tasks and prepare construction plans as required by the referenced Purchase Order. Work performed in connection with modification of pier and piping installation from ship to new storage tank. Charges are for the period from "start" through 8/31/98. Services are listed on the following page.

CHARGES:

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66 man-hours @ $79.00 per man-hour	$ 5,214.00	
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Senior Drafter:		
93½ man-hours @ $40.00 per man-hour	3,740.00	
Labor Total (303 man-hours).....	$16,487.75	$16,487.75

Material:

AutoPIPE Program rental and shipping charges (2 – 50 use packages) ..	1,425.04
TOTAL AMOUNT DUE	$17,912.79

TERMS: Net cash

Cont'd . . .

Koppers Industries, Inc. (Attention: WM. Meisinger) September 3, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-62

DESCRIPTION AMOUNT

SERVICES:

COPY

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2. Began piping flexibility stress analysis. Obtained computer software "AutoPIPE" and began running calculations.

3. .Visited Koppers in Portland on 8/13/98. Met with Amos Kamerer and toured the facility. Discussed the lay out of the piping runs and the arrangement at the ship connection.

4. Prepared the following plans incorporating previously developed site plans with new Koppers' drawing format and including new pipeline lay out. Delivered 3 copies of the plans to Amos Kamerer and sent a copy via UPS Next Day Air to Bill Meisinger on 8/17/98

PLAN NO.	REV.	TITLE
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9710-S11	A	PIER & BRIDGE – ARRANGEMENT PLAN
9710-S12	A	PIER – WALKWAY & PIPE ARRANGEMENT
9710-S13	A	BRIDGE – SHORE TO PIER PLAN & ELEVATION
9710-S14	A	BRIDGE – SHORE END & PARKING AREA

5. Started work on the bridge design. Did calculations for strength and support to meet AISC Requirements. Prepared the following plans:

PLAN NO.	REV.	TITLE
97010-23	PRELIM	WALKWAY PIER – DOLPHIN ARRANGEMENT
97010-24	PRELIM	WALKWAY PIER – STRUCTURAL DETAILS
97010-27	PRELIM	BRIDGE TO SHORE ARRANGEMENT
97010-28	PRELIM	BRIDGE TO SHORE STRUCTURAL DETAILS

Koppers Industries, Inc. (Attention: WM. Meisinger) September 3, 1998
Portland Pitch Ship Terminal - Purchase Order # 300-8-13016
McKernan Engineering Service Invoice No: PI98-62

LABOR SUMMARY:

Period ending:	7/31	8/15	8/31	Total
Principal Engineer:				
McKernan	20	19½	26½	66
Senior Engineer:				
Parham	38	62	43½	143½
Senior Drafter:				
Kincaid	0	21¾	71¾	93 ½
				303 man-hours

COPY

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-16	1½	Instructed Mike to obtain info on piping stress analysis programs so we can make arrangements to rent one of the programs so we can do our analysis. Telephone conversation with Bill Meisenger who asked that I send him the information on the surveyor we used for the project.
7-24	1	Pulled out the files to see what we got. We received the pipe stress analysis program and instructed Jerome to install it. Reviewed our files on what we got for the design of the piping system.
7-27	2½	Worked with Jerome trying to understand the new pipe stress analysis program and helped him set up a test problem and reviewed the test problem with him and instructed him to revise the test problem to be a little more realistic to our situation.
7-28	9	Attended a meeting at Koppers St. Helens Road with all the engineering people that are involved in the pitch terminal project. Arrived there just shortly after 10:00 am and left there at 8:00 pm. Took an hour off for lunch. That was a total of 9 hours.
7-29	2	Worked with Jerome learning about the pipe stress program. Reviewed his model that he had run and worked out how we wanted to put more pipe supports in there and what combinations we wanted to run.
7-30	1	Worked with Jerome again trying to get the computer program output and to understand exactly what they are doing.
7-31	3	Worked with Jerome on the autoPIPE Program sample calculations. We finally got it to be modeled and worked up with him what we're going to do Monday with it.

SIGNED JC McK DATE 8-5-98

ACTIVITY LOG

NAME Jerome Parham PERIOD ENDING 31 July 1998

JOB NO: 97-10 NAME Koppers Atch Ship Terminal

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-24	2	Read Autopipe Manuals & install on my Workstation
7-27	8	Continue Reading Manual & Do tutorial Problem Input data for 2 sample Problems from Cam & Print Results for 1 Problem
7-28	6	Calc more load cases and work on Modelling Piping Systems
7-29	8	Calc Load cases & Review w/Cam & Troubleshoot Results & analyse w/Cam
7-30	6	Correct supports in model Program & call Tech support. Recalc case with new P, T & GR combinations & Print out
7-31	8	Model new Pipe Run with correct supports Discuss w/Cam & Fix wt Distrib. Print out OK case

SIGNED Jerome J. Parham DATE 8-3-98

38 hrs

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 15, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-3	1½	Worked with Jerome to review the computer print outs on the piping flexibility analysis.
8-4	2	Worked with Jerome reviewing the pipe flexibility analysis on our simplified model and got out our General Arrangement Plan and laid out on the plan where the expansion bends are going to be. Also worked out how we are going to make the first expansion bend at the shore end of the bridge and instructed Jerome on how to make that model.
8-10	1	Worked with Mike to get our title block modifications and had Mike email it back east to the title people. Reviewed with Jerome some of the pipe stress analysis that he is doing. Not in very great depth though. More or less checked to see if he was progressing.
8-11	2	Worked with Jerome reviewing pipe stress analysis output especially the problem at the end of the dock bridge and suggested that he divide it up into two pieces and rerun the flexibility analysis.
8-12	1½	Worked with Jerome reviewing the flexibility calculations. Revised the run coming off the pier to make it so we're not so over stressed. We put an anchor right at the end of the pier.
8-13	1½	Worked with Jerome reviewing the flexibility analysis. Worked out some tentative arrangements at the end of the bridge.
	2½	Went over to St. Helens Road Plant. Met with Amos Kamerer. Did a check out on the pier and tried to lay out things the way we wanted to. Moved the pipe from the way we had shown on the original drawings.
	½	Worked with Mike to get the preliminary drawings started and laid out and outlined what we're going to give Amos on Monday morning.
8-14	4	Marked up some plans for Mike to revise and went with Mike over to the St. Helens Plant and gave him a tour of the dock and the dolphins and where the bridge is going to end and traced the whole pipe line from one end to the other. Came back and marked up some more drawings.
8-15	3	Working on Koppers. Marked up original site plans and general arrangements to reflex the changes Amos wanted made in the location of the pipe line and other things for the drawings he need for his lease.

SIGNED J. Cameron McKernan DATE 8/15/98

19

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 15 AUG 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-3	7	PRINT OUT & ANALYZE TEST CASES MODEL 1A, 1B, 1C ERRORS W/#2 & RE INPUT FROM SCRATCH. REVIEW WITH CAM. PRINT OUT CASES FOR REVIEW.
8-4	8	FIX MODEL 2 & REVIEW W/CAM. DO MODELS 2B, 2C & 2D & PRINT GET AUTOCAD SITE PLAN & LAYOUT REFERENCE POINTS FOR USE IN AUTO PIPE
8-5	8	ALTER LAYOUT OF PIPE IN AUTOCAD & PICK OFF SUPPORT POINTS & INPUT INTO NEW MODEL LEG 09 IN AUTOPIPE & CALC STRESSES
3-6	7	CHECK INPUTS FOR PL09 FOR T1 PMAX CALCS & PRINTOUT. REMODEL 1½" COIL LOOP TO ACCOUNT FOR OFFSET.
8-7	7	LAYOUT ALL REMAINING PIPE LEG RUNS IN ACAD & INDICATE SUPPORT POINTS & SPACINGS FOR PICKOFF
8-10	7	PICK OFF OFFSETS IN XYZ FROM ACAD PLAN FOR RUNS 8, 7, 6, 5 & 4 INPUT MODEL FOR RUNS 8 & 6
8-11	7	CONTINUE PICKOFF OF POINTS ON SOME LEGS. REVIEW LEG 09 W/CAM MADE MODS TO REDUCE REACTIONS FOR MODEL 09A, MADE CHANGES TO OTHER LEGS AS CAM COMMENTED RE RUN NEW MODEL 09A
8-12	6	REVIEWED NEW CASES W/CAM ON 9A & MAKE CHANGES FOR 9B & ADDED LEG 10 W/EXP LOOP TO DOCK. CALC STRESSES & PRINT BRIEFLY CHECK W/CAM. MADE PLOT OF ARRGT PLAN & CONTINUED WORK ON LEG MODELS
8-13	5	MADE PRELIM. PLAN & SKETCHES OF PIPE RUNS FOR CAM'S MEETING W/KOPPERS. MODELED LEGS 3, 4 & 5 & PUT INTO AUTO PIPE

SIGNED Jerome J. Parham DATE 8-17-98

62 mk

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING AUGUST 15, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-10-98	2	HAD DISCUSSION w/ CAM ABOUT THE TITLE BLOCK. MADE MODIFICATIONS TO THE TITLE BLOCK AFTER DISCUSSION. SENT AN E-MAIL OF TITLE BLOCK TO KOPPERS
8-12-98	3¼	WORKED ON MODIFING THE TITLE BLOCKS FOR THE PROJECT. STARTED TO PUT TOGETHER DRAWINGS 9710-S10, -S11, -S12, & -S13
8-13-98	3½	WORKED ON PLAN No. 9710-S12, -13, & -14.
8-14-98	6½	WORKED ON PLAN No's 9710-S10 THROUGH 9710-S14. MADE PLOTS OF THEM FOR CAM TO REVIEW. WORKED ON 9710-S10 & S11 DOING CHANGES MADE BY CAM. PLOTTED THEM FOR REVIEW. VISITED SITE W/CAM
8-15-98	6½	HAD A DISCUSSION w/ CAM ABOUT THE DRAWINGS (A REVIEW). WORKED ON PLAN No's 9710-S10 THROUGH 9710-S14. AND PLOTTED THEM AFTER DOING THE CHANGES THE CAM MARKED UP.

SIGNED [signature] DATE AUGUST 15, 1998

21¾

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (1 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-16	3	Went over the mark ups with Mike and he finished the drawings. I checked them, made a few minor mark ups and helped get the drawings plotted, printed and folded for delivery to Amos on Monday morning.
8-17	1	Visited Amos and delivered the prints. Reviewed the prints with him and he had basically no comments and I had a couple of changes I was going to make.
	1	Worked with Mike. Marked up a set of prints to make the small changes and he made the changes. Mary got the drawings plotted, I signed and stamped all the drawings, and Mary delivered them over to Amos in the afternoon.
	1	Telephone conversation with Ted Andersen. Sent him an email with the pipe lengths including expansion bends. Worked with Mike to get the bridge drawings started.
8-18	2	Worked with Mike on the bridge drawings. Figured out how to make the connections at the mid span of the bridge and generally the whole bridge scheme.
8-21	2	Reviewed with Michael the design of the preliminary drawing of the bridge from the dolphin to the shore. Telephone conversation with Dave Logan about some data he is going to send me by overnight mail. Reviewed with Jerome the continuance of the pipe flexibility analysis and some deflections and stresses. Especially the piping at the shore end of the bridge.
8-24	2	Worked with Mike on the bridge. Telephone conversations with galvanizing plants to determine the size of the tanks they can dip the pieces in. Called Amos and discussed the limitations on the dipping. Discussed maybe not having to galvanize the bridges. He and Bill Meisinger called back later and said they wanted to go ahead with the galvanizing. I went back with Mike and told him we have to put some splices in the bridge sections and to get them set up so we can make them not longer than 40 feet. We worked out a scheme for framing the bridge and relocating the pilings.
8-25	3	Asked Mike to work up the weights for the bridge. Asked Mike to work out sections of the bridge so we can bolt it together in sections that are no longer than 40' and discussed some of the design details so he can proceed with that part of it. Started to do the preliminary calculations to re-verify the bridge strength but did not finish them. Telephone conversations with Dave Lurch over at Bartells, an insulation contractor, and sent them over copies of some plans for the piping.
8-26	2	Telephone conversation with Dave Logan at Chem Tech. He wanted to know the pipe sizes of the structure that held the hoist we designed a few years back. Had Mary pull the file and we made some XEROX copies of parts of it and I marked them up to show the pipe sizes that I determined from the check and sent the marked up drawings pieces and a photograph by FAX to Dave Logan. Worked with Mike some more on the bridge. Got the details of the bridge fairly well fixed and decided to increase the span between the new pilings from 60' to 70' so that we can accommodate the limitations on the 40' lengths.

CONT'D . . .

SIGNED JCMK DATE 9/2/98

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1998

JOB NO: P97-10 NAME KOPPER'S PITCH SHIP TERMINAL (2 OF 2)

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-27	3	Completed the preliminary calculations. Verified that the beams are non compact sections and made some provisions for chocks and brackets to stiffen the flanges so they meet the requirements of the AISC specification. Instructed Mike to go ahead with the detail bridge design to incorporate those things that I worked up.
	1	Worked with Jerome and reviewed where we were with the piping design.
8-28	2	Worked with Mike on the bridge design and decided to make an additional length so that the bridge ends up on the bank far enough so that the foundation won't squish out through the bank. The last section will be 2 – 24' lengths. So we lengthened the bridge by 8 feet. We now have 4 – 40' sections and 2 – 24' sections for a total of 208' of fabricated length. Instructed Mike about the diagonal bracing on the bridge and how we're going to put that in underneath the bridge. Worked with Jerome on the piping design and explained to him what the piping at the end of the dock is going to look like. Gave him the information I received from Chem Tech about the pipe sizes and the valves and asked him to find out about the heating jackets that are going on the valves and generally got ready to do the detail design of the pipe connections at the end of the pier.
8-31	3½	Worked with Mike on the lay out of the walkway from the service platform to the upstream mooring dolphin. Figured out the frame spacing and how we're going to attach that walkway to the existing dolphin and service platform structures. Made a number of sketches. Revised the way we are going to handle the connection of the grating supports where they cross the main splice plates for the stringers.

SIGNED [signature] DATE 9/1/98

2/

ACTIVITY LOG

NAME JEROME PARHAM PERIOD ENDING 31 AUG 1998

JOB NO: 97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-17	4	PICK OFF NEW OFFSETS FOR MODIFIED PIPE RUN TO DOCK - 9C FROM MIKE & INPUT INTO AUTOPIPE
8-18	3 1/2	FIX DOCK LEG OFFSETS & RE-INPUT INTO MODEL 9-C. CALC STRESSES & HAVE MARY INPUT
8-19	4 1/2	CALC STRESSES FOR MODELS 8 THRU 3
8-20	2	WORK ON FIX FOR MODEL 1 ON CAD & INPUT OF MODEL #2
8-21	7	PRINT OUT MODELS 8-3 & INPUT REST OF #2 & PRINT. WORK ON MODEL 1
8-25	2	FINISH INPUT OF LEG 01 & CHECK
8-26	4	CALC STRESSES ON LEG 01 & MOVE SUPPORTS TO REDUCE STRESS & RECALC & PRINT
8-27	6	BACKUP OLD DATA RERUN #1 LOAD CASE & CHECK OTHERS & FIX SOME CALCS MAKE QUICK PLOT OF LEG TO CORRECT
8-28	6	MEET WITH CAM DISCUSS SHIP CONN LINE & PUMP CALL VALVE VENDOR FOR INFO. LAYOUT 365' OF 8" PIPE ON DOCK RUN TO CHECK VALVE LOCATION CHECK STRESS ON OLD CASE
9-31	4 1/2	START ACAD LAYOUT OF PIPE DRAIN PUMP AT SHIP CONNECTION.

SIGNED Jerome J. Parham DATE 9-1-98

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING AUGUST 31, 1998

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-16-98	3	WORKED ON 9710-S10 THROUGH 9710-S14 AFTER CAM'S REVIEW. MADE PLOTS OF THEM FOR CAM TO TAKE OVER TO AMOS ON THE 17th
8-17-98	3½	MADE CHANGES TO PLAN No's 9710-S11, S12, & -S13. DISCUSSED w/ CAM THE DETAILS OF THE BRIDGE TO SHORE.
8-18-98	8	WORKED ON 9710-S15 & -S16 (BRIDGE CONNECTION AT DOLPHIN, BRIDG CONNECTION AT PILES)
8-19-98	7	WORKED ON 9710-S15 & 9710-S16. HAD A DISCUSSION w/ CAM ABOUT THE BRIDGE. DID SOME REVIEWING ON THE INTERNET FOR SOME BOLTS.
8-20-98	3	WORKED ON 9710-S15 & 9710-S16
8-21-98	3½	WORKED ON 9710-S15 (ACTUALLY THE DEVELOPMENT OF THE BRIDGE FROM PIER TO SHORE). HAD A DISCUSSION w/ CAM ABOUT THE PROJECT.
8-24-98	7¼	DISCUSSED w/ CAM A REDESIGN IN THE BRIDGE FROM THE EXISTING PIER TO SHORE. CHANGED FROM (3) 60' PANELS TO (5) 40' PANELS. WORKED ON 9710-S10 (SITE PLAN) BY CHANGING COORIDINATES SO THEY MATCH THE SURVEY FROM MINISTER/GRAESER
8-25-98	5	WORKED ON THE BRIDGE DESIGN & THE CONCRETE PAD SUPPORTING THE PIER
8-26-98	8	WORKED ON THE WEIGHTS OF THE BRIDGE. WENT THROUGH SOME MODIFICATIONS DURING THE PROCESS OF CALCULATIONS. DID SOME WORK ON PLAN No. 9710-S10 AND EMAILED IT TO CHEMTECH.
8-27-98	7	WORKED ON OVERALL DRAWINGS OF THE BRIDGE. DISCUSSED SOME DESIGN CHANGES w/ CAM. WORKED ON SOME OF THE DESIGN CHANGE
8-28-98	8½	HAD DISCUSSIONS w/ CAM ABOUT DESIGN CHANGES TO THE BRIDGE T SHORE. WORKED ON THE CHANGES AND MADE A PLOT OF THE BRIDG FOR CAM TO REVIEW. WORKED ON IT MORE.
8-31-98	8	DISCUSSED THE DESIGN OF THE BRIDGE FROM THE PIER TO THE SERVICE PLATFORM w/ CAM. WORKED ON 9710-S13 (PLAN & PROFILE OF THE BRIDGE TO SHORE)

SIGNED [signature] DATE AUGUST 31, 1998

RECEIVED

SEP 21 1998

KOPPERS INDS., INC.
PORTLAND, OR

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

September 5, 1997

INVOICE

#4210 - 8027

NO: PI97-70

Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

Attention: Amos Kamerer

Reference: Purchase Order No. 3000-7-9020

DESCRIPTION	AMOUNT
Portland Pitch Ship Unloading Pier & Pipe Line Project (INTERIM INVOICE for the period from 7-1-97 to 8-31-97) (McKernan Job No. P97-10)	
Engineering services to support the permit application to the City of Portland for the pitch ship unloading pier and pipe line project as outlined in McKernan letter dated 3/19/97. Services during this period are listed on the following page.	

CHARGES

LABOR (Activity Logs attached):

Principal engineer: 8 man-hours @ $75 per man-hour	$600.00
Drafting technician: 10 man-hours @ $35 per man-hour	350.00
TOTAL AMOUNT DUE (18 man-hours)	$950.00

TERMS: Net cash

OK TO PAY - J. Vu

RECEIVED
SEP 10 1997
KOPPERS INDS., INC.
PORTLAND, OR

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	8027	0362			950 —

INV # 9770 DATE 07/25/97

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE 045 DUE DATE: / /

OK TO PAY

GROSS AMOUNT 950 00

DISCOUNT $

NET $

DIVISION	MONTH	AUDIT NUMBER
483	09	92700509

IMPORTANT: CIRCLE TERMS ON INVOICE

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

September 5, 1997

INVOICE

NO: PI97-70

Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

Attention: Amos Kamerer

Reference: Purchase Order No. 3000-7-9020

DESCRIPTION	AMOUNT

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(INTERIM INVOICE for the period from 7-1-97 to 8-31-97)
(McKernan Job No. P97-10)

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8 man-hours @ $75 per man-hour	$600.00
Drafting technician:	
10 man-hours @ $35 per man-hour	350.00
TOTAL AMOUNT DUE (18 man-hours)	$950.00

TERMS: Net cash

RECEIVED

SEP 10 1997

KOPPERS INDS., INC.
PORTLAND, OR

September 5, 1997

Koppers Industries, Inc.
Pitch Ship Unloading Pier and Pipe Line Project
Purchase Order No. 3000-7-9020
McKernan Invoice No. PI97-70

DESCRIPTION	AMOUNT

1. (NO CHARGE) Hand delivered to Amos Kamerer a copy of the Corps of Engineer's and the State of Oregon Permit Application on 7-8-97.

2. (NO CHARGE) Hand delivered to Amos Kamerer a copy of the City of Portland Notice on the Greenway Review on 7-11-97.

3. Had a telephone discussion with Steve Gerber at the City of Portland Planning Bureau about the possible conflict between the new tanks and the view corridor looking downstream toward the St. John's Bridge.

4. Obtained drawing and documentation on the view corridor.

5. Visited Amos Kamerer at the Koppers Plant on 8-1-97. Discussed the view corridor and took some photos of the site.

6. Revised our Site Plan to include the view corridor boundary.

7. Prepared a letter describing how the tanks do fit into the scheme of things at the site and selected a supporting photo.

8. Sent the letter, photo, and revised Site Plan to Steve Gerber at the City of Portland Planning Bureau by mail on 8-7-97.

9. (NO CHARGE) Had delivered to Amos Kamerer a copy of the City of Portland Approval Notice on 8-21-97.

END

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 15, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-8	N/C	On the way back to the office stopped in at Koppers and left the Corps of Engineer's and State of Oregon Permit Application copies for Amos.
7-11	N/C	Hand delivered the City of Portland Notice on the Greenway Review to Amos Kamerer.

SIGNED [signature] DATE 7-21-97

N/C

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 31, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-24	1	Had telephone conversation with Steve Gerber at the City of Portland Planning Bureau about the possible conflict between the new tanks and the view corridor looking downstream toward the St. John's Bridge. Tried to find the planning drawings and we seem to have lost them out of the file. Had Mike make a plot that shows where the view corridor is on our sight plan. Not quite satisfied that it is accurate. Asked Mary to go get another drawing on Monday.
7-31	1	Reviewed with Mike the paper work for the view corridor on the City document they FAXed us and asked Mike to plot that view corridor as an overlay on our site plan so we can study it.

SIGNED [signature] DATE 8-7-97

2 mh

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 15, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-1	1	Visited Koppers and met with Amos Kamerer and looked at the plant and the view corridor. Took some pictures and sighted down the view corridor line.
8-5	1 1/2	Worked with Michael to get the site plan to agree with the City's drawings that show the view corridor. Michael finished it and plotted out both a large scale and a small scale plot.
8-6	1/2	Reviewed the photographs we got back. Selected a photograph to submit to the City to show the alignment of the big blue tank with the St. John's Bridge and how the new Koppers tanks will fit in to the scheme of things.
8-7	3	Drafted a letter and the supporting photograph and got it all ready to send to the City of Portland regarding the view corridor issue. Did a final check on Mike's revision of the Site Plan. Telephoned Steve Gerber at the City of Portland Planning Bureau and discussed what I was doing ~~with him~~. He seemed to be receptive to the information that I will mail him today.
8-14	N/C	Telephone conversation with Amos Kamerer. Looked up the estimate for the cost of the City Building Permits and gave him that information over the telephone.

SIGNED JCMK DATE 8-25-97

6 mth

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING JULY 31, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7/24/97	¾	HAD DISCUSSION w/ CAM ABOUT LOCATION OF VIEW LINE
7/31/97	3½	TOOK DRAWINGS RECEIVED FROM THE CITY THAT SHOWS THE "VIEW CORRIDOR" AND ADDED IT TO PLAN No. 97010-01

SIGNED [signature] DATE JULY 31, 1997

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING AUGUST 15, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8/1/97	1¾	HAD DISCUSSION w/ CAM ABOUT CHANGES TO BE MADE TO PLAN No. 97010-1. CHANGES WERE MADE AFTER CAM'S VISIT TO KOPPERS TO LOOK AT WHERE THE NEW TANK WILL BE LOCATED AND IF IT IS IN THE "VIEW LINE".
8/4/97	½	STARTED TO WORK ON CHANGES TO BE MADE TO PLAN 97010-1 AFTER DISCUSSION w/ CAM.
8/5/97	2	WORKED WITH CAM ON LOCATION OF VIEW CORRIDOR. MADE CHANGES TO EXACT LOCATION OF TANK AND OTHER STUFF. MADE PLOT OF BOTH PLANS 97010-1 AND SHEET 1 (8½ x 11)
8/6/97	1	SAT DOWN w/ CAM TO DISCUSS THE PROJECT
8/7/97	½	MADE CHANGES TO BOTH SHEET 97010-1 & THE SMALLER SIZE DRAWING OF THE SAME THING. MADE A PLOT OF BOTH DRAWINGS.

SIGNED [signature] DATE AUGUST 15, 1997

5¾1

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-21	N/C	(1/2 hour) Delivered the City of Portland approval to Amos Kamerer on the way home from Gunderson.

SIGNED JCMK DATE 9-2-97

N/C

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

September 5, 1997

INVOICE

NO: PI97-70

Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

COPY

Attention: Amos Kamerer

Reference: Purchase Order No. 3000-7-9020

DESCRIPTION	AMOUNT
Portland Pitch Ship Unloading Pier & Pipe Line Project (INTERIM INVOICE for the period from 7-1-97 to 8-31-97) (McKernan Job No. P97-10)	
Engineering services to support the permit application to the City of Portland for the pitch ship unloading pier and pipe line project as outlined in McKernan letter dated 3/19/97. Services during this period are listed on the following page.	
CHARGES	
LABOR (Activity Logs attached):	
Principal engineer: 8 man-hours @ $75 per man-hour	$600.00
Drafting technician: 10 man-hours @ $35 per man-hour	350.00
TOTAL AMOUNT DUE (18 man-hours)	$950.00

TERMS: Net cash

RECEIVED
SEP 10 1997
KOPPERS INDS., INC.
PORTLAND, OR

September 5, 1997

Koppers Industries, Inc.
Pitch Ship Unloading Pier and Pipe Line Project
Purchase Order No. 3000-7-9020
McKernan Invoice No. PI97-70

COPY

DESCRIPTION	AMOUNT

1. (NO CHARGE) Hand delivered to Amos Kamerer a copy of the Corps of Engineer's and the State of Oregon Permit Application on 7-8-97.

2. (NO CHARGE) Hand delivered to Amos Kamerer a copy of the City of Portland Notice on the Greenway Review on 7-11-97.

3. Had a telephone discussion with Steve Gerber at the City of Portland Planning Bureau about the possible conflict between the new tanks and the view corridor looking downstream toward the St. John's Bridge.

4. Obtained drawing and documentation on the view corridor.

5. Visited Amos Kamerer at the Koppers Plant on 8-1-97. Discussed the view corridor and took some photos of the site.

6. Revised our Site Plan to include the view corridor boundary.

7. Prepared a letter describing how the tanks do fit into the scheme of things at the site and selected a supporting photo.

8. Sent the letter, photo, and revised Site Plan to Steve Gerber at the City of Portland Planning Bureau by mail on 8-7-97.

9. (NO CHARGE) Had delivered to Amos Kamerer a copy of the City of Portland Approval Notice on 8-21-97.

END

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 15, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-8	N/C	On the way back to the office stopped in at Koppers and left the Corps of Engineer's and State of Oregon Permit Application copies for Amos.
7-11	N/C	Hand delivered the City of Portland Notice on the Greenway Review to Amos Kamerer.

SIGNED [signature] DATE 7-21-97

N/C

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JULY 31, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7-24	1	Had telephone conversation with Steve Gerber at the City of Portland Planning Bureau about the possible conflict between the new tanks and the view corridor looking downstream toward the St. John's Bridge. Tried to find the planning drawings and we seem to have lost them out of the file. Had Mike make a plot that shows where the view corridor is on our sight plan. Not quite satisfied that it is accurate. Asked Mary to go get another drawing on Monday.
7-31	1	Reviewed with Mike the paper work for the view corridor on the City document they FAXed us and asked Mike to plot that view corridor as an overlay on our site plan so we can study it.

SIGNED [signature] DATE 8-7-97

2 of 2

ACTIVITY LOG

NAME J. CAMERON MCKERNAN

PERIOD ENDING AUGUST 15, 1997

JOB NO: P97-10

NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-1	1	Visited Koppers and met with Amos Kamerer and looked at the plant and the view corridor. Took some pictures and sighted down the view corridor line.
8-5	1 1/2	Worked with Michael to get the site plan to agree with the City's drawings that show the view corridor. Michael finished it and plotted out both a large scale and a small scale plot.
8-6	1/2	Reviewed the photographs we got back. Selected a photograph to submit to the City to show the alignment of the big blue tank with the St. John's Bridge and how the new Koppers tanks will fit in to the scheme of things.
8-7	3	Drafted a letter and the supporting photograph and got it all ready to send to the City of Portland regarding the view corridor issue. Did a final check on Mike's revision of the Site Plan. Telephoned Steve Gerber at the City of Portland Planning Bureau and discussed what I was doing ~~with him~~. He seemed to be receptive to the information that I will mail him today.
8-14	N/C	Telephone conversation with Amos Kamerer. Looked up the estimate for the cost of the City Building Permits and gave him that information over the telephone.

SIGNED [signature]

DATE 8-25-97

6 mlh

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING JULY 31, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
7/24/97	¾	HAD DISCUSSION w/ CAM ABOUT LOCATION OF VIEW LINE
7/31/97	3½	TOOK DRAWINGS RECEIVED FROM THE CITY THAT SHOWS THE "VIEW CORRIDOR" AND ADDED IT TO PLAN No. 97010-01

SIGNED [signature] DATE JULY 31, 1997

4/4

ACTIVITY LOG

NAME MICHAEL H. KINCAID PERIOD ENDING AUGUST 15, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8/1/97	1¾	HAD DISCUSSION w/ CAM ABOUT CHANGES TO BE MADE TO PLAN No. 97010-1. CHANGES WERE MADE AFTER CAM'S VISIT TO KOPPERS TO LOOK AT WHERE THE NEW TANK WILL BE LOCATED AND IF IT IS IN THE "VIEW LINE".
8/4/97	½	STARTED TO WORK ON CHANGES TO BE MADE TO PLAN 97010-1 AFTER DISCUSSION w/ CAM.
8/5/97	2	WORKED WITH CAM ON LOCATION OF VIEW CORRIDOR. MADE CHANGES TO EXACT LOCATION OF TANK AND OTHER STUFF. MADE PLOT OF BOTH PLANS 97010-1 AND SHEET 1 (8½ x 11)
8/6/97	1	SAT DOWN w/ CAM TO DISCUSS THE PROJECT
8/7/97	½	MADE CHANGES TO BOTH SHEET 97010-1 & THE SMALLER SIZE DRAWING OF THE SAME THING. MADE A PLOT OF BOTH DRAWINGS.

SIGNED [signature] DATE AUGUST 15, 1997

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING AUGUST 31, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
8-21	N/C	(1/2 hour) Delivered the City of Portland approval to Amos Kamerer on the way home from Gunderson.

SIGNED [signature] DATE 9-2-97

N/C

To: Amos Kamerer
From: Jim Dietz

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

July 21, 1997

INVOICE

NO: PI97-54

RECEIVED
JUL 22 1997
KOPPERS INDS., INC.
PORTLAND, OR

Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

Attention: Amos Kamerer

Reference: Purchase Order No. 3000-7-9020

DESCRIPTION	AMOUNT
Portland Pitch Ship Unloading Pier & Pipe Line Project (INTERIM INVOICE for the period from 6-1-97 to 6-30-97) (McKernan Job No. P97-10)	
Engineering services to support the pitch ship unloading pier and pipe line project as outlined in McKernan letter dated 3/19/97. Services during this period are listed on the following page.	
CHARGES	
LABOR (Activity Logs attached):	
Principal engineer: ½ man-hours @ $75 per man-hour	$ 37.50
Clerical: 7 man-hours @ $35 per man-hour	245.00
MATERIAL (Receipts attached):	
- Fee for Affidavit from City of Portland in the Joint Permit Application to the State of Oregon . .	119.00
- Fees for parking at City of Portland Building re: Permit Applications	5.25
TOTAL AMOUNT DUE (7½ man-hours)	$406.75

TERMS: Net cash

OK TO PAY

KI 37W REV 2 6M 6/90

CIRCLE TERMS ON INVOICE

GIL	DET.	S-DET.	LOC.	DEPT.	TAX	EMP #	MOVE # PO #	AMOUNT
4210			9270	8027	0362			407 —

INV # 9754 DATE 06/30/97

A/P DEPARTMENT USE ONLY

VENDOR NUMBER 0 0 6 5 6 5 0 1 6

TERMS CODE 045 DUE DATE: / /

GROSS AMOUNT	406 75
DISCOUNT $	
NET $	

DIVISION	MONTH	AUDIT NUMBER
483	07	92700042 7

IMPORTANT: CIRCLE TERMS ON INVOICE

J. CAMERON McKERNAN COMPANY

Engineering & Naval Architecture

825 NE 20th Avenue, Suite 110 • Portland, Oregon 97232 • (503) 232-7211 • FAX (503) 232-7658

July 21, 1997

INVOICE

NO: PI97-54

RECEIVED

JUL 24 1997

KOPPERS INDS., INC.
PORTLAND, OR

Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, Oregon 97210-3663

Attention: Amos Kamerer

Reference: Purchase Order No. 3000-7-9020

DESCRIPTION	AMOUNT
Portland Pitch Ship Unloading Pier & Pipe Line Project (INTERIM INVOICE for the period from 6-1-97 to 6-30-97) (McKernan Job No. P97-10)	
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TOTAL AMOUNT DUE (7½ man-hours)	$406.75

TERMS: Net cash

July 21, 1997

Koppers Industries, Inc.
Pitch Ship Unloading Pier and Pipe Line Project
Purchase Order No. 3000-7-9020
McKernan Invoice No. PI97-54

DESCRIPTION	AMOUNT

1. Contacted DEQ for information required in the State of Oregon Joint Permit Application.

2. Made a final check of the City of Portland Land Use Greenway Review Application.

3. Completed Joint Permit Application for the State of Oregon.

4. Visited Koppers on 6-20-97. Had Amos Kamerer sign the City of Portland and the State of Oregon Permit Application Forms and picked up a check for the Greenway Review Fee.

5. Visited City of Portland Planning Department on 6-23-97. Submitted Land Use/Greenway Review Application and fee.

6. Visited City of Portland Planning Department on 6-24-97. Had a City Planner sign Affidavit Section of the State of Oregon Joint Permit Application form stating they have received an application from us on this project.

7. Mailed State of Oregon Joint Permit Application on 6-27-97.

END

ACTIVITY LOG

NAME J. CAMERON MCKERNAN PERIOD ENDING JUNE 30, 1997

JOB NO: P97-10 NAME KOPPERS PITCH SHIP TERMINAL

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-17	N/C	Put in telephone call to Sandra Hart and Karla Urbanowicz of DEQ to find out he identification of the State's matter for the site contamination.
6-19	1/2	Did a final check on the permit applications. Telephoned Koppers and gave Linda the information on the amount of the check and told her I would probably come by tomorrow and pick it up.
6-20	N/C	(1 hour) Took the Permit Application Forms over to Amos Kamerer and had him sign the forms. Also picked up the check for the Greenway Permit Fee.

SIGNED [signature] DATE 7-3-97

1/2 m-h

ACTIVITY LOG

NAME Mary-Anne J McKernan PERIOD ENDING 6-30-97

JOB NO: P97-10 NAME Koppers Terminal Permits

DATE	HOURS	DESCRIPTION OF ACTIVITY
6-23-97 Mon	½	Print forward letter to City for Greenway Application. Make copies of letters & the application for files & Koppers.
	2½	Go downtown to City of Portland Planning Dept. Reviewed Application and turned it in. Also paid fee.
	½	Type forwarding letter and check to get State Applications Submitted to City for them to sign affidavit stating we are applying w/them also.
6-24-97 Tues.	1	Go downtown to City of Portland Planning Dept. Submit State Applications and fees for them to Sign affidavit that we have turned in an application w/them also.
6-27-97 Fri	2½	Went to city Portland Planning Dept. to pick up signed Affidavits of State Permit Applications. After returning to office = discovered They stated no Greenway Application has been returned in. Returned downtown. Met w/city Planner. showed him copy Greenway Application and City Receipt. The State and City Applications got separated. He corrected affidavit. Typed letters and made copies and packaged up Joint Permit Applications to State Eng. & Division St. Lands.

SIGNED Mary-Anne J McKernan DATE 6-27-97

7 mh

CI. OF PORTLAND - PLANNING BUR. U
PERMIT CENTER RECEIPT

PL Nº 112470

DATE: 24 June 97

NAME: J. Cameron McKenan Company PHONE #: 232-7211

ADDRESS: 825 NE 20th St 118 CITY/ST/ZIP: Portland OR 97232

JOB ADDRESS: 7540 NW St. Helens PERMIT #:

The following reviews require payment of the Hearings Officer fee:

Amount	Fee Code	Item Description
	0224	CCPD Height Transfer
	0202	Comp Plan Map Amendment
	0227	Conditional Use - Minor
	0203	Conditional Use - Major
	0204	Convenience Store Review
	0206	Environmental Conservation
	0229	Environmental Protection
	0225	Essential Service Provider
	0207	Excavation and Fill Reveiw
	0208	Greenway Review
	0209	Hazardous Substance Review
	0211	Industrial Park Review
	0213	Land Division - Major
	0223	Master Plan Review
	0215	Non-Conforming Use Review
	0216	Planned Unit Development
	0243	Property Tax Exemption
	0230	Reasonable Use Review
	0218	Revocable Permit Extension
	0231	Rocky Butte Hist. Features
	0220	Statewide Planning Goal
	0221	Sub-Standard Lot Review
	0232	Tree Removal Review
	0222	Zoning Map Amendment
	0254	Hearings Officer Fee

These reviews do not require payment of the Hearings Officer fee:

Amount	Fee Code	Item Description
	0201	Adjustment Review
	0228	Design Review - Minor
	0205	Design Review - Major
	0210	Historic Landmark Reviews
	0214	Land Division - Minor
	0212	Lot Line Adjusment
	0233	Non-Conf Use Establishment
	0217	Pre-Application Conference
	0244	Plan Check
$119.00	0251	Zoning Confirmation
	0253	Document and Map Sales

JUN 24 1997
CITY OF PORTLAND

$119.00 **TOTAL FEES**

6181 ____ Cash
X Check
____ TF
____ Bill to:

Bureau Staff:

LE: 7/91

Koppers005483

6181

J. CAMERON McKERNAN COMPANY
ENGINEERING & NAVAL ARCHITECTURE
(503)232-7211
825 NORTHEAST 20TH AVENUE, SUITE 110
PORTLAND, OREGON 97232

91-119
1221(1)

DATE June 24, 1997

PAY TO THE ORDER OF City of Portland $ *119.00*

DOLLARS

WELLS FARGO BANK
612 SOUTHEAST MORRISON STREET, PORTLAND, OR 97214

J. CAMERON McKERNAN COMPANY

FOR State Joint Permit Application Affidavit BY J. Cameron McKernan MP

⑈006181⑈ ⑆122101191⑆0419 667508⑈

TTLAMT 2.25

848A 12:41

PORTLAND BLDG.
PARKING GARAGE
THANK YOU

06/23/97

Parking @ City of Portland Bureau turning Koppers Greenway Apps.

P97-10

(425) auto $2.25

6-23-97

PORTLAND BLDG.
PARKING GARAGE
THANK YOU

06/24/97

000002P
1 HOUR 1.50
CASH 1.50

1264 11:57

Parking @ City of Portland
turn in Koppers State Permit Applications
for City Affidavit that we have an
application in w/them also.

✓

(425) Auto $1.50 6-24-97

TTLAMT 0.75

0423A 11:50

PORTLAND BLDG.
PARKING GARAGE
THANK YOU

06/27/97

Signed not received Greenway App

The State & Greenway Apps got separated I guess

PORTLAND BLDG.
PARKING GARAGE
THANK YOU

Corrected yes received Greenway App
I showed receipt from
City as proof of submitting Greenway App

06/27/97

TTLAMT 0.75

0227A 11:07

Re Koppers P97-10

To Pick up State Permit Applications after City Planner signed Affidavit

Mary-Anne

✓

(425) auto

$1.50

6-27-97

WACKER
Wacker Siltronic Corporation

Ship to: 7200 N.W. Front Ave.
Portland, OR 97210
Mailing: P.O. Box 83180
Portland, OR 97283-0180
Phone: (503) 243-2020, ext. 7514
Fax: (503) 241-7599
Internet: john_pittman@siltronic.com

John L. Pittman
Director of Engineering

WACKER

THOMAS C. McCUE
Environmental ~~Health & Safety~~ Manager

Wacker Siltronic Corporation
Mail to: P.O. Box 83180, Portland, OR 97283-0180
Ship To: 7200 N.W. Front Ave., Portland, OR 97210
(503) 243-2020, Ext. 7532, FAX (503) 241-7599

MEMO TO FILE March 22, 1996

Wacker Siltronic Corp.
Portland, OR

I. THOSE PRESENT:

WALCKER SILTRONIC	PACIFIC NORTHERN OIL	KII
John Pittman, Dir. of Engineer Tom McCue, Envin. Mgr.	Tina Garrett, Oper. Mgr.	Amos Kamerer

II. PURPOSE OF THE VISIT:

To discuss odor complaints received over the years from their own employee's and recent complaints from contractor employee's who are working on their expansion project, that is scheduled to be completed in July of this year.

III. DISCUSSION:

The employee complaints have dealt with safety issues. Some employee's have been sick, even nauseous, from the odors. Several of the construction trailers have added carbon filters to their heating and air conditioning units, which has helped. They have hired an independent industrial hygienist to do some monitoring in the plant and on the construction site, to show the employee's that there is no health risk involved, but they are still getting the complaints.

They also indicated that they were worried about product quality issues. They have had some sporadic incidences where their Silicon Wafer's have been rejected for what they call a "Blue Haze". They claim that this is hydro carbons that collects on the face of the wafer. There is a documented case in Europe, where this problem was excessive, and the wafer manufacture was located next to a petroleum manufacturing facility. I asked how they resolved this problem and they indicated that the wafer manufacture had to install very expensive air filtration equipment.

I explained that I was not a chemist but that I understood that there were many types of hydro carbons, from many, many types of sources and they acknowledged that was their understanding also, but it is still a concern to them. I explained that it was my understanding that these hydro carbons can be identified along with the probable source.

III. DISCUSSION: (cont.)

However they also needed to remember that one of the largest sources of hydro carbons was auto and truck emissions and that highway 30 in front of both of our facilities, was a very heavily traveled road. They agreed, but they wondered why they only had the problem at random times.

They explained about their process and asked about our processes. Tina indicated that they only dealt with fuel oils, mostly marine grade fuels. They have contracts with most of the State of Oregon agencies to supply their fuel needs and many large industrial customers like Boise Cascade. They process some 250,000 barrels each month. The only safety issue that they deal with is H2S, which they monitor for with a max. level permitted of 10ppm.

I explained about our operations and offered to take then on a tour, later.

They said that their ideal resolution to this problem would be to eliminate the smells. I explained that would be impossible from our perspective. I suggested that the next time they receive a complaint that they should call both Tina and myself, so that we could look into what we were doing at that particular time, to see if perhaps we could make some operational change or improvement in what we were doing to eliminate the odors.

They thanked us for our time, Tina left and I took them on the tour. The thing that pleased them the most was our fume recovery system, that deals with all of our elevated temperature tanks or loading systems. I mentioned that I have kept a record of their complaint calls in the past and on each occasion, Pacific Northern Oil was heating tank cars on their railroad spur to the east of our property and immediately in between Koppers and Wackers properties. Tom said that their checking had shown similar conclusions.

I offered that if they still encounter questions from their employee's regarding health issues, that we have considerable data on our own employee's and that through our corporate industrial hygienist perhaps we could offer some assistance.

IV. FOLLOW UP:

I'm sure that we will hear from them again, the next time they have a complaint and we will just have to go from there.

Amos S. Kamerer

cc: M.H. Juba
W.W. Turner

3/19/96

Tom McCue, Environ. mgr., Wacker Silitronics

John Pitman, Engineering Director

Would like to meet with KII + PNO reps

9:00 AM Friday at KII

Concerned about product quality issues
documented that Hydrocarbons can cause a "Blue Haze"
(in Germany) on the wafer surface

type of Hydrocarbons - Light ?
Heavy

what concentrations

ANALYSIS REPORT

O: John Oxford / Paul Stadel

DATE: 7/27/93

P.O. SAMPLE NO.

ESCRIPTION: Sulfur Analysis

DATE REC'D. | QUANTITY

HOLD UNTIL

ABEL READS:

ORIGINATORS SAMPLE NO.

ECEIVED FROM:

ETTER REFERENCE:

NALYSIS:

Bristol #	% Sulfur
93-21-1	0.59
93-21-2	0.59
93-21-3	0.58
93-22	0.59

John Hu

DISTRIBUTION

- ☐ LOCATION or ADDRESSEE
- ☐ NUMERICAL FILE
- ☐
- ☐

ANALYZED BY: DATE

APPROVED BY: TITLE DATE

KOPPERS INDUSTRIES INC.
GENERAL SPECIFICATION

NO.: TG-3015-6
PLANT: Chicago
DATE: March 1993

CUSTOMER:

Aluminum Company of America
Wenatchee and Rockdale

PRODUCT:

Hard Carbon Pitch

REQUIREMENTS:

Property	Method of Test	Specification	Target
Softening Point, C/A,°C	ASTM D 3104 (Mettler)	108-113	110 ± 1
Toluene Insoluble, wt. %	ASTM D 4072	25-35	27 ± 2
Quinoline Insoluble, wt. %	ASTM D 2318	10-15	14 ± 1
Coking Value, Conradson, wt. %	ASTM D 2416	54.0 min.	57 ± 2
Distillation, wt. % 0-355°C	ASTM D 20	4.0 max.	2 ± 1
Ash, wt. %	ASTM D 2415	0.40 max.	0.3 max.
Relative Density @ 25°C	ASTM D 2320 or ASTM D 71	1.300 min.	1.32±0.01
Sodium, ppm	Atom. Absorp.	100 max.	50 max.
Sulfur, wt. %	Leco	0.65 max.	0.65 max.

Koppers005493

P1/P13	CREO BLEND	SOLVENT	NSR	HVY OIL	LITE CREO	TANK 67
% IN BLEND	100.0	2.7	17.3	9.3	17.3	53.4
GALLONS	75000	2000	13000	7000	13000	40000
2%MAX 0-210	1.2	35.0	0.0	0.0	0.0	0.5
12%MAX 235	3.3	66.0	0.0	0.0	0.4	2.8
10-40 270	20.5	97.0	39.0	0.0	9.9	17.7
40-65 315	47.3	99.0	76.3	0.0	42.6	45.0
65-77 355	75.5	99.0	90.3	4.0	85.5	78.8
23-35 RESIDUE	27.6	1.0	9.4	96.0	14.1	27.3

TANK 3 METHYL SOLVENT 0 7 1/4 inches = 2000 GAL START 25-11 1/2 STOP 26-7

25-11 1/2 100

26-6 3/4 2169 GAL

TANK 99 NSR 1 9 1/2 13000 GAL START 22-11 1/2 STOP 24-9

12,662 GAL

22-11

24-9

100°

TANK 17 HVY OIL

1077 6022 GAL

15,215 GAL

~~12,5[illegible] GALS~~

TANK 23 LITE CREO

80033
144
80,177

1.0464

1059
36
1095

100,163

76,621
40 670
35,951

7-30-93

Ted,

Enclosed are two samples. These samples also have been sent to Korea (Mr. OH).

Do the following test on these samples.

Softening Point
QI
Ash
TI
Distillation

Paul Stadel

1.051
80.3762

Koppers005495

Organic Materials Group
Koppers Company, Inc.

KOPPERS

PAGE NO. 117

T-170 REV. 6
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	Truck	Temp	Loader	
1-9-89	App 4500	Tc 586	W Coloid		350	HB	K-15-35
"	" 5600	Tc 76423	Mc Bax	K-40	190	GH	cl Gr-3
"	5600	Tc 76423	Mc Bax	K-40	200	GH + HB	cl Gr-3
"	5500	Tc 223038	Calis	K-30	200	HB + GH	cl Gr-3
1-10-89	5605	68	Wy Sea	K-40	184	HB	
1-11-89	5605	68	Taylor	K-40	195	HB	
"	5605	68	Wy Sea	K-40	198	HB	
1-12-89	5605	68	Wy Sea	K-40	194	HB	
"	5605	68	Wy Sea	K-30	194	HB	
1-16-89	5605	68	Wy Sea	K-40	176	GH	
"	5605	68	Wy Sea	K-30	176	GH	
1-17-89	5605	68	Wy Sea	K-40	184	GH	
"	5605	68	Wy Sea	K-30	184	GH	
1-18-89	5605	68	Wy Sea	K-30	190	GH	
"	5605	68	Taylor	K-40	190	GH	
"	5605	68	Wy Sea	K-40	190	GH	
1-19-89	5605	68	Wy Sea	K-30	186	GH	
"	5605	68	Wy Sea	K-40	186	GH	
1-20-89	5605	68	Taylor	K-30	174	GH	
1-23-89	5605	68	Wy Sea	K-40	160	GH	
"	5605	68	Wy Sea	K-30	160	GH	
"	5605	68	Wy Sea	K-40	185	HB	
1-24-89	5605	68	Wy Sea	K-30	180	GH	
1-25-89	5605	68	Wy Sea	K-40	185	GH	
"	5605	68	Wy Sea	K-30	185	GH	
1-26-89	5605	68	Wy Sea	K-30	186	GH	
"	5605	68	Taylor	K-40	186	GH	
1-27-89	5605	68	Wy Sea	K-40	170	GH	
"	5605	68	Wy Sea	K-30	170	GH	
1-30-89	5605	68	Wy Sea	K-40	150	HB	
"	5605	68	Wy Sea	K-30	150	HB	
"	4740	Tc 87744	W Coloid		280	HB + GH	K-364
1-31-89	5605	68	Wy Sea	K-40	175	HB	
"	5605	68	Mc Bax	K-30	200	HB + GH	
2-1-89	App 5082	Tc 79682	Mc Bax	K-40	185	HB + GH	cl Gr-3
2-3-89	5605	68	Taylor	K-30	160	GH	

PAGE NO. 118

KOPPERS

Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6-81
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	Loader	
2-7-89	5381	TC 79981	Asecroff	K-30	200	HB	
"	5810	TC 79981	Asecroff	K-40	200	HB	
"	7562	TC 79981	Dome Tar	P.M.#1	200	HB	
"	7667	68	Dome Tar	P.M.#2	200	HB	
2-9-89	5605	TC 25554	Mc Bax	K-30	150	GH	
2-10-89	5800	TC 25554	Mc Bax	K-40	150	HB	
"	5700	TC 25554	"	K-30	150	GH	
"	"	TC 223004	"	K-40	150	GH + HB	
"	"	"	"	K-30	150	GH + HB	
"	"	"	"	K-40	150	GH + HB	
2-14-89	7531	68	Dome Tar	P/ Motor	230	B.C., GH	
"	7531	68	Dome Tar	P/ Motor	230	B.C., GH	
2-15-89	5605	TC 56351	Wy Sea	K-30	230	GH	
"	5605	"	Mc Bax	K-40	230	GH + HB	
"	5605	"	Mc Bax	K-40	230	GH + HB	
2-16-89	5704	56351	Wy Sea	K-40	210	GH	
"	5285	223129	Wy Sea	K-30	170	GH	
"	7488	223129	Dome Tar	P/Motors	170	GH + HB	B.C.
"	7541	223129	Dome Tar	P/Motors	170	GH + HB	B.C.
2-17-89	5605	68	Wy Sea	K-40	200	GH	
"	5605	68	Wy Sea	K-30	200	GH	
2-21-89	5281	TC 79680	Wy Sea	K-30	180	GH	
2-22-89	5701	TC 79676	Wy Sea	K-40	230	GH	
"	5274	TC 79676	Wy Sea	K-30	230	GH	
2-23-89	5256	TC 88674	Wy Sea	K-30	230	GH	
"	5605	T-68	Wy Sea	K-40	186	GH	
2-24-89	5281	TC 75164	Wy Sea	K-40	195	GH	
"	5697	TC 75164	Mc Bax	K-30	195	GH	
"	5736	TC 75164	Mc Bax	K-30	195	GH	
2-27-89	4,000	68	Calif	K-30	184	GH + HB	
2-28-89	7356	68	Taylor	Portland Motors	190	HB + GH	
3-6-89	5605	68	Wy Sea	K-40	160	HB + GH	
"	5605	68	Wy Sea	K-30	180	HB	
3-7-89	5605	68	Wy Sea	K-40	180	HB	
"	5605	68	Wy Sea	K-30	200	HB	
"	5605	68	Wy Sea	K-40	200	HB + GH	

T-170 REV. 6
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION DATE BY

SUBJECT Daily Gallon From Customer Truck Temp Loader

3-8-89	5605	68	Wy Sea	K-30	208	[illegible]	
3-9-89	5605	68	Wy Sea	K-30	172	[illegible]	
3-13-89	5300	TC81225	Mc-Bax	K-30	170	GH & HB	
"	5300	TC81225	Mc Bax	K-40	190	[illegible]	
3-14-89	5400	TC81225	Mc Bax	K-40	170	[illegible]	
"	5605	68	Wy Sea	K-40	188	[illegible]	
3-15-89	5605	68	Wy Sea	K-40	200	[illegible]	
3-17-89	5668	TC223129	Mc Bax	K-40	170	GH	
"	5643	223129	Mc Bax	K-40	225	GH	
3-20-89	5605	68	Wy Sea	K-40	170	GH	
"	5605	68	Wy Sea	K-30	170	GH	
3-21-89	5773	TC25554	Wy Sea	K-40	60	GH	
"	5573	TC25554	Mc. Bax Calif	K-30	60	GH	
3-22-89	5605	68	Wy Sea	K-40	180	GH	
3-23-89	5605	68	Wy Sea	K-40	190	GH	
3-27-89	5605	68	Wy Sea	K-40	176	[illegible]	
"	5605	68	Wy Sea	K-30	176	[illegible]	
3-28-89	5605	68	Wy Sea	K-40	190	[illegible]	
"	5606	68	Wy Sea	K-30	190	[illegible]	
3-29-89	5605	68	Wy Sea	K-30	198	[illegible]	
"	5740	TC89029	McBax	K-40	60	[illegible]	
"	5696	TC89029	McBax	K-40	60	[illegible]	
3-30-89	5605	68	Wy Sea	K-40	188	[illegible]	
"	5605	68	Wy Sea	K-30	188	[illegible]	
3-31-89	5605	68	Wy Sea	K-40	184	[illegible]	
"	5605	68	Wy Sea I	K-30	184	[illegible]	
4-3-89	5605	68	Wy Sea	K-40	180	[illegible]	
"	5605	68	Wy Sea	K-30	180	[illegible]	
4-4-89	5605	68	Wy Sea	K-40	190	[illegible]	
"	5605	68	Wy Sea	K-30	190	[illegible]	
5-3-89	5605	68	Wy Sea	K-40	190	[illegible]	
"	5605	68	Wy Sea	K-30	184	[illegible]	
5-4-89	5605	68	Wy Sea	K-40	194	[illegible]	
"	5605	68	Taylor	K-30	194	[illegible]	
5-7-89	5605	68	Wy Sea	K-40	184	GH	
"	5605	68	Wy Sea	K-30	184	GH	

PAGE NO. 120

KOPPERS

Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6-71 T
200 BKS. 5-80-03
PRINTED IN U.S.A.

LOCATION _____ YB _____ DATE _____ BY _____

SUBJECT _____

Date	Gallon	From	Customer	T-T	Temp	Loader	
4-10-89	5605	68	Wy Sea	K-40	180	GH	
"	5605	68	Wy Sea	K-30	180	GH	
4-11-89	5605	68	Wy Sea	K-40	186	GH	
"	5286	Tc 89029	Mc-Bax	K-30	200	GH	
"	6306	68	Taylor	P/Motor	186	GH	
"	5286	89029	Mc Bax	K-30	200	GH	
4-12-89	5605	68	Wy Sea	K-40	190	GH	
"	5605	68	Wy Sea	K-30	190	GH	
4-13-89	5605	68	Wy Sea	K-40	182	GH	
"	5605	68	Wy Sea	K-30	182	GH	
"	5605	68	Wy Sea	K-40	188	HB	
4-14-89	5605	68	Wy Sea	K-30	190	GH	
4-17-89	5605	68	Wy Sea	K-30	174	GH	
4-18-89	5605	68	Wy Sea	K-30	172	GH	
4-19-89	App. 5000	Tc 87744	Am. Tar.	K-30	250	GH	RT-8
4-20-89	5605	68	Wy Sea	K-40	200	GH	
"	5605	68	Wy Sea	K-30	200	GH	
4-21-89	6305	68	Wy Sea	K-40	190	HB	
	App 4800	Tc 87744	Am Tar	K-30	225	HB	RT-8
4-24-89	5605	68	Wy Sea	K-40	174	HB	
"	2335	Tc 586	Spokan	K-30	200	HB & GH	
4-25-89	5605	68	Wy Sea	K-40	184	HB	
4-26-89	5605	68	Wy Sea	K-30	190	HB	
"	5726	Tc 223047	Mc Bax	K-40	160	HB	
"	5700	Tc 223047	Mc Bax	K-40	200	HB - GH	
"	4345	Tc 223047	Mc Bax	K-40	190	HB	
5-1-89	5605	68	Wy Sea	K-40	176	HB	
"	5605	68	Wy Sea	K-30	176	HB	
5-2-89	5605	68	Wy Sea	K-40	184	HB	
"	5605	68	Wy Sea	K-30	184	HB	
5-3-89	5605	68	Wy Sea	K-30	186	HB	
"	5717	Tc 223589	Mc Bax	K-40	180	HB	
"	5680	223589	Mc Bax	K-40	180	HB & GH	
"	4585	223004	Mc Bax	K-40	172	HB & GH	
5-4-89	5605	68	Wy Sea	K-30	190	HB	
"	5605	68	Wy Sea	K-40	190	HB	

Organic Materials Group
Koppers Company, Inc.

KOPPERS

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T-170 REV. 6-[illegible]
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp.	Loader
5-5-89	5605	68	Wy Sea	K-30	190	HB
5-8-89	5605	68	Wy Sea	K-30	188	GH
5-9-89	5605	68	Wy Sea	K-30	190	GH
5-10-89	5605	68	Wy Sea	K-30	190	GH
5-11-89	5605	68	Wy Sea	K-30	190	GH
5-12-89	5723	TC 223004	Mc Bax	K-40	170	GH
"	5623	TC 223004	Mc Bax	K-40	190	GH + HB
5-15-89	5605	68	Taylor	K-30	190	GH
"	App. 5000	JC 586	Cal F	K-40	260	GH + HB 15-35
5-18-89	5605	68	Wy Sea	K-30	186	GH
5-19-89	5605	68	Wy Sea	K-40	180	GH
"	5605	68	Wy Sea	K-30	180	GH
5-22-89	5605	68	Wy Sea	K-40	180	HB
"	5605	68	Wy Sea	K-30	180	HB
5-23-89	5713	TC 150005	Mc Bax	K-40	125	HB
"	5708 60°	TC 150005	Mc Bax	K-40	180	HB
"	5614	TC 150005	Mc Bax	K-40	170	HB
5-24-89	5605	68	Wy Sea	K-40	188	HB
5 "	5605	68	Wy Sea	K-30	188	HB
5-25-89	5605	68	Wy Sea	K-30	182	HB
5-26-89	5605	68	Wy Sea	K-30	186	HB
"	5502	TC 94541	Mc Bax	K-40	180	HB
"	5501	TC 94541	Mc Bax	K-40	180	GH
"	5704	"	Mc Bax	K-40	180	GH
5-30-89	5605	68	Wy Sea	K-40	168	HB
5-31-89	2800	68	Taylor	K-40	185	HB
"	5605	68	Taylor	K-30	185	HB
6-1-89	5605	68	Wy Sea	K-40	185	HB
"	5605	68	Wy Sea	K-30	185	HB
6-2-89	5605	68	Wy Sea	K-40	180	HB
"	5605	68	Wy Sea	K-30	180	HB
6-5-89	5605	68	Wy Sea	K-40	165	GH
"	5605	68	Wy Sea	K-30	165	GH
6-6-89	5605	68	Wy Sea	K-30	162	GH
"	5605	68	Wy Sea	K-40	162	GH

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Organic Materials Group
Koppers Company, Inc.

T-170 REV. 8[illegible]
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

Date	SUBJECT Gallons	From	Customer	Truck	Temp	By
6-7-89	5605	68	Wy Sea	K-30	156	GH
6-8-89	5605	68	Wy Sea	K-30	156	GH
6-9-89	App. 5400	T/C 75164	Mc Bax	K-30	180	GH
"	App. 5400	T/C 75164	Mc Bax	K-30	180	GH+HB
"	App 5300	T/C 75164	Mc Bax	K-40	180	HB+RB
6-12-89	5605	68	Wy Sea	K-40	172	GH
"	App 2300	15-35 T/C 586	Spokane	K-30	270	GH
6-13-89	5605	68	Wy Sea	K-40	178	GH
6-14-89	5605	68	Wy Sea	K-40	170	GH
"	5605	68	Wy Sea	K-30	170	GH
6-15-89	5605	68	Wy Sea	K-40	186	GH
"	5605	68	Wy Sea	K-30	186	GH
6-16-89	5605	68	Wy Sea	K-40	185	GH
"	5758	67	Mc Bax	K-30	205	GH
6-19-89	5605	68	Wy Sea	K-40	180	HB
"	5605	68	Wy Sea	K-30	180	HB
6-20-89	5605	68	Wy Sea	K-40	190	HB
"	5605	68	Wy Sea	K-30	190	HB
6-21-89	5605	68	Wy Sea	K-40	192	HB
"	5605	68	Taylor	K-30	192	HB
"	5758	67	Mc Bax	K-30	198	HB
6-22-89	5605	68	Wy Sea	K-40	180	HB
"	5605	68	Wy Sea	K-30	180	HB
6-23-89	5605	68	Taylor	K-30	186	HB
"	5673	T-79676	Mc Bax	K-40	178	HB
"	5673	"	Mc Bax	K-40	178	HB+GH
"	5673	"	Mc Bax	K-40	178	GH+HB
6-26-89	5605	68	Wy Sea	K-40	185	HB
6-27-89	5605	68	Wy Sea	K-40	188	HB
"	5605	68	Wy Sea	K-30	188	HB
6-28-89	5605	68	Wy Sea	K-40	192	HB
"	5605	68	Wy Sea	K-30	192	HB
6-29-89	5605	68	Wy Sea	K-40	186	HB
"	5605	68	Wy Sea	K-30	180	HB
6-30-89	5605	68	Wy Sea	K-30	178	HB
"	5605	68	Wy Sea	K-40	178	HB

Koppers005501

Organic Materials Group
Koppers Company, Inc.

KOPPERS

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T-170 REV. 6-81 T
200 BKS. 6-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

DATE	GALLONS	From	Customer	Truck	Temp	Loader	
SUBJECT							
6-30-89	5605	68	B.C.	P/M.Tex	198	HB	
"	5685	68	B.C.	P/M.Tex	198	HB	
7-5-89	5605	68	Taylor	K-30	180	GH	
"	2802	68	Taylor	K-40	180	GH	Truck only
"	5758	67	Mc Bax	K-30	190	GH	
7-6-89	5605	68	Wy Sea	K-30	184	GH	
"	5741@60°	T/C 56351	Mc Bax	K-40	180	GH	
"	5596@60°	T/C 56351	Mc Bax	K-40	180	GH	
"	5595@60°	T/C 56351	Mc Bax	K-40	180	GH	
7-7-89	5605	68	Wy Sea	K-40	200	GH	
"	5605	68	Wy Sea	K-30	200	GH	
7-10-89	5605	68	Wy Sea	K-40	165	GH	
"	Approx 2300	T/C 586	Spokane	K-30	270	GH	15-35
7-11-89	5605	68	Wy Sea	K-40	188	GH	
7-12-89	5605	68	Wy Sea	K-40	195	GH	
"	5605	68	Wy Sea	K-30	195	GH	
7-13-89	5605	68	Wy Sea	K-40	188	GH	
"	5605	68	Wy Sea	K-30	188	GH	
7-14-89	5605	68	Wy Sea	K-30	192	GH	
"	5647	T/C 76384	Mc Bax	K-40	176	GH	
"	5647	T/C 76384	Mc Bax	K-40	176	GH	
7-17-89	5605	68	Wy Sea	K-40	178	HB	
"	5605	68	Wy Sea	K-30	178	HB	
7-18-89	5605	68	Wy Sea	K-40	180	RHC	
"		To 511	B.C.	K-30	285	RHC	K-364
7-19-89	5605	68	Wy Sea	K-40	190	RHC	
7-20-89	5641	To 25553	Mc Bax	K-40	165	RHC	
"	5643	To 25553	Mc Bax	K-40	240	RHC	
"	5543	To 25553	Mc Bax	K-40	230	RHC	
7-21-89	5605	68	Wy Sea	K-30	194	RHC	
"	5605	68	Wy Sea	K-40	194	RHC	
7-24-89	5605	68	Wy Sea	K-40	180	RHC	
	5605	68	Wy Sea	K-30	184	RHC	
7-25-89	5605	68	Wy Sea	K-40	174	RHC	
"	4480 Approx	To 511	BC	K-30	240	RHC	K-364

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Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	Tank	Customer	T-T	Temp	Loader	
7-26-89	5605	68	Wy Sea	K-40	170	HB	
7-27-89	5605	68	Wy Sea	K-30	200	HB	
"	5605	68	Wy Sea	K-40	200	HB	
7-28-89	5605	68	Wy Sea	K-40	194	HB	
"	5605	68	Wy Sea	K-30	194	HB	
7-31-89	5605	68	Wy Sea	K-40	160	HB	
8-1-89	4716 eW	Tc 87746	BC	K-30	230	HB	K-364
"	5411	Tc 89029	Mc Bax	K-40	186	HB	
"	5737	"	Mc Bax	K-40	186	HB	
"	5737	"	Mc Bax	K-40	180	HB	
8-2-89	5605	68	Wy Sea	K-40	174	HB	
8-3-89	5605	68	Wy Sea	K-40	180	HB	
	5605	68	Wy Sea	K-30	180	HB	
8-4-89	5182	67	Mc Bax	K-40	200	HB	
8-10-89	6289	T/C 223047	Mc. Bax	Portland Motor	210	GH + HB	Clean Gr 3
8-11-89	5505	"	Mc Bax	K-40	180	GH	Galls
"	5214	"	Mc Bax	K-40	170	GH	@60°
8-14-89	5605	68	Wy Sea	K-40	184	GH	
"	5605	68	Wy Sea	K-30	184	GH	
8-15-89	5343	T/C 223559	Mc Bax	K-30	180	GH	Clean Gr 3
"	5349	Galls @60°	Mc Bax	K-30	180	GH	Clean Gr 3
8-16-89	5605	68	Wy Sea	K-30	200	GH	
"	5605	68	Wy Sea	K-40	200	GH	
8-17-89	5605	68	Wy Sea	K-40	184	GH	
"	5605	68	Wy Sea	K-30	184	GH	
8-18-89	4897	T/C 305	Tacoma	K-40	190	GH	K-364
"	4897	T/C 305	Tacoma	K-30	190	GH	K-364
8-21-89	App. 4700	T/C 537	Calif.	K-30	390	GH	Bitumen
8-23-89	App. 3500	T/C 77423	Mc Bax	K-40	190	GH	Clean Gr 3
"	App. 3500	"	"	"	185	GH	"
"	App. 3500	"	"	"	180	GH	"
8-24-89	App. 6000	68	Taylor	Port. Motor	192	GH	
"	App. 3500	T/C 77423	Mc. Bax	K-40	176	GH	
"	"	"	" "	"	"	GH	
"	5605	68	Wy Sea	K-30	200	GH	
8-25-89	5605	68	Wy Sea	K-30	200	GH	

Organic Materials Group
Koppers Company, Inc.

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T-170 REV. 6
200 BKS. 5-80
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LOCATION VI TANK DATE BY

SUBJECT Daily Gallons Tank Customer Truck Temp Loader

Date	Gallons	Tank	Customer	Truck	Temp	Loader
8-25-89	5605	68	Wy Sea	K-30	200	RB
8-26-89	5605	68	Wy Sea	K-30	200	GH
"	5605	68	Wy Sea	K-30	200	TJ
8-28-89	App. 3435	T/C 305	Am. Tar	K-40	190	GHRB
"	B. Tumen	T/C 537	Cal F	K-30	425	GH
"	5605	68	Wy Sea	K-40	190	RB
8-29-89	5605	68	Wy Sea	K-40	180	GH
"	5605	68	Wy Sea	K-40	190	RB
8-30-89	5605	68	Wy Sea	K-40	190	GH
"	5605	68	Wy Sea	K-40	200	RB
8-31-89	5605	68	Wy Sea	K-40	192	GH
9-5-89	5605	66	Wy Sea	K-40	190	GH
9-6-89	5751	To 77423	McBax	K-40	200	HB
"	5675	"	McBax	K-40	200	GH
"	App 5700	67	McBax	K-40	195	RB
9-7-89	5605	68	Wy Sea	K-40	190	GH
9-8-89	5605	68	Wy Sea	K-40	192	GH
"	5605	68	Taylor	K-30	192	HB
"	5605	68	Wy Sea	K-40	192	GH
9-11-89	5605	68	Wy Sea	K-40	192	JO
"	6505	64	Wy Sea	K-30	192	JO
9-12-89	6505	68	Wy Sea	K-40	192	JO
9-14-89	4842	To 823166	Tacoma	K-40	200	JO
9-15-89	6505	68	Wy Sea	K-40	180	HB
9-15-89	6505	68	Wy Sea	K-30	180	HB
9-15-89	6505	68	Wy Sea	K-40	180	RB
9-15-89	6505	68	Wy Sea	K-30	180	RB
9-16-89	6505	68	Wy Sea	K-40	170	JO
9-16-89	6505	68	Wy Sea	K-30	170	JO
9-18-89	6505	68	Wy Sea	K-40	175	HB
9-18-89	6505	68	Wy Sea	K-30	175	HB
"	6505	68	Wy Sea	K-30	175	RB
9-19-89	6505	68	Wy Sea	K-30	170	RB
9-19-89	6505	68	Wy Sea	K-40	170	JO
9-20-89	6505	68	Wy Sea	K-40	175	JO
9-21-89	6505	68	Wy Sea	K-30	175	TJ

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180480
170820

48150
48250
48500

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Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	Loader
9-21-89	5605	68	Wy Sea	K-40	180	HB
9-22-89	5605	68	Wy Sea	K-40	186	HB
"	6721	79680	Bc Bax	Blueline	170	HB
"	6684	79680	"	"	200	HB
"	5605	68	Wy Sea	K-40	186	TJ
9-23-89	5605	68	Wy sea	K-40	180	J.O.
9-25-89	5605	68	Wy sea	K-40	180	GH
"	5605	68	Wy sea	K-30	180	GH
"	3902	T/C 79680	Bc Bax	K-20	188	HB
9-26-89	5605	68	Wy Sea	K-40	190	GH
"	App 5000	T/C 537	Calif.	K-20	430	GH+HB B.Tumen
"	5605	68	Wy Sea	K-40	190	J.O.
9-27-89	5605	68	Wy Sea	K-40	200	GH
"	App 5000	T/C 511	Tacoma	K-30	280	GH K-364
9-28-89	5605	68	Wy Sea	K-30	190	GH
"	5605	68	Wy Sea	K-40	190	GH
"	5605	68	Wy Sea	K-30	186	HB
9-29-89	5605	68	Wy Sea	K-40	190	GH
"	5605	68	Wy Sea	K-30	190	GH
"	5605	68	Wy sea	K-40	192	R.B.
"	5605	68	Wy Sea	K-30	192	RB
10-2-89	5605	68	Wy Sea	K-40	180	GH
"	5605	68	Wy Sea	K-30	180	GH
"	App 4500	T/C 536	Calif	K-20	450	GH+HB K-364
10-3-89	5605	68	Wy Sea	K-30	180	J.O
10-3-89	5605	68	Wy Sea	K-40	180	GH
10-4-89	App 4500	T/C 511	Am Tar	K-40	350	GH+HB RT-8
10-5-89	5605	68	Wy sea	K-30	170	GH
"	5605	68	Wy sea	K-20	170	GH
"	App 4500	T/C 536	Tacoma	K-30	270	GH+HB K-364
10-6-89	5605	68	Wy sea	K-30	178	RB
"	App 5000	T/C 511	Am Tar	K-40	210	GH RT-8
"	App 5500	T/C 79981	Mc Bax	K-20	200	HB Clean Gr. 3
"	App 5500	T/C 79981	Mc Bax	K-20	200	GH "
"	App 5500	T/C 79981	Mc Bax	K-20	200	GH "

Organic Materials Group
Koppers Company, Inc.

KOPPERS

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T-170 REV. 6-
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

Date	Gallons	From	Customer	T/T	Temp	Loader
10-9-89	5605	68	Wy Sea	K-40	178	HB
"	App 4200	T/C 537	Calif	K-20	440	GH, HB Bitumen
10-10-89	5605	68	Wy Sea	K-30	176	HB
"	5605	68	Wy Sea	K-40	178	HB
10-11-89	5605	68	Wy Sea	K-30	190	HB
"	5605	68	Wy Sea	K-40	190	HB
10-12-89	5605	68	Wy Sea	K-30	180	HB
"	5605	68	Wy Sea	K-40	180	HB
10-13-89	5605	68	Wy Sea	K-40	190	HB
"	5605	68	Wy Sea	K-30	190	RB
10-16-89	5605	68	Wy Sea	K-30	180	HB
"	5605	68	Wy Sea	K-40	180	HB
"	App 4200	T/C 87743	Calif	K-20	420	GH HB RB
10-17-89	5605	68	Wy Sea	K-30	190	HB
"	5605	68	Wy Sea	K-40	190	HB
10-18-89	5605	68	Wy Sea	K-40	190	HB
10-19-89	5605	68	Wy Sea	K-30	180	HB
"	5605	68	Taylor	K-40	180	HB
"	5605	68	Wy Sea	K-40	190	GH
10-20-89	5605	68	Wy Sea	K-30	186	HB
"	5605	68	Wy Sea	K-40	192	GH
10-23-89	5605	68	Wy Sea	K-40	170	GH
10-24-89	App 4200	T/C 76384	Calif West-Colaid		240	GH+RB 15-35
"	App 4500	T/C 511	Am. Tar	K-40	220	GH+RB RT-8
10-23-89	App 5000	T/C 87743	Calif	K-20	480	GH+HB Bitumen
10-25-89	App 5500	T/C 93732	Mc. Bax	K-40	170	GH Clean 3
"	App 5500	T/C 93732	Mc. Bax	K-40	190	GH Clean 3
"	App 5500	"	Mc. Bax	K-40	190	HB Clean 3
10-26-89	5605	68	Wy Sea	K-40	186	GH
10-27-89	5605	68	Wy Sea	K-40	180	GH
10-30-89	5605	68	Wy Sea	K-40	176	GH
"	5605	68	Wy Sea	K-30	176	GH
10-31-89	5605	68	Taylor	K-40	180	GH
11-1-89	5605	68	Wy Sea	K-30	172	RB
11-2-89	5605	68	Wy Sea	K-30	194	GH
"	5605	68	Taylor	K-20	194	GH

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KOPPERS

Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6-81
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

Date	Subject	Gallons	From	Customer	T/T	Temp	Loader
11-3-89		5605	68	Wy Sea	K-30	190	GH
11-6-89		5605	68	Wy Sea	K-30	160	[illegible]
11-7-89		5605	68	Wy Sea	K-20	200	[illegible]
"		5725	TC78462	Mc Bax	K-40	200	[illegible]
"		5248 App	D84628	Mc Bax	K-40	195	[illegible]
"		5245	78462	Mc Bax	K-40	190	[illegible]
11-8-89		5605	68	Wy Sea	K-40	180	[illegible]
11-9-89		5605	68	Wy Sea	K-40	178	[illegible]
11-13-89		5605	68	Wy Sea	K-30	160	[illegible]
11-14-89		5605	61	Wy Sea	K-30	190	[illegible]
11-15-89		5605	68	Wy Sea	K-30	194	[illegible]
11-16-89		5605	68	Wy Sea	K-30	190	JO
11-17-89		5605	68	Wy Sea	K-40	180	JO
11-17-89		5605	68	Wy Sea	K-30	180	JO
11-20-89		App. 5000	T/C 537	Cal. F.	K-20	450	GH Bitumen
11-27-89		App. 5000	T/C 537	Cal. F	K-20	490	GH Bitumen
11-28-89		App. 5000	T/C 511	Am. Tar	K-40	120	GH RTS
11-30-89		5605	T/C 76295	Mc Bax	K-40	200	JO
11-30-89		5605	T/C 76295	Mc Bax	K-40	200	JO
11-30-89		5605	T/C 76295	Mc Bax	K-40	200	JO
11-30-89		5605	T/C 511	Am Tar	K-40	200	RB RT-8
12-4-89		5605	T-68	Wy Sea	K-30	200	HB & GA
12-5-89		5605	T-68	Wy Sea	K-30	174	JO
12-6-89		5605	T-68	Wy Sea	K-30	184	JO
12-7-89		5605	T-68	Wy Sea	K-30	194	JO
12-7-89		5605	T-68	Wy Sea	K-20	194	RB
12-8-89		5605	T-68	Wy Sea	K-40	192	JO
12-11-89		App 4900	T/C 537	Cal. F	K-30	440	GH Bitumen
"		App 4900	T/C 537	Cal. F	K-30	440	GH Bitumen
12-12-89		App 6656	T-68	Taylor Ra	Ford M	Tons	GH
12-13-89		App 4900	T/C 537	Cal. F	K-30	425	GH Bitumen
12-14-89		App 5600	T/C 8908	Cal. F	K-40	205	GH Bitumen
12-18-89		App 4900	T/C 201	Cal. F	K-30	450	Bitumen
12-19-89		App. 5500	T/C 75164	Mc Bax	K-40	180	GH
"		App. 5500	T/C 75164	Mc Bax	K-40	180	GH
"		App. 5500	T/C 75164	Mc Bax	K-40	180	GH

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LOCATION _____ TAC DATE _____ BY _____

SUBJECT

Date	Gallons	From	Customer	T/T	Temp	Loader
12-20-89	App. 5579	TC 89029	Cal. F	K-40	210	Clean 3 GH
12-22-89	App. 5700	TC 89029	Cal. F	K-40	210	Clean 3 GH
12-27-89	5605	68	Wy Sea	K-30	186	[illegible]
"	5605	68	Wy Sea	K-40	186	[illegible]
12-28-89	Apr 5600	TC 89029	OREville	K-40	205	[illegible]
"	5605	68	Taylor	K-30	196	[illegible]
"	5605	68	Wy Sea	K-20	196	[illegible]
"	5605	68	Wy Sea	K-30	205	GH
12-29-89	5605	68	Wy Sea	K-20		
1-3-90	Apr 5500	TC 25097	OREville	K-30	194	[illegible]
"	5605	68	Wy Sea	K-40	150	[illegible]
"	Apr 5000	TC 537	CALIS	K-20	460	[illegible]
1-8-90	Apr 5400	TC 89029	Oreville Cal. F	K-30	190	GH Clean 3
"	Apr 5400	TC 89029	" "	K-40	190	GH Clean 3
1-9-90	5605	68	Wy Sea	K-20	180	GH
1-10-90	2954	TC 89029	Cal. F	K-40	60°	GH Clean 3
1-10-90	2684	TC 76348	Cal. F	K-40	60°	GH 15-35
1-15-90	5605	68	Wy Sea	K-30	180	J O
"	5605	68	Wy Sea	K-40	180	J O
"	Apr 5000	TC 537	Cal. F	K-20	490	B Tanner GH
1-16-90	5605	68	Wy Sea	K-30	180	GH
"	5605	68	Wy Sea	K-40	180	GH
1-17-90	5605	68	Wy Sea	K-30	186	GH
"	5605	68	Wy Sea	K-40	186	GH
1-18-90	5605	68	Wy Sea	K-30	186	GH
"	5605	68	Wy Sea	K-40	186	GH
1-19-90	5605	68	Wy Sea	K-30	182	GH
"	5605	68	Wy Sea	K-40	182	GH
1-22-90	5605	68	Wy Sea	K-30	180	[illegible]
"		TC 79686	McBax	K-40	101	[illegible]
"		TC 79686	McBax	K-40	150	[illegible]
1-23-90	5605	68	Wy Sea	K-30	190	[illegible]
"		TC 79686	McBax	K-40	180	[illegible]
		TC 79686	McBax	K-40	180	" "
1-24-90	5605	68	Wy Sea	K-30	190	[illegible]

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	Loader	Pro
1-29-90	48,340 Lb	Tc 537	Calif	K-20	460	HB+GH	Bitumen
2-1-90	5605	68	Wy Sea	K-40	186	HB	
2-2-90	6306	68	Wy Sea	K-40	170	HB	
2-5-90	5605	68	Wy Sea	K-40	170	GH	
2-6-90	5605	68	Wy Sea	K-40	180	GH	
2-7-90	App-5400	T/C 25554	Mc-Bax	K-40	200	GH	
"	App 5400	"	Mc Bax	K-40	190	GH	
"	App 5400	"	Mc Bax	K-40	190	GH	
2-9-90	5605	68	Wy Sea	K-40	160	GH	
2-14-90	6306	68	Wy Sea	K-40	200	GH+HB	
2-16-90	6306	68	Wy Sea	K-40	176	GH	
2-21-90	5605	68	Wy Sea	K-40	166	HB	
2-22-90	5605	68	Wy Sea	K-40	155	HB	
2-23-90	5605	68	Wy Sea	K-40	174	HB	
2-26-90	5605	68	Wy Sea	K-40	174	HB	
2-27-90	5605	68	Wy Sea	K-40	206	HB	
"	5605	68	Calif	K-20	206	GH	
2-28-90	5596	Tc 88943	McBax	K-40	202	JO	
	5640	Tc 88943	McBax	K-40	200	GH	
	5623	Tc 88943	McBax	K-40	200	HB	
3-2-90	5605	68	Wy Sea	K-40	180	HB	
3-5-90	5605	68	Wy Sea	K-40	180	GH	
3-6-90	5605	68	Wy Sea	K-40	190	GH	
3-7-90	5605	68	Wy Sea	K-40	190	GH	
"	48,340 Lbs	T/C 537	Calif	K-20	450	GH+RB	Bitumen
3-8-90	5605	68	Wy Sea	K-40	190	GH	
3-9-90	5605	68	Wy Sea	K-40	192	GH	
3-13-90	5605	68	Wy Sea	K-30	175	GH	
3-14-90	5605	68	Wy Sea	K-30	180	GH	
3-15-90	5605	68	Wy Sea	K-30	200	GH	
3-16-90	App 5400	T/C 223057	Mc Bax	K-40	166	GH	
"	"	"	"	"	200	GH	
"	"	"	"	"	212	GH	
3-19-90	5605	68	Wy Sea	K-30	170	HB	
"	48,420 Lb	Tc 537	Calif	K-20	470	HB+GH	RB Bitumen

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	Loader	Pro
3-20-90	5605	68	Wy Sea	K-30	180	RB	
3-21-90	5605	68	Wy Sea	K-30	190	RB	
3-22-90	5605	68	Wy Sea	K-30	198	RB	
"	5605	68	Wy Sea	K-30	188	RB-GH	
3-26-90	5605	68	Taylor	K-30	176	RB	
"	5605	68	WY-SEA	K-30	186	R.B.	
"	5605	68	WY-SEA	K-20	235	RB-GH	
3-28-90	5605	68	Wy SEA	K-30	190	RB	
"	5605	68	Wy Sea	K-20	202	RB-GH	
3-29-90	5605	68	Wy Sea	K-30	200	RB	
"	5557	TC 88942	Mc Bax	K-40	190	RB	
"	5538	TC 88942	Mc Bax	K-40	186	GH	
"	5470	67	Mc Bax	K-40	210	HB-GH	Sludge
"	5605	68	Wy Sea	K-20	206	GH	
"	5605	68	Wy Sea	K-30	206	GH	
4-2-90	5605	68	Wy Sea	K-30	180	GH	
"	5605	68	Wy Sea	K-30	186	GH	
4-3-90	5605	68	Wy Sea	K-30	190	GH	
4-4-90	5605	68	B.C	K-40	186	GH	
4-9-90	5605	68	Wy Sea	K-20	176	GH	
"	5605	68	B-C	K-40	190	GH-RB	
4-10-90	5605	68	Wy Sea	K-20	184	GH	
4-11-90	5605	68	Wy Sea	K-20	176	GH	
4-12-90	5605	68	Wy Sea	K-20	184	GH	
"	App 5540	TC 223589	Mc-Bax	K-40	190	GH	
"	App 5538	"	"	"	"	GH	
"	App 4000	"	"	"	220	GH	
"	App 2802	68	"	"	190	RB	
4-16-90	5605	68	Wy Sea	K-20	160	GH	
"	5605	68	Wy Sea	K-30	160	GH	
4-17-90	5605	68	Wy Sea	K-30	174	RB	
"	5605	68	Wy Sea	K-20	174	RB	
4-18-90	5605	68	Wy Sea	K-30	190	RB	
"	4905	68	Wy Sea	K-20	190	RB	
4-19-	5605	68	Wy Sea	K-30	180	RB	
"	4804800	TC 87745	Am Tar	K-30	210	RB	RT-9

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SUBJECT _____

DATE	GALLON	From	Customer	T-T	Temp	Loader	
4-20-90	5605	68	Wy Sea	K-20	190	HB	
"	5605	68	Wy Sea	K-30	190	HB	
4-23-90	5605	68	Wy Sea	K-20	150	HB	
	5605	68	Wy Sea	K-30	150	HB	
4-24-90	5605	Tc 11748	Wy Sea	K-30	190	HB	
4-25-90		Tc 11748	Wy Sea	K-30	155	HB	
4-26-90		T-3034	McBAX	K-40	60	HB	Solvent + Methyl
"	5605	Tc 11748	McBAX	K-40		RB	
"		Tc 11748	McBAX	K-40		HB	300 pH dec
4-27-90		Tc 87422	Wy Sea	K-3	185	HB	
4-30-90	5605	68	Wy Sea	K-30	180	GH	
5-1-90	5605	68	Wy Sea	K-30	210	GH	
5-2-90	5605	68	Wy Sea	K-20	190	GH	
"	5605	68	Wy Sea	K-30	190	GH	
5-3-90	5605	68	Wy Sea	K-20	180	GH	
"	5605	68	Wy Sea	K-30	180	GH	
5-4-90	5614	67	Wy Sea	K-20	170	GH	
"	5614	67	Wy Sea	K-30	170	GH	
5-7-90	5614	67	Wy Sea	K-20	164	GH	
5-8-90	5614	67	Wy Sea	K-20	186	GH	
5-9-90	5614	67	Wy Sea	K-20	186	GH	
"	5614	67	Wy Sea	K-30	186	GH	
5-10-90	App. 2300	87744	Spokane	K-30	195	GH	15-35
5-14-90	5614	67	Wy Sea	K-30	170	HB	
5-15-90	5614	67	Wy Sea	K-30	176	HB	
5-16-90	5614	67	Wy Sea	K-20	180	HB	
"	5614	67	Wy Sea	K-30	180	HB	
5-17-90	5614	67	Wy Sea	K-20	189	HB	
"	5614	67	Wy Sea	K-30	189	HB	
5-18-90	5614	67	Wy Sea	K-20	186	HB	
"	5614	67	Wy Sea	K-30	186	HB	
5-21-90	5614	67	Wy Sea	K-20	172	HB	
"	5614	67	Taylor	K-30	172	HB	
5-22-90	5614	67	Wy Sea	K-20	184	HB	
"		67	Wy Sea	K-30	184	HB	

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LOCATION _____ START DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp.	Loaded
5-23-90	5470	67	Wy Sea	K-30	178	MB
5-24-90	5614	67	Wy Sea	K-30	180	MB
"	5614	67	Dalles	K-20	180	MB
"	5614	67	Dalles	K-20	186	MB
5-25-90	5614	67	Wy Sea	K-30	184	MB
5-29-90	5614	67	Dalles	K-20	164	GH
"	5614	67	Dalles	K-30	164	GH
"	5614	67	The Dalles	K-20	180	GH
"	5614	67	" "	K-30	180	GH
5-30-90	5614	67	The Dalles	K-20	190	GH
"	5614	67	" "	K-30	190	GH
"	5614	67	Taylor	K-30	190	RB
6-4-90	5614	67	Wy Sea	K-20	164	GH
"	5614	67	Wy Sea	K-30	164	GH
6-5-90	5614	67	Wy Sea	K-20	180	GH
"	5614	67	Wy Sea	K-30	180	GH
6-7-90	5614	67	Taylor	K-20	180	GH
"		79978	Mc Bax	K-40	180	RB
"		"	Mc Bax	K-40	210	GH
"		"	Mc Bax	K-20	220	TJ
"		T-99+T-3-T3	Mc Bax	K-40		GH+RB Blend
6-6-90	5614	67	Wy Sea	K-20	174	GH
"	5614	67	Wy Sea	K-30	174	GH
6-11-90	5614	67	Wy Sea	K-30	164	GH
"	5614	67	The Dalles	K-20	164	GH
6-12-90	5614	67	Wy Sea	K-30	180	MB
"	5614	67	Wy Sea	K-20	180	MB
6-13-90	5614	67	Wy Sea	K-20	170	MB
"	5614	67	Wy Sea	K-30	170	MB
6-14-90	5614	67	Wy Sea	K-30	184	MB
"	5614	67	Wy Sea	K-20	184	MB
6-15-90	5614	67	Wy Sea	K-20	170	MB
"	5614	67	Wy Sea	K-30	170	GH
6-18-90	5326	67	Wy Sea	K-20	150	GH
6-19-90	5470	67	Wy Sea	K-20	188	MB
6-21-90	5470	67	Wy Sea	K-20	180	MB

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SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	Handler	
6-22-90	5470	67	Taylor	K-20	196	HB	
6-25-90	5614	67	The Dalles	K-20	184	GH	
"	5614	67	Dalles	K-20	184	GH	
6-27-90	5614	67	The Dalles	K-20	172	GH	
"	5614	67	Taylor	K-20	180	GH + HB	
6-28-90	5614	67	The Dalles	K-20	179	GH	
"	5470	67	Wy Sea	K-20	184	HB	
7-2-90	5614	67	Wy Sea	K-20	180	GH	
"	5614	67	Wy Sea	K-30	180	GH	
7-3-90	5614	67	Wy Sea	K-20	184	GH	
"	5614	67	Wy Sea	K-30	184	GH	
7-5-90	5614	67	Wy Sea	K-20	184	GH	
"	5614	67	Wy Sea	K-30	184	GH	
7-6-90	5614	67	Wy Sea	K-30	185	GH	
7-9-90	5614	67	Wy Sea	K-20	176	HB	
"	5614	67	Wy Sea	K-30	176	HB	
7-10-90	5614	67	Wy Sea	K-20	188	HB	
"	App 5100	Tc 26384	McBax	K-30	220	HB	Sludge
"	App 5200	"	McBax	K-30	220	HB	"
"	1000	"	McBax	K-30	200	HB	"
"	5614	67	Wy Sea	K-30	200	[illegible]	
7-11-90	5614	67	Wy Sea	K-30	190	HB + GH	
"	5614	67	Wy Sea	K-20	190	HB + GH	
7-16-90	5614	67	Wy Sea	K-20	180	HB	
"	5614	67	Wy Sea	K-30	180	HB	
7-17-90	5614	67	Wy Sea	K-20	184	HB	
"	5614	67	Wy Sea	K-30	184	HB	
7-18-90	5614	67	Wy Sea	K-20	180	HB	
"	5614	67	Wy Sea	K-30	180	HB	
7-19-90	5614	67	Taylor	K-20	190	HB	
"	5696	Tc 26218	McBax	K-40	188	HB	
"	5703	"	McBax	K-40	200	GH	
"	5690	"	McBax	K-40	202	HB + GH	
7-20-90	5614	67	Wy Sea	K-30	182	HB	

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SUBJECT _____

Date	Gallons	From	Customer	T/T	Temp	Loader
7-23-90	5614	T-67	Wy Sea	K-20	174	GH
"	5614	T-67	Wy Sea	K-30	174	GH
7-24-90	5614	T-67	Wy Sea	K-20	184	GH
"	5614	T-67	Wy Sea	K-40	184	GH
8-1-90	5614	T-67	Wy Sea	K-30	174	GH
"	5614	T-67	Taylor	K-20	174	GH
8-2-90	5614	T-67	Wy Sea	K-20	193	GH
"	5614	T-67	Wy Sea	K-30	193	GH
8-3-90	5614	T-67	Wy Sea	K-20	182	GH
"	5614	T-67	Wy Sea	K-30	182	GH
8-6-90	5614	T-67	Wy Sea	K-[redacted]	180	[illegible]
8-6-90	5614	T-67	Wy Sea	K-[redacted]	180	[illegible]
8-7-90	5614	T-67	Taylor	K-20	184	[illegible]
"	5614	T-67	Wy Sea	K-30	184	[illegible]
"	5614	T-[redacted]	Wy Sea	K-20	184	[illegible]
8-8-90	5614	T-67	Wy Sea	K-30	180	[illegible]
"	5614	T-67	Wy Sea	K-20	180	[illegible]
8-9-90	5758	T-67	Wy Sea	K-30	178	[illegible]
8-13-90	5614	T-67	Wy Sea	K-30	186	[illegible]
8-14-90	5614	T-67	McBax	K-40	186	[illegible]
"	5614	T-67	Wy Sea	K-30	186	[illegible]
8-15-90	5663	T-78887	McBax	K-40	196	[illegible]
"	5660	"	McBax	K-40	196	[illegible]
"	5606	"	McBax	K-40	194	[illegible]
8-16-90	5614	T-67	Taylor	K-30	196	[illegible]
"	5614	T-67	Wy Sea	K-30	194	[illegible]
8-24-90	5614	T-67	Taylor	P. Motors	176	[illegible]
8-27-90	5614	T-67	Wy Sea	K-30	175	GH
"	5614	T-67	Wy Sea	P/Motors	175	GH
8-28-90	5706	T/T 38612	McBax	K-40	165	RB
"	5614	67	Wy Sea	P/Motors	180	GH
"	5656	T/T 38612	McBax	K-40	210	GH+RB
"	5440	"	"	"	200	GH+RB
8-29-90	5614	67	Wy Sea	K-30	184	GH
"	5614	67	Taylor	Blue Line	184	GH
8-31-90	4744 @ 60°	T-87745	Am. Tank	K-30	180	GH+RB

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LOCATION _____ DATE _____ BY _____

SUBJECT

DATE	Gallons	From	Customer	T/T	Temp	By
9-4-90	6,046	67	Wy Sea	Port/Motor	170	GH
"	6,046	67	Taylor	" "	170	GH
" 15-35	App. 2200	T/C 87744	Calif	K-30	300	HB
"	Bitumen	T/C 537	Calif	P/Motor	450	HB
9-5-90	6,046	67	Wy Sea	K-40	182	GH
"	6,046	67	Wy Sea	P/Motor	182	GH
9-6-90	6,046	67	Wy Sea	K-40	180	GH
"	6,046	67	Wy Sea	P/Motor	180	GH
9-7-90	6,297	67	Wy Sea	K-40	176	GH
"	6,298	67	Wy Sea	P-Motor	176	GH
9-10-90	67[illegible]	67	Wy Sea	K-40	182	HB
"	[illegible]	T/C 53[illegible]	Tocoma	K-30	310	[illegible]
9-11-90	5614	67	Wy Sea	K-30	192	HB
	5614	67	Wy Sea	K-40	192	HB
9-12-90	5614	67	[illegible]	K-40	178	HB
	5614	67	[illegible]	K-30	178	HB
9-13-90	5614	67	Wy Sea	K-30	180	HB
9-14-90	5614	67	Wy Sea	K-30	182	HB
9-17-90	5614	67	Wy Sea	K-30	174	HB
9-18-90		T/C 223589	Mc Bax	K-30	180	HB
"	20,603 @60°	"	"	K-30	210	GH
"		"	"	K-30	220	GH
"		"	"	K-30	220	GH
"	5527	3 Methyl	McBax	K-30	60	GH
9-19-90	RT-8	T/C 536	Am Tar	K-30	250	HB
"	Bitumen	T/C 201	Calif	Blueline	330	HB
9-20-90	5614	67	Wy Sea	K-30	190	HB
9-24-90	5614	67	Wy Sea	K-40	180	GH
"	Bitumen	Kebx 201	Calif	K-30	420	GH
9-25-90	5614	67	Wy Sea	K-40	180	GH
9-26-90	5614	67	Wy Sea	K-40	180	GH
9-27-90	5614	67	Wy Sea	K-40	180	GH
"	5216	T/C 642211	Mc Bax	K-30	190	GH
"	5201	"	Mc Bax	K-30	210	GH
"	5201	"	Mc Bax	K-30	200	GH
"	3545	"	"	"	200	RB

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LOCATION _____ DATE _____ BY _____

SUBJECT

Date	Gallons	From	Customer	T-J	Temp	Loader
9-28-90	5614	67	Wy Sea	40	180	GH
10-1-90	5614	67	Wy Sea	40	162	GH
"	5614	67	Wy Sea	20	188	HB+GH
"	5614	67	Wy Sea	40	190	HB
"	Bitumen	Tc 87743	Calif	30	450	HB+TJ
10-3-90	5614	67	Wy Sea	40	184	HB
10-4-90	5614	Tc 56351	Wy Sea	30	170	HB+TJ
"	Roofing	Tc 87747	Calif	20	455	HB+TJ
10-5-90	5614	Tc 56351	Wy Sea	30	190	GH
10-8-90	"	"	Wy Sea	30	190	HB+GH
"	Bitumen	Tc 87743	Calif	20	460	HB+TJ
10-9-90	5614	Tc 56351+67	Wy Sea	30	200	HB+GH
10-10-90	5614	67	Wy Sea	30	178	HB
10-11-90	5614	67	Wy Sea	30	184	HB
10-12-90	5614	67	Wy Sea	30	182	HB
10-15-90	5614	67	Wy Sea	30	160	GH
"	Bitumen	Tc 87744	Calif	20	450	HB+TJ
10-16-90	Type I Roofing	Tc 87748	Calif	30	420	HB
10-17-90	Clean 3	Tc 641996	McBax	40	192	HB
"	Rec.	"	Mc Bax	40	200	HB
"	19,875	"	Mc Bax	40	200	GH
"	@ 60°	"	Mc Bax	40	220	GH
10-18-90	Tc 87743	Type III Bitumen	Calif	20	460	HB+TJ
10-19-90	5614	67	Taylor	30	184	HB
10-22-90	5614	67	Wy Sea	30	170	GH
10-23-90	5614	67	Wy Sea	30	172	GH
"	Tc 87747 old style pitch		Calif	20	450	GH+HB
10-24-90	Tc 642213 Clean P1-P13		Mc-Bax	40	190	GH
"	"	"	"	40	200	GH
"	Rec 18,299 Galls @ 60°		"	40	200	GH
"	"	"	"	40	210	GH
"	old style pitch	Tc 87747	Calif	30	450	HB+[illegible]
10-25-90	5614	67	Taylor	40	178	GH
10-29-90	5614	67	Wy Sea	30	172	GH
"	5614	67	Wy Sea	20	174	GH
10-30-90	5614	67	Wy Sea	30	180	GH

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KOPPERS

Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6-71-T
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

SUBJECT

Date	Gallons	From	Customer	T/T	Temp	By
10-31-90	5614	67	Wy Sea	30	180	GH
11-1-90	5614	67	Wy Sea	30	186	GH
11-5-90	5614	67	Wy Sea	30	172	HB
"	5614	67	Wy Sea	20	172	HB
"	5659	Tc 642210	Bc BAX	40	190	HB
	5682	"	"	40	200	HB
	5621	"	"	40	206	RB
	3606	"	"	40	210	RB
11-6-90	5614	67	Wy Sea	K-30	180	HB
	5614	67	Wy Sea	K-40	180	HB
11-7-90	5614	67	Wy Sea	K-40	184	HB
"		Tc 87743	Calif	K-20	365	HB TJ
"		Tc 87743	Calif	K-30	370	HB TJ
11-13-90	5614	67	Wy Sea	K-40	180	HB
"		Tc 537	L.A. Calif	K-30	445	HB [illegible]
"		Tc 87743	Calif	K-20	405	[illegible] TJ
11-14-90		67	Bc BAX	K-40	190	HB
"	20,720	67	Mc Bax	K-40	196	HB
"		67	Mc Bax	K-40	196	HB
"	Track only	67	Mc Bax	K-40	196	GH
" Methyl	3100	3 Trailer	Mc Bax	K-40	60	GH
11-15-90	5614	67	Wy Sea	K-40	190	GH
11-16-90	5614	67	Wy Sea	K-40	180	GH
11-19-90	5614	67	Wy Sea	K-30	176	GH
11-19-90	10,773	Tc 642206	Calif.	K-20	200	GH
" "		Clean P1-P13		K-40	200	GH
11-20-90	5614	67	Wy Sea	K-30	180	GH
11-21-90	5614	67	Mc Bax	K-30	220	RB
11-26-90	5605	68	Taylor	K-30	178	GH
"	5605	68	Wy Sea	K-40	178	GH
"	5614	67	Wy Sea	K-30	170	GH
11-27-90	5614	67	Wy Sea	K-40	170	GH
11-28-90	5614	67	Wy Sea	K-30	180	GH
"	5614	67	Wy Sea	K-40	180	GH

Organic Materials Group
Koppers Company, Inc.

KOPPERS

T-170 REV. 6
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

	GALLONS	From	Customer	T-T	Temp	By
12-3-90		Tc 642208	Kopper F.R.	K-40	200	HB
"	16,124 Gals	642208	" "	K-30	200	HB
"	@60°	642208	" "	K-20	200	GH
12-6-90	5605	68	Taylor	K-30	174	HB
"		T/C 642211	Mc Bax	K-40	184	GH
"	5605	68	Wy Sea	K-30	180	HB
12-7-90	6306	68	Taylor Port-Motor		185	GH
"		T/C 642211	Mc Bax	K-40	200	HB
"	20,344	T/C 642211	Mc Bax	K-40	200	HB
"		T/C 642211	Mc Bax	K-40	200	HB
12-10-90	5605	68	Wy Sea	K-30	176	HB
12-10-90	5605	68	Wy Sea	K-40	176	HB
12-11-90	5605	68	Wy Sea	K-30	180	HB
12-12-90	10,896	Tc 642206	Kopper F.R.	K-30	200	HB
"		642206	" "	K-40	200	GH
12-17-90	5605	68	Wy Sea	K-30	168	GH
"	5605	68	Taylor	K-40	168	GH
12-18-90	5605	68	Wy Sea	K-40	170	GH
"	5175	T/C 642207	Calif	K-20	200	GH
"	5206	"	"	K-30	200	GH
12-20-90	5604	T/C 642206	Mc Bax	K-40	200	GH
"	6049		Mc Bax	K-40	200	GH
12-21-90	5605	68	Mc Bax	K-40	170	GH
"	5605	68	Taylor Port. Motor		170	GH
"	5605	68	Mc Bax	K-40	170	GH
12-27-90	5605	68	Wy Sea	K-30	150	GH
"	5605	68	Wy Sea	K-20	150	GH
"	5605	68	Taylor	K-40	150	GH
1-21-91		Tc 536	Calif	K-30	280	GH HB K-45 35
2-1-91	2300	17	Kent	K-40	190	HB GH
2-4-91	5605	68	Wy Sea	K-40	174	HB
" "	5605	68	Taylor	K-30	174	HB
2-5-91	5862	99	McBax	K-40	70	GH [illegible]
"	5626	Tc 77418	Mc Bax	K-40	184	[illegible]
"	5606	T/C 77418	Mc Bax	K-40	200	GH & HB

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Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6-81 I-7
200 SHTS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT Gallows From Customer T/T Temp Bar

Date							
2-6-91	5637	T/C 77418	Mc Bax	K-40	200	GH+HB
"	3439	T/C 77418	Mc Bax	K-40	186	GH+HB
"	5605	68	Wy Sea	K-40	182	GH+HB
2-7-91	5605	68	Wy Sea	K-40	180	GH+HB
2-11-91	5605	68	Wy SeA	K-40	184	HB
2-12-91	5605	68	Wy Sea	K-40	182	HB
2-13-91	5605	68	Wy Sea	K-20	178	HB
2-15-91	5606	68	Wy Sea	K-20	181	HB
"	5605	68	Wy Sea	K-30	186	HB
2-19-91	5605	66	Wy Sea	K-20	170	GH
"	5758	67	Mc Bax	K-30	165	GH
2-20-91	5605	68	Wy Sea	K-20	180	GH
2-25-91	5605	68	Wy Sea	K-20	176	GH
2-26-91	5605	68	Wy Sea	K-20	181	GH
3-1-91	5605	68	Wy Sea	K-20	190	GH
3-5-91	5182	67	McBAX	K-20	162	GH
"	5605	68	Wy Sea	K-20	174	HB
3-8-91	5420	67	Mc Bax	K-20	160	GH+HB
3-11-91	5605	68	Wy SeA	K-20	160	HB
3-12-91	5605	68	Wy SeA	K-20	162	HB
3-13-91	2826	17	Fc Lds	K-40	208	HB+RB
"	5605	68	Wy SeA	K-20	182	HB
3-14-91	5605	68	Wy Sea	K-20	186	HB
3-15-91	5605	68	Wy Sea	K-20	188	GH
3-19-91	5605	68	Wy Sea	K-20	184	GH
3-20-91	5295@60°	T/C 79979	Mc Bax	K-20	196	GH
"	5710@60	"	"	K-40	194	GH+HB
"	4687@60	"	"	K-40	200	GH+RB
3-21-91	5605	68	Wy Sea	K-20	194	GH
3-22-91	5605	68	Wy Sea	K-20	196	GH
3-26-91	5605	68	Tay lor	K-20	190	GH+HB
3-28-91	5605	68	Taylor	K-20	180	GH
4-2-91	5605	68	Wy Sea	K-20	188	HB
4-3-91	5605	68	Wy Sea	K-20	174	HB
4-4-91	5605	68	Wy Sea	K-40	186	HB

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Organic Materials Group
Koppers Company, Inc.

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T-170 REV. 6
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LOCATION _____ STA. DATE _____ BY _____

SUBJECT

DATE	GALLONS	From	Customer	T-T	Temp	By	
4-5-91		Tc 78865	McBax	K-40	180	HB	
"	20,098 @60°	"	"	K-40	200	GH+HB	
"		"	"	K-40	200	GH	
"		"	"	K-40	200	GH	
4-8-91	5605	68	Wy Sea	K-20	178	HB	
4-9-91	5605	68	Wy Sea	K-20	184	HB	
4-10-91	5605	68	Wy Sea	K-20	190	HB	
4-11-91	5605	68	Wy Sea	K-20		HB	
"	App. 2500	Tc 536	Fields	K-40	250	HB & GH	15-35
4-12-91	5182	67	McBax	K-20	192	HB	
4-15-91	5605	68	Wy Sea	K-20	180	HB	
4-16-91	5605	68	Wy Sea	K-20	182	HB	
4-17-91	5182	67	McBax	K-20	200	HB	
"	3838	67	McBax	K-20	200	HB	
4-18-91	5605	68	Wy Sea	K-20	198	HB	
4-19-91	5605	68	Wy Sea	K-20	192	HB	
4-22-91	5605	68	Taylor	K-20	190	GH	
4-23-91	App. 2500	Tc 201	T-6	K-40 Tank	200	GH+HB	K-364
4-24-91	5605	68	Wy Sea	K-20	192	GH	
4-26-91		Tc 77418	McBax	K-40	186	GH	
"	20,098 @60°	"	"	K-20	186	GH	
"		"	"	K-40	210	GH	
"		Tc 77418	"	K-40	190	HB	
4-30-91	5605	68	Taylor	K-40	184	GH+HB	
5-1-91	5605	68	Wy Sea	K-20	190	GH	
5-2-91	5605	68	Wy Sea	K-20	190	GH	
5-3-91	5605	68	Wy Sea	K-20	186	GH	
5-6-91	5605	68	Wy Sea	K-20	182	HB	
5-7-91	2,073	Tc 201	T-6	K-40	60°	HB & GH	K-364
5-8-91	App. 2,184	Tc 536	Fields	K-40	270	HB GH	15-35
5-9-91	5605	68	Wy Sea	K-20	182	HB	
5-13-91	5605	68	Wy Sea	K-20	174	HB	
5-14-91	5605	68	Wy Sea	K-20	188	HB	
5-15-91	5291	Tc 64197	McBax	K-20	190	HB	
"	5250	"	McBax	K-20	188	GH	

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200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	By	
5-16-91	5280	T/C 641997	McBax	K-20	180	HB	
"	4740	"	McBax	K-20	200	GH	
5-17-91	5373	67	Wy Sea	K-20	182	HB	
5-20-91	5758	67	Wy Sea	K-40	170	GH	
5-21-91	5758	67	Wy Sea	K-30	180	GH	
"		T/C 537	Calif	K-20	450	GH+HB	Bitumen
5-23-91	App-2500	T/C 201	Feilds	K-40	230	GH+HB	15-35
5-28-91	5758	67	Wy Sea	K-20	170	GH	
5-29-91	5758	67	Wy Sea	K-20	184	GH	
5-30-91	5758	67	Wy Sea	K-20	186	GH	
6-4-91	5470	67	Wy Sea	K-20	160	HB	
6-5-91	5176	T/C 88946	McBax	K-20	180	HB	Galls @ 60°
6-5-91	5232	"	McBax	K-20	218	GH	
6-5-91	5221	"	McBax	K-20	210	GH	
6-5-91	1785	"	McBax	K-20	200	GH	
6-6-91	5470	67	Wy Sea	K-20	178	HB	
6-10-91	5470	67	Wy Sea	K-20	180	HB	
6-11-91	5470	67	Wy Sea	K-20	186	HB	
6-12-91	5470	67	Wy Sea	K-20	188	HB	
6-13-91	5470	67	Wy Sea	K-20	190	HB	
6-17-91	5470	67	Wy Sea	K-20	178	GH	
6-18-91	5470	67	Taylor	K-20	180	GH	
6-19-91	5470	67	Wy Sea	K-20	184	GH	
6-20-91	5470	67	Wy Sea	K-20	186	GH	
6-24-91	5470	67	Wy Sea	K-20	158	GH	
6-25-91	5470	67	Wy Sea	K-20	148	GH	
6-26-91	4750 @ 60°	T/C 511	S.T.C.	K-20	250	GH+HB	K-364
6-27-91	5290	T/C 642213	McBax	K-20	200	GH	Cl-Pl-13
6-28-91	5158	"	"	K-20	180	GH	
"	5206	"	"	K-20	210	GH	
"	3450	"	"	K-20	200	GH	
7-1-91	3117 @ 60°	T/C 511	S.T.C	K-20	240	RB	K-364
"	1,976 @ 60°	34	McBax	K-20	60	GH	Blend Solvent
"	3,508 @ 60°	T/C 76033	McBax	K-20	160	GH	NSR
7-8-91	5470	67	Wy Sea	K-20	156	GH	
7-9-91	5470	67	Wy Sea	K-20	182	GH	

Organic Materials Group
Koppers Company, Inc.

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LOCATION _____ DATE _____ BY _____

SUBJECT

Date	Gallons	From	Customer	T-T	Temp	By
7-10-91	5470	67	Wy Sea	K-20	195	GH
7-12-91	5470	67	Taylor	K-20	192	GH
7-15-91	5202 } 60°	T/C 75167	Mc Bax	K-20	180	GH
"	5401 }	"	"	K-20	220	GH
7-16-91	5470	67	Wy Sea	K-20	186	GH
7-17-91	5470	67	Wy Sea	K-20	188	GH
7-18-91	5470	67	Wy Sea	K-20	191	RB
7-19-91	5470	67	Taylor	K-20	188	GH
7-22-91	5470	67	Wy Sea	K-30	177	HB
"		Tc 537 Bitumen	Cal. F.	K-20	400	HB
7-23-91	5470	67	Taylor	K-30	184	HB
7-24	2374	Tc 511	S.C.I.	K-30	200	HB+TJ
"	5470	67	Wy Sea	K-30	184	HB
7-25-91	5470	67	Wy Sea	K-30	190	HB-RB
7-26-91	5470	67	Taylor	K-20	189	GH
7-29-91	5470	67	Wy Sea	K-20	176	RB-HB
7-27-91	5470	67	Wy Sea	K-30	176	[illegible]
8-1-91		Tc 87748 K-364	S.T.C	K-20	240	[illegible]
8-1-91		Tc 79693	Wy Sea	K-20	220	[illegible]
8-2-91	5605	68	Wy Sea	K-30	184	HB
8-5-91	5605	68	Wy Sea	K-20	186	GH
"	5605	68	Wy Sea	K-30	186	GH
8-6-91	5605	68	Wy Sea	K-30	195	GH
8-7-91	Bitumen	T/C 537	Cal. F.	K-20	430	GH+HB
8-8-91	2335	15-35 T/C 201	Feilds	K-30	220	GH+HB
"	App. 2500	K-364 T/C 511	S.T.C.	K-30	220	RB+TJ
"	2802	68	Wy Sea	K-30	190	RB+TJ
8-12-91	5605	68	Mc Bax	K-30	174	GH
"	5605	68	Mc Bax	K-30	186	GH-HB
"	2879	67	Wy Sea	K-20	190	GH
"	2879	67	Wy Sea	K-30	190	GH
8-14-91	5470	67	Wy Sea	K-30	190	GH
8-16-91	1962	K-364 T/C 511	S.T.C.	K-30	220	GH+HB
8-19-91	5470	67	Wy Sea	K-40	180	[illegible]
8-20-91	5470	67	Wy Sea	K-40	184	[illegible]
"	5470	67	Wy Sea	K-20	184	[illegible]

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Koppers Company, Inc.

T-170 REV. 6/
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LOCATION _____ DATE _____ BY _____

DATE	SUBJECT GALLONS	From	Coastwise	F-T	Temp	By	
9-21-91	5470	67	Wy Sea	K-40	188	HB	
"	5470	67	Wy Sea	K-20	188	HB	
9-22-91	5470	67	Wy Sea	K-40	189	HB	
"	5470	67	Wy Sea	K-20	189	HB	
9-23-91	5470	67	Wy Sea	K-40	186	HB	
	5470	67	Wy Sea	K-20	186	HB	
8-26-91	5470	67	Wy Sea	K-40	194	HB	
8-27-91	1861 @60°	TK 87748	S.T.C.	K-40	210	HB + GH	K-364
"	5470	67	Wy Sea	K-40	200	HB + GH	
8-28-91	5470	67	Wy Sea	K-40	190	HB	
8-29-91	5470	67	Taylor	K-40	190	HB + GH	
"	5470	67	Wy Sea	K-20	190	HB + GH	
9-3-91	18,360	TK 87744	Calif	K-20	460	GH + HB	B. Tunnel
9-4-91	5470	67	Wy Sea	K-40	182	GH	
9-6-91	2450	TK 201	Fields	K-40	119	GH + HB	15-35 Blend
9-9-91	5470	67	Wy Sea	K-40	170	GH	
"	5470	67	Wy Sea	K-20	176	HB + GH	
9-10-91	2210	TK 87748	S.T.C.	K-40	225	GH + HB	
"	5470	67	Wy Sea	K-40	182	GH	
"	5470	67	Wy Sea	K-20	182	HB	
9-11-91	5165 @60°	TK 88204	Wy Sea	K-40	190	GH	
"	5049 @60°	88674	Wy Sea	K-20	190	GH	
9-13-91	5470	67	Taylor	K-40	186	GH	
9-16-91	5470	67	Wy Sea	K-40	174	HB	
	5470	67	Wy Sea	K-20	174	HB	
9-17-91	5470	67	Wy Sea	K-20	172	HB	
"	5470	67	Taylor	K-40	172	HB	
"	5470	67	Wy Sea	K-40	180	HB	
9-18-91	5470	67	Wy Sea	K-20	180	HB	
9-19-91	5470	67	Wy Sea	K-20	194	HB	
"	2160	TK 201	Fields	K-40	195	HB	
9-23-91	5470	67	Wy Sea	K-20	170	HB	
"	5470	67	Taylor	K-40	170	HB	
9-24-91		TK 87748	Atlantic	K-40	258	HB	K-364
"	5490	67	Wy Sea	K-20	190	HB	

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Koppers Company, Inc.

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Customer	T-T	Temp	Loader
9-25-91	4726	Tc 87748	Tocoma	K-40	260	HB K-364
"	5470	67	Wy Sea	K-20	174	HB
9-26-91	5470	67	Wy Sea	K-40	160	HB
"	5470	67	Wy Sea	K-20	180	HB
9-27-91	5470	67	Wy Sea	K-40	190	HB
9-30-91	5470	67	Wy Sea	K-40	176	GH
10-1-91	5283 @ 60°	Tc 88670	Mc Bax	K-40	185	GH
"	48,900 Lbs	Tc 87744	Calif	K-20	465	H.B. Bitumen
"	5318 @ 60°	Tc 88670	Mc Bax	K-40	200	RB
10-3-91	4664	Tc 87749	Tacoma	K-40	235	HB + GH K-364
10-4-91	5470	67	Wy Sea	K-40	180	GH
10-7-91	5470	67	Wy Sea	K-40	170	GH
10-8-91	5470	67	Wy Sea	K-40	170	HB
10-9-91	5470	67	Wy Sea	K-40	182	HB
10-10-91	4639	Tc 87749	Tocoma	K-40	260	HB + RB K-364
10-11-91	5470	67	Wy Sea	K-40	180	HB
10-14-91	5470	67	Wy Sea	K-40	171	HB
"	5470	67	Wy Sea	K-20	171	HB
10-15-91	5470	67	Wy Sea	K-40	175	HB
10-16-91	5470	67	Wy Sea	K-40	176	HB
"		Tc 537	Calif	K-20	348	HB Bitumen
"		T-67	Wy Sea	K-40	182	RB
10-23-91	5470	67	Wy Sea	K-40	188	GH
10-24-91	2385	Tc 201	Feilds	K-20	195	GH + HB
10-29-91	2140	Tc 201	Feilds	K-40	160	GH
10-30-91	2309	Tc 536	Spokane	K-40	260	GH + HB
11-1-91	5470	67	Wy Sea	K-40	184	GH
11-4-91	5470	67	Wy Sea	K-40	160	HB
11-5-91	5482	67	Wy Sea	K-40	170	HB
11-6-91	5470	67	Wy Sea	K-40	180	HB
11-7-91	5470	67	Wy Sea	K-40	172	HB
11-8-91	5470	67	Wy Sea	K-40	175	HB
11-12-91	5470	67	Wy Sea	K-40	165	HB
11-13-91	5470	67	Taylor	K-20	170	HB
"	2565 @ 60°	Tc 201	Feilds	K-40	200	HB + NN K-15
"	5470	67	Wy Sea	K-20	180	HB

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Koppers Company, Inc.

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LOCATION _____ DATE _____ BY _____

SUBJECT

Date	Gallons	From	Customer	T-T	Temp	By	
11-14-91	5430	67	Wy Sea	K-40	180	HB	
"	5470	67	Tacoma	K-20	190	GH	
"	2395	Tc 241	Fields	K-40	220	GH	
11-18-91	5470	67	Wy Sea	K-40	170	GH	
"		Tc 537	Cal. F	K-20	435	GH+HB	B. Turner
11-20-91	5178 @60°	Tc 23165	Tacoma	K-40	150	GH	P1-P13
11-22-91	5181	Tc 88289	Taylor	K-40	180	HB	
11-25-91		Tc 88289	Wy Sea	K-40	170	HB	
11-26-91	5490	67	Wy Sea	K-40	190	HB	
"	5470	67	Wy Sea	K-20	190	HB	
11-27-91	5430	67	Taylor	K-40	180	HB	
12-6-91	5420	67	Taylor	K-40	170	HB	
12-9-91	47,720 Lbs	Tc 87743	L.A.	K-40	450	GH+HB	B. Turner
"	48,360 Lbs		L.A.	K-20	450	GH+HB	
12-10-91	5758	67	Taylor	Blue Lines	170	GH + HB	
12-16-91	5,038.60	Tc 87749	Cal. F	K-20	300	HB+GH	15-35
12-19-91	5470	67	Taylor	K-40	180	GH	
12-23-91	5470	67	Taylor	K-40	176	GH	
12-27-91	5430	67	Taylor	K-40	155	HB + GH	
12-30-91	5430	67	Taylor	K-40	174	HB + GH	
1-2-92	2465	Tc 201	Fields	K-40	190	HB+GH	15-35 B. Turner
1-7-92	5188	67	Taylor	K-40	170	HB	
"	48,380 Lbs.	Tc 87743	L.A.	K-20	500	GH+HB	B. Turner
1-13-92	5470	67	Taylor	K-40	155	HB	
1-20-92	48,900 lbs	Tc 87748	Cal. F	K-20	515	HB+GH	B. Turner
"	47,480		Cal. F	K-40	500	HB+GH	
2-4-92		Tc 801	Fields	K-40	195	GH+HB	K-15-35
2-10-92		7.82745	Cal. F	K-20	480	HB+GH	
2-12-92	5470	67	Wy Sea	K-40	180	HB	
2-13-92	5182	67	Wy Sea	K-40	183	HB	
"	6181	67	Taylor	Blue Line	180	HB	
2-14-92	5182	67	Wy Sea	K-40	180	HB	
2-18-92	5182	67	Wy Sea	K-40	164	GH	
"	5758	67	Taylor	Blue Line	166	GH	
2-25-92	48,040	Tc 87748	Cal. F	K-20	420	HB	
"	47,530	87749	Cal. F	K-40	400	HB	

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SUBJECT

Date	Gallons	From	Customer	T-T	Temp	By
2-28-92	6456	67	Taylor	Blue Line	174	GH
3-2-92	5182	67	Wy Sea	K-30	160	HB
3-3-92	5182	67	Wy Sea	K-30	170	
"	48360	Tc 87748	Calif	K-22	470	
"	48240	"	Calif	K-20	470	
3-4-92	5182	67	Wy Sea	K-30	180	HB
3-5-92	5182	67	Wy Sea	K-30	185	HB
3-6-92	2141	Tc 87749	Ferrite	K-30	170	HB
3-9-92	5182	67	Wy Sea	K-22	160	HB
"	6456	67	Taylor	Blue Line	160	GH
3-10-92	5182	67	Wy Sea	K-22	180	HB
3-11-92	5182	67	Wy Sea	K-30	180	HB
"	6456	67	Taylor	Blue Line	180	HB
3-12-92	5182	67	Wy Sea	K-30	170	HB
3-13-92	2602	Tc 201	STC	K-30	270	HB
3-17-92	5182	67	Taylor	K-30	170	HB
3-18-92	5182	67	Tocoma	K-30	180	HB
"	B. Tumen 48480 lbs	Tc 87747	Calif	K-20	450	HB
3-19-92	5182	67	Tcoma	K-30	180	HB
3-20-92	2291	Tc 201	STC	K-30	220	HB
3-23-92	5326	67	Wy Sea	K-22	150	HB
3-24-92	5326	67	Wy Sea	K-22	170	HB
" " "	5326	67	Taylor	K-30	175	HB
3-25-92	5182	67	Wy Sea	K-22	175	HB
3-26-92	5182	67	Wy Sea	K-22	180	HB
3-27-92	5182	67	Wy Sea	K-22	175	HB
3-30-92	5182	67	Wy Sea	K-22	150	HB
"	5182	67	Wy Sea	K-40	150	HB
"	B. Tumen 48,300 lb	Tc 87748	Calif	K-22	450	HB
3-31-92	5182	67	Taylor	K-22	150	HB
4-2-92	5182	67	Wy Sea	K-22	160	HB
"	5470	67	Wy Sea	K-22	170	GH
4-3-92	5470	67	Wy Sea	K-22	168	GH
4-6-92	48,620	Tc 87748	Calif	K-20	470	GH
4-6-92	5470	67	Wy Sea	K-22	170	GH

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Date	Gallons	From	Customer	T/T	Temp	By	
4-7-92	5470	67	Wy Sea	K-22	174	GH	
4-9-92	6478	67	Taylor Blue Line		188	GH	
4-10-92	2395	TC 201	STC	K-22	230	RB+HB	
4-13-92	47,940 Lbs	TC 87748	Calif	K-22	470	HB+GH	
"	48,200 Lbs	"	"	K-20	470	"	
4-14-92	6329	67	Taylor Blue Lines		172	GH	
4-16-92	2596	TC 201	STC	K-40	120	HB+RB	
4-20-92	47640	TC 87748	Calif Con	K-22	470	HB+GH	Bitumen
"	48920	"	" Owens	K-20	470	"	"
"	48100	"	" Con	K-40	470	"	"
4-24-92	2247	TC 201	STC	K-40	210	HB+RB	
4-27-92	49,120	TC 87748	Calif	K-20	480	HB+GH	Bitumen
5-4-92		TC 87748	Calif	K-20	480	TJ-RB	Bitumen
"	5470	67	The Dalles	K-22	160	GH	
"	5470	67	"	K-40	160	GH	
"	6334	67	Taylor Blue Lines		160	GH	
5-5-92	5470	67	Dalles	K-22		HB	
"	5470	67	"	K-40		HB	
5-6-92	5470	67	"	K-22	188	GH	
"	5470	67	"	K-40	188	GH	
"	5470	67	"	K-22	188	GH	
5-7-92	5470	67	"	K-40	180	GH	
"	5470	67	"	K-22	180	GH	
5-8-92	5470	67	Taylor Blue Lines		180	GH	
5-11-92			Calif	K-20	480	HB	Bitumen
"	5470	67	Dalles	K-22	160	GH	
"	5470	67	"	K-40	160	GH	
"	5470	67	"	K-22	188	GH	
"	5470	67	"	K-40	188	GH	
5-12-92	5470	67	"	K-22	180	GH	
5-13-92	1902 @ 60°	TC 87749	Spokane	K-22		HB	15-35
"	5470	67	Dalles	K-40	180	GH	
"	6117	67	Taylor Blue Lines		190	HB	
5-14-92	5470	67	Dalles	K-40	195	GH	
5-14-92	5470	67	P/wood	K-40	190	RB	
5-15-92	5470	67	P/wood	K-20	180	GH	

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SUBJECT

Date	Gallons	From	Customer	T/T	Temp	By
5-15-92	2316 @60°	TC87749	Fields	K-22		H.B
5-18-92	10940	67	Dalles	K-22	170	HB
"		67	Taylor	K-40	170	"
"	48,980 Lbs	TC650800	Calif	K-20	405	HB+TJ BIT
"	10940	67	Dalles	K-22	180	HB
"		67	P-Wood	K-40	180	"
5-19-92	10336	67	Dalles	K-40	178	HB
"		67	Dalles	K-22	178	
5-20-92	10,533	TC78422	Wy Sea	K-40	NSR	HB
"			Wy Sea	K-22		HB
5-26-92	5182	67	Taylor	K-22	170	HB
"	48,760 Lbs	TC87748	Calif	K-20	490	HB+TJ BIT
5-28-92	6464 @60°	67	P-Wood	Blue Line	170	[illegible]
6-1-92	48,080 Lbs	TC87748	Calif	K-20	480	HB Bit
"	6,820	3	Wy Sea	Blue Lines	75	GH
"	5,476	34	Wy Sea	K-22	76	GH
6-2-92	1,902	34	Wy Sea	K-22	64	GH+RH
"	3,867	3	Wy Sea	K-22		GH+RH
"	6,909	67	Taylor	Blue Lines	180	GH+HB
6-3-92	1902	34	Wy Sea	K-22	60	GH+RH
"	3805	3	Wy Sea	K-22	60	GH+RH
6-8-92	47,940 Lbs	TC87748	Calif	K-22	480	GH+HB
"	48,460 Lbs			K-20	480	GH+HB
"	6909	67	Taylor	Blue Lines		RB
6-12-92	5470	67	Taylor			
6-15-92	47920	TC87748	Calif	K-22	490	[illegible]
	48260	"		K-20	490	[illegible]
6-16-92	6666	99	Wy Sea	Blue Line	100	HB NSR
6-17-92	6203	67	Taylor	Blue Line	170	HB
6-18-92	5079	99	Wy Sea	Blue Line	170	[illegible]
6-19-92	2621 @60°	TC87749	STC	K-22	290	[illegible]
6-25-92	4,514 @60	TC87745	Cascade Asphalt	K-22	270	[illegible]
"	5563	99	Wy Sea	K-20	190	HB NSR
6-29-92		TC87748	Calif	K-22	490	HB+TJ
"			Calif	K-20	490	HB+TJ
"	6748 NSR	99	Wy Sea	Blue Lines	138	GH

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Date	SUBJECT Gallons	From	Customer	T/T	Temp	By
7-1-92	6,478	67	Taylor	Blue Lines	186	GH
7-3-92	3,592	TC87747	STC	K-22		HB
7-6-92	47,800 Lbs	TC87746	Cal. F	K-22	490	GH-HB
"	48,920 Lbs	TC87746	Cal. F	K-20	490	GH-HB
7-10-92	2,364	TC87747	STC	K-20	330	GH-HB
"	2,453	TC87749	Fields		240	GH-HB
7-13-92	6,478	67	Taylor Blue Lines		165	GH
7-15-92	5398	99	Wy Seattle	K-22	90	HB
"	5420	62	Wy Sea	K-20	170	HB
7-16-92	5398	99	Wy Sea	K-22	110	GH
"	5398	99	Wy Sea	K-20	110	GH
"	4402	67	Wy Sea	K-22	186	GH-HB
7-20-92						
7-23-92	5420	67	Tacoma	K-22	160	HB
7-23-92	5470	67	Tacoma	K-22	170	RB
7-27-92	5470	67	Taylor	K-22	165	GH
"		TC87748	Cal. F	K-20	190	GH-HB
"	5490	67	Wy Sea	K-22	170	GH
7-28-92	6334	67	P/Wood	Blue Lines	190	GH
"	5470	67	Wy Sea	K-22	190	GH
7-29-92	8349	67	P/Wood	Blue Lines	184	GH
"	5,548 NCR	99	Wy Sea	K-22	120	RB
7-31-92	2,347	TC87747	STC	K-22	300	GH-HB
8-3-92	5470	67	Wy Sea	K-20	170	GH
8-4-92	5470	67	Taylor	K-22	180	GH
8-6-92	8,925	67	Taylor	Blue Lines	190	GH
8-7-92	7,125	67	P/Wood	Blue Lines	180	GH
"	6,909	67	Dome Tex B.C.	Blue Lines	194	GH
"	7,989	67	P/Wood	Blue Lines	200	GH-RH
8-10-92	5470	67	Wy Sea	K-22	190	GH
"	5490	67	Wy Sea	K-20	170	GH
8-11-92	5398	99	Wy Sea	K-22	150	HB
8-12-92	6187	TC87748	P/Wood	Blue Lines	190	HB
8-13-92	5398	99	Wy Sea	K-22	150	HB
"	6901	67	Taylor	Blue Lines		
"	5	67	P/Wood	Blue Lines		

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SUBJECT _____

Date	Gallons	From	Customer	T.T.	Temp	By
8-13-92	6909	67	Wy Sea	K-20	180	RHB
8-14-92	6621	67	P/Wood	Blue Line	18	R H
8-19-92		67	Taylor	K-20	180	RHB
8-28	5974	67	TAYLOR	K-20	174	GH.
9-1-92	5470	67	Wy Sea	K-22	188	RJ H
"	5476	67	Wy Sea	K-20	188	RJ H
9-3-92	5470	67	Wy Sea	K-20	200	RHB
"	6046	67	P-Wood	Blue Line	200	RHB
"		67	Taylor	Blue Line	200	RHB
"		67	P-Wood	Blueline	196	RB+GH
9-4-92	6334	67	P/wood	Blue Lines	200	GH+RB
"	6621	67	P/wood	Blue Lines	200	GH+RB
9-8-92	5758	67	Taylor	K-20	176	GH
9-9-92	5326	67	Wy Sea	K-20	186	GH
9-10-92	5470	67	Wy Sea	K-20	179	GH
9-14-92	5470	67	Wy Sea	K-20	158	GH
9-11-92	6485	67	Taylor	Blue Lines	190	GH
9-14-92	2159	67	Wy Sea	K-22	195	GH
9-18-92	2311	TC87747	STC	K-20	312	GH+RB
"	2425	TC87749	Fields	K-22	265	RB+TJ
9-21-92	6478	67	P Wood	Blueline	160	RH
"	6478	67	P Wood		188	RHB
9-22-92	18160	TC87746	Cal-5	K-20	466	RHB + GH
"	5181	67	Taylor	K-22	185	RHB
9-24	5614	67	Wy Sea	K-22	170	RHB
9-25-92	5038	67	Taylor	K-22	180	GH
9-28-92	5326	67	Wy Sea	K-22	160	GH
9-30-92	5470	67	Wy Sea	K-22	190	GHB
10-1-92	6621	67	P/wood	Blue Lines	192	HB + GH
10-1-92	6550	67	P/wood	Blue Lines	182	HB + GH
10-2-92	6490	67	Wy Sea	K-20	170	RH
"	7413	67	Taylor	Blueline	168	RH
10-7-92	5470	67	Wy-Sea	K-20	175	RB
10-8-92	5470	67	Wy Sea	K-20	194	GH
"	8133	67	Taylor	Blue Lines	192	GH
10-9-92	5254	67	Wy Sea	K-20	155	GH

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SUBJECT _____

DATE	GALLONS	From	Customer	TT	Temp	By	Pro
10-12-92	5686	67	Wy Sea	K-22	160	HB	P-1/P-13
"	48060 lbs	TC 87748	CALIF	K-20	490	HB + RH	Bitumen
10-13-92	5686	67	WY SEA	K-22	162	HB	P-1/P-13
10-14-92	5686	67	WY SEA	K-22	176	RB	P1/P-13
"	6334	67	PWT	Blueline	176	RB+RH	P-1/P-13
10-15-92	5638	67	Wy Sea	K-22	190	RB	P-1/P-13
"	6485	67	P Wood	Blueline	190	RB & HB	" "
"	6456	67	Taylor	Blueline	192	HB	" "
"	6485	67	P Wood	Blueline	195	HB	" "
10-16-92	5638	67	Wy Sea	K-20	190	HB	" "
"	6957	67	P Wood	Blueline	180	HB	" "
"	2339	TC 87749	Fields	K-22	210	HB + RB	K-15-35
10-19-92	5470	67	Wy Sea	K-22	150	HB	P-1/P-13
"	48040 lb	TC 650860	CALIF	K-20	570	HB + RH	Bitumen
10-20-92	5638	67	Wy Sea	K-22	175	HB	P-1/P-13
10-21-92	5470	67	Wy Sea	K-22	180	HB	"
"	5470	67	Taylor	K-40	180	HB	"
10-22-92	5754	67	Wy Sea	K-22	185	HB	"
10-23-92	5182	67	Wy Sea	K-22	180	HB	"
"	2464	TC 87747	STC	K-40	280	HB	STC
10-23	5470	67	TAYLOR	K-40	205	RB	P-1/P-13
10-26-92	5686	67	Wy Sea	K-22	180	GH	P1-P13
10-27-92	5470	67	Wy Sea	K-20	182	GH	P1-P13
10-28-92	5470	67	Wy Sea	K-20	190	GH	P1-P13
"	5470	67	Taylor	K-22	190	GH	P1-P13
10-29-92	5398	67	Wy Sea	K-22	190	GH	P1-P13
10-30-92	5470	67	Wy Sea	K-20	190	GH	P1-P13
"	App 2300	TC 87749	Fields	K-22	210	GH + RB	15-35
11-2-92	5470	67	Wy Sea	K-20	170	GH	P1-P13
"	5470	67	Taylor	K-22	170	GH	P1-P13
11-3-92	5470	67	Wy Sea	K-20	190	GH	P1-P13
11-4-92	5470	67	Wy Sea	K-20	192	GH	P1-P13
"	6909	67	Taylor	Blue Line	200	GH + TJ	P1-P13
11-5-92	5038	67	Wy Sea	K-20	188	RH + GH	P1-P13
11-6-92	3192	TC 87747		K-22	300	TJ-RH	STC Blend
11-9-92	5182	67	PS Sea	K-22	182	RH-GH	P1-P13

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Date	Gallons	From	Customer	T/T	Temp	B.P.	Product
11-9-92	5182	67	P.S. Sea	K-40	182	RH-GH	P1-P13
11-10-92	5614	67	wy Sea	K-22	190	GH+RH	P1-P13
"	48,160 lbs	TC509	Cal. F	K-20	450	GH+RH	Bitumen
11-12-92	5470	67	wy Sea	K-22	180	GH+RH	P1-P13
"	7773	67	Taylor	Blue Lines	182	GH+RH	P1-P13
11-13-92	5398	67	wy Sea	K-40	182	GH	P1-P13
"	2329	TC87749	Fields	K-22	178	GH+RH	15-35
11-16-92	5228	67	wy Sea	K-22	170	GH+RH	P1-P13
"	48,040	TC509	Cal. F	K-20	475	GH+RH	Bitumen
11-17-92	4383	67	P.S. Sea	K-40	188	RH	P1-P13
"	47700	TC509	Cal. F	K-22	450	RH+GH	Bitumen
11-18-92	5470	67	P.S. Sea	K-40	190	RH	P1-P13
"	6969	67	Taylor	Blue Line	190	RH	P1-P13
11-19-92	5003	67	P.S. Sea	K-40	185	RH	P1-P13
11-20-92	5548	67	P.S. Sea	K-40	184	RH	P1-P13
11-24-92	6190	67	Wy. Sea	K-40	200	RH	P1-P13
11-30-92	7485	67	Taylor	Blue Lines	185	GH	P1-P13
12-1-92	—	TC87746	STC	K-40	280	GH+RH	STC
12-2-92	5182	67	Tacoma	K-20	190	GH	P1-P13
12-28-92	5182	67	P.S. SEA	K-20	173	GH	P1-P13
12-29-92	5182	67	P.S. Sea	K-20	186	RB	P1-P13
12-30	5470	67	Taylor	K-40	185	RB	P1-P13
12-30	5182	67	P.S. Sea	K-20	165	RB	P1-P13
12-30		TC87746	STC	K-40	270	RB-EF	STC BLEND
12-30		TC87749	FIELDS	K-22	190	RB-EF	K-15-35
1-4-93	5182	67	Taylor	K-20	150	RB	P1-P13
"	5228	67	TAYLOR	K-22	150	RB	P1-P13
"	7197	67	P-WOOD	B Line	150	RB GH	P1-P13
"	7197	67	P-WOOD	B-Line	170	GH	P1-P13
1-5-93	5182	67	P.S. SEA	K-20	190	RB	P1-P13
1-7-93	5686	67	wy Sea	K-20	198	GH	P1+P13
1-8-93		67	P/wood	Blue Lines	200	GH	P1-P13
1-11-93		67	wy Sea	K-20	197	RH	P1-P13
"	6969	67	Taylor	Blue Lines	200	GH	P1-P13
1-14-93	7341	67	P/wood	Blue Lines	198	GH	P1-P13
"							P1-P13

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SUBJECT _____

DATE	GALLON	FROM	CUST.	T-T	TEMP	BY	PROD
1-14-93	5686	T-67	P.S. SEA	K-20	198	RH	P1/P13
"	"			K-22	198	RH	"
1-15-93	5686	T-67	PS. SEA	K-20	190	RH	P1/P13
1-15-93	5182	T-67	PS. SEA	K-22	190	RH	P1/P13
1-18-93	5470	T-67	PS. SEA	K-20	165	RB	P1-P13
	5470	T-67	P.S. SEA	K-22	165	RLB	P1-P13
1-21-93	5182	T-67	PS. SEA	K-20	175	RL.B	P1/P-13
1-22-93	5182	T-67	PS. SEA	K-20	178	RLB	P1-P13
1-26-93	5182	T-67	Wy Sea	K-20	192	GH	P1-P13
"	5470	T-67	Taylor	K-22	192	GH	P1-P13
1-27-93	5470	T-67	Wy Sea	K-22	200	GH	P1-P13
1-28-93	5470	T-67	Wy Sea	K-22	192	GH	P1-P13
2-1-93	5470	T-67	Wy Sea	K-20	184	GH	P1-P13
2-2-93	5470	T-67	Wy Sea	K-20	200	GH	" "
2-4-93	5470	T-67	Wy Sea	K-22	195	GH	" "
"		T-67	Taylor	Blue Lines	204	GH	"
2-5-93	5767	T-67	Taylor	Blue Line	[illegible]	[illegible]	P1-P13
2-8-93	5614	T-67	Taylor	K-22	182	RB	"
"	5470	T-67	Wy Sea	K-22	189	GH	"
2-9-93	48,040	7C87743	Calif	K-20	475	RB	Bitumen
"	5470	T-67	Taylor	K-40	189	RB	P1-P13
"	5470	T-67	Wy Sea	K-22	204	GH	P1-P13
"	5470	T-67	Wy Sea	K-40	204	GH	"
2-10-93		T-67	Wy Sea	K-22	186	RH	P1-P13
2-11-93	5470	T-67	TAYLOR	K-40	194	RB	P1-P13
2-16-93	5470	T-67	Wy Sea	K-22	160	RB	P1-P13
2-16-93		T-67	TAYLOR	K-40	160	RB	P-1-P13
2-16-93	4637	ACFX 87549	Calif.	K-20	290	RB	P1-P13
2-18-93	5470	T-67	Wy Sea	K-22	200	RB	P1-P13
"	5470	T-67	Taylor	K-40	200	RB	"
"	7269	T-67	Pac. Wood	Blue	200	GH	"
"	7269	T-67	Pac. Wood	Line	200	GH	"
2-19-93	4470	T-67	Wy Sea	K-22	190	RB	"
2-22-93	5470	T-67	Wy Sea	K-20	145	GH	"
"	5470	T-67	Taylor	K-22	145	GH	"
2-23-93	5470	T-67	Taylor	K22	200	GH	"

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Gallons	From	Cust	T/T	Temp	By	Prod
2-24-93	5470	67	Wy Sea	K-20	200	GH	P1-P13
2-26-93	5470	67	Taylor	K-40	190	GH	P1-P13
"	5470	67	Taylor	K-20	190	GH	P1-P13
3-1-93	5758	67	Wy Sea	K-20	176	GH	P1-P13
3-3-93	5470	67	Wy Sea	K-20	180	GH	P1-P13
"		T/C 87749	Tacoma	K-22	180	T.J.	15-35
"	7485	67	Taylor	Blue Lines	196	GH	P1-P13
3-8-93		67	Wy Sea				
"	7,197	67	Taylor	Blue Lines	176	GH	P1-P13
3-10-93	67	T/C TLDX 221365	Wy Sea	K-22	240	RH	P1-P13
3-11							
3-12	5740	67	TAYLOR	K-22	200	RB	P1-P13
3-15	48,580	T/C 509	Owens	K-20	440	RB RH	Bitumen
3-16	5740	67	TAYLOR	K-22	190	RB	P1-P13
"	5740	67	TAYLOR	K-40	190	RB	P1-P13
3-17	5470	67	WY SEA	K-40	200	RB	P1-P13
"	2370	ACTX 87749	FIELDS	K-22	185	RB	K-15-35
3-18-93	5470	67	WY SEA	K-22	185	RB	P1-P13
3-18-93	5470	67	WY SEA	K-40	185	RB	P1-P13
3-19-93	5470	67	Wy Sea	K-22	180	RB	P-1-P13
3-19-93	5470	67	TAYLOR	K-40	180	RB	P1-P13
3-19-93	7197	67	PAC. WOOD	Blue Line	175	RB	P1-P13
3-19-93	7197	67	PAC. WOOD	Blue Line	175	RB	P1-P13
3-19-93	5470	20	WY SEA	K-40	180	RB	RAILTIE Blend
3-23-93	16332	T-20		K-20	190°	RH	Rail tie Blend
		"		K-22			
		"		K-40			
3-24-		T-20	WY SEA	K-20	190	RB	RT. CREO
3-24-93		"	Wy Sea	K-22	190	RB	RAILTIE CR
		T-67	TAYLOR	K-40	185	RB	P1-P13
		T-67	TAYLOR	K-40	185	RB	P1-P13
3-25		T-20	Wy Sea	K-22	190	RB	Rail Tie Blend
3-25		T-20	"	K-40	190	RB	

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Date	Gallons	From	Cus	T/T	Temp	By	Prod
3-30-93	5758	67	Taylor	K-40	180	GH	P1-P13
3-31-93	7197	67	P/wood	Blue Line	180	GH	P1-P13
"	"	67	"	"	182	GH	P1-P13
4-7-93	7197	67	TAYLOR	B-LINE	184	RB	P1-P13
4-6-93	7053	67	Taylor	B-Line	179	GH	P1-P13
4-8-93	7413	67	Taylor	B-Line	191	GH	P1-P13
4-15-93	4822	67	Taylor	K-20	196	GH	P1-P13
4-16-93	5038	67	Taylor	K-22	196	GH	P1-P13
4-21-93	2393	ACFX 87749	Fields	K-22	185	RH	K-15-35
4-22-93	2591	67		K-22	184	RH	P1-P13
4-23-93	4462	67		K-22	180	RH	P1-P13
4-27-93	4750	67	Taylor	K-20	197	GH	P1-P13
4-30-93	5326	67	Taylor	K-22	178	GH	P1-P13
5-5-93		67	Taylor	Blue Line	194	RB	P1-P13
5-11-93			CANADA	K-20	175	RB	P1-P13
			Taylor	Blue Line	180		
5-12-93	5470	67	Taylor	Blue Lines	190	RH	P1-P13
5-13-93	13,459	67	P/wood	Blue	190	RB	P1-P13
"		67	P/wood	Lines	190	RB	P1-P13
5-17-93	5671	20	Wy-Sea	K-20	178	RH	R.T. Creo
5-18-93	5254	67	Taylor	K-20	186	RH GH	P1-P13
5-20-93		67	Taylor	K-20		RH	P1-P13
5-21-93	5,557	20	Wy-Sea	K-20	186	RH	R.T. Creo
5-24-93	5,557	20	Wy-Sea	K-20	140	RH	R.T. Creo
5-25	5039	67	TAYLOR	K-22	199	RH	P1-P13
5-25	5063	20	Wy-Sea	K-20	180	RH	R.T. Creo
5-26-93	4966	67	Taylor	K-22	198	RH	P1-P13
5-27-93	6351	20	Wy-Sea	K-20	197	RH	R.T. Creo
5-28-93	5670	20	Wy-Sea	K-20	189	RH	R.T. Creo
"	5902	67		K-22	192	RH	P1-P13

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DATE	GALLONS	FROM	CUST.	T/T	TEMP	BY	PROD
6-2-93	48,89@60°	T-20	WY SEA	K-20	190	RB	RT-CREO
6-2-93	48,89@60°	T-20	WY SEA	K-22	190	RB	RT-CREO
6-2-93	6,999	T-67	TAYLOR	Blue line	190	RB	P1-P13
6-3-93	4889@60	T-20	WY sea	K-22	200	RP	RT-CREO
6-4-93	4889@60°	T-20	Wy sea	K-22		RB	RT-Creo
"	6804	T-67	Taylor	Blue Line	200	RB	P1-P13
"	6804	T-67	P/wood	" "	200	RB	P1-P13
"	6804	T-67	P/wood	Blue Line	200	TH & GH	P1-P13
6-8-93		T-20	WY SEA	K-20	180	RB	RT-CREO
6-9-93		T-20	WY sea	K-20	185	RB	RT-CREO
6-9-93	2,193@60°	T-20	Wy sea	K-40	185	GH	RT-Creo
6-14-93	5758	T-67		K-20	180	RH	P1-P13
"	2569	T-20	Wy sea	K-22	180	RB	RT-Creo
6-15-	2569	T-20	Wy sea	K-40	180	RB	RT-Creo
6-16-93	48120 Lbs.	ACFX 87743		K-20	320	RH	K-364
"	4661	T-20	Wy sea	K-22	185	TH & GH	RT-Creo
6-17-93	5188	T-67	TAYLOR	K-40	193	GH & TH	P1 P13
6-22	4940	T-67	TAYLOR	K-40	186	RB	P1-P13
6-24	5083	T-67	"	K22	195	TH	P1 P13
6-28		T-67	Taylor	K-22	190	RB	P1-P13
7-1-93	5542	T-20		K-20	198	RH	RT Creo
7-1-93	7058	T-67	"	Blue Line	192	RH	P1-P13
7-7-93		ACFX 87743		K-20	270	RB, RH	K-364
7-9-93		T-67	TAYLOR	Blue LINE	188	RB	P1-P13
7-12-93		T-20	WY-SEA	K-20	150	RB	RT-CREO
7-14-93		T-34	WY-SEA	K-20	160	RB	RT-CREO
7-15-93	4916@60	T-67	TAYLOR	K22	196	TH	P1 P13
7-16-93	5062@60	T-67	TAYLOR	K22	189	TH	P1 P13
7-19-93	5213	T-67	McFarland	K20		RB	P1 P13
7-19-93	5105	T-67	TAYLOR	K22		RB	P1 P13
7-21-93	5068	T67	McFarland	K22		RB	P1 P13
7-21-93	5120	T-34	WY-SEA	K20		RB	RT Creo
7-22-93	2667	T-34	WY SEA	K22		"	"
7-26-93	5614	T-67	Taylor	K-20		RH	P1-P13
7-27-93	3089	T-34		K-20		RH	RT-Creo

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DATE	GALLONS	FROM	CUST.	T/T	TEMP	BY	PRODUCT
7-28-93		T-34	WY-SEA	20	150	RH	RT. CREO
8-2-93	48060 LBS	87744	LETNER	20	500	RB RH	K-364
8-3-93	24120 LBS	87746	STC	K-22	270	RB RH	STC BLEND
8-4-93	47020	87744	CASCADE ASPH.	K-22	300	RB	K-364
8-4	5035 GAL	T-67	TAYLOR	K-40	180	RB	P1-P13
8-5-93	4994	T-34	WY SEA	K-22	180	RB	RT CREO
8-5-93	5093	T-67	TAYLOR	K-40	190	RB	P1-P13
8-6-93	5032	T-34	WY SEA	K-22	180	RB	RT CREO
8-6-93	46880 LBS	87744	CASCADE	K-40	300	RB	K-364
8-9-93	5123	T-67	TAYLOR	K-40	190	RB	P1-P13
	47640	87744	100 bid	K-22	420	RH	K-364
8-13-93		T-67	TAYLOR	K-22	194	RB	P1-P13
8-18-93		T-67	TAYLOR	K-22	187	RB	P1-P13
8-20		T-67	TAYLOR	K-22	210	RB	P1-P13
8-23-93		T-67		K-22	185	RH	P1-P13
8-27-93		T-67	TAYLOR	K-22			
8-30-93		T-67	TAYLOR	K-22	T	TH	P1-P13
8-30-93		T-67	WY SEA	K-40		↓	↓
8-30-93		T-67	BLUELINE	—			
8-30-93		T-67	WY SEA	K-40			
9-7-93	23260	ACFR 87746	STC	K-22	290	RH	STC blend
9-7-93		T-67 34	WY SEA	K-20	150	RB	P1-P13
9-13-93		T-67	PSR	K-22	190	RB	P1-P13
9-13-93		T-67	BLUELINE	—	195	RH	P1-P13
9-15-93		T-67	WY SEA	K-40	190	RB	P1/P13
9-16-93		T-67	WY SEA	K-22	190	RH	
		T-67	TAYLOR	K-20	190	RH	
9-17-93		T-67	TAYLOR	K-22	190	RH	P1/P13
9-20-93		T-67	WY SEA	K-22	190	RH	P1-P13
9-21-93		T-67	WY SEA	K-22	190	RH	" "
9-21-93		T-67	TAYLOR	K-20	190	RH	" "
9-24-93		T-67	TAYLOR	K-22	190	RH	" "
9-27-93		T-67	WY SEA	K-22	195	RH	P1-P13
9-30-93		T-67	TAYLOR	K-22	184	RB	P1-P13

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DATE	GALLONS	FROM	CUSTOMER	T/T	TEMP	LOADER	PRODUCT
11-93		T-67		K-23	190	RH	P1-P13
		T-67		Blue line	190	RH	P1-P13
12-93		T-67		K-20	195	RH	P1-P13
18-93		T-67		K-20	178	RH	P1-P13
		T-67		K-22			
19-93		T-67		K-20	172	RH	P1-P13
				K-22			
10-25-93		T-67	WY sea	K-22	175	RB	P1-P13
10-27		T-67	"	K22	190	RB	P1-PD
10-28		T-67	WY SEA	K-22	185	RB	P1-P13
"		T-67	TAYLOR	K-20	185	RB	P1-P13
10-29	6 Buckets	[illegible]	Caldwell	FRED	[illegible]	RB	P1-Tch
11-1-93		T-67	PACIFIC BOUND	K-22	198	RB	P1-P13
11-1-93		T-67	TAYLOR	K-20	198	RB	P1-P13
11-2-93		T-67	PSR	K-22	198	RB	P1-P13
11-3-93		T-67	TAYLOR	BLUE LINE	185	RB	P1-P13
12-16-93	2350	87746	STC	K-22	280	RH-LM	STC BLEND
12-16-93	5254	T-67	WY SEA	K22	190	LM	P1-P13
12-20-93		T-67	WY SEA	K22	198	RB	P1-P13
12-21-93		T-67	taylor	K-22	190	RH-LM	P1-P13
12-28-93		T-67	WY SEA	K-22	185	RB	P1-P13
12-28-93		T-67	WY sea	K-22	155	RB	P1-P13
12-28		T-67	TAYLOR	K-22	178	RB	P1-P13
12-24		T-67	TAYLOR	K-22	200		
12-5-94	[illegible]	T-99		T-67	215	RH-CV	NSR
"	[illegible]	T-23		T-67	162	RH-CV	LT-Creo
"	705	T-17		T-67	166	"	H-Oil
"	3100	[illegible]		T-67	60	"	Solv
1-14-94		T-67	TAYLOR	K-22	180	RB	P1-P13
1-17-94		T-67		K-22	178	RH	P1-P13
1-18-94		T-67		K-22	180	RH	P1-P13
1-24-94	10 Buckets		Caldwell	FRED		RB	P1-Ch
1-25-94		T-67		K-22	182	RB	P1-P13
"		"		K-40	182	RH-LM	"

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LOCATION _____ DATE _____ BY _____

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DATE	GALLONS	FROM	CUST	T/T	TEMP	LOADER	PROD
2-2-94		T-67	OROVILLE	K-20	190	RB	PL-P13
			OROVILLE	K-22	190	RB	PL-P13
2-7-94	5309	T-67	CRUM &	K-20	180	RB	PL-P13
"	5163	"	PSR	K-22	"	RB	"
"	7315	"	TAYLOR	Blue Line	"	RH	"
2-8-94	6781	T-67	PSR	K22	"	RB	"
2-9		T-67	PSR	K22	"	RB	"
2-16-94		T-67	Talor	K-22	150	RH	"
"		"		K-22	150	RH	"
3-2-94		T-67	PSR	K-22		RB	"
3-3-94		"	PSR	K-22		RB	"
3-4-94		"	PSR	K-22		RB	"
3-7-94		T-67	Taylor	Blue Line	195	RB	"
3-28-94		T-67	TAYLOR	K-22	182	LM	PL-P13
4-18-94		T-67	ASHCROFT	K-20	180	RB	PL-P13
4-18-94		T-67	TAYLOR	K-22	180	RB	PL-P13
4-25-94		T67	Taylor	K-20	178	RH	PL-P13
4-26-94		T-67	ASHCROFT	K-20	200	TH	PL-P13
5-2-94		T-67	ASHCROFT	K20	190	RB	PL-P13
5-3-94		T-67	TAYLOR	BLUE LINE	195	RB	PL-P13
5-4-94		T-67	ASHCROFT	K20	203	RB	PL-P13
5-6		T-3	PSR	K22			PL-P13
5-6		T-99	PSR	K22			PL-P13
5-9-94		T-67	ASHCROFT	K-22	186	RB	PL-P13
5-17-94		T-67		K-22	182	RH	PL-P13
5-18		T-67	TAYLOR	K-22	190	RB	PL-P13
5-18-94		T-67		K-22	200	RH	PL-P13
5-20-94		T-67		K-22	212		PL-P13
5-24		T-67		K-22			PL-P13
5-20		T-67	Taylor	K-22	190	TH	PL-P13
6-7		T-67	Blueline		192	TH	PL-P13
7-21-94		T-67		K-22	216	LM	PL-P13

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DATE GALLONS FROM COST T-T

DATE	GALLONS	FROM	COST	T-T	TEMP	LOADER	PROD.
7 12 94							

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Date	T/C No	From	Pro	T/C out	T/C Domo	T/C Temp	T/C Tinage	Rec Tank	T/C residue
1-24-89	GATX 93732	Chi	Gr. 3	30	13	110	86	68	3 in
1-30-89	NATX 76295	Chi	Clean 3	32½	12½	112	84½	68	10 in
3-2-89	ACFX 79682	Chi	cl. Gr. 3	26	13½	170	92 in	68	2 in
2-9-89	NATX 25554	Chi	Gr. 3	23½	12	168	97 in		7 in
2-9-89	TLDX 223004	Chi	Gr. 3	32	15	164	90	68	6 in
2-7-89	UTLX 79981	Chi	Gr. 3	31	11	170	83½	T-Ts	1 in
2-13-89	ACFX 89029	Chi	out of Gr. 3	36½	12	30	83½	68	6 in
2-16-89	GATX 56351	Chi	Gr. 3	30½	7	90	85½		4
2-16-89	TLDX 223129	Chi	Gr. 3	32	13	168°	88		7
2-16-89	NATX 76384	Chi	Gr. 3	29½	14½	160	90	68	1
2-21-89	ACFX 79680	Chi	Gr. 3	33½	13	70	86½	68	5
2-22-89	ACFX 79676	Chi	Gr. 3	34	13	115	86	68	5 in
2-23-89	ACFX 88674	Chi	Gr. 3	31½	12½	160	88½	68	5
2-24-89	UTLX 75164	Chi	Gr. 3	33	14	214	93 in	68	4 in
3-9-89	NATX 76075	Chi	Gr. 3	36	13	90°	81½	68	1 in
3-14-89	ACFX 81225	Chi	Gr. 3	26½	10½	40°	78½	68	1 in
3-16-89	NATX 76384	Chi	Gr. 3	36½	14½	90	83½	68	1 in
3-17-89	TLDX 223129	Chi	Gr. 3	36	13½	60	84½	68	7 in
3-21-89	NATX 25554	Chi	Gr. 3	39	12	60	83	68	3 in
3-21-89	GATX 93732	Chi	Gr. 3	33	13	70	84	68	4 in
3-22-89	UTLX 79978	Chi	Gr. 3	27	11	170	86½	68	2 in
3-23-89	KPCX 706	Chi	Gr. 3	29	9	210	89½	68	2 in
[illegible]	UTLX 79981	Chi	Gr. 3	31½	11	170	82	68	1 in
[illegible]	PLMX 15005	Chi	Gr. 3	31	14½	220	84½	68	2 in
4-11-89	ACFX 89029	Chi	Clean 3	31	11½	200	88	Trucks	
[illegible]	TLDX 223004	Chi	Gr. 3	36	15	185	84½	68	3 in
[illegible]-3-89	ACFX 79680	Chi	Gr. 3	23	13	220	96½	68	2 in
[illegible]	GATX 56351	Chi	Gr. 3	30½	8	140	86	68	3
[illegible]	GATX 94541	Chi	Gr. 3	31	13	180	90	68	2 in
[illegible]	[illegible]	Chi	cl. Gr. 3	35½	12½	180	85	T-T	1
[illegible]	NATX 76075	Chi	Gr. 3	37	12½	105	80½	68	3 in
[illegible]	NATX 76384	Chi	Gr. 3	36	14½	105	84	68	2 in
[illegible]	NATX 25554	Chi	Gr. 3	32	12½	100	89	68	3 in
[illegible]	GATX 93732	Chi	Gr. 3	22	13½	90	94½	68	2 in
[illegible]	[illegible] 706	Chi	Gr. 3	28	9	85	85	68	2 in

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KOPPERS

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T-170 REV. 6
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

SUBJECT _____

By	Start	Stop	Start	Stop	Tank Temp	Gallons	Factor	Gallons @60°	
	4-7	6-9			190	18,216	1.052	17,315	
	1-4	3-8			178°	19,617	1.0472	18,733	
	4-7½	6-2	5762 To	K-40	194	12,961	1.0536	11,851 To T-68	
	Trucks				60			18,316	55,386
	Trucks		1-½	1-6	60	3,853 Galls To T-68		18,612	
		3 T-T			100	18,753	1.016	18,458	
	1-6	3-10			230	19,617	1.068	18,367	
			Trucks		60			19,749	
			Trucks		60			19,336	
	1-5	3-11½			222	21,369	1.0648	20,068	
	2-6	4-0	5281	K-30	164	12,611	1.0016	12,590	
	4-0	4-9	10,975	K-30+40	182	6,306	1.0488	6,012	
	4-1	5-9½	5282	K-30	208	14,362	1.0592	13,559	
			16,714	K-30+40		2765 Galls To T-68			
	2-0	4-4			192	19,205	1.0528	18,242	
	3-9½	4-0				1751 To T-68	1.0512	1666	
	2-8	5-0			208	19,617	1.0592	18,520	
	5-0	6-0	10,311	K-40	204	8,047	1.0576	7,608	
	4-6½	5-5	11,346	K-30	184	7,356	1.0496	7,008	
	5-5	7-7			188	18,216	1.0512	17,328	
	6-10½	9-4			196	20,668	1.0544	19,601	
	8-7	11-0			204	20,318	1.0576	19,211	
	9-9	12-2½			190	20,668	1.052	19,646	
	10-10½	11-9	9-8	11-1½	185	19,617	1.06	18,683	
	11,436	To K-40			60°			18,492	
	9-10	12-0			190	18,216	1.052	17,316	
	10-10	13-1½			190	19,267	1.052	18,315	
	11-9½	14-1			192	19,267	1.0528	18,301	
	12-9	15-2			198	20,318	1.0552	19,255	
	5-3½	7-6½			170	18,917	1.044	18,122	
	6-11½	9-4½			190	20,318	1.052	19,393	
	9-4½	11-8½			204	19,617	1.0576	18,549	
	10-3½	12-8½			192	20,318	1.0528	19,2[illegible]	
	11-11½	14-6			184	21,369	1.0496	20,359	

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T-170 REV. 6
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	T/C No	From	Pro.	T/C out	T/C Dome	T/C Temp	T/C Image	Rec. Tank
4-27-89	TLDX 223047	Chi	Cl Gr 3	35	15	130	88	
4-29-89	GATX 13713	Chi	Gr-3	31½	9	190	87½	68
5-1-89	UTLX 79981	Chi	Gr-3	28½	10½	140	85½	68
5-12-89	TLDX 223004	Chi	Gr-3	36½	14½	140	85	
5-4-89	KPCX 537	Chi	Bitumen	32	14	252	81	
5-4-89	ACFX 81225	Chi	Gr-3	23½	10½	135	81½	68
5-5-89	GATX 56351	Chi	Gr-3	25½	7½	190	90	68
5-9-89	ACFX 79680	Chi	UNC	25	13	80	95	4
5-2-90	KPCX 511	Chi	K-364	27	19	220	88	
5-19-89	ACFX 79679	Foll.	Methyl	23½	13½	60	96½	3
5-24-89	PLMX 15005	Chi	Gr-3	36	14½	122	80½	68
5-26-89	GATX 94541	Chi	Gr-3	37	13	180	87½	68
6-1-89	NATX 25554	Chi	Gr-3	34½	12½	170	86½	68
6-2-89	GATX 93732	Chi	Gr-3	22	13	160	94	68
6-12-89	UTLX 75164	Chi	Gr-3	28½	15	160	96	68
6-13-89	Kpcx 706	Chi	Gr-3	16	9	162	102	68
6-14-89	ACFX 81225	Chi	Gr-3	25	10½	122	80	68
6-15-89	TLDX 223004	Chi	Gr-3	34½	15½	126	87½	68
6-16-89	PTLX 223589	Chi	Gr-3	28½	12¾	208	91	68
6-20-89	UTLX 79981	Chi	Gr-3	26	10½	200	89	68
6-21-89	GATX 13713	Chi	Gr-3	31	9	150	88	68
6-23-89	ACFX 79676	Chi	Gr-3	19½	13½	128	99½	68
6-26-89	NATX 76075	Chi	Gr-3	30½	12½	163	86	68
6-27-89	PLMX 15005	Chi	Gr-3	27½	14½	198	88	68
6-29-89	GATX 94541	Chi	Gr-3	33	13	154	89	68
7-7-89	GATX 56351	Chi	Gr-3	33	9	160	83½	68
7-11-89	TLDX 223004 x	Chi	Gr-3	33	16	158	89	68
7-12-89	UTLX 75164 x	Chi	Gr-3	32	15	160	95	68
7-14-89	NATX 76384 x	Chi	Gr-3	40	14½	180	80	68
7-17-89	ACFX 81225 x	Chi	Gr-3	29½	10½	160	75½	68
7-20-89	NATX 25553 x	Chi	Gr-3	26	12½	176	96	68
7-21-89	ACFX 88674 x	Chi	Gr-3	24	12	206	96	68
[illegible]	PLMX 15005 x	Chi	Gr-3	24	14½	192	91½	68
[illegible]	ACFX 87746	Chi	K-364	40	17	165	80½	
[illegible]	ACFX 89029	Chi	Cl Gr 3	22	12	192	96¾	

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LOCATION _____ DATE _____ BY _____

SUBJECT

T/C Residuals	By	Start	Stop	Start	Stop	Tank Temp	Gallons	Factor	Gallons
1	[illegible]	15	771 To	T-T	4062	Gals To	To 223589		19832
2 in	"	12-5½	14-6	NEW	Month	184	17,165	1.0496	16,353
3 in		13-4½	15-10			182	20,668	1.0488	19,706
4 in		13-11	14-3	Trucks			To T-68 2802	1.056	2653
3 in									
2 in		12-6	14-9			192	18917	1.0528	17968
4 in		14-1½	16-7			196	20668	1.0544	19602
3 in	GH	2-1	8-0			158	20,028	1.0392	19,272
5500	Galls	T/C 586	15-35	5-11-89					
2 in		0-6	6-3½			60	19,605	1	19,605
3 in		8-10	9-1	+ 17,035 To T-T		188	2,102	1.0512	19,035
2 in		7-9½	8-1	16,707	K-40	194	2452	1.0536	2,327
3 in	GH	5-½	7-3½			186	18,917	1.0504	18,009
3 in	GH	5-11	8-3			176	19,617	1.0464	18,747
2 in	GH	3-7	4-1	15,447	Trucks	182	4,204	1.0488	4,008
3 in	GH	3-4½	6-1½	+ 1777 Galls		178	23,120	1.0472	22,174
4 in	GH	4-10	7-0			178	18,216	1.0472	17,394
3 in	GH	5-8½	8-1			184	19,967	1.0496	19,020
3 in	RB	7-4	9-10			202	21,019	1.0568	19,889
3 in	GH	7-½	9-6½			198	21,019	1.0552	19,919
4 in	GH	8-1½	10-2½			184	17,516	1.0496	16,688
4 in	GH HB	8-10	9-3	17,020	K-40	189	3,331	1.0516	2,788
2 in	HB GH	7-10½	10-4			188	20668	1.0512	19,661
3 in	HB GH	9-0	11-5			198	20,318	1.0516	19,321
2 in	GH HB	8-8	11-1	Month end		182	20,318	1.0488	19,372
2 in	GH HB	6-4½	6-8	16,932	K-40	202	2,452	1.0568	2,320
3 in	GH HB	3-11	6-4			198	20,318	1.0522	19,310
2 in	" "	5-3	7-8			190	20,318	1.052	19,313
3 in	" "	5-8	6-6	11,294	K-40	200	7,006	1.056	6,634
6 in	"	5-1	7-2			180	17,516	1.048	16,71[illegible]
2 in	"	5-9½	6-3	16,827	K-40	204	3,853	1.0576	[illegible]
3 in	"	4-11½	7-4			180	19,967	1.048	[illegible]
8 in	"	4-7	7-½			210	20,668	1.06	[illegible]
13 in									
1 in		3-2½	[illegible]	16,222	K-40	184	3503	[illegible]	[illegible]

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LOCATION _____ DATE _____ BY _____

SUBJECT

DATE	T/C NO	FROM	PRO.	T/C OUT	T/C DOME	T/C TEMP	T/C INNAGE	REC. TANK
8-11-89	TLDX 223047	Chi	Clean 3	40"	15"	220°	83"	68
8-7-89	NATX 76075	Chi	Gr. 3	31	13	166	86	68
8-9-89	UTLX 79981	Chi	Gr. 3	25	11	180	89	68
8-24-89	PTLX 223559	Chi	Clean 3	30	13½	190	90	
8-16-89	GATX 56351	Chi	Gr. 3	23½	8½	122	93½	68
8-28-89	Kebx 305	Chi	K-364	43	16	190	76	
8-21-89	TLDX 223004	Chi	Gr. 3	34	15½	102	88½	68
	Kpcx 537	Chi	Bitumen	28½	14½	394	85½	
9-6-89	UTLX 77423	Chi	Clean 3	35	15	206	92	
8-28-89	ACFX 88674	CHI	GR-3	28½	12	184	92½	68
8-29-89	KPCX 706	CHI	GR-3	28½	8"	160	90 in.	68
8-30-89	UTLX 75164	Chi	Gr. 3	29½	15"	158°	96½	68
8-31-89	GATX 94541	Chi	Gr. 3	27½	13	160	93½	68
9-1-89	NATX 25553	Chi	Gr. 3	30½	12½	142	92	68
9-7-89	ACFX 89029	Chi	Gr. 3	26½	12½	176	92½	68
9-8-89	PLMX 15005	Chi	Gr. 3	24½	14½	180°	91	68
9-26-89	TLDX 223166	Chi	K-364	46½	12½	180	62	
9-25-89	ACFX 79680	CHI	CLEAN 3	21"	13¼	170	99"	
	KPCX 500	Bitumen		39½	25½	60°		
9-28-89	Kpcx 706	Chi	Gr. 3	32	9	150	89½	68
9-29-89	UTLX 75164	Chi	Gr. 3	34	15	160	92½	68
10-2-89	ACFX 88674	Chi	Gr. 3	40	12	158	81	68
10-5-89	RTLX 223589	Chi	Gr. 3	32	13½	166	88"	68
10-6-89	UTLX 79981	Chi	Clean 3	29	11	180	85	
10-10-89	UTLX 77423	Chi	Gr. 3	28	15	136	97½	68
10-11-89	ACFX 89029	Chi	Gr. 3	28	12	160	91½	68
10-20-89	ACFX 87743	CHI	Bitumen	30½	17½	290	90½	
10-12-89	GATX 94541	Chi	Gr. 3	34½	13	164	87	68
10-13-89	Kpcx 700	Foll	NSR	27	8	85	91½	99
10-13-89	NATX 25553	Chi	Gr. 3	24	12	170	98	68
10-16-89	GATX 56351	Chi	Gr. 3	34½	8½	184	81½	68
10-16-89	NATX 76674	Chi	Methyl	32	14½	60	89½	3
10-17-89	TLDX 223057	Chi	Gr. 3	38	15½	210	88½	68
	ACFX 87749	Chi	K-364	33	17½	240	78½	
	PLMX 15005	Chi	Gr. 3	35	14½	144	80½	68

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* See Log 8-15-89

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T/C RESIDUE	SUBJECT By	Start	Stop	Start	Stop	Temp Tank	Gallons	Factor	Galls @ 60°
3 in	"	7-5	7-8	17,008	K-40	204	2,102	1.0576	1,987
2 in	GH HB	2-0½	4-5½			184	20,318	1.0496	19,357
2 in	"	4-5-½	6-10½			198	20,318	1.0522	19,310
3 in	*	10,692 Galls @ 60° Trucks							
5 in	"	5-1½	7-8			173	21,369	1.0452	20,444
2 in	Trucks								
4 in	"	6-4	8-8½			186	19,967	1.0504	19,008
3 in		16,994 Galls @ 60° Trucks							
2	RB	4-6	6-10½			190	19,967	1.052	18,980
1	RB	5-5½	7-11½			190	21,019	1.052	19,980
1	RB	6-6½	9-1			200	21,369	1.056	20,236
3		7-7	10-2	Month End		198	21,719	1.0552	20,583
3 in	GH	9-5	11-10			190	20,318	1.052	19,313
2	GH	10-5	12-10½			193	20,668	1.0532	19,624
3 in	GH JD	11-6½	14-½			200	21,019	1.056	19,904
				K-40	61842 gal				
				K-30	K-20				
		2-7½	5-½			184	20,318	1.0496	19,358
		3-0½	5-5	Month END		192	19,9[illegible]	1.0528	18,966
		1-5	3-7			180	18,[illegible]	1.048	17,381
		2-2	4-7			168	20,3[illegible]	1.0432	19,476
Trucks		68 3-1½	4-5 = 3638 @ 60°			K-20 = 15,8[illegible]			19,486
5		2-4	4-9½			200	20,668	1.056	19,571
3		3-5	5-9½			186	19,967	1.0504	19,008
		Trucks							
4		4-6	6-11½			188	20,668	1.0512	19,661
5		0-10½	3-7½			85	19,792	1.0100	19,586
3		5-7½	8-2			198	21,369	1.0522	20,308
4 in		6-11	9-2			194	18,917	1.0536	17,954
2 in		3-7	9-8			60	20,591	"	20,591
19		8-2	10-2½			190	17,165	1.052	16,316
3 in		6-9	9-1			180	19,617	1.05[illegible]	18,647

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	T/C NO.	From	Pro.	T/C Out	T/C DOME	T/C TEMP.	T/C Trace	Re Tan
10-24-89	TLDX 223156	Chi	UNC.	31	13	160	89½	4
10-25-89	GATX 93732	Chi	Clean 3	32	13½	190	82½	
10-31-89	UTLX 78845	Chi	Gr. 3	38	15	125	90	68
11-7-89	UTLX 78462	Chi	Gr-3	32½	15	190	94½	
11-8-89	UTLX 75164	Chi	Gr-3	29½	14½	148	96½	68
11-9-89	KPCX 706	Chi	Gr-3	33	9	156	86	68
11-14-89	ACFX 88674	Chi	Gr-3	34	12	174	86	68
11-17-89	TLDX 223004	Chi	Gr-3	33½	14½	120	89½	68
11-21-89	NATX 25554	Chi	Gr. 3	26	12½	160	95½	68
11-30-89	NATX 76295	Chi	Clean Gr. 3	33	12½	170	84	
12-12-89	KEBX 207	Chi	BIT	44		230		
12-12-89	PTLX 223589	Chi	Gr. 3	32½	13	210	85½	68
12-13-89	UTLX 77423	Chi	Gr. 3	42½	15	140	84	68
12-14-89	UTLX 79981	Chi	Gr. 3	28	11	190	86	68
12-28-89	ACFX 89029	Chi	cl Gr-3	24	11½	205		
12-21-89	UTLX 75164	Chi	Clean 3	30	15	164	97	
1-3-90	GATX 25097	Hou	Clean 3	12				
1-12-90	GATX 56351	Chi	Gr 3	40½	8	100	75½	68
1-16-90	UTLX 77423	Chi	Gr. 3	36	15	98	91½	68
1-18-90	ACFX 79682	Chi	Gr 3	31	13¼	96	88½	[illegible]
2-2-90	NATX 76[illegible]5	Chi	Gr. 3	33½	13	84	84	[illegible]
1-23-90	ACFX 79[illegible]	Chi	Clean 3	25½	13½	91	94½	
1-20-90	UTLX [illegible]	Clean 3						
2-6-90	UTLX [illegible]64	Chi	Gr 3	31½	16	90	94½	68
2-7-90	NATX [illegible]554	Chi	3	36½	12½	74	85½	
2-13-90	TLDX 223004	CHI	GR-3	40½	14¾	46	82	[illegible]
[illegible]-14-90	KPCX 706	Chi	Gr. 3	39	9½	130	81	68
[illegible]-16-90	ACFX 89029	Chi	Gr-3	31	11½	60	88½	68
[illegible]-27-90	GATX 93732	Chi	Gr 3	22¾	12¾	65	93½	68
[illegible]-90	ACFX 88943	Chi	Gr 3	25½	11½	80	93	
[illegible]-90	UTLX 79981	Chi	Gr. 3	27½	10½	68	87	68
[illegible]	ACFX 87743	Chi	BIT	34	17½	300		
[illegible]	UTLX 78845	Chi	Gr. 3	36	15	60	91¼	68
[illegible]	TLDX 223057	Chi	Gr. 3	33	15½	48	85½	
[illegible]	GATX 11748	Chi	Gr. 3	17½	8	112	100	68

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T/K	SUBJECT TO Residue	By	Start	Stop	Start	Stop	Temp. Tank	Gallons	Factor	Gals. @60°
	31		1-7	6-5½			120	16,504	1.0240	16,117
	3	Trucks	16,859 Gals @60°							
	4		4-1	6-5	Month end		172	19,617	1.0448	18,775
	5,10									
	2		2-4	4-9			182	20,318	1.0488	19,373
	5,10		4-1	6-5			194	19,617	1.0536	18,619
			5-2	7-6			196	19,617	1.0544	18,605
			6-1	7-0	5-8½	7-1	196	19,267	1.0544	18,272
			7-1	9-3			178	18,216	1.0472	17,783
				32½ in Hose						
			4-9	7-2			200	20,318	1.056	19,240
			7-2	9-1			188	17,516	1.0512	16,663
			9-1	11-2			186	17516	1.0504	16,676
			T-T-40							19,425
	5,11		Trucks							19,855
	5,11		Trucks							16,488
	3,11		5-10½	8-0			188	17,866	1.0512	16,995
	5,11		5-2½	7-6			192	19,267	1.0528	18,300
	7,10		4-8½	6-10			192	17,866	1.0528	16,969
			2-0	4-5			200	20,318	1.056	19,241
	Trucks				17,490 Gals @ 60°					
	This car To			Orey. IL	Calif					
			3-7½	5-5½	4-8½	5-4½	196	21,019	1.0544	19,935
			Trucks		16,667 @ 60°					
			4-7	6-5			204	15,414	1.0576	14,574
			5-8	7-9½	"	"	198	17,816	1.0536	16,910
	3,11		4-10½	6-7½	5-10	6-7	202	21,019	1.0568	19,889
	4,11		5-2½	5-7½	5-7⅞	7-7½	202	20,318	1.0568	19,226
	Trucks		16,959 gal. To		Mt. Eq. 210°				T-65 →	998 Tank
			7-8	8-6 190	195	9-2½	194	20,319	1.0536	19,289
				173	000 Lbs.					
			4-6	6-9½			206	18,566	1.0554	17,592
			Trucks		18,085 Gals @ 60°					
			6-7½	8-10	"	"	188	18,566	1.0512	17,662

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T-170 REV. 6
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

DATE	SUBJECT T/C NO.	FROM	PRO.	T/C OUT	T/C DOME	T/C TEMP	T/C INAGE	REC. TANK
3-27-90	UTLX 78422	Chi.	Gr. 3	40 3/4	14 3/4	100	87 1/4	68
3-29-90	ACFX 88942	Chi.	R1/R3	27 1/2	11 1/2	98°	91 1/2	67
3-30-90	ACFX 88689	Chi.	R1/R3	25 1/2	11 1/2	87	94 1/2	69
4-4-90	ACFX 88674	Chi.	Gr. 3	26	11 1/2	84	95	68
4-12-90	PTLX 223589	Chi.	Gr. 3	48	13	76	78 1/2	
	ACFX 87744	Chi.	R-364	31 1/2	12 1/2	100	81 1/2	
4-19-90	PTLX 223594	Chi.	Gr. 3	34	13	78	86	68
4-20-90	NATX 76423	Chi.	UNC	37 1/2	14 1/2	86	81 1/2	4
4-23-90	GATX 11746	Chi.	GR-3	24	7 1/2	96	94	
4-27-90	UTLX 78422	Chi.	Gr-3					4
4-30-90	ACFX 79676	Chi.	Gr. 3	34	13 1/2	90	94 1/2	68
5-1-90	UTLX 75164	Chi.	Gr-3	35 1/2	15 1/2	98	91	67
5-8-90	UTLX 79981	Chi.	Gr. 3	30 1/2	10 1/2	88	84 3/4	67
5-10-90	GATX 56351	Chi.	Gr. 3	30	8 1/2	86	86 1/2	67
5-11-90	ACFX 88942	Chi.	Gr. 3	33	11 1/4	86	87 1/4	67
5-14-90	TLDX 223129	Hou.	H-016	40 1/2	12 1/2	70	80 1/2	3
5-16-90	ACFX 88689	Chi.	Gr-3	29	11 1/2	76	71	67
5-17-90	GATX 13706	Foll	Methyl	15	8	60	103	3
5-18-90	ACFX 79678	Chi.	UNC	27	13 1/2	80	92 1/2	4
5-21-90	GATX 99263	Foll	Solvent	18	11	60	93 1/2	34
5-21-90	ACFX 79683	Chi.	Gr-3	26 1/2	13 1/2	84	93	67
5-23-90	NATX 76587	Chi.	Gr-3	34 1/2	14 1/2	101	83 1/2	67
5-24-90	ACFX 79678	Foll	NSR	21	13 1/2	60	98 1/2	4
5-31-90	UTLX 75164	Chi.	Gr-3	30	14 3/4	104	96 1/2	67
6-1-90	PTLX 223594	Chi.	Gr-3	34 1/2	13	94	86	67
6-5-90	ACFX 88674	Chi.	Gr-3	36 1/2	12	84	91	67
6-6-90	TLDX 223106	Chi.	Clean 3	39	16 1/2	80	83 1/2	67
6-7-90	UTLX 79918	Chi.	Gr-3	34	11	100	80	
6-12-90	GATX 56351	Chi.	Gr-3	31	8	104	85 1/2	67
6-13-90	UTLX 79981	Chi.	Gr-3	31	10 1/2	84	83 1/2	67
6-14-90	ACFX 79678	Chi.	Gr-3	22	13 1/2	106	92 1/2	67
6-18-90	UTLX 77436	Chi.	Gr-3	38	15	110	99	67
6-19-90	NATX 76423	Chi.	Gr-3	33	15	110	94 1/2	67
6-20-90	ACFX 88794	Chi.	GR-3	26 1/2	11 1/2	106	93 1/2	67

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Organic Materials Group
Koppers Company, Inc.

KOPPERS

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T-170 REV. 6
200 BKS. 5-60
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LOCATION _____ DATE _____ BY _____

T/C RESIDUE	SUBJECT	BY	START	STOP	START	STOP	TEMP TANK	GALLONS	FACTOR	GALLONS @ 60°
			6-4	8-7½			196	19,267	1.0544	18972
	Month end		7-11	8-3½	6-11½	7-9	199	9848 7-68	÷ 1.0556	9291
			6-5½	8-10¾			198	20,493	1.0522	19,476
			6-5	9-0			196	21,719	1.0544	20,598
	Trucks				15,171 Gallons @ 60°					
							180	6306	1.048	
			1-7	2-4	28-11	27-2¼	200	14538	1.056	19784
			2-1	3-11¾			186	20,058	1.0504	19,002
	TRUCKS									
	1-Truck		6-3	10-9½			170	15376	1.044	14727 7-68 5138
			5-6	7-7			218	17,516	1.0632	16,474
			6-7½	12-5			182	20,008	1.0496	19,062
			9-3	14-11			190	19,864	1.052	18,882
			11-7½	17-6			180	20,296	1.048	19,366
			17-6	23-2½			184	19,721	1.0496	18,789
	3 in		0-3	9-7	+ 1596 060 =		130	17,946	1.0266	17,482
			18-½	24-0			186	20,584	1.0504	19,596
	3 in		2-10	8-9½			60	20,169	1	20,169
			0	6-2½			208	21,013	1.0592	19,839
			0-10	9-2½			60	15,924	1	15,954
			14-2½	19-10			185	19,433	1.05	18,507
	5 in		15-5½	20-10½			184	18,713	1.0496	17,829
	12 in		0-8½	3-4½			90°	18893	1.012	18669
	10 in		5-9	7-4½	4-3	8-6	186	20,296	1.0504	19,328
			Month End							
	7 in		6-10	12-7½			194	20,008	1.0536	18,990
	10		6-3	12-½			190	20,008	1.052	19,019
	3		8-10½	14-8			180	26,018	1.048	19,091
	[redacted]		TRUCKS							
	3		7-9	15-6			184	19,864	1.0496	18,923
	13 5		5-11	11-4½			190	18,857	1.052	17,924
	10 4		9-4½	9-8½			191	20,152	1.0584	19,041
	6 in		7-7½	13-7½			180	20,728	1.048	19,780
	4 in		12-½	17-11			196	20,296	1.0584	19,175
			16-4½	22-3½			200	22,011	1.056	20,927

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Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Tc No.	From	Pr. Ot	T.C Out	Tc Down	Tc In Ave	Tc Temp	Rec Tank
6-28-90	TLDX223047	Chi	P-1/P-13	31 3/4	14 1/2	91 3/4	90	67
			Month		End			
7-3-90	GATX 117 48	chi	P-1/P13	32 1/2	8	95 1/2	102	67
7-12-90	GATX 56351	CHI	P-1/P-13	30 1/4	7	86	104	67
7-13-90	UTLX 78422	CHI	P-1/P-13	28 3/4	14 1/2	99 1/2	120	67
7-16-90	ACFX 81225	CHI	P1/P13	23 3/4	10	81 1/4	92	67
7-19-90	NATX 76218	CHI	CLEAN 3	32 1/4	12 3/4	84	72°	
7-30-90	PTLX 223594	chi	P-1/P13	34	12 1/2	86	86°	67
			Mon	Th	End			
8-1-90	ACFX 89030	chi	P-1/P-13	25 1/2	11 1/2	94 1/2	96°	67
8-2-90	ACFX 79678	chi	P1/P13	24	13	95	90	67
8-3-90	ACFX 88790	chi	P1/P13	25 1/2	11 1/2	94	94	67
8-6-90	TLDX223047	chi	P-1/P13	35	14 1/2	88 1/2	82	67
8-7-90	NATX 25583	chi	P-1/P13	28	12	94 1/2	98	67
8-13-90	NATX 76029	chi	P-1/P-13	25 1/2	12 1/2	92	114°	67
8-17-90	UTLX 78887	chi	CL P-1/P13	34 1/2	15	93	78°	T-T to 67
8-19-90	KPCX 500	chi	Bitumen	45 1/2	25 1/2	?	80	T-T
8-21-90	TLDX223112	chi	P-1/P13	36	14 1/2	86	78	67
8-28-90	GATX 38612	Chi	CL P1-P13	33 1/2	12	82 1/2	68	
8-29-90	UTLX 78422	CHI	P-1/P13	35	15	93	84	67
8-30-90	GATX 56351	Chi	P1-P13	30	8 1/2	86	84	67
			Mon	Th		End		
9-4-90	ACFX 89694	chi	P-1/P13	27	11 1/2	93 1/2	82	4
9-5-90	ACFX 81225	Chi	P-1/P13	31 1/2	10	73 1/2	74°	67
	KPCX 536	chi	K-364	36	14		60°	
9-7-90	ACFX 79678	chi	P-1/P13	23	13 1/2	99	96°	67
9-11-90	PTLX 223594	CHI	P-1/P13	32 1/4	12 1/2	88	80	67
9-12-90	ACFX 87747	CHI	P1-P13	29	12 1/4		60°	
	KEBX 201	CHI	Bitumen	44 1/2	5 3/4		60	
9-18-90	PTLX 223588	chi	CL P-1/P13	30 1/2	12 1/2	89 1/2	120°	
9-24-90	TLDX223124	Chi	H-011	35 1/2	12 1/2	85 1/2	76	4
9-26-90	UTLX 79929	CHI	L.MNC	31 1/2	10 1/2	83	95	4
	ACFX 87743	CHI	Bitumen	37 3/4	17 1/4		60°	
	ACFX 87747	CHI	K-364	30	17	87	210°	

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Koppers Company, Inc.

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LOCATION _____ DATE _____ BY _____

SUBJECT

Tc residue	Start	Stop	Start	Stop	Tank Temp	Rec. Gallons	Factor	Gallon @ 60°
8 in	20-5½	26-3½			184	20,152	1.0496	19,199
			Month End					
3 in	19-10	25-4¼			188	19,071	1.0512	18,142
4	10-11½	16-9½			191	20,152	1.0524	19,148
8	16-9½	22-10½			186	21,016	1.0504	20,007
12	19-6¾	24-8			182	17,633	1.0488	16,812
17,089 →	Trucks		T-67	T-67 2057	186		T-T 1.0504	2055 T-67 17,089 T-T
4	9-1	14-10½			182	20,008	1.0488	19,077
			Month End					
4	11-8	17-6			186	20,152	1.0504	19,185
5	14-3½	19-11¾			186	19,649	1.0504	18,706
10	16-10	22-6½			182	19,721	1.0488	18,803
10	19-4½	25-3			183	20,256	1.0492	19,306
7	15-6	21-7			184	21,016	1.0496	20,023
	19-11½	26-3½			186	21,434	1.0504	20,405
6 in						16,929 2405 T-67		16,929 77 2405 T-67
15	20-5¼	26-1¾			186	19,721	1.0504	18,775
17 Trucks								16,802
5	15-4	21-3			190	20,440	1.052	19,429
5	21-3	27-2			192	20,440	1.0528	19,414
			Month End					
6 in	0-4½	6-10			150	21,857	1.036	21,097
6 in	19-6	24-2½			180	16,266	1.048	15,521
2	16-11	22-9½			181	20,296	1.0484	19,359
3	17-10	23-11½			184	20,872	1.0496	19,885
2	Trucks		K-30		Rec. 20,603 @ 60°			
6	0-6½	6-4			180	19,605	1.0456	18,750
10	6-4	11-7½			155	17,914	1.038	17,258

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Koppers Company, Inc.

T-170 REV. 6
200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

SUBJECT _____

DATE	T/C NO.	FROM	PROD.	T/C OUT	T/C DOME	T/C IMAGE	TEMP	REC. TANK
9-27-90	UTLX 642211	CHI	CL P-1/P-13	35	10 3/4	84	100	
10-1-90	ACFX 88945	chi	P-1/P-13	36	11 1/2	84	84°	67
10-9-90	GATX 56351	chi	P-1/P-13	30	8 1/2	85 1/2	84°	67
10-5-90	GATX 11748	Chi	P1-P13	22	8 1/2	96	82	67
10-8-90	ACFX 88790	Chi	P1-P13	27	11 1/2	92	74	67
10-15-90	TLDX 223106	Chi	P1-P13	38	15	84	64	67
10-17-90	UTLX 641996	Chi	Clean P1-P13	29	11	89 1/2	96	
10-18-90	UTLX 77475	Chi	P1-P13	30	14 1/2	96 1/2	76	67
10-19-90	UTLX 78422	Chi	P1-P13	33	15	94 1/2	72	68
10-22-90	NATX 25555	Chi	P1-P13	32 1/2	11 1/2	89 1/2	80	68
10-24-90	UTLX 642213	Chi	Clean P1-P13	36 1/2	10 1/2	82	94	
10-25-90	TLDX 223112	chi	P-1/P-13	33 1/2	15	88 1/2	60	68
10-26-90	NATX 76384	Chi	P1-P13	35	14 1/2	86	88	68
10-29-90	ACFX 88670	chi	P-1/P-13	29	11 1/2	91	70	67
10-30-90	ACFX 79680	chi	P-1/P-13	28	13 1/2	92 1/2	86	67
11-1-90	GATX 93198	Chi	P1-P13	32	13 1/4	88 3/4	74	68
11-1-90	ACFX 88789	Chi	P-1/P-13	32	11 1/2	87 1/2	64	68
11-5-90	UTLX 642210	CHI	CLEAN P-1/P-13	31	11"	87 1/2	60	
11-6-90	ACFX 88946	chi	P-1/P-13	32	11 1/2	87	86	67
11-14-90	ACFX 87743	chi	Type I Roofing	33 1/2	17		280	
11-20-90	KPCX 537	chi	Bitumen	39	13 1/2		60	
11-8-90	ACFX 88793	chi	P-1/P-13	34	11 1/2	85 1/2	72	67
12-21-90	UTLX 642206	chi	CL P-1/P-13	31 1/2	10 3/4	87 1/2	74°	
11-13-90	ACFX 88945	Chi	P-1/P-13	29 1/4	11 1/2	90 3/4	78°	68
11-14-90	ACFX 89035	Chi	P1-P13	26 1/2	12 1/2	93	80	68
11-15-90	GATX 56351	Chi	P1-P13	28	8 1/2	88 1/4	75	67
12-3-90	UTLX 642208	Chi	CL P-1/P-13	29 1/2	11	89	62°	
12-7-90	UTLX 642211	chi	CL P-1/P-13	29 1/4	10 3/4	89 3/4	60	
12-18-90	UTLX 642207	Chi	CL P1-P13	30 1/2	11	88 1/2	50	
					Year	END		AND
1-21-91	GATX 12455	Foll	Methyl	25	7 1/2	93	60	3
1-22-91	ACFX 87748	Chi	Bitumen	25 1/2			440	
[illegible]-23-91	UTLX 641998	Chi	LT UNC	38	11	77 1/2	56	4
[illegible]-91	TLDX 22[illegible]	Foll	Solvent	38 3/4	15 1/2	85	60	34
[illegible]-91	KPCX 702	Hou	Hoil	32 3/4	7 1/4	80 1/2	58	36

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200 BKS. 5-80
PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

T/C RESIDUE	SUBJECT START	STOP	START	STOP	TANK TEMP	REC. GALLONS	FACTOR	GALLONS @ 60°
2 in		Trucks	Month	End				19,163
5 in	10-5	15-9			188	18,425	1.0512	17,527
8 in	10-10½	13-8½			180	19,236	1.048	18,354
10 in	11-6½	17-0½			178	19,091	1.0472	18,144
14 in.	17-0½	22-6½			172	19,441	1.0448	18,607
4 in	14-11½	20-9			180	20,008	1.048	19,091
	Trucks				Rec.	19,875 Galls @ 60°		
3 in	20-9	26-9½			184	20,872	1.0496	19,885
5 in	0-2½	2-8½			150	21,019	1.036	20,288
6 in	2-8½	5-1			173	19967	1.0452	19104
3 in	Trucks	Rec.	18,299	Galls @ 60°				
10 in	5-1	7-4½			190	19267	1.052	18315
3 in	7-4½	9-9½			182	20,318	1.0488	19,372
10 in	17-2	22-10			174	19577	1.0436	18,783
9 in	21-4	26-10	Month	END	181	19,001	1.0484	18,123
10 in	9-8	12-½			182	19967	1.0488	19038
	12-½	14-5½			184	20318	1.0496	19,358
	+ TRUCKS	K-40		Rec	19968 @ 60°			
	17-2½	23-1			180	20296	1.048	19,366
		Trucks						
	21-4½	27-0½			186°	19,577	1.0504	18638
	Trucks							
	14-5½	16-9½			176°	19,617	1.0464	18,747
4	16-9½	19-2¾			181	20,493	1.0484	19,546
5	16-0	21-11½			184	20,584	1.0496	19,611
	T-1	16,124, + pumped 4600 Galls To T/C 64206						20,724 Rec.
	T-4	29,344 @ 60°						
	Trucks	10,381 To K-20 + 30			10,000 To	T/C 64226		Rec 20,381
		Month End						
2 in	3-3½	8-10½			60	18,685	1	18,685
1	Truck	Load + rest Tubs						
	9-7½	14-8½				17209	1.03	17708
1½	3-7	14-8½				19602	To	19652
8 in	7-0	18-7			92	18,220	1.012	18,644

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Koppers Company, Inc.

T-170 REV. 6
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PRINTED IN U.S.A.

LOCATION _____ DATE _____ BY _____

DATE	SUBJECT CAR NO	FROM	PRD	OUT	DOME	TEMP	TEMP	REC'D BY
1-29-91	NATX 76298	Hou	NSR	32½	12½	86	40	99
	MONTH END							
2-7-91	ACFX 79683	Chi	P1-P13	24	13½	96½	61	68
2-6-91	UTLX 77418	chi	CL P1/P13	33½	14½	93½	42	T-T
2-14-91	ACFX 79676	CHI	P-1/P-13	24"	13½	95"	50°	68
2-25-91	GATX 5[illegible]357	CHI	P-1/P-13	33¾	8	82"	58°	68
2-27-91	GFTX 93198	Chi	P1-P13	38	13½	83½	52	68
	MONTH END							
3-1-91	TLDX 223047	Chi	P-1/P-13	38½	14½	85½	50	68
3-1-91	TLDX 223165	Chi	P1-P13	34½	12½	86½	51	68
3-20-91	UTLX 79979	Chi	CL P1-P13	43	10½	72½	50	Trucks
			MONTH		END			
4-5-91	UTLX 78865	Chi	CL-P1-P13	34	10½	93½	50	Trucks
4-8-91	ACFX 79689	Chi	P1-P13	32	13½	88½	60	68
4-9-91	ACFX 88789	chi	P-1/P-13	40	11½	79½	60	68
4-16-91	UTLX 77418	CHI	P-1/P-13	32½	15	94¼	66°	Trucks
4-11-91	UTLX 78887	Chi	P1-P13	33	15	94½	70	68
4-19-91	UTLX 77425	chi	P-1/P-13	39	14½	86	65°	23K 68
			MONTH			END		
5-16-91	UTLX 641997	chi	CL P1/P13	33½	11	88	54°	
5-24-91	TLDX 223112	chi	P-1/P13	34	15½	88½	60°	67
5-28-91	UTLX 79979	Chi	P1-P13	32	10½	83	68	67
			MONTH		END			
6-5-91	ACFX 88946	chi	P-1/P-13	32½	12	84½	74	
6-7-91	ACFX 79639	chi	P-1/P-13	22	13½	98	94	67
6-28-91	UTLX 642213	Chi	CL P1-P13	32	11	87½	62	
			MONTH		END			
7-8-91	GFTX 38612	Chi	P1-P13	25½	12½	90½	72	67
7-9-91	UTLX 77425	Chi	P1-P13	27	14½	99	106	67
7-10-91	UTLX 77418	CHI	P1-P13	34	15	92½	100	67
7-16-91	UTLX 75167	CHI	P1-P13	32½	14 3/4	95	106	67
7-17-91	UTLX 79978	Chi	P1-P13	29½	10½	85	102	68
7-18-91	ACFX 89035	Chi	P1-P13	32½	11½	87½	106	67
7-25-91	TLDX 223112	Chi	P1-P13	38	14 3/4	84½	82	67
			MONTH		END			

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SUBJECT

Tc Residue	Start	Stop	Start	Stop	Tank Temp	Gallons	Divider	Gallon @ 60°
13	1-3¾	4-½			110	19,342	1.02	18,962
			Month END					
	11-3¼	13-0½	+ Truck Load		190	20,493	1.052	19,480
1½ in	20,308		Galls. @ 60°		Trucks			20,308
	10-3¼	12-6¼			186°	18,917	1.0504	18,009
	9-3½	11-7¾			183	19,792	1.0492	18,864
10 in	10-11½	13-4½			186	20,318	1.0504	19,343
2 in	13-4½	15-8¼			194	19443	1.0536	18454
	15-½	17-3½			176	18,917	1.0464	18,078
	Rec	15,692 Galls. @			60°			
	Month	End						
3		20,098	Galls.		@	60°		
	11-5	13-8¾			189	19,442	1.0516	18,488
	13-1	15-3			192	18,216	1.0528	17,302
2 in		20,098	@ 60°					
2 in	14-0	16-6¼	T-68		196	21,194	1.0544	20,100
T-23	2'2"	12'1"	13-11	15-3	196	8373 T-23 17216	1.0544	8373 10632
			Month	END				
Trucks		20,561 Galls @ 60°						
	15-5½	21-1¾			190	19,649	1.052	18,678
	20-6	26-½			180	19,145	1.048	18,268
		Month	End					
	Trucks		Rec. 17,414		Galls. @ 60°			
	18-5	24-3			190	19,577	1.052	19,040
	Trucks							
			Month	END				
	8-8	14-4			180	19,576	1.048	18,438
	12-9	18-10			194	21,016	1.0536	19,804
	17-3½	23-2½			190	20,440	1.052	19,537
	21-6½	24-3½	10,603	K-20	9788	T-67		20,391
	0-2½	2-8¾			152	21,094	1.0368	20,345
	19-6½	25-2¼			186	19,577	1.0504	18,691
	18-10	24-4½			188	19,145	1.0512	18,213
		Month	End					

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1.0766
1.0304

KOPPERS

Organic Materials Group
Koppers Company, Inc.

T-170 REV. 6
[illegible] BKS 5-80
[illegible] U.S.A.

LOCATION _____ DATE _____ BY _____

SUBJECT _____

DATE	T/C No	From	Pro.	OUT	Dome	Image	Temp	Rec Tank	By
8-1-91	UTLX 78865	Chi	P1-P13	31½	14¾	96¼	94	67	GH
8-1-91	ACFX 79683	Chi	P1/P13	22¼	13½	97¾	98	67	
8-2-91	NATX 76295	Chi	P1/P13	34	12¾	83½	97	68	
8-5-91	ACFX 89030	Chi	P1-P13	32	11¾	88	82	68	
8-26-91	GATX 11748	Chi	P1-P13	20	7½	98	110	67	
8-28-91	ACFX 79686	Chi	P1/P13	22¾	13¼	97¼	102	67	
9-9-91	ACFX 88945	Chi	P1/P13	29½	11½	90½	84	67	
9-10-91	KEOX 4	Hou	OLA-Tar	42½	5	85	110	23	
9-11-91	ACFX 88674	Chi	P1/P13	29	11½	91¾	78	67	
9-24-91	UTLX 6422 N	Chi	P1/P13	31¾	10½	86¾	70	67	
9-24-91	NATX 76033	Foll	NSR	36	12¾	81	62	67	
		Month		END					
10-1-91	ACFX 88670	Chi	P1-P13	33½	11½	87	76		
	ACFX 87749	Chi	K-364	32	17½	89¼	235		
10-2-91	ACFX 87744	Chi	Bitumen						
10-9-91	UTLX 79978	CHI	P1-P13	31½	10½	82¾	97	67	R.B+RH
10-10-9	ACFX 88689	CHI	P1-P13	29½	11½	90½	90	67	RB
10-11-91	UTLX 79981	Chi	P1/P13	31	10½	83½	98	67	RH+RB
10-15-91	ACFX 88945	CHI	P1/P13	35	11½	85¼	84	67	RB
10-16-91	ACFX 79683	Chi	P1/P13	25¼	13½	94¾	91	67	RB
10-28-91	ACFX 82756	Chi	NSR	22¾	11½	94	80	99	
			Month	END					
11-5-91	UTLX 77475	Chi	P1/P13	31½	15	94¾	68	67	
11-12-91	UTLX 79979	Chi	P1-P13	29	11½	86	66	67	
2-14-92	GATX 13718	Chi	H-oil	21½	8	93½	60	17	
11-20-91	TLPX 223165	Chi	P1/P13	30	12½	89½	194	67	
	ACFX 88789	Chi	P1/P13	32½	11½	87	52°		
			Month	End					
12-3-91	UTLX 77418	Chi	P1/P13	32¾	14¾	94½	50	67	
	ACFX 87743	Chi	Bitumen	36¾	17½		50°		
12-19-91	UTLX 78865	Chi	P1-P13	33	15	95¾	96	67	
			Month	END					
[illegible]-8-92	ACFX 79680	Chi	P1/P13	25	13½	95	50	67	
			Month	END					
[illegible]-92	UTLX 77475	Chi	P1-P13	32½	14¾	94	64	67	

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200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT

Residue	Start	Stop	Start	Stop	Tank Temp	Gallons	FAcTor	Gallons @60°
5	17-11	24-1½			188	21,448	1.0512	20,403
	24-1½	27-5½	T68 2-8½	3'-1	181	11,516 3,102	1.0484 1.0492	10,984 T-67 [illegible]
	2-4½	11-10			210	20,618	1.06	19,451
	3-5¾	5-10¾			201	20,318	1.0564	19,233
	15-5¾	21-0½	Month end		168	19,073	1.0432	18,283
	19-8½	25-7			190	20,296	1.052	19,292
	17-7½	23-6½			176	20,440	1.0464	19,533
	0-4	18-3			140	15,089	1.0288	14,667
	18-10½	24-10½			190	21,016	1.052	20,140
	6-9	12-5½			202	19,721	1.0568	18,661
	10-5½	16-11	3,508	K-20	201	18,088	1	14,580 T-67
			Month		END			
Rec	17,558 @60		K-40	10,601 Galls @60°		6,957 Galls @60°		To T-67
	5-9¼	11-5¾			203	19,721	1.0572	18,654
	11-5¾	17-2½			190	19,793	1.052	18,815
	15-8	21-5¼			190	19,936	1.052	18,951
	16-8	22-4¼			182	19,649	1.0488	18,735
	20-9½	26-6¾			184	19,936	1.0516	18,958
	0-6	3-6			60	19,600	1	19,600
			Month		END			
	20-6	26-7¾			192	21,232	1.0528	20,167
	20-3	25-10½			184	19,433	1.0496	18,515
				@60°	146	18,711	1.03268	18,118
	18-10½	22-8	K-40	5178	200	12,985	1.056	17,474
	18-4½	21-1½	K-40	5181	5192 200	9,500	1.056	19,369
	19-5	25-6			188	21,016	1.0512	19,992
	19-11¼	25-6			180	19,217	1.048	18,336
				Month	END			
	19-3	24-8			190	18,713	1.052	17,788
				Month	End			
	12-4	17-9½			200	18,857	1.056	17,857

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Tc No.	From	Pro	Out	Done	Image	Temp	Rec Tank By
3-9-92	GATX 38612	Chi	P1-P13	34¼	12¼	82	52	67
3-13-92	UTLX 79981	Chi	P1-P13	30	11	84½	58	67
5-13-92	ACFX 87746	chi	K-364	36	17		120	
12-2-92	ACFX 87747							Billed
3-24-92	UTLX 78887	chi	P-1/P-13	42	14½	85½	58	67
	TTLX 77418	chi	P-1/P-13	32½	15¼	94¾	56	67
4-10-92	UTLX 79979	Chi	P1-P13	34	11½	81	69	67
4-15-92	ACFX 79680	Chi	P1-P13	24½	13¼	95	69	67
4-22-92	UTLX 78865	Chi	P1-P13	28	15	99½	84	67
4-23-92	UTLX 77475	chi	P-1/P-13	27¾	15	98¼	84	67
	ACFX [illegible]	chi	Bitumen	33½	12¼	88¾		
				Month	END			
5-5-92	ACFX 88789	chi	P-1-P13	33½	11½	86"	76°	67
5-6-92	UTLX 78462	Foll	Methyl	30	14½	98	62	3
5-7-92	GATX 25097	Foll	NSR	22	12½	92	62	99
5-12-92	UTLX 642210	Chi	UNC	35	11	84	140	4
5-14-92	TLPX 223165	chi	P-1/P-13	35½	12½	85½	65°	67
5-14-92	UTLX 75167	Chi	P1-P13	36	15	90	80	67
5-15-92	UTLX 78887	chi	P-1/P-13	32	14½	91¼	130°	67
5-27-92	UTLX 650800	chi	Bitumen	27¾			400	
5-18-92	ACFX 88790	chi	P-1/P-13	32½	12	86½	100	67
5-20-92	UTLX 78422	chi	P-1/P-13	28¾	14¾	98½	130°	67
				Month	END			
6-3-92	UTLX 79978	Chi	P1-P13	32½	10½	81½	90	67
6-4-92	KPCX 509		Bitumen	41½	25¼		Billed	177650
6-9-92	NATX 76384	chi	P-1/P-13	38	14½	82	90	67
6-10-92	ACFX 79683	chi	P-1/P-13	25½	13¼	94¼	92	67
6-11-92	NATX 76292	Foll	NSR	31	12½	87½	85	99
6-8-92	TLPX 223121	Foll	NSR	35	14½	87	80	99
7-1-92	ACFX 87743	chi	BIT	34	17¼		60°	
7-17-92	ACFX 87745	chi	K-364	33½	17¼		60°	
6-30-92	GATX 38612	Chi	P1-P13	26	13½	90½	80	67
				Month	END			
[illegible]-92	NATX 25553	Foll	Solvent	31½	11¼	92	70	34
[illegible]-92	ACFX 87744	chi	Bitumen	37¾	13½		120	

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Res	Start	Stop	Start	Stop	Tank Temp	Gallons	Factor	Gallon @ 60°
	5-8½	10-4			194	18,323	1.0536	17,390
	5-1	9-½			189	19,432	1.0516	18,478
	169,160 Lbs							
	3-6½	5-10¼	92840 @ 180° = 88[illegible] @ 60° 2-9½	5-3	206	8413 @ 206° 7949 @ 60°	1.0584	16808
	3-9	9-½	18,137 @ 180		180	18137	1.048	17306
	6-9	12-3½			187	19,145	1.0508	18,228
	12-2¾	15-1	13-2	15-10	186	19,072	1.0504	18,095
@163	15-8	21-9½			180	21160	1.048	20,194
180°	21-9½	27-6			180	20433	1.048	19497
	Trucks							
				Month		End		
	18-1	22-2½	+ K-40 Load		198	19,763	1.0552	18,729
	3-2½	9-3½			75	20,591	1.0067	20,454
	0-6¾	3-4½			78°	20,242	1.0152	19,939
	2-2	7-5			200°	19,852	1.056	18,800
@190°	4-9	3 Trucks		16,506	@60° 186	576	1.0504	17,090
@186°	4-11	9-1	+ 1 K-40			14395 @ 206° 5210 @ 60°	1.0584	13601 5210 = 18,811
	7-5½	11-2½	+ 1 K-40		202		1.0568	17,547
Billed 171,920 Lbs								
	8-¼	13-7½			182	19361	1.0488	18,460
	7-6¾	13-7			190	20,800	1.052	19,772
				Month		End		
@182	11-2½	16-6¾			192		1.0528	17,419
170°	14-6½	19-11¾			178	18,785	1.047	17,938
178°	19-11¾	25-9¼			180	20,008	1.048	19,091
	0-4	3-4			170	21,591	1.044	20,681
170	1-8½	4-6¾			195	20545	1.054	19,492
Billed 193,250 Lbs				Rec	175,444 Lbs		@ 60°	
Billed 17,411								
@171	20-1¼	25-7½			178	19,073	1.0472	18,035
				Month	END			
	0-3	11-1			78°	20591	1.009	20,427
	Rec 163,926 Lbs @ 60							

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	Tc No.	From	Pro.	Out	Dome	Inag.	Temp	Res. Tank	By	Re
7-27-92	TLDX 223004	Foll.	NSR	35 1/2	14 1/2	87	79	99		
7-28-92	UTLX 78483	Foll.	NSR	32	14 1/2	95	95°	99		
7-29-92	UTLX 77418	Chi	P1-P13	32	15	95	76	67		
				MONTH		END				
8-7-92	UTLX 78865	Chi	P1-P13	35 1/2	15	89	80	67		
8-13-92	UTLX 78887	Chi	P1-P13	34	15	93 3/4	88	67		3
8-14-92	GATX 38612	Chi	P1/P13	29 3/4	12 1/2	93	90	67		
8-18-92	UTLX 75167	Chi	P1/P13	29	14 1/2	97	105	67		
8-19-92	UTLX 79981	Chi	P1/P13	29 3/4	10 1/2	84	105	67		
				MONTH		END				
9-2-92	ACFX 89035	CHI	P1/P13	26	11 1/2	93 1/4	110	67		RB
9-3-92	TLDX 223165	Chi	P1/P13	34 1/2	12 1/2	86 1/2	70	67		
9-4-92	UTLX 77510	Foll.	NSR	35	14 1/2	92	90	99		
9-8-92	TLDX 223003	Chi	UNC	39	14 1/2	83	90	4		
9-15-92	UTLX 79981	Chi	P1-P13	33	11 1/2	82	105	67		
9-21-92	ACFX 88945	Chi	P1/P13	35 1/2	11 1/2	94 1/2	110	67		
9-22-92	UTLX 75167	Chi	P1/P13	39 1/2	14 1/4	88	110	67		
9-29-92	ACFX 79680	Chi	P1/P13	29 1/2	13 1/2	92 1/2	92°	67		
				MONTH		END				
10-9-92	UTLX 78865	Chi	P1-P13	32	15	96 1/2	115	67		C
10-13-92	UTLX 79979	CHI	P1-P13	28	10 1/2	86 3/4	105	67		
10-14-92	UTLX 78422	CHI	P1/P13	28	15 1/2	99 1/4	135	67		
10-19-92	ACFX 79689	CHI	P1/P13	23 1/2	13 1/4	96 1/4	93	67		
	UTLX 89746	Chi	P-3/4	34	17 1/2	88	123	67		
10-20-92	ACFX 88945	CHI	P1/P13	39	11 1/4	81	88	67		
10-21-92	UTLX 75167	CHI	P1/P13	34 1/4	14 1/2	92 1/2	100	67		
10-22-92	UTLX 77478	CHI	P1/P13	32	14 1/2	94 1/2	96	67		
10-28-92	ACFX 88945	CHI	P1/P13	29 1/2	11 1/2	90	82	67		
10-29-92	UTLX 79981	Chi	P1-P13	31	11	83 3/4	85	67		
			MONTH		END					
11-2-92	GATX 35846	FOLL.	NSR	39 1/2	12 1/4	87 1/4	60	99		
11-4-92	ACFX 79676	CHI	P1-P13	24 3/4	13 1/2	94 1/4	70	67		
11-9-92	TLDX 223982	Chi	P1-P13	24 1/2	13 1/2	86	55	67		
11-12-92	UTLX 79978	Chi	P1-P13	30	11 1/2	84 1/2	80	67		

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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Res.	Start	Stop	Start	Stop	Tank Temp	Gallons	Factor	Gallons @ 60°
	0-5½	3-4½			160	20992	1.040	20185
	3-4½	6-3			140	20,692	1.0320	20,050
	6-7	12-6			188	20,440	1.0512	19,444
			Month			END	1-06	
	2-8¾	4-3½	1-11¾	5-10¾	206	18,927	1.0584	17,908
3" 190°	2-9¼	4-11½	6-½	8-0½				19967
	6-7½	8-8½	5-5	8-6½				17759
	8-6½	14-6½			186	20,728	1.0504	19,733
	12-11½	18-7¾			184	19,649	1.0496	18,720
			Month			END		
@188	13-11½	20-0¾			216	21088	1.0624	19,849
	14-4	15-10½	14-1½	18-0½	202	20,145	1.0568	19,062
	3-5¾	6-4¼			170	20,692	1.044	19,819
	2-1¾	7-11			172	19,534	1.0448	18,696
180°	5-2	10-6½			166	18,569	1.0424	17,814
	7-1½	12-6			188	18,569	1.048	17,719
	8-11½	14-6			192	19145	1.0528	18,185
182°	12-5	17-11½			194	19,145	1.0536	18,171
			Month			END		
@155°	1-8½	7-7¾			214	20,512	1.0616	19,322
	6-0	8-5½	6-11	9-11¼	193	19,001	1.0552	18,007
	7-7½	8-10	11-2	16-1½	204	21,016	1.0576	19,871
	3-3½	9-2¼			192	20374	1.0528	19,352
					1049-1279	5023 gal		
	7-7¾	12-10½			194	17,707	1.0536	16,806
	9-9	15-7¾			193	19,534	1.0532	18,548
	14-1½	15-5½ 180°	14-0	18-½	205	14,606 / 13,963	1.045 / 1.056	17,804
@191	12-3	18-2			204	20,440	1.0576	19,327
	16-7¼	22-3½			193	19,649	1.0536	18,649
			Month			END		
	2-0½	5-0½			140	21,591	1.0320	20,922
	18-3½	23-9½			188	19,001	1.0512	18,075
182°	19-4	25-3½			194	20,584	1.0536	19,537
190	11-2¾	16-11			192	19,649	1.0528	18,664

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Koppers Company, Inc.

T-170 REV. 6
200 BKS. 5-80
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LOCATION _____ DATE _____ BY _____

SUBJECT _____

Date	t/c Number	From	Prod	out	Dome	image	temp°	Rec. Tank	BY
11-19-92	ACFX 89030	Chi	P1-P13	30	12	90°	85°	67	RH
11-23-92	UTLX 77475	Chi	P1-P13	28 3/4	14 3/4	97	90	67	RH
				Month	End				
12-1-92	NATX 76426	Foll	Solvent & Methyl	33	14 1/2	88	60	3	
12-3-92	UTLX 75167	Chi	P1-P13	36	15 1/4	90	75	67	
12-4-92	ACFX 88689	Chi	P1-P13	32 3/4	12 1/4	87 3/4	60	67	
12-23-92	ACFX 88789	Chi	P1-P13	34	12	87	50	67	
				Year	End				
1-4-93	UTLX 78865	CHI	P1/P13	34 1/4	15	95	50	67	GH
1-6-93	GATX 88612	CHI	P1-P13	20 1/2	12 1/4	93	50	67	RH
1-11-93	UTLX 79981	Chi	P1-P13	33	10 1/2	81 1/4	50	67	
1-12-93	UTLX 75139	Chi	P1-P13	34	14	89 1/2	50	67	
1-16-93	UTLX 79978	Chi	P1-P13	28	11	93 1/2	140	67	
1-17-93	ACFX 79689	CHI	P1-P13	32 1/2	13	91	115	67	
1-18-93	UTLX 78422	Chi	P1-P13	32	15	95	65	67	
	ACFX 87745	Chi	K-364	36 1/4	17 1/4		60		
1-26-93	ACFX 88670	CHI	P1-P13	29	11 1/4	91 1/2	55	67	
				Month	End				
2-2-93	ACFX 88689	Chi	P1-P13	35 1/4	11 1/2	85 3/4	50	67	
2-7-93	ACFX 23165	Chi	P1-P13	38 1/2	12 1/2	81 1/2	50	67	
2-11-93	ACFX 88790	Chi	P1-P13	31 1/4	12 1/2	84	50	67	
2-12-93	ACFX 88789	Chi	P1-P13	31 1/4	11 1/2	88	105	67	
2-19-93	UTLX 77418	Chi	P1-P13	32	15	94	140	67	
2-22-93	UTLX 78887	Chi	P1-P13	39	15	89	80	67	
2-25-93	ACFX 89035	Chi	P1-P13	30	13 1/4	89	140	67	
2-26-93	UTLX 79978	Chi	P1-P13	28	11	85 3/4	120	67	
				Month	End				
3-1-93	ACFX 88670	Chi	P1-P13	41 1/2	12	79 1/2	70	67	
3-4-93	NATX 76035	Chi	UNC	32 1/4	12 3/4	86	200	20	
3-5-93	ACFX 88689	Chi	P1-P13	29 1/2	12	90 1/2	150	67	
3-9-93	ACFX 79684	Chi	P1-P13	27 3/4	13 1/4	92 1/2	140	67	
3-10-93	TLDX 23165	Chi	P1-P13	35	12 1/2	85 1/2	135	67	
3-11-93	UTLX 78884	Chi	P1-P13	30	15	97 1/2	146	67	
3-12-93	UTLX 77418	Chi	Light UNC	40	14 3/4	87	160	4 + 20	
3-16-93	PLAX 1520	Chi	P1-P13	34	11 1/2	83 1/2	60	99	

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Res.	Start	Stop	Start	Stop	Tank Temp	Gallons	Factor	Gallons @ 60
@185	15-4 1/2	21-2 3/4			182	19649	1.0488	18735
@180	19-7 1/4	25 3/1/2			185	19649	1.05	18,712
				Month	End			
	4-0 3/4	10-1			66	20,337	1	20,337
@196	16-11	22-8			200	19,864	1.056	18,81[illegible]
	21-0 1/4	26-11	Trucks		208	20,368	1.0592	19,229
	19-7 1/2	21-11 1/4	10,326 @60°		216	7,989	1.0608	7,531
				Year End.				
	10-1 3/4	11-9 3/4	10-3 1/2	12-2 1/2	200		1.056	21,548
	12-2 1/2	14-6 3/4	10-4 1/4	13-3 1/4	210	18,209	1.06	17,219 @60
@200	11-10 1/2	17-6			201	19,433	1.0564	18,395
@192	15-11	21-8			204	19,864	1.0576	18,782
	8-3	13-10	5'-7		188	19,289	1.0512	18,349
	13-10	19-4	5'4"		192	19,001	1.0528	18,048
@176	16-2	22-1			200	20,440	1.056	19,356
	15-11 3/4	21-6 1/2			200	19217	1-056	18,198
			Month	End				
@184	15-2 1/2	21-4			198	21,160	1.0552	20,018
@172	10-6	11-8 1/2	10-3 1/2	12-7 1/2	204	18,849	1.0576	17,823
@192	9-7 1/2	11-2	9-11 1/2	13-10 1/2	200	18,260	1-056	17,292
	13-10 1/2	15-1	13-10	17-9	194	20,440	1.0536	19,400
	11-7 1/2	17-4 1/2			200	19,864	1-056	18,811
@145	5-3 1/2	10-9 1/4			200	18,927	1-056	17,923
@200	9-5	14-11 1/2			200	19,145	1-056	18,129
@200	13-5	19-2			196	19,864	1.0544	18,839
			Month	End				
@176	15-2	20-7			183	18,713	1.0492	17,835
@131	5-1 3/4	7-0 1/2			170	19,968	1-044	19,199
@176	2-3 3/4	8-0 1/2			210	20,143	1.06	19,013
210	8-0 1/2	13-6 1/4			198	19,001	1.0552	18,007
@198	13-6 1/4	16-11 1/2			200	19,968	1-056	18,909
206	16-11 1/2	22-9 1/2			200	20,452	1.056	19,383
	1-5	3-10 3/4	10,325	T-20	210		1.054	18,042
	1-7 1/2	5-0			195	20,780	1.054	19,500

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DATE	TC NO.	FROM	PROD.	OUT	DONE	INAGE	TEMP	REC TANK	
3-15-93	PLNTX-15005	CHI	P1-P13	39	14 1/2	62 1/2	60	T-99	GHRB
3-16-93	TLDX 223124	CHI	P1-P13	37	13 1/2	82 3/4	175	T-99	GHRB
3-15-93	ACFX 82526	FOLL	NSR	22	12"	94	60	T-20	RB GH
	KPCX 509	CHI	BLTon	46			60		
3-18-93	NATX 76295	Chi	Mod UNC	32 1/2	12 1/2	84 1/2	170	T-20	
3-23-93	UTLX 74479	Chi	P1-P13	30 3/4	11	84	120	T-67	
3-24-93	AQFX 79680	Chi	P1-P13	24-1/2	13	95	160	T-67	
3-25-93	ACFX 88789	Chi	LightUNC	38	12	81 3/4	160	T-4	
3-25-93	TLDX 223034	Foll	NSR	36	14 3/4	86 3/4	110	T-134	
3-29-93	AEFX 79682	Chi	P1-P13	32	13 1/2	87 1/2	110	T-67	
			MonTh		END				
4-1-93	UTLX 78887	CHI	P1-P13	34 1/2	14	93 1/2	98	T-67	
4-5-93	ACFX 88670	Chi	P1-P13	32 1/2	11 1/2	87 1/2	95	T-67	
4-6-93	UTLX 77448	Chi	P1-P13	32	15	95	141	T-67	
4-16-93	ACFX 88674	Chi	P1-P13	35	12	86 1/2	77	T-67	
4-30-93	TLDX 223192	Chi	P1-P13	33	13	87	60	T-67	
				MonTh		END			
5-1-93	UTLX 79976	Chi	P1-P13	39 1/2	10 1/2	76 1/4	70	T-67	
5-17-93	UTLX 78139	Chi	P1-P13	35	14 3/4	89 1/2	80	T-67	
5-25-93	ACFX 89035	CHI	P1-P13	33	11 1/2	86	95	T-67	
			MonTh		END				
6-1-93	NATX 2559	Foll	NSR	30 1/2	12 1/2	92	80	T-34	
6-3-93	ACFX 88670	Chi	P1-P13	35	12	85 1/2	73	T-67	
6-7-93	UTLX 78864	CHI	P1-P13	34 3/4	15 3/4	93	85	T-67	
6-17-93	TLDX 223192	CHI	P1-P13	35 1/4	13 1/2	85 1/2	75	T-67	
			MonTh		END				
7-13-93	ACFX 88790	CHI	P1-P13	30	11 3/4	88	115	T-67	
7-26-93	ACFX 88677	CHI	P1-P13	32 1/4	11 1/2	85 3/4	85	T-67	
7-27	UTLX 77475	CHI	P1-P13			91 1/2	110	T-67	
8-9-93	ACFX 88689	CHI	P1-P13	34	12 1/2	87 1/4	102	T-67	
8-24	TLDX 223210	CHI	P1-P13				75	T-67	
				MonTh		END			
9-1-93	UTLX 76155	Chi	P1-P13	35 1/4	14 1/2	90 1/2	135	T-67	
9-16-93	ACFX 89029	FOLL	P1-P13	31 1/2	11 1/2	98 1/4	77	T-67	
	TLDX 223211	CHI	P1-P13	34 1/2	14 3/4	84 1/2	129	T-67	

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Res	START	STOP	START	STOP	Temp TANK	GALLONS	FACTOR	GALLONS @ 60
		5-0			195			
@ 194	5-0	7-8			205	19,192	1.058	18,139
	8-7½	9-7	10,433 gal	T-20	180	19,344	1	19,344
	14-7	16-5			194	19,961	1.0536	18,945
@ 146°	5-11	11-6			180	19,289	1.048	18,405
180	11-6	17-2			206	19,577	1.0584	18,497
	3-10¾	9-0¼			200	17,350	1.056	16,443
	0-4	10-11½			156	20,196	1.0384	19,449
	14-¼	19-5			190	18,641	1.052	17,719
			MONTH		END			
	11-3	16-11½			187	19,721	1.0508	18,768
184°	16-11¼	22-5½			178	19,071	1.0472	18,212
@ 179	20-5	26-½			194	19,433	1.0536	18,444
@ 196°	20-8¼	26-6¼			206	20,224	1.0584	19,108
@ 178	20-4	26-4½			188	20,872	1.0512	19,855
			MONTH		END			
	20-5¼	25-9			192	18353	1.0528	17,433
	20-3¼	26-0			188	19,793	1.0512	18,829
199°	21-6¼	27-0¼			204	19,001	1.0576	17,966
			MONTH		END			
	7-3½	18-4¼			98	21,025	1.0152	20,711
@ 190	21-8¼	27-5			209	19,793	1.0596	18,679
@ 183	21-0¾	27-1½			200	20,944	1.056	19,833
@ 193	20-9¾	26-10			194	20,800	1.0536	19,637
			MONTH		END			
@ 188	17-9½	23-9¾			207	19,294	1.000	19,294
@ 173	14-4½	20-0½			181	18,587	1.000	18,587
@ 181	20-0½	25-9			191	18,479	1.00	18,479
@ 200	19-8½	25-3			201	19,145	1.0564	18,123
200		18-4½				18,459	1	18,459
			MONTH		END			
@ 210	10-3	15-11¼			196		1.0544	18,812
@ 211	9-5¼	14-11¾			200			18,257
	11-9½	15-3½	190° 10-2-½ 2nd start	14-5	190°		1.054	19,208

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SUBJECT _____

DATE	FC NUMBER	CHI	PROD.	OUT"	DOME	IMAGE	TEMP	REC. TANK	BY	RI
10-[illegible]	UTLX 78884	CHI.	P1/P13	35 1/2	15	91 1/2	80	K-22	RH	
9-28-93	TLDX 223184	CHI	P1/P13	35 1/2	12 1/2	85 1/2	70	T-67	RB	3
9-30-93	TLDX 223189	FOLL	NSR	42 1/2	12 1/2	78 3/4	67	T-99	RB	
SEPT.			MONTH END							
10-11-93	TLDX 223037	FOLL	P1-P13	38	14 1/2	84 1/2	60	T-67	RB	
10-26-93	TLDX 223084	FOL	NSR	34 1/2	15	88 1/2	55	T-99		
10-29-93	NATX 25559	Foll	L-HT UHL	36	11 1/2	87	65	T-23		
OCT.				MONTH END						
NOV.										
11-10-93	NCFX 88680	FOLL	P1-P13	27 1/2	12	92	90	T-67	SBE	
11-17-93	UTLX 77450	Foll	P1-P13	36	15	91	62	T-67		8
NOV.				MONTH		END				
DEC.										
12-3-93	TLDX 223158	Foll	P1-P13	37	12 1/2	85	55	T-67		
12-22-93	NCFX 88683	FOLL	P1-P13	28	11 1/2	92 1/4	72	T-67	RB	
						YEAR END				
1-28-94	TLDX 225000	Foll.	P1-P13	36	14 3/4	91 1/2	60	T-67	[illegible]	
2-11-94	TLDX 223004	FOLL	P1P13			73"	52"	T-67	[illegible]	
2-16-94			MONTH END							
3-1-94	ANX 23900	Foll	Trans	35 1/2	13"	86	75	T-23		
3-8-94	TLDX 223037	Foll	P1-P13	38	14 1/2	84 1/2	60	T-67		
3-9-94	NATX 25551	FOLL	NSR	29 1/2	11 1/2	90 1/2	70	T-99		
4-21-94	UTLX 78487	FOL	P1P3					T-67		

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20512

1.0528

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19188

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RES	START	Tak	STOP	START (IN AGE)	STOP (IN)	START TEMP	FINISH TEMP	BEGIN @60 GALLONS	TOTAL GALL @60	GALL REC
				22-2			184°	14394		13714 + K-22 load
3 IN.	21-5 3/4		27-5	Rec 5-11 1/4		192		20512		19188
	1-0 1/2	60°	3-7 3/4	@180		60°	180	7197	25,038	17841 (674 CR.)
				MONTH END						
				19-5	25-3 1/2	190	190			19157 648 CR
										20,145
										18,787
				Month END						
	12-0									
@162°	15-10 1/2		21-10				205	20,584	1.058	19,055
				Month END				NOVEMBER		CREDIT
				CREDIT					70533	19001 @ 210
@188	14-10 1/2		20-5	1,927 GAL CR.			210°	51388	1.06	REC. 17925 @ 60
1 in	12-6		17-10	REC. 17581 @ 60			180°	43184	1.048 1842 Satem	2724 gal CR.
	12-7		18 1/2	REC 19433 @ Temp		1.05	185	43471	152179	REC 18,508 @ 60
198			13 1/2		17 1/5	198		40286	56	REC 16,450 @ 60
	0-9		19-5	Rec 15707 @ Temp			1.0448			Rec 15,033 @ 60
	~~1-8~~ 1/2				9 1/4					+ 2182
	21-11 1/2		22-11 1/2					184		17215 Total
	10-8 1/2		16-2 1/2	Rec 19002 @ Temp				182	Rec	@ 60
	0-7									

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DATE	T-C NO.	FROM	PROD.	OUT	DOME	INAGE	TEMP	REC. TANK	BY	RE
5-20-94	TLDX 223113	Foll.	P1-P13	36	15 1/4	86 1/4	120	T-67		
6-16-94	ACFX 88680	Foll	[illegible]	29	11 1/2	91 1/2	175			
7 12 94	ACFX 79679	Foll	NSR		13 1/2	87	90	T-34	RH	
10-5-94	UTLX 78889	FOLL.	P1-P13	32 1/4	15 1/4	95 1/2	165	T-67	CJ.	

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RESIDUE	START (IN AGE)	STOP (IN AGE)	START (IN)	STOP (IN)	TEMP.	GALLONS	FACTOR	GALLONS @ 60
	14-3 1/4	20-3			218			
		1						
	21-7 1/4	27-2 3/4			192	19433	.9486	18434

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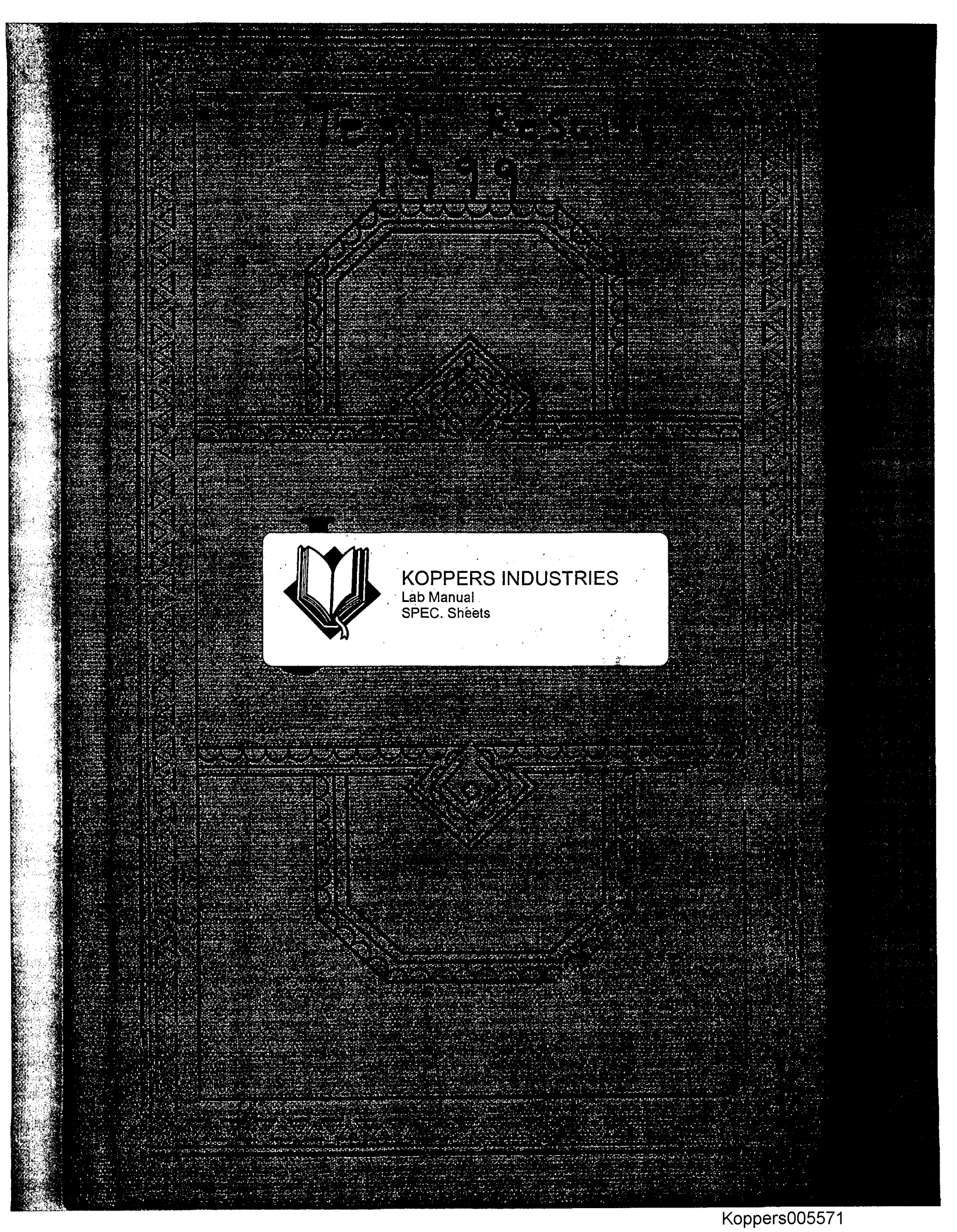

KOPPERS INDUSTRIES
Lab Manual
SPEC. Sheets

1999 Batch Samples

					Sample to Kaiser
01-06	1	Blended Pitch t-65	99-01		✓
01-13	2	Blended Pitch t-65	99-02		✓
01-18	2-A	Pisces Venturech Chineses	99-03		
01-20	2-B	" " "	99-03-B		
~~01-21~~	~~2-C~~	~~" " "~~	~~99-03-C~~		
1-21	4	Blended Pitch t-65	99-04		✓
1-22	5	Korcon PAN Dynamic	99-05-A		
1-24		" " " "	-B		
1-25		" " "	-C		
1-27	6	Blended pitch t-65	99-06		✓
2-3		" " "	99-07		✓
2-11		" " "	99-08		✓
2-21		New accord Korcon	99-09-A		
2-23		Blended pitch t-65	99-10		✓
3-4		Blended Pitch t-65	99-11		✓
3-17		Blended Pitch t-65	99-12		✓
3-25		Blended Pitch t-65	99-13		✓
4-7		Ocean Duke Korcon Ship	99-14		~~✓~~ ✓
4-8		Blended Pitch t-65	99-15		
4-16		Blended pitch t-65	99-16		✓
4-28		Blended Pitch t-65	99-17		✓

1999 BAtch SAmples

				Samples to Kaiser?
5-5		Blended Pitch t-65 99-18		✓
5-13		Blended Pitch t-65 99-19		✓
5-13	5	New Accord Koreon 99-20	A-B-C	
		A Done Here B,C at HTC		
5-26		Blended Pitch t-65 99-21		✓
		Sent to HTC		
6-4	10	Blended Pitch t-65 99-22		✓
		Sent to HTC		
6-16		Blended Pitch t-65 99-23		✓
6-21		Sammi crystal Koreon 99-24		✓
	15			
6-23		Blended Pitch t-65 99-25		✓
6-30		Blended Pitch t-65 99-26		✓
7-8	20	Blended Pitch t-65 99-27		✓
7-11		Chinese Pitch 99-28 Ship		
7-15		Blended Pitch t-65	99-29	✓
	25			
7-26	26	"Sammi Harold" Korea	99-30	A,B,C
		Sent "A" to Harmarville 7-28		
7-29	28	BLENDED PITCH T-65	99-31	✓
8-4		Blended Pitch t-65	99-32	✓
8-11		Blended Pitch t-65	99-33	✓

	1999 Batch - Ship Samples		Samples to Kaiser?
7-18	Blended Pitch t-65	99-34	✓
8-26	Blended Pitch t-65	99-35	✓
8-25,27	Koreon Pitch Sammi Crystal	99-36A-B-C	
8-28	" " "	99-36-C	
9-1	Blended pitch t-65	99-37	✓
9-9	Blended pitch t-65	99-38	✓
9-15	Blended Pitch t-65 stickney	99-39	✓
9-22	Blended Pitch t-65 stickney	99-40	✓
9-30	Blended Pitch t-65 stickney	99-41	✓
9-30	Koreon pitch PAN Noble	99-42-A	
10-3	Koreon Pitch PAN Noble	" "-B	
10-5	Koreon Pitch PAN Noble	" "-C	
10-6	Blended pitch t-65 NONstickney	99-43	✓
10-13	Blended Pitch t-65 NONstickney	99-44	✓
10-20	Blended Pitch t-65 NONstickney	99-45	✓
10-28	Blended pitch t-65 NONstickney	99-46	✓
10-28	New Accord A Koreon Ship	99-47-A	

composite

			Samples to Kathy
10-28		New Accord Korean 99-47-B	
		o	
11-1		New Accord Korean 99-47-C	
11-15		Blended Pitch t-65 99-48	✓
11-23		Blended pitch t-65 99-49	✓
12-3	X	Blended pitch t-65 99-50	✓
12-8	X	Blended pitch t-65 99-51	✓
12-14	X	Blended Pitch t65 99-52	✓
12-23		Osprey arrow 99-53-A	
12-24		osprey arrow 99-53-B	
12-24	X	Blended Pitch 99-54 t65	✓

ALCOA

Date Ship	CAR #	Date Load		Temp	Batch	BOL
1-4	UTLX 650823	12-22	✓	109.0	98-59	5636
1-4	" 650899	12-22	✓	109.4	98-59	5635
1-6	" 650858	1-6	✓	109.6	99-01	5640
1-6	" 650836	1-6	✓	110.2	|	5641
1-11	UTLX 650845	1-6	✓	109.9	|	5668 ?
1-11	UTLX 650847	1-6	✓	110.1	|	5667
1-19	UTLX 650895	1-6	✓	109.6	|	5706
~~1-19~~	~~858~~	~~1-6~~	~~✓~~	~~109.6~~	~~|~~	~~5707~~
1-19	UTLX 650 896	1-6	✓	109.6	|	5705
1-11	UTLX 650876	1-6	✓	109.8	|	5668 ?
1-19	UTLX 650839	1-6	✓	110.2	|	5704
1-26	UTLX 650853	1-13	✓	109.2	99-02	5745
1-26	UTLX 650 897	1-13	✓	108.8	|	5746
1-26	UTLX 650 814	1-21	✓	108.6	99-04	5747
2-1	UTLX 650829	1-21	✓	109.0	|	5776
2-1	UTLX 650843	1-21	✓	109.3	|	5777
2-8	UTLX 650 898	1-27	✓	109.0	99-06	5811
2-1	UTLX 650817	1-27	✓	109.2	|	5778
2-8	823	2-3	✓	108.6	9907	5809
2-16	836	2-3	✓	108.7	|	5835
2-16	852	2-3	✓	108.3	|	5834
2-8	858	2-3	✓	108.8	|	5810
2-16	UTLX 650899	2-3	✓	108.4	|	5833
2-23	650845	2-10	✓	108.1	99-08	5862
2-23	650847	2-10	✓	108.5	|	5861
2-23	UTLX 650 876	2-23	✓	108.7	99-10	5860
3-1	650 895	2-23	✓	108.4	99-10	5890
3-1	650 896	2-24	✓	108.4	|	5891
3-1	650 897	2-25	✓	108.7	|	5892
3-23	650 898	3-5	✓	109.7	99-11	5959
3-8	650 853	3-5	✓	109.3	|	5913
3-8	650 839	3-5	✓	109.5	|	5914
3-16	650 824	3-8	✓	109.7	|	5939
3-8	650 823	3-5	✓	109.1	|	5912

KAISER, MEAD

Date Ship	Car #	Date Load		Temp	Batch	BOL
1-4	ACFX 94944	12-9	✓	109.0	98-57	5634
1-4	ACFX 94476	12-22	✓	109.1	98-59	5632
1-4	ACFX 87690	12-22	✓	109.1	9859	5633
1-6	ACFX 94479	1-6	✓	110.1	99-01	5642
1-11	ACFX 79882	1-7	✓	110.0	9901	5670
1-11	ACFX 79884	1-7	✓	110.0	9901	5671
1-19	ACFX 72821	1-13	✓	108.9	99-02	5707
1-25	94478	1-13	✓	109.1		5749
1-19	94471	1-13	✓	109.1		5709
1-13	94941	1-13	✓	109.1		5674
1-19	94474	1-13	✓	109.1		5708
1-19	79875	1-13	✓	109.2		5710
1-13	ACFX 79877	1-13	✓	109.0		5675
1-28	94479	1-27	✓	109.6	99-06	5756
2-1	94473	1-27	✓	109.0		5780
1-28	87690	1-27	✓	108.4		5755
1-28	79891	1-27	✓	108.7		5757
2-1	ACFX 79883	1-27	✓	109.0		5781
2-8	94940	2-3	✓	108.4	9907	5805
2-8	94942	2-3	✓	108.4		5806
2-8	94944	2-3	✓	107.8		5808
2-3	94471	2-3	✓	108.7		5782
2-8	94474	2-3	✓	109.0		5807
2-3	ACFX 72821	2-3	✓	108.5		5783
2-11	94941	2-11	✓	108.5	99-08	5825
2-23	79891	2-10	✓	108.8		5863
2-11	79882	2-11	✓	108.1		5827
2-16	79884	2-11	✓	108.7		5832
2-11	79877	2-11	✓	109.0		5826
2-16	79875	2-11	✓	108.8		5829
2-16	72826	2-11	✓	108.8		5830
2-11	ACFX 94479	2-10	✓	108.5		5813
2-16	94476	2-11	✓	108.7		5828
2-16	79896	2-12	✓	109.2		5831

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Rep. Sample

Ship Date		Car #	Load date		Temp	Batch	BoL
3-16		UTLX 650842	3-9	✓	109.1	99-11	5940
3-16		650846	3-9	✓	109.4	1	5941
~~3-23~~		~~650847~~	~~3-17~~				~~5957~~
3-23	✓	UTLX 650845	3-17	✓	108.6		5958
3-23	✓	650847	3-17	✓	108.8	99-12	5957
3-29	✓	650817	3-24	✓	108.6	99-13	5983
~~4-29~~ 3-29	✓	650826	3-29	✓	108.9		6014
3-29	✓	UTLX 650832	3-25	✓	108.6		5985
3-29	✓	650899	3-25	✓	108.1		5984
3-29	✓	650817	3-25	✓	108.3		5983
~~4-6~~ 3-30		650823	3-30	✓	109.0		6012
4-6		650843	3-30	✓	109.0		6013
4-13		650853	4-8	✓	108.3	99-15	6034
4-13		650897	4-8	✓	108.8		6035
4-13		650839	4-8	✓	108.8		6036
4-19		650824	4-15	✓	108.8	99-16	6063
4-19		650845	4-15	✓	108.8		6061
4-19		650896	4-15	✓	108.8		6062
Returned		650876	4-19	✓	108.8		OK
4-26		650847	4-19	✓	108.7		6080
4-26		UTLX 650895	4-19	✓	108.6		6089
4-26		650898	4-19	✓	108.8		6088
4-28		UTLX 650836	4-27	✓	108.5	99-17	6097
5-4		650814	4-27	✓	108.6		6132
5-3		650846	4-27	✓	1086		6126
5-3		650842	4-28	✓	108.4		6127
5-3		650832	4-28	✓	1090		6128
5-10		UTLX 650826	5-5	108.5	✓	99-18	6164
5-10		650843	5-5	108.2	✓		6165
5-10		650839	5-5	108.4	✓		6163
5-10		650899	5-5	108.9	✓		6162
		650898	5-6	108.4			
		~~650895~~	~~5-6~~	108.2			

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Ship Date		Car #	Load date	Temp	Batch		BoL
3-8		ACfx 94473	2-23	108.8	99-10	✓	5915
3-8		94474	2-23	108.9		✓	5916
2-23		94478	2-23	108.8		✓	5865
2-23		87690	2-23	108.9		✓	5864
3-8		72821	2-24	108.7		✓	5917
3-8		94471	2-24	109.0		✓	5918
2-23		79883	2-24	108.8		✓	5868
3-16		94941	3-8	109.8	99-11	✓	5937
3-16		94479	3-8	109.4		✓	5936
3-16		79882	3-8	109.8		✓	5935
3-16		94940	3-9	109.6		✓	5938
3-23		ACfx 94942	3-17	108.4	99-12	✓	5961
3-23	/	79896	3-17	108.6		✓	5963
3-23	/	72826	3-17	108.6		✓	5962
3-23	/	94944	3-17	108.1		✓	5960
3-29	/	79884	3-24	108.8	99-13	✓	5979
3-29	/	79877	3-24	108.8		✓	5980
3-29	/	94476	3-24	108.8		✓	5981
3-29	/	79875	3-29	109.1		✓	5982
4-6	/	ACfx 94472	3-29	109.0		✓	6015
4-6	/	94477	3-29	108.7		✓	6016
4-6	/	94470	3-30	108.5		✓	6017
4-9		94478	4-8	108.7	99-15	✓	6060
4-13		87690	4-8	108.3		✓	6038
4-19		72821	4-8	108.7		✓	6089
4-13		94471	4-8	108.2		✓	6039
4-6		79883	3-30	108.7	99-13	✓	6018
4-19		ACfx 94940	4-19	108.5	99-16	✓	6058
4-21		94479	4-20	109.1		✓	6092
4-21		79882	4-20	109.2		✓	6065
5-4		94474	4-19	109.3		✓	6131
4-28		ACfx 94941	4-27	108.9	99-17	✓	6096
5-3		94942	4-28	108.7		✓	6130

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5-17		U+LX	650	858	5-14	109.3	99-19	✓	6203
5-17				829		109.2		✓	6204
5-17				817		109.6		✓	6205
5-24				853	5-14	109.6		✓	6227
6-2		U+LX	650	896	5-27	109.3	9921	✓	6259
6-2				846	5-26	109.6		✓	6258
6-2				842		109.2		✓	6260
5-27				898		109.4		✓	6241
5-27				845		109.5		✓	6240
6-9		U+LX	650	847	6-2	108.3	99-22	✓	6281
6-7				895		108.3		✓	6277
6-7				814		108.3		✓	6276
6-16		U+LX	650	896	6-16	108.5	99-23	✓	6307
6-16				899	6-16	108.8		✓	6308
6-17				839	6-16	108.8		✓	6309
6-28		U+LX	650	858	6-23	108.4	99-25	✓	6364
6-22		@ TJ		829	6-23	108.2		✓	6343
6-22				817	6-23	108.5		✓	6344
6-23				843	6-23	108.2		✓	6342
6-28				826	6-23	108.4		✓	6362
6-28				832	6-23	108.7		✓	6363
7-6		U+LX	650	853	6-30	108.4	99-26	✓	6391
7-6				814	6-30	108.3		✓	6389
7-6				824	6-30	108.5		✓	6390
7-8		U+LX	650	847	7-8	108.4	99-27	✓	6426
7-8				895	7-8	108.4		✓	6425
		~~U+LX 650~~		~~811~~					~~6426~~
7-8				896	7-14	109.3	99-29	✓	6427
7-14				839	7-14	109.5		✓	6453
7-22				846	7-14	109.6		✓	6451
7-22				836	7-14	109.6		✓	6452
7-30		U+LX	650	826		108.6	99-31	✓	6477
7-30				832		108.8		✓	6478

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Shipdate	CAR #	Loaddate	Temp	Batch	✓	BoL
5-3	ACFX 79896	4-28	108.8	99-17	✓	6129
4-28	94944	4-28	108.8		✓	6100
4-28	72826	4-28	108.8		✓	6101
5-6	ACFX 94472	5-5	108.1	99-18	✓	6133
5-10	94470	5-5	108.4		✓	6161
5-10	94473	5-5	108.3		✓	6160
5-10	94476	5-6	108.3		✓	6158
5-10	94477	5-6	108.6		✓	6159
	~~94474~~	~~5-6~~	108.5			@ TJ
5-17	ACFX 79877	5-13	108.4	99-19	✓	6201
5-17	79884		108.9		✓	6202
5-24	79875		108.9		✓	6228
5-24	79883		108.9		✓	6229
5-24	87690	5-17	109.3		✓	6225
6-2	94477	5-17	108.9		✓	6257
6-2	ACFX 94476	5-26	109.6	99-21	✓	6256
5-24	94471		109.7		✓	6226
6-2	79882		109.4		✓	6254
6-2	72821		109.6		✓	6255
6-7	ACFX 94942	6-4	108.3	99-22	✓	6275
6-7	94940	6-4	108.6		✓	6278
6-7	94944	6-4	108.4		✓	6279
6-7	94941	6-~~7~~	108.2		✓	6280
6-16	72826	6-7	109.3		✓	6305
6-16	94479	6-7	108.3		✓	6306
6-17	ACFX 94474	6-16	109.5	99-23	✓	6311
6-17	94472	~~6-16~~	108.5		✓	6310
6-22	79896		108.6		✓	6331
6-22	94476		108.7		✓	6332
6-22	94477		108.6		✓	6333
6-22	94473		108.6		✓	6334
6-28	94470		108.6		✓	6368
6-28	ACFX 79877	6-23	108.7	99-25	✓	6365

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Shipdate	CAR #	Load Date		TCM	Batch		BOL
7-30	HTLX 650	829	8-4	108.6	99-31	✓	6479
8-4		899		108.4	99-32	✓	6489
8-5		814		108.3		✓	6490
8-5		824		108.4		✓	6491
8-5		853		108.8		✓	6519
8-5		817	8.5	108.5		✓	6520
8-16	GTLX650	897	8-11	108.6	99-33	✓	6556
8-12		858	8-11	108.9		✓	6528
8-16		843		108.9		✓	6557
8-16		847		108.9		✓	6556
8-12		895	8-11	108.6		✓	6527
8-23	HTLX 650	836	8-18	108.7	99-34	✓	6588
8-23		839	8-18	108.9		✓	6589
8-18		846	8-18	109.1		✓	6564
8-23		896	8-18	109.2		✓	6586
8-23		832	8-18	109.2		✓	6587
8-30	HTLX 650	829	8-24	109.8	99-35	✓	6611
9-1		826	8-24	109.5		✓	6613
9-1		899	8-25	109.6		✓	6612
9-1		817	9-1	109.2	99-37	✓	6614
9-7		895	9-1	109.1		✓	6636
9-7		824	9-1	109.1		✓	6637
9-7		814	9-1	109.1		✓	6638
9-9	HTLX650	823		108.9	99-38	✓	6678
9-13		853		108.9		✓	6685
9-13		846		108.7		✓	6683
9-13		845		109.0		✓	6684
9-13		898		108.9		✓	6682
9-20	HTLX650	843		108.4	99-39	✓	6717
9-20		839		108.7		✓	6716
9-20		858		108.9		✓	6718
9-20		847		108.5		✓	6719

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Ship Date	CAR #	Load date	Temp	Batch	✓	BoL
6-28	ACfx 94944	6-23	108.6	99-25	✓	6366
6-28	94471	6-23	108.2	〃	✓	6367
7-6	ACfx 72826	6-30	108.4	99-26	✓	6393
7-6	94941	6-30	108.2	〃	✓	6395
7-6	94940	6-30	108.1	〃	✓	6394
7-6	94942	6-30	108.5	〃	✓	6392
7-22	ACfx 94477	7-8	108.5	99-27	✓	6454
7-13	94476	7-8	108.4	〃	✓	6424
7-13	79896	7-8	108.4	〃	✓	6423
7-22	79877	7-14	109.2	99-29	✓	6455
7-22	ACfx 94470	7-14	109.7	〃	✓	6456
7-22	94472	7-14	110.0	〃	✓	6457
7-29	ACfx 94479		108.7	99-31	✓	6472
7-29	94474		108.9	〃	✓	6473
7-29	94473		108.9	〃	✓	6474
7-30	79875		108.9	〃	✓	6475
7-30	79884		108.8	〃	✓	6476
8-4	ACfx 94941		108.4	99-32	✓	6483
8-4	94942		108.2	〃	✓	6492
8-5	72826		108.5	〃	✓	6518
8-5	94944		108.7	〃	✓	6517
8-9	94471		108.6	〃	✓	
8-12	ACfx 94473	8-11	108.7	99-33	✓	
8-12	94474		108.5	〃	✓	
8-12	79896		108.6	〃	✓	
~~8-12~~	~~79875~~		~~108.4~~			
8-12	79884		108.7	〃	✓	
8-16	94940		109.1	〃	✓	
8-16	94476	8-12	109.3	〃	✓	
8-18	ACfx 79877	8-18	109.2	99-34	✓	6563
8-23	79875	8-18	109.1	〃	✓	6593
8-23	94470	8-19	109.2	〃	✓	6591
8-23	94472	8-19	109.2	〃	✓	6590
8-19	94477	8-18	109.1	〃	✓	6565

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8-23		Acfx	94479	8-18	109.2	99-34	✓	6542	
		Acfx	94944	8-24	109.6	99-35			?
			94942	8-25	109.5				?
8-30			94941	9-1	109.2		✓	6610	
9-1		Acfx	94476	9-1	109.2	99-37	✓	6625	
9-1			79884	9-1	109.3		✓	6626	
9-1			94474	9-1	108.4		✓	6627	
9-1			94471	9-1	108.9		✓	6628	
9-7			94940	9-1	109.3		✓	6641	
9-7			79896	9-2	108.4		✓	6640	
9-7			94473	9-2	109.2		✓	6639	
9-9		Acfx	79875	9-8	108.8	99-38	✓	6653	
9-13			94477	9-8	109.0		✓	6679	
9-13			79877	9-8	108.5		✓	6680	
9-9			94472	9-8	108.7		✓	6652	
9-13			94944	9-9	108.9		✓	6681	
9-15		Acfx	94476	9-15	108.4	99-39	✓	6701	
9-20			94942	9-15	109.1		✓	6715	
9-20			79884	9-20	108.9		✓	6713	
9-20			94941	9-16	109.1		✓	6712	
9-15			94470	9-15	108.7		✓		
9-20			94479	9-15	109.2		✓	6714	
9-20		Acfx	94474	9-22	109.4	99-40	✓	6738	
9-27			94472	9-22	109.2		✓	6757	
9-27			94471	9-22	109.0		✓	6756	
9-27			79896	9-23	109.1		✓	6759	
9-27			94473	9-23	109.3		✓	6758	
9-27			94940	9-23	109.3		✓	6760	
10-6		Acfx	94477	10-6	108.8	99-43	✓	6800	
10-6			94470	10-6	109.0		✓	6801	
10-6			79875	10-6	108.7		✓	6793	
10-6			94944	10-6	109.1		✓	6794	
10-6			79877	10-6	109.1		✓	6795	

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Ship date		CAR #	Load date	temp	Batch entry		Bol	
10-13		ACFX 94479	10-13	108.8	99-44	✓	6821	
10-13		94942	10-14	108.7		✓	6822	
10-13		94941		108.8		✓	6823	
10-13		79884		109.0		✓	6824	
10-14		94474		109.1		✓	6843	
10-18		94476	10-14	109.0		✓	6844	
10-20		ACFX 94473	10-20	109.6	99-45	✓	6849	
10-20		79896		109.4		✓	6850	
10-20		94472		109.3		✓	6848	
10-20		94940		109.4		✓	6851	
10-25		79875		109.5		✓	6878	
10-25		94470		109.2		✓	6876	
10-25		94477		109.5		✓	6875	
10-25		94944		109.4		✓	6879	
10-25		94471		109.4		✓	6877	
11-1		ACFX 79891		109.8	99-46	✓	6914	
11-1		79883		110.0		✓	6913	
11-6		94474		109.7		✓	6921	
11-6		79877		109.8		✓	6923	
11-6		87690		109.8		✓	6923	
11-6		79882		109.8		✓	6924	
11-16		ACFX 79884	11-15	109.3	99-48	✓	6952	
11-16		94941		109.9		✓	6951	
11-16		94942		109.2		✓	6950	
11-22		79896	11-16	109.1		✓	6976	
11-22		94472		109.3		✓	6973	
11-22		94473		109.5		✓	6974	
11-22		94476		109.6		✓	6977	
11-29		94940		109.8		✓	7003	
11-22		79883		109.4		✓	6975	
11-29		94479		109.4		✓	7007	
11-29		ACFX 79891	11-23	108.3	99-49	✓	7004	
11-29		94470		108.7		✓	7005	

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Ship Date		CAR #			Load date	Temp	Batch	Extend	BoL
9-23		UTLX	650	817	9-22	108.7	99-40	✓	6739
9-23				836		108.8		✓	6742
9-23				897		108.8		✓	6740
9-23				832		109.3		✓	6741
10-1				829		108.8		✓	6762
10-6		UTLX	650	814	10-6	109.1	99-43	✓	6798
10-6				896		109.2		✓	6799
10-6				845		109.1		✓	6792
10-6				895		108.5		✓	6804
10-7				824	10-7	108.5		✓	6803
10-7				853	10-7	109.1		✓	6791
10-14		UTLX	650	823		108.9	99-44	✓	6826
10-14				846		108.8		✓	6827

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Ship date			Coil #	Load date	Temp	Batch	Entry	BoL
11-29		ACfx	94477	11-27	108.1	99-49	✓	7006
12-14			94474	12-2	108.7	99-50	✓	7071
12-6			82690		108.2		✓	7023
12-6			94471		109.0		✓	7024
12-6			79875		108.4		✓	7025
12-14			7292	12-3	108.7		✓	7070
12-6			79827		108.8		✓	7021
12-6			79882		109.3		✓	7022
12-14			~~94944~~		109.6		✓	7069
12-20		ACfx	94941	12-8	109.2	99-51	✓	7094
12-20			94942	12-8	109.1		✓	7095
12-14			79884		109.2		✓	7072
12-14			94476		108.8		✓	7068
12-20			94472		108.9		✓	7090
12-14			79883		108.8		✓	7067
12-20			94473		109.1		✓	7091
12-20		ACfx	94940	12-16	109.2	99-52	✓	7092
12-27			94470	12-16	108.8		✓	7117
12-27			79896	12-16	109.1		✓	7116
12-20			94477	12-16	109.1		✓	7093
12-27		ACfx	79891	12-27	110.4	99-54	✓	7119
12-27			94479		110.4		✓	7118
1-4			87690		110.3		✓	7127
12-28			79883		110.2		✓	7120
1-4			94471		110.3		✓	7128
12-28			94476	12-27	110.4		✓	7121

Koppers005587

01-06 Blended pitch t-65 99-01 B1-16
SP 109.8 QI 8.6 TI 27.3 ASh .12 CV 58.23
Dist 355° 1.7 360° 2.1 B.R. 18.7
Dens. 1.3248

01-14 Blended Pitch t-65 99-02 B-02-05
SP 109.0 QI 9.1 TI 28.0 ASh .12 CV 57.86
Dist. 355° 1.6% 360 2.1% B.R. 18.9 Dens. 1.3229
Chinese

01-19 Pices venture 99-03 A B02-12
SP 110.1 QI 3.3 TI 19.4 Ash 08 CV 53.87
Dist 355 2.5% 360 2.9% BR 19.40 Dens 1.2982
Chinese

01-20 pisces venturer 99-03 B B-02-13
Sp 110.0 QI 3.0 TI 17.6 ASh .12 CV 53.34
Dist. 355 5.1% 360 5.6% Br 14.6 Dens. 1.2979
01-22 Chinese

pisces Venture 99-03 C B-02-14
SP 109.7 QI 3.4 TI 17.7 ASh .10 CV 52.68
Dist. 355 2.4 360 3.0 Br 17.7 Dens. 1.3222
Batch

01-22 Blended Pitch t-65 99-04 B-03-01
SP 109.0 QI 9.3 TI 28.0 ASh .12 CV 57.13
Dist. 355 1.6% 360 2.1% Br 18.7 Dens 1.2982 Redo ON 2-12 1.3202
01-22 Korcon PAN Dynamic B03 02
PAN Dynamic 99-05 A
SP 109.1 QI 9.3 TI 26.8 ASh .29 CV 56.40
Dist. 355 1.3% 360 1.9% Br 17.5 Dens. 1.3267
01-24 99-05 B B-03-03
Korcon Pan Dynamic
SP 109.0 QI 9.0 TI 26.2 ASh .07 CV 54.33
Dist. 355 1.5% 360 1.9% Br 17.2 Dens. 1.3272

Soft. Points – Dailey L-68

01-04	"	111.4	
01-05	"	111.5	
01-06	"	111.9	
01-07	"	110.3	
01-08	"	110.9	
01-11	"	110.2	
01-12	"	110.6	
01-13	"	111.0	
01-14	"	110.0	
01-18	"	110.4	
01-19	"	110.7	
01-20	"	110.9	
01-21	"	111.0	
01-22	"	110.8	
1-25	"	111.0	
1-26	"	111.4	
1-27	"	111.3	
1-28	"	110.9	
1-29	"	111.1	
2-1	"	110.8	
2-2	"	111.3	
2-3	"	110.9	
2-4	"	110.3	
2-5	"	110.3	
2-8	"	110.5	
2-9	"	110.3	
2-10	"	110.6	
2-11	"	111.0	
2-12	"	110.2	
2-16	" passo 2-16 110.4	~~109.2~~	
2-17		110.6	
2-18		110.9	
2-19		110.1	

Koppers005589

01-25 Korcon 99-05C B03-04
Pan Dynamic
SP 110.0 QI 9.1 TI 28.6 Ash .11 CV 57.05
Dist. 355 1.2% 360 1.6% BR. 19.5 Dens 1.3262

1-28 Blended pitch t-65 9906 B-03-19
SP 108.7 QI 8.8 TI 28.0 Ash .13 CV 57.74
Dist 355 1.9% 360 2.3% Br 19.2 Dens. 1.3230

2-04 Blended Pitch t-65 99-07 B-04-07
SP 108.1 QI 8.9 TI 27.8 Ash .15 CV 58.00
Dist. 355° 2.3 360° 2.7 BR 18.9 Dens. 1.3253

2-11 Blended pitch t-65 99-08 B-04-31
SP 108.4 QI 8.8 TI 27.8 Ash .15 CV 58.09
Dist. 355° 1.7% 360° 2.3% B. R. 19.0 Dens. 1.3194

2-21 New Accord (Corcon 99-09-A B-05-09
SP 109.1 QI 10.10 TI 28.50 Ash .13 CV 58.72
Dist. 355° 1.2 360° 1.6 BR 18.4 Dens. 1.3107

2-25 New Accord Korcon 99-09-B B-05-31
SP 109.5 QI 9.9 TI 28.7 Ash .13 CV 57.94
Dist. 355° 1.3 360° 2.0 BR 18.8 Dens. 1.3182

New Accord Korcon 99-09-C B-06-04
SP 109.5 QI 10.5 TI 29.5 Ash .15 CV 57.78
Dist. 355° 1.5% 360° 1.9% B.R 19.0 Dens. 1.3249

2-23 Blended pitch t-65 99-10 B05-21
SP 108.4 QI 9.6 TI 28.0 Ash .12 CV 57.64
Dist. 355° 1.5 360° 2.0 Br 18.4 Dens. 1.3296

Daily Softning points from b-68

2-22		"	110.5				
2-23		"	111.4				
2-24		"	111.8				
2-25		"	109.8				
2-26		"	109.9				
3-1		"	109.8				
3-2		"	110.7				
3-3		"	110.8				
3-4		"	111.0				
3-8		"	111.2				
3-9		"	110.9				
3-10		"	110.4				
3-11		"	110.6				
3-15		"	110.9				
3-16		"	111.4				
3-17		"	111.2				
3-18		"	110.5				
3-22		"	110.9				
3-23		"	111.0				
3-24		"	111.0				
3-25		"	111.3				
3-29		"	111.5				
3-30		"	110.9				
3-31		"	109.9				
4-1		"	110.1				
4-5		"	110.4				
4-6		"	110.6				
4-7		"	111.2				
4-8		"	111.6				
4-12		"	110.3				
4-13		"	110.4				
4-14		"	110.1				
4-15		"	110.9				

Batch Blend Results
Ship Incoming Results

3-5		Blended Pitch t-65 99-11	B-06-12	
		SP 108.8 QI 9.3 TI 28.0 Ash .09	CV 57.49	
		Dist. 355° 1.3% 360° 1.7% Dens. 1.3218	B.R. 18.7	
3-18		Blended Pitch t-65 99-12	B-07-11	
		SP 108.7 QI 9.3 TI 27.7 Ash .13	CV 57.52	
		Dist. 355° 1.4% 360° 2.0% Dens. 1.3230	B.R. 18.4	
3-25		Blended Pitch t-65 99-13	B-7-28	
		SP 108.4 QI 9.4 TI 27.7 Ash .13	CV 57.82	
		Dist. 355° 1.5% 360 1.9% Dens 1.3217	BR 18.3	
4-07		Korcon Pitch Ship O. Duke 99-14-A	B-8-23	
		SP 108.9 QI 12.0 TI 29.4 Ash .11	CV 58.80	
		Dist. 355° 1.3% 360 1.8% Dens 1.3223	BR 17.4	
4-09		Blended Pitch t-65 99-15	B-8-24	
		SP 108.5 QI 9.7 TI 28.4 Ash .13	CV 57.87	
		Dist. 355° 1.3% 360° 2.0% Dens. 1.3289	B.R. 18.7	
4-19		Blended Pitch t-65 99-16	B-9-14	
		SP 108.3 QI 9.9 TI 28.6 Ash .12	CV 57.89	
		Dist. 355° 1.2 360 1.8 Dens. 1.3252		
4-28		Blended Pitch t-65 99-17	B-10-15	
		SP 108.4 QI 9.5 TI 28.9 Ash .12	CV 57.7	
		Dist. 355. 1.3% 360 1.8% Dens 1.3246	BR 19.4	
5-5		Blended Pitch t-65 99-18	B-11-10	
		SP 108.0 QI 9.8 TI 28.1 Ash .14	CV 57.73	
		Dist 355° 1.7% 360° 2.3% Dens. 1.3257	B.R. 18.3	
5-13		Blended Pitch t-65 99-19	B-12-04	
		SP 108.8 QI 9.1 TI 28.4 Ash 13	CV 57.82	
		Dist. 355° 1.9% 360° 2.4% Dens 1.3225	BR 19.3	
5-13		New Accord -A Korcon 99-18	B-12-05	PDK
		SP 109.2 QI 10.0 TI 29.1 Ash .14	CV 58.9	
		Dist. 1.5 355 2.1 360 Dens 1.3241	BR 19.1	
5-		New accord ship 99-20-B	B-12-11	HTC
		SP 109.1 QI 10.3 TI 29.0 Ash .15	CV 58.91	
		Dist Ø 355 2.0 360 Dens. 1.3250	CV 57.4	

Koppers005592

Daily Softening points from tank 68

4-19		"	111.1			
4-20		"	110.7			
4-21		"	109.9			
4-22		"	110.2			
4-26		"	110.6			
4-27		"	111.1			
4-27		"	111.1			
4-28		"	110.3			
4-29		"	110.3			
4-30		"	110.0			
5-3		"	110.4			
5-4		"	110.6			
5-5		"	111.2			
5-6		"	110.6			
5-7		"	110.6			
5-10		"	110.3			
5-11		"	110.7			
5-12		"	110.6			
5-13		"	110.7			
5-14		"	111.1			
5-17		"	110.9			
5-18		"	110.4			
5-19		"	110.9			
5-20		"	111.3			
5-21		"	111.2			
5-24		"	111.5			
5-25		"	112.0			
5-26		"	112.1			
5-27		"	109.6			
5-28		"	110.1			
6-1		"	110.7			
6-2		"	110.9			
6-3		"	110.7			

5-24 New accord 99-20-C B-12-12 HTC
SP 109.2 QI 10.1 TI 29.4 Ash .17
CVC 57.20 Dist. 355° ø 360° 1.7% Dens 1.3180 BR. 19.3

5-28 Blended Pitch 6-65 99-21 B-13-12 HTC
SP 109.7 QI 9.3 TI 27.3 Ash .15 CVC 56.6
Dist. 355° 1.10 360° 1.6 Dens 1.3300 BR 18.0

06-07 Blended Pitch 6-65 99-22B- 14-7 HTC
SP 108.3 QI 9.4 TI 28.3 Ash .15 CVC 57.0
Dist. 355° 1.0 360° 1.3 Dens. 1.3220 BR 18.9

06-17 Blended pitch 6-65 99-23 B-15-7
SP 108.2 QI 9.6 TI 27.6 Ash .13 CVC 57.94
Dist. 355° 1.7% 360° 2.2% Dens 1.3218 BR 18.0

6-21 Jammi Crystal 99-24 B-15-20
SP 109.9 QI 9.5 TI 27.2 Ash .13 CVC 58.5
Dist. 355° 1.8% 360° 2.3% Dens. 1.3238 BR 17.7

6-23 Batch # 99-25 SP 108.5 QI 9.4 TI 27.5
Ash .15 CVC 58.0 Dist 355 1.8 360 2.2
Dens 1.3219 Beta R 18.1

6-30 Batch # 99-26 SP 108.4 QI 9.1 TI 27.2
Ash .14 CVC 57.90 Dist 355 2.4 360 2.9
Dens 1.3250 Beta R 18.1

7-08 Batch # 99-27 SP 108.1 QI 9.2 TI 27.7
Ash .13 CVC 57.9 Dist 355 2.1 360 2.9
Dens 1.3278 Beta R 18.5

7-11 Batch # 99-28 SP 110.0 QI 3.3 TI 19.1
Ash .26 CVC 53.10 Dist 355 1.0 360 1.2
Dens 1.2776 Beta R 15.8

Koppers005594

Daily S.of T. From t-68

4-	6-7	4	111.6
4-	6-8	4	109.8
4-	6-9	4	110.0
4	6-10	4	110.0
4	6-11	4	110.2
4	6-14	4	110.4
4	6-15	4	110.9
4	6-16	4	111.0
4	6-17	4	110.0
	6-18	4	109.9
	6-21	4	110.2
	6-22	4	110.2
	6-23	4	110.3
	6-24	4	110.6
	6-25	4	109.8
5	6-28	4	109.9
5	6-29	4	110.4
5	6-30	4	110.7
5	7-1	4	109.3
5	7-2	4	109.8
5	7-6	4	110.3
5	7-7	4	110.2
5	7-8	4	110.6
5	7-9	4	109.7
5	7-12	4	110.0
5	7-13	4	110.5
5-	7-14	4	110.7
5-	7-15	4	110.9
5-	7-16	4	110.7
5-	7-19	4	110.7
6-	7-20	4	110.7
6-7	7-21	4	110.9
6-3	7-22	4	111.0

Koppers005595

7-15

Batch # 99-29 SP 109.3 QI 8.7 TI 27.1

Ash .13 CVC 57.64 Dist 355 1.8 360 2.2

Dens 1.3227 Beta R 18.4

7.26 "SAMMI HAROLD" 99-30 "A"

QI 9.~~5~~9 (9.6) SP 109.6 ASH .09

TI 27.6 CVC 58.1 Sp. Gr. 1.32

DIST: 355° 1.3 / 360° 1.9

7.28 SAMMI HAROLD 99-30 "B"

QI 9.4

TI 27.1

DIST: 355° 1.9 CVC 58.2

360° 2.3 S Pt. 109.5

ASH .10

Sp. GRAV 1.31

7.29 BLENDED PITCH T-65 99-31

QI 9.6

TI 27.

DIST 355° 1.3 CVC 57.6

360° 1.8 ① S. pt 108.5 S. pt. ② 108.6

ASH .12

Sp grav 1.32

Koppers005596

8-04
Batch # 99-32 SP 108.0 QI 9.2 TI 27.9
Ash .11 CVC 57.13 Dist 355 1.8 360 2.3
Dens 1.3215 Beta R 18.7

8-11
Batch # 99-33 SP 108.1 QI 9.3 TI 27.7
Ash .12 CVC 57.17 Dist 355 2.0 360 2.5
Dens 1.3260 Beta R 18.4

8-18
Batch # 99-34 SP 108.7 QI 9.0 TI 27.8
Ash .11 CVC 57.35 Dist 355 1.4 360 2.1
Dens 1.3231 Beta R 18.8

8-26
Batch # 99-35 SP 109.1 QI 9.4 TI
Ash .08 CVC 56.9 Dist 355 2.5 360 3.0
Dens 1.3259 Beta R 18.9

8-25
Batch # 99-36-A SP 109.4 QI 9.4 TI 27.3
Ash .12 CVC 57.76 Dist 355 2.1 360 2.7
Dens 1.3308 Beta R 17.9

8-27
Batch # 99-36-B SP 109.5 QI 9.1 TI 26.8
Ash .11 CVC 56.96 Dist 355 1.0 360 1.8
Dens 1.3287 Beta R 17.7

8-28
Batch # 99-36-C SP 109.4 QI 9.8 TI 28.5
Ash .15 CVC 57.81 Dist 355 1.5 360 2.2
Dens 1.3266 Beta R 18.7

Koppers005597

Daily S.o.T. Points L-68

7-23	"	111.0
7-26	"	111.1
7-27	"	111.3
7-28	"	112.1
8-2	"	110.3
8-3	"	111.0
8-4	"	110.6
8-9	"	110.3
8-10	"	110.3
8-11	"	110.6
8-12	"	109.9
8-13	"	109.7
8-16	"	110.3
8-17	"	110.6
8-18	"	110.7
8-19	"	110.8
8-20	"	110.8
8-23	"	110.8
8-24	"	110.6
8-25	"	111.2
8-26	"	111.6
8-27	"	110.3
8-30	"	111.0
8-31	"	111.2
9-1	"	111.5
9-2	"	110.3
9-7	"	111.2
9-8	"	111.3
9-9	"	111.4
9-10	"	110.1
9-13	"	110.8
9-14	"	110.7
9-15	"	110.9

Koppers005598

9-1

Batch # 99-37 SP 108.7 QI 9.3 TI 28.0

Ash .11 CVC 57.23 Dist 355 .9 360 1.4

Dens 1.3234 Beta R 18.7

9-9

Batch # 99-38 SP 108.4 QI 8.9 TI 27.7

Ash .10 CVC 57.11 Dist 355 1.4 360 2.0

Dens 1.3248 Beta R 18.8

9-16

Batch # 99-39 SP 108.8 QI 9.6 TI 27.9

Ash .10 CVC 56.70 Dist 355 1.6 360 2.1

Dens 1.3228 Beta R 18.3

Koppers005599

All This Page

Daily Soft Points => t-68

9-16		11	110.5				

1997-1998

SAMPLE LOG

JOURNAL

01	1	TLDX 223140 P-1/P-13	12-20-94
01	2	K67 Batch 94.63 P1/P-13	12-21 94
01	3	T 67 Batch 94-63 P1/P13	12/22/94
01	4	K-22 Taylor "	12/22/94
01	5	Melter Sample Batch #95-1	1/4/95
01	6	Blended Pitch UTLX 650765	1/4/95
01	7	Blended Pitch ~~loading sample~~ UTLX 650769	1/4/95
01	8	Blended Pitch UTLX 650780	1/4/95
01	9	Blended Pitch Batch 95-1	1/4/95
01	10	Blended Pitch UTLX 650756	1/4/95
01	11	Blended Pitch UTLX 650777	1/5/95
01	12	P1/P13 Taylor/67 tank	1/4/95
01	13	P1/P13 Taylor/67 tank	1/5/95
01	14	Blended Pitch UTLX 650772	1/5/95
01	15	Blended Pitch UTLX 650755	1/6/95
01	16	Blended Pitch UTLX 650759	1/6/95
01	17	Blended Pitch UTLX 650783	1/6/95
01	18	Blended Pitch UTLX 650767	1/6/95
01	19	Blended Pitch UTLX 650766	1/6/95
01	20	Blended Pitch "Split Batch" 95-1	1/6/95
01	21	Blended Pitch UTLX 650778	1/6/95
01	22	Bitumen UTLX 514 TO K-22	1/9/95
01	23	STC UTLX 650832 Batch 95-2	1/10/95
01	24	STC UTLX 650832 Batch 95-2	1/10/95
01	25	P1/P13 Taylor 67 Tank 94-63	1/16/95
01	26	K 1535 Fields KPCX 502 94-62	1/16/95
01	27	Melter Sample Batch 95-3	1/17/95
01	28	Blended Pitch UTLX 650754	1/17/95
01	29	Blended Pitch UTLX 650770	1/17/95
01	30	Blended Pitch UTLX 650760	1/17/95
01	31	Blended Pitch UTLX 650774	1/17/95
01	32	Blended Pitch UTLX 650771	1/18/95
01	33	Blended Pitch UTLX 650763	1/18/95

02	1	Blended Pitch UTLX 650775	1/18/95
02	2	Blended Pitch UTLX 650773	1/18/95
02	3	Batch 95-3 Supplementary Sample	1/19/95
02	4	Blended Pitch UTLX 650762	1/19/95
02	5	Blended Pitch UTLX 650758	1/19/95
02	6	Blended Pitch UTLX 650761	1/19/95
02	7	Blended Pitch UTLX 650782	1/19/95
02	8	Batch 95-3 2nd Supp. Sample	1/20/95
02	9	Lab Blend B95-3 + heavy oil	1/20/95
02	10	STC Retain Batch 95-2	1/24/95
02	11	Taylor Retain P1/P13 94-63	1/24/95
02	12	Pencil Pitch Old Bag	1/25/95
02	13	Pencil Pitch New Bag	1/25/95
02	14	Pencil Pitch Building	1/25/95
02	15	P1/P13 JLDX 223039 Prelim.	1/26/95
02	16	P1/P13 T67 Batch 95-4	1/27/95
02	17	STC Batch Sample 95-6	1/31/95
02	18	K-1535 Batch 94-62 Drumming Sam.	1/31/95
02	19	K-1535 Batch 94-62 Drumming Sam	1/31/95
02	20	Blended Pitch Batch Sample 95-5	2/1/95
02	21	Blended Pitch UTLX 650767	2/1/95
02	22	Blended Pitch UTLX 650772	2/1/95
02	23	Blended Pitch UTLX 650759	2/1/95
02	24	Blended Pitch UTLX 650783	2/1/95
02	25	Blended Pitch UTLX 650756	2/2/95
02	26	Blended Pitch UTLX 650780	2/2/95
02	27	Blended Pitch UTLX 650777	2/2/95
02	28	Blended Pitch UTLX 650755	2/2/95
02	29	Tank 17	2/2/95
02	30	Blended Pitch UTLX 650781	2/3/95
02	31	P1/P13 K-22 Stella-Jones Retain	2/3/95
02	32	Blended Pitch UTLX 650769	2/3/95
02	33	Blended Pitch UTLX 650765	2/3/95

03	1	Blended Pitch UTLX650765	2/3/95	
03	2	P-1/P-13 Taylor Retain	2-8-95	
03	3	P-1/P-13	2-8-95	
03	4	P-1/P-13 Taylor	2-9-95	
03	5	K-1535 KPCX 502 Batch 95-7	2/10/95	
03	6	Korean Pitch Ocean Duke 2nd 1st 1/3	2/10/95	
03	7	Korean Pitch Ocean Duke 1st 2nd 1/3	2/10/95	
03	8	Korean Pitch Ocean Duke 3rd 1/3	2/10/95	
03	9	Korean Pitch Ocean Duke, 1st 1/3	2/15/95	Resample
03	10	K-15-35 KPCX 502 Batch 95-7 Resample	2/16/95	
03	11	STC Retain 2/20 Shipdate 95-6	2/20/95	
03	12	K-15-35 drumming sample 95-7	2/20/95	
03	13	lite uncorrected T23 B95-8	2/20/95	
03	14	NSR K-34 B95-9	2/21/95	
03	15	Blended Pitch Batch Sample 95-10	2/21/95	
03	16	Blended Pitch UTLX 650772	2/21/95	
03	17	P-1/P-13 Retain Taylor	2/21/95	
03	18	Blended Pitch UTLX 650767	2/21/95	
03	19	Blended Pitch UTLX 650754	2/22/95	
03	20	Blended Pitch UTLX 650773	2/22/95	
03	21	Blended Pitch UTLX 650774	2/22/95	
03	22	Blended Pitch UTLX 650760	2/22/95	
03	23	P1/P13 UTLX 77423	2/22/95	
03	24	Blended Pitch UTLX 650766	2/23/95	
03	25	Blended Pitch UTLX 650762	2/23/95	
03	26	Blended Pitch UTLX 650782	2/23/95	
03	27	P1/P13 Tank 67 Batch 95-11	2/23/95	
03	28	Blended Pitch UTLX 650770	2/23/95	
03	29	Blended Pitch UTLX 650763	2/24/95	
03	30	Blended Pitch UTLX 650771	2/24/95	
03	31	Blended Pitch UTLX 650778	2/24/95	
03	32	K-364 Batch 95-12 Soft Pitch-95-16 KPCX 510	2/28/95	
03	33	K-364 K-22 West Cotton Retain	3/1/95	

Koppers005604

04	1	P1/P13 Taylor retain		3/7/95
04	2	P1/P13 UTLX 78484		3/8/95
04	3	P1/P13 T67 Batch 95-13		3/9/95
04	4	K-15-35 Batch 95-14 KPCX502		3/10/95
04	5	K-15-35 B95-14 KPCX502 from pump		3/10/95
04	6	STC Retain Batch 95-6		3/13/95
04	7	P1/P13 Stella Jones retain		3/13/95
04	8	Blended Pitch Batch Sample 95-15		3/14/95
04	9	Blended Pitch UTLX650781		3/14/95
04	10	Blended Pitch UTLX650756		3/14/95
04	11	Blended Pitch UTLX650777		3/14/95
04	12	Blended Pitch UTLX650780		3/14/95
04	13	Blended Pitch UTLX650765		3/15/95
04	14	Blended Pitch UTLX650767		3/15/95
04	15	Blended Pitch UTLX650772		3/15/95
04	16	Blended Pitch UTLX650811		3/15/95
04	17	Blended Pitch UTLX650761		3/16/95
04	18	Blended Pitch UTLX650758		3/16/95
04	19	Blended Pitch UTLX650783		3/16/95
04	20	Blended Pitch UTLX650759		3/16/95
04	21	P1/P13 Taylor Retain		3/17/95
04	22	P1/P13 Stella Jones Retain		3/17/95
04	23	Blended Pitch UTLX650775		3/17/95
04	24	P1/P13 Stella Jones Retain		3/20/95
04	25	P1/P13 Taylor Retain		3/22/95
04	26	Soft Pitch Alcoa Retain (B95-16)		3/22/95
04	27	P1/P13 UTLX 78473		3/29/95
04	28	P1/P13 T67 Batch 95-17		3/30/95
04	29	P1/P13 UTLX 642204		3/30/95
04	30	P1/P13 K-22 Taylor Retain		3/30/95
04	31	P1/P13 T67 Batch 95-18		3/31/95
04	32	Blended Pitch Batch 95-19		4/4/95
04	33	Blended Pitch UTLX650756		4/4/95

05	1	Blended Pitch UTLX 650781	4/4/95
05	2	Blended Pitch UTLX 650762	4/4/95
05	3	Blended Pitch UTLX650766	4/4/95
05	4	Blended Pitch KPLX 507	4/5/95
05	5	Blended Pitch UTLX650769	4/5/95
05	6	Blended Pitch UTLX650780	4/5/95
05	7	Blended Pitch UTLX650763	4/6/95
05	8	Blended Pitch UTLX650771	4/6/95
05	9	P1/P13 Taylor Retain / Blue Line	4/6/95
05	10	Blended Pitch UTLX650778	4/6/95
05	11	Blended Pitch UTLX650806	4/6/95
05	12	Blended Pitch UTLX650773	4/7/95
05	13	P1/P13 Taylor Retain Blue Line	4/7/95
05	14	Blended Pitch UTLX650755	4/7/95
05	15	Blended Pitch UTLX650770	4/7/95
05	16	Blended Pitch UTLX650782	4/7/95
05	17	K-364 Cascade Retain (KPLX519)	4/10/95
05	18	K-364 KPLX510 B95-20	4/13/95
05	19	P1/P13 Taylor Retain	4/13/95
05	20	P1/P13 Taylor Retain	4/20/95
05	21	STC Blend B-95-6 Retain	4/24/95
05	22	Blended Pitch Batch 95-21	4/25/95
05	23	Blended Pitch UTLX650759	4/25/95
05	24	Blended Pitch UTLX650758	4/25/95
05	25	Blended Pitch UTLX650783	4/25/95
05	26	Blended Pitch UTLX650776	4/25/95
05	27	P1/P13 Taylor Retain	4/26/95
05	28	Blended Pitch UTLX650913	4/26/95
05	29	Blended Pitch UTLX650767	4/26/95
05	30	Blended Pitch UTLX650765	4/26/95
05	31	Blended Pitch UTLX650775	4/26/95
05	32	Blended Pitch UTLX650754	4/27/95
05	33	Blended Pitch UTLX650772	4/27/95

06	1	Blended Pitch UTLX 650772	4/27/95	
06	2	Blended Pitch UTLX 650761	4/27/95	
06	3	Blended Pitch UTLX 650777	4/27/95	
06	4	Blended Pitch UTLX 650760	4/28/95	
06	5	Blended Pitch UTLX 650774	4/28/95	
06	6	Blended Pitch UTLX 650832	4/28/95	
06	7	P1/P13 Taylor Return	5/1/95	
06	8	GATX 56375 lite uncorrected	5/3/95	
06	9	K15-35 KPCX 502 B95-22	5/3/95	
06	10	GATX 56375 lite uncor.	5/3/95	
06	11	T34 NSR B95-23	5/3/95	
06	12	GATX 56375 lite uncor.	5/3/95	
06	13	T3 50/50 NSR/methyl solvent	5/3/95	
06	14	T67 P1/P13 Batch 95-24	5/5/95	
06	15	K-15-35 KPCX 502 B95-22	5/5/95	
06	16	K-15-35 drumming sample	5/5/95	
06	17	P1/P13 Taylor return	5/8/95	
06	18	Blended Pitch UTLX 650877	5/10/95	
06	19	Blended Pitch Batch 95-25	5/10/95	
06	20	Chinese Pitch NAHX 487646	5/10/95	= 5/9
06	21	Chinese Pitch NP 75300	5/10/95	= 5/10
06	22	Chinese Pitch NP 75619	5/10/95	= 5/9
06	23	Blended Pitch UTLX 650793	5/10/95	
06	24	Blended Pitch UTLX 650781	5/10/95	
06	25	Blended Pitch UTLX 650756	5/10/95	
06	26	Blended Pitch UTLX 650755	5/11/95	
06	27	Blended Pitch UTLX 650773	5/11/95	
06	28	Chinese Pitch NP 75320	5/11/95	Valtava
06	29	Chinese Pitch PLFX 759	5/11/95	
06	30	Blended Pitch UTLX 650780	5/11/95	
06	31	Blended Pitch UTLX 650769	5/11/95	
06	32	Blended Pitch UTLX 650762	5/12/95	
06	33	Blended Pitch UTLX 650766	5/12/95	

07	1	Blended Pitch KRLX 501	5/12/95	
07	2	Blended Pitch UTLX650806	5/12/95	
07	3	Chinese Pitch CBQ 85188	5/12/95	
07	4	Chinese Pitch BN 419321	5/12/95	
07	5	Chinese Pitch NP 75391	5/12/95	
07	6	Chinese Pitch SLSF 182067	5/12/95	
07	7	Chinese Pitch BN 435033	5/12/95	
07	8	Chinese Pitch SLSF 182130	5/12/95	
07	9	Chinese Pitch NP 75308	5/12/95	
07	10	Chinese Pitch BN 467647	5/12/95	
07	11	Chinese Pitch GN 71529	5/12/95	
07	12	Chinese Pitch GN 71551	5/12/95	
07	13	Blended Pitch UTLX650832	5/15/95	
07	14	Blended Pitch UTLX650913	5/15/95	
07	15	P1/P13 Taylor Return	5/15/95	
07	16	P1/P13 TLDX 223113	5/15/95	
07	17	(STC) K-364 UTLX650858 from truck	5/16/95	
07	18	P1/P13 Tank 67 Batch 95-27	5/17/95	
07	19	(STC) K-364 UTLX650858	5/17/95	
07	20	Chinese Pitch BN419421	5/14/95	
07	21	Chinese Pitch CBQ 85181	5/14/95	
07	22	Chinese Pitch SLSF 182058	5/14/95	
07	23	Chinese Pitch NP 75399	5/14/95	
07	24	Chinese Pitch CBQ 85163	5/14/95	
07	25	Chinese Pitch NP 75305	5/14/95	
07	26	Chinese Pitch NP 75392	5/14/95	
07	27	Chinese Pitch SLSF 82284	5/14/95	
07	28	Chinese Pitch NP 75383	5/14/95	
07	29	Chinese Pitch GN 71548	5/14/95	
07	30	P1/P13 Taylor Return	5/17/95	
07	31	P1/P13 Taylor Return (Blue Line)	5/25/95	
07	32	P1/P13 Taylor Return (Blue Line)	5/25/95	
07	33	P1/P13 Batch 95-28	5/26/95	

"Valtava"

"Valtava"

08	1	K-364 KPCX 510 Cascade Asphalt		5/30/95
08	2	K-364 KPCX 510 Re-Test		5/31/95
08	3	Korean Pitch Ship "Pan Noble" 1st 1/3	B 95-29A	6/1/95
08	4	Korean Ship "Pan Noble" 2/3	95-29B	6/2/95
08	5	TLDX223045 Methyl Napth FZ		6/2/95
08	6	Blended Pitch B 95-30		6/5/95
08	7	Blended Pitch UTLX650775		6/5/95
08	8	Korean Ship "Pan Noble" 3/3	95-29C	6/5/95
08	9	Blended Pitch UTLX650754		6/5/95
08	10	Blended Pitch UTLX650770		6/5/95
08	11	Blended Pitch UTLX650782		6/5/95
08	12	Blended Pitch UTLX650766		6/6/95
08	13	Blended Pitch UTLX650762		6/6/95
08	14	Blended Pitch UTLX650783		6/6/95
08	15	Blended Pitch UTLX650759		6/6/95
08	16	Blended Pitch UTLX650774		6/7/95
08	17	Blended Pitch UTLX650760		6/7/95
08	18	Blended Pitch UTLX650765		6/7/95
08	19	Blended Pitch UTLX650767		6/7/95
08	20	Blended Pitch UTLX650832		6/8/95
08	21	Blended Pitch UTLX650778		6/8/95
08	22	Blended Pitch UTLX650771		6/8/95
08	23	Blended Pitch UTLX650763		6/8/95
08	24	Blended Pitch UTLX650793		6/9/95
08	25	Blended Pitch UTLX650806		6/9/95
08	26	Blended Pitch UTLX650772		6/9/95
08	27	Blended Pitch UTLX650777		6/9/95
08	28	P1/P13 Taylor Retain B/L		6/13/95
08	29	P1/P13 JH Baxter Retain B/L		6/22/95
08	30	P1/P13 JH Baxter Retain B/L		6/23/95
08	31	Cascade Asphalt Retain K364		6/26/95
08	32	Melter Blended Pitch Batch	95-31	6/26/95
08	33	Blended Pitch UTLX650858		6/26/95

09	1	Blended Pitch UTLX650773	6/26/95		
09	2	Blended Pitch UTLX 650780	6/26/95		
09	3	P1/P13 Taylor Retain	6/27/95		
09	4	Blended Pitch UTLX650769	6/27/95		
09	5	Blended Pitch UTLX650766	6/27/95		
09	6	P1/P13 ACFX 89029	6/27/95		
09	7	Blended Pitch UTLX650762	6/27/95		
09	8	Blended Pitch UTLX650806	6/27/95		
09	9	Blended Pitch UTLX 650756	6/28/95		
09	10	Blended Pitch UTLX650755	6/28/95		
09	11	Blended Pitch UTLX650754	6/28/95		
09	12	P1/P13 T67 Batch 95-32	6/28/95		
09	13	Blended Pitch UTLX 650775	6/28/95		
09	14	Blended Pitch UTLX650913	6/29/95		
09	15	Blended Pitch UTLX650761	6/29/95		
09	16	Blended Pitch UTLX 650781	6/29/95		
09	17	Blended Pitch UTLX650877	6/29/95		
09	18	Blended Pitch UTLX650759	6/30/95		
09	19	Blended Pitch UTLX650783	6/30/95		
09	20	Taylor retain P1/P13	6/30/95		
09	21	Cascade Asphalt retain K-364	7/5/95		
09	22	Taylor Retain P1/P13	7/12/95		
09	23	KPCX 5.10 K364 / Soft Pitch ~~Field Retain~~ ~~K-15-35~~ K364	7/12/95		
09	24	Fields Retain K-15-35	7/13/95		
09	25	Taylor Retain P1/P13	7/14/95		
09	26	Soft Pitch (K364) Alcoa Retain	7/14/95		
09	27	Blended Pitch UTLX650778	7/18/95		
09	28	Blended Pitch UTLX650767	7/18/95		
09	29	Blended Pitch UTLX650832	7/18/95		
09	30	P1/P13 T67 Batch 95-34	7/20/95		
09	31	P1/P13 Taylor Retain	7/21/95		
09	32	Blended Pitch Batch 95-35	7/24/95		
09	33	Blended Pitch UTLX650762	7/24/95		

10	1	Blended Pitch UTLX 650766	7/24/95		
10	2	Blended Pitch UTLX 650755	7/24/95		
10	3	Blended Pitch UTLX 650858	7/25/95		
10	4	Blended Pitch UTLX 650780	7/25/95		
10	5	Blended Pitch UTLX 650771	7/25/95		
10	6	Blended Pitch UTLX 650763	7/25/95		
10	7	Blended Pitch UTLX 650782	7/26/95		
10	8	Blended Pitch UTLX 650770	7/26/95		
10	9	Blended Pitch UTLX 650756	7/26/95		
10	10	K-364 Cascade Isopivalt Return	7/28/95		
10	11	P1/P13 Stella Jones Return B95-34	T67	7/31/95	
10	12	Blended Pitch UTLX 650760	8/1/95		
10	13	Blended Pitch Batch 95-36	8/1/95		
10	14	Blended Pitch UTLX 650772	8/1/95		
10	15	~~UTLX 650803~~ Heavy Oil T33	8/1/95		
10	16	Blended Pitch UTLX 650777	8/1/95		
10	17	Blended Pitch UTLX 650793	8/1/95		
10	18	P1/P13 Stella Jones Return B95-34	8/1/95		
10	19	Heavy Oil T33	8/2/95		
10	20	Blended Pitch UTLX 650765	8/2/95		
10	21	Blended Pitch UTLX 650769	8/2/95		
10	22	Blended Pitch UTLX 650759	8/2/95		
10	23	Blended Pitch UTLX 650783	8/2/95		
10	24	Blended Pitch UTLX 650773	8/3/95		
10	25	Blended Pitch Batch 95-37	8/3/95	T68	
10	26	P1/P13 Stella-Jones Return B95-34	8/3/95		
10	27	P1/P13 Taylor return B95-34	8/7/95		
10	28	Blended Pitch UTLX 650776	8/7/95		
10	29	Blended Pitch UTLX 650-774	8/7/95		
10	30	P1/P13 Stella-Jones Return B95-34	8/7/95		
10	31	Blended Pitch UTLX 650767	8/8/95		
10	32	Blended Pitch UTLX 650778	8/8/95		
10	33	Blended Pitch UTLX 650754	8/8/95		

11	1	Blended Pitch UTLX650775	8/8/95
11	2	K-364/Soft Pitch KPCX514 B95-38 39	8/9/95
11	3	P1/P13 Taylor Retain	8/10/95
11	4	Blended Pitch UTLX650758	8/10/95
11	5	Blended Pitch UTLX650781	8/10/95
11	6	Blended Pitch UTLX650780	8/10/95
11	7	P1/P13 Stella Jones Retain	8/10/95
11	8	P1/P13 ACFX 79682	8/14/95
11	9	K-364 KPCX 514 Cascade Asphalt Retain	8/14/95
11	10	P1/P13 T67 B95-40 w/ ACFX	8/15/95
11	11	P1/P13 Taylor Retain B40	8/16/95
11	12	P1/P13 Taylor retain B95-40	8/21/95
11	13	Blended Pitch UTLX650772	8/21/95
11	14	Blended Pitch UTLX650777	8/21/95
11	15	Blended Pitch Batch 95-41	8/21/95
11	16	Blended Pitch UTLX650763	8/21/95
11	17	Blended Pitch UTLX650762	8/21/95
11	18	Blended Pitch UTLX650782	8/22/95
11	19	Blended Pitch Batch 95-41 (2nd sample)	8/22/95
11	20	Blended Pitch UTLX650770	8/22/95
11	21	Blended Pitch UTLX650761	8/22/95
11	22	Blended Pitch UTLX650756	8/25/95
11	23	Blended Pitch ~~UTLX650~~ Batch 95-42	8/25/95
11	24	Blended Pitch UTLX650760	8/25/95
11	25	Blended Pitch UTLX650765	8/25/95
11	26	Blended Pitch UTLX650769	8/25/95
11	27	P1/P13 Taylor Retain B95-40	8/28/95
11	28	P1/P13 ACFX 89030	8/28/95
11	29	P1/P13 T67 B95-43	8/31/95
11	30	K-364 Cascade Asphalt Retain	9/1/95
11	31	Blended Pitch B95-44	9/5/95
11	32	Blended Pitch UTLX650776	9/5/95
11	33	Blended Pitch UTLX650774	9/5/95

1	Blended Pitch B 95-44	S/2	9/5/95
2	Blended Pitch UTLX650759		9/5/95
3	Blended Pitch UTLX 650783		9/5/95
4	Blended Pitch UTLX 650-780		9/6/95
5	Blended Pitch UTLX 650773		9/6/95
6	Blended Pitch UTLX 650766		9/6/95
7	Blended Pitch UTLX 650755		9/6/95
8	Blended Pitch T65 (for bl.)		9/6/95
9	Heavy Oil (for bl.)		9/6/95
10	Lab Blend - Melter Pitch		9/6/95
11	Blended Pitch UTLX 650777		9/7/95
12	Blended Pitch UTLX 650772		9/7/95
13	Blended Pitch UTLX650781		9/7/95
14	Blended Pitch UTLX650777		9/7/95
15	Blended Pitch - T65 blend		9/8/95
16	K-364 Western Colloid retain		9/11/95
17	P1/P13 UTLX 641996		9/11/95
18	P1/P13 T67 Batch 95-45		9/12/95
19	K-15-35 KPCX 502 B95-46		9/15/95
20	Blended Pitch B 95-47		9/18/95
21	Blended Pitch UTLX 650765		9/18/95
22	Blended Pitch UTLX650 760		9/18/95
23	Blended Pitch UTLX650775		9/18/95
24	Blended Pitch UTLX650756		9/18/95
25	Blended Pitch UTLX650767		9/19/95
26	Blended Pitch UTLX650758		9/19/95
27	Blended Pitch UTLX650778		9/19/95
28	Blended Pitch UTLX650754		9/20/95
29	K364 Cascade Asphalt		9/22/95
30	K364 Western Colloid		9/25/95
31	K-15-35 & Vass Industries	return	10/2/95
32	Blended Pitch UTLX650776		10/2/95
33	Blended Pitch UTLX650762		10/2/95

1	Blended Pitch ~~UTLX~~ Batch 95-48			10/2/95
2	Blended Pitch UTLX650763			10/3/95
3	Blended Pitch UTLX650761			10/3/95
4	Blended Pitch UTLX650770			10/3/95
5	Blended Pitch UTLX650782			10/3/95
6	Blended Pitch UTLX650769			10/4/95
7	Blended Pitch UTLX650759			10/4/95
8	Blended Pitch UTLX650774			10/4/95
9	P1/P13 T67 Blueline Taylor Retain			10/6/95
10	Korean Pitch Ship "Ocean Beauty"	1st	1/3	10/10/95
11	Korean Pitch Ship "Ocean Beauty"	2nd	1/3	10/10/95
12	Korean Pitch Ship "Ocean Beauty"	3rd	1/3	10/16/95
13	Korean Pitch Ship "Ocean Beauty"	extra		10/18/95
14	P1/P13 Taylor Retain			10/19/95
15	K-15-35 Fields Retain			10/23/95
16	K-15-35 Batch 95-49			10/27/95
17	K-15-35 Batch 95-49			10/27/95
18	K-15-35 Batch 95-49			10/30/95
19	Blended Pitch UTLX650777			10/30/95
20	Blended Pitch UTLX650781			10/30/95
21	Blended Pitch UTLX650780			10/30/95
22	Blended Pitch B95-50			10/30/95
23	K-15-35 Batch 95-49			10/31/95
24	K-15-35 Fields Retain			10/31/95
25	Blended Pitch UTLX650756			10/31/95
26	Blended Pitch UTLX650775			10/31/95
27	Blended Pitch UTLX650767			10/31/95
28	Blended Pitch UTLX650778			11/1/95
29	P1/P13 UTLX642207			11/1/95
30	P1/P13 Taylor Retain			11/1/95
31	Blended Pitch UTLX650758			11/1/95
32	Blended Pitch UTLX650760			11/1/95
33	Blended Pitch UTLX650765			11/1/95

1	Blended Pitch UTLX650755	11/2/95
2	Blended Pitch UTLX650 773	11/2/95
3	Blended Pitch UTLX650783	11/2/95
4	Blended Pitch UTLX650778	11/2/95
5	P1/P13 T67 Batch 95-51	11/2/95
6	Blended Pitch UTLX650759	11/13/95
7	Blended Pitch UTLX650769	11/13/95
8	Blended Pitch UTLX650763	11/15/95
9	Blended Pitch Batch 95-52	11/15/95
10	Blended Pitch UTLX650757	11/15/95
11	Blended Pitch UTLX650762	11/15/95
12	Blended Pitch UTLX650776	11/15/95
13	Blended Pitch UTLX650754	11/16/95
14	Blended Pitch UTLX650774	11/16/95
15	P1/P13 Taylor Retain	11/21/95
16	Blended Pitch UTLX650780	11/27/95
17	Blended Pitch UTLX650781	11/27/95
18	Blended Pitch ~~UTLX650~~ Batch 95-53	11/27/95
19	Blended Pitch UTLX650 770	11/27/95
20	Blended Pitch UTLX650761	11/27/95
21	Blended Pitch UTLX650773	11/28/95
22	Blended Pitch UTLX650755	11/28/95
23	Blended Pitch UTLX650782	11/28/95
24	Blended Pitch UTLX650756	11/28/95
25	Blended Pitch UTLX650777	11/29/95
26	Blended Pitch Transfer sample	11/~~28~~/95
27	Blended Pitch UTLX650760	12/4/95
28	Blended Pitch UTLX650765	12/4/95
29	Blended Pitch Batch 95-54	12/4/95
30	Blended Pitch UTLX650778	12/4/95
31	Blended Pitch UTLX650758	12/4/95
32	Blended Pitch UTLX650759	12/5/95
33	Blended Pitch UTLX650769	12/5/95

	1	Blended Pitch Transfer Sample	12/6/95
	2	Blended Pitch UTLX650759	12/18/95
Bridge	3	Chinese Pitch GN 71578	12/14/95
	4	Chinese Pitch GN 71564	
	5	Chinese Pitch GN 71573	
	6	Chinese Pitch CBQ 85181	
	7	Chinese Pitch CBQ 85166	
	8	Chinese Pitch SLSF 182067	
	9	Chinese Pitch BN 475103	
	10	Chinese Pitch GN 71554	
	11	Chinese Pitch NP 75383	
	12	Chinese Pitch BN 419371	
	13	Chinese Pitch BN 435027	
Global	14	Chinese Pitch SLSF 182008	
	15	Chinese Pitch "A" 1st 1/3 ~~NP 75345~~ 95-55	
	16	Chinese Pitch NP 75345	12/15/95
	17	Chinese Pitch NP 75308	
	18	Chinese Pitch NP 75392	
	19	Chinese Pitch GN 71512	
	20	Chinese Pitch BN 419421	
	21	Chinese Pitch GN 71536	
	22	Chinese Pitch CBQ 85163	
	23	Chinese Pitch CBQ 85159	
	24	Chinese Pitch CBQ 85178	
	25	Chinese Pitch SLSF 182058	
	26	Chinese Pitch BN 419377	
	27	Chinese Pitch SLSF 182130	
	28	Chinese Pitch 2nd 1/3 "B" 95-55	12/18/95
	29	Chinese Pitch 3rd 1/3 "C" 95-55	12/18/95
	30	Blended Pitch UTLX650783	12/18/95
	31	Blended Pitch UTLX650772	12/18/95
	32	Blended Pitch Batch 95-56	12/18/95
	33	Blended Pitch UTLX650754	12/18/95

1995 / 1996

1	Blended Pitch UTZX650767	12/18/95
2	Blended Pitch UTZX650774	12/19/95
3	Blended Pitch Transfer Sample	12/18/95
4	Blended Pitch UTZX650774 : Deep	12/19/95
5	Blended Pitch UTZX650763	12/20/95
6	Blended Pitch UTZX650755	12/20/95
7	Blended Pitch UTZX650796	12/20/95
8	Blended Pitch UTZX650762	12/20/95
9	Blended Pitch UTZX650756	1/2/96
10	Blended Pitch UTZX650782	1/2/96
11	Blended Pitch Batch 96-01	1/2/96
12	Blended Pitch UTZX650781	1/2/96
13	Blended Pitch UTZX650777	1/2/96
14	Blended Pitch UTZX650780	1/3/96
15	Blended Pitch UTZX650761	1/3/96
16	Blended Pitch UTZX650761 Re	1/3/96
17	Blended Pitch UTZX650770	1/3/96
18	Blended Pitch UTZX650757	1/3/96
19	Blended Pitch UTZX650760	1/4/96
20	Blended Pitch UTZX650759 E	1/4/96
21	Blended Pitch UTZX650759 T	1/4/96
22	Blended Pitch UTZX650773	1/4/96
23	Blended Pitch UTZX650758	1/4/96
24	Korean Pitch - rev Ocean Beauty	1/5/96
25	Fume Tank	1/5/96
26	lite uncorrected NATX76426	1/8/96
27	P1/P13 T67 B96-02	1/9/96
28	T23 lite uncorrected B96-03	1/9/96
29	Blended Pitch B96-4	1/15/96
30	Blended Pitch UTZX650778	1/15/96
31	Blended Pitch UTZX650765	1/15/96
32	Blended Pitch UTZX650767	1/15/96
33	Blended Pitch UTZX650654	1/15/96

Koppers005617

1	Blended Pitch UTLX C50769	1/16/96
2	Blended Pitch UTLX C50783	1/16/96
3	Blended Pitch UTLX C50776	1/16/96
4	K15-35 KPCX502	1/18/96
5	K15-35 KPCX502	1/19/96
6	Blended Pitch T-C5 (Batch 96-6)	1/19/96
7	P1/P13 Taylor	1/19/96
8	Blended Pitch UTLX 650774	1-22-96
9	" " " " 772	1-22-96
10	K15-35 Fields ReTain	1-22-96
11	K15-35 Fields ReTain	1-23-96
12	Blended Pitch UTLX650755	1-24-96
13	Blended Pitch UTLX650763	1-24-96
14	Blended Pitch UTLX650762	1-24-96
15	Blended Pitch UTLX650756	1-29-96
16	Blended Pitch UTLX650760	1-29-96
17	Blended Pitch ACFX94470	1-29-96
18	Blended Pitch ACFX72832	1-29-96
19	Blended Pitch UTLX650759	1-30-96
20	Blended Pitch ACFX72825	1-30-96
21	Blended Pitch ACFX72824	1-30-96
22	Blended Pitch UTLX650782	1-30-96
23	P1/P13 Sheridan Retail	1-25-96
24	K15-35 Deming Retail	1-26-96
25	Blended Pitch UTLX650781	1/31/96
26	Korean Pitch "Ocean Crown"	2/5/96
27	" "	2/6/96
28	" "	2/7/96
29	Liq. Pitch, KAI-T, #1181-B,	2/7/96
30	" , KAI-M, #1183-M	2/7/96
31	" , KAI-M, #1184-M	2/7/96
32	" , KAI-T, #1182-B	2/8/96
33	" , KAI-M, #1186-M	2/9/96

Koppers005618

[illegible]	1	Liq. Pitch, KAI-M, #1187-M		2/9/96		
	2	Liq. Pitch, KAI-M, #1188-M		2/10/96		
	3	Liq. Pitch, KAI-M, #1189-M		2/10/96		
	4	Liq. Pitch, KAI-M, #1185-B		2/11/96		
	5	" " , KAI-M, #1190-M		2/11/96		
	6	" " , KAI-M, #1191-M		2/11/96		
	7	" " , KAI-T, #1192-B		2/11/96		
	8	" " , KAI-T, #1193-B		2/12/96		
	9	" " , KAI-M, #1195-M		2/12/96		
	10	" " , KAI-T, #1196-B		2/12/96		
	11	" " , KAI-M, #1197-M		2/12/96		
	12	" " , KAI-T, #1194-B		2/13/96		
	13	" " , KAI-M, #1201-B		2/13/96		
	14	" " , KAI-M, #1200-M		2/13/96		
	15	" " , KAI-T, #1199-B		2/13/96		
	16	" " , KAI-M, #1202-M		2/13/96		
	17	" " , KAI-T, #1203-B		2/14/96		
	18	" " , KAI-M, #1205-M		2/14/96		
	19	" " , INTALCO, UTLX 650765		2/14/96		
	20	" " , KAI-M, #1202-B		2/14/96		
	21	" " , INTALCO, UTLX 650769		2/14/96		
	22	" " , KAI-T, #1207-B		2/14/96		
	23	" " , INTALCO, UTLX 650766		2/14/96		
	24	" " , KAI-M, #1206-M		2/14/96		
	25	" " , KAI-T, #1213-B		2/15/96		
	26	" " , KAI-M, #1211-M		2/15/96		
	27	" " , INTALCO, UTLX 650780		2/15/96		
	28	" " , BATCH #96-7		2/15/96		
	29	" " , KAI-M, #1214-B		2/15/96		
	30	" " , KAI-T, #1218-B		2/15/96		
	31	" " , KAI-M, #1212-M		2/15/96		
	32	" " , INTALCO, UTLX 650797		2/15/96		
	33	" " , KAI-T, #1225-B		2/16/96		

1	Liq. Pitch, KAI-M, #1223-M	2/16/96
2	" , KAI-M, ACFX 72825	"
3	" , KAI-M, #1224-M	"
4	" , KAI-T, #1221-B	"
5	" , KAI-M, ACFX 72824	"
6	" , INTALCO, UTLX650774	"
7	" , KAI-M, #1222-B	"
8	" , INTALCO, UTLX650755	"
9	" , INTALCO, UTLX 650779	2/20/96
10	" , INTALCO, UTLX 650778	"
11	" , INTALCO, UTLX 650767	"
12	P1/P13 CREO, TAYlor	2/21/96
13	Liq. Pitch, INTALCO, UTLX 650770	"
14	P1/P13 CREO, TAYlor	2/27/96
15	KPCX 518, K-364, Chicago Soft pitch Analy.	2/29/96
16	P1/P13 CREO, Taylor	3/1/96
17	Liq Pitch Intalco #1277-1	3/5/96
18	" " " #1285	3/6/96
19	" " " #1286	3/6/96
20	" " " #1287	3/6/96
21	P1/P13 To UTLX 6/1996	3/6/96
22	Liq Pitch Batch 96-8	3/6/96
23	P-1/P-13 T-67	3/7/96
24	Liq Pitch Intalco #1288	3/6/96
25	" " " #1289	3/6/96
26	" " " #1290	3/6/96
27	" " " #1294	3/7/96
28	" " " #1295	3/7/96
29	" " " #1296	3/8/96
30	" " " #1305	3/8/96
31	Liq Pitch Blended Batch 96-8	3/8/96
32	Liq Pitch Intalco #1306	3/11/96
33	" " " #1307	3/11/96

Koppers005620

1	Liq Pitch Intalco #1311		3/11/96
2	" " " #1308		3/12/96
3	" " " #1309		3/12/96
4	" " " #1310		3/12/96
5	Kon. Pitch Hard Pencil		3/13/96
6	" " Hard Pencil		3/13/96
7	" " Hard Pencil		3/13/96
8	Liq Pitch Intalco #1313		3/13/96
9	" " " #1314		3/13/96
10	" " " #1315		3/13/96
11	Blended Pitch Batch 96-8		3/13/96
12	Liq Pitch Intalco #1316		3/14/96
13	" " " #1317		3/14/96
14	" " " #1318		3/14/96
15	T-67 P1/P13 Batch 96-9		3/14/96
16	T-65 Blended Pitch Batch 96-8		3/15/96
17	Liq Pitch Intalco #1325		3/18/96
18	" " " #1326		3/18/96
19	" " " #1327		3/18/96
20	" " " #1328		3/19/96
21	" " " #1329		"
22	" " " #1330		"
23	To [illegible] 78[illegible] [illegible]		3-21-96
24	To [illegible]		3-21-96
25	Liq Pitch Intalco #1335		3-25-96
26	" " " #1337		3-25-96
27	" " " #1338		3-25-96
28	" " " #1339		3-25-96
29	" " " #1340		3/25/96
30	" " " #1341		3/26/96
31	" " " #1344		3/26/96
32	" " " #1345		3/26/96
33	" " " #1346		3/26/96

1	Blended L.T.L.T-65 Batch 96-11	3/26/96
2	Hvy Oil T-33	3/26/96
3	Liq Pitch Intalco #1349	3/27/96
4	" " " #1350	3/27/96
5	" " " #1351	3/27/96
6	" " " #1352	3/27/96
7	" " " #1353	3/27/96
8	" " " #1354	3/27/96
9	" " " #1355	3/27/96
10	" " " #1356	3/27/96
11	" " " #1357	3/27/96
12	" " " #1359	3/28/96
13	" " " #1360	3/28/96
14	" " " #1361	3/28/96
15	" " " #1362	3/28/96
16	" " " #1363	3/28/96
17	" " " #1364	4/1/96
18	" " " #1365	4/1/96
19	" " " #1366	4/1/96
20	" " " #1367	4/1/96
21	" " " #1368	4/1/96
22	" " " #1369	4/1/96
23	" " " #1370	4/1/96
24	" " " #1371	4/1/96
25	" " " #1372	4/2/96
26	" " " #1373	4/2/96
27	" " " #1374	4/2/96
28	" " " #1375	4/2/96
29	" " " #1376	4/2/96
30	" " " #1377	4/2/96
31	" " " #1378	4/2/96
32	" " " #1379	4/2/96
33	" " " #1381	4/3/96

Koppers005622

1	Lig Pitch	Intalco	#1382		4/3/96
2	"	"	"	#1383	4/3/96
3	"	"	"	#1384	4/3/96
4	"	"	"	#1385	4/3/96
5	"	"	"	#1387	4/4/96
6	"	"	"	#1388	4/4/96
7	"	"	"	#1389	4/4/96
8	"	"	"	#1390	4/4/96
9	"	"	"	#1391	4/4/96
10	"	"	"	#1392	4/4/96
11	"	"	"	#1393	4/4/96
12	"	"	"	#1394	4/5/96
13	"	"	"	#1395	4/5/96
14	"	"	"	#1396	4/5/96
15	"	"	"	#1397	4/5/96
16	"	"	"	#1398	4/8/96
17	"	"	"	#1399	4/8/96
18	"	"	"	#1400	4/8/96
19	"	"	"	#1401	4/8/96
20	"			#1403	4/8/96
21	"			#1404	4/8/96
22	"			#1405	4/8/96
23	"			#1406	4/8/96
24	"			#1408	4/9/96
25	"			#1409	4/9/96
26	"			#1410	4/9/96
27	"			#1411	4/9/96
28	"			#1419	4/9/96
29	"			#1420	4/9/96
30	"			#1421	4/9/96
31	"			#1422	4/9/96
32	"			#1423	4/10/96
33	"			#1424	4/10/96

Koppers005623

1	Liq Pitch InTalco #1425		4/10/96
2	" " " #1426		4/10/96
3	Blended Pitch T-65 Cat. h96	12	4/10/96
4	Composite Pitch Chr		4/6/96
5	Composite Pitch Chr		4/6/96
6	Composite Pitch Chr		4/6/96
7	Liq Pitch InTalco #1427		4/10/96
8	" " " #1428		4/10/96
9	" " " #1429		4/10/96
10	" " " #1430		4/10/96
11	" " " #1431		4/11/96
12	" " " #1432		4/11/96
13	" " " #1433		4/11/96
14	" " " #1434		4/11/96
15	" " " #1435		4/12/96
16	" " " #1436		4/12/96
17	" " " #1437		4/12/96
18	" " " #1438		4/12/96
19	" " " #1441		4/15/96
20	" " " #1442		4/15/96
21	" " " #1443		4/15/96
22	" " " #1444		4/15/96
23	" " " #1445		4/15/96
24	" " " #1446		4/16/96
25	" " " #1452		4/16/96
26	" " " #1453		4/16/96
27	" " " #1454		4/16/96
28	P-1/P-13 TcAcFx 98 789		4/16/96
29	Liq Pitch InTalco #1455		4/16/96
30	" " " #1456		4/17/96
31	" " " #1457		4/17/96
32	" " " #1458		4/17/96
33	" " " #1459		4/17/96

Koppers005624

1	Blended Pitch Batch 96-13					4/17/96		
2	P-11 P-13 T-67					4-18-96		
3	Liq Pitch Intal co # 1460					4-17-96		
4	"	"	"		1461	4-18-96		
5	"	"	"		1462	4/18/96		
6	"	"	"		1463	4/18/96		
7	"	"	"		1464	4/18/96		
8					1465	4-19-96		
9					1466	"		
10					1467	"		
11					1468	"		
12					1469	"		
13	"	"	"		1470	4/22/96		
14	"	"	"		1471	4/22/96		
15	"	"	"		1472	4/22/96		
16	"	"	"		1473	4/22/96		
17	"	"	"		#1475	4/22/96		
18	"	"	"		#1476	4/23/96		
19	"	"	"		#1477	4/23/96		
20	"	"	"		#1478	4/23/96		
21	"	"	"		#1479	4/23/96		
22	"	"	"		#1480	4/23 96		
23	"	"	"		#1481	4/24/96		
24	"	"	"		#1482	4/24/96		
25	"	"	"		#1483	4/24/96		
26	"	"	"		#1484	4/24/96		
27	Blended Pitch Batch 96-15					4/24/96		
28	Liq Pitch Intal co #1485					4/24/96		
29	"	"	"		#1486	4/25/96		
30	"	"	"		#1487	4/25/96		
31	"	"	"		#1488	4/25/96		
32	"	"	"		#1489	4/25/96		
33	"	"	"		#1491	4/25/96		

Koppers005625

1	Liq Pitch Intalco #1492	4/26/96
2	" " " #1493	4/26/96
3	" " " #1494	4/26/96
4	" " " #1495	4/26/96
5	" " " #1496	4/29/96
6	" " " #1497	4/29/96
7	" " " #1498	4/29/96
8	" " " #1499	4/29/96
9	" " " 1500	4/29/96
10	" " " 1505	4/30/96
11	" " " 1506	4/30/96
12	" " " 1507	4/30/96
13	" " " 1508	4/30/96
14	" " " 1509	4/30/96
15	" " " #1510	5/1/96
16	" " " #1511	5/1/96
17	" " " #1512	5/1/96
18	Blended Pitch T-65 B96-16	5/1/96
19	Liquid Pitch Intalco #1514	5/1/96
20	" " " 1513	5/2/96
21	" " " 1515	5/2/96
22	" " " 1516	5/2/96
23	" " " 1517	5/2/96
24	" " " 1518	5/2/96
25	" " " 1521	5/3/96
26	" " " 1522	5/3/96
27	" " " 1523	5/3/96
28	" " " 1524	5/3/96
29	K364 UTLX 65089# KPCX518 Western colloid	4/26/96
30	K15-35 Drumming Sample	5/3/96
31	Liq Pitch Intalco #1529	5/6/96
32	" " " #1530	5/6/96
33	" " " #1531	5/6/96

5-4-96	1	Intalco Liq Pitch #1572	5/6/96
5/6/96	2	" " " #1533	5/6/96
5/7/96	3	" " " #1537	5/7/96
"	4	" " " #1538	5/7/96
"	5	" " " #1539	5/7/96
"	6	" " " #1540	5/7/96
"	7	" " " #1543	
5/6/96	8	P1/P13 - McFarland Cascade	5/6/96
5/6/96	9	" " "	5/6/96
5/7/96	10	" " "	5/7/96
5/7/96	11	" " "	5/7/96
5/8/96	12	Blended Pitch T-65 B.96-18	5/8/96
5/8/96	13	Intalco Liq. Pitch #1544	5/8/96
"	14	" " " #1545	"
"	15	" " " #1546	"
"	16	" " " #1547	"
5/7/96	17	April Monthly composite Pitch	
5/8/96	18	Liq Pitch Intalco #1548	
5/9/96	19	" " " #1555	
"	20	" " " #1556	
"	21	" " " #1557	
"	22	" " " #1558	
5/8/96	23	K-364 Cascade Asphalt	
5/9/96	24	P1/P13 Taylor Lumber	
5/9/96	25	Liq. Pitch Intalco #1559	
5/10/96	26	" " " #1567	
"	27	" " " #1568	
"	28	" " " #1569	
"	29	" " " #1570	
5/13/96	30	" " " #1574	
"	31	" " " #1577	
"	32	" " " #1578	
"	33	" " " #1579	

Koppers005627

5/13/96	1	P1 / P13
5/13/96	2	Liq Pitch Intalco #1580
5/14/96	3	" " " #1584
"	4	" " " #1586
"	5	" " " #1583
"	6	" " " #1585
"	7	" " " #1587
5/15/96	8	" " " #1596
"	9	" " " #1597
"	10	" " " #1595
"	11	" " " #1598
5-15-96	12	Blended Pitch T-65 6.96-19
5-15-96	13	Liq. Pitch Intalco #1599
5-16-96	14	#1601
"	15	#1602
"	16	#1603
"	17	#1604
"	18	#1605
5-17-96	19	#1606
	20	#1607
	21	#1608
	22	#1609
	23	P1 / P13 Geo Taylor Lumb.
5-20-96	24	Liq Pitch Intalco #1616
	25	#1617
	26	#1618
	27	#1619
	28	K-364 West. Colloid
	29	Liq Pitch Intalco #1620
	30	#1621
5-21-96	31	#1631
	32	#1632
5-20-96	33	Liq Pitch / K-364 blend

5·22·96	1	BLENDED PITCH T-65 b: 96-20			
5·28·96	2	LIQ. PITCH INTALCO	# 1634		
	3		# 1633		
	4		# 1636		
	5		# 1637		
5·28·96	6	STC Blend (refined tar) T518			
5·28·96	7	LIQ PITCH INTALCO	# 1638		
5·29·96	8		# 1639		
	9		# 1640		
	10		# 1641		
	11		# 1642		
	12		# 1644		
5·30·96	13		# 1646		
	14		# 1645		
	15		# 1647	* THESE 2 LOADS RET'D TO INVENTORY DUE TO INTALCO POWER FAILURE... BOL'S TO BE RE-ISSUED	
	16		# 1648		
5·31·96	17	T-65 Soft. Pt. Sample			
6·3·96	18	LIQ PITCH INTALCO	# 1649		
	19		# 1654		
	20		# 1647		
	21		# 1657		
6·3·96	22	May Monthly Comp. Pitch			
6·3·96	23		# 1658		
	24		# 1659		
5·28·96	25	P1 | P13 TAYLOR			
6·3·96	26	P1 | P13 TAYLOR			
6·4·96	27	LIQ PITCH INTALCO	# 1660		
	28		# 1662		
	29		# 1663		
	30		# 1661		
	31		# 1664		
	32		# 1665		
6·5·96	33		# 16666		

Koppers005629

6.5.96	1	LIQ PITCH INTALCO	#1667
	2		#1668
	3		#1669
	4		#1671
	5		#1670
6.6.96	6		#1672
	7		#1673
	8		#1674
	9		#1675
	10		#1677
	11		#1676
6.7.96	12		#1678
	13		#1679
	14		#1680
	15		#1681
6.10.96	16		#1683
	17		#1684
	18		#1685
	19		#1686
	20		#1687
	21		#1688
6.10.96	22		#1695
6.11.96	23		#1696
	24		#1697
	25		#1698
	26		#1699
	27		#1700
	28		#1701
	29		#1702
6.12	30		#1708
	31		#1709
	32		#1710
	33		#1711

Koppers005630

6-12-96	1	BLENDED PITCH T-65 b. 96-22					
6-12-96	2	LIQ PITCH INTALCO	#1712				
	3		#1713				
	4		#1714				
6-13-96	5		#1719				
	6		#1720				
	7		#1721				
	8		#1722				
	9		#1723				
	10		#1724				
	11		#1725				
6-14	12		#1734				
	13		#1733				
	14		#1735				
	15		#1736				
	16		#1739				
	17		#1740				
6-17	18		#1741				
	19		#1746				
	20		#1747				
	21		#1748				
	22		#1750				
	23		#1749				
	24		#1751				
6-17	25	KOREAN PITCH "SAMHI MANNA"		A, B, C			
6-18	26	LIQ PITCH INTALCO	#1754				
	27		#1756				
	28		#1753				
	29		#1755				
	30	K-364 Pascade Asphalt					
	31	LIQ PITCH INTALCO	#1757				
	32		#1758				
	33		#1759				

Koppers005631

6.19-96	1	LIQ PITCH INTALCO	#1762
	2		#1763
	3		#1764
	4		#1765
	5		#1766
	6		#1768
	7		#1767
6.20	8		#1772
	9		#1771
	10		#1773
	11		#1774
	12		1775
	13		1776a
6.20	14	BLENDED PITCH T-65 6.96-24	
6.21	15	LIQ PITCH INTALCO	1777
	16		1778
	17		1779
	18		1780
	19		1781
	20		1782
	21		1783
6/24	22		1784
	23		1786
	24		1787
	25		1788
	26		1789
	27		1790
	28		1791
6/25	29		1796
	30		1794
	31		1795
	32		1792
	33		1797

Koppers005632

6·25·96	1	LIQ PITCH INTALCO	#1798
	2		1799
6·26	3		1801
	4		1802
	5		1803
	6		1804
	7		1805
	8		1806
	9		1807
6·27	10		1809
	11		1810
	12		1811
	13		1812
	14		1813
	15		1814
	16		1815
6·28	17		1816
	18		1817
	19		1818
	20		1819
	21		1820
	22		1821
	23		1822
6·24·96	24	TAYLOR Lumber	P1/P13
6·28·96	25	TAYLOR Lumber	P1/P13
7-1-96	26	LIQ PITCH INTALCO	1824
	27		1825
	28		1826
	29		1827
	30		1828
	31		1829
7·2	32		1830
	33		1831

Koppers005633

1	LIQ PITCH INTALCO	1832	7/2/96
2		1833	
3		1834	
4		1835	
5		1836	7/3/96
6		1838	
7		1839	
8		1840	
9		1841	
10		1842	
11		1845	7-8
12		1846	
13		1847	
14		1848	
15		1850	
16		1851	
17		1852	7-9
18		1855	
19		1856	
20		1857	
21		1862	
22		1863	
23		1864	
24		1869	7-10
25		1870	
26		1871	
27		1872	
28		1877	
29		1878	
30		1879	
31		1884	7-11
32		1885	
33		1886	

Koppers005634

7-9-96	1	P1/P13 UTLX 642204	
7-2-96	2	K-364 West Colloid	
7-9-96	3	K-364 West Colloid	
6-23-96	4	K-364 West Colloid	
7-10-96	5	P1/P13 Creo T-67 Batch 96-25	
7-11-96	6	LIQ Pitch Intalco #	1887
	7		1889
	8		1890
	9		1891
7-12-96	10		1896
	11		1897
	12		1898
	13		1899
	14		1900
	15		1901
	16		1902
7-18-96	17	Alcatel (STC) Blend batch 96-21	
7-19-96	18	P1/P13 Creo-Taylor Lumber	
7-26-96	19	P1/P13 Creo-Taylor Lumber	
7-29-96	20	LIQ Pitch Intalco	1920
	21		1921
	22		1922
	23		1923
	24		1924
7-30	25		1930
	26		1931
	27		1932
	28		1933
	29		1934
7/31	30		1936
	31		1937
	32		1938
	33		1939

Koppers005635

7.31	1	Chinese Pencil Plant Sample Moisture
	2	NP 75343
	3	NP 75301
	4	CBEQ 85194
	5	Chinese Pencil "Kuanyin" b. 96-26
	6	Blended Pitch b. 96-27
7/31	7	Liq Pitch Intalco 1940
8.1.96	8	1941
	9	1942
	10	1943
	11	1944
	12	1945
	13	GN 71516
	14	NP 75330
	15	BN 419561
	16	SLSF 82301
	17	BN 419375
	18	CBEQ 85194
8.5.96	19	Liq Pitch Intalco 1956
	20	1957
	21	1958
	22	1959
	23	1960
	24	P1 / P13 Creo - Taylor
8.6.96	25	1963
	26	1964
	27	1965
	28	1966
	29	1967
8.7.96	30	1968
	31	1969
	32	1970
	33	1971

Koppers005636

8-7-96	1	BLENDED PITCH T-65 96-28					
8-7-96	2	LIQ Pitch INTALCO 1972					
8-8-96	3		1973				
	4		1974				
	5		1975				
	6		1976				
	7		1977				
8-12-96	8	P1/P13 CREO - TAYLOR LUMB.					
8-12-96	9	LIQ PITCH INTALCO	1980				
	10		1981				
	11		1982				
	12		1983				
	13		1984				
8-13	14		1986				
	15		1987				
	16		1988				
	17		1989				
	18		1990				
8-14	19		1991				
	20		1992				
	21		1993				
	22		1994				
	23		1995				
	24	Blended Pitch 96-29					
8-15	25	LIQ PITCH INTALCO	1999				
	26		2000				
	27		2001				
	28		2002				
	29		2003				
8-15-96	30	P1/P13 CREO T-67-TAYLOR					
8-16-96	31	K-364 PAVE. SEAL. - CASCADE Asphalt					
8-19	32	LIQ PITCH INTALCO	2006				
	33		2007				

Koppers005637

8.19	1	LIQ PITCH INTALCO	2008
	2		2009
	3		2010
8.20	4		2014
	5		2015
	6		2016
	7		2017
	8		2018
8.19	9	K-1535 VASS	
8.20	10	P1/P13 CREO TLDX 223000 batch 96-30	
8.21	11	P1/P13 CREO T-67 batch 96-30	
8.21	12	LIQ PITCH-INTALCO	2019
	13		2020
	14		2021
	15		2022
	16		2023
8.21	17	NETX 18817 Hwy. 0.1 sample	
8.21	18	BLENDED PITCH T-65 96-31	
8.22	19	LIQ PITCH Intalco	2025
	20		2026
	21		2027
	22		2028
	23		2029
8.23	24		2030
	25		2031
	26		2032
	27		2033
	28		2034
8.26	29		2037
	30		2038
	31		2039
	32		2041
	33		2040

8-27-96	1	LIQ PITCH Intalco	2042					
	2		2043					
	3		2044					
	4		2045					
8-27	5	HEAVY OIL / T-31	96-32					
8-27	6	K-364 STC BLEND	b. 96-3[illegible]					
8-26	7	P1/P13 CREO-TAYLOR						
8-26	8	K-364 PAVE. SEAL CASCADE Asphalt						
8-27	9	LIQ PITCH Intalco	2046					
8-28	10		2047					
	11		2048					
	12		2049					
	13		2050					
	14		2051					
8-28	15	BLENDED PITCH T65	96-33					
8-28	16	P1/P13 Creo Taylor Lumber						
8-29	17	LIQ PITCH Intalco	2052					
	18		2053					
	19		2054					
	20		2055					
	21		2056					
8-30	22		2057					
	23		2058					
	24		2059					
	25		2060					
	26		2061					
9-3	27		2065					
	28		2066					
	29		2067					
	30		2068					
	31		2072					
9-4	32		2077					
	33		2078					

Koppers005639

9.4	1	Lig Pitch Intalco	2079
	2		2080
	3		2081
9.5	4		2082
	5		2083
	6		2084
	7		2085
	8		2086
9.4	9	Lig Pitch / BLEND 96-35	
9.9	10	K-364 Pave Seal. West Colloid	
9.6	11	Lig Pitch Intalco	2087
	12		2088
	13		2089
	14		2090
	15		2091
9.9	16		2093
	17		2094
	18		2095
	19		2097
	20		2098
9.10	21		2101
	22		2102
	23		2103
	24		2104
	25		2105
	26		21010
9.11	27		2107
	28		2108
	29		2109
	30		2110
	31		2111
	32		2112
9.11	33	BLENDED PITCH T-65 96-3%	

Koppers005640

9.11.96	1	P1 / P13 CREO - TAYLOR	
9.12	2	LIQ PITCH INTALCO	2118
	3		2119
	4		2120
	5		2121
	6		2122
	7		2123
9.13	8		2125
	9		2126
	10		2127
	11		2128
	12		2129
	13		2130
9.16	14		2132
	15		2133
	16		2134
	17		2135
	18		2136
	19		2137
9.17	20		2140
	21		2141
	22		2142
	23		2143
	24		2144
	25		2145
9.18	26		2146
	27		2147
	28		2148
	29		2149
	30		2150
	31		2151
9.18	32	BLENDED PITCH 96-37	
9.19	33	LIQ PITCH Intalco	2153

Koppers005641

9.19	1	Liq Pitch Intalco	2154
	2		2155
	3		2156
	4		2157
	5		2158
9.20	6		2161
	7		2162
	8		2163
	9		2164
	10		2165
	11		2166
9.23	12		2167
	13		2168
	14		2169
9.12	15	K-1535 Cascade Asphalt	
9.13	16	K-364 West Colloids	
9.16	17	K-364 West Colloid	
9.18	18	P1 P13 Creo Taylor Lumber	
9.19	19	K-364 West Colloids	
9.23	20	K-364 West Colloids	
9.23	21	Liq Pitch Intalco	2170
	22		2171
	23		2172
9.24	24		2177
	25		2178
	26		2179
	27		2180
	28		2181
	29		2182
9.25	30		2183
	31		2184
	32		2185
	33		2186

9.25	1	Liq Pitch Intalco 2187			
|	2	| | 2188			
9.24	3	Korean Pencil "Ocean Duke"	96-38	A	
9.25	4	| | "Ocean Duke" B			
9.26	5	| | "Ocean Duke" C			
9.25	6	Blended Pitch T-65 96-39			
9.26	7	Liq Pitch Intalco 2192			
|	8	2193			
|	9	2194			
|	10	2195			
|	11	2196			
|	12	2197			
9.27	13	2198			
|	14	2199			
|	15	2200			
|	16	2201			
|	17	2202			
|	18	2203			
9.30	19	2206			
|	20	2207			
|	21	2208			
|	22	2209			
|	23	2210			
10.1	24	2213			
|	25	2214			
|	26	2215			
|	27	2216			
|	28	2217			
9.26	29	K-3604 West Colloid			
9.25	30	P1/P13 CREO TAYLOR Lumber			
9.30	31	P1/P13 CREO TAYLOR			
10.1	32	K-3604 West Colloid			
10.2	33	BLENDED PITCH T65 96-40			

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10.2	1	LIQ PITCH INTALCO	2218
	2		2219
	3		2220
	4		2221
	5		2222
10/3	6		2224
	7		2225
	8		2226
	9		2227
	10		2228
10.4	11		2231
	12		2232
	13		2233
	14		2234
	15		2235
10.4	16	TAYLOR LUMBER PI/PI 3 CREO	
10.7	17	K-364 Western Colloid	
10.7	18	LIQ PITCH INTALCO	2236
	19		2237
	20		2238
	21		2239
	22		2240
10.8	23		2244
	24		2245
	25		2246
	26		2247
	27		2248
10.9	28		2251
	29		2252
	30		2253
	31		2254
	32		2255
10.9	33	BLENDED PITCH T-65 96-41	

Koppers005644

10.9	1	650 845	
	2	650 819	
	3	650 895	
10.9	4	T-67 P.1 / P.3 ORCO Retain	
10.10	5	HIQ PITCH INTALCO	2259
	6		2260
	7		2261
	8		2262
	9		2263
10-11	10		2265
	11		2266
	12		2267
	13		2268
	14		2269
10.14	15		2272
	16		2273
	17		2274
	18		2275
	19		2276
10.15	20		2278
	21		2279
	22		2280
	23		2281
	24		2282
10.16	25		2283
	26		2284
	27		2285
	28		2286
	29		2287
10.16	30	BLENDED PITCH T-65 96-42	
10.16	31	650 836 UTLX	
	32	650 846 UTLX	
	33	650 896 UTLX	

Koppers005645

10.17	1	LIQ PITCH INTALCO	2291
	2		2292
	3		2293
	4		2294
	5		2295
10.18	6		2298
	7		2299
	8		2300
	9		2301
	10		2302
10.16	11	P_1/P_{13} TAYLOR LUMBR.	
10.16	12	P_1/P_{13} TLDX 223124	
10.17	13	P_1/P_{13} ACFX 79682	
10.18	14	P_1/P_{13} T-67 96-43	
10.21	15	LIQ PITCH INTALCO	2303
	16		2304
	17		2305
	18		2306
10.21	19	TAYLOR LUMBER P_1/P_{13}	
10.22	20	LIQ PITCH Intalco	2309
	21		2316
	22		2311
	23		2312
10.23	24		2313
	25		2314
	26		2315
	27		2316
10.23	28	Blended Pitch T-65 ~~96-44~~	
10.23	29	(STC Blend) ALCATEL	
10.24	30	LIQ PITCH INTALCO	2317
	31		2320
	32		2321
	33		2322

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10.25	1	LIQ PITCH INTALCO	2323
	2		2324
	3		2325
	4		2326
10.28	5		2328
	6		2329
	7		2330
10.29	8		2332
	9		2333
	10		2334
10.30	11		2335
	12		2336
	13		2337
10.31	14		2338
	15		2339
	16		2340
11.1	17		2341
	18		2342
	19		2343
11.4	20		2344
	21		2345
	22		2346
11.5	23		2348
1	24		2349
	25		2350
11.5	26	STC BLEND ALCATEL	
11.5	27	BLENDED PITCH T-65 b. 96-45	
11.5	28	UTLX 650899 PITCH ALCOA	
11.6	29	LIQ PITCH INTALCO	2351
	30		2352
	31		2353
	32	UTLX 650 814 LIQ PITCH ALCOA	
	33	UTLX 650 847 " "	

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11.6	1	UTLX 650842	ALCOA	Liq Pitch		
1	2	UTLX 650829	ALCOA	Liq Pitch		
11.7	3	UTLX 650897	ALCOA	Liq Pitch		
11.7	4	Liq Pitch Intalco	2355			
1	5	1	2356			
1	6	1	2357			
11.8	7	1	2358			
1	8	1	2359			
1	9	1	2360			
11.18	10	Liq Pitch Intalco	2372			
1	11	1	2373			
1	12	1	2374			
1	13	1	2375			
1	14	1	2376			
11.15	15	Chinese Pencil Pitch "CAPE CONFIDENCE		96-46 A		
11-16	16					
11.17	17					
11.19	18	(COMPOSITE) VANALCO TANK CARS (Chinese)		96-47 A		
1	19	1 COMPOSITE of 12 cars 1		B		
11.19	20	Liq Pitch Intalco	2389			
1	21	1	2390			
1	22	1	2391			
1	23	1	2392			
11.20	24	Blended Pitch T65	96-48			
11.20	25	Liq Pitch Intalco	2393			
1	26	1	2403			
1	27	1	2404			
1	28	1	2405			
11.21	29	1	2406			
	30	1	2407			
	31	1	2428			
	32	1	2429			
	33	1	2410			

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11.22	1	L/Q Pitch Intalco	2430
	2		2431
	3		2432
	4		2408
	5		2409
	6		2434
	7		2433
11.25	8	L/Q Pitch Intalco	2437
	9		2438
	10		2439
	4		2440
11.26	12		2441
	13		2444
	14		2445
	15		2446
	11		2447
	17		2448
11.27	18		2449
	19		2450
	20		2451
	21		2452
12.2	22		2453
	23		2454
	24		2455
	25		2456
	26		2457
	27		2458
12.3	28		2459
	29		2460
	30		2461
	31		2462
	32		2463
	33		2464

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12-4	1	LIQ PITCH INTALCO	2465
	2		2466
	3		2467
	4		2468
	5		2469
	6		2470
12-4	7	BLENDED PITCH T-65 96-49	
12-5	8	LIQ PITCH INTALCO	2474
	9		2475
	10		2476
	11		2477
	12		2478
	13		2479
12-4	14	ALCOA RAIL CARS UTLX650842	
	15		846
	16		836
	17		876
12-5	18	UTLX650824	
	19		829
	20		832
12-6	21	LIQ PITCH INTALCO	2480
	22		2481
	23		2482
	24		2483
	25		2484
	26		2485
12-9	27		2494
	28		2495
	29		2496
	30		2497
12-10	31		2498
	32		2499
	33		2500

12-10	1	Liq Pitch Intalco	2501					
1	2	1 1 1	2502					
12-11	3	Blended Pitch T-65	96-50					
12-11	4	Liq Pitch Intalco	2507					
	5		2508					
	6		2509					
	7		2510					
	8		2511					
12-12	9		2512					
	10		2513					
	11		2514					
	12		2515					
	13		2516					
12-13	14		2519					
	15		2520					
	16		2521					
	17		2522					
	18		2523					
12-16	19		2525					
	20		2526					
	21		2527					
	22		2528					
	23		2529					
	24		2530					
12-17	25		2535					
	26		2536					
	27		2537					
	28		2538					
	29		2539					
	30		2540					
12-18	31		2543					
	32		2544					
	33		2545					

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12.18	1	LIQ PITCH INTALCO	2546
	2		2547
	3		2548
12.18	4	BLENDED PITCH T-65 96-51	
12.17	5	LIQ PITCH ALCOA UTLX 650814	
12.16	6		826
	7		823
12.19	8		847
19	9		817
	10		897
12.17	11		853
12.19	12		899
12.19	13	LIQ PITCH INTALCO	2553
	14		2554
	15		2555
	16		2556
	17		2557
	18		2558
12.20	19		2559
	20		2560
	21		2561
	22		2562
	23		2563
	24		2564
1.3.97	25		2572
	26		2573
	27		2574
	28		2575
1.6.97	29		2578
	30		2579
	31		2580
	32		2581
	33		2582

Koppers005652

1-6-97	1	Liq Pitch Intalco	2583				
1-7-97	2		2588				
	3		2589				
	4		2590				
	5		2591				
	6		2592				
	7		2593				
	8		2594				
1-7-97	9	Blended Pitch T-65 97-2					
1-6-97	10	Korean Pencil Pitch "Pan Hope" 97-1		A, B, C			
1-8-97	11	Liq Pitch Intalco	2598				
	12		2599				
	13		2600				
	14		2601				
	15		2602				
	16		2603				
1-8-97	17	Alcoa-Wen UTLX650845					
	18		895				
1-9-97	19	Liq Pitch Intalco	2610				
	20		2611				
	21		2612				
	22		2613				
	23		2614				
	24		2615				
1-10	25		2621				
	26		2622				
	27		2623				
	28		2624				
	29		2625				
	30		2626				
1-13	31		2639				
	32		2646				
	33		2641				

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1.13	1	L/a Pitch Intalco 2642
	2	2643
	3	2644
1.14	4	2648
	5	2649
	6	2650
	7	2651
	8	2652
	9	2653
1.15	10	2655
	11	2656
	12	2657
	13	2658
	14	2659
	15	2660
1.15	16	Blended Pitch T-65 97-3
	17	Alcoa - Wen UTLX650832
	18	1 1 1 1 824
1.16	19	L/a Pitch Intalco
	20	2666
	21	2667
	22	2668
	23	2669
	24	2670
	25	2671
1.17	26	2672
	27	2673
	28	2674
	29	2675
	30	2676
	31	2677
1.17	32	K-364 Stc blend KPC4519 97-4
1.21	33	Blended Pitch T-65 97-5

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1.20	1	LIQ PITCH INTALLO	2678					
	2		2679					
	3		2680					
	4		2681					
	5		2682					
	6		2683					
1.21	7		2684					
	8		2685					
	9		2686					
	10		2687					
	11		2688					
	12		2689					
1.22	13	ALCOA - Wen	UTLX650826					
	14		UTLX650836					
1.23	15		2691					
	16		2692					
	17		2693					
	18		2694					
	19		2695					
1.24	20		2696					
	21		2697					
	22		2698					
	23		2699					
	24		2700					
1.25	25		2701					
	26		2702					
	27		2703					
1.27	28		2704					
	29		2705					
	30		2706					
	31		2707					
	32		2708					
1.28	33	BLENDED PITCH T-65	97-6					

1·28	1	Liq Pitch Intalco	2713
	2		2714
	3		2715
	4		2716
1·29	5		2719
	6		2720
	7		2721
	8		2722
	9		2718
	10		2717
1·30	11		2723
	12		2724
	13		2725
	14		2726
	15		2727
	16		2728
1·31	17		2732
	18		2733
	19		2734
	20		2735
	21		2736
	22		2737
2·3	23		2743
	24		2744
	25		2745
	26		2746
	27		2747
	28		2748
2·4	29		2749
	30		2750
	31		2751
	32		2752
	33		2753

Koppers005656

2-4	1	LIQ PITCH Intake	2754
2-5	2		2763
	3		2764
	4		2765
	5		2766
	6		2767
	7		2768
	8	BLENDED PITCH T-65 ~~97-7~~	
2-6	9		2775
	10		2776
	11		2777
	12		2778
	13		2779
	14		2780
2-7	15		2781
	16		2782
	17		2783
	18		2784
	19		2785
	20		2786
2-10	21		2790
	22		2791
	23		2792
	24		2993
	25		2794
	26		2795
2-11	27		2796
	28		2797
	29		2798
	30		2799
	31		2800
	32		2801
2-11	33	BLENDED PITCH T-65 97-8	

Koppers005657

2.12	1	LIQ PITCH INTALCO	2802
	2		2803
	3		2804
	4		2805
	5		2806
	6		2807
2.13	7		2808
	8		2809
	9		2810
	10		2811
	11		2812
	12		2813
	13		2817
2.14	14		2818
	15		2819
	16		2820
	17		2821
	18		2822
2.18	19		2825
	20		2826
	21		2827
	22		2829
	23		2830
	24	VOID this space	
2.18	25	TAYLOR LUMBER P1/P13	
2.19	26		
2.19	27	LIQ PITCH INTALCO	2831
	28		2832
	29		2833
	30		2834
	31		2835
	32		2836
2.20	33		2837

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2-20	1	LIQ PITCH INTALCO	2838
	2		2839
	3		2840
	4		2841
	5		2842
2-21	6		2843
	7		2844
	8		2845
	9		2846
	10		2847
	11		2848
2-24	12		2851
	13		2852
	14		2853
	15	BLENDED PITCH T-6597-9	
	16	LIQ PITCH INTALCO	2854
	17		2855
	18		2856
2-25	19		2857
	20		2858
	21		2859
	22		2860
	23		2861
	24		2862
2-26	25		2863
	26		2864
	27		2865
	28		2866
	29		2867
	30		2868
2-25	31	LIQ PITCH ALCOA-WENATCHEE	846
	32		847
2-27	33	LIQ PITCH INTALCO	2869

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2.27	1	LIQ PITCH INTALCO	2870			
	2		2871			
	3		2872			
	4		2873			
	5		2874			
2.28	6	RETAIN K-1535 [PERSON COVEY]		[CKT - N.W.]		
2.28	7	TAYLOR LUMBER P1/P13 Creo				
3.3	8	TAYLOR LUMBER P1/P13 Creo				
3.4	9	TAYLOR LUMBER P1/P13 Creo				
3.6	10	BLENDED PITCH T-65 ~~97-10~~				
3.7	11	P1/P13 CREO T-67 ~~97-11~~				
2.28	12	LIQ PITCH INTALCO	2879			
	13		2880			
	14		2881			
	15		2882			
	16		2883			
3.3	17	KAISER - LIQ PITCH	2885			
	18		2886			
	19	LIQ PITCH - INTALCO	2884			
	20		2895			
3.4	21	KAISER - LIQ PITCH	2887			
	22		2888			
	23	LIQ PITCH INTALCO	2896			
	24		2897			
	25		2898			
3.5	26	KAISER - LIQ PITCH	2912			
	27		2913			
	28	INTALCO - LIQ PITCH	2899			
	29		2900			
	30		2901			
3.6	31	KAISER - LIQ PITCH	2914			
	32		2915			
	33	INTALCO	2902			

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3.6	1	INTALCO - La Pitch	2903					
	2		2904					
3.7	3	KAISER - La Pitch	2916					
	4		2917					
	5	INTALCO - La Pitch	2905					
	6		2906					
	7		2907					
3-10	8	KAISER -	2923					
	9		2924					
	10	INTALCO -	2908					
	11		2909					
	12		2918					
3.11	13	KAISER	2925					
	14		2926					
	15	INTALCO	2919					
	16		2920					
	17		2921					
3.12	18	KAISER	2927					
	19		2928					
	20	INTALCO	2922					
	21		2933					
	22		2934					
3.13	23	KAISER	2929					
	24		2930					
	25	INTALCO	2935					
	26		2936					
	27		2937					
3.14	28	KAISER	2931					
	29		2932					
	30	INTALCO	2938					
	31		2939					
	32		2940					
	33	INTALCO	2945					

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3·17	1	INTALCO - LIQ PITCH	2946			
"	2	"	2947			
3·18	3	"	2948			
"	4	"	2949			
"	5	"	2950			
3·19	6	"	2951			
"	7	"	2952			
"	8	"	2953			
3·20	9	"	2954			
"	10	"	2955			
"	11	"	2956			
3·20	12	BLENDED PITCH 97-12 T-65				
3·20	13	ALCOA-WEN LIQ PITCH UTLX650826				
"	14	" "	UTLX650836			
3·21	15	INTALCO LIQ PITCH	2957			
"	16	"	2958			
"	17	"	2959			
3·24	18	"	2961			
"	19	"	2962			
"	20	"	2963			
"	21	"	2964			
"	22	"	2965			
3·25	23	"	2966			
"	24	"	2967			
"	25	"	2968			
"	26	"	2969			
"	27	"	2970			
3·26	28	KOREAN PENCIL PITCH "NEW CONCORD"		97-13	A	
"	29	"	"		B	
"	30	"	"		C	
"	31	INTALCO - LIQ PITCH	2971			
"	32	"	2972			
"	33	"	2973			

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3.26	1	INTALCO - LIQ PITCH	2974				
	2	"	2975				
3.25	3	STC blend Retain ALCATEL		(from 97-4)			
3.24	4	ALCOA - WEN LIQ PITCH UTLX650	847				
3.25	5	" UTLX650	817				
	6	"	846				
	7	"	899				
3.27	8	INTALCO - LIQ PITCH	2976				
	9	"	2977				
	10	"	2978				
	11	"	2979				
	12	"	2980				
3-31	13	ALCOA - Malaga UTLX650	845				
3-31	14	ALCOA - Malaga (wen)	895				
3.20	15	ALCOA - Wen	896				
4.1	16	STC blend - ALCATEL KPCX519					
4.2	17	P1/P13 UTLX 77436	97-14				
4.1	18	ALCOA - WEN LIQ PITCH UTLX650	842				
4.1	19	"	823				
3.31	20	INTALCO - LIQ PITCH	2995				
	21	"	2996				
	22	"	2997				
	23	"	2998				
	24	"	2999				
	25	"	3003				
4.1	26	"	3004				
	27	"	3005				
	28	"	3006				
	29	"	3007				
	30	"	3012				
4.2	31	"	3013				
	32	"	3014				
	33	"	3015				

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4.2	1	INTALCO - LIQ PITCH	3016
	2		3017
	3		3018
4.3	4		3020
	5		3021
	6		3022
4.4	7	Reilly Liq Pitch UTLX650819	
4.3	8	INTALCO - LIQ PITCH	3023
4.4	9		3024
	10	L.T.I.	3025
	11		3026
	12		3027
4.7	13		3034
	14		3035
4.8	15		3036
	16		3037
	17		3038
	18		3039
4.9	19		3040
	20		3041
	21		3042
	22		3043
4.10	23		3044
	24		3045
4.10	25	Blended Pitch T65	97-16
4.10	26	K-1535	97-15
4.11	27	INTALCO - LIQ PITCH	3046
	28		3047
	29		3048
	30		3049
4.14	31	ALCOA - LIQ PITCH	UTLX 650898
	32		UTLX650824
	33		UTLX650839

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4.15	1	ALCOA-WEN LIQ PITCH	UTLX 650	829				
|	2	| |	UTLX 650	853				
4.16	3	ALCOA	UTLX 650	876				
4.14	4	INTALCO-LIQ PITCH	3054					
|	5		3055					
|	6		3056					
|	7		3057					
4.15	8		3058					
|	9		3059					
4.16	10		3060					
|	11		3061					
|	12		3062					
|	13		3063					
4.17	14		3064					
|	15		3065					
4.18	16		3066					
|	17		3067					
|	18		3068					
|	19		3069					
4.18	20	STC blend-ALCATEL-Retain						
4.18	21	VASS Industries-K-1535 Retain						
4.24	22	TAYLOR-P1/P13-Retain						
4.21	23	INTALCO-LIQ PITCH	3077					
	24		3078					
	25		3079					
	26		3080					
4.22	27		3081					
	28		3082					
4.23	29		3083					
	30		3084					
	31		3085					
	32		3086					
4.24	33		3087					

4.24	1	INTALCO - LIQ PITCH	3088
4.25	2		3089
	3		3090
	4		3091
	5		3092
4.25	6	BLENDED PITCH T-65 97-17	
4.25	7	PITCH Sample REILLY UTLX650837	
	8	ALCOA-LIQ PIT. UTLX650896	
	9		826
	10		832
4.29	11	ALCOA-LIQ PITCH	823
	12		814
	13		836
4.28	14	INTALCO-LIQ PITCH	3098
	15		3099
	16		3100
	17		3101
4.29	18		3102
	19		3103
4.30	20		3104
	21		3105
4.30	22	Western Colloid - K-364 retain	
4.30	23	K.1535 barrel retain	
4.30	24	INTALCO-LIQ PITCH	3106
1	25		3107
5.1	26		3108
	27		3109
5.2	28		3110
	29		3111
	30		3112
	31		3113
5.5	32		3123
	33		3124

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5.1	1	K-1535 barrel retain					
5.5	2	K-364 retain KPCX518					
5.8	3	P.1/P13 Creo-TAYLOR Lumber					
5.5	4	INTALCO-hiPITCH	3125				
	5		3126				
5.6	6		3127				
	7		3128				
5.7	8		3129				
	9		3130				
	10		3131				
	11		3132				
5.8	12		3133				
	13		3134				
	14		3135				
	15		3136				
5.9	16		3137				
	17		3138				
5.9	18	Blended PITCH TLS 97-13					
5.14	19	STC blend	97-19				
5.15	20	INTALCO BINDER Round Robin					
5.12	21	Intalco	3141				
	22		3142				
	23		3143				
	24		3144				
5.13	25		3145				
	26		3147				
5.14	27		3148				
	28		3149				
	29		3150				
	30		3151				
5.15	31		3152				
	32		3153				
5.16	33		3154				

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5-16	1	Intalco - Liq Pitch	3155				
	2		3156				
	3		3157				
5.19	4		3164				
	5		3165				
	6		3166				
	7		3167				
5.20	8		3177				
	9		3178				
5.20	10	ALCATEL - STC blend - KPCX519 Blueline		Retain			
5.15	11	Cascade Asphalt K-364 retain					
5.21	12	INTALCO LIQ PITCH	3179				
|	13		3180				
|	14		3181				
|	15		3182				
5.21	16	P1 / P13 Pacific Wood		retain			
5.22	17	INTALCO LIQ PITCH	3183				
\	18		3184				
5.23	19		3185				
	20		3186				
|	21		3187				
|	22		3188				
	23	P1 / P13 PACIFIC WOOD					
5.27	24	BLENDED PITCH T-65	97-20				
5-27	25	INTALCO LIQ PITCH	3198				
	26		3199				
5-28	27		3200				
	28		3201				
	29		3202				
	30		3203				
	31	"Maritime Fauth" Chinese Pencil ~~97-21~~			A		
	32				B		
	33				C		

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5.29	1	INTALCO Liq Pitch	3204
	2		3205
	3		3206
	4		3207
5.30	5		3208
	6		3209
	7		~~3210~~
	8		~~3211~~
	9		3215
	10		3216
5/31	11		3217
	12		3218
6.2	13		3219
	14		3220
	15		3221
	16		3222
6.3	17		3223
	18		3224
6.2	19	P1/P13 Pacific Wood Rotain	
6.3	20	P1/P13 " "	
6.5	21	P1/P13 " " Calif.	
6.4	22	INTALCO Liq Pitch	3225
	23		3226
	24		3227
	25		3228
6.5	26		3229
	27		3230
5.29	28	INTALCO Binder Pitch Composites	
6.6	29	Koppers Truck Sampled for INTALCO (Composite) week of 4/14-4/18	
6.6	30	INTALCO Liq Pitch	3231
	31		3232
6.9	32		3233
	33		3234

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6.9	1	INTALCO LIQ PITCH	3239
	2		3240
6.10	3		3241
	4		3242
6.11	5		3243
	6		3244
	7		3245
	8		3246
6.12	9		3247
	10		3248
	11		3249
	12		3250
6.13	13		3251
	14		3252
6.11	15	BLENDED PITCH T-65	97-22
6.16	16	LIQ PITCH INTALCO	3261
	17		3262
6.11	18	ALCOA-WEN LIQ PITCH	UTLX650 814
	19		UTLX650 823
	20		UTLX650 899
6.12	21	ALCOA-WEN	UTLX650 846
	22		UTLX650 842
6.16	23		3263
	24		3264
6.17	25		3265
	26		3266
6.18	27		3267
	28		3268
6.23	29		3279
	30		3280
	31		3281
	32		3282
6.24	33		3283

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6-24	1	LIQ PITCH INTALCO 3284	
6-16	2	ALCOA-WEN LIQ PITCH UTLX650898	
6-24	3	BLENDED PITCH T-65 97-23	
6-25	4	INTALCO-LIQ Pitch	3285
	5		3286
	6		3287
	7		3288
6-26	8		3289
	9		3290
6-29	10		3291
	11		3292
	12		3293
	13		3294
6-24	14	Retain for ALCATEL-STC blend	
6-16	15	Retain for CASCADE Asphalt. K-364	
6-27	16	Retain for TAYLOR-LUMBER P.1 / P.3	
6-30	17	INTALCO-LIQ PITCH	3297
	18		3298
6-30	19	WESTERN OILOID K-364 Retain	
	20	Liq pitch Intalco	3299
	21		3300
7-1	22		3301
	23		3302
~~7-2-97~~	24	~~BLEND LIQ 97-24~~ (YES!) BLENDED PITCH	
7-8-97	25	STC blend-ALCATEL-Return	
7-1-97	26	Liq pitch Intalco	3303
7-1-97	27		3304
7-2-97	28		3305
7-2-97	29		3306
7-3-97	30		3307
7-3-97	31		3308
7-7-97	32		3309
7-7-97	33		3310

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7.7	1	LIQ PITCH INTALCO 3334					
		3335					
7.11	3	P1/P13 CREO T-67 from UTLX 641997 GATY 42145 97-25					
7.10	4	ALCATEL Steblond Retain					
7/7	5	McFarland-CASCADE P1/P13 Retain					
7/7	6	McFarland-Cascade P1/P13 Retain					
7/2	7	TAYLOR Lumber P1/P13 Retain					
7-8	8	Liq Pitch Intalco 3323					
7/8	9	3324					
7-9	10	3325					
7-9	11	3326					
7-10	12	3327					
7-10	13	3328					
7-11	14	3329					
7-11	15	3330					
7-14	16	3331					
7-14	17	3332					
7-14	18	3349					
7-14	19	3350					
7-15	20	3351					
7-15	21	3352					
7-15	22	3353					
7-15	23	3354					
7-16	24	3355					
7-16	25	3356					
7-16	26	3357					
7-16	27	3358					
7-17	28	TAYLOR Lumber P1/P13 Retain					
7-14	29	KOREAN PENCIL PITCH "Sammi Blonde" 97-26A					
7-15	30	" " " " " " 97-26B					
7-16	31	" " " " " " 97-26C					
7-17	32	LIQ PITCH INTALCO 3359					
7-17	33	3360					

7-18	1	Liq Pitch Intalco	3361		
7-18	2		3362		
7-21	3		63		
7-21	4		64		
7-21	5	Kaiser	72		
7-21	6		73		
7-22	7		74		
7-22	8		75		
7-23	9		76		
7-23	10	Kaiser	77		
7-24	11	Kaiser	78		
7-24	12	Kaiser	79		
7-25	13	Kaiser	80		
7-25	14	Kaiser	81		
7-22	15	Blended Pitch T-65		97-27	
7-22	16	P1 P13 Creo T-67		97-28	
7-30	17	STC blend (Alcatel)		97-29	
7-30	18	K-364 Cascade Retain		95-38	
7-31	19	K-364 Cascade Retain		" "	
7-18	20	P1 P13 Taylor Retain			
7-25	21	P1 P13 Taylor Retain			
7-21	22	Liq pitch Intalco	3382		
7-21	23		3383		
7-22	24		84		
7-22	25		85		
7-23	26		86		
7-23	27		87		
7-23	28		88		
7-23	29		89		
7-24	30		90		
7-24	31		91		
7-24	32		92		
7-24	33		3393		

Koppers005673

7-25		INtalco Liq Pitch 3394			#1	
7-25		" 395			2	
7-28		Kaiser 3406			3	
"		" 3407			4	
"		Intalco 08			5	
"		" 09			6	
7-31		Blended Pitch T-65		97-30	7	
7-28		INt 3410			8	
7-28		INt 11			9	
7-29		Kai 12			10	
7-30		Kai 13			11	
7-31		Kai 14			12	
7-30		Kai 15			13	
7-31		Kai 16			14	
7-31		Kai 17			15	
8-1		Kai 18			16	
		KAi 19			17	
7-29		Int 34 20			18	
"		INT 21			19	
7-30		INT 22			20	
7-30		INT 23			21	
7-31		INt 24			22	
7-31		INt 25			23	
8-1		INt 26			24	
8-1		INt 27			25	
8-4		" 28			26	
8-4		" 29			27	
8-6		STC Blend Alcatec		97-31	28	
8-8		CASCade Asphalt K364		REFAI'N	29	
8-8		P1 P13 Creo + Hvy oil Add.		97-32	30	
8-4		Intalco 5430			31	
8-4		" 31			32	
8-5		36			33	

Koppers005674

8-4	1	INTalco 3437						
7-31	2	Kaiser 38						
8-5	3	INTALCO 39						
8-6	4	" 40						
8-6	5	" 41						
8-6	6	" 42						
8-6	7	" 43						
8-7	8	" 44						
8-7	9	INTalco 45						
8-7	10	" 46						
8-8	11	" 47						
8-8	12	" 48						
8-11	13	" 49						
8-4	14	Kaiser 34 50						
8-5	15	" 51						
8-6	16	" 53						
8-6	17	" 54						
8-7	18	" 55						
8-7	19	" 56						
8-8	20	" 57						
8-8	21	" 58						
7-9	22	UTLX 650814 ALCOA wen						
7-9	23	" 650 823 "						
7-9	24	" 650 853 "						
7-9	25	" 650 826 "						
7-10	26	" 650 899 "						
7-10	27	" 650 824 "						
7-24	28	" 650 836 "						D-P
7-24	29	650 842 "						D-P
7-23	30	650 839 "						D-P
8-7	31	ACFX 67681 Kaiser mead						D-P
8-7	32	" 79885 "						
8-7	33	" 89210 "						

Koppers005675

7-9	1	Tayler Cust. Samples P1 P13	A+B	Retain				
7-25	2	" " "	"	"				
8-11-97	3	Baxter P1-P13 Retain						
8-12-97	4	" " "						
8-12-97	5	" " "						
8-14-97	6	" " "						
8-13-97	7	CASCADE ASPHALT K-364 Retain						
8-7-97	8	Liq. Pitch Intalco	3462					
8-7-97	9	" " "	3464					
8-11	10	" " "	3465					
8-11	11	"	3466					
8-11	12	Kaiser	3473					
8-11	13	"	3474					
8-12	14	Intalco	3484					
8-12	15	"	345					
8-12	16	Kaiser	3486					
8-12	17	"	3487					
8-12	19	Intalco	3490					
8-12	19	"	91					
8-13-97	20	Kaiser may be a duplicate sample of Bill # entered for Record	3491					
8-13	21	"	92					
8-13	22	"	93					
8-13	23	Intalco	94					
8-13	24	"	95					
8-14	25	"	96					
8-14	26	Kaiser	3500					
8-14	27	"	3501					
8-14	28	BAXTER P1 P13 Retain 2ND Load						
8-15	29	" " "	1ST	"				
8-14	30	Intalco Liq. Pitch	3499					
8-14	31	"	3498					
8-15	32	"	3502					
8-15	33	"	3503					

Koppers005676

8-15	1	Kaiser Liq. Pitch 35	04				
8-15	2	Kaiser " " 35	05				
8-15	3	Blended Pitch T-65 1st.	Sample	77-33			
8-15	4	BAXter P1-P13 Retain					
8-18	5	" " "					
8-18	6	Western Colloids K-364 Retain					
8-18	7	Liquid Pitch Koisertar 35	06				
8-18	8	"	07				
"	9	" "	08				
"	10	" "	09				
"	11	Intalco ferN	10				
18	12	" Intalco ferN	11				
18	13	" " ACFX 79889		Kaiser mead			
18	14	Intalco ferN	12				
18	15	"	13				
19	16	Kaiser tar	15				
"	17	"	16				
"	18	"	17				
"	19	"	18				
"	20	Intalco ferN	19				
"	21	"	20				
8-20	22	"	21				
"	23	"	22				
"	24	Kaiser tar	24				
"	25	"	25				
"	26	Intalco	27				
"	27	"	28				
"	28	Kaiser Tar	29				
"	29	"	30				
8-21	30	"	31				
8-28	31	P1-P13 Creo T67 77-39					
8-21	32	Retain " " BAXter					
8-28	33	Retain " " "					

Koppers005677

8-21	1	Liq. Pitch	Kaiser Toc.	35	32			
4	2		11		33			
8-28	3	BAXter P1/P13 RETain 2ND load						
8-21	4	Liq pitch	Kaiser Toc.	35	34			
8-21	5	11	Intalco		35			
11	6	11	11		36			
11	7	11	11		37			
8-22	8	11	11		38			
11	9	11	11		39			
8-21	10	11	11		42			
8-22	11	11	11		43			
11	12	11	11		44			
8-29	13		11		40			
8-29	14	Tayler P1/P13 Retain						
~~9-3-97~~	~~15~~	~~Ship Sample A "BATSA 69" chinese~~			~~Sample "B"~~	~~9-5-97~~		p979 for this
9-3-97	16	P1 P13 dred Tayler Retain						
9-2	17	Liq. Pitch/Kaiser Toc.			41			
9-2	18	11	11		49			
9-3	19	11	11	35	50			
9-2	20	Intalco ferr. 11		35	62			
9-2	21	11	11		63			
9-3	22	11	11		66			
11	23	11	11	35	74			
11	24	11	11		75			
9-4	25	11	11		78			
11	26	11	11		79			
9-4	27	11	11		80			
11	28	11	11		81			
9-5	29		11	11	83			
9-5	30		11	11	84			
9-5	31	11	11		85			
11	32	11			86			
9-8	33		11	11	90			

Koppers005678

Liquid Pitch T-68

9-8-92	1	Intalco "	35	95
"	2	" "		96
9-5	3	GN 71517 VANALCO		
"	4	BN 435033 "		
"	5	ATSF82900 "		
"	6	GN 71512 "		
"	7	GN 71551 "		
"	8	GN 71536 "		
9-4	9	NP 75399 "		
"	10	GN 71991 "		
"	11	ATSF82912 "		
"	12	NP 75330 "		
"	13	CB+O 85181 "		
"	14	NP 75300 "		
9-9	15	Blended Pitch T-65 [redacted]		
9-10	16	" " " "		2nd SAMPLE
9-9	17	Western Colloids K-364 Retain		
9-8	18	Liquid pitch T-65 Kaiser	35	89
9-9	19	" "	35	91
9-9	20	" "	35	92
9-8	21	Intalco "		97
9-9	22	" "		98
9-8	23	"	36	00
9-9	24	"	36	01
9-10	25	"	36	02
9-10	26	"		03
9-10	27	"		06
9-10	28	"		07
9-10	29	"		08
9-10	30	"		09
9-11	31	"		10
9-11	32	"		11
9-11	33	"		12

Koppers005679

CASdade

9-11-97	1	~~West Collords~~ K-364 Blucke Retain			
9-11	2	Liq. pitch 7-68 Kaiser	36	13	
9-11	3	Intalco		14	
9-11	4	Intalco		15	
9-12	5	Intalco		16	
9-12	6	Intalco		17	
9-12	7	Kaiser		18	
9-12	8	Kaiser		19	
9-15	9	Intalco		20	
9-15	10	Intalco		21	
9-15	11	Kaiser		24	
9-3	12	BALSA 59 Ship Sample A	97	37 A	
9-3	13	" " " 13	97	37 B	
9-18	14	P1 P13 Taylor Creo Retain			
9-19	15	P1 P13 Creo 2 Railcars + tank Balance	~~97~~	~~39~~	
9-19	16	Blended Pitch-65	97	38	
9-19	17	K-364 From KCBX 209 Added to KCPX 518	97	40	
9-15	18	Kaiser	36	23	
"	19	Intalco		22	
"	20	Kaiser		25	
9-16	21	Intalco		29	
	22	Intalco		30	
16	23	Kaiser		31	
16	24	Kaiser		32	
17	25	Intalco		33	
9-17	26	Intalco		34	
9-17	27	Intalco		35	
9-17	28	Intalco		36	
9-17	29	Kaiser		37	
9-17	30	Kaiser		38	
9-18	31	Intalco		39	
9-18	32	Kaiser		42	
9-18	33	Kaiser		41	

Koppers005680

Blended Pitch + 68

9-18	1	Kaiser	36	42		
9-18	2	Intalco		43		
9-18	3	Intalco		52		
9-19	4	Intalco		53		
9-19	5	INtalco		54		97-36
9-19	6	Kaiser	36	55		~~97-38~~
9-22	7	Kaiser		58		97-38
9-22	8	Kaiser		56		
9-23	9	Kaiser		59		
9-22	10	Antolco		60		
9-24	11	STC Blueline Retain				
9-23	12	P1-P13 +67 Retest 97-39				
9-26	13	"Ocean Crown" Koreon Pencil Sample		A		
9-29	14	" " " " "		B		
9-22	15	Intalco	36	61		
9-22	16	Intalco		63		
9-24	17	Intalco		64		
9-23	18	Intalco		65		
9-24	19	Kaiser		67		
9-23	20	Kaiser		62		
9-24	21	Kaiser		68		
9-24	22	Intalco		69		
9-24	23	Intalco		70		
9-24	24	Intalco		71		
9-24	25	Intalco		72		
9-25	26	Kaiser		74		
9-25	27	Kaiser		75		
9-25	28	Intalco		76		
9-25	29	Intalco		77		
9-25	30	Intalco		78		
9-25	31	Intalco		79		
9-26	32	Kaiser		81		
9-26	33	Kaiser		82		

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Blended Pitch T-68

9-26	1	~~Duplicate Kaiser~~	~~36~~	~~82~~
9-26	2	Intalco		83
9-26	3	Intalco		84
9-29	4	Kaiser		89
9-29	5	Intalco		93
9-29	6	Intalco		94
9-30	7	"Ocean Crown" Koreon Pencil		C
10-2	8	Sept Composite Batches 97-36		97-39
9-29	9	Kaiser	36	90
9-30	10	Kaiser		91
9-30	11	Kaiser		92
9-30	12	Intalco		98
9-30	13	Intalco		99
10-1	14	Kaiser	37	01
10-1	15	Kaiser		02
10-1	16	Intalco		03
10-1	17	Intalco		04
10-2	18	Kaiser		08
10-2	19	Kaiser		07
10-2	20	Intalco		11
10-2	21	Intalco		12
10-3	22	Kaiser	37	09
10-3	23	Kaiser	37	10
10-3	24	macFarland-Cascade P1-P13		Retain
10-3	25	" " "		"
10-6	26	P1 P13 taylor Retain		
10-6	27	Intalco	37	18
10-6	28	Intalco		19
10-6	29	Kaiser		20
10-8	30	Blended Pitch T-65		
10-6	31	Kaiser	37	21
10-7	32	Intalco		23
10-7	33	Intalco		24

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Blended pitch t 68

10-7	1	Kaiser	37	25			
10-7	2	Kaiser		26			
10-8	3	Kaiser		32			
10-8	4	Kaiser		33			
10-8	5	Intalco		34			
10-8	6	Intalco		35			97-58
10-9	7	P1 P13 T67 Taylor Relain					97-92
10-9	8	Kaiser	37	39			
10-9	9	Intalco	37	37			
10-9	10	Intalco	37	38			
10-9	11	Kaiser	37	40			
10-10	12	Kaiser	37	41			
10-13	13	Kaiser		43			
10-13	14	Intalco		46			
10-13	15	Intalco		47			
10-13	16	Kaiser		48			
10-13	17	Intalco		49			
10-13	18	Intalco		50			
10-14	19	Kaiser		51			
10-14	20	Intalco		53			
10-14	21	Intalco		54			
10-14	22	Kaiser		52			
10-14	23	Intalco	37	55			
10-15	24	Intalco		56			
10-15	25	Intalco		57			
10-15	26	Intalco		58			
10-15	27	Kaiser		61			
10-15	28	Kaiser		62			
10-15	29	Kaiser		64			
10-16	30	Blended pitch t-65					
10-16	31	Intalco	37	59			
10-16 97	32	Intalco		60			
10-16	33	Kaiser		65			

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Blended pitch +-68

10-16-97	1		Kaiser	37	67			
10-13-97	2	P1-P13 Calgon Retain						
10-17-97	3	Alcatel Std Blend Retain						
10-20-97	4	Intalco		37	68			
10-20	5	Intalco			69			
10-20	6	Intalco			70			
10-20	7	Intalco			71			
10-20	8		Kaiser		72			
10-21	9	Intalco			78			
10-21	10	Intalco			79			
10-21	11		Kaiser	37	73			
10-21	12	Intalco			80			
10-21	13	Intalco			81			
10-22	14		Kaiser		74			
10-22	15	Intalco			82			
10-22	16	Intalco			83			
10-23	17	Intalco			84			
10-23	18	Intalco		37	85			
10-23	19		Kaiser		75			
10-23	20	Intalco			86			
10-23	21	Intalco			87			
10-24	22	Intalco			88			
10-24	23	Intalco			89			
10-27	24	Intalco			92			
10-27	25	Intalco			93			
10-23	26		Kaiser	37	75			
11-3	27		Kaiser	37	76			
10-23	28	Intalco		37	86			
10-23	29	Intalco			87			
10-27	30	Intalco		37	94			
10-27	31	Intalco			95			
10-28	32	Intalco			77			
10-28	33	Intalco			98			

Blended Pitch T-68

10-28	1	Intalco		37	99			
10-28	2	Intalco		38	00			
10-29	3	Intalco		38	02			
10-29	4	Intalco			03			
10-29	5	Intalco			04			
10-31	6	Intalco			08			
10-31	7	Intalco			09			
11-03	8	Intalco			10			
11-3	9	Intalco			11			
10-29	10	Intalco		38	01			
11-4	11	T-68 Blended Pitch		97	44			
11-3	12		Kaiser	38	12			
11-4	13		Kaiser		13			
11-4	14		Kaiser		~~15~~ 14			
11-4	15		Kaiser		~~14~~ 15			
11-3	16	Intalco			~~15~~ 16			
11-3	17	Intalco			~~16~~ 17			
11-4	18	Intalco			~~17~~ 18			
11-4	19	Intalco			~~18~~ 19			
11-5	20	Intalco		38	21			
11-5	21	Intalco			22			
11-5	22		Kaiser		20			
11-5	23	Intalco			23			
11-5	24	Intalco			24			
11-6	25		Kaiser		25			
11-6	26		Kaiser		26			
11-6	27	Intalco	~~Kaiser~~		27			
11-6	28	Intalco			28			
11-6	29	Intalco			29			
11-6	30	Intalco			30			
11-7	31		Kaiser		31			
11-7	32		Kaiser		32			
11-7	33	Intalco			33			

Koppers005685

Blends & pitch T-68

11-7	1	Antolec	38	34	
11-7	2	Kaiser		36	
11-10	3	Kaiser		37	
11-11	4	Antolec		38	
11-11	5	Antolec		39	
11-11	6	Antolec		40	
11-11	7	Kaiser	38	41	
10-24	8	STC Blend			
10-28	9	STC Blend Last Load			
11-11	10	Kaesr	38	42	
11-11	11	Antolec	38	43	
11-11	12	Antolec		44	
11-12	13	Antolec		45	
11-12	14	Antolec		46	
11-12	15	Antolec		47	
11-12	16	Koeser		49	
11-12	17	Koesr	38	50	
11-13	18	Koesr		51	
11-13	19	Kaiser		52	
11-14	20	Kaiser		53	
11-12	21	Antolec		55	
11-12	22	Antolec		56	
11-13	23	Antolec		57	
11-13	24	Antolec		58	
11-13	25	Antolec		59	
11-14	26	Antolec	38	60	
11-14	27	Antolec		61	
11-14	28	Antolec		62	
11-14	29	Kaiser		54	
11-17	30	Antolec	38	64	
11-17	31	Antolec		65	
11-17	32	Kaiser		67	
11-17	33	Kaiser		68	

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11-20-97	1	Blended pitch T-65 97-84						
11-17-97	2	Intolco		38	66			
11-17	3	Intolco			73			
11-18	4		Kaiser		74			
11-19	5		Kaiser		79			
11-18	6		Kaiser		75			
11-18	7	Intolco			76			
11-18	8	Intolco			77			
11-19	9		Kaiser		78			
11-20	10		Kaiser	38	80			
11-20	11		Kaiser		81			
11-21	12		Kaiser		82			
11-21	13		Kaiser	38	83			
11-19	14	Intolco			84			
11-18	15	Intolco			85			
11-19	16	Intolco			86			
11-19	17	Intolco			87			
11-20	18	Intolco			88			
11-20	19	Intolco		38	89			
11-20	20	Intolco		38	90			
11-20	21	Intolco			91			
11-21	22	Intolco			92			
11-21	23	Intolco			93			
11-24	24		Kaiser	38	97			
11-24	25	Intolco		38	99			
11-24	26	Intolco		39	00			
11-24	27	Intolco		39	01			
11-24	28		Kaiser	38	98			
11-25	29		Kaiser	39	02			
11-25	30		Kaiser		03			
11-25	31		Kaiser		04			
11-24	32	Intolco			05			
11-24	33	Intolco			06			

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11-25	1	Intolco	39	07			
11-25	2	Intolco		08			
11-25	3	Intolco		09			
11-25	4	Intolco	39	10			
11-25	5	Intolco		11			
11-25	6	Intolco		12			
11-26	7	Intolco		13			
11-26	8	Intolco		14			
11-25	9	Kaiser		16			
11-26	10	Kaiser		17			
11-26	11	Kaiser		18			
11-26	12	Kaiser	39	19			
12-1	13	Kaiser		20			
12-1	14	Kaiser		21			
12-2	15	Kaiser		22			
12-1	16	Intolco	39	31			
12-1	17	Intolco		32			
12-1	18	Intolco		33			
12-1	19	Intolco		34			
12-2	20	Intolco		35			
12-2	21	Intolco	39	36			
12-2	22	"Sammi aurora" Korean pitch A, B, C	A	[illegible]			
12-2	23	" " "	B	"			
12-2	24	" " "	C	"			
12-4	25	Blended Pitch t-65 trans. to t68 on 12-4 p.m.		97-47			
12-3	26	Kaiser	39	24			
12-3	27	Kaiser		25			
12-3	28	Intolco		39			
12-3	29	Intolco		40			
12-3	30	Intolco	39	50			
12-2	31	Kaiser	39	23			
12-2	32	Intolco		37			
12-2	33	Intolco	39	38			

Blended Pitch C-68

12-2	1	Intotro		39	49			
12-4	2		Kaiser		26			
12-4	3	Intotro			41			
12-4	4	Intotro			42			
12-4	5	Intotro			43			
12-4	6	Intotro			44			
12-4	7	Intotro			52			
12-5	8		Kaiser	39	28			
12-5	9	Intotro			45			
12-5	10	Intoto			46			
12-5	11	Intotro		39	53			
12-4	12		Kaiser	39	27			
12-8	13		Kaiser	39	56		97.47	
12-8	14	Intotro			83			
12-8	15	Intotro			84			
12-8	16	Intotro		39	82			
12-8	17		Kaiser		57			
12-8	18	Intotro			85			
12-8	19	Intotro		39	86			
12-9	20	Intotro		39	90			
12-9	21	Intotro			91			
12-9	22		Kaiser	39	58			
12-9	23		Kaiser		59			
12-9	24	Intoko			87			
12-9	25	Intotro		39	88			
12-9	26	Intotro			89			
12-10	27		Kaiser	39	60			
12-10	28		Kaiser		61			
12-10	29	Intotro			92			
12-10	30	Intotro			93			
12-10	31	Intotro			94			
12-11	32		Kaiser		62			
12-11	33	Intotro		39	95			

12-11	1	Antelope	39	96			
12-11	2	Antelope		97			
12-11	3	Antelope		98			
12-11	4	Antelope		99			
12-11	5	Kaiser	36	93	—		
12-12	6	Kaiser		64			
12-12	7	Antelope	40	00			
12-12	8	Antelope		01			
12-12	9	Antelope		02			
12-15	10	Kaiser	40	09			
12-15	11	Kaiser		10			
12-16	12	Kaiser		11			
12-16	13	Kaiser		12			
12-15	14	Antelope		18			
12-15	15	Antelope		19			
12-15	16	Antelope		20			
12-15	17	Antelope		21			
12-15	18	Antelope		22			
12-16	19	Antelope		23			
12-16	20	Antelope		24			
12-16	21	Antelope		25			
5-29	22	Maritime Faith Chinese penic		A	97-21A		
11	23	" " " "		B	97-21B		
11	24	" " " "		C	97-21C		
12-9	25	Blended Pitch t-65 97-19					
12-17	26	Kaiser	40	13			
12-17	27	Kaiser		14			
12-17	28	Antelope		26			
12-17	29	Antelope		27			
12-17	30	Antelope		28			
12-17	31	Antelope		29			
12-18	32	Kaiser	40	15			
12-18	33	Antelope	40	30			

Koppers005690

Blended Pitch t-65

12-18	1	Intolerance		40	31			
12-18	2	Intolerance			32			
12-18	3	Intolerance			34			
12-18	4	Intolerance			35			
12-18	5	Intolerance			36			
12-19	6		Kaiser	40	17			
12-19	7	Intolerance			37			
12-19	8	Intolerance			38			
12-19	9	Intolerance			39			
12-22	10		Kaiser	40	41			
12-22	11		Kaiser		42			
12-22	12	Intolerance			51			
12-22	13	Intolerance			52			
12-22	14		Kaiser		43			
12-22	15		Kaiser		44			
12-23	16		Kaiser		47			
12-23	17		Kaiser		48			
12-22	18	Intolerance			53			
12-22	19	Intolerance			54			
12-22	20	Intolerance		40	55			
12-23	21	Intolerance			56			
12-23	22		Kaiser		45			
12-23	23		Kaiser		46			
12-24	24		Kaiser		49			
12-24	25		Kaiser	40	50			
12-23	26	Intolerance			58			
12-23	27	Intolerance			59			
12-23	28	Intolerance			57			
12-24	29	Intolerance		40	60			
12-29	30	Intolerance			61			
12-29	31	Intolerance			62			
12-29	32	Intolerance			63			
12-29	33	Intolerance			64			

Koppers005691

End 1997

12-29	1	Intalco	40	65			
12-29	2	Intalco		66			
12-29	3	Intalco		67			
12-30	4	Intalco		68			
12-30	5	Intalco		69			
12-30	6	Kaiser	40	75			
12-30	7	Intalco		70			
12-31	8	Intalco		71			
12-31	9	Intalco		72			
12-31	10	Intalco		73			
12-31	11	Intalco		74			
12-30	12	Kaiser	40	76			
12-31	13	Kaiser		77			
12-31	14	Intalco		83			
12-10	15	P1 P13 Creo 97-48					
12-9	16	taylor P1 P13 Retain					
12-31	17	Kaiser	40	78			
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						

Start of 1998

1-5-98	1	Kaiser	40	84			
1-5	2	do		93			
1-5	3	do		94			
1-6	4	Blended Pitch 6-65	98	1			
1-5	5	Kaiser		85			
1-6	6	Kaiser	40	86			
1-6	7	Kaiser	40	87			
1-7	8	Kaiser		88			
1-5	9	do		95			
1-5	10	do		96			
1-6	11	do		97			
1-6	12	do		98			
1-6	13	do		99			
1-6	14	do	4	100			
1-7	15	do	4	101			
1-7-98	16	do	41	02			
1-7	17	Kaiser	40	89			
1-8	18	Kaiser	40	90			
1-7	19	do	41	03			
1-7	20	do	41	04			
1-8	21	Kaiser	40	91			
1-9	22	Kaiser	40	92			
1-8	23	do	41	05			
1-8	24	do	41	06			
1-9	25	do	41	07			
1-9	26	do	41	08			
1-14	27	Kaiser	41	14			
1-14	28	Kaiser		15			
1-14	29	do		27			
1-14	30	do		29			
1-14	31	do		30			
1-14	32	Kaiser	41	16			
1-12	33	Kaiser		17			

Koppers005693

1-16	1	Blended Pitch E-65			
1-14	2	Kaiser	41	18	
1-15	3	Kaiser		19	
1-13	4	Kaiser		20	
1-13	5	Kaiser		21	
1-15	6	Kaiser		22	
1-15	7	Kaiser		23	
1-16	8	Kaiser		24	
1-19	9	Kaiser		26	
1-19	10	Antolro	41	28	
1-14	11	Antolro		31	
1-14	12	Antolro		32	
1-15	13	Antolro		33	
1-15	14	Antolro		34	
1-15	15	Kaiser		35	
1-16	16	Kaiser		37	
1-15	17	Antolro	41	38	
1-16	18	Antolro		39	
1-16	19	Antolro		40	
1-16	20	Antolro		41	
1-16	21	Antolro	41	42	
1-17	22	Antolro		43	
1-17	23	Antolro		44	
1-17	24	Antolro		45	
1-19	25	Antolro	41	55	
1-19	26	Antolro		56	
1-19	27	Kaiser	41	25	
1-20	28	Kaiser		47	
1-20	29	Kaiser		48	
1-21	30	Kaiser		49	
1-19	31	Antolro		57	
1-19	32	Antolro		58	
1-20	33	Antolro		59	

Koppers005694

Blended Pitch F-68

1-20-98	1	Antolec			41	60			
1-21	2	Antolec			41	61			
1-21	3	Antolec				62			
1-21	4	Antolec				63			
1-21	5	Antolec				64			
1-19	6			Kaiser	41	26			
1-21	7			Kaiser	41	50			
1-21	8			Kaiser		51			
1-22	9			Kaiser		52			
1-22	10			Kaiser		53			
1-22	11	If				65			
1-23	12	If				66			
1-22	13	If				67			
1-22	14	If				68			
1-22	15	If				69			
1-23	16	If			41	70			
1-26	17			KT	41	54			
1-26	18			KT		74			
1-27	19			KT		75			
1-27	20			KT		76			
1-28	21			KT		77			
1-28	22			KT		78			
1-29	23			KT		79			
1-29	24			KT	41	80			
1-30	25			KT		81			
1-26	26	If			41	82			
1-25	27	If				83			
1-26	28	If				84			
1-26	29	If				85			
1-27	30	If				86			
1-27	31	If				87			
1-27	32	If				88			
1-27	33	If			41	89			

Koppers005695

1-26-98	1	t-65 Blended Pitch t-65			98-3	
1-26	2	Sample Crystal A Ship		Koron Pencil		See A Book 98-4
1-27	3	" " B "		"	"	
1-28	4	" " C "		"	"	
1-28	5	If		41	90	
1-28	6	If			91	
1-29	7	If			92	
1-29	8	If			93	
1-29	9	If			94	
1-29	10	If			95	
1-30	11	If			96	
1-30	12	If		41	97	
2-3	13	If		42	12	
2-2	14		KT	42	04	
2-3	15	If		42	13	
2-3	16		KT	42	05	
1-27	17	Taylen Creo	Matlacic			
1-27	18	Tayen Creo	"			
1-28	19	Taylen Creo	"			
2-4	20	fume Live Residue				
2-3	21		KT	42	06	
2-3	22		KT		07	
2-4	23		KT		08	
2-4	24		Kt		09	
2-5	25		KT	42	10	
2-3	26	If			14	
2-3	27	If			15	
2-4	28	If			16	
2-4	29	If			17	
2-4	30	If			18	
2-5	31	If			19	
	32	ENS 2-9-98 See "A" Book				
	33	(some 2-5, 2-6 samples are in the "A" Bk)				

Koppers005696

End -2-9-98

TEST RESULTS

KOPPERS PORTLAND

Lab
Manual

1/2/96 Batch 96-01 Blended Pitch

Softening Points

1/2/96	16-09	UTLX650756	111.3	
"	16-10	UTLX650782	111.2	
"	16-11	B 96-01	111.3	
"	16-12	UTLX650781	111.4	
"	16-13	UTLX650777	111.3	
1/3/96	16-14	UTLX650780	111.4	
"	~~16-15~~	~~UTLX650761~~	~~111.7~~	
"	16-16	UTLX650761 dup	111.4	
"	16-17	UTLX650770	111.4	
"	16-18	UTLX650757	111.6	111.6
1/4/96	16-19	UTLX650760	111.2	
"	16-20	UTLX650759 E	111.4	
"	16-22	UTLX650772	111.5	111.7
"	16-23	UTLX650758	111.5	111.6

1/3/95 B 96-01 Sample 16-09 (756) Blended Pitch

Q 1

	48.7656	~~58.8698~~	~~59.2977~~
A	47.7579	~~57.8748~~	~~58.2896~~
	1.0077	.9950	
	1.8		
	26.8596	~~26.0400~~	
	26.7812	85 ~~25.9499~~	~~26.0702~~
	.0784	.0901	

Koppers005699

1/29/95 Sample 16-11 Batch 96-01
Blended Pitch

	47.7009	27.0650	58.2944	30.0451
Q	46.7078	26.9913	58.2899	29.9702
	.9931	.0737	1.0045	.0749
	7.4		7.5	
TI	80.5786	23.3981		
	79.6057	23.1390		26.6
	.9729	.2591		
CV	19.7138	18.4411		
	16.7315	16.7315		57.3
	2.9823	1.7096		
ASH	31.6406	21.6342		
	21.6071	21.6071		0.27
	10.0335	.0271		

Distillation

31.1846 (b)

30.0957 (a)

32.9526
29.8609 3.1
3.0917

Relative Density

6.1177
1.4736
4.6441

1.317

96-14 Q1
48.6414
47.6372
1.0042

26.0851
26.0102
.0749

7.5

Koppers005700

1/3/96 Sample 16-16 UTLX650761 deep

Q1	47.7006	27.5148
	46.7077	27.4393
	.9929	.0750
	48.7151	27.4816
	47.7576	27.4066
	.9581	.0750

1/4/95 Sample 16-20 UTLX650759E

Q1	58.8866	59.2955
1	57.8745	2 58.2894
	1.0121	1.0061
	27.5243	
	27.4470	28.5914
	.0773	

Sample 16-21 UTLX650759T

Q1	48.6464	48.7562
3	47.6374	4 47.7577
	1.0090	0.9985
	25.8473	25.8382
	25.7713	25.7598
	.0760	.0784

1/5/96 16-24 rev Ocean Beauty (Korean Building)

	49.3652	48.7624
	48.3641	47.7519
		1.0045
		26.1527
	27.8332	2 26.0792
		.0735

Koppers005701

1/5/96 16-25 Fume Tank
Grav 1.065 @ 38°C
1.081 @ 60°F 1.065 @ 100°F
Water 0.15

1/5/96 16-24 Korean Pitch from building
big chunks

Q1 _____ _____

Small chunks

Q1 _____ _____

Dust

Q1 _____ _____

1/8/96 Sample 16-26 lite uncorrected
NATX 76 Y26
1081 @ 47°C
1.104 @ 60°F 1.087 @ 100°F

Water 0.1

1/9/96 Sample 16-28 T23 96-03
1093 @ 38°C 1.093 @ 100°F
1.111 @ 60°F
0.6 water

247.7 90.3
need
cork
therm tube

1/8/96 Sample 16-27 T67 96-02

Water 0.1

Grav 1072@57 1.102 @ 60°F 1.086 @ 100°F

X1	65.9955	26.5296	
	56.0562	26.4962	.34
	9.9393	.0334	

Distillation

32.4402

1	31.1888	1.3	Grav Fx 3-4
	1.2514		
	32.1986		1072 @ 50°C
2	31.5294	2.5	
	1.2692		
	45.2919		
3	29.7759	18.0	
	15.5160		
	55.1732		
4	29.3802	43.8	
	25.7930		
	56.3239		
5	31.5953	68.6	
	24.7286		
	35.2666		
R	31.1848		
	4.0818		
	377.6	25.2	
DA	356.5		
	21.1		

Koppers005703

1/9/96		Sample 16-28 T23 Distillation	Lit uncorrected 96-03		
		33.5218	50.6717		
	1	31.9106 (1.6)	4 31.4029		(34.8)
		1.6112	19.2688		
		31.6585	64.8082		
	2	30.0958 (3.7)	5 30.7984		(68.8)
		1.5627	34.0098		
		42.5044	31.9145		
	3	30.2320 (15.5)	R 29.8609		
		12.2724	2.0536		(30.4)
		366.3			
		DA 338.0			
		28.3			
1/15/96		Batch No 96-4 S.P 111.5			
			S.P.		
		1/15/96 UTLX 650778	111.2		
		" UTLX 650765	111.5		
		" UTLX 650767	111.6	111.8	
		" UTLX 650754	111.4		
		1/16/96 UTLX 650769	111.4		
		" UTLX 650763	111.2		
		" UTLX 650776	111.5		
1/18/96		KPCX 502 K15-35	92.32		
1/19/96		KPCX 502 K15-35	23.91	23.92	
1/19/96		Blended Pitch T-65	110.7	110.5	

Koppers005704

	Blended Pitch - Batch #96-6			
	Softening points			
		S.P.		
	1/22/96 #17-08 UTLX650774	110.9		
	" 17-09 " 772	110.8		
1-22-96	~~UTLX 650 774~~			
	1/24/96 UTLX650755	111.1	110.9	
1/24/96	Blended Pitch UTLX650762	110.9	110.7	
1/24/96	" " UTLX650763	110.9	111.0	
1/29/96	" " UTLX650756	111.2	111.0	
1/29/96	" " TCQ	111.1		
1/29/96	" " ACFX 94476	111.4	111.2	
1/29/96	" " ACFX 72832	111.2		
1/30/96	" " UTLX 650759	110.5	110.5	
"	" " ACFX 72825	111.3	111.4	
"	" " ACFX 72824	111.3	111.4	
1/31/96	" " UTLX 650780	110.9	111.5	
1/31/96	Blended Pitch UTLX650781	111.4	111.2	
2/7/96	#1181-B, KAI-T, Liq. Pitch	108.8		
"	#1183-M, KAI-M	108.8		
"	#1184-M, KAI-M	108.8		
2/8/96	#1182-B, KAI-T	108.8		
2/9/96	#1186-M, KAI-M	109.3		
"	#1187-M, KAI-M	109.3		
2/10/96	#1188-M, KAI-M	109.2		
"	#1189-M, KAI-M	109.2		
2/11/96	#1185-B, KAI-T	109.2		
"	#1190-M, KAI-M	109.7		
"	#1191-M, KAI-M	109.7		
"	#1192-B, KAI-T	109.7		
2/12/96	#1193-B, KAI-T	109.9		
"	#1195-M, KAI-M	110.2		

Koppers005705

2/12/96		Liq. Pitch, KAI-T, #1196-B		110.2			
"		" , KAI-M, #1197-M		110.2			
2/13/96		" , KAI-T, #1194-B		110.1			
"		" , KAI-M, #1201-B		110.1			
"		" , KAI-M, #1200-M		110.1			
"		" , KAI-T, #1199-B		110.1			
"		" , KAI-M, #1202-M		110.1			
2/14/96		" , KAI-M, #1205-M		110.3			
"		" , KAI-T, #1203-B		110.3			
"		" , INTALCO, UTLX 650765		110.3			
"		" , KAI-M, #1204-B		110.3			
"		" , INTALCO, UTLX 650769		110.3			
"		" , KAI-T, #1207-B		110.3			
"		" , INTALCO, UTLX 650766		110.3			
"		" , KAI-M, #1206-M		110.3			
2/15/96		" , KAI-T, #1213-B		110.6			
"		" , KAI-M, #1211-M		110.6			
"		" , INTALCO, UTLX 650780		110.5			
"		" , KAI-M, #1214-B		110.6			
"		" , KAI-T, #1218-B		110.6			
"		" , KAI-M, #1212-M		110.6			
"		" , INTALCO, UTLX 650777		110.6			
2/16/96		" , KAI-T, #1225-B		110.5			
"		" , KAI-M, #1223-M		110.5			
"		" , KAI-M, ACPX 72825		108.5			
"		" , KAI-M, #1224-M		110.5			
"		" , KAI-T, #1221-B		110.5			
"		" , KAI-M, ACPX 72824		108.5			
"		" , INTALCO, UTLX650774		109.1			
"		" , KAI-M, #1222-B		110.5			
"		" , INTALCO, UTLX650755		109.1			
2/17/96		" , INTALCO, UTLX 650779		109.1			
"		" , INTALCO, UTLX 650778		109.2			

Koppers005706

2/20/96	Liq. Pitch, INTALCO UTLX 650767	109.5	
2/21/96	" , INTALCO UTLX 650770	109.3	
3/5/96	" " #1277	110.1	
3/6/96	P-1/P-13 To UTLX 6W1996 Sp Gr =	1.0870	% H_2O = 0.44
3/6/96	Liq Pitch Intalco #1285	109.9	
3/6/96	Liq Pitch Blended #96-8	108.6	
3/7/96	P-1/P-13 T-67 Sample #1 H_2O = 8% +		
3/6/96	Liq Pitch Intalco #1286	109.9	
3/6/96	" " " #1287	109.9	
3/6/96	" " " #1288	110.0	
3/6/96	" " " #1289	110.0	
3/6/96	" " " #1290	110.0	
3/7/96	" " " #1294	109.9	
3/7/96	" " " #1295	109.9	
3/8/96	" " " #1296	110.0	
3/8/96	" " " #1305	110.0	
3/11/96	Liq Pitch Intalco #1306	110.6	
3/11/96	" " " #1307	110.6	
3/11/96	" " " #1311	110.6	
3/12/96	" " " #1308	110.9	
3/12/96	" " " #1309	110.9	
3/12/96	" " " #1310	110.9	
3/13/96	" " " #1313	110.9	
3/13/96	" " " #1314	110.9	
3/13/96	" " " #1315	110.9	
3/13/96	Blended Pitch Batch 96-8 Sample 20 "	109.5	
3/14/96	Liq Pitch Intalco #1316	111.3	
3/14/96	Liq Pitch " #1317	111.3	
3/14/96	Liq Pitch " #1318	111.3	
3/			

Koppers005707

3-15-96	P1-P-13 T-67 Batch		96-9
	Sample # 15		
	Sp. Gr. @ 38° =	1.092	
	H_2O =	0.2	
	XI =	.24	
	Dist. 210 =	0	
	235	2.3	
	270	23.6	
	315	45.9	
	355	71.8	
	Sp. Gr. 235-315 =	1.044	
	315-355 =	1.136	
3/15/96	Blended Pitch batch 3 sample 96-8 20-16		109.4
3/18/96	Lig. Pitch Intal Co #1325		110.2
3/18/96	" " " #1326		110.2
3/18/96	" " " #1327		110.2
3/19/96	" " " #1328		110.2
"	" " " #1329		110.2
"	" " " #1330		110.2
3-21-96	To UTEX 78498 H-oil 1331		
	Sp. Gr. = 1.153 @ 38°C		
	H_2O = 0.1		
3-21-96	To RTRK 602 K-15-35 #1332		
	Vis. 50 ML @ 50°C = 26.1		
	Sp. Gr. = 1.186 @ 100 + 38°		
	H_2O = < 0.1		
	Dist. 170 =	0	
	270 =	8.3	
	300 =	13.3	
	CS_2 =	113 / 9.5 ←	

Koppers005708

3/25/96	Liq Pitch Intalco #1335	110.8
3/25/96	" " " #1337	110.8
3/25/96	" " " #1338	110.8
3/25/96	" " " #1339	111.0
3/25/96	" " " #1340	111.0
3/26/96	" " " #1341	111.0
3/26/96	" " " #1344	111.3
3/26/96	" " " #1345	111.3
3/26/96	" " " #1346	111.3
3/26/96	Liq Pitch T-65 Batch 96-11 Sample 21-1	108.9
3/27/96	Liq. Pitch INTALCO #1349	111.5°C
3/27/96	" " " #1350	111.5°C
3/27/96	" " " #1351	111.5°C
3/27/96	T-33 H-OIL SAMPLE #2172	
	SpG = 1.152 @ 38°C	
	H2O = 0.3	
	DIST. = 210° = 0	
	235° = 0	
	270° = 0	
	315° 1.4	
	355 15.9	
	RES — = 83.5	
3/27/96	Liq. Pitch INTALCO 1352	112.2°C
	" " " 1353	112.2°C
	" " " 1354	112.2°C
	" " " 1355	112.2°C
	" " " 1356	112.2°C
	" " " 1357	112.2°C
	" " " 1358	112.2°C
3/28/96	" " " 1359	112.2°C
	" " " 1360	112.2°C
	" " " 1361	112.2°C

3/28/96	Liq Pitch Intalco	1362	112.0°C
	" " "	1363	112.0°C
4-1-96	" " "	1364	110.9°C
	" " "	1365	110.9°C
	" " "	1366	110.9°C
	" " "	1367	110.9°C
4-1-96	" " "	1368	111.0°C
	" " "	1369	111.0°C
	" " "	1370	111.0°C
	" " "	1371	111.0°C
4-2-96	" " "	1372	110.9°C
	" " "	1373	110.9°C
	" " "	1374	110.9°C
	" " "	1375	110.9°C
	" " "	1376	110.9°C
	" " "	1377	110.8
	" " "	1378	110.8
	" " "	1379	110.8
4-3-96	" " "	1381	110.9
	" " "	1382	110.9
	" " "	1383	110.9
	" " "	1384	110.9
	" " "	1386	111.4
	" " "	1387	111.4
4-4-96	" " "	1388	110.7
	" " "	1389	110.7
	" " "	1390	110.7
	" " "	1391	110.7
	" " "	1392	111.4
	" " "	1393	111.4
4-5-96	" " "	1394	110.7
	" " "	1395	110.7
	" " "	1396	110.7

Koppers005710

			S.P.
4-5-96	Liq. Pitch Intalco	1397	110.7
4-8-96	" "	1398	111.1
	" "	1399	111.1
	" "	1400	111.1
	" "	1401	111.6
	" "	1403	111.6
	" "	1404	111.6
	" "	1405	111.3
	" "	1406	111.3
4-9-92	" "	1408	111.3
	" "	1409	110.7
	" "	1410	110.7
	" "	1411	110.7
	" "	1419	111.3
	" "	#1420	111.3
	" "	#1421	111.3
	" "	#1422	111.3
4/10/96	" "	#1423	111.4
	" "	#1424	111.4
	" "	#1425	111.4
	" "	#1426	111.4
4/10/96	Blended Pitch Batch 96-12		108.9 109.1 108.8
4/10/96	Liq Pitch Intalco	#1427	111.2
	Liq Pitch Intalco	#1428	111.2
		#1429	111.2
		#1430	111.2
4/11/96		#1431	111.3
		#1432	111.3
		#1433 1434	111.3 111.3
4/12/96		#1435	111.1
		#1436	111.1
		#1437	111.1
		#1438	111.1

Koppers005711

		S.P.
4-15-96	Liq. Pitch Intaroo # 1441	111.1
	1442	"
	1443	"
	1444	"
	1445	111.3
4-16-96	1446	111.4
	1452	"
	1453	"
	1454	"
4-16-96	P-1/P-13 TC Acct 88789	
	Gravity = 1.093 @ 38°C H2O = 0.4	
4-16-96	Liq. Pitch Intaroo # 1455	111.6
4-17-96	1456	111.7
	1457	"
	1458	"
	1459	"
4/17/96	Blended Pitch batch 96-13	108.9
4/17/96	Liq Pitch Intaroo # 1460	111.3
4/18/96	" " " # 1461	111.3
4/18/96	" " " # 1462	111.3
4/18/96	" " " # 1463	111.3
4/18/96	" " " # 1464	111.3
4-18-96	P-1/P-13 T-67 # 24-2 Batch # 96-14	
	Gravity = 1.094 @ 38°	
	H2O = 0.1	
	Dist. 210 = 0	
	235 = 1.2	
	270 = 18.4	
	315 = 44.2	
	355 = 69.6	
	S.P. Gr. 215-235 = 1.0445 @ 38°C	
	XI = .34	

Koppers005712

			S.P.	
4-19-96		Liq. Pitch Intalco # 1465	111.4	
		1466	11	
		1467	11	
		1468	11	
		1469	110.5	
4/22/96		11 11 11 # 1470	110.4	
4/22/96		11 11 11 # 1471	110.4	
4/22/96		11 11 11 # 1472	110.4	
4/22/96		11 11 11 # 1473	110.4	
11		# 1475	110.6	
4/23/96		# 1476	11	
		# 1477	11	
		# 1478	11	
		# 1479	11	
		# 1480	11	
4/24/96		# 1481	110.1	
		# 1482	11	
		# 1483	11	
		# 1484	11	
4/24/96		Blended Pitch Batch 96-15	109.0	109.1
4/24/96		Liq Pitch Intalco # 1485	110.9	
4/25/96		11 11 11 # 1486	110.9	
4/25/96		11 11 11 # 1487	110.9	
4/25/96		11 11 11 # 1488	110.9	
4/25/96		11 11 11 # 1489	110.9	
4/25/96		11 11 11 # 1491	111.5	
4/26/96		11 11 11 # 1492	111.4	
4/26/96		11 11 11 # 1493	111.4	
4/26/96		11 11 11 # 1494	111.4	
4/26/96		11 11 11 # 1495	109.8	
4/29/96		11 11 11 # 1496	110.4	
4/29/96		11 11 11 # 1497	110.4	
4/29/96		11 11 11 # 1498	110.4	

Koppers005713

4/29/96	Liq Pitch Intalco #1499	110.4
" "	" " 1500	110.8
4/30/96	" " 1505	110.8
	" " 1506	110.8
	" " 1507	110.8
	" " 1508	110.8
4/30/96	" " 1509	111.4
5/1/96	" " #1510	111.4
5/1/96	" " #1511	111.4
5/1/96	" " #1512	111.4
5/1/96	Blended Pitch T-65 B 96-1C	108.9
5/1/96	Liquid Pitch Intalco #1514	110.9
5/2/96	" " " 1513	110.9
5/2/96	" " " 1515	110.9
5/2/96	" " " 1516	110.9
5/2/96	" " " 1517	110.9
5/2/96	" " " 1518	110.9
5/3/96	" " " 1521	111.5
5/3/96	" " " 1522	111.5
5/3/96	" " " 1523	111.5
5/3/96	" " " #1524	109.8
5/6/96	" " " #1529	110.5
5/6/96	" " " #1530	110.5
5/6/96	" " " #1531	110.5
5/6/96	" " " #1532	110.5
5/6/96	" " " #1533	110.1
5/7/96	" " " #1537	110.3
5/7/96	" " " #1538	110.3
5/7/96	" " " #1539	110.3
5/7/96	" " " #1540	110.4
5/7/96	" " " #1543	110.5
5/8/96	BLENDED PITCH T-65 B. 96-18	108.5
5/8/96	INTALCO LIQ. PITCH #1544	110.9

Koppers005714

5/8/96	INTALCO LIQUID PITCH #1545	110.9
"	" " " #1546	111.0
"	" " " #1547	110.9
"	" " " #1548	110.8
5/9/96	LIQ PITCH INTALCO #1555	110.8
"	" " " #1556	111.1
"	" " " #1557	110.8
"	" " " #1558	110.8
"	" " " #1559	110.8
5/10/96	LIQ. PITCH INTALCO #1567	111.3
"	" " " #1568	111.3
"	" " " #1569	111.5
"	" " " #1570	111.3
5/13/96	" " " #1574	110.3
"	" " " #1577	110.2
"	" " " #1578	110.3
"	" " " #1579	110.3
"	" " " #1580	110.5
5/14/96	LIQ PITCH INTALCO #1584	110.6
"	" " " #1586	110.6
"	" " " #1583	110.6
"	" " " #1585	110.6
"	" " " #1587	110.9
5/15/96	" " " #1596	110.6
"	" " " #1597	110.6
"	" " " #1595	110.6
"	" " " #1598	110.6
5-15-96	BLENDED PITCH T-65 b. 96-19	108.3
5-15-96	LIQ. PITCH INTALCO #1599	110.9
5-16-96	#1601	110.9
	#1602	110.9
	#1603	110.9
	#1604	110.9

Koppers005715

5-16-96	L1a Pitch Intalco	#1605		110.8
5-17-96		#1606		110.9
		#1607		110.9
		#1608		110.9
		#1609		110.9
5-20-96		#1616		110.0
		#1617		110.0
		#1618		110.0
		#1619		110.0
		#1620		110.5
		#1621		110.5
5-21-96		#1631		110.4
		#1632		110.4
5-22-96	Blended Pitch T-65 b. 9620			108.6
5-28-96	L1a Pitch Intalco	#1634		111.0
		#1633		111.0
		#1636		111.0
		#1637		111.0
5-28-96	STC blend (refined tar) T-518 b. 96-21 Distillation .5 at 270° H_2O =< .1 Ash = .07			
5-28-96	L1a Pitch Intalco	#1638		110.4
5-29-96		#1639		110.6
		#1640		110.6
		#1641		110.6
		#1642		110.6
		#1644		110.7
5-30-96		#1646		111.0
		#1645		111.0
		#1647		111.0
		#1648		111.0
5-31-96	T-65 Soft. Pt. Sample			110.2

TRUCKLOADS RET'D TO INVENTORY - INTALCO POWER FAILURE... B/L #'S TO BE REVIS

Koppers005716

6-3-96		L19 Pitch Intalco		#1649		110.8		
				#1654		110.8		
				#1647		110.8		
				#1657		110.8		
				#1658		110.5		
				#1659		110.5		
6-4-96				#1660		110.8		
				#1662		110.8		
				#1663		110.8		
				#1661		110.8		
				#1664		110.5		
				#1665		110.5		
6-5-96				#1666		110.8		
				#1667		110.8		
				#1668		110.8		
				#1669		110.8		
				#1671		110.9		
				#1670		110.9		
6-6-96				#1672		110.8		
				#1673		110.8		
				#1674		110.8		
				#1675		110.8		
				#1677		110.9		
				#1676		110.9		
6-7-96				#1678		110.9		
				#1679		110.9		
				#1680		110.9		
				#1681		110.9		
6-10-96				#1683		110.4		
				#1684		110.4		
				#1685		110.4		
				#1686		110.4		
				#1687		110.2		

Koppers005717

6-10-96	L/Q PITCH INTALCO	# 1685	110.2
		# 1695	110.2
6.11.96		# 1696	110.1
		# 1697	110.1
		# 1698	110.1
		# 1699	110.1
		# 1700	110.2
		# 1701	110.2
		# 1702	110.2
6.12		# 1708	110.3
		# 1709	110.3
		# 1710	110.3
		# 1711	110.3
6.12	BLENDED PITCH T-65 6.96-22		108.9
6.12	L/Q PITCH INTALCO	# 1712	110.3
		# 1713	110.3
		# 1714	110.3
6.13		# 1719	110.5
		# 1720	110.5
		# 1721	110.5
		# 1722	110.5
		# 1723	110.6
		# 1724	110.6
		# 1725	110.6
6.14		# 1734	110.3
		# 1733	110.3
		# 1735	110.3
		# 1736	110.3
		# 1739	110.3
		# 1740	110.3
6.17		1741	110.4
		1746	110.4
		1747	110.4

Koppers005718

6.17.96	LIQ PITCH INTALCO	#1748	110.4
		#1750	110.3
		#1749	110.3
		#1751	110.3
6.18		#1754	110.5
		#1756	110.5
		#1753	110.5
		#1755	110.5
6.18	KOREAN PENCIL PITCH 6.96-23 "A"		
	QI = 8.8 (A)	8.95 (B)	9.6 (C)
	TI = 26.6	27.4	26.8
	CVC = 56.5	57.05	57
	SPEC. GR. = 1.32	1.33	1.32
	SOFT PT. = 109.7	109.2	109.2
	Ash = .13	.12	.12
	DIST. =		
6.18	LIQ PITCH INTALCO	#1757	110.5
		#1758	110.5
		#1759	110.5
6.19		#1762	110.6
		#1763	110.6
		#1764	110.6
		#1765	110.6
		#1766	110.4
		#1768	110.4
		#1767	110.4
6.20		#1772	110.2
		#1771	110.2
		#1773	110.2
		#1774	110.2
		1775	110.1
		1776	110.1

Koppers005719

6-20-96	BLENDED PITCH: T-65 b. 96-24					
	(A) QI = 7.87	(B) 7.8				
	TI = 24.4	24.01				
	CVC = 56.1	55.6				
	Sp. Grav = 1.32	1.32				
	Soft. Pt = 108.9	109.1				
	Ash =	.15				
	Dist. =	2.8				
6-21-96	Liq Pitch Intalco	# 1777		110.7		
		1778		110.7		
		1779		110.7		
		1780		110.7		
		1781		110.9		
		1782		110.7		
		1783		110.7		
6.24		1784		110.4		
		1786		110.4		
		1787		110.4		
		1788		110.4		
		1789		110.4		
		1790		110.4		
		1791		110.4		
6/25		1796		110.7		
		1794		110.7		
		1795		110.7		
		1792		110.7		
		1797		110.4		
		1798		110.4		
		1799		110.4		
6.26		1801		110.2		
		1802		110.2		
		1803		110.2		

Koppers005720

6-26	LLA Pitch Intalled	1804	110.2
		1805	110.2
		1806	110.2
		1807	110.2
6-27		1809	110.7
		1810	110.7
		1811	110.7
		1812	110.7
		1813	110.7
		1814	110.7
		1815	110.7
		186	110.7
6/28		1817	110.7
		1818	110.7
		1819	110.7
		1820	110.2
		1821	110.2
		1822	110.2
7-1-96		1824	110.4
		1825	110.4
		1826	110.4
		1827	110.4
		1828	110.4
		1829	110.4
1.2		1830	110.3
		1831	110.3
		1832	110.3
		1833	110.3
		1834	110.3
		1835	110.3
7.3		1836	110.4
		1838	110.4
		1839	110.4

Koppers005721

7.3.96	LIQ PITCH / NTALCO:	1840	110.8
		1841	110.8
		1842	110.8
7.8.96		1845	111.0
		1846	111.0
		1847	111.0
		1848	111.0
		1850	111.0
		1851	111.0
7.9		1852	111.0
		1855	111.0
		1856	111.0
		1857	111.0
		1862	110.9
		1863	110.9
		1864	110.9
7.10		1869	110.6
		1870	110.6
		1871	110.6
		1872	110.6
		1877	111.2
		1878	111.2
		1879	111.2
7.11		1884	111.2
		1885	111.2
		1886	111.2
		7887	110.8
		1889	110.8
		1890	110.8
		1891	110.8
7.12		1896	111.0
		1897	111.0
		1898	111.0
		1899	111.0

Koppers005722

7-10-96	P1/P13 T-67 Batch 96-25		H_2O =	.4	
	210° = 0 235° = 1.0		XI =	.4	
	270° = 14.4 315° = 40.9		Sp. G =	1.091	
	355° = 69		Dist =		
7-12-96	T-65 →		109.4	109.3	
7.12.96	Liq Pitch Intalco	1900	111.4		
		1901	111.4		
		1902	111.4		
7.29	Liq Pitch Intalco	1920	110.2		
		1921	110.2		
		1922	110.2		
		1923	110.2		
		1924	110.4		
7.30		1930	110.8		
		1931	110.8		
		1932	110.8		
		1933	110.8		
		1934	110.8		
7.31		1936	110.2		
		1937	110.2		
		1938	110.2		
		1939	110.2		
		1940	110.5		
7.31	Chinese Pencil / Plant Sample		Moisture Content	.55	
	NP. 75343			.8	.975
	NP 75301			1.3	↓ Avrg.
	CB&Q 85194			1.25	
	Chinese Pencil "Kuanyin" b. 96-26		Soft. Pt	110.2	110.0
			QI	3.42	(P)
Dist:	.1		TI	20.1	17.7
	3.9		Ash	.11	
			Cvc	53.5	53.3
			Spec Gr.	1.31	

Koppers005723

7-31-96	BLENDED PITCH b. 96-27		Soft. Pt		108.4 108.4
				QI	8.5
DIST:	360 = 2.7			TI	26.1
	OVER = 1.3			ASH	.12
				CVC	56.9
				Sp. gr	1.31
8-1-96	LIQ PITCH INTALCO	1941	110.8		7
		1942	110.8		
		1943	110.8		
		1944	110.8		
		1945	109.7		
8-1-96	GN 71516		1.1		
	NP 75330		.7		.808
	BN 419561		1.0		
	SLSF 82301		.85		
	BN 419375		.5		✓
	CBIQ 86194		.7		AVG.
8-5-96	LIQ PITCH INTALCO	1956	110.2	96-27	
		1957	110.2		
		1958	110.2		
		1959	110.2		
		1960	110.2		
8-6-96		1963	110.2		
		1964	110.2		
		1965	110.2		
		1966	110.2		
		1967	110.4		
8-7-96		1968	110.7		
		1969	110.7		
		1970	110.7		
		1971	110.7		
		1972	110.1		

Koppers005724

8-7-96 BLENDED PITCH T-65/96-28

DIST: 300° = Ø
360° = 2
OVER = 1.5

8-8-96 LIQ PITCH INTAKED

1973	110.4
1974	110.4
1975	110.4
1976	110.4
1977	110.7
1980	110.4
1981	110.4
1982	110.4
1983	110.4
1984	109.9
1986	110.6
1987	110.6
1988	110.6
1989	110.6
1990	110.6
1991	110.9
1992	110.9
1993	110.9
1994	110.9
1995	110.9

96-28

8-12-96

8-14

8-14 BLENDED PITCH b. 96-29

DIST: 300° Ø
360° 1.9
OVR 1.3
Res. 99.2

SFT pt	108.3	108.5
QI	8.6	
Ti	27.5	
ASH	.12	
CVC	56.3	
SP.gr.	1.33	

QI	8.5
TI	26.1
BR.	17.6
ASH	.13
CVC	56.9
S.G.	1.32
S.Pt.	109.3 109.3

Koppers005725

8-15-96	Liq Pitch Intalco	1999		110.1		
		2000		110.1		
		2001		110.1		
		2002		110.1		
		2003		110.3		
8-19		2006		110.9		
		2007		110.9		
		2008		110.9		
		2009		110.9		
		2010		111.0		
8-20		2014		110.8		
		2015		110.8		
		2016		110.8		
		2017		110.8		
		2018		110.9		
8-20	P1/P13 Creo TLDX 223000	Batch	96-30			
					H_2O	.7
8-21	P1/P13 Creo T-67	Batch	96-30			
	Dist: 210 .3				H_2O	.35 - (.4)
	235 3				Sp gr.	1.092
	270 15.8				XI	.29
	315 42.2					
	355 68.7					
8-21	NETX 18817 - Heavy Oil				H_2O	.3
8-21	Liq Pitch - Intalco	2019		111.		
		2020		111.		
		2021		111.		
		2022		111.		
		2023		110.7		

Koppers005726

8-21-96	BLENDED PITCH T-65 ~~batch~~		Sp. Pt.	109.3	108.1	ASH	.13
	DIST: 300 - 0		QI	8.6		CVC	56.4
	300 2.6		TI	29.1	26.4	Sp. Gr.	1.33
	RES: 99.8		BR	20.5			
		96-31					
8-22	LIQ PITCH INTALCO	2025		111.			
		2026		111.			
		2027		111.			
		2028		111.			
		2029		110.5			
8-23		2030		110.1			
		2031		110.1			
		2032		110.1			
		2033		110.1			
		2034		110.2			
8-26		2037		110.2			
		2038		110.2			
		2039		110.2			
		2041		110.2			
		2040		110.4			
8-27		2042		110.5			
		2043		110.5			
		2044		110.5			
		2045		110.5			
8-27	HEAVY OIL / T-31	96-32					
	DIST: 270 = .4			Sp. grav =		1.56	
	300 = 2.4	RES = 84.6					
	355 = 14.6	TOTAL = 99.2					
8-27	LIQ PITCH Intalco	2046		110.6			
8-27	K-364 / STC BLEND	96-34		H_2O		7.1	
				R&B		42	41.5
	DIST 0-270 = 1.2			ASH		.09	
				FLOAT		137 SEC	[illegible]
						1 min 17 sec	[illegible]

8-28	Liq Pitch Intalco	2047	110.6	"		
		2048	110.6			
		2049	110.6			
		2050	110.6			
		2051	110.5			
8-28	Blended Pitch F65 ~~96-33~~			S.pt.	109.5	
				QI	8.2 & 8.5	
	Dist: 300 = 0			TI	26.5	
	360 = 2.6			BR	18	
	Res = 99.5			Ash	.13	
				CVC	56.6	
				S.gr.	1.33	
8-29	Liq Pitch Intalco	2052	110.5			
		2053	110.5			
		2054	110.5			
		2055	110.5 →		96-33	
		2056	110.1			
8-30		2057	110.5			
		2058	110.5			
		2059	110.5			
		2060	110.5			
		2061	110.6			
9/3		2065	110.9			
		2066	110.9			
		2067	110.9			
		2068	110.9			
		2072	110.7			
9-4		2077	110.9			
		2078	110.9			
		2079	110.9			
		2080	110.9			
		2081	111.1			

Koppers005728

9.4	LIQ PITCH/BLEND 96-35		sf Rf.	108.4	Ash .13	
	DIST: 300 D		QI	8.4	CVC 56.7	
	360 2.4		TI	26.4	sp. grav 1.33	
	OVER -2.4 RES: 99.7		BR	18		
9.5	LIQ PITCH INTALCO 2082		111.1			
		2083	111.1			
		2084	111.1			
		2085	111.1			
	~~Batch 96-35~~	~~2086~~	111 0.3			
1.6	X	2087	110.3			
		2088	110.3			
		2089	110.3			
		2090	110.3			
		2091	110.3			
9.9		2093	110.2			
		2094	110.2			
		2095	110.2			
		2096	110.2			
		2097	110.2			
		2098	110.4			
9/10		2101	110.0			
		2102	110.0			
		2103	110.0			
		2104	110.0			
		2105	110.3			
		2106	110.3			
9.11		2107	110.3			
		2108	110.3			
		2109	110.3			
		2110	110.3			
		2111	110.4			
		2112	110.4			

Koppers005729

9.11.96	BLENDED PITCH T-65			96-36		ASH	.12
	DIST: 300: 0			Q1	8.4	Sf PH.	108.8
	360: 2.			T1	96.5	CVC	56.8
	OVER: 4.5	Res:	99.4	BR	18.1	Sp. grav.	1.33
9.12	Liq Pitch Intake	2118		110.6			
		2119		110.6			
		2120		110.6			
		2121		110.6			
	96-36	2122		110.			
		2123		110.			
9.13		2125		110.1			
		2126		110.1			
		2127		110.1			
		2128		110.1			
		2129		110.			
		2130		110.			
9.16		2132		110.3			
		2133		110.3			
		2134		110.3			
		2135		110.3			
		2136		110.3			
		2137		110.3			
9.17		2140		110.3			
		2141		110.3			
		2142		110.3			
		2143		110.3			
		2144		110.1			
		2145		110.1			
9.18		2146		110.3			
		2147		110.3			
		2148		110.3			
		2149		110.3			
		2150		110.4			
		2151		110.4			

Koppers005730

9.18.96	BLENDED PITCH 96-37	QI	8.7		ASH	.14
	DIST: 300 0	TI	26.2		CVC	57.2
	360 2.5	BR	17.5		sp. grav	1.33
	over 2.2 Res. 99.7				sf pt	108.9
			(96-37)			
9.19	LIQ + PITCH Intake	2153	110.7			
		2154	110.7			
		2155	110.7			
		2156	110.7			
		2157	110.7			
		2158	110.7			
9.20		2161	110.3			
		2162	110.3			
		2163	110.3			
		2164	110.3			
		2165	110.3			
		2166	110.3		wk	
9.23		2167	110.7			
		2168	110.7			
		2169	110.7			
		2170	110.5			
		2171	110.5			
		2172	110.5			
9.24		2177	110.6			
		2178	110.6			
		2179	110.6			
		2180	110.6			
		2181	110.6			
		2182	110.6			
9.25		2183	110.5			
		2184	110.5			
		2185	110.5			
		2186	110.5			

Koppers005731

9·25		Liq Pitch Intalco	2187		110.5			
1		1	2188		110.5			
9·23·96		Korean Pencil "Ocean Duke"		A	QI	8.6	Ash	.12
		Dist: 300 ⊖			TI	29.9	CVC	58
		360 3.1			BR	19.9	sp. grav	1.32
		over 5.2 Res: 99.4			sft pt	110.8		
96-38		"Ocean Duke"		B	QI	9.2	Ash	.11
A, B, C		Dist: 300 ⊖			TI	28	CVC	58.8
		360 1.4			BR	18.8	sp. grav	1.33
		over 4. Res: 99.6			sft. pt	110.9		
		"Ocean Duke"		C	QI	9.3	Ash	.12
		Dist: 300 ⊖			TI	27.6	CVC	60
		360 2.9			BR	19.4	sp. grav	1.32
		over 5. Res: 99.4			sft. pt	111.4		
9.25		Blended Pitch T-65 96-39			QI	8.5	Ash	.13
		Dist 300 ⊖			TI	27	CVC	57
		360 2.4			BR	18.5	sp. grav	1.33
		over 2.2 Res: 99.3			s. pt.	108.8		
9.26		Liq Pitch Intalco	2192	110.9				
			2193	110.9				
			2194	110.9				
			2195	110.9	96-39			
			2196	110.1				
			2197	110.1				
9.27			2198	110.5				
			2199	110.5				
			2200	110.5				
			2201	110.5				

Koppers005732

9.27		LIQ Pitch Intelco	2202		110.5				
			2203		110.5				
9.30	25		2206		110.6				
			2207		110.6				
			2208		110.6				
			2209		110.6				
			2210		1106				
10.1			2213		110.7				
			2214		110.7				
			2215		110.7				
			2216		110.7				
			2217		110.7				
10.2			2218		110.9				
			2219		110.9				
			2220		110.9				
			2221		111.				
			2222		111.				
10.2		BLENDED PITCH T-65 96-40		s.pt.	109	108.8	ASH	.12	
		DIST: 300		QI	8.5		CVC	58	
		360 2.8		TI	26.2		sp. gr.	1.323	
		OVER 2.1 RES: 99.5		B.P.	17.7				
		(4.9)							
10.2		KOREAN PENCIL "OCEAN DUKE" Retest "A" 96-38 CVC=58							
		DIST 300		g.Pt.	110.4	B.P.	18.8		
		360 2.7		QI	8.8	ASH	.12		
		over 2. Res: 99.6		TI	27.6	Sp.gr.	1.325		
		(4.7)							
10.3		LIQ PITCH INTALCO	2224		110.6				
			2225		110.6				
			2226		110.6				
			2227		110.6				
			2228		110.6				

Koppers005733

96-40

10.4		Lig Pitch Intalco	2231		109.9			
			2232		109.9			
			2233		109.9			
			2234		110.			
			2235		110.			
10.7			2236		110.1			
			2237		110.1			
			2238		110.1			
			2239		110.1			
			2240		110.3			
10.8			2244		110.6			
			2245		110.6			
			2246		110.6			
			2247		110.6			
			2248		110.6			
10.9			2251		110.5			
			2252		110.5			
			2253		110.5			
			2254		110.5			
			2255		110.5			
10.9		Blended Pitch T-65 96-41			s.pt.	108.8	Ash	.12
		Dist: 300			Q1	8.3	CVC	58
		360 2.7			T1	26.5	Sp. grav.	1.325
		over Res.			B12	18.2		
10.9	X	650 845 Tank Car			108.7			
	XX	650 819 Tank Car			108.6			
		650 895 Tank Car			108.7			
10.10		Lig Pitch Intalco	2259		110.9			
			2260		110.9			
			2261		110.9		96-41	
			2262		110.9			
			2263		109.8			

Koppers005734

11	LIQ PITCH INTALCO	2265		109.4			
		2266		109.4			
		2267		109.4			
		2268		109.4			
		2269		109.4			
14		2273		110.3			
		2274		110.3			
		2275		110.3			
		2276		110.3			
		2277		110.3			
15		2278		110.6			
		2279		110.6			
		2281		110.6			
		2281		110.6			
		2282		110.6			
16		2283		111.0			
		2284		111.0			
		2285		111.0			
		2286		110.7			
		2287		110.7			
16	BLENDED PITCH T-65 96-42		pt.	108.8		ASH	.12
	DIST: 300 ø		G1	8.4		CVC	57
	360 2.9		T1	26.5		S. grav.	1.33
	OVER: 2.4 Res: 99.4		BR	18.1			
	+2.9 = 5.3						
16	Tank Car 650 836 UTLX			109.4			
	UTLX 650 896			109.7			
	UTLX 650 846			108.8			
17	LIQ PITCH INTALCO	2291		110.6			
		2292		110.6			
		2293		110.6			
		2294		110.6			96-42
		2295		110.			

Koppers005735

10.18	LIQ PITCH Intalco	2298		109.6				
		2299		109.6				
		2300		109.6				
		2301		110.				
		2302		110.				
10.18	R/P13 T-67 96-43		H_2O	.3		X1	.27	
	DIST 210° ⊖		Sp.gr	1.0926				
	235° = 2.5 270° = 12.5							
	315° = 41.6 355° = 68.9			RES: 29.4				
10.21	LIQ PITCH Intalco	2303		110.3				
		2304		110.3				
		2305		110.3				
		2306		110.3				
10.22		2309		110.3				
		2310		110.3				
		2311		110.3				
		2312		110.3				
10.23		2313		110.3				
		2314		110.3				
		2315		110.3				
		2316		110.3				
10.23	BLENDED PITCH T-65 96-44		spt	108.5 108.7	ASH	.13		
	DIST: 300° ⊖		QI	8.3	CVC	56.4		
	360° ⊖		TI	26.7	sp grav	1.33		
	OVER RES:		BI2	18.4				
10.24	LIQ PITCH INTALCO	2317		110.6				
		2320		110.6				
		2321		110.6				96-44
		2322		110.2				
10.25		2323		110.4				
		2324		110.4				
		2325		110.4				
		2326		110.4				

Koppers005736

10.28	Liq Pitch Intalco	2328	110.				
		2329	110.				
		2330	110.				
10.29		2332	110.				
		2333	110.				
		2334	110.				
10.30		2335	110.1				
		2336	110.2				
		2337	110.2				
10.31		2338	110.2				
		2339	110.2				
		2340	110.2				
11.1		2341	110.5				
		2342	110.5				
		2343	110.5				
11.4		2344	110.9				
		2345	110.9				
		2346	110.9				
11.5		2348	111.1				
		2349	111.1				
		2350	111.1				
11.5	Blended Pitch T-65 96-45		spt.	108.8	ash	.13	
	Dist: 300 - 2		Q1	8.5	CVC	56.2	
	360 2.8 2.6+.2		T1	26.5	sp. grav	1.31	
	over 2 1.8 Res: 99.4		BR	18			
11.5	UTLX 650899 Liq Pitch → Alcoa		108.9	96-45			
11.6	Liq Pitch Intalco	2251	110.9				
		2252	110.9				
		2253	110.9				
11.6	UTLX 650814 Liq Pitch Alcoa		109.2				
	UTLX 650847 Liq Pitch Alcoa		109.6				
	UTLX 650842 Liq Pitch		109.	96-45			
	UTLX 650829 Liq Pitch		109.				
11.7	UTLX 650897 Liq Pitch		109.8				

11.7	Liq Pitch Intalco	2355		110.9				
		2356		110.9				
		2357		110.9		9645		
11.8		2358		110.2				
		2359		110.2				
		2360		110.2				
	No Shipments to Intalco 11/11-11/15							
11.18	Liq Pitch Intalco	2372		110.8				
		2373		110.8				
		2374		110.8				
		2375		110.8				
		2376		110.8				
11.19		2389		110.4				
		2390		110.4				
		2391		110.4				
		2392		110.9				
11.19	Blended Pitch T-65 96-48		spt	108.3	108.5	Ash	.13	
	Dist 300: 0		Q1	83		cvc	57.0	
	360: 2.9		T1	26.1		sp grav	1.32	
	Over 2.=4.9 Res 99.7		BR	17.8				
11.19	Tank Car Vanalco Composite 96-47 (A)		spt.	110.3		Ash	.08	
	Dist 300: 0		Q1	3.0		cvc	53.4	
	360: 3.5		T1	17.9		sp grav:	1.315	
	Over: 3.5+2.3 5.8 Res=99.6		BR	14.9				
11.19	Chinese Pitch "Cape Confidence" 96-46 (A)		sp			Ash		
	Dist 300		Q1			cvc		
	360		T1			sp gr		
	Over Res.		BR					
11.20	Liq Pitch Intalco	2393		111.				
		2403		111.				
		2404		111.				
		2405		111.				

Koppers005738

11.20	COMPOSITE VANALCO CARS 96-47B		SP	110.1	MS H.	.08
	DIST 300 ~~0~~		Q1	3.1	CVC	51.8
	360 ~~3.3~~		T1	18.2	Sp grav	1.310
	OVER 3.3+2 Res: 99.6		BR	15.1		
	5.3					
11.21	LIQ PITCH INTALCO	2406		111.3		
		2407		111.3		
		2428		111.3		
		2429		111.1		
11.21	LIQ PITCH ALCOA UTLX650837			108.6		
		898		108.6		
		895		108.2		96-48
		819		108.4		
		845		109.		
		876		108.9		
11.21	LIQ PITCH Intalco	2410		111.0		96-48
11.22	LIQ PITCH INTALCO	2436		110.4		
		2431		110.4		
		2432		110.4		
		2408		110.2		
		2409		110.2		
		2434		110.2		
		2433		110.2		
11.22	VANALCO RAIL CARS H_2O					
96-47A	NP 75619	1.0				
	NP 75320	.8				
	TBN 419561	.7				
	BN 438033	1.2				
	GN 71512	1.2				
	GN 71578	.9				
96-47B	GN 71536	1.3	BN 419377	1.4		
	GN 71548	1.4	BN 419375	1.2		
	GN 71564	.2	CB&Q 85159	.3		

Koppers005739

11.25	LIQ. PITCH INTALCO	2437	110.6	
		2438	110.6	
		2439	110.6	
		2440	110.6	
11.26		2441	110.7	
		2444	110.7	
		2445	110.7	
		2446	110.7	
		2447	110.6	
		2448	110.6	
11.27		2449	110.5	
		2450	110.5	
		2451	110.5	
		2452	110.5	
12.2		2453	111	
		2454	111	
		2455	111	
		2456	111	
		2457	111	
		2458	111	
12.3		2459	111	
		2460	111.	
		2461	111	
		2462	111.2	
		2463	111.2	
		2464	111.2	
12.4		2465	111.5	
		2466	111.5	
		2467	111.5	
		2468	111.5	
		2469	111.4	
		2470	111.4	

Koppers005740

12.4	BLENDED PITCH T-65 96-49		spt	109.2	ASH	413
	DIST: 300 0		Q1	8.3	CVC	57.5
	355 1. 360 2.2		T1	27	s grav	1.323
	OVER 2 HRS: 99.6		BR	18.7		
	← ALSO: 876			108.9		
12.5	ALCOA-WEN UTLX 650	842		109,3		
		846		109.5		
		836		109.6	96-49	
12.6		824		109.5		
		832		109.3		
		829		109.6		
12.5	LIQ PITCH INTALCO	2474		110.9		
		2475		110.9		
		2476		110.9		
		2477		110.9		
		2478		110.5		
		2479		110.5		
12.6		2480		110.2		
		2481		110.2		
		2482		110.2		
		2483		110.4		
		2484		110.4		
		2485		110.4		
12.9		2494		110.9		
		2495		110.9		
		2496		110.9		
		2497		110.9	96-50	
12.10		2498		110,3		
		2499		110,3		
		2500		110.3		
		2501		110.3		
		2502		110.1		

Koppers005741

12.11		BLENDED PITCH T65/68 96-50		S.pt	109.9	ASH	.13
		DIST 300 : 0		Q1	8.2	CVC	57.7
		Res = 99.6 355 : 1.		T1	26.3	S. grav	1.319
		360 : 2.2 OVER 2		BR	18.1		
12.11		LIQ PITCH INTALCO	2507	109.7			
			2508	109.7			
			2509	109.7			
			2510	109.7			
			2511	109.9			
12.12			2512	109.9			
			2513	109.9			
			2514	109.9			
			2515	109.9			
			2516	110.0			
12.13			2519	110.5			
			2520	110.5			
			2521	110.5			
			2522	110.5			
			2523	110.4			
12.16			2525	110.8			
			2526	110.8			
			2527	110.8			
			2528	110.8			
			2529	110.9			
			2530	110.9			
12.17			2535	110.9			
			2536	110.9			
			2537	110.9			
			2538	110.9			
			2539	111.1			
			2540	111.1			

12.18	BLENDED PITCH T-65 96-51			spt	108.8	
	DIST 300Ø 355-.7		Q1	8.6	ASH	.12
	Res: 99.7 360 2.3 over=3.3		T1	27.1	CVC	57.6
			BR	18.5	sapar	1.32
12.18	LIQ PITCH Intalco	2543	111.1			
		2544	111.1			
		2545	111.1			
		2546	111.1			
		2547	111.1			
		2548	111.1			
12.17	ALCOA →	853 →	108.9	96-51		
12.16	LIQ PITCH ALCOA	UTLX650823.	109.1			
		826	109.3			
12.17		814	108.8			
12.19		847	109.1			
19		899	109.			
12.17		~~897~~	REPAIR Needed			
12.19		817	109.			
				96-51		
12.19	LIQ PITCH INTALCO	2553	110.			
		2554	110.			
		2555	110.			
		2556	110.			
		2557	110.2			
		2558	110.2			
FRI 12.20		2559	110.4			
		2560	110.4			
		2561	110.4			
		2562	110.5			
		2563	110.5			
		2564	110.5			

1.3.97	LIQ. PITCH INTALCO	2572		110.9		
		2573		110.9		
		2574		110.9		
		2575		110.9		
1.6.97		2578		110.8		
		2579		110.8		
		2580		110.8		
		2581		110.8		
		2582		110.7		
		2583		110.7		
1.7.97		2588		111.1		
		2589		111.1		
		2590		111.1		
		2591		111.2		
		2592		111.2		
		2593		111.2		
1.6.97	KOREAN PENCIL PITCH "PAN HOPE"		97-1 A		ASH	.12
	DIST: 300 0		SPT	110.2	CVC	58.1
	360 2.		Q1	9.1	SP GRAV	1.320
	OVER RES:		T1	28	Beta	18.9
1.8.97	97-1 B		SPT	110.1	ASH	.12
	DIST: 300 .2		Q1	8.9	CVC	57.4
	360 2.1		T1	28.1	S GRAV	1.319
	OVER		Beta	19.2		
1.7.97	BLENDED PITCH T-65 97-2				ASH	.12
	DIST: 300		SPT	108.9	CVC	57.3
	* 355 1.2		Q1	8.2	S GRAV	1.326
	360 2.5		T1	26.4	Beta	18.2
	OVER					

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1.8.97	Lia Pitch Intalco	2598		111.3		
		2599		111.3		
		2600		111.3		
		2601		111.3		
		2602		111.3		
		2603		111.3		
1.8	ALCOA	UTLX650845		109.		
		895				
1.9	Korean Pencil "Pan Hope" 97-1 C		spt	110.5	ASH	.12
	D.57 300 Q		Q1	8.9	CVC	57.3
	360 P.9		T1	27.9	S grav	1.32
	over Rev		B/2	19		
1.9	Lia Pitch Intalco	2610		110.1		
		2611		110.1		
		2612		110.1		
		2613		110.1		
		2614		110.		
		2615		110.		
1.10		2621		110.1		
		2622		110.1		
		2623		110.1		
		2624		110.1		
		2625		110.2		
		2626		110.2		
1.13		2639		110.5		
		2640		110.5		
		2641		110.5		
		2642		110.5		
		2643		110.5		
		2644		110.5		

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1.14		2648	111				
		2649	111				
		2650	111				
		2651	110.9				
		2652	110.9				
		2653	110.9				
1.15		2655	111.3				
		2656	111.3				
		2657	111.3				
		2658	111.3				
		2659	111.				
		2660	111.				
1.15	BLENDED PITCH T-65 973		spt.	108.4	Ash	.12	
	DIST: 300 0		Q1	8.5	CVC	57.8	
	355 .8		T1	26.1	sp grav	1.331	
RES	360 2.7 OVER:		BR.	17.6			
1.15	ALCOA-WEN 97-3 LTZX650 832		108.6				
	824		108.7				
1.16	LIQ PITCH INTALCO 2666		111.				
	2667		111.				
	2668		111.				
	2669		111.	97-3			
	2670		110.5				
	2671		110.5				
1.17	2672		110.1				
	2673		110.1				
	2674		110.1				
	2675		110.1				
	2676		109.7				
	2677		109.7				

1.20	LIQ PITCH INTALCO	2678		110.5			
		2679		110.5			
		2680		110.5			
		2681		110.5			
		2682		110.6			
		2683		110.6		97-5	
1.21		2684		110.2			
		2685		110.2			
		2686		110.2			
		2687		110.4			
		2688		110.4			
		2689		110.4			
1.21	ALCOA-WEN 97-5 UTLX650	826		108.9	→ stripped		
1	1 1 1	836		109.1	1/22		
1.22	BLENDED PITCH T-65 97-5		cpt	108.4	ASH	.12	
	DIST 300		Q1	8.1	CVC	57.6	
	355 1.1		T1	26.3	sp.grav	1.321	
	360 B.1		B2	18.2			
1.23	LIQ PITCH INTALCO	2691		110.3			
		2692		110.3			
		2693		110.3			
		2694		110.3			
		2695		110.3			
1.24	STC blend + K.364 97-4		R&B	39°-40°	ASH	.12	
	DIST: @ 270° = .9		H2O	7.1	sgrav	1.264	
1.24	LIQ PITCH INTALCO	2696		110.3			
		2697		110.3			
		2698		110.3			
		2699		110.4			
		2700		110.4			

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1·25	LIQ PITCH INTALCO	2701		110.3			
		2702		110.3			
		2703		110.3			
1·27		2704		110.4			
		2705		110.4			
		2706		110.4			
		2707		110.4			
		2708		110.4			
1·28		2713		110.6			
		2714		110.6			
		2715		110.6			
		2716		110.6			
1·28	BLENDED PITCH T-65 *97-6		spt.	109.2		ASH	.12
	Dist: 300 0'		QI	8.3		CVC	57.6
	355 1.1		TI	27		spgrw	1.326
	360 3.1 O= 4.1		BR	18.7			
1·29	LIQ PITCH INTALCO	2719		111.			
		2720		111.			
		2721		111.2			
		2722		111.2			
		2717		111.			
		2718		111.			
1·29	LIQ PITCH ALCOA 97-6	UTLY650		846	109.5	> 97-6	
	↓ ↓			847	109.6		
				896	109.6		
1·30	LIQ PITCH INTALCO	2723		110.2		97-6	
		2724		110.2			
		2725		110.2			
		2726		110.			
		2727		110.			

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1.30	Liq Pitch Intake	2728		110.			
1.31		2732		109.9			
		2733		109.9			
		2734		109.9			
		2735		109.9			
		2736		109.8			
		2737		109.8			
2.3		2743		109.6			
		2744		109.6			
		2745		109.6			
		2746		109.9			
		2747		109.9			
		2748		109.9			
2.4		2749		110.2			
		2750		110.2			
		2751		110.2			
		2752		110.2			
		2753		110.5			
		2754		110.5			
2.5		2763		110.6			
		2764		110.6			
		2765		110.6			
		2766		110.6			
		2767		110.7			
		2768		110.7			
2.5	Blended Pitch T-65 97-7		spt.	108.4	Ash	.12	
	Dist 300 : 0		Q1	8.1	cvc	57.9	
	355 : .9		T1	27.1	sp grav	1.314	
	360 : 2.0		BR	19			
				→	97-7		
2.6	Liq Pitch Intake	2775		110.1			
		2776		110.1			
		2777		110.1			
		2778		110.			

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2.6		Liq Pitch Intalco	2779		110.2		
			2780		110.2		
2.7			2781		109.8		
			2782		109.8		
			2783		109.8		
			2784		109.8		
			2785		109.8		
			2786		109.8		
2.10			2790		109.6		
			2791		109.6		
			2792		109.6		
			2793		109.6		
			2794		109.7		
			2795		109.7		
2.11			2796		109.7		
			2797		109.7		
			2798		109.7		
			2799		109.7		
			2800		110.1		
			2801		110.1		
2.11		Blended Pitch T-65 97-8		spt	109.1	Ash	.12
		Dist 300 ⊖		Q1	8.1	CVC	57.9
		355 1.3		T1	27.1	sp. gr.	1.328
		360 2.0		BR.	19		
2.12		Liq Pitch Intalco	2802				
			2803				
			2804				
			2805				
			2806				
			2807				

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2.13		Liq Pitch, Intallo	2808		110.1			
			2809		110.1			
			2810		110.1			
	7 Trucks		2811		110.1			
			2812		110.3			
			2813		110.3			
			2817		110.3			
2.14			2818		110.3			
			2819		110.3			
			2820		110.3			
			2821		110.2			
			2822		110.2			
2.18			2825		110.5			
			2826		110.5			
			2827		110.5			
			2828		110.5			
			2829		110.8			
			2830		110.8			
2.19			2831		110.8			
			2832		110.8			
			2833		110.8			
			2834		110.8			
			2835		110.9			
			2836		110.9			
2.20			2837		110.8			
			2838		110.8			
			2839		110.8			
			2840		110.8			
			2841		111.			
			2842		111.			
2.21			2843		111.4			
			2844		111.4			
			2845		111.4			
			2846		111.4			

2.21		Liq. Pitch Intalco 2847		111.3		97-9	
		2848		111.3			
2.24		2851		110.5			
		2852		110.5			
		2853		110.5			
		2854		110			
		2855		110			
		2856		110			
2/25		2857		109.6			
		2858		109.6			
		2859		109.6			
		2860		109.9			
		2861		109.9			
		2862		109.9			
2.26		2863		110.1			
		2864		110.1			
		2865		110.1			
		2866		110.1			
		2867		110.1			
		2868					
2.21		Blended Pitch T-65 97-9	sp	100.4		A&H	.13
		Dist 300	Q1	8.4		CUC	57.5
		355 .9	T1	26.4		s. grav	1.323
		360 2.3	BR	18			
2.25		Liq Pitch. Alcoa WEN UTX650		847		108.4	
2.25		"		846		108.8	
2.24		Liq Pitch Intalco 2869		110.1			
		2870		110.1			
		2871		110.1			
		2872		110.1			
		2873		110.2			
		2874		110.2			

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2.28	LIQ PITCH INTALCO	2879	110.3	
		2880	110.3	
		2881	110.3	
		2582	110.3	
3.3	LIQ PITCH KAISER TACOMA	2885	110.3	
		2886	110.4	
3.3	LIQ PITCH INTALCO	2884	110.3	
		2895	110.3	
3.4	KAISER-LIQ PITCH	2887	110.7	
		2888	110.9	
	INTALCO-LIQ PITCH	2896	110.7	
		2897	110.7	
		2898	110.7	
3.5	KAISER-LIQ PITCH	2912	110.9	
		2913	111.0	
	INTALCO-LIQ PITCH	2899	110.9	
		2900	110.9	
		2901	110.9	
3.6	KAISER - LIQ PITCH	2914	111.	
1	KAISER - LIQ PITCH	2915	111.3	
3.6	INTALCO - LIQ PITCH	2902	111.	
		2903	111.	
		2904	111.	NEW batch 9T-10
3.7	Kaiser - LIQ PITCH	2916	110.6	
		2917	110.4	
	INTALCO-LIQ PITCH	2905	110.6	
		2906	110.6	
		2907	110.6	

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3.6		BLENDED PITCH T-65 97-10	spt	108.7		Ash	.12
		DIST: 300 ∅	Q1	8.2		cvc	56.8
		355 = 2.1	T1	26.1		sgrav	1.319
		360 = 3.4 Res 99.7	BR	17.9			
3.7		P1 / P13 CREO T-67 97-11	H_2O	.3			
		DIST 210 = ∅	X1	.23			
		235 = .7	sgrav	1.1014	@ 38°		
		270 = 11.2 Res = 30.2					
		315 = 40.1					
		355 = 67.1					
3.10		KAISER - LIQ PITCH 2923		110.1			
		2924		110.2			
		INTALCO - LIQ PITCH 2908		110.1			
		2909		110.1			
		2918		110.1			
3.11		KAISER 2925		110.1			
		2926		110.3			
		INTALCO 2919		110.1			
		2920		110.1			
		2921		110.1			
3.12		KAISER 2927		110.2			
		2928		110.3			
		INTALCO 2922		110.2			
		2933		110.2			
		2934		110.2			
3.13		KAISER 2929		110.4			
		2930		110.2			
		INTALCO 2935		110.2			
		2936		110.2			
		2937		110.2			

3.14	KAISER – LIQ PITCH	2931		110.5			
		2932		110.6			
	INTALCO - LIQ PITCH	2938		110.5			
		2939		110.5			
		2940		110.5			
3.17	INTALCO - LIQ PITCH	2945		110.9			
		2946		110.9			
		2947		110.9			
3.18		2948		111.1			
		2949		111.1			
		2950		111.1			
3.19		2951		111.1			
		2952		111.1			
		2953		111.1			
3.20		2954		111.4			
		2955		111.4			
		2956		111.4	HTC got	7.5!	
3.20	BLENDED PITCH T-65 97-12		spot	108.3	ASH	.13	
	DIST 300 — 1		Q1	8.1/8.2	CYC	57.4	
	355 1.6		T1	27.4	S. GRAV	1.322	
	360 2.2		B1R	19.2			
3.20	ALCOA ——	896		109.2			
3.20	ALCOA-WEN. LIQ PITCH UTLX650826			108.8	→ 97-12		
3.20	" " " " UTLX650886			108.9			
3.21	INTALCO LIQ PITCH	2957		111.5			
		2958		111.5			
		2959		111.5			97-10
3.24		2961		110.3			
		2962		110.3			
		2963		110.3			
		2964		110.3			
		2965		110.3			
3.24	ALCOA · WEN UTLX650857			109.1	— 97-12		

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3.25	ALCOA WEN	UTLX 650846		109.6			
	LIQ PITCH	UTLX 650817		109.2			
		UTLX650899		109.1			
3.25	INTALCO - LIQ PITCH	2966		110.5			
		2967		110.5			
		2968		110.5			
		2969		110.5			
		2970		110.5			
3.26	INTALCO - LIQ PITCH	2971		111			
		2972		111			
		2973		111			
		2974		111			
		2975		110.6	← 97-12		
3.26	KOREAN PENCIL PITCH "NEW CONCORD"			97-13A		SP pt	109.4
	DIST 300 .1		Q1	9.1		ASH	.12
	360 2.1		T1	28.4		CVC	58.2
			BR	19.3		Sp gr	1.324
3.27	INTALCO - LIQ PITCH	2976		110.2			
		2977		110.2			
		2978		110.2			
		2979		110.2			
		2980		109.8			
3.31	ALCOA	UTLX 650845		109.1			
		895		109.4			
3.31	INTALCO LIQ PITCH	2995		110.8			
		2996		110.8			
		2997		110.8			
		2998		110.8			
		2999		110.9			
		3003		110.9			

4.1	ALCOA-WEN LIQ PITCH UTLX650		823		109.6	
			842		109.8	
-.1	INTALCO - LIQ PITCH	3004	110.8			
		3005	110.8			
		3006	1108			
		3007	110.8			
		3012	10.8			
4.2		3013	110.9			
		3014	110.9			
		3015	110.9			
		3016	110.9			
		3017	110.9			
		3018	110.9			
	P1 / P13 UTLX 77436 97-14		H2O	.5		
	DIST: 210 = 0		S grav	1.0975		
	235 = .3 270 = 11.2		X1	.27		
	315 = 41.4 355 = 67.6					
	Remain 69.2 Res = 30.5	99.5				
4.2	KOREAN PENCIL "New Concord"	97-13B				
	DIST 300 -		spt	109.8	ASH	.13
	360 1.3		Q1	9.0	CVC	58.4
			T1	28.1	S grav	1.325
			B2	19.1		
4.2	KOREAN PENCIL "New Concord" 97-13C				ASH	.13
	DIST 300 -		spt	109.7	CVC	57.8
	360 1.5		Q1	9.2	S grav	1.325
			T1	28.3		
			B2	19.1		

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4.3	Intalco Liq Pitch -	3020		110.9			
		3021		110.9			
		3022		110.9			
4.4		3023		110.9			
		3024		111			
		3025		111			
		3026		111			
		3027		111			
4.7	Intalco-Liq Pitch-LTI	3034		110.9			
		3035		110.9			
4.8		3036		111.2			
		3037		111.2			
		3038		110.9			
		3039		110.9			
4.9		3040		111.2			
		3041		111.2			
		3042		111.3			
		3043		111.3			
4.10		3044		111.2			
		3045		111.2			
4.11		3046		111.4			
		3047		111.4			
4.10	Blended Pitch T-65 97-16		a				
	Dist 300: 2		spt	108.1		Ash	.13
	355: 2.2		Q1	8.1		QC	57.2
	360: 3.5		TI	26.2		S grav	1.323
			B/2	18.1			
4.10	K-1535 97-15	63-26	Sample #				
	Dist: 170 0	Ryder =		18.26			
	270 8.8	S grav =		1.206			
	300 14.1	CS_2 =		9.9			
		H_2O =		.1			

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4.11	INTALCO - Liq Pitch	3048	110.3	97-16
		3049	110.3	
4.14	ALCOA - Liq Pitch UTLX650898		108.1	
		650824	108.2	
		650839	108.4	
4.14	INTALCO - Liq Pitch	3054	110.5	
		3055	110.5	
		3056	110.6	
		3057	110.6	
4.15		3058	110.7	
		3059	110.7	
4.16		3060	110.8	
		3061	110.8	
4.16	ALCOA-WEN Liq Pitch UTLX650876			109.
4.16	INTALCO - Liq Pitch	3062	110.6	
		3063	110.6	
4.17		3064	110.3	
4.15	ALCOA - Liq Pitch UTLX650852		108.7	
		329	108.6	
4.17	INTALCO - Liq Pitch	3065	110.3	
4.18		3066	110.2	
		3067	110.2	
		3068	110.2	
		3069	110.2	
4.21		3077	110.5	
		3078	110.5	
		3079	110.4	
		3080	110.4	
4.22		3081	110.4	
		3082	110.4	
4.23		3083	110.8	
		3084	110.8	
		3085	111.1	

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4.23	INTALCO - LIQ PITCH	3086		111.1			
		3087		111.2			
		3088		111.2			
4.25		3089		111.2			
		3090		111.2			
		3091		111.2			
		3092		111.2			
4.25	BLENDED PITCH T-65 ~~97-17~~						
	DIST 300 .2		SH	1084		ASH	.13
	355 1.8		Q1	8.4		C.V.C.	56.9
	360 3.3 99.8		TI	26.		S. grav	1.322
			P.L.	17.6			
4.25	ALCOA-LIQ PITCH UTLX650	896		108.3			
		826		108.2			
		832		108.4			
4.29	ALCOA-LIQ PITCH	814		108.7			
		836		108.3			
		823		108.6			
4.28	INTALCO - LIQ PITCH	3098		110.3			
		3099		110.3			
		3100		110.1			
		3101		110.1			
4.29		3102		109.6			
		3103		109.6			
4.30		3104		109.8			
		3105		109.8			
		3106		109.8			
		3107		109.8			
5.1		3108		109.5			
		3109		109.5			
5.2		3110		109.5			
		3111		109.5			

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5.2			3112		109.3		
			3113		109.3		
5.5			3123		109.5		
			3124		109.5		
			3125		109.8		
			3126		109.8		
5.6			3127		109.3		
			3128		109.3		
5.7			3129		109.5		
			3130		109.5		
			3131		109.6		
			3132		109.6		
5.8			3133		109.6		
			3134		109.6		
			3135		109.8		
			3136		109.8		
5.9			3137		109.		
			3138		109.		
5.9		BLENDED PITCH T-65	97-18		on next page		
		DIST: 300		SPT	108.8	CUC	
		355		Q1	8.4	[illegible]	
		360		T1			
				B12			
5.9		ALCOA-WEN	UTLX650845		108.8		
		97-18 Blended Pitch	UTLX650895		109.		
			842		108.8		
			847		108.7		
5.12		Intalco	3141		109.4		
			3142		109.4		
			3143		109.2		
			3144		109.2		

5.9	BLENDED PITCH T-65 97-18		S/t	108.8	ASH	.12
	DIST 300 0		Q1	8.4	CYC	57.5
	355 1.0		T1	26	Sp gr.	1.321
	360 2.8		Bz	17.6		
5.15	STC Blend - ALCATEL 97-19					
	R+B = 42		H2O	.1	ASH	.1
			Sp gr.	1.246	DIST	1.1
5.13	ALCOA 839 10%.9 898 108.4					
5.13	INTALCO	3146	109.5			
		3147	109.5			
5.14		3148	109.8			
		3149	109.8			
		3150	109.6			
		3151	109.6			
5.15		3152	109.8			
		3153	109.8			
5.16		3154	109.9			
		3155	109.9			
		3156	109.8			
		3157	109.8			
5.19		3164	110.2			
		3165	110.2			
		3166	110.3			
		3167	110.3			
5.20		3177	110.2			
		3178	110.3			
5.21		3179	110.1			
		3180	110.1			
		3181	110.4			
		3182	110.4			
5.22		3183	110.6			
		3184	110.6			

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5.23	INTALCO LIQ PITCH	3185		110.4			
		3186		110.4			
		3187		110.4			
		108.7 3188		110.4			
5.16	ALCOA	8961 8761	108.9	829	108.8		
5.23	BLENDED PITCH LT.I. Comp.		spt.	110.		ASH	.12
	DIST: 300 ~~0~~		Q1	8.0		CVC	56.4
	355 .8		T1	26.1		S. grav	1.322
	360 3.3		B12	18.1			
5.25	INTALCO LIQ PITCH	3198		111.			
		3199		111.			
5.28		3200		110.8			
		3201		110.8			
		3202		110.7			
		3203		110.7			
5.28	ALCOA	VTLX650826		108.9		97-20	
		824		108.			
		853		108.6			
5.27	BLENDED PITCH T-65 97-20						
	DIST: 300 ~~0~~		spt	108.7		ASH	.14
	355 2.1		Q1	8.2		CVC	56.7
	360 3.1		T1	26.		S grav	1.325
		1/2 17.8					
5.29	INTALCO LIQ PITCH	3204		110.4			
		3205		110.4			
		3206		110.2			
		3207		110.2			
5.30		3208		110.4			
		3209		110.4			
		~~3210~~		~~110.4~~			
		~~3211~~		~~110.4~~			

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5.30	INTALCO-high Pitch	3215		110.			
		3216		110.			
5.31		3217		110.1			
		3218		110.1			
6-2		3219		110.2			
		3220		110.2			
		3221		110.4			
		3222		110.4			
6-8		3223		110.3			
		3224		110.3			
6.4		3225		110.8			
		3226		110.8			
		3227		110.9			
		3220		110.9			
5.29	"Maritime Faith" Chinese Pencil 97-21A		spt	111.	ASH	.11
	300 .7		Q1	3.8	CVC	53.8
89.07	360 3.5 BR = 13.9		T1	17.7	Sgr.	1.296
6.4	'Maritime Faith 97-21B		spt	110.9	ASH	.10
89.07	300 .2 BR = 14.5		Q1	3.5	CVC	53
	360 2.9		T1	18.	S. grav	1.29
	Maritime Faith 97-21C		spt	109.6	ASH	.11
89.07	300 0		Q1	3.5	CVC	52.3
	360 3.0 BR = 14.6		T1	18.1	S. grav	1.292
	REILLY UTLX650819 LiqPitch		spt			
			Q1		ASH	
	300		T1		CVC	
	360		BR		S. grav	

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6-5	3229		111.0			
	3230		111.			
6-6	3231		111.4			
	3232		111.4			
6-9	3233		111.2			
	3234		11.2			
	3239		111.4			
	3240		111.4			
6-10	3241		111.3			
	3242		111.3			
6-11	3243		111.5			
	3244		111.5			
	3245		111.2			
	3246		111.2			
6-12	3247		111.3			
	3248		111.3			
	3249		111.3			
	3250		111.3		97-22	
6-13	3251		110.2			
	3252		110.2			
6-16	3261		110.4			
	3262		110.4			
6-11-97	BLENDED PITCH T-65 97-22		gpt. 109.1		ASH	.12
	DIST: 300 ø		Q1 8.4		CVC	55.9
	355 .ö		TI 26.1		Sp. gr.	1.324
	360 3.2		Be 17.7			
6-11	ALCOA-WGN LIQ PITCH VTLX650814				108.5	
	(97-22) VTLX650823				108.7	
	VTLX650899				108.7	

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6.12	ALCOA-WEN LiqPitch	UTLX650	842	—	109.4	
1		1	846	—	109.4	
6.16	INTALCO LiqPitch	3263	110.6			
6.16		3264	110.6			
6.17		3265	110.8			
1		3266	110.8			
6-18		3269	111.2			
1		3268	111.2			
6-23		3279	111.4			
		3280	111.4			
		3281	111.2			
		3282	111.2			
6.24		3283	111.3			
		3284	111.3			
6.25		3285	111.3			
		3286	111.3			
		3289	111.4			
		3288	111.4			
6.26		3289	111.1			
1		3290	111.1			
6.27		3291	111.			
		3292	111.			
		3293	110.8			
		3294	110.8			
6.30		3297	110.6			
	(batch 97-23)	3298	110.6			
6.18	ALCOA-WEN-LiqPitch	UTLX650	898	97.2	109.1	
6.25		UTLX650	817		108.7	
			847		109.	
			895		108.8	
6.27			829		108.5	
			876		108.4	
			896		108.7	

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6.30		3299	110.7				
1		3300	110.7				
7.1		3301	110.9				
		3302	110.9				
6.30	BLENDED PITCH T-65 97.23		spt	108.4	ASH	.12	
retest 7.1	DIST 300 ø		Q1	0.0	CVC	56.2	
	355 1.7		T1	26.2	sgravel	1.326	
OVER: 4	360 2.8	Res: 99.9	BR	18.2			
7-1	INTALCO LIQ PITCH	3303	110.4				
7-1		3304	110.4				
7.2		3305	110.4				
1		3306	110.4				
7.3		3307	110.8				
1		3308	110.8				
7.7		3309	110.8				
1		3310	110.8				
7-7		3334	110.9				
7-7		3335	110.9				
7.8		3323	110.8				
7-8		3324	110.8				
7-9		3325	111.1				
1		3326	111.1				
7-10		3327	111.4				
1		3328	111.4		batch	97-24	
7-11		3329	109.8				
1		3330	109.8		new week		
7.14		3331	110.4				
1		3332	110.4				
1		3349	110.1				
1		3350	110.1				
7-15		3351	110.1				
		3352	110.1				

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7-14	Korean Pencil Pitch "Sammi Blonde"				97-26A	
	Dist: 300 ∅	spt	110.0		ASH	.10
	355 1.2	Q1	8.8		CVC	57.5
	360 3.1	T1	26.8		s grav	
		BR	18			
7-15	Korean Pencil Pitch 97-26B				ASH	.11
	Dist: 300 ∅	spt.	110.2		CVC	57.6
	355 1.0	Q1	8.4		s grav	
	360 2.9	T1	27.			
		BR	18.6			
7-16	Korean Pencil 97-26C					
	Dist: 300 ∅	spt			ASH	
	355 1.7	Q1			CVC	57.7
	360 2.1	T1			s grav	S
		BR				
7-15	Liq Pitch Intalco 3353		110.1			
	3354		110.1			
7-16	3355		110.4			
	3356		110.4			
	3357		110.2			
	3358		110.2			
7-17	3359		110.2			
	3360		110.2			
7-18	3361		110.2			
	3362		110.2			
	Blended Pitch T-65 97-24		spt	108.1	ASH	.13
	Dist: 300 ∅		Q1	8.1	CVC	56.3
	355 1.7		T1	26.	s pgrav	1.325
	360 2.8		BRestn	17.9		

7-11		P1/P13 Creo From UTLX 641997 GATX 42145		97-25			
		H2O % .4	X土.[illegible].3				
		Spec. Gr. 1.0901	Dist. 210 0				
		" "	235 3.0				
		" " 235-315 1.046	270 12.1				
		" " 315-355 1.132	315 47.3				
		Res. 24.1	355 77				
7-22		Blended pitch T-65			97-27		
		1st Sample	SoFT 107.8				
7-22		P1/P13 Creo From UTLX 641997 GATX 42145			97-28		
7-21		Blended pitch T-65	SoFT.		97-24		
		Intake	3363		110.5		
		"	64		110.5		
		Kaiser	72		110.1	←	97-27
7-21		"	73		110.1		
7-22		"	74		109.8		
1		"	75		109.8		
7-23		"	76		110.4		
7-23		Kaiser	77		110.4		
7-24			78		110.1		

7-24	Kaiser Blended Pitch	3379		110.1		
7-25	1	80		109.4	Batch # 97-27	
7-25	1	81		110.2	11	
7-21	Intalco	82		110.2	Batch # 97-24	
1		83		110.2		
7-22		84		110.5		
1		85		110.5		
7-23		86		110.5		
		87		110.5		
		88		110.9		
		89		110.9		
7-24		90		110.2		
		91		110.2		
		92		109.8		
7-24		93		109.8		
7-25		94		109.8	Batch # 97-27	
1		95		109.8	NEW WEEK	
7-28	Kaiser	3406		109.8		
	1	07		109.8		
	Intalco	08		109.8		
	1	09		109.5		
		10		109.6		
		11		109.6		
7-31	Blended Pitch T-65 97-30		Spot	109.4	* Ash	1.07
	Dist (300) 0		Q1	8.56	CVC	57.10
	355 .86		T1	26.21	S grav	1.3304
	360 1.26		BL	17.65		
8-1-97	STC Blend 97-29					
7-29	Kaiser	3412		109.5		
	Intalco	3420		109.6		
	11	3421		109.6		
7-30	Kaiser	3413		109.6		
1	11	3415		109.9		

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7-30	INTALCO	3422	109.9	#97-27
"	"	3423	109.9	
7-31	KAISER	3414	109.9	
		3416	109.9	
		3438	110.2	
		3417	110.6	
	INTALCO	3426	110.5	
	"	3427	110.4	
8-1	"	3424	110.6	
	"	3425	110.6	
	KAISER	3418	110.6	
	"	3419	110.6	
8-4	INTALCO	3428	110.9	
	"	3429	110.9	
	KAISER	3437	110.9	
	"	3450	110.1	BATCH #97-30
	INTALCO	3430	109.8	
	"	3431	109.4	
8-5	"	3436	109.4	
	"	3439	109.4	
	KAISER	3451	109.7	
	"	3452	—	
8-6	"	3453	109.4	
	"	3454	109.4	
	INTALCO	3440	109.3	
	"	3441	109.3	
	"	3442	109.3	
	"	3443	109.2	
8-7	"	3444	108.9	
	KAISER	3455	109.0	
	INTALCO	3462	108.9	
	"	3446	110.0	
8/8	"	3447	109.5	

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Liq. Pitch Int. — Kaiser

97-30

QI 8.56 A. .07

8-7 Std 97-3 | H2O 7.25 Ash .009 Dist 170 0 300 6.08 235 0 270 1.6 | Sp.G. 1.2435 R.B. 40-41 | ~~3448~~

8/7		INTALCO	3445	110.7	✓		
			~~3446~~	~~110.0~~			
			47	109.5			
8/8		INTALCO	3448	109.5	✓		
8/11		"	3449	109.1	✓		
8/7		KAISER	3456	109.7	✓		
8/8		"	57	109.0	✓		
"		"	58	109.3	✓		
8-11		Intalco	3464	109.8	✓		
8-11		"	65	109.8	✓		
8-11		"	66	109.8	✓		
8-11		Kaiser	3473	109.8	✓		
8-11		"	74	109.6	✓		
8-12		Intalco	3484	109.8	✓		
8-12		Intalco	85	109.8	✓		
8-12		Kaiser	86	109.5	✓		
8-12		KAISER	87	108.3	✓		
8-12		INTALCO	90	109.8	✓		
8-12		INTALCO	91	109.4	✓	Shower on 14th	
8-12		KAISER	92	109.6	✓		
8-12		KAISER	93	109.9	✓	3186	
8-13		INTALCO	94	109.7	✓		
8-13		INTALCO	95	108.8	✓		
8-13		INTALCO	96	110.2	✓		
8-13		INTALCO	97	109.9	✓		
8-14		KAISER	3500	110.4	✓		
8-14		KAISER	3501	109.7	✓		
8-14		INTALCO	3498	110.0	✓		
8-14		INTALCO	3499	110.0	✓		
8-15		"	3502	110.0	✓		
8-15		"	3503	109.6	✓		
8-15		KAISER	3504	110.1	✓		
8-15		"	3505	109.7	✓		

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Q A
8.6.10

Liquid Pitch

8-18	Kaiser Toc 35	06	109.7	✓	
	"	07	109.3	✓	
	"	08	110.2	✓	
	"	09	111.7	✓	
	Intalco ferN.	10	110.3	✓	
	"	11	110.9	✓	
8-18	Kaiser mead ACFX 79889	—	108.3	✓	
1	Intalco ferN	12	110.0	✓	
18	"	13	109.9	✓	
	—	14	—		
8-19	Kaiser toc	15	110.4	✓	
19	"	16	109.4	✓	
	Batch Sample				
08-18	Liquid Pitch ~~97-33~~ ~~76-5~~				
	SP 108.3 QI 8.6				
	Ash .10 TI 26.48				
	CV 56.94 BRI 7.88				
	Dist 270 0 355 1.10				
	360 2.9 Sp. Gr. 1.3305				
8-19	Kaiser toc 35	17	109.4	✓	
"	Intalco ferN Duplicate	~~19~~	~~109.0~~	✓	
"	"	~~20~~	~~109.2~~	✓	
"	Kaiser Toc. 35	18	111.7	✓	
8-19	Int. ferN	19	110.2	✓	
19	INT. "	20	110.1	✓	
8-20	INT. "	21	109.4	✓	
"	INT "	22	109.6	✓	
"	KAISER Toc	24	109.8	✓	
"	KAISER "	25	109.0	✓	
"	INT. "	27	110.0	✓	
"	INT. "	28	110.2	✓	
"	KAISER TOC	29	110.1	✓	
"	KAISER TOC 35	30	110.1	✓	

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Del. 3 250

.a. .A.
8.6 .10

97-33 Liquid Pitch T-68

8-21-97		Kaiser-Toc	35	31	109.5	✓		✓
"		Kaiser Toc		32	109.3	✓	3533 Kaiser Toc 108.9	
"		Kaiser Toc		34	110.3	✓		
"	Intalcon-fern			35	110.5	✓		
"	INT. " "			36	109.8	✓		
"	INT. "			37	110.4	✓		
8-22		Kaiser Toc		38	109.2	✓		
"		Kaiser Toc		39	109.5	✓		
8-21	INT. fern			42	109.5	✓		
8-22	INT. "			43	109.9	✓		
"	INT. "			44	109.2	✓		
8-29		Kaiser Toc		40	109.6	✓		
9-2		Kaiser Toc		41	110.0	✓		
9-2		Kaiser Toc		49	110.0	✓		
9-3		Kaiser Toc	35	50	109.6	✓		
9-2	INT. fern			62	109.9	✓		
9-2	INT. fern			63	108.5	✓		
9-3		Kaiser Toc		66	109.8	✓		
"	INT. fern			74	109.7	✓		
"	INT. fern			75	109.9	✓		
9-4		Kaiser Toc,	35	78	109.9	✓		
"		Kaiser Toc		79	109.1	✓		
"	INT. fern		35	80	110.0	✓		
"	INT. fern			81	110.2	✓		
9-5		Kaiser Toc		83	109.9	✓		
"		Kaiser Toc		84	109.8	✓		
"	INT. fern			85	109.4	✓		
"	INT. fern			86	110.0	✓		
9-8		Kaiser Toc	35	90	110.5	✓		
"	INT. fern			95	110.2	✓		
"	INT. fern			96	110.2	✓		
9-8		Kaiser Toc		89	110.1	✓		
9-9		Kaiser Toc		91	110.1	✓		

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97-35 BALSA 59

Q 8.6 A .10

9-4-5	1	VANalco Railcars						
	2	H2O % Avg. 3.41						
	3							
	4							
9-4	5	NP75399 H2O % .9	A	1	✓			
	6	GN 71991 5.1		2	✓			
	7	ATSF 82912 2.6		3	✓			
	8	NP 75330 1.3		4	✓			
	9	CB+O 85181 1.3		5	✓			
	10	NP 75300 2.5		6	✓	H2O % Avg.		
9-5	11	GN 71517 4.3	B	1	✓		2.8 @ HTC	
	12	BN 435033 5.7		2	✓			
	13	ATSF 82900 2.3		3	✓			
	14	GN 71512 5.6		4	✓			
	15	GN 71536 2.2		5	✓			
	16	GN 71551 4.3		6	✓			
	17	ATSF 82932 2.9		7	✓			
9-9	18	Liq. pitch T-65 Kaiser	35	92	110.9	✓		
9-8	19	Intalco		97	110.7	✓		
9-9	20	Intalco		98	110.2	✓		
9-8	21	Intalco	36	00	110.5	✓		
9-9	22	Intalco		01	110.1	✓		
9-10	23	Intalco		02	110.9	✓		
9-10	24	Intalco		03	110.6	✓		
9-10	25	Kaiser		06	110.6	✓	97-33	
9-10	26	Intalco		07	109.4	✓	97-36	
9-10	27	Intalco		08	109.5	✓	Q 8.86	A .11
9-10	28	Kaiser		09	109.3	✓		
9-11	29	Intalco		10	109.2	✓		
9-11	30	Intalco		11	110.6	✓		
9-11	31	Kaiser		12	109.4	✓		
9-11	32	Kaiser		13	110.0	✓		
9-12	33	Intalco		14	110.4	✓		

Q 8.86 A .11

9-10-11		Liq pitch T-65 BAtch Test	~~9-36~~				
		QI 8.86 CVC 57.30					
		TI 26.59 SpGr. 1.3318					
		Beta 17.73 Dist 270 0	360	2.4			
		Ash .11 300 0	Soft	109.2			
		Soft. 109.2 355 1.8					
9-12		Intalco Liquid pitch T-65 36	15	110.3	✓		
"		Intalco	16	110.1	✓ Q 8.86	A .11	
"		Intalco	17	109.6	✓	--	
"		Kaiser	19	110.1	✓		
9-12		Kaiser	19	110.2	✓		
9-15		Intalco	20	110.2	✓		
9-15		Intalco	21	110.6	✓		
9-15		Kaiser	24	111.0	✓		
9-12		BALSA [redacted] 59 A		97-37-A		79-12	
		SOFT QI TI BR ASH CV Den					
		110.5 2.93 3.2 [illegible] 17.97 15.04 .14 5338 1.2905					
		Dist — 270 300 355 360	1420%				
		0 .3 1.9 2.3	2.8				
9-12		BALSA 59 B		97-37-B		79-12	
		Soft QI TI Br Ash CV Den					
		110.7 2.55 3.2 18.59 16.04 .09 52.79 1.2950					
		Dist 270 300 355 360 1420%					
		0 .3 2.0 2.6 2.8					
9-15		Intalco ~~Kaiser~~	36	23	110.5	✓	
"		Intalco		22	110.4	✓	
9-15		Kaiser		25	110.2	✓	
9-16		Intalco		29	110.4	✓	
"		Intalco		30	110.4	✓	
"		Kaiser		31	110.4	✓	
"		Kaiser		32	~~108.3~~	110.3	✓
9-17		Intalco		33	109.6	✓	
"		Intalco		34	110.7	✓	

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Blended pitch T-65

9-17		Intalco		36	35	110.5	✓	
"		Intalco			36	110.9	✓	
9-17			Kaiser		37	110.4	✓	
"			Kaiser		38	108.3	✓	—
9-18		Intalco			39	110.7	✓	
"		Intalco	~~Kaiser~~		40	110.2	✓	
9-18			Kaiser		41	110.6	✓	
"			Kaiser		42	110.0	✓	
9-18		Intalco			43	110.8	✓	
"		Intalco			52	110.7	✓	
9-19		Intalco			53	111.2	✓	
"		Intalco			54	111.0	✓	
9-19			Kaiser		55	110.8	✓	92-36
9-22			Kaiser		56	109.7	✓	92-38
9-22			Kaiser		58	110.8	✓	
9-23			Kaiser		59	110.2	✓	
9-22		Intalco			60	109.2	✓	
9-22		Intalco		36	61	109.2	✓	
9-22		Intalco			63	109.2	✓	
9-23		Intalco			64	108.4	✓	
9-23		Intalco			65	110.2	✓	
9-24			Kaiser		67	109.4	✓	
9-23			Kaiser		62	110.2	✓	
9-24			Kaiser		68	108.4	✓	
9-24		Intalco	W		69		✓	
9-24		Intalco			70		✓	
9-24		Intalco			71		✓	
9-24		Intalco			72		✓	
9-25			Kaiser		74	110.7	✓	
9-25			Kaiser		75		✓	
9-25		Intalco			76		✓	
9-25		Intalco			77		✓	
9-25		Intalco			78		✓	

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a 8.33 A.11

80-13,14,15

9-26		"Ocean Crown" Sample A Koreon Pencil 97-41					
9-25	79	Intalco Blended pitch T-68	36	79	110.7	✓	
9-26		Kaiser		81	110.2	✓	
9-26		Kaiser		82		✓	
9-26		Intalco		83		✓	
9-26		Intalco		84		✓	
9-29		Kaiser		89	110.0	✓	
9-29		Intalco		93		✓	
9-29		Intalco		94		✓	
9-29		Kaiser	36	90	110.0	✓	9-30 109.7
9-30		Kaiser		91	109.7	✓	
9-30		Kaiser		92		✓	
9-30		Intalco		98		✓	
9-30		Intalco		99		✓	
10-1		Kaiser	37	01	109.7	✓	
10-1		Kaiser		02		✓	
10-1		Intalco		03		✓	
10-1		Intalco		04		✓	
10-2		Kaiser		07	109.4	✓	
10-2		Kaiser		08		✓	
10-2		Intalco		11		✓	
10-2		Intalco		12		✓	
		Blended pitch T-68 80-12	97-38				
		SofT 108.5 QI 8.33 TI 26.02 Ashill Br. 17.69 Coke 56.91					
		Den. 1.3182 Dist 270° 0 3000° 0 355° .6 360° 3.4					
10-3		Kaiser		37	09	110.6 ✓	
10-3		Kaiser	37	10		1 ✓	
10-6 1		Intalco		16	110.5	✓	
10-6 2		Intalco		19		✓	
10-6 1		Kaiser		20		✓	
10-6 2		Kaiser	37	21		✓	
10-7 3		Intalco		23	110.5	✓	
10-7 4		Intalco		24	1	✓	

K9 I8

10-7[3]		Kaiser	37-	25	110.5	✓	
10-7[4]		Kaiser		26		✓	
10-8[5]		Kaiser		32	110.3	✓	
10-8[6]		Kaiser		33		✓	
10-8[5]	Intalco			34		✓	
10-7-97	Blended Pitch t-65 trans. 10-8 to 68					97-42	81-30
	SofT 108.9 QI 9.16 b I 26.23 B r 17.07 [redacted] Ash .09 C VC 57.32 Dens. 1.3269						
	Dist 270ø 300ø 355 .4 360 1.4						
10-8[6]	Intalco		37	35	110.3	✓	97-38
10-9[7]	~~Intalco~~	Kaiser	37	39	110.1	✓	97-42
10-9[7]	Intalco		37	37	109.9	✓	
10-10[8]		Kaiser	37	41	109.8	✓	
10-9[8]	Intalco		37	38	109.9	✓	
10-9		Kaiser	37	40	109.9	✓	
10-10		Kaiser	37	41	109.8	✓	
10-13		Kaiser	37	43	110.2	✓	
10-13	Intalco		37	46		✓	
10-13	Intalco		37	47		✓	
10-13		Kaiser	37	48		✓	
10-13	Intalco		37	49		✓	
10-13	Intalco		37	50		✓	
10-14		Kaiser	37	51	110.7	✓	
10-14	Intalco		37	53		✓	
10-14	Intalco		37	54		✓	
10-14		Kaiser	37	52		✓	
10-14	Intalco			55		✓	
10-15	Intalco			56	110.1	✓	
10-15	Intalco			57		✓	
10-15	Intalco			58		✓	
10-15		Kaiser		61		✓	
10-15		Kaiser		62		✓	
10-15		Kaiser		64		✓	
10-16	Intalco			59	110.6	✓	

Blended Pitch T-68

10-16	Intalco	37	60	110.6	✓	
10-16	Kaiser		65	|	✓	
10-16	Kaiser		67	|	✓	
10-17	~~~~~			110.8		97-42
10-20	Intalco	37	68	110.6	✓	97-43
10-20	Intalco		69	|	✓	
10-20	Intalco		70	|	✓	
10-20	Intalco		71	|	✓	
10-20	Kaiser		72	|	✓	
10-21	Intalco		78	111.0	✓	
10-21	Intalco		79	111.0	✓	
10-21	Kaiser		73	|	✓	
10-21	Intalco	37	80	|	✓	
10-21	Intalco		81	|	✓	
10-22	Kaiser		74	111.1	✓	
10-22	Intalco		82	|	✓	
10-22	Intalco		83	|	✓	
10-23	Intalco		84	111.2	✓	
10-23	Intalco	37	85	|	✓	
10-23	Kaiser		75	|	✓	
10-23	Intalco		86	|	✓	
10-23	Intalco		87	|	✓	
10-24	Intalco		88	111.1	✓	
10-24	Intalco		89	1	✓	
10-27	Intalco	37	92	111.4	✓	
10-27	Intalco		93	1	✓	
10-23	Kaiser	37	75	111.2	✓	
10-23	Kaiser		76	111.4	✓	
10-23	Intalco	37	86	111.3	✓	
10-23	Intalco		87	111.2	✓	
10-27	Intalco		94	111.2	✓	
10-27	Intalco		95	111.2	✓	
10-28	Intalco		97	110.9	✓	

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Blended Pitch T-68

10-28	Intalco	37	98	110.9	✓	
10-28	Intalco		99	110.9	✓	
10-29	Intalco	38	00	110.4	✓	
10-29	Intalco	38	02	110.4	✓	
10-29	Intalco	38	03	110.4	✓	
~~10-31~~ 10-29	Intalco	38	04	110.4	✓	
10-31	Intalco	38	08	111.9	✓	
10-31	Intalco	38	09	111.9	✓	
~~10~~-03	Intalco	38	10	111.4	✓	
11-3	Intalco	38	11	111.4	✓	
10-29	Intalco	38	01	110.4	✓	
11-4	Blended Pitch T-65	S 84.1		B 97-44		
	Soft 108.9 QI 9.6 TI 26.8 Br 17.2					
	Ash .14 CV 55.17 DCN 1.3210					
	Dist — 270 0 300 0		355 0	360 2.5		
10-16	Blended Pitch T-65	S ~~82.3~~ 0		B ~~97-43~~		
	Soft 109.6 QI 9.8 TI 27.7 Br 17.9					
	Ash .19 CV 55.3 DCN 1.321					
	Dist 270 0 300 0 355 0 360 2.1					
11-3	Blended ~~Pitch~~ T-68 Kaiser	38	12	111.4	✓	97-43
11-4	Kaiser		13	111.7	✓	97-44
11-4	Kaiser		14	111.7	✓	
11-~~3~~4	Intalco ~~Kaiser~~		15	111.7	✓	
11-3	Intalco		16	111.4	✓	97-43
11-3	Intalco		17	111.4	✓	
11-4	Intalco		18	111.7	✓	97-44
11-4	Intalco		19	111.7	✓	
11-5	Intalco	38	21	111.9	✓	
11-5	Intalco		22	111.9	✓	
11-5	Kaiser	38	20	111.9	✓	
11-5	Intalco		23	111.9	✓	
11-5	Intalco		24	111.9	✓	
11-6	Kaiser	38	25	110.6	✓	

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97-44

~~11-6~~		~~Blended patch~~ ~~Kaiser~~	~~38~~	~~25~~	~~110.6~~		
11-6		Kaiser		26		✓	
11-6		Intolco		27		✓	
11-6		Intolco		28		✓	
11-6		Intolco		29		✓	
11-6		Intolco	38	30	110.6	✓	
11-7		Kaiser		31	110.8	✓	
11-7		Kaiser		32		✓	
11-7		Kaiser		33		✓	
11-7		Intolco		34		✓	
11-7		Kaiser		36		✓	
11-10		Kaiser		37	110.9	✓	
11-11		Intolco		38	110.4	✓	
11-11		Intolco		39		✓	
11-11		Intolco	38	40		✓	
11-11		Kaiser		41		✓	
11-11		Kaiser		42		✓	
		Intolco		43		✓	
				44	110.9	✓	
11-12			38	45	110.7	✓	
				46		✓	
				47		✓	
		Kaiser		49		✓	
			38	50		✓	
11-13				51	110.7	✓	
11-13				52	1	✓	
11-14		Kaiser		53	111.0	✓	
11-13		Intolco		55	110.7	✓	
11-12				56	1	✓	
11-13				57	110.7	✓	
11-13				58		✓	
11-13				59		✓	
11-14			38	60	111.0	✓	

11-14	Intalco	38	61	111.0	✓	
11-14	"		62	"	✓	
11-14	" Kaiser	38	54	"	✓	
11-17	Intalco	38	64	110.8	✓	
11-17	Intalco		65	"	✓	
11-17	" Kaiser		67	"	✓	
11-17	" Kaiser		68	"	✓	
11-17	Intalco	38	66	"	✓	
11-17	"		73	110.8	✓	
11-18	" Kaiser		74	110.9	✓	
11-19	"		79	111.0	✓	
11-18	" Kaiser		75	110.9	✓	
11-18	Intalco		76	110.9	✓	
11-18	"		77	110.9	✓	
11-19	" Kaiser		78	111.0	✓	
11-20	Blended Pitch T65→T68	97-45		86-1		
	Soft 108.8 QI 9.0 TI 26.5 B.R. 17.5			Trans. T-65-T-68		
	Ash .21 CVC 55.2 Dens. 1.322			1-23-97		
	Dist 270 ø 300 ● 1 355 ø 360 2.2					
11-20		38	80	110.7	✓	
11-20			81	"	✓	
11-21			82	110.8	✓	
11-21	Kaiser		83	"	✓	
11-19	Intalco		84	111.0	✓	
11-19			85	110.9	✓	
11-19			86	111.0	✓	
11-19			87	"	✓	
11-20			88	110.7	✓	
11-20			89	"	✓	
11-20		38	90	"	✓	
11-20			91	110.7	✓	
11-21			92	110.8	✓	

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Blended Pitch T-68

TK 11-23 65-68

11-21		Antolco	38	93	110.8	✓	97-44
11-24		Kaiser		97	110.0	✓	97-45
11-24		Antolco		99		✓	
11-24			39	00		✓	
11-24				01		✓	
11-24		Kaiser	38	98	110.0	✓	
11-25		Kaiser	39	02	109.8	✓	
11-25		Kaiser		3		✓	
11-25		Kaiser		04		✓	
11-24		Antolco		05	110.0	✓	
11-24		Antolco		06		✓	
11-25		Antolco		07	109.8	✓	
11-25		Antolco		08		✓	
11-25		Antolco		09		✓	
11-25		Antolco	39	10		✓	
11-25		Antolco		11		✓	
11-25		Antolco		12		✓	
11-26		Antolco		13	110.7	✓	
11-26		Antolco		14		✓	
11-25		Kaiser		16	109.8	✓	
11-26		Kaiser		17	110.7	✓	
11-26		Kaiser		18		✓	
11-26		Kaiser		19		✓	
12-1		Kaiser	39	20	110.7	✓	
12-1		Kaiser		21		✓	
12-2		Kaiser		22	109.9	✓	
12-1		Antolco		31	110.7	✓	
12-1		Antolco		32		✓	
12-1		Antolco		33		✓	
12-1		Antolco		34		✓	
12-2		Antolco	39	35	109.9	✓	
12-2		Antolco		36		✓	
12-3		Kaiser		24	110.7	✓	

12-4		Kaiser	39	27	✓	Tr. 65-68 12-4	
12-3		Kaiser	39	25	110.7	✓	
12-3		Intoto		39		✓	
12-3		Intoto		40		✓	
12-3		Intoto	39	50		✓	
12-2		Kaiser		23	110.5	✓	
12-2		Intoto		37		✓	
12-2		Intoto		38		✓	
12-2		Intoto		49		✓	
12-4		Kaiser	39	26	110.2	✓	
12-4		Intoto		41		✓	
12-4		Intoto		42		✓	
12-4		Intoto		43		✓	
12-4		Intoto		44		✓	
12-4		Intoto		52		✓	
12-5		Kaiser		28	110.4	✓	
12-5		Intoto		45		✓	
12-5		Intoto		46		✓	
12-5		Intoto	39	53	✓	97-45	
12-1		"Sammi aurora" 97-46 ABC		Korean	Pencil	97-46	
		A Soft 109.3 B 110.2 C 109.6					
		QI 9.0 10.0 8.6					
		TI 27.1 27.8 27.0					
		Br 18.1 17.8 18.4					
		Ash .11 .18 .11					
		CVC 57.7 55.2 57.5					
		Den. 1.325 1.316 1.319					
		Dist 270 0 0 0					
		300 0 0 0					
		355 0 0 0					
		360 1.9 2.8 3.1					
12-4		Blended Pitch t-65				[illegible]	
		Soft 108.3 QI 9.6 TI 26.0 Br 16.3 Ash .15 CVC 54.8					
		Dens. 1.322 Dist 270 0 300 0 355 0 360 2.9					

12-4	1		Kaiser	39	27	110.2	✓	97-46
12-8	2		Kaiser		56	110.7	✓	97-47
12-8	3	Antotro			83		✓	
12-8	4	Antotro			84		✓	
12-8	5	Antotro			82		✓	
12-8	6		Kaiser		57		✓	
12-8	7	Antotro			85		✓	
12-8	8	Antotro			86		✓	
12-9	9	Antotro		39	90	110.4	✓	
12-10	10	Antotro			91		✓	
12-9			Kaiser		58		✓	
12-9			Kaiser		59		✓	
12-9		Antotro			87		✓	
12-9		Antotro			88		✓	
12-9		Antotro			89		✓	
12-10			Kaiser	39	60	109.8	✓	
12-10			Kaiser		61		✓	
12-10		Antotro			92		✓	
12-10		Antotro			93		✓	
12-10		Antotro			94		✓	
12-11			Kaiser		62	110.0	✓	
12-11		Antotro			95		✓	
12-11		Antotro			96		✓	
12-11		Antotro			97		✓	
12-11		Antotro			98		✓	
12-11		Antotro		39	99		✓	
12-11			Kaiser		93		✓	
12-12			Kaiser		64	110.2	✓	
12-12		Antotro		40	00		✓	
12-12		Antotro			01		✓	12-15 110.3
12-12		Antotro			02		✓	12-16 110.3
12-15			Kaiser	40	09	110.7	✓	
12-15			Kaiser		10	110.7	✓	

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12-16		Kaiser	40	11	110.3	✓	
12-16		Kaiser		12	1	✓	
12-15	Intolro			18	110.3	✓	
12-15	Intolro			19		✓	
12-15	Intolro		40	20		✓	
12-15	Intolro			21		✓	
12-15	Intolro			22		✓	
12-16	Intolro			23	110.3	✓	
12-16	Intolro			24	110.3	✓	
12-16	Intolro			25	110.3	✓	
12-17		Kaiser	40	13	111.3	✓	
12-17		Kaiser		14		✓	
12-17	Intolro			26		✓	
12-17	Intolro			27		✓	
12-17	Intolro			28		✓	
12-17	Intolro			29		✓	
12-18		Kaiser		15	111.2	✓	
12-18	Intolro		40	30	111.3	✓	
12-18	Intolro		40	31	111.3	✓	
12-18	Intolro			32		✓	
12-18	Intolro			34		✓	
12-18	Intolro			35		✓	
12-18	Intolro		40	36	111.3	✓	
12-19		Kaiser		17	110.4	97-47 ✓	
12-19	Intolro			37		✓ 97-49	
12-19	Intolro			38		✓	
12-19	Intolro			39		✓	
12-22		Kaiser		41	110.9	✓ 97-49	
12-22		Kaiser		42		✓	
12-22	Intolro			51		✓	
12-22	Intolro			52		✓	
12-22		Kaiser		43		✓	
12-22		Kaiser		44		✓	

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END 1997

12-23		Kaiser	40	47	110.0	✓	
12-23		Kaiser		48	1	✓	
12-22	Chtolco			53	110.9	✓	
12-22	Chtolco			54	1	✓	
12-22	Chtolco		40	55	1	✓	
12-23	Chtolco			56	110.0	✓	
12-23		Kaiser		45	1	✓	
12-23		Kaiser		46	1	✓	
12-24		Kaiser		49	110.0	✓	pd half
12-24		Kaiser	40	50	1	✓	
12-23	Chtolco			58	110.0	✓	
12-23	Chtolco			59	1	✓	
12-23	Chtolco			57	1	✓	
12-24	Chtolco		40	60	110.0	✓	
12-29	Chtolco			61	110.6	✓	
12-29	Chtolco			62	1	✓	
12-29	Chtolco			63	1	✓	
12-29	Chtolco			64	1	✓	
12-29	Chtolco			65	1	✓	
12-29	Chtolco			66	1	✓	
12-29	Chtolco			67	1	✓	
12-30	Chtolco			68	110.4	✓	
12-30	Chtolco			69	1	✓	
12-30		Kaiser	40	75	1	✓	
12-30	Chtolco			70	1	✓	
12-31	Chtolco			71	110.6	✓	
12-31	Chtolco			72	1	✓	
12-31	Chtolco			73	1	✓	
12-31	Chtolco			74	1	✓	
12-30		Kaiser		76	110.4	✓	
12-31		Kaiser		77	110.6	✓	
12-31	Chtolco			83	1	✓	
12-31		Kaiser		78	1	✓	

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Start 1998

			~~40~~	~~84~~			
				~~93~~			
				~~94~~			

Start 1998

						97-49	
1-5-98		Kaiser	40	84	111.2	✓	
1-5	Intatro			93		✓	
1-5	~~Intatro~~ Intatro			94		✓	
1-5		Kaiser		85		✓	
1-6				86	111.2	✓	
1-6				87	1	✓	
1-7		Kaiser		88	111.3	✓	
1-5	Intatro			95	111.2	✓	
1-5				96	1	✓	
1-6				97	111.2	✓	
1-6				98		✓	
1-6				99		✓	
1-6			41	00		✓	
1-7			41	01	111.3	✓	
1-7	Intatro		41	02	1	97-49	
1-7-98	Blended Pitch	98-1	92-4			98-1	
	Soft. 108.8 QI 8.9 TI 26.1 B.S. 17.5 ASh .10			CVC 55.9		t-65→68	
	Dens. 1.31 Dist. @ 360 2.2						
1-7		Kaiser		41	89	109.7	✓
1-8		Kaiser			90	109.7	✓
1-7	Intatro			41	03	109.7	✓
1-7	Intatro				04	109.7	✓
1-8		Kaiser	40	91	109.7	✓	
1-9		Kaiser		92	109.9	✓	
1-8	Intatro		41	05	109.7	✓	
1-8	Intatro		41	06	109.7	✓	
1-9	Intatro			07	109.9	✓	
1-9	Intatro			08	1	✓	
1-14		Kaiser		14	110.3	✓	
1-14		Kaiser		15		✓	
1-14	Intatro			27		✓	

1-14		dutotro		41	29	110.3	✓	
1-14		dutotro		41	30	"	✓	
1-14			Kaiser		16	"	✓	
1-14			Kaiser		17	"	✓	
~~1-14~~		1-15	Kaiser	41	18	110.4	✓	
1-15			Kaiser		19	110.4	✓	
~~1-15~~	~~1-14~~	1-15	Kaiser	41	20	~~110.3~~ 110.4	✓	
~~1-15~~	~~1-14~~	1-15	Kaiser		21	110.4	✓	
~~1-15~~		1-16	Kaiser		22	110.7	✓	
~~1-15~~		1-16	Kaiser		23	110.7	✓	
1-16			Kaiser		24	110.7	✓	
~~1-16~~		1-16	Kaiser		26	110.7	✓ ~~✗~~	~~98-02~~
1-14		dutotro		41	28	110.3	✓	
1-14		dutotro			31	"	✓	
1-14		dutotro			32	110.3	✓	
1-15		dutotro			33	110.4	✓	
~~1-15~~ 1-15		dutotro			34	"	✓	
1-15		dutotro	~~Kaiser~~		35	110.4	✓	
1-16		dutotro	~~Kaiser~~		37	110.7	✓	
1-15		dutotro			38	110.4	✓	
1-16		dutotro			39	110.7	✓	
1-16		dutotro		41	40	"	✓	
1-16		dutotro			41	"	✓	
1-16		dutotro			42	"	✓	
1-17		dutotro			43	110.1	✓	
1-17		dutotro			44	"	✓	
1-17		dutotro			45	"	✓	
1-19		dutotro		41	55	109.0	← ✓	98-02
1-19		dutotro			56	"	← ✓	98-02
1-19			Kaiser	41	25	109.0	✓	
1-20			Kaiser		47	109.3	✓	
1-20			Kaiser		48	"	✓	
1-21			Kaiser		49	109.4	✓	

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IF Intalco ferndale
KT Kaiser tacoma
KM Kaiser mead

99-02

1-19		Intalco	41	57	109.0	✓	
1-19		Intalco		58	1	✓	
1-20		Intalco		59	109.3	✓	
1-20		Intalco	41	60	1	✓	
1-21		Intalco		61	109.4	✓	
1-21		Intalco		62	1	✓	
1-21		Intalco		63	1	✓	
1-21		Intalco		64	109.4	✓	
1-19		Kaiser	41	26	109.0	✓	
1-21		Kaiser	41	50	109.9	✓	
1-19		Blended Pitch T-65 [redacted]		93+1			
		SP 108.1 QI 8.4 Ash .11 TI 26.7					
		CV 55.9 Dist 360 1.2 Dens. 1.328					
		B.R. 18.3					
		Sample taken on 1-17-98 analysis done 1-17 1-20					98-02
1-21		KT	41	51	109.4	✓	
1-22		KT		52	109.7	✓	
1-22		KT		53	109.7	✓	
1-22		DF ~~KT~~		65	109.2	✓	
1-23		DF		66	109.9	✓	
1-22		DF		67	109.7	✓	
1-22		DF		68	1	✓	
1-23		DF		69	109.9	✓	
1-23		DF	41	70	109.9	✓	
1-26		KT		54	110.1	✓	
1-26		KT		74	1	✓	98-02
1-27		KT		75	110.0	✓	98-05
1-27		KT		76	1	✓	
1-28		KT		77	109.8	✓	
1-28		KT		78	1	✓	
1-29		KT		79	109.8	✓	
1-29		KT	41	80	1	✓	
1-30		KT	41	81	110.1	✓	

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98-3

1-26		If		82	110.1	✓
1-26		If		83	|	✓
1-26		If		84	|	✓
1-26		If		85	|	✓
1-27		If		86	110.0	✓
1-27		If		87	|	✓
1-27		If		88	|	✓
1-27		If	41	89	|	✓
1-26		6-65 Blended Pitch	~~98-3~~			
		SP 108.5 QI 8.6 Ash .04 TI 26.4 CV 56.34				
		Dist 360 1.1 Dens. 1.321 BR 17.8				
1-26		Sammi crystal Korean Pentic	A			
1-27		" " " "	B		~~98-4~~	
1-28		" " " "	C			
		A B C				
	SP					
	QI					
	TI					
	CV					
	Ash					
	Dens.					
	B.R.					
Dist.	360°					
1-28		If	41	90		
1-28		If		91		
1-29		If		92		
~~1-29~~		If		93		
1-29		If		94		
1-29		If		95		
1-30		If	41	96		

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94-3

1-28		If		41	90	109.8	✓	
1-28		If			91	"	✓	
1-29		If			92	109.8	✓	
1-29		If			93	"	✓	
1-29		If			94	"	✓	
1-29		If			95	"	✓	
1-30		If		41	96	110.1	✓	
1-30		If		41	97	"	✓	
2-2		If		42	12	110.3	✓	
2-2			KT	42	04	"	✓	
2-2		If		42	13	"	✓	
2-2			KT	42	05	"	✓	
2-3			KT		06	110.8	✓	
2-3			KT		07	"	✓	
2-4		ok	KT		08	"	✓	
2-4		ok	KT		09	"	✓	
2-5			KT		10	110.7	✓	
2-3		If			14	110.8	✓	
2-3		If			15	"	✓	
2-4		If			16	110.6	✓	
2-4		If			17	"	✓	
2-4		If			18	"	✓	
2-5		If			19	110.7	✓	AB
2-5			KT	42	11	~~110.8~~ 110.7	✓	
2-5		ok	KT	42	22	110.8	✓	
2-6		~~If~~ ok	KT		23	110.7	✓	
2-6		~~If~~ ok	KT		30	110.7	✓	
2-9			KT		32	110.2	✓	
2-9			KT		31	"	✓	
2-10			KT		33	110.5	✓	
2-9		If			40	110.2	✓	
2-9		If			41	"	✓	
2-9		If			42	"	✓	

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2-17		Blended Pitch A-1-18			-6			
		Soft 108.3 QL 9.1 TL 28.1 B.R 19						
		Ash .09 CV 56.61 Den. 1.322 Dist 3602-8						
2-9		If		42	43	110.2	✓	
2-10		If			44	110.5	✓	
2-10		If			45	110.5	✓	
2-10			KT	42	34	110.2	✓	98-3
2-11			KT		35	110.5	✓	
2-11			KT		36	1	✓	
2-12			KT		37	110.9	✓	
2-13			KT		39	109.8	✓	98-6
2-12			KT	42	38	110.9	✓	
2-10		If			46	110.2	✓	
2-10		If			47	1	✓	
2-11		If		42	48	110.5	✓	
2-12		If			49	110.9	✓	98-3
2-12		If			51	|	✓	
2-12		If			58	|	✓	
2-12		If			59	|	✓	
2-13		If		42	60	109.8	✓	
2-13		If			61	1	✓	
2-17			KT	42	73	110.7	✓	98-6
2-17		If		42	80	|	✓	
2-17		If			81	|	✓	
2-17		If			82	|	✓	
2-12		Km	UTLX 650776	42	66	110.4	✓ 109.1	✓
2-12		Km	UTLX 650756		67	110.8	✓ 108.9	✓
2-12		Km	ACFX 79884		68	110.8	✓ 108.6	✓
2-12		Km	UTLX 650772		69	110.7	108.8	✓
2-[illegible]		Km	UTLX 650763		108.7	109.8	✓	OK
2-[illegible]		Km	ACFX 94940		108.3	109.4	✓	OK
2-[illegible]		Km	UTLX 650768		109.9	109.7	✓	OK
2-[illegible]		Km	UTLX 650773		108.8	109.9	✓	OK

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98-b

2-12		If	42	50	110.9	✓	
2-17		KT		74	110.7	✓	
2-18				75	110.6	✓	
2-18				76	1	✓	
2-19				77	110.1	✓	
2-19				78	1	✓	
2-20		KT		79	110.2	✓	
2-18		If	42	91	110.0	✓	
2-18				92	|	✓	
2-18				93	|	✓	
2-19				94	110.1	✓	
2-19			42	95	110.1	✓	
2-19				96	110.1	✓	
2-20				97	110.2	✓	
2-20			42	98	|	✓	
2-20		If	42	99	|	✓	
2-~~19~~20		KM ACFX 87690			108.2	✓	
2-~~19~~20		KM " 79894			109.1	✓	
2-~~19~~20		KM " 94478			108.7	✓	
2-~~19~~20		KM " 94474			110.4	✓	
2-23		ICT	43	07	110.5	✓	
2-23		KT	43	68	|	✓	
2-23		If		13	|	✓	
2-23		If		14	|	✓	
2-23		If		15	|	✓	
2-24		Korean Pencil Ship "Ocean Beauty" 98-24A,B					
B=		A-3-7 SP 109.2 QI 9.1 Ash .16 TI 26.9					
		CV 56.1 Dist. 360° 2.4% DENS. 1.324					
		B.R. 17.8					
A=		A-3-6 SP 109.4 QI 9.2 Ash. 12 TI 27.5					
		CV 56.7 Dist. 360° 1.9% DENS 1.322					
		B.R. 18.3					

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2-26		Blended Pitch t-65		98-8			
		A-3-9 = SP 108.0 QI 9.4		Ash .10			
		TI 27.3 CV 56.4		Dist. 360° 1.9			
		Dens. 1.325 BR 17.9					
							98-6
2-26		Km ACFX 94942			108.0	✓	98-8
2-26		Km ACFX 79880			109.2	✓	
2-~~28~~ 27		Km ACFX 79884			108.7	✓	
2-26		Km ACFX 94477			108.4	✓	
2-26		Km ACFX 79896			108.0	✓	
2-~~26~~ 25		Km ACFX 94473			108.9	✓	
3-12		Km ACFX 94479			108.2	✓	
3-~~9~~		Km ACFX 94471 ship 3-9?			1086	✓	
3-~~9~~		Km ACFX 94941 ship 3-9?			108.0	✓	
3-~~4~~		Km ACFX 92821			108.3	✓	
3-~~4~~		Km UTLX 650772			1083	✓	
2-28		Km ACFX 79883			108.1	✓	
2-24			KT	43 09	110.8	✓	
2-24			KT	43 10	|	✓	
2-25			KT	11	111.3	✓	
2-25			KT	12	|	✓	
2-24		If		16	110.8	✓	
2-24		If		17	|	✓	
2-24		If		18	|	✓	
2-25		If		19	111.3	✓	
2-25		If		43 20	|	✓	
2-25		If		21	|	✓	
2-26		If		22	|	✓	
2-26		IS		43 23	|	✓	

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							98.8
2-26		If Blended Pitch T-68	43	24	111.3	✓	
2-26		KT	43	25	|	✓	
2-26		KT		26	|	✓	
2-27		KT		27	111.0	✓	
3-2		KT		36	108.7	✓	
3-2		KT		37	|	✓	
3-2		If		39	|	✓	
3-2		If	43	40	|	✓	
3-2		If		41	|	✓	
3-2		If		42	|	✓	
3-3		~~If~~ KT		43	109.4	✓	
3-3		If		49	|	✓	
3-3		If	43	50	|	✓	
3-3		KT		38	108.7	✓	
3-4		KT		44	109.4	✓	
3-3		If		51	1	✓	
3-4		If		52	109.9	✓	
3-4		If		53	|	✓	
3-4		If		54	|	✓	
3-4		1 KT		45	109.4	✓	
3-5		KT		46	109.9	✓	
3-5		KT		47	1	✓	
3-6		KT		48	110.0	✓	
3-4		If		61	109.9	✓	
3-4		If		62	1	✓	
3-5		If		63	109.9	✓	
3-5		If		64	110.0	✓	
3-6		If		65	1	✓	
3-6		If		66	|	✓	98.9
3-9		KM ACFX 72826 ✓		107.8	✓		98.9
3-9		KM UTLX 650756 ✓		107.8	✓		

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3-6 Blended Pitch t-65 98-9

Soft 108.0 QI 9.1 TI 26.5 Ash .13

CV 56.4 Dist. 360° 1.3% Dens. 1.327

B.R. 17.4 98-9

Chinese Pencil from "Rau Voyage" 98-10 A-B-C

	C	B	A
Soft	110.3	110.3	109.6
QI	4.0	3.8	4.4
TI	16.1	16-8	17.5
Ash	.05	.11	.11
CV	50.0	50.20	50.30
Dist. 360°	2.5	2.1	4.20
B.R	12.1	12.1	13.10
Dens.	1.2920	1.3000	1.3070

3-12 Blended Pitch t-65 98-11

Soft 108.1 QI 9.1 TI 27.3 Ash .11 Dist 360° .50

Dens. 1.3220 B.R. 18.2

3-9		KT	43	55	109.5	✓ 98-9	
3-9		KT		56	1	✓	
3-10		KT		57	109.6	✓	
3-10		KT		58	1	✓	
3-9	If		43	74	109.5	✓	
3-9	If		43	75	1	✓	
3-10	If			76	109.6	✓	
3-9	If			77	109.5	✓	4020
3-10	If			78	109.6	✓	
3-10	If			79	|	✓	
3-10	If		47	80	|	✓	
3-10	If			81	|	✓	
3-11	If			82	109.1	✓	
3-11	If			83	1	✓	
3-12	If		43	84	109.3	✓	

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No Ship dates

Ship date			Good date					
3-12		If		43	85	109.3	✓	
3-11			KT	43	90	109.1	✓	
3-11			KT	43	91	109.1	✓	
3-18	✓	KM UTLX 650773	3-10			108.6	✓	
3-18	✓	KM UTLX 650768	3-10			109.3	98-11 ✓	
3-18	✓	KM ACFX 94940	3-10			108.9	✓	
~~3-18~~ 3-23	✓	KM ACFX 94476	3-9			108.6	✓	
3-12		If		43	86	109.3	✓	
3-13		If			88	109.1	✓	
3-13		If		43	89	1	✓	
3-12		If		43	87	109.3	✓	
3-13		If		44	15	109.1	✓	
3-12			KT	43	92	109.3	✓	
3-16			KT		93	109.8	✓	
3-16		If		44	20		✓	
3-16		If			21		✓	
~~3-12~~		~~If~~		~~43~~	~~87~~	109.3		
3-17			KT		94	110.1	✓	
3-17			KT	44	10	~~[illegible]~~ 110.1	✓	
3-18			KT		11	107.9	✓ 98-11	
3-19			KT		12	110.1	✓	
3-16		If			22	109.8	✓	
3-16		If			23	1	✓ 98-9	
3-17		If			25	110.1	✓ 98-11	
3-17		If			24		✓	
3-17		If			26		✓	
3-17		If			27		✓	
3-18		If			28	107.9	✓	
3-18		If			29	1	✓	
3-19		If		44	31	110.1	✓	
3-19		If			30	1	✓	
3-23		KM ACFX 79884	3-18			109.3	✓	
3-23		KM UTLX650763	3-18			109.2	✓	

Ship date		Load date				98-11	
3-23		km ACFT 94478 3-18			109.2	✓	
3-19		KT	44	13	110.1	✓	
3-19		If	44	32	1	✓	
3-19		If		33	110.1	✓	
3-20		If		34	109.8	✓	
3-20		If		35	1	✓	
3-20		If		38	1	✓	
3-23		KT	44	14	110.0	✓	
3-23		If		48	1	✓	
3-23		If		49	110.0	✓	
3-24		KT		39	110.2	✓	
3-24		KT		40	110.2	✓	
3-25		KT		41	110.6	✓	
3-26		KT		42	110.1	✓ 98-12	
3-26		KT		43	1	✓	
3-23		If	44	50	110.0	✓	
3-23		If		51	110.0	✓	
3-24		If		52	110.2	✓	
3-24		If		53	1	✓	
3-24		If		54	1	✓	
3-24		If	44	55	110.2	✓	
3-25		If		56	110.6	✓	
3-25		If		57	110.6	✓	
3-26		If		58	110.1	✓	
3-26		If		59	1	✓	
3-26		If	44	60	1	✓	
3-26		If		61	110.1	✓	
3-27		If		62	110.1	✓	
3-27		If		63	110.1	✓	
3-30		KT	44	77	110.2	✓	
3-30		If		83	1	✓	
3-30		If		84	110.2	✓	

98-12

3-31		KM	ACFx	94942	3-25			108.4	✓	
3-25		KM	"	94474	3-25			109.2	✓	
3-25		KM	"	79880	3-25			108.9	✓	
3-31		KM	"	79896	3-25			109.1	✓	
3-31		KM	"	94477	3-25			108.6	✓	
3-31		KM	"	94473	3-25			108.7	✓	
3-31		KM	"	79894	3-26			109.0	✓	
3-31		KM	"	94944	3-26			109.0	✓	
3-27		If				44	76	110.1	✓	
3-30					KT		78	110.7	✓	
3-31					KT		79	110.7	✓	
3-30		If				44	85	110.2	✓	
3-30		If					86	110.2	✓	
3-31		If					87	110.7	✓	
3-31		If					88	110.7	✓	
4-1					KT	44	80	110.9	✓	
4-2					KT		81	110.4	✓	
4-2					KT		82	1	✓	98-14
3-31		If				44	89	110.7	✓	98-12
3-31		If				44	90	1	✓	
4-1		If					91	110.9	✓	
4-1		If					92	|	✓	98-14
4-1		If					93	|	✓	~~98-15~~
4-2		If					94	110.4	✓	98-14
4-2		If				44	95	|	✓	
4-2		If					96	|	✓	
4-3		If					97	110.9	✓	
4-3		If				45	01	|	✓	
4-3		If				45	02	|	✓	
4-6					KT	45	06	110.3	✓	
4-6		If					12	|	✓	
4-6		If					13	|	✓	

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4-8		KM UtLx 650776 4-1			109.4	✓
4-8		" ACft 87690 4-1			109.9	✓
4-8		" " 94471 4-1			110.2	✓
4-8		" " 72821 4-1			109.6	✓
4-8		" " 79877 4-1		110.3		✓
4-8		" " 94941 4-2			109.1	✓
4-8		" " 72826 4-2			109.1	✓
4-8		" " 79883 4-2			109.3	✓

98-14

3-25 Blended pitch t-65 98-12

SP 108.6 QI 9.6 Ash .14 TI 26.6

CV 56.58 Dist 360.90 Dens. 1.3221 B.R. 16.9

4-1 Blended Pitch t-65 98-14

QI 8.7 TI 26.8 Ash .13

CV 56.41 SofT. 108.7 Dens 1.3220

Dist 360° 1.1%

4-1 creo P1P13 t-67 (Reformulated) 98-15

XI .47 H20 .75 Dens. 1.0942

Dist. 210. .2 235.3 270 20.1

315 46.3 355 69.6

98-14

4-8-		Blended pitch f-65		98-16		A-9-7	
		SP 108.9 QI 9.3 TI 27.20 ASh .19			CV 56.42		
		Dist. 360° 2.38 Dens. 1.3210		B.R. 17-90			
4-7		KT	45	07	110.5	✓	
4-7		KT		08	1	✓	
4-8		KT		09	110.4	✓	
4-8		KT	45	10	1	✓	
4-9		KT		11	109.9	✓	
4-6	If			14	110.3	✓	
4-6	If			15	1	✓	
4-7	If			16	110.5	✓	
4-7	If			17	|	✓	
4-7	If			18	|	✓	
4-7	If			19	|	✓	
4-8	If		45	20	110.4	✓	
4-8	If			21	1	✓	
4-9	If			22	109.9	✓	
4-9	If			23	1	✓	
4-13	KM ACfx ~~94474~~ 79884		48		108.5	✓	
4-13	KM ACfx 94940		4-8		108.9	✓	
4-8	KM ACfx 79880		4-8		109.1	✓	98-16
4-8	KM ACfx 94474		4-8		110.8	✓	
4-13	KM UfLx 650768		4-8		110.9	✓	
4-13		KT		44	111.2	✓	98-16
4-13	If		45	50	|	✓	
4-13	If			51	|	✓	
4-14		KT	45	45	110.8	✓	
4-14		KT		46	|	✓	
4-15		KT		47	110.8	✓	
4-16		KT		98	110.7	✓	
4-20	If		45	49	110.2	✓	
4-13	If			52	111.2	✓	
4-13	If			53	1	✓	

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4-15		If	45	54	110.8	✓	
4-15		If		55	1	✓	
~~4-15~~		~~Ef~~			X		
4-16		If	45	56	110.7	✓	
4-16		If		57	1	✓	
4-16		If		58	1	✓	
4-17		If		59	110.6	✓	
4-20		If		77	110.2	✓	
4-20		If		78	110.2	✓	
4-20		KM ACfx 94473 4-13			107.6	✓	
4-20		" " 94942 "			109.7	✓	
4-20		" " 94473 "			109.5	✓	
4-22		KM UHx 650773 4-14			109.9	✓	
4-16		KM ACfx 94472 4-14			110.2	✓	
4-16		KM ACfx 94479 4-14			109.5	✓	
4-21		KT	45	70	111.5	✓	
4-21				71	1	✓	
4-22				72	111.3	✓	
4-23				73	110.7	✓	
4-23		KT	45	75	1	✓	
4-21		If		79	111.5	✓	
4-21		If	45	80	1	✓	
4-22		If		81	111.3	✓	
4-22		If		82	1	✓	
4-23		If		83	110.7	✓	
4-23		If		84	1	✓	98-16
4-24		If	45	85 ✓	111.2		98-17
4-22		Blended Pitch A-10-19 T65	98-17				
		SP 108.8 Q 9.0 TI 26.3 Ash .11					
		Dist. 360° 1.9 Dens. 1.321 B.R. 17.3					
		GV. 56.01					
4-24		If	45	86	111.2	✓	

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98-17

4-28		KM ACFX 72826 4-22					109.3	✓	
4-22		" " 79894 "					108.9	✓	
4-28		" " 79883 "					109.0	✓	
4-28		" " 79880 "					108.9	✓	
4-28		" " 94478 "					109.2	✓	
4-28		" " 94944 "					109.4	✓	
4-27		KT		45	26		111.6	✓	
4-27		If		46	05		111.6	✓	
4-27		If		46	04		111.6	✓	
4-28		KT		45	98		111.4	✓	
4-28		KT		45	99			✓	
4-28		If		46	06			✓	
4-28		If		46	07			✓	
4-29		If		46	08		111.7	✓	
4-29		KT		46	00			✓	
4-30		Blended Pitch +45		98-18			A-11-18		
		QI 8.9 TI 26.4 Ash		.09					
		CV 55.83 Soft. 109.3 Dens		1.3217					
5-5		KM ACFX 94474 4-30					109.9	✓ 98-18	
		Dist. 360° 1.6 B.R.		17.5					
4-29		If		46	09		111.7	✓	
~~4-28~~		KT		46	01		111.4	✓	
4-30		If		46	10		111.4	✓	
4-30		If			11		111.4	✓ 98-17	
5-1		If		46	20		109.8	✓ 98-18	
5-5		KM ACFX 94941 4-29					110.1	✓	
5-5		" " 79877 4-29					109.8	✓	
5-5		" " 94471 4-29					110.0	✓	
5-4		KT		46	02		111.5	✓	
5-5		KT			03		111.6	✓	
5-5		KT		46	32		1	✓	
5-6		KT			33		111.0	✓	

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5-7		KT	46	34	111.7	✓
5-7		KT	46	41	1	✓
5-4		If	46	22	111.5	✓
5-4		If		23	1	✓
5-5		If		24	111.6	✓
5-5		If		25	1	✓
5-6		If		26	111.6	✓
5-6		If	46	27	1	✓
5-7		If		28	111.7	✓
5-7		If		29	1	✓ 98-18
5-8		If	46	30	110.9	✓ 98-20
5-8		If		31	1	✓
5-6		Blended Pitch t-65	98-20		A-12-13	
		SP 108.8 QI 8.7 TI 26.00 Ash .13				
		Dist. 360° 1.5% Dens. 1.3227 B.R. 17.3				
		CV 56.16				~~98-18~~
5-8		If	46	42	110.9	✓ 98-20
5-12		KM ACfx 94472 5-6			109.0	✓
5-12		KM " 94479 5-6			109.1	✓
5-12		" " 94942 5-6			109.6	✓
5-12		utlx 650768 5-6			109.5	✓
5-7		KM ACfx 79884 5-6			108.5	✓
5-12		KM ACfx 94940 5-6			108.7	✓
		Koreon Pitch from MV ocean Duke	98-21 A,B,C, D			
98-21	A	SP 109.2 QI 8.8 TI 27.3 Ash .15				
		Dist 360° 1.9 Dens. 1.312 BR ~~18.2~~ 18.5 CV 56.3				
	B	SP 115.3 QI 8.8 TI 27.0 Ash .09				
		Dist. 360° 1.3 Dens. 1.310 CV 58.3 BR 18.2				
	C	SP 115.2 QI 8.5 TI 26.7 Ash .11 Dist. 360° 1.2				
		Dens. 1.316 BR 18.2 CV 57.6				

98-21 Blended Pitch from MV Ocean Duke

98-21-	D	SP 109.6 AI 9.1 TI 26.5 ASh .10		Dist	360°	1.4		
		Br 17.4 Dens. 1.323						
S-11		KT	46		43	111.3	✓	98-20
S-12		KT			44	111.4	✓	
S-12		KT			45	1	✓	
S-13		KT			46	111.4	✓	
S-14		KT			47	111.4	✓	
S-14		KT	46		48	1	✓	
S-11		If			49	111.3	✓	
S-11		If			50	1	✓	
S-12		If			51	111.4	✓	
S-12		If			52	1	✓	
S-13		If			53	111.4	✓	
S-13		If			54	1	✓	
S-14		If			55	111.4	✓	
S-14		If			56	1	✓	
S-15		If			57	111.3	✓	
S-15		If			58	1	✓	
S-18		KT	46		79	111.1	✓	
S-18		If	46		76	|	✓	
S-18		If			85	|	✓	
S-19		KT	46		80	111.7	✓	
S-18		If			86	111.1	✓	
S-18		If			87	1	✓	
S-19		If	46		88	111.7	✓	
S-19		If			89	1	✓	
S-20		KT	46		82	110.9	✓	
S-21		KT			83	110.8	✓	98-23
S-21		KT			84	1	✓	
S-19		If			90	111.7	✓	
S-19		If			91	111.7	✓	
S-20		If			92	110.9	✓	

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5-22		Blended Pitch A-14-18	98	23			
		SP 109.0 QI 9.2 TI 27.1 ASH .12					
		CV 56.71 Dst. 360° 1.5 DCWS		1.3240			
		BR 17.9					
5-20		If	46	93	110.9	✓ 98	-20
5-21		If	46	94	110.8	✓ 98-23	
5-21		If		95	1	✓	
5-22		If	46	96	110.5	✓	
5-19		KT	46	81	111.7	✓ 98-20	
5-21		KM ACFX 72826			109.6	✓	
5-21		KM ACFX 94477			110.1	✓	
5-20		KM ACFX 79883			109.8	✓	
5-20		KM ACFX 79896			109.4	✓	
5-22		KM ACFX 94473			109.7	✓	
5-26		KM ACFX 72821			109.5	✓	
6-9		KM ACFX 94471 5-28 ✓			109.5		
6-2		KM ACFX 79884 5-28 ✓			110.2		
6-3		KM ACFX 94474 5-28 ✓			110.1		
6-3		KM ACFX 94478 5-29 ✓			109.8		
5-28		KM UTLX 650773 5-28			109.5	✓ 98-24	
5-28		KM ACFX 94944 5-28			109.6	✓	
5-28		KM ACFX 79882 5-28			109.8	✓	
6-2		KM ACFX 79877 5-29 ✓			109.6		
5-28		KM UTLX 650776 5-28 ✓			109.3	✓	
6-2		KM ACFX 87690 5-29 ✓			110.1		
5-26		If	46	97	110.9	✓ 98-23	
5-26		If	46	98		✓	
5-26		If		99		✓	
5-26		If	47	00		✓	
5-26		KT	47	13		✓	
5-27		KT		14	111.3	✓	
5-27		KT		15	1	✓	
5-28		KT		16	111.1	✓	

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5-29-98		Blended Pitch t-65	98-24		A-15-3		
		QI 8.8 TI 26.8 Ash .11					
		CV 56.74 Soft. 109.5 Dens. 1.3232					
		DIST 360° 1.3 BR 18					
5-28		KT	47	17	111.1	✓	98-23
5-27		If	47	19	111.3	✓	
5-27		If	47	20	1	✓	
5-28		If		21	111.1	✓	
5-28		If		22	1	✓	
5-28		If		23	1	✓	
5-29		If	47	24	111.0	✓	
5-28		If		25	111.1	✓	
5-29		If		26	111.0	✓	
5-29		If		31	111.0	✓	98-23
							98-24
6-1		KT	47	18	111.0	✓	
6-2		KT	47	36	111.2	✓	
6-1		If		41	111.0	✓	
6-2		If		42	111.2	✓	
6-2		If		43	111.2	✓	
6-1		If		54	111.0	✓	
6-1		If		55	1	✓	
6-1		If		56	1	✓	
6-2		KT		37	111.2	✓	
6-3		KT		38	111.0	✓	
6-4		KT		39	109.4	✓	
6-2		If		44	111.2	✓	
6-2		If		45	1	✓	
6-3		If		46	111.0	✓	
6-3		If		47	1	✓	98-24
6-4		If		48	109.4	✓	98-28

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							98-24
6-4		If		47	49	109.4	98-25
6-16		KM	uHLx 650768 6-11		110.8		98-29
6-16		KM	ACfx 94479 6-11		110.7		
6-9		KM	ACfx 79896 6-4		110.8		
6-9		KM	" 79883 6-3		110.8		
6-9		KM	" 72826 6-3		109.2		98-24
6-16		KM	" 94473 6-3		109.9		
6-16		KM	" 94941 6-3		109.7		
6-9		KM	" 79894 6-1		110.9		
6-22		KM	ACfx 94942 6-11		110.5		29
6-22		KM	" 94940 6-10		110.1		98-
6-16		KM	" 94477 6-10		109.7		
6-8			KT	47	40	110.5	98-25
6-4		If		47	50	110.8	98-24
6-4		If		47	51		
6-4		If			52		
6-5		If			53	111.4	
6-5		If			64	111.4	98-24
6-8		If			65	110.5	98-25
6-8		If			66		
6-8		If			67		
6-8		If			68		
6-9		If			69	110.6	
6-9		If			70		
6-9		If			71		
6-9		If			72		
6-10		If			73	110.7	
6-10		If			74	110.7	98-25
6-11		If		47	75	110.8	98-29
6-11		If			76	110.8	
6-10			KT	47	83	110.7	98-25
6-11			KT		84	110.8	98-29
6-9			KT		81	110.6	98-25

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6-9		KT	47	82	110.6	98-25
6-4	Blended pitch t-65 98-25 A-15-28					
	Sp 108.8 QI 8.8 TI 27.7 Ash .09 CV 57.14					
	Dist. 360° .9 Br 18.2 Dens. 1.3265					
6-8	Ship "Sammi Blonde" 98-26-A Koreon A-16-11					
	SP 108.8 QI 10.7 TI 26.8 Ash .21 CV 56.94 Dist. 360° 3.7					
	Br 16.1 Dens. 1.3246					
6-9	Ship "Samm Blonde" 98-26-B Koreon A-16-12					
	SP 109.6 QI 9.3 TI 26.9 Ash .19 CV 56.86 Dist. 360° 1.7					
	Br 17.6 Dens. 1.3241					
6-9	Ship "Birkness" 98-28-A Chinese					
	SP 109.2 QI 3.5 TI 18.8 Ash .08 CV 53.41 Dist. 360° 1.4					
	Br 15.3 Dens. 1.2969					
	Ship Birkness 98-28-B Chinese					
	SP 109.9 QI 3.6 TI 18.9 Ash .08 CV 54.32 Dist 360° 1.8					
	Br 15.3 Dens. 1.2987					
6-11	98-29 Blended Pitch t-65 98-29 A-17-12					
	SP 109.7 QI 8.8 TI 27.2 Ash .12 Dist. 360° 1.0					
~~6-11~~	Br 18.4 Dens. 1.3171					
6-11	If		47	77	110.8	98-29
6-12	If			79	111.3	98-29
6-12	If		47	80	111.3	
6-11		KT	48	10	110.8	
6-12	If			13	111.3	
6-15		KT	48	14	111.4	
6-15	If			19		
6-15	If		48	20		
6-15		KT	48	15		
6-16		KT		16	111.8	

6-17		KT	48	17 ✓	111.5		
6-18		KT	48	18 ✓	111.4		
6-15	If			21 ✓	111.4		
6-15	If			22 ✓	1		
6-16	If			23 ✓	111.8		
6-16	If			24 ✓	1		
6-16	If		48	25 ✓	1		
6-16	If			26 ✓	111.8		
6-17	If			27 ✓	111.5		
6-17	If			28 ✓	111.5		
6-18	If			29 ✓	111.4		
6-18	If		48	30 ✓	111.4		
6-22	If			31 ✓	111.7		
6-22	~~If~~			32 ✓	111.7		
6-19	If			33 ✓	111.7		
6-19	If		48	45 ✓	1		
6-19	If			46 ✓	111.7		
6-18		KT		47 ✓	111.4		
6-22		KT	48	49 ✓	111.7		
	~~ACFX 94941~~						
6-24	Blended pitch t-65 98-31					A-18-9	
	Sp 108.5 QI 9.1 TI 26.6 Ash .13				BR 17.9		
	Dens. 1.3235 Dist. 360° 1.8 CV		56.20				
6-23		KT	48	50	111.7 ✓	98-29	
6-23		KT		51	1 ✓		
6-26		KT		52	110.9 ✓		
6-25		KT		53	110.6 ✓	98-31	
6-25		KT		54	1 ✓		
6-22	If		48	55	112.4 ✓	98-29	
6-22	If			56	1 ✓		
6-23	If		48	57	111.7 ✓		

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6-23	If	48	58	111.7	98-29	
6-24	If		59	108.9		
6-24	If	48	60			
6-24	If		61		98-31	
6-24	If		62			
6-26	If		63	110.9		
6-26	If		64			
6-26	KT	48	98			
7-1	KM ACfx 94478 6-24			108.8		
7-1	KM ACfx 79877 6-24			109.1		
6-24	KM ACfx 72821 6-24			109.1		
6-24	KM ACfx 79884 6-24			109.3		
6-24	KM ACfx 94472 6-24			109.0		
7-13	KM ACfx 94474 6-30			107.6		
7-1	KM ACfx 72826 6-30			108.7		
7-1	KM ACfx 87690 6-30			108.7	98-32	
7-13	KM ACfx 79896 7-1			108.5		
7-1	KM ACfx 79883 6-30			108.7		
6-30	CVCO t-67 98-33		A-19-8			
	H20 .10 SP.Gr 38° 1.0984		XI .35			
	Spec. 235-315 1.0290 DIST 210° 0 235°.4					
	Spec. 315-355 1.1260 270° 16.3 315° 46.4 355° 74.5					
6-29	IF	48	65	110.5		
6-29	IF		66		98-31	
6-29	KT		79			
6-30	KT		80	110.9		
6-29	If		84	110.5		
6-29	If		85	1		
6-30	If		86	110.9		
6-30	If		87	1		
7-1	KT	48	81	110.0	98-32	
7-1	KT		82	110.0		

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7-2			KT	48	83	110.2	✓	
7-1		If			88	110.0	✓	
7-1		If			89	"	✓	
7-1		If		48	90	"	✓	
7-1		If			91	"	✓	
7-2		If		48	92	110.2	✓	
7-2		If			93	"	✓	
7-6		If			94	110.4	✓	
7-6		If			95	"	✓	
7-6			KT	49	19	"	✓	
7-7			KT		20	111.1	✓	
7-7			KT		21	~~109.4~~ 111.1	✓	
7-8			KT		22	109.1	✓	94-32
7-9			KT		23	111.4	✓	98-35
7-9		If		49	13	111.4	✓	
7-13		If			14	110.7	✓	
7-13		If			15	"	✓	
7-14		If			16	111.9	✓	
7-14		If			17	"	✓	
7-14			Kt		39	"	✓	
7-13			KT		40	110.7	✓	
7-27		KM	ACFX 79883			109.0	✓	
7-13		KM	ACFX 94471 7-8			108.8	✓	
7-13		"	" 94944 7-8			109.1	✓	
7-21		"	" 79882 7-10			109.4	✓	
7-21		"	" 94479 7-10			109.2	✓	
7-27		"	" 94941 7-14			109.3	✓	
7-21		"	UTLX 650776 7-9			109.4	✓	
7-21		"	" 650768 7-9			108.7	✓	
7-6		If		49	03	110.4	✓	98-32
7-6		If			04	"	✓	
7-7		If		49	05	111.4	✓	
7-7		If			06	"	✓	

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7-8		If	49	07	109.4	✓	98-32
7-8		If		08	|	✓	
7-8		If		09	|	✓	
7-8		If	49	10	|	✓	
7-9		If		11	110.9	✓	98-35
7-9		If		12	110.9	✓	
7-15		If	49	18	110.3	✓	
7-14		KT	49	41	111.9	✓	
7-15		KT		42	110.3	✓	
7 15		If	49	68	110.3	✓	
7-27		KM GHLX650773-7-15			110.6	✓	
7-16		If	49	69	110.1	✓	
7-16		If		70	|	✓	
7-16		KT		71	|	✓	
746		KT		72	|	✓	
7-17		If	49	74	111.8	✓	
7-20		KT		76	111.2	✓	
7-20		If	49	80	|	✓	
7-20		If		81	|	✓	
7-21		KT	49	77	110.8	✓	98-35
7-22		KT		78	110.6	✓	98-36
7-23		KT		79	110.3	✓	
7-21		If		82	110.8	✓	
7-21		If		83	1	✓	
7-22		If	49	84	110.6	✓	
7-22		If		85	1	✓	
7-23		If		86	110.3	✓	
7-23		If		87	1	✓	
7-21		If	49	91	110.8	✓	
7-23		KT		93	110.3	✓	
7-23		KT		94	1	✓	
7-24		If		96	110.5	✓	
7-27		If		97	111.0	✓	

Koppers005816

7-9	Blended Pitch t-65		98-35		A-19-29
	SP 108.9 QI 93 TI 26.9 Ash .17 CV 56.7 Dist. 360 2.5 P				
	BR 17.60 Dens. 1.3244				
7-21	Blended Pitch t-65		98-36		A2-16
	SP 108.3 QI 8.9 TI 26.8 Ash .13 CV 56.36 Dist. 360 2.0				
	Br 17.9 Dens 1.3233				
7-27	IF		49	98	111.0 ✓
7-27		KT	50	13	111.0 ✓
8-3	KM	ACFX 94477 7-21			109.0 ✓ 98-36
8-3	"	" 79884 7-22			108.4 ✓
8-12	"	" 94472 7-22			108.0 ✓
8-12	"	" 72821 7-22			108.6 ✓
8-3	"	" 79875 7-21			108.8 ✓
8-3	"	" 94942 7-22			108.6 ✓
8-12	"	" 87696 7-22			108.7 ✓
8-12	"	" 72826 7-22			108.7 ✓
8-3	"	" 94473 7-21			108.8 ✓
7-27	"	" 79894 7-21			108.2 ✓

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7-29		Blended Pitch t-65 98-37						98-36
		SP 108.9 QI 8.5		Ash .12		TI 26.7		
		CV 56.68	Dist. 360° 2.6	Dens	13232	B.R. 18.2		
7-27		If		49	99	111.2	✓	
7-27		If		50	00	111.3	✓	
7-28		If			01	|	✓	
7-28		If			02	|	✓	
7-28		If			03	|	✓	
7-28		If			04	|	✓	
7-29		If		50	05	111.1	✓	98-37
7-29		If			06	1	✓	
7-30		If			07	111.2	✓	
7-30		If			08	|	✓	
7-30		If			09	|	✓	
7-30		If		50	10	|	✓	
7-30		If			11	111.3	✓	
7-31		If			12	1	✓	
7-28				KT	14	111.3	✓	98-36
7-28				KT	15	1	✓	
7-29				KT	16	111.1	✓	98-37
7-30				KT	17	111.2	✓	
7-31		If		50	24	111.3	✓	
8-14		KM	ACFX 94478	7-28		109.3	✓	
8-14		"	" 79896	7-24		110.1	✓	
8-14		"	" 94474	7-28		109.4	✓	
8-14		"	" 94944	7-28		109.4	✓	
8-14		"	" 79877	7-28		109.5	✓	
8-3				KT	50	18	111.0	✓
8-3		If				25	|	✓
8-3		If				26	|	✓

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8-7		P1 P13 Creo t-67 98-41					
		H20 .10 Sgr. 38C = 1.1192					
		xI .46 Fr. 235-315			1.0290		
		Dist 210 0 Fr. 315-355			1.1270		
		" 235 .50					
		" 270 15.60					
		" 315 45.50					
		" 355 74.80					
8-3		If		50	27	111.0	✓ 98-37
8-3		If			28	1	✓
8-4		If			29	111.4	✓
8-4		If		50	30	1	✓
8-5		If			33	111.3	✓
8-5		If			34	1	✓
8-4			KT		41	111.4	✓
8-4			KT		42	1	✓
8-5		If		50	31	111.3	✓
8-5		If			32	1	✓
8-6		If		50	35	111.8	✓
8-6		If			36	1	✓
8-7		If			37	110.7	✓
8-6		If			38	111.8	✓
8-7		If			39	110.7	✓
8-7		If		50	40	110.7	✓
8-5			KT		43	111.3	✓
8-6			KT		44	111.8	✓
8-6			KT	50	45	1	✓
8-10			KT		46	111.4	✓
8-6		If		50	62	111.8	✓ 98-37
8-7		Blended Pitch t-65 98-40					
		SP 109.0 Qt 9.3 TI 27.1 Ash .12 CV 56.30					
		Dist 360° 1.5 Dens 1.3234 BR. 17.7					

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98-40

8-11		KT	50	63	110.4	✓	
8-11		KT		64	"	✓	
8-12		KT	50	65	110.3	✓	
8-12		KT	50	66	"	✓	
8-12		KT		67	"	✓	
~~8-13~~	~~OK 5068~~	~~KT~~		~~68~~	~~110.5~~	✓	
8-13		KT		77	110.5	✓	
8-13		KT		78	"	✓	
8-13		KT	50	79	"	✓	
8-14		KT	50	80	110.9	✓	
8-24	If		51	01	111.6	✓	
8-24	If		51	02	"	✓	
8-24		KT	50	81	"	✓	
8-20	ACFX 94471 8-19				110.1	✓	
8-20	" 94940 8-19				109.7	✓	
8-20	" 94479 8-19				109.9	✓	
8-25		KT	50	94	111.2	✓	
8-25		KT		95	"	✓	
8-26		KT		96	112.3	✓	98-40
8-27		KT		97	110.9	✓	98-42
8-24	If		51	03	111.6	✓	98-40
8-24	If			04	"	✓	
8-25	If		51	05	111.2	✓	
8-25	If			07	"	✓	
8-25	If			06	"	✓	
8-25	If			08	"	✓	
8-26	If			09	112.3	✓	98-40
8-26	If		51	10	"	✓	
8-27	If			11	110.9	✓	98-42
8-27	If			12	"	✓	
8-27	If			13	"	✓	
8-27	If			14	"	✓	
8-28	If		51	15	111.1	✓	

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8-26		Blended Pitch 98-42					
		SP 108.8 QI 8.8 TI 26.7					
		ASH, 11 CV 56.75 Dist. 360° 2-5					
		B.R. 17.9 Dens. 1.3206					
							98-42
8-28		If	51	16	111.1 ✓		
8-28		IF	51	24	1 ✓		
8-31		If		26	110.9 ✓		
8-31		If		27	1 ✓		
8-26	5	U+LX 650 768 8-26			108.8 ✓		
8-26		" 650 773 8-26			108.8 ✓		
8-26		" 650 776 8-26			108.9 ✓		
8-26		ACEX 94 941 8-26			109.2 ✓		
9-1		" 79 884 8-26			109.2 ✓		
9-1		" 94 476 8-27			109.3 ✓		
8-27		" 79 882 8-26			109.2 ✓		
9-1		" 79 894 8-26			109.0 ✓		
9-1		" 79 883 8-26			109.2 ✓		
9-1		SP Retest 111.3 LT	51	00	~~111.9~~ 111.3		✓
8-31		If		28	110.9 ✓		
8-31		If		29	1 ✓		
9-1		If		30	~~111.9~~ 111.3		✓
9-1		If		31	~~111.8~~	111.3	✓
9-1		If		32	1		✓
9-1		If		33	1		✓
9-2		If		34	~~111.8~~	111.3	✓
9-2		If		35	1		✓
9-2			KT	46	1	111.3	✓
8-31			KT 50	98	110.9		✓

SP Retest 111.3 a-1 111.3 a-2 to

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FT 111.3 98-42

9-1			KT	50	99	~~111.8~~		
9-3		If		51	36	~~111.7~~		
9-3		If			37		111.5	
9-3		If			38			
9-5		If	SP Retest 111.3		39	112.0		
9-4		If	SP Retest 111.5	51	40	111.4		
9-3			KT	51	47	~~111.7~~	Retest 9-5	
9-3			KT		48	111.5		
9-4			KT	51	49	111.4		
9-9		ACFX 72826	9-3			109.7		
9-9		ACFX 79875	9-3			109.6		
9-14		ACFX 94472	9-3			109.2		
9-9		ACFX 87690	9-3			109.7		
9-14		ACFX 94940	9-4			110.1		
9-4		ACFX 94473	9-3			109.4	98.43	
9-14		ACFX 94942	9-3			109.2		
9-9		ACFX 94471	9-3			109.3		
9-9		ACFX 79877	9-4			109.9		
9-14		ACFX 94479	9-4			109.2		
9-4		If		51	41	111.4	98.42	
9-4			KT	51	50	1		
9-8			KT		56	110.8	98-43	
9-8			KT		57	1		
9-9			KT		58	111.1		
9-9			KT		59	1	98-43	
9-10			KT		60	111.3		
9-8		If 4704		51	64	110.8		
9-8		If			65	1	98-43	

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98-43

9-8		If		51	66	110.8	✓	
9-8		If			67	1	✓	
9-9		If			68	111.1	✓	
9-9		If			69	|	✓	
9-9		If		51	70	|	✓	
9-9		If			71		✓	
9-10		If			72	111.3	✓	
9-10		If			73	|	✓	
9-10			KT	51	61	|	✓	
9-11			KT		62	111.5	✓	
9-11			KT		63	1	✓	
9-10		If			74	111.3	✓	
9-10		If		51	75	1	✓	
9-11		If			76	111.5	✓	
9-11		If			77	1	✓	
9-14		If		51	84	110.4	✓	98-46
9-14		If			85	|	✓	
9-14		If			86	|	✓	
9-14		If			87	|	✓	
9-15		If		51	88	109.4	✓	
9-15		If			89	1	✓	
9-14			LT	52	01	110.4	✓	
9-15			KT	52	02	109.4	✓	
9-15			KT	52	03	1	✓	
9-14		ACFX 79896	9-13			108.3	✓	
9-14		94478	9-13			108.8	✓	
9-14		94944	9-13			108.9	✓	
9-14		94477	9-13			108.9	✓	
9-15		94948	9-14			109.7	✓	
9-15		UHX 650776	9-15			109.5	✓	
9-15		ACFX 72821	9-15			109.5	✓	
9-15		If		51	90	110.4	✓	
9-15		If			91	1	✓	

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Blended / Pitch t-65 98-43 A-25-15
SP 109.3 QI 8.8 TI 26.5 ASh .07 CV 56.67
Dist.360° 2.5 Dens 1.3194 BR 17.7

Ship Koreon New Concord 98-45-A A-26-27
SP 109.6 QI 9.1 TI 26.0 ASh .11 CV 53.90
Dist.360° 2.2 Dens. 1.3272 BR 16.9

Ship Koreon New Concord 98-45-B A-26-28
SP 109.4 QI 9.0 TI 26.3 ASh .20 CV 57.00
Dist.360° 1.7% Dens. 1.3223 Br 17.3

Blended pitch t-65 98-46 A-26-29
SP 108.7 QI 9.2 TI 26.4 ASh .10 CV 56.20
Dist 360° 2.3% Dens 13196 BR 17.2

9-16		If		51	92	110.4	✓	98-46
9-16		If			93		✓	
9-16			Kt	52	04		✓	
~~9-15~~	9-22	ACFX 94474	9-14	4784		109.4	✓	
~~9-15~~	9-22	" 94470	9-14	4785	4786	109.6	✓	
~~9-15~~	9-22	utlx650773	9-14		4787	109.6	✓	
9-17		If		51	94	110.6	✓	
9-17		If			95		✓	
9-17		If			96		✓	

98-46

9-17	If		51	97	110.6	✓
9-18	If		51	98	110.7	✓
9-18	If		51	99		✓
9-18	If		52	00		✓
9-17		KT	52	05	110.6	✓
9-18		KT	52	06	110.7	✓
9-21		KT	52	27	III	✓
9-21	If		52	29		✓
9-21	If		52	30		✓
9-23	Blended Pitch 98-47 + 65				A-28-21	
	QI 9.0 TI 27.0					
	SP 108.5 ASH .08					
	CV 57.16 DST. 360° 2.2					
	BT 18.0 DENS. 1.3245					
9-22	If		52	33	111.4	✓
9-21		KT	52	28	111.1	✓
9-21	If		52	31		✓
9-21	If		52	32		✓
9-22	If			34	111.4	✓
9-22		KT		46		✓
9-22	If			35		✓
9-22	If			36		✓
9-23	If			37	111.3	✓
9-23	If			38		✓
9-23		KT	52	47		✓
9-24	If			39	110.4	✓ 98-47
9-24	If		52	40		✓
9-23		KT		48	111.3	98-46
9-24	If		52	41	110.4	✓ 98-47
9-24	If			42	110.4	✓
9-25	If			44	110.5	✓

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98-47

9-28		If			52	45	110.5	✓	
~~9-23~~	9-24		UtLx 650768	9-23			108.7	✓	
9-29			acfx 94476	9-23			108.0	✓	
	9-24		acfx 79894	9-23			108.6	✓	
9-28				Kt	52	49	109.9	✓	
9-28		If			52	64		✓	
9-28		If			52	65		✓	
9-24		If			52	43	110.4	✓	
9-28				Kt	52	59	110.9	✓	
9-29				Kt		60	111.0	✓	
9-28		If				66	110.9	✓	
9-28		If				67		✓	
9-29		If				68	111.0	✓	
9-29		If				69		✓	
9-29				Kt	52	61		✓	
9-29		If				70		✓	
9-29		If				71		✓	
9-30		If				72	111.1	✓	
9-30		If				73	111.1	✓	
10-1		If			52	74	111.3	✓	
10-1		If				75		✓	
10-1		If				76		✓	
10-5		Al	UtLx 650814	10-1			110.2	✓	
10-5		~~KM~~ Al	" 650824				109.9	✓	
10-5		Al	" 650842				109.9	✓	
10-1		Al	" 650898				109.3	✓	98-48
10-1		Al	" 650858				109.4	✓	
10-1		Al	" 650895				109.5	✓	
10-1		KM	Acfx 94478				109.5	✓	
10-2		KM	" 94471	10-1			110.1	✓	
10-5		KM	" 79883				109.5	✓	
10-2		KM	" 79877				109.1	✓	
10-2		KM	" 94473	10-1			109.5	✓	

9-30	Blended Pitch 98-48		A-29-13			
	SP 109.3 QI 9.0 T I 26.8 ASh .07		C V 57.30			
	Dist. 360° 2.0 g. Dens. 1.3213		BR 17.8			
10-1	If	52	77	111.3	✓	98-49
10-1	If		78	1	✓	
10-2	If		79	110.2	✓	98-49
10-2	If		80	1	✓	
10-5	If	52	91	111.1	✓	
10-5	If		92	1	✓	
10-9	Blended Pitch t. 65 98-49		A-30-04			
	SP 109.1 QI 8.8 T I 27.0 C V 57.07 ASh .10					
	Dist. 360° 1.6 Dens. 1.3336		BR. 18.2			
10-7	KT	52	62	111.4	✓	
10-8	If	52	93	1	✓	
10-12	KT	52	63	111.8	✓	
10-12	If	52	96	1	✓	98-49
10-12	If	52	95	1	✓	
10-13	If	52	94	111.4	✓	98-49
10-14	If	52	98	111.5	✓	
10-14	If	53	19	1	✓	98-49
10-9	KM UtLX 650776 10-8			109.6	✓	98-49
10-19	AL " 650897 10-7 ok?			109.5	✓	
10-12	AL " 650843 10-7			109.7	✓	
10-12	AL " 650829 10-7			108.9	✓	
10-19	AC " 650876 10-7			109.3	✓	
10-12	AL " 650846 10-8			109.9	✓	
10-9	KM ACfX 87690 10-8			109.5	✓	
10-9	KM " 94970 10-8			109.8	✓	
10-9	KM " 94942 10-6			109.8	✓	
10-12	KM " 94940 10-8			109.9	✓	

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AC=3 km=4

10-12		If		52	63	111.5	✓	
10-12		If			96	1	✓	
10-12		If			95	1	✓	
10-13		If			94	111.7	✓	
10-14		If			98	111.7	✓	
10-14		If		53	19	1	✓	98-49
10-15			KT	53	08	111.4	✓	
10-15			KT		09	1	✓	
10-15		If			21	1	✓	
10-15		If		53	22	1	✓	
10-19		KM	ACfx 79896 10-15		—	109.6	✓	
10-19		"	ACfx 94944 10-15			109.7	✓	
11-2		"	ACfx 72821 10-15			109.2	✓	
10-15		"	ACfx 72826 10-14			109.5	✓	
10-14		"	ACfx 79875 10-14			108.9	✓	
10-14		"	ACfx 94479 10-14			108.9	✓	98-49
10-14		"	ACfx 94472 10-14			109.5	✓	
10-19		"	ACfx 79882 10-15			109.3	✓	
10-19		"	ACfx 79884 10-14			109.2	✓	
10-26		AL	UTLX 650896 10-15			109.0	✓	
10-19		AL	UTLX 650826 10-15			108.6	✓	
10-26		AC	UTLX 650899 10-22			109.4	✓	
11-2		KM	UTLX 650768 10-22			109.2	98-50	98-50
11-2		AL	UTLX 650847 10-22			108.2	✓	
10-26		AL	UTLX 650823 10-22			108.4	✓	
10-15		If		53	20	111.4	✓	98-49
10-19		If	E		32	110.3	✓	
10-19		If	E		33	1	✓	98-50
10-19		If			34	1	✓	
10-19		If			35	1	✓	
10-20		If			36	110.3	✓	
10-20		If			37	1	✓	
10-19			KT	53	40	110.3	✓	

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10-19		KT	53	41	110.3	✓	98-50	
10-20		KT		42	110.3	✓		
10-20	If			38	/	✓		
10-20	If			39	/	✓		
10-20		KT	53	43	/	✓		
10-21	If		53	53	1108	✓		4877
10-16	Blended Pitch 98-50			A30-21				
	SP 108.8 QI 9.0 TI 27.7 Ash .12							
	Dist. 355° .80 360° 1.8 Br. 18.7							
	Dens. 1.3283 CV. 56.77							
10-22	Blended Pitch 98.51			A-31-22				
	SP 109.2 QI 9.3 TI 26.9 Ash .11							
	Dist. 355° 1.3 360 2.0 Br. 17.6							
	Dens. 1.3182 CV 56.77							
10-28	PAN Bright Korean Pre-Ship 98-52-C						A-32-03	
	SP 110.2 QI 9.4 TI 28.2 Ash .06							
	Dist. 355° 1.7 360° 2.2 B.R. 18.8							
	Dens. 1.3189 CV 57.91							
10-28	PAN Bright Korean Ship 98-52-B						A-31-24	
	SP 109.7 QI 9.3 TI 27.7 Ash .09							
	CV 57.58 Dist. 355° 1.30 360° 2.2							
	Dens 1.3177 B.R. 18.4							
10-28	PAN Bright Korean Ship 98-52-A						A-31-23	
	SP 109.7 QI 10.0 TI 28 Ash .09							
	Dist. 355° 1.6 360° 2.3 Br 18.0							
	Dens 1.3179 C.V. 57.74							

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10-26		±f		53	54	110.9	✓	98-51
10-26		±f			55		✓	
10-26		±f			56		✓	
10-26		±f			57		✓	
10-27		±f			58	110.3	✓	
10-27		±f			59		✓	
10-27		±f			60		✓	
10-27		±f		53	61		✓	
10-26			KT	53	66	110.9	✓	
10-27			KT		67	110.3	✓	
10-28			KT		68	110.9	✓	
10-29		±f		53	62	110.5	✓	
10-28			KT		69	110.9	✓	98-51
10-29			KT	53	70	110.5	✓	
10-28		±f		53	63	110.9	✓	
10-30		±f			64	110.9	✓	
10-29		±f			65	110.5	✓	
10-30		±f		53	84	110.9	✓	
11-02		±f			85	111.2	✓	
11-02		±f		53	86		✓	
11-02			KT	54	00		✓	
11-02		±f		53	87		✓	
11-2		±f		53	88		✓	
11-3		±f		53	89	111.9	✓	
11-3		±f		53	90		✓	
11-3			KT	54	01		✓	
11-3		±f		53	91		✓	
11-3		±f			92		✓	
11-5		±f			93	111.0	✓	98-52
11-5		±f			94	1	✓	
11-4			KT	54	02	111.3	✓	98-51
11-4			KT		03	1	✓	
11-5			KT		04	111.0	✓	98-52

Koppers005830

98-52

11-4		AL	Utlx 650 845	11-4	✓		109.1		
11-4		KM	Utlx 650 773	11-4	✓		109.1		
11-9		KM	ACfx ~~650~~ 79877	11-5	✓		109.1		
11-9		KM	ACfx 94471	11-5	✓		109.0		
11-9		KM	ACfx 94941	11-5	✓		109.2		
11-9		KM	ACfx 94474	11-4	✓		109.1		
11-4		KM	ACfx 79891	11-4	✓		109.2		
11-5		AL	Utlx 650836	11-5	✓		109.4		
11-9		AL	Utlx 650824	11-5	✓		108.9		
11-9		AL	Utlx 650842	11-5	✓		109.1		
11-9		AL	Utlx 650858	11-5	✓		109.1		
11-5		If			53	95	111.0 ✓		
11-5		If				96	1 ✓	98-52	
11-5		If				97	1 ✓		
11-6		If				98	110.4 ✓	98-52	
11-6		If				99	1 ✓		
11-9				Kt	54	13	110.5 ✓		
11-9		If			54	18	1 ✓		
11-9		If			54	19	1 ✓		
11-10				Kt		14	110.4 ✓		
11-11				Kt		15	110.6 ✓		
11-11				Kt		16	1 ✓		
11-9		If			54	20	110.5 ✓		
11-16		KM	ACfx 94476	11-11	✓	5022	108.3	98-53	
11-16		KM	ACfx 54940	11-11	✓		109.2		
11-16		KM	Utlx 650 776	11-11	✓		108.9		
12-15		KM	ACfx 94473	11-11	✓		108.7		
12-15		KM	ACfx 94942	11-12	✓		109.1		
11-16		KM	ACfx 87690	11-12	✓		109.0		
12-15		KM	ACfx 94470	11-12	✓		109.0		
11-16		AL	Utlx 650814	11-12	✓		108.7		
11-16		AL	Utlx 650829	11-11	✓		108.5		
11-16		AL	Utlx 650843	11-11	✓		109.0		

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98-52

11-5		Blended Pitch t-65 98-52		A-32-19			
		SP 108.6 QI 9.2 Ash. 10		TI 27.8			
		CV 56.54 Dist. 355° 1.70 360° 2.2					
		Dens. 1.3105 Br. 18.6					
11-12		Blended Pitch t-65 98-53		A-34-3			
		SP 108.4 QI 9.2 Ash. 11		TI 28.4			
		CV 57.26 Dist. 355° 2.5 360° 2.8					
		Dens 1.3159 Br. 19.2					
11-9		If	54	21	110.5	✓	
11-10		If		22	110.4	✓	
11-10		If		23	"	✓	
11-10		If		24	"	✓	
11-10		If		25	"	✓	
11-11		If		26	110.6	✓	
11-11		If		27	"	✓	
11-12		If		28	111.2	✓	
11-12		If	54	29	"	✓	
11-12		KT	54	17	✓	✓	~~98-53~~
11-12		If		30	✓		
11-12		If		31	✓		
11-13		If		32	110.4	✓	98-53
11-13		If		33	"	✓	
11-13		If		49	"	✓	
11-16		KT	54	44	110.5	✓	
11-16		If		50	"	✓	
11-16		If		51	"	✓	
11-17		KT		45	110.6	✓	17th 110.8
11-16		If		52	110.4	✓	
11-17		If		53	110.9	✓	
11-17		If		54	"	✓	
11-17		If		55	"	✓	
11-18		KT	54	46	110.5	✓	

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11-18			KT	54	47	110.1	✓	98-53
11-19			KT	54	48	110.8	✓	98-54
11-17		If		54	56	110.5	✓	98-53
11-17		If		54	57	110.5	✓	
11-18		If		54	58	110.5	✓	
11-18		If			59	110.5	✓	
11-19		If		54	60	110.8	✓	
11-19		If			61	5	✓	98-54
11-19		If			62	110.8	✓	
11-23		If			63	110.7	✓	
11-23		If			64		✓	
11-23		If			65		✓	
11-23			KT	54	74		✓	
11-23			KT		75		✓	
11-24			KT		76		✓	
11-23		If			78	110.7	✓	
11-24		If			79	110.7	✓	
11-24		If		54	80		✓	
11-24		If			81		✓	
11-24		If			82	110.7	✓	
11-25		If			83	111.2	✓	
11-25		If			84		✓	
11-25		If		54	90		✓	
11-30		If			91	111.5	✓	
11-30		If			92	111.5	✓	
11-30			KT		93	111.5	✓	
12-1			KT		94	110.9	✓	98-56
12-2			KT		95	110 Trans!		
12-2			KT		96	110.7	✓	
12-7		~~If~~	KT		97	111.0	✓	
11-30		If			98	14.5	✓	98-54
11-30		If			99	111.5	✓	
12-1		If		55	00	10.9	✓	

Koppers005833

11-30	AL	UTLX	650 823	11-18		✓	109.4		98-54
11-23	AL	"	650 895	11-19		✓	108.5		
11-30	AL	"	650 899	11-18		✓	109.1		
11-30	AL	"	650 826	11-18		✓	109.3		
11-23	AL	"	650 846	11-18		✓	109.3		
11-23	AL	"	650 898	11-18		✓	108.9		
		~~650 898~~		~~11-18~~					
12-15	KM	ACFX	79883	11-18		✓	109.1		98-56
12-15	KM	ACFX	94478	12-1		✓	109.2		
12-15	KM	ACFX	79875	12-1		✓	109.3		
12-8	AL	UTLX	650897	12-1			109.4	✓	
12-8	AL	"	650876	12-1		✓	109.1	✓	
12-8	AL	"	650896	12-1		✓	109.4	✓	
12-1		If			SS	01	110.9	✓	98-56
12-2		If				02	110.7	✓	
12-2		If				03	1	✓	
12-3		If				04	110.7	✓	
12-3		If			SS	05	|	✓	
12-3		If				06	|	✓	
12-4		If				07	110.7	✓	
12-4		If				08	1	✓	
12-7		IT			SS	09	111.0	✓	
12-8				KT		14	110.1	✓	
12-7		If				17	111.0	✓	
12-7		If				18	|	✓	
12-7		If				19	|	✓	
12-8		If			SS	20	110.1	✓	
12-8		If				21	110.1	✓	
12-9				KT	SS	15	110.1	✓	
12-9				KT		16	|	✓	
12-9		If				22	|	✓	
12-9		If				23	|	✓	
12-10		If				24	110.1	✓	98-56

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12-10		If		55	25	110.1	✓ 98-56	
12-10		If		55	26	1	✓	
12-28		ACfx 79896	12-10		✓	109.3	98-57	
12-28		Acfx 72826	12-9		✓	109.2		
12-15		UTLx 650836	12-9		✓	109.1		
12-15		UTLx 650 858	12-9		✓	109.2		
12-15		UTLx 650 845	12-9		✓	109.0		
12-21		UTLx 650 773	12-9		✓	109.0		
12-21		UTLx 650 772.	12-9		✓	108.9		
12-15		UTLx 650 847	12-9		✓	109.1		
12-11		If		55	27	109.4	✓	
12-11		If		55	33	1	✓	
12-14		If			34	110.9	✓	
12-14		If			35	|	✓	
12-14			KT	55	51	|	✓	
12-14		If		55	36	|	✓	
12-14		If			37	|	✓	
12-15		If			38	111.2	✓	
12-15		If			39	/	✓	
12-15		If			41		✓	
12-16		If			43	110.9	✓	
12-15		If		55	40	111.2	✓	
12-16		If			42	110.9	✓	
12-15			KT		52	111.2	✓	
12-16			KT		53	110.9	✓	
12-16			KT		54	1	✓	
12-17		If		55	46	111.0	✓	
12-17		If			45	/	✓	
12-17		If			44	/	✓	
12-17		If		55	47	110.3	✓ 98-58	
12-17		If			48	1	✓	
12-18		If			49	110.8	✓	
12-18		If			50	1	✓	

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98-58

12-21		UtLx 650 829 12-16	✓		109.4				
12-21		842	✓		109.1				
12-21		824	✓		108.9				
12-21		843	✓		109.1				
12-28		AcFx 79891	✓		108.9				
12-28		94840	✓		108.4				
		~~94944 12-16~~			109.0				
12-21		Kt	55	67	110.8	✓	98-58		
12-21	If			71		✓			
12-21	If	5880		72		✓	98-59		
12-22		Kt		68	110.9	✓			
12-21	If			73	110.8	✓			
12-21	If			74	1	✓			
12-22	If			75	110.9	✓			
12-22	If			76	1	✓			
12-23		Kt		69	110.7	✓			
12-23	If			77		✓			
12-23	If			78		✓			
12-23	If			79		✓			
12-28	If			80	111.0	✓			
12-28	If			81	1	✓			
12-28		UtLx 650 898 12-21	✓		109.0				
12-28		650 832 12-21	✓		108.8				
12-28		650 817 12-21	✓		108.9				
12-28		650 814 12-21	✓		108.8				
		~~650 823 12-22~~			~~109.0~~				
		~~UtLx 650 899 12-22~~			~~109.4~~				
		~~AcFx 94476 12-22~~			~~109.1~~				
		~~AcFx 87690 12-22~~			~~109.1~~				

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98-59

12-29		KT	55	70	111.3	✓
12-28	If		55	82	111.0	
12-28	If			96	✓	
12-29	If			97	111.3 ✓	
12-29	If		55	98	111.3 ✓	
~~12-28~~	~~If~~		~~55~~	~~82~~	~~111.0~~	111.0
12-30		KT	55	94	111.3 ✓	
12-29	If		55	99	111.3 ✓	
12-29	If		56	00	111.3 ✓	
12-30	If		56	01	111.3 ✓	
12-30	If	SLTP	56	02	111.3 ✓	
12-30		KT	55	95	111.3 ✓	

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SUBJECT Date From Ph oil & grease Phenols Water Temp.

1-1-89	
1-2-89	
1-3-89	
1-4-89	
1-5-89	Called COFFey Lab Okay To pump 1&2
1-6-89	pumping w-w- 1&2
1-7-89	
1-8-89	
1-9-89	pumping w-w- 3&4
1-10-89	Flow
1-11-89	
1-12-89	
1-13-89	No Flow
1-14-89	
1-15-89	
1-16-89	Sampled w-w- 1&2
1-17-89	
1-18-89	
1-19-89	
1-20-89	
1-21-89	
1-22-89	
1-23-89	
1-24-89	
1-25-89	
1-26-89	
1-27-89	pumping w-w- 1&2
1-28-89	Flow
1-29-89	
1-30-89	
1-31-89	No Flow

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Date	
2-1-89	
2-2-89	
2-3-89	
2-4-89	
2-5-89	
2-6-89	
2-7-89	
2-8-89	
2-9-89	
2-10-89	
2-11-89	
2-12-89	
2-13-89	Sampled w-w - T-3 + T-4
2-14-89	
2-15-89	
2-16-89	
2-17-89	Sampled w-w T-1 + T-2
2-18-89	
2-19-89	
2-20-89	
2-21-89	
2-22-89	pumping T-3 + 4
2-23-89	
2-24-89	Flow
2-25-89	
2-26-89	
2-27-89	
2-28-89	

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SUBJECT Date From PH Oil+Grease Phenols Water Temp

Date	From PH Oil+Grease Phenols Water Temp
3-1-89	No Flow
3-2-89	
3-3-89	pumping W-W-T-1 & 2
3-4-89	
3-5-89	
3-6-89	
3-7-89	
3-8-89	
3-9-89	
3-10-89	Sampled W-W-T-3 & 4
3-11-89	
3-12-89	
3-13-89	
3-14-89	
3-15-89	
3-16-89	
3-17-89	
3-18-89	
3-19-89	
3-20-89	
3-21-89	pumping W-W-T-3 & 4
3-22-89	
3-23-89	
3-24-89	
3-25-89	
3-26-89	
3-27-89	
3-28-89	NO Flow
3-29-89	
3-30-89	Sampled T-1 & 2
3-31-89	

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SUBJECT

DATE	From	Ph	oil & Grease	Phenols	water Temp,
5-1-89	pumping	w-w	- T-1 & 2		
5-2-89					
5-3-89					
5-4-89					
5-5-89					
5-6-89					
5-7-89					
5-8-89					
5-9-89					
5-10-89					
5-11-89					
5-12-89					
5-13-89					
5-14-89					
5-15-89					
5-16-89					
5-17-89					
5-18-89					
5-19-89					
5-20-89					
5-21-89					
5-22-89					
5-23-89					
5-24-89	Sampled w-w. T-3 & T-4				
5-25-89					
5-26-89					
5-27-89					
5-28-89					
5-29-89					
5-30-89					
5-31-89					

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SUBJECT Date From P/1 oil+Grease Phenols water Temp

6-1-89	
6-2-89	
6-3-89	
6-4-89	
6-5-89	
6-6-89	
6-7-89	
6-8-89	
6-9-89	
6-10-89	
6-11-89	
6-12-89	
6-13-89	pumpids w-w-T-3 & 4 out
6-14-89	Flow
6-15-89	Sampled w-w-T-1 & T-2
6-16-89	
6-17-89	
6-18-89	
6-19-89	
6-20-89	
6-21-89	
6-22-89	
6-23-89	
6-24-89	
6-25-89	
6-26-89	
6-27-89	
6-28-89	
6-29-89	
6-30-89	

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SUBJECT Date From Ph oil+Grease phenols water Temp

7-1-89					
7-2-89					
7-3-89					
7-4-89					
7-5-89					
7-6-89	pumping W-W-T-1+2				
7-7-89	Flow				
7-8-89					
7-9-89					
7-10-89					
7-11-89					
7-12-89	No Flow				
7-13-89					
7-14-89					
7-15-89					
7-16-89					
7-17-89					
7-18-89					
7-19-89					
7-20-89					
7-21-89					
7-22-89					
7-23-89					
7-24-89					
7-25-89					
7-26-89					
7-27-89					
7-28-89					
7-29-89					
7-30-89					
7-31-89					

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SUBJECT

Date	From	Ph	oil & grease	Phenols	water Temp
8-1-89					
8-2-89					
8-3-89					
8-4-89					
8-5-89					
8-6-89					
8-7-89					
8-8-89					
8-9-89					
8-10-89					
8-11-89					
8-12-89					
8-13-89					
8-14-89					
8-15-89					
8-16-89					
8-17-89					
8-18-89					
8-19-89					
8-20-89					
8-21-89					
8-22-89					
8-23-89					
8-24-89					
8-25-89					
8-26-89					
8-27-89					
8-28-89					
8-29-89					
8-30-89					
8-31-89					

No Flow

No Flow

Month of Aug.

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

4200 PRINTED IN U.S.A.

SUBJECT

Date	From	Ph	oil & Grease	Phenols	Temp. water
9-1-89	Sampled	w-	w-344		
9-2-89					
9-3-89					
9-4-89					
9-5-89					
9-6-89					
9-7-89					
9-8-89					
9-9-89					
9-10-89					
9-11-89					
9-12-89					
9-13-89		Pumping		3 of 6	
9-14-89					
9-15-89					
9-16-89					
9-17-89					
9-18-89		Flow			
9-19-89					
9-20-89					
9-21-89					
9-22-89					
9-23-89					
9-24-89					
9-25-89					
9-26-89					
9-27-89		NO	Flow		
9-28-89					
9-29-89					
9-30-89					

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month Yr.

LOCATION DATE BY

T-200 PRINTED IN U.S.A.

SUBJECT

Date To	From	Ph	oil & Grease	Phenols	Water Temp.
10-1-89					
10-2-89		No	Flow		
10-3-89					
10-4-89					
10-5-89					
10-6-89					
10-7-89					
10-8-89					
10-9-89					
10-10-89					
10-11-89					
10-12-89					
10-13-89					
10-14-89					
10-15-89					
10-16-89					
10-17-89					
10-18-89					
10-19-89					
10-20-89					
10-21-89					
10-22-89					
10-23-89					
10-24-89					
10-25-89					
10-26-89		Sampled	W-W-1+2		
10-27-89					
10-28-89					
10-29-89					
10-30-89					
10-31-89					

Koppers Company, Inc.
Organic Materials Group

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Month ____ Yr. ____

LOCATION ____ DATE ____ BY ____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil+Grease Phenols Water Temp

11-1-89					
11-2-89					
11-3-89					
11-4-89					
11-5-89					
11-6-89					
11-7-89	pumping	w-w-T-1 + T-2			
11-8-89					
11-9-89		Flow			
11-10-89					
11-11-89					
11-12-89					
11-13-89	Sampled	T-3 + 4			
11-14-89					
11-15-89					
11-16-89					
11-17-89					
11-18-89					
11-19-89					
11-20-89					
11-21-89					
11-22-89					
11-23-89					
11-24-89					
11-25-89					
11-26-89					
11-27-89					
11-28-89		Flow			
11-29-89					
11-30-89					

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No 29
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____ T-200 PRINTED IN U.S.A.

SUBJECT_____

Date	From	PH	Oil & Grease	Phenols	water Temp
12-1-89		Flow			
12-2-89					
12-3-89					
12-4-89	Sampled	T-1 & T-2			
12-5-89					
12-6-89					
12-7-89					
12-8-89					
12-9-89					
12-10-89					
12-11-89					
12-12-89					
12-13-89					
12-14-89					
12-15-89	Called	Coffey Lab.		Okay To pump	
12-16-89					
12-17-89					
12-18-89	Pumped		T-1 & T-2		
12-19-89					
12-20-89					
12-21-89					
12-22-89					
12-23-89					
12-24-89					
12-25-89	No	Flow			
12-26-89					
12-27-89					
12-28-89					
12-29-89					
12-30-89					
12-31-89					

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil + Grease Phenols Water Temp

1-1-90	
1-2-90	
1-3-90	
1-4-90	Sampled w-w- T-3 & 4
1-5-90	
1-6-90	
1-7-90	
1-8-90	
1-9-90	Sampled w-w- T-1 & T-2
1-10-90	
1-11-90	
1-12-90	
1-13-90	
1-14-90	
1-15-90	
1-16-90	
1-17-90	
1-18-90	
1-19-90	Sampled w-w- T-3 + T-4
1-20-90	
1-21-90	
1-22-90	Sampled w-w- T-1 + T-2
1-23-90	Sampled T-1 + T-2 i.e. PAh.
1-24-90	
1-25-90	
1-26-90	
1-27-90	
1-28-90	
1-29-90	
1-30-90	
1-31-90	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month ____ Yr. ____

LOCATION ____ DATE ____ BY ____

T-200 PRINTED IN U.S.A.

SUBJECT Date From PM oil/grease Phenols

2-1-90
2-2-90
2-3-90
2-4-90
2-5-90
2-6-90
2-7-90
2-8-90
2-9-90
2-10-90
2-11-90
2-12-90
2-13-90
2-14-90
2-15-90
2-16-90
2-17-90
2-18-90
2-19-90
2-20-90
2-21-90
2-22-90
2-23-90
2-24-90
2-25-90
2-26-90
2-27-90
2-28-90

Sampled T= 3+4

Pump pins T= 3 & 4

No Flow

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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LOCATION DATE BY

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SUBJECT

Date	From	Ph	Oil & Grease	Phenols
3-1-90				
3-2-90				
3-3-90				
3-4-90				
3-5-90	Sampled W-W. T-1 + T-2			
3-6-90				
3-7-90				
3-8-90				
3-9-90				
3-10-90				
3-11-90				
3-12-90				
3-13-90				
3-14-90				
3-15-90	Pumping		T-1 T-2	
3-16-90				
3-17-90				
3-18-90				
3-19-90				
3-20-90				
3-21-90		Flow		
3-22-90				
3-23-90				
3-24-90				
3-25-90				
3-26-90	No	Flow		
3-27-90				
3-28-90				
3-29-90				
3-30-90				
3-31-90				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page
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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT

Date	From	Ph	oil + Greas	Phenols
4-1-90				
4-2-90				
4-3-90				
4-4-90		Flow		
4-5-90				
4-6-90				
4-7-90				
4-8-90				
4-9-90				
4-10-90				
4-11-90		No Flow		
4-12-90				
4-13-90				
4-14-90				
4-15-90				
4-16-90				
4-17-90				
4-18-90				
4-19-90				
4-20-90				
4-21-90				
4-22-90				
4-23-90				
4-24-90				
4-25-90				
4-26-90	Sampled outfall D.C.Q. Split			
4-27-90	Sampled tks 3 & 4			
4-28-90				
4-29-90				
4-30-90				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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LOCATION _____ DATE _____ BY _____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil & grease Phenols

5-1-90	
5-2-90	
5-3-90	Sampled Koppers OUT Fall with D.E.Q
5-4-90	
5-5-90	
5-6-90	
5-7-98	
5-8-90	Sampled w-w- T-1+2
5-9-90	
5-10-90	
5-11-90	
5-12-90	
5-13-90	
5-14-90	
5-15-90	
5-16-90	
5-17-90	
5-18-90	
5-19-90	
5-20-90	
5-21-90	
5-22-90	pumping w-w-T-1 + T-2
5-23-90	Flow
5-24-90	
5-25-90	Sampled No Flow
5-26-90	w-w- 3+4
5-27-90	
5-28-90	Flow
5-29-90	
5-30-90	
5-31-90	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No 32
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT_____

Date	From	PH	Oil & Grease	Phenols
6-1-90				
6-2-90				
6-3-90				
6-4-90				
6-5-90				
6-6-90				
6-7-90	pumping T-3 & 4			
6-8-90				
6-9-90				
6-10-90				
6-11-90				
6-12-90				
6-13-90				
6-14-90				
6-15-90	Sampled W-W T-1 & T-2			
6-16-90				
6-17-90				
6-18-90				
6-19-90				
6-20-90		N/S		
6-21-90				
6-22-90				
6-23-90				
6-24-90				
6-25-90				
6-26-90				
6-27-90				
6-28-90				
6-29-90				
6-30-90				

Koppers Company, Inc.
Organic Materials Group

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT_____

Date	From	PH	Oil & Grease	Phenols
7-1-90	pumping W-W- T-1 & T-2			
7-2-90				
7-3-90				
7-4-90				
7-5-90				
7-6-90				
7-7-90		A/QC		
7-8-90				
7-9-90				
7-10-90				
7-11-90				
7-12-90				
7-13-90				
7-14-90				
7-15-90				
7-16-90		No F/QC		
7-17-90				
7-18-90				
7-19-90				
7-20-90				
7-21-90				
7-22-90				
7-23-90				
7-24-90				
7-25-90				
7-26-90				
7-27-90		No F/QC		
7-28-90				
7-29-90				
7-30-90				
7-31-90				

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KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date - From Ph oil & Grease \ Phenols

8-1-90
8-2-90
8-3-90
8-4-90
8-5-90
8-6-90
8-7-90
8-8-90
8-9-90
8-10-90
8-11-90
8-12-90
8-13-90
8-14-90
8-15-90
8-16-90
8-17-90
8-18-90
8-19-90
8-20-90
8-21-90
8-22-90
8-23-90
8-24-90
8-25-90
8-26-90
8-27-90
8-28-90
8-29-90
8-30-90
8-31-90

No Flow i.e. Month of Aug.

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Butt - From PH oil & Grease - Phenols

9 - 1 - 90
9 - 2 - 90
9 - 3 - 90
9 - 4 - 90 No Flow
9 - 5 - 90
9 - 6 - 90
9 - 7 - 90
9 - 8 - 90
9 - 9 - 90
9 - 10 - 90
9 - 11 - 90
9 - 12 - 90
9 - 13 - 90
9 - 14 - 90
9 - 15 - 90 No
9 - 16 - 90
9 - 17 - 90
9 - 18 - 90
9 - 19 - 90
9 - 20 - 90
9 - 21 - 90
9 - 22 - 90
9 - 23 - 90
9 - 24 - 90
9 - 25 - 90
9 - 26 - 90
9 - 27 - 90
9 - 28 - 90
9 - 29 - 90
9 - 30 - 90

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Organic Materials Group

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil & Grease Phenols

10-1-90	
10-2-90	
10-3-90	
10-4-90	
10-5-90	Sampled w-w-T-3 & T-4
10-6-90	
10-7-90	
10-8-90	
10-9-90	
10-10-90	
10-11-90	
10-12-90	
10-13-90	
10-14-90	
10-15-90	
10-16-90	
10-17-90	
10-18-90	
10-19-90	Called Coffey Lab Oil & Grease & Phenols OK
10-20-90	Pumping T-3 & 4
10-21-90	
10-22-90	
10-23-90	
10-24-90	
10-25-90	
10-26-90	
10-27-90	
10-28-90	
10-29-90	
10-30-90	Sampled w-w-T-1 & T-2
10-31-90	

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil & grease Phenols

11-1-90		
11-2-90		
11-3-90		
11-4-90		
11-5-91		
11-6-90		
11-7-90		
11-8-90		
11-9-90		
11-10-90		
11-11-90		
11-12-90		
11-13-90		
11-14-90		
11-15-90		
11-16-90		
11-17-90		
11-18-90		
11-19-90		
11-20-90		
11-21-90		pumping w-w T-1 & 2
11-22-90		
11-24-90		
11-25-90		
11-26-90		pumping T-1 & T-2 again.
11-27-90		
11-28-90		
11-29-90		
11-30-90		

Koppers Company, Inc.
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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil + Grease Phenols

12-1-90	
12-2-90	
12-3-90	
12-4-90	
12-5-90	Sampled w-w T-3 & 4
12-6-90	
12-7-90	
12-8-90	
12-9-90	
12-10-90	
12-11-90	
12-12-90	
12-13-90	
12-14-90	
12-15-90	
12-16-90	
12-17-90	pumping w-w-T-3 & 4
12-18-90	Flow
12-19-90	
12-20-90	
12-21-90	
12-22-90	
12-23-90	
12-24-90	
12-25-90	
12-26-90	
12-27-90	No Flow
12-28-90	
12-29-90	
12-30-90	
12-31-90	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No 35
Month ____ Yr. ____

LOCATION ____ DATE ____ BY ____

T-200 PRINTED IN U.S.A.

SUBJECT Pd To From Ph oil & Grease Phenols

1-1-91	No Flow
1-2-91	
1-3-91	
1-4-91	→ Sampled w-w- T-1 & T-2
1-5-91	
1-6-91	
1-7-91	
1-8-91	
1-9-91	
1-10-91	Sampled w-w- T-3 & 4
1-11-91	Called re Effl Lab OKay To pump
1-12-91	Flow
1-13-91	
1-14-91	
1-15-91	
1-16-91	No Flow
1-17-91	
1-18-91	
1-19-91	
1-20-91	
1-21-91	
1-22-91	
1-23-91	
1-24-91	
1-25-91	pumping w-w- T ? & 4
1-26-91	Flow
1-27-91	
1-28-91	
1-29-91	
1-30-91	No Flow
1-31-91	

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Month_____ Yr._____

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T-200 PRINTED IN U.S.A.

SUBJECT Data From Ph oil+Grease Pheads

2-1-91	
2-2-91	
2-3-91	
2-4-91	
2-5-91	Sampled w-w- 1+2
2-6-91	
2-7-91	
2-8-91	
2-9-91	
2-10-91	
2-11-91	
2-12-91	
2-13-91	
2-14-91	
2-15-91	Called Coffey Lab. Okay To pump
2-16-91	
2-17-91	Flow
2-18-91	
2-19-91	
2-20-91	No Flow
2-21-91	
2-22-91	Sampled w-w- T-3,&4
2-23-91	
2-24-91	
2-25-91	
2-26-91	
2-27-91	
2-28-91	

Koppers Company, Inc.
Organic Materials Group

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LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT_____

Date	From	Ph	Oil & Grease	Phenols
3-1-91				
3-2-91				
3-3-91				
3-4-91				
3-5-91				
3-6-91				
3-7-91	pumping w-w-	T-3 x 4		
3-8-91	Sampled w-w-	T-1 & T-2		
3-9-91				
3-10-91				
3-11-91				
3-12-91	pumping w-w-	T-3 x 4 again		
3-13-91				
3-14-91				
3-15-91				
3-16-91	No Flow			
3-17-91				
3-18-91				
3-19-91				
3-20-91				
3-21-91	pumping	T-1 & T-2		
3-22-91				
3-23-91	No Flow			
3-24-91				
3-25-91	pumping	T-1 & T-2 again		
3-26-91				
3-27-91	No Flow			
3-28-91	Sampled w-w-	T-3 & 4		
3-29-91				
3-30-91				
3-31-91	No Flow			

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

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SUBJECT_____

Date	Event	PH	Oil & Grease	Phenols
4-1-91				
4-2-91				
4-3-91				
4-4-91				
4-5-91				
4-6-91				
4-7-91				
4-8-91				
4-9-91				
4-10-91	pumping W-W	W-W 3+4	Sampled T-3	PAH
4-11-91				
4-12-91	W-W T-3+4	Empty		
4-13-91				
4-14-91				
4-15-91				
4-16-91	Sampled W-W T-1 & 2			
4-17-91				
4-18-91				
4-19-91				
4-20-91				
4-21-91				
4-22-91				
4-23-91				
4-24-91				
4-25-91				
4-26-91				
4-27-91				
4-28-91				
4-29-91				
4-30-91				

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LOCATION_____ DATE_____ BY_____

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SUBJECT Date From Ph oil+grease Phenols

Date	
5-1-91	
5-2-91	
5-3-91	
5-4-91	
5-5-91	
5-6-91	
5-7-91	pumping w-w T-1+T-2
5-8-91	
5-9-91	Sampled flow w-w- 3+4
5-10-91	
5-11-91	No Flow
5-12-91	
5-13-91	
5-14-91	
5-15-91	
5-16-91	
5-17-91	
5-18-91	
5-19-91	
5-20-91	
5-21-91	
5-22-91	
5-23-91	
5-24-91	pumping w-w- 3+4 out.
5-25-91	
5-26-91	Flow
5-27-91	
5-28-91	
5-29-91	
5-30-91	NO Flow
5-31-91	

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SUBJECT

Date	From	Ph	Oil & Grease	Phenols
6-1-91				
6-2-91				
6-3-91				
6-4-91				
6-5-91				
6-6-91				
6-7-91				
6-8-91				
6-9-91				
6-10-91				
6-11-91				
6-12-91				
6-13-91				
6-14-91				
6-15-91				
6-16-91				
6-17-91				
6-18-91				
6-19-91				
6-20-91	Sampled w-w-T-1 & T-2			
6-21-91				
6-22-91				
6-23-91				
6-24-91				
6-25-91				
6-26-91				
6-27-91				
6-28-91				
6-29-91				
6-30-91				

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SUBJECT_____

Date	From	Ph	oil & Grease	Phenols
7-1-91	pumping		w-w-1	92
7-2-91				
7-3-91	No	Flow		
7-4-91				
7-5-91				
7-6-91				
7-7-91				
7-8-91	Flow			
7-9-91				
7-10-91				
7-11-91				
7-12-91				
7-13-91				
7-14-91				
7-15-91				
7-16-91	No	Flow		
7-17-91				
7-18-91				
7-19-91				
7-20-91				
7-21-91				
7-22-91				
7-23-91				
7-24-91				
7-25-91				
7-26-91				
7-27-91				
7-28-91				
7-29-91				
7-30-91				
7-31-91				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No 39
Month Yr.

LOCATION DATE BY

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil & Grease Phenols

8	1	9	1	
8	2	9	1	
8	3	9	1	
8	4	9	1	
8	5	9	1	
8	6	9	1	
8	7	9	1	
8	8	9	1	
8	9	9	1	
8	10	9	1	
8	11	9	1	
8	12	9	1	
8	13	9	1	
8	14	9	1	
8	15	9	1	
8	16	9	1	
8	17	9	1	
8	18	9	1	
8	19	9	1	
8	20	9	1	Sampled W-W - T-3 & T-4
8	21	9	1	
8	22	9	1	
8	23	9	1	
8	24	9	1	
8	25	9	1	
8	26	9	1	
8	27	9	1	
8	28	9	1	
8	29	9	1	
8	30	9	1	
8	31	9	1	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT Date From Ph Oil & Grease Phenols

9-1-91	
9-2-91	
9-3-91	pumping W-W- T-3+4
9-4-91	
9-5-91	
9-6-91	Flow
9-7-91	
9-8-91	
9-9-91	
9-10-91	
9-11-91	
9-12-91	
9-13-91	
9-14-91	No Flow
9-15-91	
9-16-91	
9-17-91	
9-18-91	
9-19-91	
9-20-91	
9-21-91	
9-22-91	
9-23-91	
9-24-91	
9-25-91	
9-26-91	
9-27-91	
9-28-91	
9-29-91	
9-30-91	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil + Grease PHenols

10 - 1 - 91						
10 - 2 - 91						
10 - 3 - 91			No Flow			
10 - 4 - 91						
10 - 5 - 91						
10 - 6 - 91						
10 - 7 - 91						
10 - 8 - 91						
10 - 9 - 91						
10 - 10 - 91						
10 - 11 - 91						
10 - 12 - 91						
10 - 13 - 91						
10 - 14 - 91						
10 - 15 - 91						
10 - 16 - 91						
10 - 17 - 91						
10 - 18 - 91						
10 - 19 - 91						
10 - 20 - 91						
10 - 21 - 91						
10 - 22 - 91						
10 - 23 - 91	Sampled w-w-T1 + T-2					
10 - 24 - 91						
10 - 25 - 91						
10 - 26 - 91						
10 - 27 - 91						
10 - 28 - 91						
10 - 29 - 91						
10 - 30 - 91						
10 - 31 - 91						

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No. 40
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil & Grease Phenols

11-1-91	
11-2-91	
11-3-91	
11-4-91	pumping w-w T-1 & T-2 out
11-5-91	
11-6-91	F/o
11-7-91	
11-8-91	No Flow
11-9-91	
11-10-91	
11-11-91	
11-12-91	
11-13-91	
11-14-91	
11-15-91	
11-16-91	
11-17-91	
11-18-91	
11-19-91	Sampled w-w-T-3 & 4
11-20-91	
11-21-91	
11-22-91	
11-23-91	
11-24-91	
11-25-91	
11-26-91	Sampled w-w T-1 & 2
11-27-91	pumping T-3-4
11-28-91	
11-29-91	F/o
11-30-91	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From P/h oil & Grease Phenols

12-1-91	
12-2-91	
12-3-91	No Flow
12-4-91	
12-5-91	
12-6-91	
12-7-91	
12-8-91	
12-9-91	
12-10-91	
12-11-91	pumping w-w. T-1 & 2
12-12-91	Flow
12-13-91	
12-14-91	
12-15-91	
12-16-91	No Flow
12-17-91	
12-18-91	
12-19-91	
12-20-91	
12-21-91	
12-22-91	
12-23-91	
12-24-91	
12-25-91	
12-26-91	Sampled w-w. T-3 & 4
12-27-91	
12-28-91	
12-29-91	
12-30-91	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month Yr.

LOCATION DATE BY

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SUBJECT

Date	From	Ph	oil & Grease	Phenols
1-1-92				
1-2-92				
1-3-92				
1-4-92				
1-5-92				
1-6-92				
1-7-92				
1-8-92	pumping	T-3+4		
1-9-92		Flow		
1-10-92				
1-11-92				
1-12-92				
1-13-92		No Flow		
1-14-92	Sampled	w-w-	T-1+2	
1-15-92				
1-16-92				
1-17-92				
1-18-92		Flow		
1-19-92				
1-20-92				
1-21-92				
1-22-92		No Flow		
1-23-92				
1-24-92	pumping	w-w-	T-1+T 2	
1-25-92		Flow		
1-26-92				
1-27-92				
1-28-92				
1-29-92				
1-30-92				
1-31-92	Sampled	w-w-	T 3+4	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month Yr.

LOCATION DATE BY

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil+grease Phenols

Date	From	Ph	oil+grease	Phenols
2-1-92	No Flow			
2-2-92				
2-3-92				
2-4-92				
2-5-92				
2-6-92				
2-7-92				
2-8-92				
2-9-92				
2-10-92				
2-11-92				
2-12-92				
2-13-92				
2-14-92				
2-15-92				
2-16-92				
2-17-92				
2-18-92	Pumping T-3 & 4			
2-19-92				
2-20-92				
2-21-92				
2-22-92				
2-23-92				
2-24-92				
2-25-92				
2-26-92	No Flow			
2-27-92				
2-28-92				
2-29-92				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil + Grease Phenols

3-1-92	
3-2-92	No Flow
3-3-92	
3-4-92	Sampled w-w T-1 & 2
3-5-92	
3-6-92	
3-7-92	
3-8-92	
3-9-92	
3-10-92	Sampled Tank 65
3-11-92	
3-12-92	
3-13-92	pumping T-65
3-14-92	Flow
3-15-92	
3-16-92	
3-17-92	
3-18-92	pumping w-w T-1 & 2
3-19-92	Flow
3-20-92	
3-21-92	
3-22-92	No Flow
3-23-92	
3-24-92	
3-25-92	
3-26-92	
3-27-92	
3-28-92	
3-29-92	No Flow
3-30-92	
3-31-92	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No. 43
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil + Grease Phenols

Date	From	Ph	oil + Grease	Phenols
4-1-92				
4-2-92				
4-3-92	No Flow			
4-4-92				
4-5-92				
4-6-92				
4-7-92				
4-8-92				
4-9-92				
4-10-92				
4-11-92				
4-12-92				
4-13-92				
4-14-92				
4-15-92				
4-16-92				
4-17-92				
4-18-92				
4-19-92				
4-20-92				
4-21-92				
4-22-92				
4-23-92	Sampled w-w T-34	4	& Coffey Lab	Sampled
4-24-92			API Tank	i.e. P.A.H.
4-25-92				
4-26-92				
4-27-92				
4-28-92				
4-29-92				
4-30-92				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page
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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT_____

Date	From	Ph	oil & Grease	Phenols
5-1-92				
5-2-92				
5-3-92				
5-4-92				
5-5-92				
5-6-92				
5-7-92				
5-8-92				
5-9-92				
5-10-92				
5-11-92				
5-12-92				
5-13-92	pumping w-w		T-3 & 4	
5-14-92				
5-15-92				
5-16-92				
5-17-92				
5-18-92	No			
5-19-92				
5-20-92		Flow		
5-21-92				
5-22-92				
5-23-92				
5-24-92				
5-25-92				
5-26-92				
5-27-92				
5-28-92				
5-29-92				
5-30-92				
5-31-92				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No. 44
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From PH oil & Greas Phenols

6 - 1 - 92					
6 - 2 - 92					
6 - 3 - 92					
6 - 4 - 92					
6 - 5 - 92					
6 - 6 - 92					
6 - 7 - 92					
6 - 8 - 92					
6 - 9 - 92					
6 - 10 - 92					
6 - 11 - 92					
6 - 12 - 92					
6 - 13 - 92		NO			
6 - 14 - 92					
6 - 15 - 92			FLOW		
6 - 16 - 92					
6 - 17 - 92					
6 - 18 - 92					
6 - 19 - 92			MONTH		
6 - 20 - 92					
6 - 21 - 92					
6 - 22 - 92					
6 - 23 - 92					
6 - 24 - 92					
6 - 25 - 92					
6 - 26 - 92					
6 - 27 - 92					
6 - 28 - 92					
6 - 29 - 92					
6 - 30 - 92					

JUNE

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No. 44
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Daily From PH oil & Grease Phenols

7-1-92
7-2-92
7-3-92
7-4-92
7-5-92
7-6-92
7-7-92
7-8-92
7-9-92
7-10-92
7-11-92
7-12-92
7-13-92
7-14-92
7-15-92
7-16-92
7-17-92
7-18-92
7-19-92
7-20-92
7-21-92
7-22-92
7-23-92
7-24-92
7-25-92
7-26-92
7-27-92
7-28-92
7-29-92
7-30-92
7-31-92

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page
No. 45
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT Date From Ph oil+Grease Phenols

8	- 1 -	9	2
8	- 2 -	9	2
8	- 3 -	9	2
8	- 4 -	9	2
8	- 5 -	9	2
8	- 6 -	9	2
8	- 7 -	9	2
8	- 8 -	9	2
8	- 9 -	9	2
8	- 10 -	9	2
8	- 11 -	9	2
8	- 12 -	9	2
8	- 13 -	9	2
8	- 14 -	9	2
8	- 15 -	9	2
8	- 16 -	9	2
8	- 17 -	9	2
8	- 18 -	9	2
8	- 19 -	9	2
8	- 20 -	9	2
8	- 21 -	9	2
8	- 22 -	9	2
8	- 23 -	9	2
8	- 24 -	9	2
8	- 25 -	9	2
8	- 26 -	9	2
8	- 27 -	9	2
8	- 28 -	9	2
8	- 29 -	9	2
8	- 30 -	9	2
8	- 31 -	9	2

No Oil

March

Aug. 92

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page
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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT

Date From Ph oil + Grease Phenols

9-1-92
9-2-92
9-3-92
9-4-92
9-5-92
9-6-92
9-7-92
9-8-92
9-9-92
9-10-92
9-11-92
9-12-92
9-13-92
9-14-92
9-15-92
9-16-92
9-17-92
9-18-92
9-19-92
9-20-92
9-21-92
9-22-92
9-23-92
9-24-92
9-25-92
9-26-92
9-27-92
9-28-92
9-29-92
9-30-92

No Flow Month Sept 92

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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No. 46
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT Daily From P/L oil & Grease Phenols

Date			
10 - 1 - 92			
10 - 2 - 92			
10 - 3 - 92			
10 - 4 - 92			
10 - 5 - 92			
10 - 6 - 92			
10 - 7 - 92			
10 - 8 - 92			
10 - 9 - 92			
10 - 10 - 92			
10 - 11 - 92			
10 - 12 - 92			
10 - 13 - 92			
10 - 14 - 92			
10 - 15 - 92			
10 - 16 - 92			
10 - 17 - 92			
10 - 18 - 92			
10 - 19 - 92			
10 - 20 - 92			
10 - 21 - 92			
10 - 22 - 92			
10 - 23 - 92			
10 - 24 - 92			
10 - 25 - 92			
10 - 26 - 92	Sampled w-w- T-1 & T-2 i.e Coffee Lab.		
10 - 27 - 92			
10 - 28 - 92			
10 - 29 - 92			
10 - 30 - 92			
10 - 31 - 92			

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No 46
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____ T-200 PRINTED IN U.S.A.

SUBJECT_____

Date	From	Ph	Oil & Grease	Phenols
11-1-92				
11-2-92				
11-3-92				
11-4-92				
11-5-92				
11-6-92	Pumping W-W T-1 & T-2			
11-7-92				
11-8-92				
11-9-92				
11-10-92				
11-11-92				
11-12-92				
11-13-92		No Flow		
11-14-92				
11-15-92				
11-16-92				
11-17-92				
11-18-92				
11-19-92	Sampled W-W T-3 & 4			
11-20-92				
11-21-92				
11-22-92				
11-23-92				
11-24-92				
11-25-92				
11-26-92				
11-27-92				
11-28-92				
11-29-92				
11-30-92				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

Page No 47
Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil+grease Phenols

12 - 1 - 92	
12 - 2 - 92	
12 - 3 - 92	
12 - 4 - 92	pumping W-W- 3 & 4
12 - 5 - 92	
12 - 6 - 92	F/O
12 - 7 - 92	
12 - 8 - 92	
12 - 9 - 92	
12 - 10 - 92	
12 - 11 - 92	
12 - 12 - 92	
12 - 13 - 92	
12 - 14 - 92	
12 - 15 - 92	
12 - 16 - 92	
12 - 17 - 92	
12 - 18 - 92	Sampled W-W-T# 1+2 i.e CoAFey Lab.
12 - 19 - 92	
12 - 20 - 92	
12 - 21 - 92	
12 - 22 - 92	
12 - 23 - 92	
12 - 24 - 92	Pumping W-W-T 1 & 2
12 - 25 - 92	
12 - 26 - 92	F/O
12 - 27 - 92	
12 - 28 - 92	
12 - 29 - 92	
12 - 30 - 92	Sampled W-W 3 & 4
12 - 31 - 92	

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Pln oil & Grease Phenols

1 - 1	- 93		
1 - 2	"		
1 - 3	"	No Flow	
1 - 4	"		
1 - 5	"		
1 - 6	"		
1 - 7	"		
1 - 8	"		
1 - 9	"		
1 - 10	"		
1 - 11	"		
1 - 12	"		
1 - 13	"		
1 - 14	"	pumping MW-3+4	
1 - 15	"		
1 - 16	"		
1 - 17	"	Flow	
1 - 18	"		
1 - 19	"		
1 - 20	"		
1 - 21	"		
1 - 22	"		
1 - 23	"		
1 - 24	"		
1 - 25	"	No Flow	
1 - 26	"		
1 - 27	"		
1 - 28	"		
1 - 29	"		
1 - 30	"		
1 - 31	"		

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

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SUBJECT Data From PH oil & Grease Phenols

2	-	1	-	93
2	-	2		"
2	-	3		"
2	-	4		"
2	-	5		"
2	-	6		"
2	-	7		"
2	-	8		"
2	-	9		"
2	-	10		"
2	-	11		"
2	-	12		"
2	-	13		"
2	-	14		"
2	-	15		"
2	-	16		"
2	-	17		"
2	-	18		"
2	-	19		"
2	-	20		"
2	-	21		"
2	-	22		"
2	-	23		"
2	-	24		"
2	-	25		"
2	-	26		"
2	-	27		"
2	-	28		"

No Oil Month Feb.

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oil & Grease Phenols

3-1-93			
3-2	"	"	Sampled WWT-1 & 2 & EAH
3-3	"	"	
3-4	"	"	
3-5	"	"	
3-6	"	"	
3-7	"	"	
3-8	"	"	
3-9	"	"	
3-10	"	"	
3-11	"	"	
3-12	"	"	
3-13	"	"	
3-14	"	"	
3-15	"	"	
3-16	"	"	
3-17	"	"	
3-18	"	"	
3-19	"	"	
3-20	"	"	
3-21	"	"	
3-22	"	"	
3-23	"	"	pumping WWT-1&2
3-24	"	"	
3-25	"	"	
3-26	"	"	
3-27	"	"	
3-28	"	"	
3-29	"	"	
3-30	"	"	
3-31	"	"	No Flow

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT Date From Ph oils Grease Phenols

4-1-93	
4-2-93	Samp lad w-w T-3:04
4-3-93	
4-4-93	
4-5-93	
4-6-93	No Flow
4-7-93	
4-8-93	
4-9-93	
4-10-93	
4-11-93	
4-12-93	
4-13-93	
4-14-93	
4-15-93	
4-16-93	
4-17-93	
4-18-93	
4-19-93	
4-20-93	
4-21-93	
4-22-93	
4-23-93	
4-24-93	
4-25-93	
4-26-93	pumpius w-w- T-3:49
4-27-93	
4-28-93	No Flow
4-29-93	
4-30-93	

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Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200
PRINTED IN U.S.A.

SUBJECT_____

DATE	FROM	PH	OIL GREASE	PHENOLS
5-1-93				
5-2-93				
5-3-93	Sampled w w 1+2 this			
5-4-93				
5-5-93				
5-6-93				
5-7-93		No		
5-8-93			Flow	
5-9-93				
5-10-93				
5-11-93				
5-12-93				
5-13-93				
5-14-93				
5-15-93				
5-16-93				
5-17-93				
5-18-93	pumping w-w-1+2			
5-19-93				
5-20-93				
5-21-93				
5-22-93				
5-23-93		No	Flow	
5-24-93				
5-25-93				
5-26-93				
5-27-93				
5-28-93	Sampled w-w-T-3+4			
5-29-93	+ T-3 P.A.H.			
5-30-93				
5-31-93				

Koppers Company, Inc.
Organic Materials Group

KOPPERS

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Month_____ Yr._____

LOCATION_____ DATE_____ BY_____

T-200 PRINTED IN U.S.A.

SUBJECT_____

Date	From	PH	oil/grease	Phenols
6-1-93				
6-2-93		No		
6-3-93			Flow	
6-4-93				
6-5-93				
6-6-93				
6-7-93				
6-8-93				
6-9-93				
6-10-93				
6-11-93				
6-12-93				
6-13-93				
6-14-93				
6-15-93				
6-16-93				
6-17-93				
6-18-93				
6-19-93				
6-20-93				
6-21-93				
6-22-93				
6-23-93	pumping	W-W-T-	3 & 6	
6-24-93			Flow	
6-25-93				
6-26-93			No Flow	
6-27-93				
6-28-93				
6-29-93	SAMPLE	W W T	1 & 2	
6-30-93				

Date: 9/22/99 10:32 AM
Sender: Ralph Vesely
To: Jim Dietz; Robert Mason; Mike Mancione
cc: Kimberly Stewart
Priority: Normal
Receipt requested
Subject: PAA Production Estimate for 2000

I have recalculated the estimate based upon the information reviewed with BASF at our recent meeting. In light of their pilot testing data and our experience with a similar type start up of NHN-36R catalyst, my prediction is 185MM# of refined production assuming a feed ratio of 60% naphthalene / 40% orthoxylene..

Ralph

TO: D.H. BACHMAN **FROM:** KEN REGEL

LOCATION: K-1600 **LOCATION:** K-1600

SUBJECT: STATUS OF PITCH ACCOUNTS **DATE:** OCTOBER 5, 1999

According to my records, the attached is the status of Pitch Accounts versus orders through the week of September 27, 1999.

Ken

Ken Regel

Attachment

cc: **K.J. Fitzgerald – K-1600**
C.E. Kraynik – K-1600
D. E. Evans -- K-1600
P.W. Winschel K-1600
W.F. Plovic – K-1650
J.T. Dietz -- K-1650
J.A. Cafaro - K-1650
P.W. Heal - K-1650
M. Mancione - Stickney
G. Traczek - Stickney
D. Claire - Stickney
T.A. Golubic - Follansbee
N.W Valero - Follansbee
R.J. Morris - Woodward Tar
R.J. Melville - Clairton
P. Hochhauser - Clairton

C:\My Documents\[backlog by plant.xls]Shee

TANK CAR ORDERS

Chicago	Backlog	Orders w/o 10-04	Total	4-Oct Mon	5-Oct Tue	6-Oct Wed	7-Oct Thu	8-Oct Fri	9-Oct	10-Oct Sun	*Backlog Total*
Malaga	0	0	0	0	0	0	0	0	0	0	0
Warrick	1	7	8	0	2	0	0	0	0	2	4
Alumax	0	5	5	0	0	3	0	0	0	1	1
ABI	3	3	6	3	0	0	0	0	0	0	3
Alcoa Pt. C	6	0	6	0	0	2	0	2	0	2	0
Noranda	0	7	7	0	2	2	0	0	0	2	1
Reilly Arvida	2	4	6	0	1	0	1	0	0	0	4
Reilly Seebree	2	3	5	0	0	0	1	0	0	0	4
Kaiser Tacoma	0	0	0								0
Total	*14*	*29*	*43*	*3*	*5*	*7*	*2*	*2*	*0*	*7*	*17*

CH KI Backlog	9
CH Reilly Backlog	8

Clairton

Alcoa Badin	-1	1	0	0	0	0	0	0	0	0	0
Alcoa Massena	1	4	5	0	0	0	0	4	0	0	1
SGL Hickman	6	3	9	0	1	2	0	2	0	0	4
Showa Denko	0	3	3	0	0	0	1	1	0	0	1
UCAR Col	0	5	5	0	2	1	1	0	0	0	1
UCAR Browns	0	0	0	0	0	0	0	0	0	0	0
Total	*6*	*16*	*22*	*0*	*3*	*3*	*2*	*7*	*0*	*0*	*7*

Follansbee

Alcoa Sandow	5	6	11	6	0	0	0	0	0	0	5
Reilly NSA	-7	6	-1	0	1	0	1	0	0	0	-3
Reilly Fonbrai	3	3	6	2	0	1	0	0	0	0	3
Total	*1*	*15*	*16*	*8*	*1*	*1*	*1*	*0*	*0*	*0*	*5*

FE KI Backlog	5
FE Reilly Backlog	0

Woodward

Lake Charles	9	7	16	0	0	0	2	0	0	4	10
Sup Graphite	0	0	0	0	0	0	0	0	0	0	0
Total	*9*	*7*	*16*	*0*	*0*	*0*	*2*	*0*	*0*	*4*	*10*

TOTAL KI BACKLOG	31
TOTAL REILLY	8

Status of Pitch Accounts (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching H:\GROUPS\TARSALES\SHEETS\MISC\PITCHSTA.XLS]4QA

Aluminum Industry

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
Alcoa, Alcoa, TN													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	386	384											
Total Order	386	384	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Woodward	386												
Shipped -- Follansbee	0												
Shipped -- Total	386	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Alcoa, Badin NC													
Backlog	-85	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	85	170	85	85									
Total Order	0	170	85	85	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	0												
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Alcoa, Frederick MD													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	293	240											
Total Order	293	240	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	293												
Shipped -- Total	293	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Alcoa, Massena, NY													
Backlog	85	85	0	0	0	0	0	0	0	0	0	0	0
Orders Received	340	340	340	255									
Total Order	425	425	340	255	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	340												
Shipped -- Total	340	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	85 (1)												
Alcoa, Mt Holly SC													
Backlog	0	85	0	0	0	0	0	0	0	0	0	0	0
Orders Received	425	510	510	510	510								
Total Order	425	595	510	510	510	0	0	0	0	0	0	0	0
Shipped -- Chicago	85												
Shipped -- Woodward	255												
Shipped -- Total	340	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	85 (1)												

Koppers005894

Status of Pitch Accounts (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4QA

Aluminum Industry

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
Alcoa, Pt. Comfort													
Backlog	510	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	510												
Shipped -- Chicago	510												
Shipped -- Total	510	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Alcoa, Rockdale													
Backlog	450	450	0	0	0	0	0	0	0	0	0	0	0
Orders Received	540	630	720	630									
Total Order	990												
Shipped -- Follansbee	540												
Shipped -- Total	540	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	450 (2)												
Alcoa, Warrick IN													
Backlog	85	340	0	0	0	0	0	0	0	0	0	0	0
Orders Received	595	595	595	595									
Total Order	680	935	595	595	0	0	0	0	0	0	0	0	0
Shipped -- Chicago	340												
Shipped -- Total	340	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	340 (1)												
Alcoa, Wenatchee WA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	595												
Total Order	595												
Shipped -- Portland	595												
Shipped -- Chicago	0												
Shipped -- Total	595	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Vanalco, Vancouver WA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Chinese													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Kopper005895

Status of Pitch Accounts (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4QA

Aluminum Industry

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
Intalco, Ferndale WA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	307	315											
Total Order	307	315	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Portland	307												
Shipped -- Total	307	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Alcan, Arvida,Canada													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Columbia Falls Alum													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Chicago													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Kaiser Alum, Mead WA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	425	425											
Total Order	425	425	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Portland	425												
Shipped -- Total	425	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Kaiser Alum, Tacoma WA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	136	140											
Total Order	136	140	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Portland	136												
Shipped -- Total	136	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Koppers005896

Status of Pitch Accounts (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4QA

Aluminum Industry

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
Lake Charles Carbon													
Backlog	765	850	0	0	0	0	0	0	0	0	0	0	0
Orders Received	595	595	595	595									
Total Order	1360	1445	595	595	0	0	0	0	0	0	0	0	0
Shipped -- Woodward	510												
Shipped -- Total	510	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	850 (1)												
Noranda Alum, New Madrid													
Backlog	0	85	0	0	0	0	0	0	0	0	0	0	0
Orders Received	595	510	595	510									
Total Order	595	595	595	510	0	0	0	0	0	0	0	0	0
Shipped -- Chicago	510												
Shipped -- Total	510	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	85 (1)												
NSA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Chicago													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Ormet Corp, Hannibal Oh													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	589	640											
Total Order	589	640	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee	589												
Shipped -- Total	589	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Century Aluminum of WV													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	384											
Total Order	0	384	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	0												
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Koppers005897

Status of Pitch Accounts (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching H:\GROUPS\TARSALES\SHEETS\MISC\PITCHSTA.XLS]4QA

Aluminum Industry

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
ABI, Becancour, Canada													
Backlog	255	255	0	0	0	0	0	0	0	0	0	0	0
Orders Received	255	255											
Total Order	510												
Shipped -- Chicago	255												
Shipped -- Total	255	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	255 (2)												
Norit Americas, Pryor OK													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Alucam (Pechiney)													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Koppers005898

4Q SOFT PITCH H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4Q SOFT PITCH

Carbon Pitch - Soft

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
Alcoa, Wenatchee Chicago													
Alcoa, Massena Follansbee													
Alcoa, Pt .Comfort Follansbee													
Vanalco, Vancouver Chicago													
Alcoa, Frederick Follansbee													
Intalco, Ferndale Follansbee													
Premier Refractories Follansbee	66												

Koppers005899

Status of Pitch Accounts H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4Q COM CARBON

Commercial Carbon Industry (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
SGL CARBON													
Backlog	510	340	0	0	0	0	0	0	0	0	0	0	0
Orders Received	255												
Total Order	765	340	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee	0												
Shipped -- Clairton	425												
Shipped -- Total	425	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	340 (2)												
Metaullics Systems													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	20	0											
Total Order	20	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee	20												
Shipped -- Total	20	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Midwest Carbide													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	60	60											
Total Order	60	60	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Chicago	60												
Shipped -- Total	60	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Pure Carbon, Coudersport													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	-0	0	0									
Total Order	0	0	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee	0												
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Carbone of America													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	40	40	40	40									
Total Order	40	40	40	40	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee	20												
Shipped -- Clairton	20												
Shipped -- Total	40	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Koppers005900

Status of Pitch Accounts H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4Q COM CARBON

Commercial Carbon Industry (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
UCAR Carbon, Columbia TN													
Backlog	0	90	0	0	0	0	0	0	0	0	0	0	0
Orders Received	450	270	270	270									
Total Order	450	360	270	270	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	360												
Shipped -- Total	450	360	270	0	0	0	0	0	0	0	0	0	0
Backlog	90												
	(2)												
UCAR Carbon, Anmoore WV													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	20											
Total Order	0	20	0	0	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	*0*												
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
UCAR Carbon, Mexico													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	90	90	90									
Total Order	0	90	90	90	0	0	0	0	0	0	0	0	0
Shipped -- Clairton													
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
The Carbide/Graphite Group													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	356	320	320										
Total Order	356	320	320	0	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	356												
Shipped -- Total	356	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Koppers005901

Status of Pitch Accounts H:\GROUPS\TARSALES\SHEETS\MISC\[PITCHSTA.XLS]4Q COM CARBON

Commercial Carbon Industry (1) Lack of Cars (2) Plant Production (3) Raw Materials (4) Switching

	10/04	10/11	10/18	10/25	11/01	11/08	11/15	11/22	11/29	12/06	12/13	12/20	12/27
NAC Carbon, Punxsutawney, PA													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	20	0	20									
Total Order	0	20	0	20	0	0	0	0	0	0	0	0	0
Shipped -- Follansbee	0												
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												
Showa Denko Carbon, Ridgeville SC													
Backlog	0	85	0	0	0	0	0	0	0	0	0	0	0
Orders Received	255	170	255	170									
Total Order	255	255	255	170	0	0	0	0	0	0	0	0	0
Shipped -- Clairton	170												
Shipped -- Total	170	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	85 (2)												
Superior Graphite, Russellville AR													
Backlog	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders Received	0	0	0	85									
Total Order	0	0	0	85	0	0	0	0	0	0	0	0	0
Shipped -- Woodward	0												
Shipped -- Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Backlog	0												

Koppers005902

Monthly Report

To: Mike Mancione
From: Kimberly Stewart

Sep-99	Shipments	Production
Carbon Pitch	11,108 Tons	10,379 Tons
Roofing Pitch (Liquid)	562 Tons	984 Tons
Roofing Pitch (Packages)	465 Tons	400 Tons
Pavement Sealer Base	1,586 Mlbs	1,164 Mlbs
Refined Chemical Oil	305 Mgls	948 Mgls
Creosote	15,931 Mlbs	15,598 Mlbs
PAA Molten	10,710 Mlbs	15,498 Mlbs
PAA Flake	4,863 Mlbs	4,755 Mlbs

Tar Gallons Distilled	4,681 Gals
Naphthalene Processed	9,378 MLbs
Orthoxylene Processed	7,995 MLbs

CC: K. Fitzgerald K-1600
J. Dietz K-1650

KOPPERS INDUSTRIES

Koppers Industries, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Telephone: (412) 227-2216
FAX: (412) 227-2778

Wayne F. Plovic
Manager, Supply Chain & Purchasing
Carbon Materials & Chemicals Division
(412) 227-2223

August 14, 1997

Mr. Mark Buffington
Director of Refinery Operations
Reilly Industries, Inc.
300 N. Meridan Street, Suite 1500
Indianapolis, Indiana 46204-1763

Dear Mark:

Attached is original freight bill from the UP for movement of coal tar pitch from Provo, UT to Portland, OR.

Please handle payment of invoice as per our agreement.

Sincerely,

Wayne F. Plovic

WFP:rs

Attachment

06/18/97 22:05 802--UNION PACIFIC RAILROAD CO.--802

ORIGINAL FREIGHT BILL (NOT GOOD FOR TRANSIT)

STOP					
POCATELLO ID WG G251200 T082000 DATE97/01/31			FREIGHT BILL NO. 601330	CUSTOMER NO. 10320	PAGE 1

EQUIPMENT INITIAL & NUMBER	RECEIVED TIME	DATE OF SHIPMENT	WAYBILL NUMBER
UTLX 650819	01/29 16:53	01 29 97	601330

FLATCAR ID	CAR KIND	TOFC PLAN	LENGTH CU-FT	BILL OF LADING NO.
	T19			5020

PAYOR

* KOPPERS INDUSTRIES C
C/O CASS INFO SYSEMS
P. O. BOX 2498
COLUMBUS OH 43216

BILLED AT STN #	ORIGIN	CITY	ST
9001	8830	IRONTON	UT

SHIPPER CODE #
REILLY INDUSTRIES

DESTINATION	CITY	ST
60	PORTLAND	OR

ROUTE
UP

CONSIGNEE CODE #
KOPPERS INDUSTRIES 10320

PATTERN NUMBER	COMMODITY CODE NO.
194 1UN3256-PG3	4912550

UP 04912 001000
TARIFF AUTHORITY

99
RATE/CODE CLERK

SPECIAL INSTRUCTIONS
WEIGHT AGREEMENT

FROM A/R 06/18/97

PACKAGES	LADING DESCRIPTION	WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
1	TCELEVATED TEMPERATURE, LIQUID, FLAMMABLE, 3 UN3256 3	169,200	276000 P	2,760.00		
	* PLACARDED FLAMMABLE					
	SEALS865251 SEALS					
	TOTALS	169,200		2,760.00		

COMMENTS

CORRECTED CHARGES: 2,760.00

DIRECT RATE QUESTIONS TO: EXTN

DIRECT OTHER QUESTIONS TO: J. SEGELHORST EXTN 4817

REMIT TO
UNION PACIFIC RAILROAD
P.O. BOX 71173
CHICAGO, IL. 60694

2,760.00
PAY THIS AMOUNT

CORRECTED FREIGHT BILL

92

FOR ASSISTANCE CALL TOLL FREE 1-800-325-7779

06/18/97 22:05 802--UNION PACIFIC RAILROAD CO.--802

1ST COPY FREIGHT BILL (GOOD FOR TRANSIT WHERE APPLICABLE)

STOP POCATELLO ID WG G251200 T082000 DATE97/01/31

FREIGHT BILL NO.	CUSTOMER NO.	PAGE
601330	10320	1

EQUIPMENT INITIAL & NUMBER	RECEIVED TIME	DATE OF SHIPMENT	WAYBILL NUMBER
UTLX 650819	01/29 16:53	01 29 97	601330

FLATCAR ID	CAR KIND	TOFC PLAN	LENGTH	CU-FT	BILL OF LADING NO.
	T19				5020

PAYOR

* KOPPERS INDUSTRIES C
C/O CASS INFO SYSEMS
P. O. BOX 2498
COLUMBUS OH 43216

BILLED AT STN #	ORIGIN	CITY	ST
9001	8830	IRONTON	UT

SHIPPER CODE #
REILLY INDUSTRIES

DESTINATION	CITY	ST
60	PORTLAND	OR

ROUTE
UP

CONSIGNEE CODE #
KOPPERS INDUSTRIES 10320

PATTERN NUMBER	COMMODITY CODE NO.
194 1UN3256-PG3	4912550

UP 04912 001000
TARIFF AUTHORITY

99
RATE/CODE CLERK

SPECIAL INSTRUCTIONS
WEIGHT AGREEMENT

FROM A/R 06/18/97

PACKAGES	LADING DESCRIPTION	WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
1	TCELEVATED TEMPERATURE, LIQUID, FLAMMABLE, 3 UN3256 3 * PLACARDED FLAMMABLE SEALS865251 SEALS	169,200	276000 P	2,760.00		
	TOTALS	169,200		2,760.00		

COMMENTS

CORRECTED CHARGES: 2,760.00

DIRECT RATE QUESTIONS TO: EXTN

DIRECT OTHER QUESTIONS TO: J. SEGELHORST EXTN 4817

REMIT TO
UNION PACIFIC RAILROAD
P.O. BOX 71173
CHICAGO, IL. 60694

2,760.00
PAY THIS AMOUNT

CORRECTED FREIGHT BILL

92

FOR ASSISTANCE CALL TOLL FREE 1-800-325-7779

KOPPERS INDUSTRIES

Koppers Industries, Inc.
Logistics Department
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Telephone: (412) 227-2776
Fax: (412) 227-2778

Wayne F. Plovic
Director of Logistics and Raw Material Purchasing
Carbon Materials & Chemicals Division
(412) 227-2223
E-Mail: wayne_plovic@koppers.com

Fax: 011-47-55-17-51-21

September 1, 1999

Mr. Gunnar Jacobsen
Vice President
Kristian Gerhard Jebsen
Folke Bernadoties VEI 38
50333 Fyllingsdalen, Bergen
NORWAY

Dear Gunnar:

As we discussed, in our recent telephone conversation, attached is a description of the hoses to be purchased for discharge at Portland

The original agreement was that Gearbulk and Koppers would each purchase a set to guarantee timely discharge of the vessel. If you agree, Koppers will purchase the hoses and rebill Gearbulk for two (2) sections.

Also, as mentioned, arrangements have been made to store all sections at Portland.

If you have any questions please call.

Best regards,

Wayne F. Plovic

P/m

Attachment

130 8SF A-1SF2FS02FS02U120K0A1-2 5SENIOR FLEX. 4 4679.0000 EA

8" X 25FT SENIOR FLEXONICS SF A-1 DOUBLE
BRAIDED 321 S.S. METAL FLEXIBLE HOSE ASSY.
C/W 300# F.S. RF S/O FLANGED ENDS -- 12" ID
S.S. RT08 GUARD & RING GUARD W/ 1" THK. 8#
KOA WOOL & ASJ WRAP --- HYDRO TEST & CERTIFY
USCG @ 150 PSIG
AS PER SENIOR FLEXONICS DWG SD 1020070 EXCEP
25 FT LONG

Koppers005908

KOPPERS INDUSTRIES

Koppers Industries, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Telephone: (412) 227-2216
FAX: (412) 227-2778

Wayne F. Plovic
Director of Logistics and Raw Material Purchasing
Carbon Materials & Chemicals Division
(412) 227-2223
E-Mail: wayne_plovic@koppers.com

Fax: 011-47-55-17-51-21

May 19, 1999

Mr. Gunnar Jacobsen
Gearbulk (UK) LTD-Bergen Office
Bergen, Norway

Subject: Osprey Arrow

Dear Gunnar:

The update provided in your recent fax, regarding the conversion schedule of the *"Osprey Arrow"* was appreciated.

In regards to Portland, the liquid pitch conversion project continues to progress, however, we have incurred delays of up to six (6) weeks. The original schedule was to be able to accept liquid deliveries by October 1, 1999, however, with the delays the earliest delivery date for the initial cargo is November 15, 1999. The delays were caused by the city of Portland's review of the project, and changing the scope of work necessary in building the foundation for the pitch tank. The city has mandated that the tank foundation must now meet more severe earthquake requirements, which has increased the required piling from 6,000 linear feet to 22,000 linear feet. Koppers assumes with this delay, our initial delivery of liquid pitch to Portland will now be in December based on the rotation schedule explained during our earlier meetings for the Kittimat and Portland vessel.

After you have reviewed your conversion schedules, please advise the revised dates, so we can reschedule loading dates with our supplier.

I look forward to seeing you next week in Pittsburgh, and any questions you have can be addressed.

Best regards,

Wayne F. Plovic/pm

Wayne F. Plovic

Copies:

K. J. Fitzgerald
R. H. Wombles
A. S. Kamerer
D. E. Evans
J. T. Dietz

KOPPERS INDUSTRIES **INTEROFFICE CORRESPONDENCE**

To:	Those Listed Below	From:	James T. Dietz
Location:	Various	Location:	K-1650
Subject:	SH&E Policy Statement	Date:	October 11, 1999

Bob Melville-Clairton
Tom Golubic-Follansbee
Jim Burkhart-Monessen
Amos Kamerer-Portland
Mike Mancione-Stickney
Jerry Morris-Woodward

Each of you has received from John Marcinowski the attached update of the SH&E Values and Policies Statement.

It is important that the company have this statement, and equally important that we communicate our values to our workers and their families, as well as any visitors to our facilities. To this end, please display the original and copies in areas of your plant that are visible to all workers and visitor's, and in each supervisor's office. Also, in order to reach each worker and their family directly please arrange to include a copy with a brief reinforcing note from you in everyone's October paycheck.

If you have any questions, please advise.

Thank you.

Jim

Jim Dietz

Copies:

R. D. Collins
K. J. Fitzgerald

Portland
Capital Expenditure Summary
May 1999
($000's)

H:\GROUPS\PUBLIC\MGMTBOOK\1999CM&C\[1999 CM & C capex summary.xls]Summary

Portland	AFE Number	1999 Authorized Projects			Year to Date 1999			
		1999 Program	Other 1999 Projects	Total Projects	Actual Capital Exp. Spent		Projected Capital Exp. Remaining	
					Dollars	Percentage	Dollars	Percentage
1998 Carryover Projects								
Liquid Pitch Unldg Terminal	46	3,701		3,701	1,252	33.8%	2,449	66.2%
Fume Recovery Modification	47			-	30		(30)	
1999 Program Projects								
Used Vehicle Purchase		15		15		0.0%	15	100.0%
Total Portland		**$ 3,716**	**$ -**	**$ 3,716**	**$ 1,282**	**34.5%**	**$ 2,434**	**65.5%**

Koppers005911

KOPPERS INDUSTRIES

Koppers Industries, Inc.
7540 N.W. St. Helens Road
Portland, OR 97210-3663

Telephone: 503-286-3681
Fax: 503-285-2831

Date: January 7, 2002

To: Amos Kamerer

From: T. J. Turner

Subject: Storm Water in the Tank Farm

On this date, upon my arrival, I did a full walk through of the plant and found that the lower tank farm was flooding, all storm water storage tanks were overflowing and heavy rain was still falling.

If this situation continued, we could sustain damage to the pumps, motors and other equipment in the tank farm. Due to this condition, I started emergency pumping of the overflow of storm water directly to the plant outfall. Samples were taken and sent for normal analysis. We will continue this emergency pumping until we are out of danger in the tank farm.

Sincerely,

T. J. Turner
General Foreman

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

ATTN: WILLIAM MEISINGER

SUBJECT: ROCK AND DIRT HANDLING

DATE OF NOTIFICATION: 04 / 23 / 99

TIME: 2:00 am (pm) SHFT: 1 2 3

APPROVAL REQ'D BY: ____ / ____ / ____

MCDOWELL NUMBER: 92070 (Job no.) - 03 (Change no.)

CLIENT NUMBER: ____

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☐ VERBAL order issued by: ____

of ____ directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on ____, for the reason described in Item C below

C. REASON FOR THE CHANGE: ENCOUNTERED ROCKS IN 5 LOCATIONS THAT HAD TO BE EXCAVATED TO INSTALL PILINGS. OTHER PILINGS WERE RELOCATED TO AVOID DEEP ROCKS. LOADED SOIL EXCAVATED AROUND PILINGS IN TRUCK AND DELIVERED TO TANK SITE FOR DISPOSAL ☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $____. ☒ Per McDowell T & M Rates. ☐ See Attached. INCREASE THE NOT TO EXCEED CONTRACT BY $2017.00

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

GRAY JOHNSON 4-23-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

cc: C. McKENNAN

FAX

McDowell Welding & Pipefitting, Inc.
4000 NW St. Helens Road
Portland, OR 97210

Date	04/23/99
Number of pages including cover sheet	1

To:	
	William Meisinger
	Koppers
Phone	412-826-3962
Fax Phone	412-826-3999
CC:	Amos Kamerer

From:	
	Gray Johnson
	McDowell Welding
Phone	503-241-2410
Fax Phone	503-241-2767

REMARKS:

☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

Bill;

Prior to the start of pipeline welding on the new dock, Amos requested that we contact Pacific Northern Oil to schedule our work around their barge loading activities. We were also asked to coordinate with the Portland Fire Department about proper fire safety procedures on the new dock. We meet with both parties and discussed coordination. What we found was that we would not be able to perform hot work on the section of the dock parallel to the river while a barge was present. This seemed reasonable until we discovered that barges would load for two hours and then wait at the dock another six hours for a tug to move them. We asked the Portland Fire department for an exception so that we could progress with our work. The fire department told us to get a Marine Chemist to test the fumes in the area and write a special safety procedure for us to perform hot work while the barge was at the dock. Our safety manager is currently trying to bypass the marine chemist because he expects any safety procedure to include a full time fire watch and a fume detector. (additional labor and rent)

We did not include money for the safety procedure, marine chemist, coordination, or fire watch in our bid because we were not aware that Pacific Northern Oil shared the dock with Koppers and North West Natural. We are working to resolve this situation without scope changes but we want you to be aware that we will have to request contract changes when a special safety procedure is required.

Please call with any questions or comments.

Regards,

Gray Johnson

cc: C. McKernan

FAX

McDowell Welding & Pipefitting, Inc.
4000 NW St. Helens Road
Portland, OR 97210

Date	04/23/99
Number of pages including cover sheet	2

To:	
	William Meisinger
	Koppers
Phone	**412-826-3962**
Fax Phone	**412-826-3999**
CC:	**Amos Kamerer**

From:	
	Gray Johnson
	McDowell Welding
Phone	**503-241-2410**
Fax Phone	**503-241-2767**

REMARKS:

☐ Urgent ☒ For your review ☒ Reply ASAP ☐ Please comment

Bill;

The piling installation required two weeks, one more week than planned. We encountered unexpected underground conditions but the delay was not entirely caused by rocks. We were able to excavate rocks in five locations with our backhoe. In other locations we were able to pull the pile back up and relocate it to avoid rocks. Cameron McKeman allowed us a reduced depth on still other pilings to avoid underground rocks. We managed to install all the piles with no additional charges from the pile driver but we had to excavate rocks and assist them full time. We had not anticipated this labor so we are requesting an increase in the not to exceed budget to cover our expenses.

In addition, we have been collecting contaminated soils that we excavate from around the pilings in our dump truck and delivering it to the tank pad area. Amos has arranged for disposal of this soil with the soils that Harder is excavating from the tank foundation. Approximately one quarter of the charges in the attached change order request are for handling and hauling these soils.

Please call with any questions or comments.

Regards,

Gray Johnson

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

DATE OF NOTIFICATION: 04 / 23 / 99

TIME: 2:00 am (pm) SHFT: 1 2 3

ATTN: WILLIAM MEISINGER

APPROVAL REQ'D BY: / / /

SUBJECT: ROCK AND DIRT HANDLING

MCDOWELL NUMBER: 92070 (Job no.) - 03 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☐ VERBAL order issued by: _____ of _____ directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: ENCOUNTERED ROCKS IN 5 LOCATIONS THAT HAD TO BE EXCAVATED TO INSTALL PILINGS. OTHER PILINGS WERE RELOCATED TO AVOID DEEP ROCKS: LOADED SOIL EXCAVATED AROUND PILINGS IN TRUCK AND DELIVERED TO TANK SITE FOR DISPOSAL ☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $_____. ☒ Per McDowell T & M Rates. ☐ See Attached. INCREASE THE NOT TO EXCEED CONTRACT BY $2017.00

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted, McDowell Welding and Pipefitting, Inc.

GRAY JOHNSON 4-23-99

McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS

DATE OF NOTIFICATION: 5 / 20 / 99

TIME: 12:00 am pm SHFT: 1 2 3

ATTN: BILL MEISINGER

APPROVAL REQ'D BY: / /

SUBJECT: NEW VALVE SPECIFICATIONS

MCDOWELL NUMBER: 92070 (Job no.) - 06 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☒ McDowell has received this date a ☐ WRITTEN ☒ VERBAL order issued by: BILL MEISINGER of KOPPERS directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: SUPPLY ALL VALVES FOR THE PITCH PUMPING PROJECT PER PORTLAND MAINTENANCE BRAND SPECIFICATIONS THIS C.O. DOES NOT INCLUDE V055-V072 AND V143-V147 ☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☐ IS ☒ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☒ Lump Sum $_____. ☐ Per McDowell T & M Rates. ☐ See Attached.

INCREASE NOT TO EXCEED T+M LIMIT BY $ 7,933

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

GRAY JOHNSON 5-20-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS INC

ATTN: BILL MEISINGER

SUBJECT: ADDITIONAL LOW POINT DRAIN

DATE OF NOTIFICATION: 5 / 12 / 99

TIME: 4:00 am (pm) SHFT: 1 2 3

APPROVAL REQ'D BY: / /

MCDOWELL NUMBER: 92070 (Job no.) - 05 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☒ McDowell has received this date a ☐ WRITTEN ☐ VERBAL order issued by:

of directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on , for the reason described in Item C below

C. REASON FOR THE CHANGE: ADD ONE LOW POINT DRAIN IN 10" PITCH PIPE

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☐ IS ☒ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☒ Lump Sum $ 46500. ☐ Per McDowell T & M Rates. ☐ See Attached.

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND INC

DATE OF NOTIFICATION: 8 / 17 / 99

TIME: 5:00 am (pm) SHFT: 1 2 3

ATTN: BILL MEISINGER

APPROVAL REQ'D BY: ____ / ____ / ____

SUBJECT: T240 PAINTING

MCDOWELL NUMBER: 98070 (Job no.) - 21 (Change no.)

CLIENT NUMBER: ____

We respectfully direct your attention to the following ☒ items:

A. ☒ McDowell has received this date a ☐ WRITTEN ☒ VERBAL order issued by: AMOS KAMERER of KOPPERS IND INC directing us to:

☒ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on ____, for the reason described in Item C below

C. REASON FOR THE CHANGE: PICK UP, SANDBLAST, PRIMER, AND PAINT T240 KOPPERS BLUE EXTERIOR ONLY. INTERIOR TO REMAIN AS FABRICATED.

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☒ The inherent delay of C above, will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☐ IS ☒ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☒ Lump Sum $ $1158.00 ADDED TO THE NOT TO EXCEED BUDGET. ☐ Per McDowell T & M Rates. ☐ See Attached.

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

GRAY JOHNSON 8-16-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND INC

ATTN: BILL MEISINGER

SUBJECT: T250 PAINTING

DATE OF NOTIFICATION: 8 / 17 / 99

TIME: 3:00 am (pm) SHFT: 1 2 3

APPROVAL REQ'D BY: / /

MCDOWELL NUMBER: 92070 (Job no.) - 22 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☒ VERBAL order issued by: AMOS KAMERER of KOPPERS IND INC directing us to:

☒ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: PICK UP SANDBLAST, PRIMER, AND PAINT KOPPERS BLUE EXTERIOR ONLY OF T250. INCLUDES INSULATION REMOVAL AND CLEANING. NO HAZARDOUS WASTE DISPOSAL INCLUDED. INSULATION REPLACEMENT BY OTHERS ☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☒ The inherent delay of C above, will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☒ McDowell ☐ IS ☒ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☒ Lump Sum $ $1676.00 ADDED TO THE NOT TO EXCEED BUDGET. ☐ Per McDowell T & M Rates. ☐ See Attached.

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting, Inc.

GRAY JOHNSON 8-17-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

FAX

McDowell Welding & Pipefitting, Inc.
4000 NW St. Helens Road
Portland, OR 97210

Date	10/21/99
Number of pages including cover sheet	1
To:	
	William Meisinger
	Koppers
Phone	**286-3681**
Fax Phone	**285-2831**
CC:	**Charlie Norris**
	Amos Kamerer

From:	
	Gray Johnson
	McDowell Welding
Phone	**503-241-2410**
Fax Phone	**503-241-2767**

REMARKS:

☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

Bill;

The ASME tank T-240 passed hydrotesting for 40psi operating pressure on 10/20/99. The Oregon state pressure vessel board has approved the application of an ASME tag to your vessel and we will begin painting today. We will store the tank at our shop until November 2nd and will deliver the tank to the job site November 3rd. Steve Hinds requested that the tank be delivered early so that he could install some piping prior to installation on the tower.

Please verify that November 8th is the first day of your shut down week and that the old tank will be empty and ready for demolition on the morning of the 8th. We want to finalize our plans with the crane rigging company for installation of this tank on the tower.

Regards,

Gray Johnson

McDowell Welding & Pipefitting

2727 NW 35th Avenue, Portland, OR 97210
503-241-2410 • Fax 503-241-2767

HYDROSTATIC TEST REPORT

UNIT TESTED: 2"€1" HOT OIL

TEST PRES.: 225#

TEST FLUID: N2

TEST DATE: 10-9-99

TIME 0745 → 10:20 AM

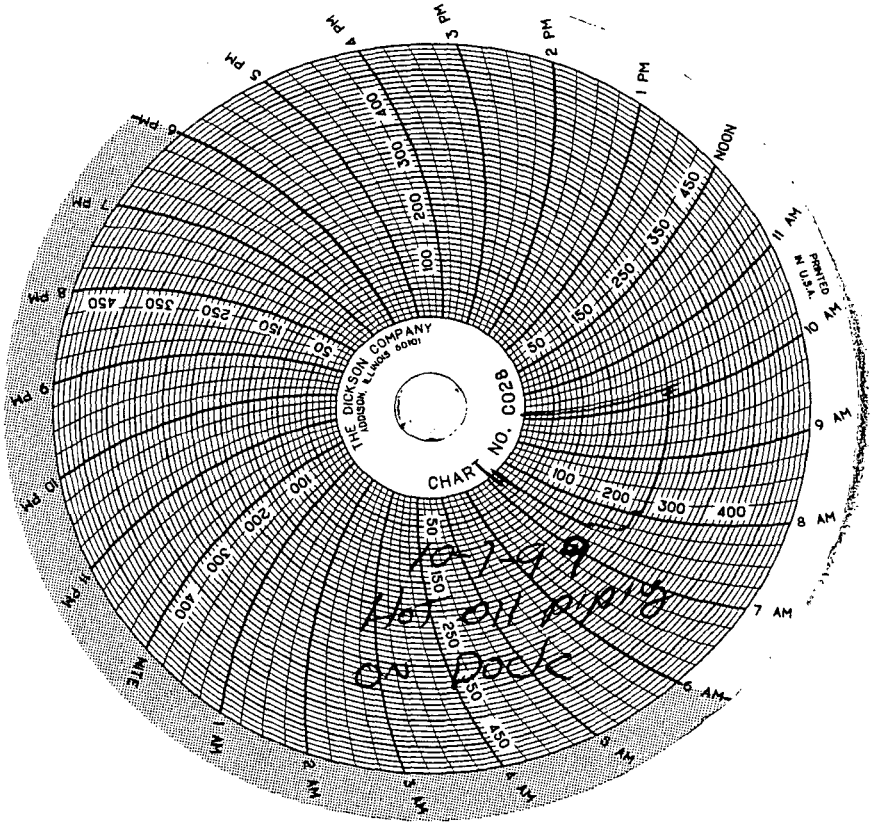
PRESSURE 230 psi

TEMP. ambient

COMMENTS Tested 2"€1" HOT OIL from HOT OIL metering shed to Pitch pump

PASSED: X
FAILED: _____

SIGNATURE OF TESTER: _____


THE DICKSON COMPANY
ADDISON, ILLINOIS 60101
CHART NO. C028
PRINTED IN U.S.A.
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11 AM
10-1-99
Hot oil piping
on Dock

McDowell Welding & Pipefitting

2727 NW 35th Avenue, Portland, OR 97210
503-241-2410 • Fax 503-241-2767

HYDROSTATIC TEST REPORT

UNIT TESTED: 1" Hot Oil Piping

TEST PRES.: 225 psi

TEST FLUID: N_2

TEST DATE: 10-19-99

TIME 11:Am

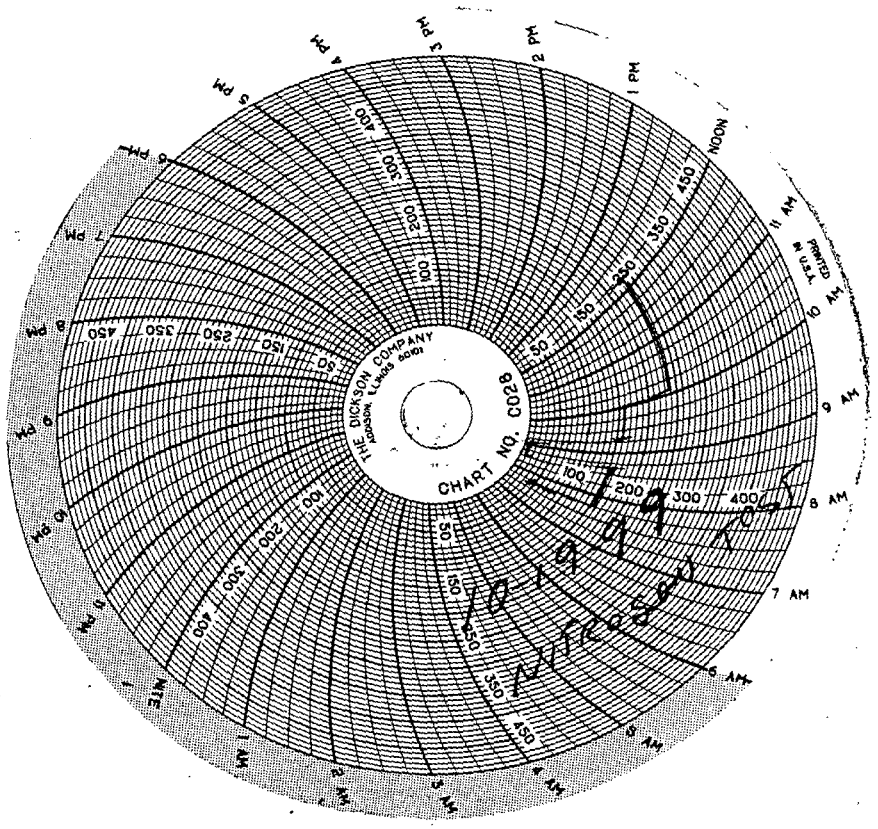
PRESSURE 235

TEMP. Amb

COMMENTS Tested 1" Hot oil piping From 8" valve HV2008 to Top TK200 including Hot oil Nozzle piping

PASSED: X
FAILED: _____

SIGNATURE OF TESTER: Stan Hd



Koppers005925

McDowell Welding & Pipefitting

2727 NW 35th Avenue, Portland, OR 97210
503-241-2410 • Fax 503-241-2767

HYDROSTATIC TEST REPORT

UNIT TESTED: Cargo Piping

TEST PRES.: 225

TEST FLUID: H_2O

TEST DATE: 10-21-99

TIME 1:00 → 3:20

PRESSURE 230 psi

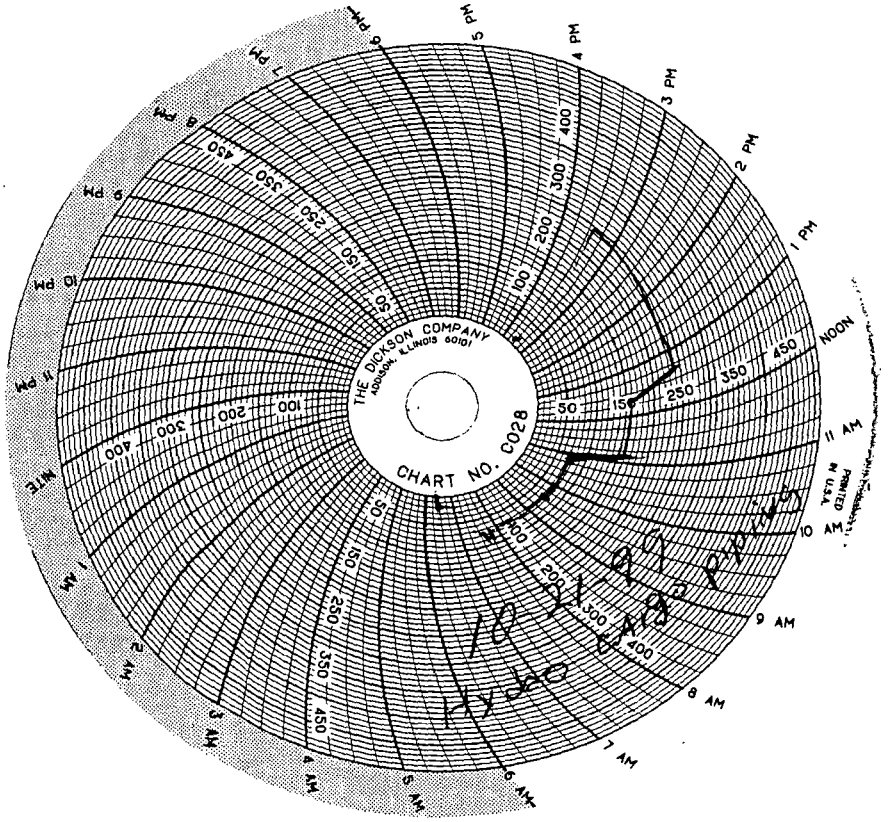
TEMP. 70°

COMMENTS Tested Cargo piping to Top Tk 200 including Dole pitch pump piping

PASSED: x

FAILED:

SIGNATURE OF TESTER: [signature]



Koppers005927

FAX

McDowell Welding & Pipefitting, Inc.
4000 NW St. Helens Road
Portland, OR 97210

Date	10/27/99
Number of pages including cover sheet	1
To:	
	William Meisinger
	Koppers
Phone	286-3681
Fax Phone	285-2831
CC:	Charlie Norris
	Amos Kamerer

From:	
	Gray Johnson
	McDowell Welding
Phone	503-241-2410
Fax Phone	503-241-2767

REMARKS:

☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

Bill;

We have completed all x-ray and magnetic particle testing of the pitch and hot oil piping on the dock. (100% requirement). In addition we have made 19 x-rays of the pitch piping on land. These 19 x-rays fulfill our 5% x-ray requirement for 380 welds on the pitch piping over land. We estimate that there are only 200 welds for the pitch piping on land, which means we have exceeded our x-ray requirement for the pitch piping. We will not be taking any more x-rays for this project.

We have completed 22 magnetic particle tests for hot oil piping on land. These 22 magnetic particle tests fulfill our 10% magnetic particle test requirement for 220 welds on the hot oil piping over land. We estimate that there are 500 welds for the hot oil piping on land so we have not completed our magnetic particle test requirement for all hot oil piping on land.

We would like to request that you relax the magnetic particle test requirement for the hot oil piping on land to 5%. This would mean that we have completed all non-destructive testing for this project and we would not have any more magnetic particle testing performed. We base this request on the fact that all hot oil piping is being nitrogen pressure tested at 225psi. We have found that a weld can pass magnetic particle testing and still have a pin-hole leak during a nitrogen pressure test. It is our opinion that the nitrogen pressure test is the final determinant and that further magnetic particle testing is redundant.

Please verify that we do not need to go to the added expense of magnetic particle testing for 28 more hot oil welds.

Regards,

Gray Johnson

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

Marketers Name: E. L. HILTS & CO.	EMERGENCY TELEPHONE NO. 704-328-2835
ADDRESS (Number, Street, City, State, and ZIP Code) P.O.Box 1789, 1928 Main Ave.,N.W., Hickory,N.C.28603	
CHEMICAL NAME AND SYNONYMS N/A	TRADE NAME AND SYNONYMS FEND A-2 and/or HILCO Pitch Cream
CHEMICAL FAMILY Oil in Water Emulsion	FORMULA See Package Label

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS None			BASE METAL None		
CATALYST None			ALLOYS None		
VEHICLE None			METALLIC COATINGS None		
SOLVENTS None			FILLER METAL PLUS COATING OR CORE FLUX None		
ADDITIVES None			OTHERS None		
OTHERS None					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
NONE		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	.82-0.92
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	none
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	very slow
SOLUBILITY IN WATER	Sparingly Soluble		
APPEARANCE AND ODOR	White Homogeneous Cream with pleasant fragrance		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	o.c,more than 590°F	FLAMMABLE LIMITS None	Lel / Uel
EXTINGUISHING MEDIA	Water		
SPECIAL FIRE FIGHTING PROCEDURES	None		
UNUSUAL FIRE AND EXPLOSION HAZARDS	None		

(Continued on reverse side)

Koppers005929

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	None
EFFECTS OF OVEREXPOSURE	None
EMERGENCY AND FIRST AID PROCEDURES	Excess Water and Soap

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
More than 3 Years	STABLE		Avoid Excess Heat
INCOMPATABILITY *(Materials to avoid)*			Fumes, Strong Acids, Alkalis
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None
	WILL NOT OCCUR		None

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Use Hot Water
WASTE DISPOSAL METHOD	Use Hot Water

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*	None		
VENTILATION	LOCAL EXHAUST	None	SPECIAL None
	MECHANICAL *(General)*	None	OTHER None
PROTECTIVE GLOVES	None	EYE PROTECTION	None
OTHER PROTECTIVE EQUIPMENT	None		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Store at Room Temperature
OTHER PRECAUTIONS	None

Koppers005930

McDowell Welding & Pipefitting

4000 NW St. Helens Rd., Portland, OR 97210
503-241-2410 • Fax 503-241-2767

June 14, 1999

William Meisinger
Koppers Industries, Inc
1001 William Pitt Way
Pittsburg, PA 15238-1362

Subject: Change Order 92070 –12

Bill,
The orientation of the low point drains on drawing 97010-51 is in conflict with the conduit. We propose to rotate the drains 180 degrees to avoid the conduit. The added cost is $247.00. Please call with any questions. We request that the not to exceed budget be increased to include this amount.

Regards
McDowell Welding and Pipe Fitting

Gray Johnson
Engineering Manager

CC: Jeff Watkins
Jack Stephenson
Charlie Norris

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

ATTN: BILL MEISINGER

SUBJECT: ROTATE LOW POINT DRAINS

DATE OF NOTIFICATION: 6 / 14 / 99

TIME: 10:00 am pm SHFT: 1 2 3

APPROVAL REQ'D BY: / / /

MCDOWELL NUMBER: 92070 (Job no.) - 12 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☒ VERBAL order issued by: CHARLIE NORRIS of KOPPERS directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: PRESENT ORIENTATION OF LOW POINT DRAINS ON DWG 91070-51 CONFLICTS WITH CONDUIT. ROTATE DRAINS 180°

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve; ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☐ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $ 249.00. ☐ Per McDowell T & M Rates. ☐ See Attached.

INCREASE T+M NOT TO EXCEED BUDGET BY THIS AMOUNT

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting

GRAN JOHNSON 6-14-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

DATE OF NOTIFICATION: 6 / 14 / 99

TIME: 10:00 am pm SHFT: 1 2 3

ATTN: BILL MEISINGER

APPROVAL REQ'D BY: / /

SUBJECT: ROTATE LOW POINT DRAINS

MCDOWELL NUMBER: 91070 (Job no.) - 17 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☒ VERBAL order issued by: CHARLIE NORRIS of KOPPERS directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: PRESENT ORIENTATION OF LOW POINT DRAINS ON DWG 91070-51 CONFLICTS WITH CONDUIT. ROTATE DRAINS 180°

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☐ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $ 241.00. ☐ Per McDowell T & M Rates. ☐ See Attached.

INCREASE T+M NOT TO EXCEED BUDGET BY THIS AMOUNT

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting

GRAM JOHNSON 6-14-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

ATTN: BILL MEISINGER

SUBJECT: TITAN LOW POINT DRAINS

DATE OF NOTIFICATION: 6 / 14 / 99

TIME: 10:00 am pm SHFT: 1 2 3

APPROVAL REQ'D BY: / /

MCDOWELL NUMBER: 01070 (Job no.) - 17 (Change no.)

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☑ VERBAL order issued by: CHARLIE MORRIS of KOPPERS directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: PRESENT ORIENTATION OF LOW POINT DRAINS ON DWG 01070-51 CONFLICTS WITH CONDUIT. ROTATE DRAINS 180°.

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☐ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $ 249.00 ☐ Per McDowell T & M Rates. ☐ See Attached.

INCREASE T+M NOT TO EXCEED BUDGET BY THIS AMOUNT

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting

CLAM JOHNSON 6-14-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

McDowell Welding
& Pipefitting, Inc.

NOTIFICATION OF CONTRACT CHANGE OR DELAY

CLIENT: KOPPERS IND

ATTN: BILL MEISINGER

SUBJECT: [illegible] LOW POINT DRAINS

DATE OF NOTIFICATION: 6 / 14 / 99

TIME: 16:00 am pm SHFT: 1 2 3

APPROVAL REQ'D BY: / /

MCDOWELL NUMBER: 170 - 12
Job no. Change no.

CLIENT NUMBER:

We respectfully direct your attention to the following ☒ items:

A. ☐ McDowell has received this date a ☐ WRITTEN ☒ VERBAL order issued by: CHARLIE NORRIS of KOPPERS directing us to:

☐ Perform work as described in Item C below.

☐ Stop work in progress as described in Item C below.

B. ☐ McDowell is unable to start work scheduled to commence on _____, for the reason described in Item C below

C. REASON FOR THE CHANGE: PRESENT ORIENTATION OF LOW POINT DRAINS ON DWG 91070-51 CONFLICTS WITH CONDUIT. ROTATE DRAINS 180°

☐ See Attached.

WE CONSIDER THE FOLLOWING ☒ ITEMS TO BE APPLICABLE:

D. ☒ The order is for work not within the scope of our present contract and will involve: ☒ ADDITIONAL COST, ☐ TIME EXTENSION.

E. ☐ The inherent delay of C above, will involve: ☐ ADDITIONAL COST, ☐ TIME EXTENSION, ☐ PREMIUM TIME, for contract completion.

IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

F. ☐ McDowell ☒ IS ☐ IS NOT proceeding with the work as directed before issuance of a formal change order, per Client Rep's Authority.

G. ☐ McDowell is submitting a proposal covering added cost directly* attributable to the work order:

☐ Lump Sum $ 247.00. ☐ Per McDowell T & M Rates. ☐ See Attached.
INCREASE T&M NOT TO EXCEED BUDGET BY THIS AMOUNT

*Total cost due to change/delay and effect on completion date(s) cannot be completely determined at this time; McDowell will advise total impact upon further analysis of change/delay and overall project effect.

Respectfully Submitted,
McDowell Welding and Pipefitting

GRAY JOHNSON 6-14-99
McDowell Representative Date

Approval to Proceed:

Client Rep. Date

Koppers005936

Day Shift

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: **Condition:**

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	12-20-07	✓	
Front "Outfall"			
Front Parking 4"	12-20-07	✓	
Front Parking 6"	12-20-07	✓	
Center Roadway	12-20-07	✓	
Hot Oil Area	12-20-07	✓	
Melter Area	12-20-07	✓	
Back Roadway	12-20-07	✓	
T-68 Area	12-20-07	✓	
Sumps	12-20-07	✓	
Boiler House	12-20-07	✓	
Creosote Unloading	12-20-07	✓	
Track Five	12-20-07	✓	
New Pitch Building	12-20-07	✓	
T-67	12-20-07	✓	
Inspected by:	Scott Hummel	Date: 12-20-07	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	11-6-07	OK	
Front "Outfall"	11-6-07	—	
Front Parking 4"	11-6-07	OK	
Front Parking 6"	11-6-07	OK	
Center Roadway	11-6-07	OK	
Hot Oil Area	11-6-07	OK	
Melter Area	11-6-07	OK	
Back Roadway	11-6-07	OK	
T-68 Area	11-6-07	OK	
Sumps	11-6-07	OK	
Boiler House	11-6-07	OK	
Creosote Unloading	11-6-07	OK	
Track Five	11-6-07	OK	
New Pitch Building	11-6-07	OK	
T-67	11-6-07	OK	
Inspected by:	Scott Hummel	Date:	11-6-07
Cleaned by:		Date:	

any

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	10-23-07	OK	
Front "Outfall"	10-23-07	gone	
Front Parking 4"	10-23-07	✓	
Front Parking 6"	10-23-07	✓	
Center Roadway	10-23-07	✓	
Hot Oil Area	10-23-07	✓	
Melter Area	10-23-07	✓	
Back Roadway	10-23-07	✓	
T-68 Area	10-23-07	✓	
Sumps	10-23-07	✓	
Boiler House	10-23-07	✓	
Creosote Unloading	10-23-07	✓	
Track Five	10-23-07	✓	
New Pitch Building	10-23-07	✓	
T-67	10-23-07	✓	
Inspected by:	Scott Hummel	Date: 10-23-07	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: Condition:

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	9-25-07	✓	
Front "Outfall"	—	—	
Front Parking 4"	9-25-07	✓	
Front Parking 6"	9-25-07	✓	
Center Roadway	9-25-07	✓	
Hot Oil Area	9-25-07	✓	
Melter Area	9-25-07	✓	
Back Roadway	9-25-07	✓	
T-68 Area	9-25-07	✓	
Sumps	9-25-07	✓	
Boiler House	9-25-07	✓	
Creosote Unloading	9-25-07	✓	
Track Five	9-25-07	✓	
New Pitch Building	9-25-07	✓	
T-67	9-25-07	✓	
Inspected by:	Scott Hummel	Date: 9-25-07	
Cleaned by:		Date:	

No drainage problems at this time

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains			
Front "Outfall"	08.28.07	Yes	
Front Parking 4"	N/A		
Front Parking 6"	08.28.07	Yes	
Center Roadway	08.28.07	Yes	
Hot Oil Area			
Melter Area	08.28.07	Yes	
Back Roadway	08.28.07	Yes	
T-68 Area	08.28.07	Yes	
Sumps			
Boiler House	08.28.07	Not operating correctly	
Creosote Unloading	08.28.07	Yes	
Track Five	08.28.07	Yes	
New Pitch Building	08.28.07	Yes	
T-67	08.28.07	Yes	
Inspected by:	[signature]	Date: 08.28.07	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	7-25-07	✓	
Front "Outfall"	7-25-07	✓	
Front Parking 4"	7-25-07	✓	
Front Parking 6"	7-25-07	✓	
Center Roadway	7-25-07	✓	
Hot Oil Area	7-25-07	✓	
Melter Area	7-25-07	✓	
Back Roadway	7-25-07	✓	
T-68 Area	7-25-07	✓	
Sumps	7-25-07	✓	
Boiler House	7-25-07	✓	
Creosote Unloading	7-25-07	✓	
Track Five	7-25-07	✓	
New Pitch Building	7-25-07	✓	
T-67	7-25-07	✓	
Inspected by:	Scott Hummel	Date:	7-25-07
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:	Condition:	
Oil Separator	**Date Inspected**	**Satisfactory** Cleaned
Rain Drains		
Front "Outfall"	N/A Removed by NWNG paved over	
Front Parking 4"	06·29·07	OK
Front Parking 6"	06·29·07	OK
Center Roadway	06·29·07	OK
Hot Oil Area	06·29·07	OK
Melter Area	06·29·07	OK
Back Roadway	06·29·07	OK
T-68 Area	06·29·07	OK
Sumps		
Boiler House	06·29·07	OK
Creosote Unloading	06·29·07	OK
Track Five	06·29·07	OK
New Pitch Building	06·29·07	OK
T-67	06·29·07	OK
Inspected by:	Steve Kenyon	**Date:** 06·29·07
Cleaned by:		**Date:**

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:	Condition:	
Oil Separator	Date Inspected	Satisfactory Cleaned
Rain Drains	05-31-07	OK
Front "Outfall"	05-31-07	OK
Front Parking 4"	N/A	
Front Parking 6"	05-31-07	OK
Center Roadway	05-31-07	OK
Hot Oil Area	05-31-07	OK
Melter Area	05-31-07	OK
Back Roadway	05-31-07	OK
T-68 Area	05-31-07	System will be rebuilt
Sumps	05-31-07	
Boiler House	05-31-07	Needs Repairs
Creosote Unloading	05-31-07	OK
Track Five	05-31-07	OK
New Pitch Building	05-31-07	OK
T-67	05-31-07	OK
Inspected by:	Steve Kearns	Date: 05-31-07
Cleaned by:		Date:

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: Condition:

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	4-23-07	✓	
Front "Outfall"	4-23-07	—	
Front Parking 4"	4-23-07	✓	
Front Parking 6"	4-23-07	✓	
Center Roadway	4-23-07	✓	
Hot Oil Area	4-23-07	✓	
Melter Area	4-23-07	✓	
Back Roadway	4-23-07	✓	
T-68 Area	4-23-07	✓	
Sumps	4-23-07	✓	
Boiler House	4-23-07	✓	
Creosote Unloading	4-23-07	✓	
Track Five	4-23-07	✓	
New Pitch Building	4-23-07	✓	
T-67	4-23-07	✓	
Inspected by:	Scott Hummel	Date: 4-23-07	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	03·28·07	OK	
Front "Outfall"	03·28·07	OK	
Front Parking 4"	———		
Front Parking 6"	03·28·07	OK	
Center Roadway	03·28·07	OK	
Hot Oil Area	03·28·07	OK	
Melter Area	03·28·07	OK	
Back Roadway	03·28·07	OK	
T-68 Area	03·28·07	OK	
Sumps	03·28·07	OK	
Boiler House	03·28·07	INop	
Creosote Unloading	03·28·07	OK	
Track Five	03·28·07	OK	
New Pitch Building	03·28·07	OK	
T-67	03·28·07	OK	
Inspected by:	Steven L Kraven	Date:	03·28·07
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	2-26-07	✓	
Front "Outfall"	2-26-07	✓	
Front Parking 4"	2-26-07	✓	
Front Parking 6"	2-26-07	✓	
Center Roadway	2-26-07	✓	
Hot Oil Area	2-26-07	✓	
Melter Area	2-26-07	✓	
Back Roadway	2-26-07	✓	
T-68 Area	2-26-07	no	
Sumps	2-26-07	✓	
Boiler House	2-26-07	✓	
Creosote Unloading	2-26-07	✓	
Track Five	2/26/07	✓	
New Pitch Building	2-26-07	✓	
T-67	2-26-07	✓	
Inspected by:	Scott Hummel	Date:	2-26-07
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: **Condition:**

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	1-29-07	ok	
Front "Outfall"	—	—	
Front Parking 4"	ok 1-29-07	ok	
Front Parking 6"	ok 1-29-07	OK	
Center Roadway	1-29-07	ok	
Hot Oil Area	1-29-07	OK	
Melter Area	1-29-07	ok	
Back Roadway	1-29-07	ok	
T-68 Area	—	—	
Sumps	1-29-07	OK	
Boiler House	1-29-07	OK	
Creosote Unloading	1-29-07	ok	
Track Five	1-29-07	ok	
New Pitch Building	1-29-07	OK	
T-67	1-29-07	ok	
Inspected by:		Date: 1-29-07	
Cleaned by:		Date:	

2006 Rain Drain & Sump & Oil Separator Inspections

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Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	1-23	✓	
Front "Outfall"	1-23	✓	
Front Parking 4"	1-23	✓	
Front Parking 6"	1-23	✓	
Center Roadway	1-23	✓	
Hot Oil Area	1-23	✓	
Melter Area	1-23	✓	
Back Roadway	1-23	✓	
T-68 Area	1-23	✓	
Sumps	1-23	✓	
Boiler House	1-23	✓	
Creosote Unloading	1-23	✓	
Track Five	1-23	✓	
New Pitch Building	1-23	✓	
T-67	1-23	✓	
Inspected by:	Scott Hummel	Date:	1-23-06
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	2-8-06	✓	
Front "Outfall"	2-8-06	✓	
Front Parking 4"	2-8-06	✓	
Front Parking 6"	2-8-06	✓	
Center Roadway	2/8/06	✓	
Hot Oil Area	2-8-06	✓	
Melter Area	2-8-06	✓	
Back Roadway	2-8-06	✓	
T-68 Area	2-8-06	✓	
Sumps	2-8-06	✓	
Boiler House	2/8/06	✓	
Creosote Unloading	2-8-06	✓	
Track Five	2-8-06	✓	
New Pitch Building	2-8-06	✓	
T-67	2-8-06	✓	
Inspected by:	Scott Hummel	Date: 2-8-06	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	04.19.06	Yes	
Front "Outfall"	04.19.06	Yes	
Front Parking 4"	04.19.06	Yes	
Front Parking 6"	04.19.06	Yes	
Center Roadway	04.19.06	Yes	
Hot Oil Area	04.19.06	Yes	
Melter Area	04.19.06	Yes	
Back Roadway	04.19.06	Yes	
T-68 Area	04.19.06	Yes	
Sumps	04.19.06	Yes	
Boiler House	04.19.06	Yes	
Creosote Unloading	04.19.06	Yes	
Track Five	04.19.06	Yes	
New Pitch Building	04.19.06	No	
T-67	04.19.06	Yes	
Inspected by:	[signature]	Date: 04.19.06	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	3-24-06	✓	
Front "Outfall"	3-24-06	✓	
Front Parking 4"	3-24-06	✓	
Front Parking 6"	3-24-06	✓	
Center Roadway	3-24-06	✓	
Hot Oil Area	3-24-06	✓	
Melter Area	3-24-06		✓
Back Roadway	3-24-06		✓
T-68 Area	3-24-06		✓
Sumps	3-24-06		✓
Boiler House	3-24-06		✓
Creosote Unloading	3-24-06		✓
Track Five	3-24-06		✓
New Pitch Building	3-24-06		✓
T-67	3-24-06		✓
Inspected by:		Date: 3-24	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	5-19-06	✓	
Front "Outfall"	5-19-06	✓	
Front Parking 4"	5-19-06	✓	
Front Parking 6"	5-19-06	✓	
Center Roadway	5-19-06	✓	
Hot Oil Area	5-19-06	✓	
Melter Area	5-19-06	✓	
Back Roadway	5-19-06	✓	
T-68 Area	5-19-06	✓	
Sumps	5-19-06	✓	
Boiler House	5-19-06	✓	
Creosote Unloading	5-19-06	✓	
Track Five	5-19-06	✓	
New Pitch Building	5-19-06	✓	
T-67	5-19-06	✓	
Inspected by:	Scott Hummel	Date:	5-19-06
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: Oil Separator	Date Inspected	Condition: Satisfactory	Cleaned
Rain Drains	07.14.06	Yes	
Front "Outfall"	07.14.06	Yes	
Front Parking 4"	07.14.06	Yes	
Front Parking 6"	07.14.06	Yes	
Center Roadway	07.14.06	Yes	
Hot Oil Area	07.14.06	Yes	
Melter Area	07.14.06	Yes	
Back Roadway	07.14.06	Yes	
T-68 Area	07.14.06	Yes	
Sumps	07.14.06	Yes	
Boiler House	07.14.06	Pump may need to be adjusted	
Creosote Unloading	07.14.06	Yes	
Track Five	07.14.06	Yes	
New Pitch Building	07.14.06	Yes	
T-67	07.14.06	Yes	
Inspected by:	[signature]	Date: 07.14.06	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	6-16-06	✓	
Front "Outfall"	6-16-06	✓	
Front Parking 4"	6-16-06	✓	
Front Parking 6"	6-16-06	✓	
Center Roadway	6-16-06	✓	
Hot Oil Area	6-16-06	✓	
Melter Area	6-16-06	✓	
Back Roadway	6-16-06	✓	
T-68 Area	6-16-06	✓	
Sumps	6-16-06	✓	
Boiler House	6-16-06	sump that sunk - still ok	
Creosote Unloading	6-16-06	✓	
Track Five	6-16-06	✓	
New Pitch Building	6-16-06	✓	
T-67	6-16-06	✓	
Inspected by:	Scott Hummel	Date: 6-16-06	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	**Date Inspected**	**Satisfactory**	**Cleaned**
Rain Drains	08.14.06	Yes	
Front "Outfall"	08.14.06	Yes	
Front Parking 4"	08.14.06	Yes	
Front Parking 6"	08.14.06	Yes	
Center Roadway	08.14.06	Yes	
Hot Oil Area	08.14.06	Yes	
Melter Area	08.14.06	Yes	
Back Roadway	08.14.06	Yes	
T-68 Area	08.14.06	Yes	last month
Sumps	08.14.06	Yes	
Boiler House	08.14.06	Yes	
Creosote Unloading	08.14.06	Yes	
Track Five	08.14.06	Yes	
New Pitch Building	08.14.06	Yes	
T-67	08.14.06	Yes	
Inspected by:	[signature]	Date: 08.14.06	
Cleaned by:		Date:	

* No RAIN in the last month all appear Normal

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: **Condition:**

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	09.18.06	OK	
Front "Outfall"	09.18.06	OK	
Front Parking 4"	09.18.06	OK	
Front Parking 6"	09.18.06	OK	
Center Roadway	09.18.06	Construction	
Hot Oil Area	09.18.06	OK	
Melter Area	09.18.06	OK	
Back Roadway	09.18.06	OK-Construction	
T-68 Area	09.18.06	OK	
Sumps	09.18.06	OK	
Boiler House	09.18.06	OK	
Creosote Unloading	09.18.06	OK	
Track Five	09.18.06	OK	
New Pitch Building	09.18.06	OK	
T-67	09.18.06	OK	
Inspected by:	JT-ZK-	Date: 09.18.06	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location:		Condition:	
Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	10-26-06	ok	
Front "Outfall"	10-26-06	gone	
Front Parking 4"	10-26-06	ok	
Front Parking 6"	10-26-06	ok	
Center Roadway	10-26-06	ok	
Hot Oil Area	10-26-06	ok	
Melter Area	10-26-06	ok	
Back Roadway	10-26-06	ok	
T-68 Area	10-26-06	ok	
Sumps	10-26-06	ok	
Boiler House	10-26-06	not working	
Creosote Unloading	10-26-06	ok	
Track Five	10-26-06	ok	
New Pitch Building	10-26-06	ok	
T-67	10-26-06	ok	
Inspected by:		Date:	10-26-06
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: Condition:

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	11-26-06	OK	
Front "Outfall"	11-26-06	OK	
Front Parking 4"	11-26-06	OK - Removed paved over	
Front Parking 6"	11-26-06	OK	
Center Roadway	11-26-06	OK	
Hot Oil Area	11-26-06	OK	
Melter Area	11-26-06	OK	
Back Roadway	11-26-06	OK	
T-68 Area	11-26-06	OK	
Sumps	11-26-06	OK	
Boiler House	11-26-06	OK	
Creosote Unloading	11-26-06	OK	
Track Five	11-26-06	OK	
New Pitch Building	11-26-06	OK	
T-67	11-26-06	OK	
Inspected by:	SF-LK	Date: 11-26-06	
Cleaned by:		Date:	

Koppers Industries, Inc. Portland, Oregon

Oil Separator, Rain Drain, & Sump

Inspection Log

Location: Condition:

Oil Separator	Date Inspected	Satisfactory	Cleaned
Rain Drains	12.07.06	OK	
Front "Outfall"	12.07.06	OK	
Front Parking 4"	N/A		
Front Parking 6"	12.07.06	OK	
Center Roadway	12.07.06	OK	
Hot Oil Area	12.07.06	OK	
Melter Area	12.07.06	OK	
Back Roadway	12.07.06	OK	
T-68 Area	12.07.06	OK	
Sumps	12.07.06	OK	
Boiler House	12.07.06	OK	
Creosote Unloading	12.07.06	OK	
Track Five	12.07.06	OK	
New Pitch Building	12.07.06	OK	
T-67	12.07.06	OK	
Inspected by:	SEK	Date: 12.07.06	
Cleaned by:		Date:	

SHIP TO:

02005857
WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 029532380
PROD NO: 04200158

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: VANWET 9N9 CAS NO.: 26027-38-3
COMMON NAMES/SYNONYMS: A NONYLPHENOL SURFACTANT VW&R CODE: T3185002

FORMULA: C33 H60 O10 DATE ISSUED: 04/87
HAZARD RATING (NFPA 704 CRITERIA) SUPERCEDES: 12/86
HEALTH: 3 HAZARD RATING SCALE:
FIRE: 1 0=MINIMAL 3=SERIOUS
REACTIVITY: 0 1=SLIGHT 4=SEVERE
SPECIAL: NONE 2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
VANWET 9N9	26027-38-3	>99	NONE	NONE	NONE	IRRITANT
ETHYLENE OXIDE	75-21-8	TRACE	1	1	0.5 (OSHA ACTION)	CARCINOGEN

PHYSICAL PROPERTIES

BOILING POINT, DEG F: >482 (DECOMPOSES) VAPOR PRESSURE, MM HG/20 DEG C: NIL
MELTING POINT, DEG F: 39 VAPOR DENSITY (AIR=1): >1
SPECIFIC GRAVITY (WATER=1): 1.057 WATER SOLUBILITY, %: 3.2
APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE=1): NIL
CLOUDY LIQUID; MILD ODOR

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND

Koppers005962

WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: MISTS MAY CAUSE CHEST DISCOMFORT AND COUGHING.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES, POSSIBLY CAUSING PERMANENT INJURY.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. PROLONGED OR REPEATED CONTACT MAY ALSO RESULT IN THE ABSORPTION OF HARMFUL AMOUNTS.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: NO DATA FOUND

DERMAL: NO DATA FOUND

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: THIS PRODUCT MAY CONTAIN TRACE AMOUNTS OF ETHYLENE OXIDE, A CONDITION WHICH CREATES THE POTENTIAL FOR ACCUMULATION OF ETHYLENE OXIDE IN THE HEAD SPACE OF SHIPPING AND STORAGE CONTAINERS OR IN ENCLOSED AREAS WHERE THE PRODUCT IS BEING HANDLED OR USED. IF THE PRODUCT IS HANDLED ACCORDING TO THE RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET, THE PRESENCE OF THESE TRACE AMOUNTS OF ETHYLENE OXIDE IS NOT EXPECTED TO RESULT IN ANY SHORT- OR LONG-TERM HAZARD. ETHYLENE OXIDE IS CONSIDERED BY OSHA AS A POTENTIAL CARCINOGEN FOR HUMANS. USERS OF THIS PRODUCT SHOULD CONFIRM THAT THEIR OPERATING, STORAGE AND DISTRIBUTION FACILITIES COMPLY WITH THE OSHA STANDARD (29 CFR 1910.1047). PERSONNEL SHOULD BE MONITORED FOR A SUFFICIENT PERIOD OF TIME TO DETERMINE IF THERE IS EXPOSURE TO ETHYLENE OXIDE ABOVE THE PERMISSIBLE LEVELS AND, IF NECESSARY, PRECAUTIONARY AND PROTECTIVE MEASURES SHOULD BE TAKEN TO KEEP ETHYLENE OXIDE PERSONNEL EXPOSURE LIMITS BELOW THE OSHA PERMISSIBLE LEVEL OF 1 PPM TWA(8) AND THE ACTION LEVEL OF 0.5 PPM TWA(8).

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THE VAPOR OR MIST CONCENTRATION AT THE POINT OF USE. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS

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ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: 477 FLAMMABLE LIMITS IN AIR, %
METHOD USED: PMCC LOWER: N/A UPPER: N/A
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: EXCESSIVE HEAT

MATERIALS TO AVOID: STRONG ALKALIS AT HIGH TEMPERATURES, STRONG ACIDS, STRONG OXIDIZERS, AND MATERIALS REACTIVE WITH HYDROXYL COMPOUNDS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS IN BLACK SMOKE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOILS. THIS PRODUCT IS HIGHLY TOXIC TO AQUATIC LIFE.

COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. STORE AT TEMPERATURES ABOVE 39 DEGREES F. TO PROTECT FROM FREEZING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

Koppers005964

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

NOTICE

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REVISION

04/87: CORRECTED CAS NUMBER.

**** E N D O F M S D S ****

PROD: 04200158 09:58:47 17 JAN 1989 CUST: 02005857 INVOICE: 029582380

August 10, 1989

Additional Information

I contacted the chemical laboratory of Van Waters & Rogers, Inc. to determine the amount of ethylene oxide found in the product Vanwet 9N9. Ethylene oxide (ETO) is not used in the production of 9N9, however, the product may contain trace amounts of ETO. The trace amounts are considered undetectable concentrations within the product.

Daniel L. White (IH)

J-094 14

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/825-9600 3000 Tech Center Dr., Monroeville, PA 15146 Fax: 412/825-9699

May 31, 1989

Shipped 6-15-89

Mr. John Oxford
Koppers Industries, Inc.
7540 NW St. Helens Road
Portland, OR 97229

Dear John:

In order to obtain Chem Security Systems, Inc. approval for disposal, a representative sample and "Generator Certification of Representative Sample" must accompany the waste profile sheet to Chem Security Systems, Inc. The Generator Certification Sheet is attached to this letter.

1. A sample size of one gallon should be obtained and should be composed of one pint from each of the drums for disposal. The sample should be representative of the contents of that drum. Chem Security Systems, Inc. will perform some analyses of the sample and use it as a basis for accepting or rejecting the load. They will also bill you for their analytical work.

2. Complete Section C of the Generator Certification, remove the peel off label of Section C and apply it to the filled sample can.

3. Forward the sample, the Generator Certification, the Waste Profile Sheet, the Land Ban Exemption Demonstration, and the attached cover letter to Chem Security Systems, Inc. in Arlington.

If you have any questions, please call me or Bill Swearingen.

Very truly yours,

Jordan M. Dern
Senior Project Manager

JMD:dac
Attachment

cc: W. Swearingen
J. Stephenson

JUN 8 ...

SERVICE CONTRACT

Profile Number: J09414
June 28, 1989

1) CUSTOMER SERVICE LOCATION
Koppers Co., Inc.
7540 NW St. Helens Rd.
Portland, OR 97229

2) CUSTOMER BILLING LOCATION
Same.

Attn: W. E. Swearingen, Env. Prog. Mgr.

3) CHEMICAL WASTE MANAGEMENT, INC. hereby agrees to provide services, including treatment and/or disposal, for waste material generated at the above CUSTOMER SERVICE LOCATION and as described in the attached WASTE MATERIAL PROFILE SHEET number J09414. The described waste material will be treated and/or disposed of at the following facility, which is permitted to receive the described waste material:

4) Chem-Security Systems, Inc.
Star Route, Box 9
Arlington, OR 97812

EPA I.D. No. ORD089452353

5) Not applicable

EPA I.D. No. N/A

6) The method of treatment and/or disposal shall be:

Secure burial - no free liquids permitted.

7) Disposer is authorized to reclaim, recover, sell, distribute or use the waste materials, their components or residue.

8) DESCRIPTIONS OF SERVICES TO BE PROVIDED	UNIT	PRICE/UNIT

Disposal pricing per attached Price Schedule effective June 28, 1989.

Transportation: See Attachment I.

Manner of Tender: Telephone request to Disposer. Material to be loaded on vehicle by Generator. Profile number to be marked on each drum top. The attached Generator Notification for August 1988 ("Soft Hammer" Wastes) must accompany each shipment. "Soft Hammer" Demonstration must accompany each shipment.

NOTES: Unless noted, the above prices do not include applicable local, state or federal taxes which, if assessed, shall be invoiced to and payable by the Customer on an actual cost basis. If Customer is to supply the waste materials' containers, Customer will be solely responsible for the appropriate construction, marking, and labeling of the containers.

9) The prices shown or rate schedule referenced above are in effect from the day of the agreement unless modified by providing a minimum of thirty (30) days written notice. Payment terms: Net 30 days.

SPECIAL PROVISIONS: CHEMICAL WASTE MANAGEMENT, INC. agrees to indemnify Customer for final judgments, decisions, or settlements in an administrative or judicial action against Customer for personal injuries or damage to personal property the proximate cause of which is the sole negligence or intentional misconduct of CHEMICAL WASTE MANAGEMENT, INC. Customer agrees to likewise indemnify CHEMICAL WASTE MANAGEMENT, INC.

Please note your signature on this contract indicates your acceptance of changes made to this Waste Material Profile in Sections A and J.

10) TERM: This Service Contract shall commence on June 28, 1989, and shall continue in effect until terminated by either party with or without cause upon thirty (30) days written notice to the other party.

ENTIRE AGREEMENT: This Service Agreement (including the attached Waste Profile Sheet) represents the entire understanding between the parties hereto and supersedes any and all prior agreements, whether written or oral that may exist between the parties and supersedes any and all terms and conditions which may be contained in any purchase orders issued by Customer prior to or subsequent to this Agreement.

11) CHEMICAL WASTE MANAGEMENT, INC.

By: _____
Doris Bjorn
Title: District Sales Manager

Date: _____

12) KOPPERS CO., INC.

By: _____

Title: _____

Date: _____

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

POR

PDX J 09414

Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) CWM Sales Rep. #: 042

A. GENERAL INFORMATION

1. Generator Name: Koppers ~~Industries,~~ Co., Inc. 2. Generator USEPA ID: O R D 0 2 7 7 3 4 3 5 9
3. Facility Address: 7540 NW St. Helens Road 4. Generator State ID: _____
Portland, OR 97229 5. Zip Code: 97~~229~~ 210
6. Technical Contact: W. E. Swearingen 7. Title: Env. Program Mgr. 8. Phone: (304) 527 - 0110
6/25/89 rc

B. MAIL CHEMICAL WASTE MANAGEMENT, INC. INVOICES TO 1. ☒ Generating Facility (A, above), or
2. Company Name: _____ 3. Phone: ( ) _____ - _____
4. Address: _____
5. Zip Code: _____

C. 1. NAME OF WASTE Creosote spill cleanup
2. PROCESS GENERATING WASTE Spill
3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, or F028)?
☐ Yes ☒ No If yes, **DO NOT COMPLETE** this form. Contact your Chemical Waste Management, Inc. sales representative for assistance.

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color:	2. Does the waste have a strong incidental odor?	3. Physical State @ 70°F:	4. Layers:	5. Specific Gravity:	6. Free Liquids:
discolored soil	☐ No ☐ Yes If known, describe: creosote	☒ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder Other: _____	☐ Multilayered ☐ Bi-layered ☒ Single Phased	Range: 1.3 - 1.4	☐ Yes ☒ No Volume: _____ %

7. pH: ☐ ≤ 2 ☐ > 2-4 ☐ 4-7 ☒ 7 ☐ 7-10 ☐ 10- < 12.5 ☐ ≥ 12.5 ☐ Range _____ - _____ ☐ NA

8. Liquid Flash Point: ☐ < 73°F ☐ 73-99°F ☐ 100-139°F ☒ 140-199°F ☐ ≥ 200°F ☐ None ☒ Closed Cup ☐ Open Cup
for pure creosote

E. CHEMICAL COMPOSITION

1.	RANGE MIN. - MAX.	
Creosote	5 - 20	%
Soil	80 - 95	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%. TOTAL: _____ %

2. Indicate if this waste contains any of the following:

	NONE	or	LESS THAN	or	ACTUAL
PCB's	☒		☐ < 50 ppm		ppm
Cyanides	☒		☐ < 50 ppm		ppm
Phenolics	☐		☐ < 50 ppm		3,000 ppm
Sulfides	☐		☐ < 50 ppm		2 ppm

F. METALS Indicate if this waste contains any of the following:
1. ☐ EP TOX/TCLP or 2. ☒ Total

METAL	LESS THAN	or	ACTUAL (Parts Per Million)
Arsenic	☐ < 5	☐ < 500	0.22
Barium	☐ < 100		2.2
Cadmium	☐ < 1	☐ < 100	0.09
Chromium	☐ < 5		0.43
Lead	☐ < 5	☐ < 500	0.19
Mercury	☐ < 0.2	☐ < 20	<0.005
Selenium	☐ < 1	☐ < 100	0.11
Silver	☐ < 5		0.13
Chromium-Hex	☐ < 5	☐ < 500	NA
Copper	☐ < 5		2.8
Nickel	☐ < 5	☐ < 134	24
Thallium	☐ < 5	☐ < 130	NA
Zinc	☐ < 5		20
	☐ <		
	☐ <		
	☐ <		

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GENERATOR'S WASTE MATERIAL PROFILE SHEET (Continued)

[ ] J 09414
Waste Profile Sheet Code

G. OTHER HAZARDOUS CHARACTERISTICS

1. Is this waste a listed solvent waste as defined by 40 CFR 261.31 (F001, F002, F003, F004, or F005)? ☐ Yes ☒ No
2. Does this waste contain greater than 1000 ppm total halogenated organic compounds? ☐ Yes ☒ No
3. Indicate if this waste is any of the following:
   - ☐ RCRA Reactive
   - ☐ Water Reactive
   - ☐ Explosive
   - ☐ Shock Sensitive
   - ☐ Pyrophoric
   - ☐ Radioactive
   - ☐ Etiological
   - ☐ Pesticide Manufacturing Waste
   - ☐ Other
   - ☒ None of the above

H. COMPLETE ONLY FOR WASTES INTENDED FOR FUELS or INCINERATION NA

		LESS THAN	or	ACTUAL
Beryllium	☐ <	5000 ppm		____ ppm
Potassium	☐ <	5000 ppm		____ ppm
Sodium	☐ <	5000 ppm		____ ppm
Total Bromine	☐ <	2 %		____ %
Total Chlorine	☐ <	35 %		____ %
Total Fluorine	☐ <	1 %		____ %
Total Sulfur				____ %

I. OPTIONAL — RECLAMATION, FUELS, OR INCINERATION PARAMETERS Provide if information is available. NA

Range

1. Heat Value (BTU/lb): ____ 2. Water: ____ %
3. Viscosity (cps): ____ @ ☐ ____ °F ☐ 100°F ☐ 150°F
4. Ash: ____ % 5. Settleable solids: ____ %
6. Vapor Pressure @ STP (mm/Hg): ____
7. Is this waste a pumpable liquid? ☐ Yes ☐ No
   Type of pump? ____
8. Can this waste be heated to improve flow? ☐ Yes ☐ No
9. Is this waste soluble in water? ☐ Yes ☐ No
10. Particle size: Will the solid portion of this waste pass through a 1/8 inch screen? ☐ Yes ☐ No

J. TRANSPORTATION INFORMATION

1. Is this a DOT Hazardous Material? ☒ Yes ☐ No 2. Anticipated Annual Volume/Units: 4,000 / lbs
3. Proper Shipping Name: RQ Hazardous waste, ~~n.o.s.~~ Solid, N.O.S.
4. Hazard Class: ORM-E 5. I.D. #: NA 9189
6. Additional Description: (Creosote)
7. Method of Shipment: ☐ Bulk Liquid ☐ Bulk Solid ☒ Drum (Type/Size): 17E / 55 Other: ____
8. CERCLA Reportable Quantity (RQ): 1 9. RQ Units (lb/kg): lb
10. USEPA Hazardous Waste? ☒ Yes ☐ No 11. USEPA Hazardous Waste Number(s): U051
12. State Hazardous Waste? ☒ Yes ☒ No 13. State Hazardous Waste Number(s): U051

6/14/89 CAS
6/22/89 CAS

K. SPECIAL HANDLING INFORMATION ____

☐ Additional Page(s) Attached

L. GENERATOR CERTIFICATION I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material, and all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

1. Jack L Stephenson
   Signature
2. Purchasing Agent
   Title
3. Jack L Stephenson
   Name (Type or Print)
4. 6/5/89
   Date

Form CWM-6000 © 1987 Chemical Waste Management, Inc.

Koppers005970

CHEMICAL WASTE MANAGEMENT, INC.
ARLINGTON, OREGON FACILITY
PRICE SCHEDULE FOR WPS J09414
EFFECTIVE June 28, 1989

All prices are FOB Arlington, Oregon. This schedule supersedes all prior price schedules.

DRUMMED WASTES

Category	Drum Gals	Price/Drum Full Drums	SURCHARGES/DRUM Less than 90% Full	Liquid in Drums	Oil/Non-banned Solvents≥1000 ppm
Drummed Solids	30-55	$ 77.00	$15.00	$48.00	$10.00

NOTES TO PRICE SCHEDULE

1. Prices do not include federal and state taxes. All applicable taxes will be invoiced as imposed.

2. The hourly rate to extend services beyond normal hours on weekdays is $225.00 per hour for a chemist, two technicians and a receiving person. If chemical stabilization is required, the rate is $275.00 per hour, rather than $225.00 per hour. The same rates apply within a minimum of four (4) hours on Saturdays. Additional rates or conditions may apply for operation outside daylight hours. Sundays and holidays are quoted case-by-case.

3. Tonnage rate for low density (<75 lbs./ft^3) will be calculated using the following formula:

$$\frac{\text{2000 pounds}}{\text{weight per cubic foot}} \times \text{cubic footage rate} = \text{rate per ton}$$

The cost per cubic foot (cubic footage rate) is $4.95/$ft^3$.

4. For odd sized containers, cubic footage will be calculated using the smallest rectangle that can be measured around the outermost dimensions of the container.

5. All prices are net 30 days and FOB Arlington, Oregon. Prices are contingent on submittal and approval of a Waste Profile Sheet and execution of a contract with Chemical Waste Management, Inc.

6. Quantities greater than 500 tons annually will be quoted case-by-case where quantity discounts are considered.

Koppers005971

7. The minimum disposal cost per truckload is $200.00.

8. The waste evaluation fee is $400.00. This fee is charged on all new waste profile sheets requiring confirming analysis for representative sample of waste. This fee is applicable on all waste profiles submitted regardless of disposal decision for approval or disapproval. A $200.00 rebate is applied to the first shipment of this waste.

9. PCB Testing: This applies to testing of wastes after receipt at the Arlington facility. Testing charges for any field work will be case-by-case.

   $ 65.00/test if liquid is found in a container manifested as PCB solids, or if, during testing of solids not manifested as PCBs, PCBs are detected.

   $130.00/test for immediate turnaround for PCB testing.

10. Bulk solids that are found to contain free-standing liquids will be assessed a fee of $300.00/$yd^3$ for stabilization material added. This will cover the cost of the stabilization material, equipment, labor and increased disposal volume. The minimum charge for this service will be $600.00 per truckload.

11. F-listed wastes covered by the EPA November 8, 1986 Landfill Disposal Ban: A pre-screen solvent test will be performed on these wastes. If a waste is rejected because it is non-conforming, a $150.00 fee per waste stream per shipment will be assessed.

12. Waste received in vans will be assessed a charge of $2.50 per drum with a minimum of $100.00 per load.

13. The surcharge for liquids in drums is assessed for those wastes profiled as solids and received containing liquids. These drums will only be accepted when availability of site personnel allows for handling.

14. If overpacks are required, they will be charged at $125.00 per overpack.

15. Drums containing solids must be at least 90% full to avoid a $15.00 per drum surcharge.

Koppers005972

ATTACHMENT I

TRANSPORTATION RATES TO ARLINGTON, OREGON FACILITY
FROM PORTLAND AREA
LESS THAN TRUCKLOAD RATES

Number of Drums	Shipping Cost per Drum
15-38	$ 14.00
10-14	19.00
6- 9	25.00
5	33.00
4	40.00
3	52.00
2	70.00
1	95.00

Rate includes loading time as follows:

1-9 drums = 1/2 hour
10 + drums = 1 hour

Loading time beyond those indicated will be charged at $67.50 per hour.

Notes:

1. Prices are for transportation only. A separate disposal price schedule is available.

2. Prices apply to drum sizes 30 - 55 gallon.

3. Transportation cost for one pallet, 4 x 4 feet or smaller, is equivalent to four (4) drums.

4. Maximum weight = 48,000 pounds per flatbed.

5. Applicable regulatory fees are additional and will be added to the invoice.

6. The price for a full truckload is $640. This includes one hour loading time. Time beyond one hour is $67.50 per hour.

attachi (portland)

"SOFT HAMMER" WASTES*

LAND DISPOSAL RESTRICTION NOTIFICATION AND CERTIFICATION FORM

Generator Name: _____ Manifest Number: _____

EPA Hazardous Waste Codes[1]: _____, _____, _____ CWM Profile Number: _____

This form is submitted to _____ in accordance with 40 CFR Part 268, which restricts the land disposal of certain hazardous wastes. I have marked the appropriate box below to indicate whether alternative treatment has been found for my waste. (See reverse side for the list of "soft-hammer" wastes and instructions on using this form.)

☐ **A. SOFT-HAMMER WASTE FOR WHICH ALTERNATIVE TREATMENT OR RECOVERY HAS BEEN LOCATED**

The soft-hammer waste I generate is (are) _____. I have identified a practically available treatment technology that yields the greatest environmental benefit. Together with the initial shipment of waste represented by this form, I submitted a demonstration to the Regional Administrator in accordance with 40 CFR 268.8(a)(1), including a list of facilities and facility officials contacted, complete with addresses, telephone numbers, and contact dates, and a justification that I have chosen the best treatment that is practically available.

"I certify under penalty of law that the requirements of 40 CFR 268.8(a) have been met and I have contracted to treat my waste (or will otherwise provide treatment) by the practically available technology which yields the greatest environmental benefit, as indicated in my demonstration. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

☐ **B. SOFT-HAMMER WASTE FOR WHICH DISPOSAL IN LANDFILL OR SURFACE IMPOUNDMENT IS THE ONLY PRACTICAL ALTERNATIVE TO TREATMENT CURRENTLY AVAILABLE**

The soft-hammer waste(s) I generate or have treated is (are) _____. I have made a good-faith effort to locate and contract with treatment and recovery facilities practically available which can meaningfully reduce the toxicity or mobility of hazardous constituents in the waste, as an alternative to land disposal. I have found no such alternative facility. Together with the initial shipment of waste represented by this form, I submitted a demonstration in accordance with 40 CFR 268.8(a), including a list of facilities and facility officials contacted, addresses, telephone numbers, contact dates, and an explanation of why no treatment is practically available. This soft-hammer waste must be disposed of in a landfill or surface impoundment meeting the minimum technological standards until treatment standards are set for the waste or May 8, 1990, whichever occurs first.

"I certify under penalty of law that the requirements of 40 CFR 268.8(a)(1) have been met and that disposal in a landfill or surface impoundment is the only practical alternative to treatment currently available. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false informations, including the possibility of fine or imprisonment."

☐ **C. TREATMENT OR RECOVERY FACILITY HAS TREATED THE WASTE**

The following soft-hammer waste(s) was treated in accordance with the generator's demonstration: _____

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with treatment as specified in the generator's demonstration. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

☐ **D. SOFT-HAMMER WASTE DESTINED FOR LAND DISPOSAL OTHER THAN IN LANDFILL OR SURFACE IMPOUNDMENT (e.g. DEEP INJECTION WELL)**

The soft-hammer waste(s) I generate is (are) _____. This waste is being disposed of in a land disposal unit other than a landfill or surface impoundment and therefore is not subject to the certification and demonstration requirements described above.

Signature _____ Title _____ Date _____

COPYRIGHT: NOVEMBER 1988 *WASTES FOR WHICH NO TREATMENT STANDARDS HAVE BEEN SET JUNE 1989

[1]List all EPA Waste Codes present in this shipment of waste. Attach separate sheet, listing waste codes if necessary.

Koppers005974

Instructions For Completing the "Soft Hammer" Notification and Certification Form

What is a "Soft-Hammer" Waste?

"Soft-Hammer" wastes are those listed hazardous wastes in the First-and Second-Third of the Scheduled Wastes for which EPA has not set treatment standards. See section 3004(g) of the Resource Conservation and Recovery Act (RCRA).

List of "Soft-Hammer" Wastes

K004-*1	K069-*2	P002	P027	P072	P120	U018	U043	U066	U097	U122	U144	U165	U189	U216
K008-*1	K073	P003	P036	P081	P122-*6	U019	U044	U067	U098	U124	U146	U168	U192	U217
K017	K083-*3	P004	P037	P082	P123	U020	U046	U070	U099	U127	U147	U169	U193	U218
K021-*1	K084	P005	P048	P084	U002	U021	U047	U073	U101	U128	U149	U170	U196	U219
K022-*1	K085	P007	P049	P087	U003	U022	U049	U074	U103	U129	U150	U171	U200	U220
K025-*1	K086-*4	P008	P050	P092	U005	U023	U050	U077	U105	U130	U151	U172	U203	U226
K029-*1	K095-*1	P010	P054	P102	U007	U025	U051	U078	U106	U131	U154	U173	U205	U227
K031	K096-*1	P011	P057	P105	U008	U026	U053	U080	U108	U133	U155	U174	U206	U228
K035-*1	K097	P012	P058	P107	U009	U029	U057	U083	U109	U134	U157	U176	U208	U237
K036-*1	K098	P014	P060	P108	U010	U031	U059	U086	U110	U135	U158	U177	U209	U238
K041	K101-*5	P105	P066	P110	U011	U032	U060	U089	U111	U137	U159	U178	U210	U239
K042	K102-*5	P106	P067	P112	U012	U035	U061	U092	U114	U138	U161	U179	U211	U244
K046	K105	P018	P068	P113	U014	U036	U062	U093	U115	U140	U162	U180	U213	U248-*7
K060-*1	K106	P020	P069	P114	U015	U037	U063	U094	U116	U142	U163	U185	U214	U249-*6
K061-*1	P001	P026	P070	P115	U016	U041	U064	U095	U119	U143	U164	U188	U215	

*1 - wastewater
*2 - calcium sulfate category
*3 - except no ash category
*4 - ink, caustic water wash & sludges
*5 - high arsenic sub-category greater than 1%
*6 - greater than 10%
*7 - greater than .3%

How Must "Soft-Hammer" Wastes Be Managed?

Until May 8, 1990 these wastes may be disposed in a landfill or surface impoundment only if such unit is in compliance with the minimum technological requirements and prior to such disposal, the generator has made a good-faith effort to locate and contract with treatment and recovery facilities practically available which provide the greatest environmental benefit.

What is "Practical Treatment?"

First, if a generator's "soft-hammer" wastes were treated in the past, EPA says it would consider at least this type of treatment to be "practical" for that generator. Second, EPA presents a cost ratio that measures the cost of treatment relative to the baseline cost of shipment and disposal in a minimum technological landfill or surface impoundment. If treating the waste costs at least twice as much as not treating the waste, EPA would ordinarily consider that form of treatment to be impractical. Third, EPA has provided in the rule's preamble a generic hierarchy of preferred treatment methods for certain First-Third wastes, see 53 Fed. Reg. 31175-76. Last, in general, the Agency says it favors recovery/recycling facilities as the best method, followed by destruction technologies such as incineration (especially for organics), and then stabilization where recycling or destruction is unavailable or inappropriate (especially for inorganics).

Which Box Should I Mark?

Mark Box A on the front of this form if you generate (or have treated) one of the hazardous wastes listed above, and you have located a treatment or recovery process which yields the greatest environmental benefit.

Mark Box B if you generate one of the hazardous wastes listed above but have been unable to locate an alternative treatment. Note that if this waste is disposed in a landfill or surface impoundment, the unit must comply with the minimum technological requirements.

Mark Box C if you have treated soft-hammer waste in accordance with the generator's demonstration.

Mark Box D if your soft-hammer waste is being land disposed in a unit other than a landfill or surface impoundment (e.g., deep well injection). The certification and demonstration requirements of Boxes I, II, III do not apply.

Where Should The Forms Be Sent?

The generator must submit the certification and demonstration to the Regional Administrator (RA). Certifications and demonstrations for subsequent shipments need not be sent to the RA provided the conditions of the original certification do not change (i.e., the same demonstration applies). The generator must also send the demonstration and certification to the receiving facility with the initial waste shipment. Provided the conditions of the certification do not change, only the certification need be sent with each subsequent waste shipment. The treatment facility must send a copy of the generator's demonstration and certification to the facility receiving the waste or treatment residues, along with a certification that it has treated the waste in accordance with the generator's demonstration.

Koppers005975

ATTACHMENT 1

From: _____
_____
_____
_____
_____

To: Regional Administrator
U.S. EPA

_____
_____
_____
_____
_____

Re: Soft Hammer Demonstration/Certification

In accordance with the Environmental Protection Agency's land disposal restrictions governing the first third scheduled wastes, I have enclosed a soft hammer demonstration and certification as per 40 CFR 268.8(a)(2) for the waste stream described by:

U.S. EPA Hazardous Waste Code (s): _____

CWM Profile Number: _____

Common Name: _____

The demonstration reflects our efforts to locate practically available treatment that afford the greatest environmental benefit. Based on our search for such treatment, we have determined that (check one):

_____ 1). No practically available treatment exists. See attached demonstration, attachments 2 and 3, for further details.

_____ 2). The best practically available treatment is: (See the attached demonstration, attachments 2, 3 and 4 for further details.)

If any further information is required, please contact me at: _____

_____ (telephone number).

_____ (signature)

_____ (typed or printed name)

_____ (title)

_____ (date

SOFT HAMMER DEMONSTRATION - ATTACHMENT 2

FACILITY OWNER/OPERATOR	LOCATION	TREATMENT METHOD	TELEPHONE	CONTACT	DATE	EXPLANATION*
1.						
2.						
3.						
4.						

* PLEASE circle the facility and treatment method (number or letter) that has been chosen.

* EXPLANATION - for no available treatment - insert the number key from Attachment 3.
for avilable treatment - insert the letter key from Attachment 4.

Koppers005977

ATTACHMENT 3

FIRST THIRD "SOFT-HAMMER" DEMONSTRATION
No Available Practical Alternative to Land Disposal

Explanation of Why No Treatment Is Practically Available

I have not been able to locate practically available treatment or recovery for the waste described in the the cover letter because, (refer to checked items, and any additional comments):

(1) _____ No recovery facilities have been located which will be able to recover the hazardous constituents of this waste.

(2) _____ There is no safe and legal treatment or recovery operation which I can perform practically at my site that will appreciably reduce the toxicity or mobility of the hazardous constituents of the waste.

(3) _____ I have not been treating this waste at my site in the past, using a treatment technology which has been found to appreciably reduce the toxicity or mobility of the hazardous constituents of the waste.

(4) _____ Stabilization treatment will not appreciably reduce the toxicity or mobility of the hazardous constituents of this waste.

(5) _____ Incineration, thermal oxidation or other destruction technologies will not appreciably reduce the toxicity or mobility of the hazardous constituents of the waste.

(6) _____ I have examined the possibilities of recovery/recycling, incineration, other destruction technologies, and stabilization, in that order or preference, and I have not been able to locate any such treatment facilities that will accept this waste.

(7) _____ The cost of treatment, shipment and disposal at the treatment/recovery facilities that have been located is greater than or equal to twice the cost of shipment and disposal at the RCRA landfill.

Additional Comments:

(8) _____

FIRST THIRD "SOFT-HAMMER" DEMONSTRATION

Soft-Hammer Waste For Which Practical Alternative Treatment or Recovery Has Been Located

A Distillation of organic solvents for recycling/recovery is a practically available technology that yields the greatest environmental benefit.

B Metals recovery is a practically available technology that yields the greatest environmental benefit. This waste is primarily heavy metal constituents which are present at recoverable concentrations.

C Incineration is a practically available technology that yields the greatest environmental benefit. This waste is principally organic liquids or residues which are best destroyed by incineration.

D Fuels blending is a practically available technology that yields the greatest environmental benefit. This waste had a heating value greater than or equal to 5,000 BTU per pound an can best be resused as a hazardous waste fuel.

E A combination of Fuels Blending, and/or Incineration is a practically available technology that yields the greatest environmental benefit. This is due to the properties of my waste which may vary slightly, from one load to the next. Solid nondispersible residues (usually with a substantial inorganic content) with free liquids will need to be solidified prior to landfill disposal; but the pumpable or dispersible portions may be blended for hazardous waste fuels usage, (when the BTU's, chlorine, ash, etc. are within the required ranges); or else be solidified.

F A combination of Fuels Blending, and/or Solidification is a practically available technology that yields the greatest environmental benefit. This is due to the properties of my waste which may vary slightly, from one load to the next. Solid nondispersible residues (usually with a substantial inorganic content) with free liquids will need to be solidified prior to landfill disposal; but the pumpable or dispersible portions may be blended for hazardous waste fuels usage, (when the BTU's, chlorine, ash, etc. are within the required ranges); or else be solidified.

G Chemical Precipitation (with filtration and/or decanting) is a practically available technology that yields the greatest environmental benefit. This should reduce the toxicity/mobility of the hazardous constituents by reducing the toxic volume of the waste.

H Filtration is a practically available technology that yields the greatest environmental benefit. This should reduce the toxicity/mobility of the hazardous constituents by reducing the toxic volume of the waste.

I Chemical Oxidation is a practically available technology that yields the greatest environment benefit. Chemical Oxidation will reduce the toxicity of the hazardous constituents of the waste.

J Stabilization is a practically available technology that yields the greatest environmental benefit. Stabilization will reduce the mobility of the hazardous constituents of the waste. I have examined recovery and destruction technologies and found that they were not practically available for the following reason(s): (see items K through R, below)

This waste is not suitable for incineration or fuels due to:

K the low percentage of hazardous organic constituents present,

L the low heating value of the waste,

M the high percentage of inorganic constituents present,

N the lack of located available capacity of incineration or fuels blending facilities.

This waste is not suitable for recovery due to:

O the hazardous constituents are present in concentrations that make recovery technologically impossible.

P the hazardous constituents are present in concentration that make recovery economically infeasible.

Q No recovery facilities were located that could treat this type of waste.

R No recovery facilities were located that had capacity to treat this type of waste.

S Other comments or treatment/recovery (describe):

Chemical Waste Management, Inc.

Suite 925 • 200 SW Market Street
Portland, Oregon 97201
503/223-1912

June 28, 1989

Mr. John Oxford
Koppers Co., Inc.
7540 NW St. Helens Rd.
Portland, OR 97229

Dear Mr. Oxford:

Enclosed are two copies of our contract for your waste product WPS J09414. Please sign both contracts and return complete with attachments to the above address. We will then sign and return a fully-executed copy to you.

Thank you.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Joyce Johnson/mak

Joyce Johnson
Account Specialist

/mak

Enclosures

JUN 29 1989

Printed on recycled paper.

SERVICE CONTRACT

Profile Number: J09414
June 28, 1989

1) CUSTOMER SERVICE LOCATION
Koppers Co., Inc.
7540 NW St. Helens Rd.
Portland, OR 97229

2) CUSTOMER BILLING LOCATION
Same.

Attn: W. E. Swearingen, Env. Prog. Mgr.

3) CHEMICAL WASTE MANAGEMENT, INC. hereby agrees to provide services, including treatment and/or disposal, for waste material generated at the above CUSTOMER SERVICE LOCATION and as described in the attached WASTE MATERIAL PROFILE SHEET number J09414. The described waste material will be treated and/or disposed of at the following facility, which is permitted to receive the described waste material:

4) Chem-Security Systems, Inc.
Star Route, Box 9
Arlington, OR 97812

EPA I.D. No. ORD089452353

5) Not applicable

EPA I.D. No. N/A

6) The method of treatment and/or disposal shall be:

Secure burial - no free liquids permitted.

7) Disposer is authorized to reclaim, recover, sell, distribute or use the waste materials, their components or residue.

8) DESCRIPTIONS OF SERVICES TO BE PROVIDED	UNIT	PRICE/UNIT

Disposal pricing per attached Price Schedule effective June 28, 1989.

Transportation: See Attachment I.

Manner of Tender: Telephone request to Disposer. Material to be loaded on vehicle by Generator. Profile number to be marked on each drum top. The attached Generator Notification for August 1988 ("Soft Hammer" Wastes) must accompany each shipment. "Soft Hammer" Demonstration must accompany each shipment.

NOTES: Unless noted, the above prices do not include applicable local, state or federal taxes which, if assessed, shall be invoiced to and payable by the Customer on an actual cost basis. If Customer is to supply the waste materials' containers, Customer will be solely responsible for the appropriate construction, marking, and labeling of the containers.

9) The prices shown or rate schedule referenced above are in effect from the day of the agreement unless modified by providing a minimum of thirty (30) days written notice. Payment terms: Net 30 days.

SPECIAL PROVISIONS: CHEMICAL WASTE MANAGEMENT, INC. agrees to indemnify Customer for final judgments, decisions, or settlements in an administrative or judicial action against Customer for personal injuries or damage to personal property the proximate cause of which is the sole negligence or intentional misconduct of CHEMICAL WASTE MANAGEMENT, INC. Customer agrees to likewise indemnify CHEMICAL WASTE MANAGEMENT, INC.

Please note your signature on this contract indicates your acceptance of changes made to this Waste Material Profile in Sections A and J.

10) TERM: This Service Contract shall commence on June 28, 1989, and shall continue in effect until terminated by either party with or without cause upon thirty (30) days written notice to the other party.

ENTIRE AGREEMENT: This Service Agreement (including the attached Waste Profile Sheet) represents the entire understanding between the parties hereto and supersedes any and all prior agreements, whether written or oral that may exist between the parties and supersedes any and all terms and conditions which may be contained in any purchase orders issued by Customer prior to or subsequent to this Agreement.

11) CHEMICAL WASTE MANAGEMENT, INC.

By: _____
Doris Bjorn
Title: District Sales Manager

Date: _____

12) KOPPERS CO., INC.

By: _____

Title: _____

Date: _____

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

POST

PDX J 09414

Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) CWM Sales Rep. #: 042

A. GENERAL INFORMATION

1. Generator Name: Koppers Industries, Co. Inc. 2. Generator USEPA ID: O R D 0 2 7 7 3 4 3 5 9
3. Facility Address: 7540 NW St. Helens Road 4. Generator State ID: _____
Portland, OR 97229 5. Zip Code: 97229 210
6. Technical Contact: W. E. Swearingen 7. Title: Env. Program Mgr. 8. Phone: (304) 527 - 0110 4/21/89 mc

B. MAIL CHEMICAL WASTE MANAGEMENT, INC. INVOICES TO 1. ☒ Generating Facility (A, above), or
2. Company Name: _____ 3. Phone: ( ) _____ - _____
4. Address: _____
5. Zip Code: _____

C. 1. **NAME OF WASTE** Creosote spill cleanup
2. **PROCESS GENERATING WASTE** Spill
3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, or F028)?
☐ Yes ☒ No If yes, **DO NOT COMPLETE** this form. Contact your Chemical Waste Management, Inc. sales representative for assistance.

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color:	2. Does the waste have a strong incidental odor?	3. Physical State @ 70°F:	4. Layers:	5. Specific Gravity:	6. Free Liquids:
discolored soil	☐ No ☐ Yes If known, describe: creosote	☒ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder Other: _____	☐ Multilayered ☐ Bi-layered ☒ Single Phased	Range: 1.3 - 1.4	☐ Yes ☒ No Volume: _____ %

7. pH: ☐ ≤ 2 ☐ > 2-4 ☐ 4-7 ☒ 7 ☐ 7-10 ☐ 10- < 12.5 ☐ ≥ 12.5 ☐ Range _____ - _____ ☐ NA

8. Liquid Flash Point: ☐ < 73°F ☐ 73-99°F ☐ 100-139°F ☒ 140-199°F ☐ ≥ 200°F ☐ None ☒ Closed Cup ☐ Open Cup
for pure creosote

E. CHEMICAL COMPOSITION

1.	RANGE MIN. - MAX.	
Creosote	5 - 20	%
Soil	80 - 95	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%. TOTAL: _____ %

2. Indicate if this waste contains any of the following:

	NONE or	LESS THAN or	ACTUAL
PCB's	☒	☐ < 50 ppm	ppm
Cyanides	☒	☐ < 50 ppm	ppm
Phenolics	☐	☐ < 50 ppm	3,000 ppm
Sulfides	☐	☐ < 50 ppm	2 ppm

F. METALS Indicate if this waste contains any of the following:
1. ☐ EP TOX/TCLP or 2. ☒ Total

METAL	LESS THAN or (Parts Per Million)		ACTUAL
Arsenic	☐ < 5	☐ < 500	0.22
Barium	☐ < 100		2.2
Cadmium	☐ < 1	☐ < 100	0.09
Chromium	☐ < 5		0.43
Lead	☐ < 5	☐ < 500	0.19
Mercury	☐ < 0.2	☐ < 20	<0.005
Selenium	☐ < 1	☐ < 100	0.11
Silver	☐ < 5		0.13
Chromium-Hex	☐ < 5	☐ < 500	NA
Copper	☐ < 5		2.8
Nickel	☐ < 5	☐ < 134	24
Thallium	☐ < 5	☐ < 130	NA
Zinc	☐ < 5		20
	☐ <		
	☐ <		
	☐ <		

Koppers005982

GENERATOR'S WASTE MATERIAL PROFILE SHEET (Continued)

[ ] J 09414
Waste Profile Sheet Code

G. OTHER HAZARDOUS CHARACTERISTICS

1. Is this waste a listed solvent waste as defined by 40 CFR 261.31 (F001, F002, F003, F004, or F005)? ☐ Yes ☒ No
2. Does this waste contain greater than 1000 ppm total halogenated organic compounds? ☐ Yes ☒ No
3. Indicate if this waste is any of the following:

☐ RCRA Reactive	☐ Radioactive
☐ Water Reactive	☐ Etiological
☐ Explosive	☐ Pesticide Manufacturing Waste
☐ Shock Sensitive	☐ Other ____
☐ Pyrophoric	☒ None of the above

H. COMPLETE ONLY FOR WASTES INTENDED FOR FUELS or INCINERATION NA

	LESS THAN	or	ACTUAL
Beryllium	☐ < 5000 ppm		____ ppm
Potassium	☐ < 5000 ppm		____ ppm
Sodium	☐ < 5000 ppm		____ ppm
Total Bromine	☐ < 2 %		____ %
Total Chlorine	☐ < 35 %		____ %
Total Fluorine	☐ < 1 %		____ %
Total Sulfur			____ %

I. OPTIONAL — RECLAMATION, FUELS, OR INCINERATION PARAMETERS Provide if information is available. NA

Range

1. Heat Value (BTU/lb): ____ 2. Water: ____ %
3. Viscosity (cps): ____ @ ☐ ____ °F ☐ 100°F ☐ 150°F
4. Ash: ____ % 5. Settleable solids: ____ %
6. Vapor Pressure @ STP (mm/Hg): ____
7. Is this waste a pumpable liquid? ☐ Yes ☐ No
   Type of pump? ____
8. Can this waste be heated to improve flow? ☐ Yes ☐ No
9. Is this waste soluble in water? ☐ Yes ☐ No
10. Particle size: Will the solid portion of this waste pass through a 1/8 inch screen? ☐ Yes ☐ No

J. TRANSPORTATION INFORMATION

1. Is this a DOT Hazardous Material? ☒ Yes ☐ No 2. Anticipated Annual Volume/Units: 4,000 / lbs
3. Proper Shipping Name: RQ Hazardous waste, ~~n.o.s.~~ Solid, N.O.S.
4. Hazard Class: ORM-E 5. I.D.#: NA 9189
6. Additional Description: (Creosote)
7. Method of Shipment: ☐ Bulk Liquid ☐ Bulk Solid ☒ Drum (Type/Size): 17E / 55 Other: ____
8. CERCLA Reportable Quantity (RQ): 1 9. RQ Units (lb/kg): lb
10. USEPA Hazardous Waste? ☒ Yes ☐ No 11. USEPA Hazardous Waste Number(s): U051
12. State Hazardous Waste? ☒ Yes ☒ No 13. State Hazardous Waste Number(s): U051

6/16/89 C
10/20/89 CA

K. SPECIAL HANDLING INFORMATION

☐ Additional Page(s) Attached

L. GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material, and all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

1. Jack L Stephenson
   Signature
2. Purchasing Agent
   Title
3. Jack L Stephenson
   Name (Type or Print)
4. 6/5/89
   Date

Side 2 of 2

Form CWM-6000 © 1987 Chemical Waste Management, Inc.

Koppers005983

CHEMICAL WASTE MANAGEMENT, INC.
ARLINGTON, OREGON FACILITY
PRICE SCHEDULE FOR WPS J09414
EFFECTIVE June 28, 1989

All prices are FOB Arlington, Oregon. This schedule supersedes all prior price schedules.

DRUMMED WASTES

			SURCHARGES/DRUM		
Category	Drum Gals	Price/Drum Full Drums	Less than 90% Full	Liquid in Drums	Oil/Non-banned Solvents≥1000 ppm
Drummed Solids	30-55	$ 77.00	$15.00	$48.00	$10.00

NOTES TO PRICE SCHEDULE

1. Prices do not include federal and state taxes. All applicable taxes will be invoiced as imposed.

2. The hourly rate to extend services beyond normal hours on weekdays is $225.00 per hour for a chemist, two technicians and a receiving person. If chemical stabilization is required, the rate is $275.00 per hour, rather than $225.00 per hour. The same rates apply within a minimum of four (4) hours on Saturdays. Additional rates or conditions may apply for operation outside daylight hours. Sundays and holidays are quoted case-by-case.

3. Tonnage rate for low density (<75 lbs./ft^3) will be calculated using the following formula:

$$\frac{\text{2000 pounds}}{\text{weight per cubic foot}} \times \text{cubic footage rate} = \text{rate per ton}$$

The cost per cubic foot (cubic footage rate) is $4.95/$ft^3$.

4. For odd sized containers, cubic footage will be calculated using the smallest rectangle that can be measured around the outermost dimensions of the container.

5. All prices are net 30 days and FOB Arlington, Oregon. Prices are contingent on submittal and approval of a Waste Profile Sheet and execution of a contract with Chemical Waste Management, Inc.

6. Quantities greater than 500 tons annually will be quoted case-by-case where quantity discounts are considered.

Koppers005984

7. The minimum disposal cost per truckload is $200.00.

8. The waste evaluation fee is $400.00. This fee is charged on all new waste profile sheets requiring confirming analysis for representative sample of waste. This fee is applicable on all waste profiles submitted regardless of disposal decision for approval or disapproval. A $200.00 rebate is applied to the first shipment of this waste.

9. PCB Testing: This applies to testing of wastes after receipt at the Arlington facility. Testing charges for any field work will be case-by-case.

   $ 65.00/test if liquid is found in a container manifested as PCB solids, or if, during testing of solids not manifested as PCBs, PCBs are detected.

   $130.00/test for immediate turnaround for PCB testing.

10. Bulk solids that are found to contain free-standing liquids will be assessed a fee of $300.00/$yd^3$ for stabilization material added. This will cover the cost of the stabilization material, equipment, labor and increased disposal volume. The minimum charge for this service will be $600.00 per truckload.

11. F-listed wastes covered by the EPA November 8, 1986 Landfill Disposal Ban: A pre-screen solvent test will be performed on these wastes. If a waste is rejected because it is non-conforming, a $150.00 fee per waste stream per shipment will be assessed.

12. Waste received in vans will be assessed a charge of $2.50 per drum with a minimum of $100.00 per load.

13. The surcharge for liquids in drums is assessed for those wastes profiled as solids and received containing liquids. These drums will only be accepted when availability of site personnel allows for handling.

14. If overpacks are required, they will be charged at $125.00 per overpack.

15. Drums containing solids must be at least 90% full to avoid a $15.00 per drum surcharge.

Koppers005985

98

SERVICE CONTRACT

Profile Number: J09414
June 28, 1989

1) CUSTOMER SERVICE LOCATION
Koppers Co., Inc.
7540 NW St. Helens Rd.
Portland, OR 97229

2) CUSTOMER BILLING LOCATION
Same.

Attn: W. E. Swearingen, Env. Prog. Mgr.

3) CHEMICAL WASTE MANAGEMENT, INC. hereby agrees to provide services, including treatment and/or disposal, for waste material generated at the above CUSTOMER SERVICE LOCATION and as described in the attached WASTE MATERIAL PROFILE SHEET number J09414. The described waste material will be treated and/or disposed of at the following facility, which is permitted to receive the described waste material:

4) Chem-Security Systems, Inc.
Star Route, Box 9
Arlington, OR 97812

EPA I.D. No. ORD089452353

5) Not applicable

EPA I.D. No. N/A

6) The method of treatment and/or disposal shall be:

Secure burial - no free liquids permitted.

7) Disposer is authorized to reclaim, recover, sell, distribute or use the waste materials, their components or residue.

8) DESCRIPTIONS OF SERVICES TO BE PROVIDED	UNIT	PRICE/UNIT

Disposal pricing per attached Price Schedule effective June 28, 1989.

Transportation: See Attachment I.

Manner of Tender: Telephone request to Disposer. Material to be loaded on vehicle by Generator. Profile number to be marked on each drum top. The attached Generator Notification for August 1988 ("Soft Hammer" Wastes) must accompany each shipment. "Soft Hammer" Demonstration must accompany each shipment.

NOTES: Unless noted, the above prices do not include applicable local, state or federal taxes which, if assessed, shall be invoiced to and payable by the Customer on an actual cost basis. If Customer is to supply the waste materials' containers, Customer will be solely responsible for the appropriate construction, marking, and labeling of the containers.

9) The prices shown or rate schedule referenced above are in effect from the day of the agreement unless modified by providing a minimum of thirty (30) days written notice. Payment terms: Net 30 days.

SPECIAL PROVISIONS: CHEMICAL WASTE MANAGEMENT, INC. agrees to indemnify Customer for final judgments, decisions, or settlements in an administrative or judicial action against Customer for personal injuries or damage to personal property the proximate cause of which is the sole negligence or intentional misconduct of CHEMICAL WASTE MANAGEMENT, INC. Customer agrees to likewise indemnify CHEMICAL WASTE MANAGEMENT, INC.

Please note your signature on this contract indicates your acceptance of changes made to this Waste Material Profile in Sections A and J.

10) TERM: This Service Contract shall commence on June 28, 1989, and shall continue in effect until terminated by either party with or without cause upon thirty (30) days written notice to the other party.

ENTIRE AGREEMENT: This Service Agreement (including the attached Waste Profile Sheet) represents the entire understanding between the parties hereto and supersedes any and all prior agreements, whether written or oral that may exist between the parties and supersedes any and all terms and conditions which may be contained in any purchase orders issued by Customer prior to or subsequent to this Agreement.

11) CHEMICAL WASTE MANAGEMENT, INC.

By: _____
Doris Bjorn
Title: District Sales Manager

Date: _____

12) KOPPERS CO., INC.

By: _____

Title: _____

Date: _____

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

PDX

PDX J 09414

Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) CWM Sales Rep. #: 042

A. GENERAL INFORMATION

1. Generator Name: Koppers ~~Industries,~~ Co. Inc. 2. Generator USEPA ID: O R D 0 2 7 7 3 4 3 5 9
3. Facility Address: 7540 NW St. Helens Road 4. Generator State ID: _____
Portland, OR 97229 5. Zip Code: 97~~229~~ 210
6. Technical Contact: W. E. Swearingen 7. Title: Env. Program Mgr. 8. Phone: (304) 527 - 0110 4/25/89mc

B. MAIL CHEMICAL WASTE MANAGEMENT, INC. INVOICES TO 1. ☒ Generating Facility (A, above), or
2. Company Name: _____ 3. Phone: ( ) _____ - _____
4. Address: _____
5. Zip Code: _____

C. 1. **NAME OF WASTE** Creosote spill cleanup
2. **PROCESS GENERATING WASTE** Spill
3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, or F028)?
☐ Yes ☒ No If yes, **DO NOT COMPLETE** this form. Contact your Chemical Waste Management, Inc. sales representative for assistance.

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color:	2. Does the waste have a strong incidental odor?	3. Physical State @ 70°F:	4. Layers:	5. Specific Gravity:	6. Free Liquids:
discolored soil	☐ No ☐ Yes If known, describe: creosote	☒ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder Other: _____	☐ Multilayered ☐ Bi-layered ☒ Single Phased	Range: 1.3 - 1.4	☐ Yes ☒ No Volume: _____ %

7. pH: ☐ ≤ 2 ☐ > 2-4 ☐ 4-7 ☒ 7 ☐ 7-10 ☐ 10- < 12.5 ☐ ≥ 12.5 ☐ Range _____ - _____ ☐ NA

8. Liquid Flash Point: ☐ < 73°F ☐ 73-99°F ☐ 100-139°F ☒ 140-199°F ☐ ≥ 200°F ☐ None ☒ Closed Cup ☐ Open Cup
for pure creosote

E. CHEMICAL COMPOSITION

1.	RANGE MIN. - MAX.	
Creosote	5 - 20	%
Soil	80 - 95	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%
	-	%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%. TOTAL: _____ %

2. Indicate if this waste contains any of the following:

	NONE or	LESS THAN or	ACTUAL
PCB's	☒	☐ < 50 ppm	ppm
Cyanides	☒	☐ < 50 ppm	ppm
Phenolics	☐	☐ < 50 ppm	3,000 ppm
Sulfides	☐	☐ < 50 ppm	2 ppm

F. METALS Indicate if this waste contains any of the following:
1. ☐ EP TOX/TCLP or 2. ☒ Total

METAL	LESS THAN or		ACTUAL (Parts Per Million)
Arsenic	☐ < 5	☐ < 500	0.22
Barium	☐ < 100		2.2
Cadmium	☐ < 1	☐ < 100	0.09
Chromium	☐ < 5		0.43
Lead	☐ < 5	☐ < 500	0.19
Mercury	☐ < 0.2	☐ < 20	<0.005
Selenium	☐ < 1	☐ < 100	0.11
Silver	☐ < 5		0.13
Chromium-Hex	☐ < 5	☐ < 500	NA
Copper	☐ < 5		2.8
Nickel	☐ < 5	☐ < 134	24
Thallium	☐ < 5	☐ < 130	NA
Zinc	☐ < 5		20
	☐ <		
	☐ <		
	☐ <		

Koppers005987

GENERATOR'S WASTE MATERIAL PROFILE SHEET (Continued)

J 09414
Waste Profile Sheet Code

G. OTHER HAZARDOUS CHARACTERISTICS

1. Is this waste a listed solvent waste as defined by 40 CFR 261.31 (F001, F002, F003, F004, or F005)? ☐ Yes ☒ No
2. Does this waste contain greater than 1000 ppm total halogenated organic compounds? ☐ Yes ☒ No
3. Indicate if this waste is any of the following:
   - ☐ RCRA Reactive
   - ☐ Water Reactive
   - ☐ Explosive
   - ☐ Shock Sensitive
   - ☐ Pyrophoric
   - ☐ Radioactive
   - ☐ Etiological
   - ☐ Pesticide Manufacturing Waste
   - ☐ Other ____
   - ☒ None of the above

H. COMPLETE ONLY FOR WASTES INTENDED FOR FUELS or INCINERATION NA

	LESS THAN	or ACTUAL
Beryllium	☐ < 5000 ppm	____ ppm
Potassium	☐ < 5000 ppm	____ ppm
Sodium	☐ < 5000 ppm	____ ppm
Total Bromine	☐ < 2 %	____ %
Total Chlorine	☐ < 35 %	____ %
Total Fluorine	☐ < 1 %	____ %
Total Sulfur		____ %

I. OPTIONAL — RECLAMATION, FUELS, OR INCINERATION PARAMETERS Provide if information is available. NA

Range

1. Heat Value (BTU/lb): ____ 2. Water: ____ %
3. Viscosity (cps): ____ @ ☐ ____ °F ☐ 100°F ☐ 150°F
4. Ash: ____ % 5. Settleable solids: ____ %
6. Vapor Pressure @ STP (mm/Hg): ____
7. Is this waste a pumpable liquid? ☐ Yes ☐ No
   Type of pump? ____
8. Can this waste be heated to improve flow? ☐ Yes ☐ No
9. Is this waste soluble in water? ☐ Yes ☐ No
10. Particle size: Will the solid portion of this waste pass through a 1/8 inch screen? ☐ Yes ☐ No

J. TRANSPORTATION INFORMATION

1. Is this a DOT Hazardous Material? ☒ Yes ☐ No 2. Anticipated Annual Volume/Units: 4,000 / lbs
3. Proper Shipping Name: RQ Hazardous waste, ~~NOS~~ Solid, N.O.S.
4. Hazard Class: ORM-E 5. I.D. #: NA 9189
6. Additional Description: (Creosote)
7. Method of Shipment: ☐ Bulk Liquid ☐ Bulk Solid ☒ Drum (Type/Size): 17E / 55 Other: ____
8. CERCLA Reportable Quantity (RQ): 1 9. RQ Units (lb/kg): lb
10. USEPA Hazardous Waste? ☒ Yes ☐ No 11. USEPA Hazardous Waste Number(s): U051
12. State Hazardous Waste? ☒ Yes ☒ No 13. State Hazardous Waste Number(s): U051

6/16/89 C
6/22/89 CAS

K. SPECIAL HANDLING INFORMATION

☐ Additional Page(s) Attached

L. GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material, and all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

1. Signature: Paula L Stephens
2. Title: Purchasing Agent
3. Name (Type or Print): Paula L Stephenson
4. Date: 6/5/89

Form CWM-6000 © 1987 Chemical Waste Management, Inc.

Koppers005988

CHEMICAL WASTE MANAGEMENT, INC.
ARLINGTON, OREGON FACILITY
PRICE SCHEDULE FOR WPS J09414
EFFECTIVE June 28, 1989

All prices are FOB Arlington, Oregon. This schedule supersedes all prior price schedules.

DRUMMED WASTES

			SURCHARGES/DRUM		
Category	Drum Gals	Price/Drum Full Drums	Less than 90% Full	Liquid in Drums	Oil/Non-banned Solvents≥1000 ppm
Drummed Solids	30-55	$ 77.00	$15.00	$48.00	$10.00

NOTES TO PRICE SCHEDULE

1. Prices do not include federal and state taxes. All applicable taxes will be invoiced as imposed.

2. The hourly rate to extend services beyond normal hours on weekdays is **$225.00 per hour** for a chemist, two technicians and a receiving person. If chemical stabilization is required, the rate is **$275.00 per hour**, rather than $225.00 per hour. The same rates apply within a minimum of four (4) hours on Saturdays. Additional rates or conditions may apply for operation outside daylight hours. Sundays and holidays are quoted case-by-case.

3. Tonnage rate for low density (<75 lbs./ft^3) will be calculated using the following formula:

$$\frac{\text{2000 pounds}}{\text{weight per cubic foot}} \times \text{cubic footage rate} = \text{rate per ton}$$

   The cost per cubic foot (cubic footage rate) is $4.95/$ft^3$.

4. For odd sized containers, cubic footage will be calculated using the smallest rectangle that can be measured around the outermost dimensions of the container.

5. All prices are net 30 days and FOB Arlington, Oregon. Prices are contingent on submittal and approval of a Waste Profile Sheet and execution of a contract with Chemical Waste Management, Inc.

6. Quantities greater than 500 tons annually will be quoted case-by-case where quantity discounts are considered.

Koppers005989

7. The minimum disposal cost per truckload is $200.00.

8. The waste evaluation fee is $400.00. This fee is charged on all new waste profile sheets requiring confirming analysis for representative sample of waste. This fee is applicable on all waste profiles submitted regardless of disposal decision for approval or disapproval. A $200.00 rebate is applied to the first shipment of this waste.

9. PCB Testing: This applies to testing of wastes after receipt at the Arlington facility. Testing charges for any field work will be case-by-case.

   $ 65.00/test if liquid is found in a container manifested as PCB solids, or if, during testing of solids not manifested as PCBs, PCBs are detected.

   $130.00/test for immediate turnaround for PCB testing.

10. Bulk solids that are found to contain free-standing liquids will be assessed a fee of $300.00/$yd^3$ for stabilization material added. This will cover the cost of the stabilization material, equipment, labor and increased disposal volume. The minimum charge for this service will be $600.00 per truckload.

11. F-listed wastes covered by the EPA November 8, 1986 Landfill Disposal Ban: A pre-screen solvent test will be performed on these wastes. If a waste is rejected because it is non-conforming, a $150.00 fee per waste stream per shipment will be assessed.

12. Waste received in vans will be assessed a charge of $2.50 per drum with a minimum of $100.00 per load.

13. The surcharge for liquids in drums is assessed for those wastes profiled as solids and received containing liquids. These drums will only be accepted when availability of site personnel allows for handling.

14. If overpacks are required, they will be charged at $125.00 per overpack.

15. Drums containing solids must be at least 90% full to avoid a $15.00 per drum surcharge.

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ATTACHMENT I

TRANSPORTATION RATES TO ARLINGTON, OREGON FACILITY
FROM PORTLAND AREA
LESS THAN TRUCKLOAD RATES

Number of Drums	Shipping Cost per Drum
15-38	$ 14.00
10-14	19.00
6- 9	25.00
5	33.00
4	40.00
3	52.00
2	70.00
1	95.00

Rate includes loading time as follows:

1-9 drums = 1/2 hour
10 + drums = 1 hour

Loading time beyond those indicated will be charged at $67.50 per hour.

Notes:

1. Prices are for transportation only. A separate disposal price schedule is available.

2. Prices apply to drum sizes 30 - 55 gallon.

3. Transportation cost for one pallet, 4 x 4 feet or smaller, is equivalent to four (4) drums.

4. Maximum weight = 48,000 pounds per flatbed.

5. Applicable regulatory fees are additional and will be added to the invoice.

6. The price for a full truckload is $640. This includes one hour loading time. Time beyond one hour is $67.50 per hour.

attachi (portland)

"SOFT HAMMER" WASTES*

LAND DISPOSAL RESTRICTION NOTIFICATION AND CERTIFICATION FORM

Generator Name: _____ Manifest Number: _____

EPA Hazardous Waste Codes[1]: _____ CWM Profile Number: _____

This form is submitted to _____ in accordance with 40 CFR Part 268, which restricts the land disposal of certain hazardous wastes. I have marked the appropriate box below to indicate whether alternative treatment has been found for my waste. (See reverse side for the list of "soft-hammer" wastes and instructions on using this form.)

☐ **A. SOFT-HAMMER WASTE FOR WHICH ALTERNATIVE TREATMENT OR RECOVERY HAS BEEN LOCATED**

The soft-hammer waste I generate is (are) _____. I have identified a practically available treatment technology that yields the greatest environmental benefit. Together with the initial shipment of waste represented by this form, I submitted a demonstration to the Regional Administrator in accordance with 40 CFR 268.8(a)(1), including a list of facilities and facility officials contacted, complete with addresses, telephone numbers, and contact dates, and a justification that I have chosen the best treatment that is practically available.

"I certify under penalty of law that the requirements of 40 CFR 268.8(a) have been met and I have contracted to treat my waste (or will otherwise provide treatment) by the practically available technology which yields the greatest environmental benefit, as indicated in my demonstration. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

☐ **B. SOFT-HAMMER WASTE FOR WHICH DISPOSAL IN LANDFILL OR SURFACE IMPOUNDMENT IS THE ONLY PRACTICAL ALTERNATIVE TO TREATMENT CURRENTLY AVAILABLE**

The soft-hammer waste(s) I generate or have treated is (are) _____. I have made a good-faith effort to locate and contract with treatment and recovery facilities practically available which can meaningfully reduce the toxicity or mobility of hazardous constituents in the waste, as an alternative to land disposal. I have found no such alternative facility. Together with the initial shipment of waste represented by this form, I submitted a demonstration in accordance with 40 CFR 268.8(a), including a list of facilities and facility officials contacted, addresses, telephone numbers, contact dates, and an explanation of why no treatment is practically available. This soft-hammer waste must be disposed of in a landfill or surface impoundment meeting the minimum technological standards until treatment standards are set for the waste or May 8, 1990, whichever occurs first.

"I certify under penalty of law that the requirements of 40 CFR 268.8(a)(1) have been met and that disposal in a landfill or surface impoundment is the only practical alternative to treatment currently available. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false informations, including the possibility of fine or imprisonment."

☐ **C. TREATMENT OR RECOVERY FACILITY HAS TREATED THE WASTE**

The following soft-hammer waste(s) was treated in accordance with the generator's demonstration: _____

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with treatment as specified in the generator's demonstration. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

☐ **D. SOFT-HAMMER WASTE DESTINED FOR LAND DISPOSAL OTHER THAN IN LANDFILL OR SURFACE IMPOUNDMENT (e.g. DEEP INJECTION WELL)**

The soft-hammer waste(s) I generate is (are) _____. This waste is being disposed of in a land disposal unit other than a landfill or surface impoundment and therefore is not subject to the certification and demonstration requirements described above.

Signature _____ Title _____ Date _____

COPYRIGHT: NOVEMBER 1988 *WASTES FOR WHICH NO TREATMENT STANDARDS HAVE BEEN SET JUNE 1989

[1]List all EPA Waste Codes present in this shipment of waste. Attach separate sheet, listing waste codes if necessary.

Koppers005992

Instructions For Completing the "Soft Hammer" Notification and Certification Form

What is a "Soft-Hammer" Waste?

"Soft-Hammer" wastes are those listed hazardous wastes in the First-and Second-Third of the Scheduled Wastes for which EPA has not set treatment standards. See section 3004(g) of the Resource Conservation and Recovery Act (RCRA).

List of "Soft-Hammer" Wastes

K004-*1	K069-*2	P002	P027	P072	P120	U018	U043	U066	U097	U122	U144	U165	U189	U216
K008-*1	K073	P003	P036	P081	P122-*6	U019	U044	U067	U098	U124	U146	U168	U192	U217
K017	K083-*3	P004	P037	P082	P123	U020	U046	U070	U099	U127	U147	U169	U193	U218
K021-*1	K084	P005	P048	P084	U002	U021	U047	U073	U101	U128	U149	U170	U196	U219
K022-*1	K085	P007	P049	P087	U003	U022	U049	U074	U103	U129	U150	U171	U200	U220
K025-*1	K086-*4	P008	P050	P092	U005	U023	U050	U077	U105	U130	U151	U172	U203	U226
K029-*1	K095-*1	P010	P054	P102	U007	U025	U051	U078	U106	U131	U154	U173	U205	U227
K031	K096-*1	P011	P057	P105	U008	U026	U053	U080	U108	U133	U155	U174	U206	U228
K035-*1	K097	P012	P058	P107	U009	U029	U057	U083	U109	U134	U157	U176	U208	U237
K036-*1	K098	P014	P060	P108	U010	U031	U059	U086	U110	U135	U158	U177	U209	U238
K041	K101-*5	P105	P066	P110	U011	U032	U060	U089	U111	U137	U159	U178	U210	U239
K042	K102-*5	P106	P067	P112	U012	U035	U061	U092	U114	U138	U161	U179	U211	U244
K046	K105	P018	P068	P113	U014	U036	U062	U093	U115	U140	U162	U180	U213	U248-*7
K060-*1	K106	P020	P069	P114	U015	U037	U063	U094	U116	U142	U163	U185	U214	U249-*6
K061-*1	P001	P026	P070	P115	U016	U041	U064	U095	U119	U143	U164	U188	U215	

*1 - wastewater
*2 - calcium sulfate category
*3 - except no ash category
*4 - ink, caustic water wash & sludges
*5 - high arsenic sub-category greater than 1%
*6 - greater than 10%
*7 - greater than .3%

How Must "Soft-Hammer" Wastes Be Managed?

Until May 8, 1990 these wastes may be disposed in a landfill or surface impoundment only if such unit is in compliance with the minimum technological requirements and prior to such disposal, the generator has made a good-faith effort to locate and contract with treatment and recovery facilities practically available which provide the greatest environmental benefit.

What is "Practical Treatment?"

First, if a generator's "soft-hammer" wastes were treated in the past, EPA says it would consider at least this type of treatment to be "practical" for that generator. Second, EPA presents a cost ratio that measures the cost of treatment relative to the baseline cost of shipment and disposal in a minimum technological landfill or surface impoundment. If treating the waste costs at least twice as much as not treating the waste, EPA would ordinarily consider that form of treatment to be impractical. Third, EPA has provided in the rule's preamble a generic hierarchy of preferred treatment methods for certain First-Third wastes, see 53 Fed. Reg. 31175-76. Last, in general, the Agency says it favors recovery/recycling facilities as the best method, followed by destruction technologies such as incineration (especially for organics), and then stabilization where recycling or destruction is unavailable or inappropriate (especially for inorganics).

Which Box Should I Mark?

Mark Box A on the front of this form if you generate (or have treated) one of the hazardous wastes listed above, and you have located a treatment or recovery process which yields the greatest environmental benefit.

Mark Box B if you generate one of the hazardous wastes listed above but have been unable to locate an alternative treatment. Note that if this waste is disposed in a landfill or surface impoundment, the unit must comply with the minimum technological requirements.

Mark Box C if you have treated soft-hammer waste in accordance with the generator's demonstration.

Mark Box D if your soft-hammer waste is being land disposed in a unit other than a landfill or surface impoundment (e.g., deep well injection). The certification and demonstration requirements of Boxes I, II, III do not apply.

Where Should The Forms Be Sent?

The generator must submit the certification and demonstration to the Regional Administrator (RA). Certifications and demonstrations for subsequent shipments need not be sent to the RA provided the conditions of the original certification do not change (i.e., the same demonstration applies). The generator must also send the demonstration and certification to the receiving facility with the initial waste shipment. Provided the conditions of the certification do not change, only the certification need be sent with each subsequent waste shipment. The treatment facility must send a copy of the generator's demonstration and certification to the facility receiving the waste or treatment residues, along with a certification that it has treated the waste in accordance with the generator's demonstration.

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ATTACHMENT 1

From: _____
_____
_____
_____
_____

To: Regional Administrator
U.S. EPA

_____
_____
_____
_____
_____

Re: Soft Hammer Demonstration/Certification

In accordance with the Environmental Protection Agency's land disposal restrictions governing the first third scheduled wastes, I have enclosed a soft hammer demonstration and certification as per 40 CFR 268.8(a)(2) for the waste stream described by:

U.S. EPA Hazardous Waste Code (s): _____

CWM Profile Number: _____

Common Name: _____

The demonstration reflects our efforts to locate practically available treatment that afford the greatest environmental benefit. Based on our search for such treatment, we have determined that (check one):

_____ 1). No practically available treatment exists. See attached demonstration, attachments 2 and 3, for further details.

_____ 2). The best practically available treatment is: (See the attached demonstration, attachments 2, 3 and 4 for further details.)

If any further information is required, please contact me at: _____

_____ (telephone number).

_____ (signature)

_____ (typed or printed name)

_____ (title)

_____ (date

SOFT HAMMER DEMONSTRATION - ATTACHMENT 2

FACILITY OWNER/OPERATOR	LOCATION	TREATMENT METHOD	TELEPHONE	CONTACT	DATE	EXPLANATION*
1.						
2.						
3.						
4.						

* PLEASE circle the facility and treatment method (number or letter) that has been chosen.

* EXPLANATION - for no available treatment - insert the number key from Attachment 3.
for avilable treatment - insert the letter key from Attachment 4.

Koppers005995

ATTACHMENT 3

FIRST THIRD "SOFT-HAMMER" DEMONSTRATION
No Available Practical Alternative to Land Disposal

Explanation of Why No Treatment Is Practically Available

I have not been able to locate practically available treatment or recovery for the waste described in the the cover letter because, (refer to checked items, and any additional comments):

(1) _____ No recovery facilities have been located which will be able to recover the hazardous constituents of this waste.

(2) _____ There is no safe and legal treatment or recovery operation which I can perform practically at my site that will appreciably reduce the toxicity or mobility of the hazardous constituents of the waste.

(3) _____ I have not been treating this waste at my site in the past, using a treatment technology which has been found to appreciably reduce the toxicity or mobility of the hazardous constituents of the waste.

(4) _____ Stabilization treatment will not appreciably reduce the toxicity or mobility of the hazardous constituents of this waste.

(5) _____ Incineration, thermal oxidation or other destruction technologies will not appreciably reduce the toxicity or mobility of the hazardous constituents of the waste.

(6) _____ I have examined the possibilities of recovery/recycling, incineration, other destruction technologies, and stabilization, in that order or preference, and I have not been able to locate any such treatment facilities that will accept this waste.

(7) _____ The cost of treatment, shipment and disposal at the treatment/recovery facilities that have been located is greater than or equal to twice the cost of shipment and disposal at the RCRA landfill.

Additional Comments:

(8) _____

FIRST THIRD "SOFT-HAMMER" DEMONSTRATION

Soft-Hammer Waste For Which Practical Alternative Treatment or Recovery Has Been Located

A Distillation of organic solvents for recycling/recovery is a practically available technology that yields the greatest environmental benefit.

B Metals recovery is a practically available technology that yields the greatest environmental benefit. This waste is primarily heavy metal constituents which are present at recoverable concentrations.

C Incineration is a practically available technology that yields the greatest environmental benefit. This waste is principally organic liquids or residues which are best destroyed by incineration.

D Fuels blending is a practically available technology that yields the greatest environmental benefit. This waste had a heating value greater than or equal to 5,000 BTU per pound an can best be resused as a hazardous waste fuel.

E A combination of Fuels Blending, and/or Incineration is a practically available technology that yields the greatest environmental benefit. This is due to the properties of my waste which may vary slightly, from one load to the next. Solid nondispersible residues (usually with a substantial inorganic content) with free liquids will need to be solidified prior to landfill disposal; but the pumpable or dispersible portions may be blended for hazardous waste fuels usage, (when the BTU's, chlorine, ash, etc. are within the required ranges); or else be solidified.

F A combination of Fuels Blending, and/or Solidification is a practically available technology that yields the greatest environmental benefit. This is due to the properties of my waste which may vary slightly, from one load to the next. Solid nondispersible residues (usually with a substantial inorganic content) with free liquids will need to be solidified prior to landfill disposal; but the pumpable or dispersible portions may be blended for hazardous waste fuels usage, (when the BTU's, chlorine, ash, etc. are within the required ranges); or else be solidified.

G Chemical Precipitation (with filtration and/or decanting) is a practically available technology that yields the greatest environmental benefit. This should reduce the toxicity/mobility of the hazardous constituents by reducing the toxic volume of the waste.

H Filtration is a practically available technology that yields the greatest environmental benefit. This should reduce the toxicity/mobility of the hazardous constituents by reducing the toxic volume of the waste.

I Chemical Oxidation is a practically available technology that yields the greatest environment benefit. Chemical Oxidation will reduce the toxicity of the hazardous constituents of the waste.

J Stabilization is a practically available technology that yields the greatest environmental benefit. Stabilization will reduce the mobility of the hazardous constituents of the waste. I have examined recovery and destruction technologies and found that they were not practically available for the following reason(s): (see items K through R, below)

This waste is not suitable for incineration or fuels due to:

K the low percentage of hazardous organic constituents present,

L the low heating value of the waste,

M the high percentage of inorganic constituents present,

N the lack of located available capacity of incineration or fuels blending facilities.

This waste is not suitable for recovery due to:

O the hazardous constituents are present in concentrations that make recovery technologically impossible.

P the hazardous constituents are present in concentration that make recovery economically infeasible.

Q No recovery facilities were located that could treat this type of waste.

R No recovery facilities were located that had capacity to treat this type of waste.

S Other comments or treatment/recovery (describe):

KOPPERS

7540 N.W. ST. HELENS ROAD
PORTLAND, OREGON 97210

TO: MERTLE KORN

COMPANY NAME: CHEMICAL WASTE MANAGEMENT

FROM: JOHN OXFORD

NUMBER OF PAGES TO FOLLOW: 1

IF YOU DO NOT RECEIVE ALL MATERIAL TRANSMITTED, PLEASE CALL US AT: (503) 286-3681

OUR FAX NUMBER IS: (503) 285-2831

SENT BY: Kelta TIME: 11:00 DATE: 6/28/89

98

SERVICE CONTRACT

Profile Number: J09414
June 28, 1989

1) CUSTOMER SERVICE LOCATION
Koppers Co., Inc.
7540 NW St. Helens Rd.
Portland, OR 97229

2) CUSTOMER BILLING LOCATION
Same.

Attn: W. E. Swearingen, Env. Prog. Mgr.

3) CHEMICAL WASTE MANAGEMENT, INC. hereby agrees to provide services, including treatment and/or disposal, for waste material generated at the above CUSTOMER SERVICE LOCATION and as described in the attached WASTE MATERIAL PROFILE SHEET number J09414. The described waste material will be treated and/or disposed of at the following facility, which is permitted to receive the described waste material:

4) Chem-Security Systems, Inc.
Star Route, Box 9
Arlington, OR 97812

EPA I.D. No. ORD089452353

5) Not applicable

EPA I.D. No. N/A

6) The method of treatment and/or disposal shall be:

Secure burial - no free liquids permitted.

7) Disposer is authorized to reclaim, recover, sell, distribute or use the waste materials, their components or residue.

8) DESCRIPTIONS OF SERVICES TO BE PROVIDED	UNIT	PRICE/UNIT

Disposal price as per attached Price Schedule effective June 28, 1989.

Transportation See Attachment I.

Manner of Service: Telephone request to Disposer. Material to be loaded on vehicle by Generator. Profile number to be marked on each drum top. The attached Generator Notification for August 1988 ("Soft Hammer" Wastes) must accompany each shipment. "Soft Hammer" Demonstration must accompany each shipment.

NOTES: Unless noted, the above prices do not include applicable local, state or federal taxes which, if assessed, shall be invoiced to and payable by the Customer on an actual cost basis. If Customer is to supply the waste materials' containers, Customer will be solely responsible for the appropriate construction, marking, and labeling of the containers.

9) Prices shown on rates schedule referenced above are in effect from the day of the agreement unless modified by giving a minimum of thirty (30) days written notice. Payment terms: Net 30 days.

SPECIAL PROVISIONS: CHEMICAL WASTE MANAGEMENT, INC. agrees to indemnify Customer for final judgments, decisions, or settlements in an administrative or judicial action against Customer for personal injuries or damage to personal property the proximate cause of which is the sole negligence or intentional misconduct of CHEMICAL WASTE MANAGEMENT, INC. Customer agrees to likewise indemnify CHEMICAL WASTE MANAGEMENT, INC.

Please note your signature on this contract indicates your acceptance of changes made to this Waste Material Profile in Sections A and J.

10) TERM: This Service Contract shall commence on June 28, 1989, and shall continue in effect until terminated by either party with or without cause upon thirty (30) days written notice to the other party.

ENTIRE AGREEMENT: This Service Agreement (including the attached Waste Profile Sheet) represents the entire understanding between the parties hereto and supersedes any and all prior agreements, whether written or oral that may exist between the parties and supersedes any and all terms and conditions which may be contained in any purchase orders issued by Customer prior to or subsequent to this Agreement.

11) CHEMICAL WASTE MANAGEMENT, INC.

By: _____
Doris Bjorn
Title: District Sales Manager

Date: _____

12) KOPPERS CO., INC.

By: John A O'Ford
Title: Plant Mgr.
Date: 6-28-89

Koppers005999

FAX

CHEMICAL WASTE MANAGEMENT, INC.
200 SW Market Street, Suite 925
Portland, OR 97201

Date:	June 28, 1989	Pages: Cover + 6
To:	John Oxford	Koppers Co. Inc.
From:	Meryle Korn	Chemical Waste Mgt.

For questions about the FAX, please contact Chemical Waste Management, Inc. (503) 223-1912, and ask receptionist for assistance.

Our Machine:

XEROX TELECOPIER #295
FAX # (503) 228-2048

COMMENTS:

Contract for your waste stream J09414, which has been approved for disposal at our Chem-Security Systems facility in Arlington, OR.

Please sign and fax back signature page only. Hard copies will follow by mail.

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

POST

PDX J 09414

Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) CWM Sales Rep. #: 042

A. GENERAL INFORMATION

1. Generator Name: Koppers Co., Inc. 2. Generator USEPA ID: O R D 0 2 7 7 3 4 3 5 9
3. Facility Address: 7510 NW St. Helens Road 4. Generator State ID: _____
Portland, OR 97229
5. Zip Code: 97210
6. Technical Contact: W. E. Swearingen 7. Title: Env. Program Mgr. 8. Phone: (304) 527 - 0110 4/28/89 mc

B. MAIL CHEMICAL WASTE MANAGEMENT, INC. INVOICES TO 1. ☒ Generating Facility (A, above), or
2. Company Name: _____ 3. Phone: ( ) _____ - _____
4. Address: _____
5. Zip Code: _____

C. 1. NAME OF WASTE: Creosote spill cleanup
2. PROCESS GENERATING WASTE: Spill
3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, or F028)?
☐ Yes ☒ No If Yes, DO NOT COMPLETE this form. Contact your Chemical Waste Management, Inc. sales representative for assistance.

D. PHYSICAL CLASSIFICATION OF WASTE

1. Color	2. Does the waste have a strong odor?	3. Physical State @ 70°F	4. Layers:	5. Specific Gravity:	6. Free Liquids:
Discolored Soil	☐ No ☐ Yes If known, describe: Creosote	☒ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder Other: _____	☐ Multilayered ☐ Bi-layered ☒ Single Phased	Range: 1.3 - 1.4	☐ Yes ☒ No Volume: _____ %

7. pH ☐ ≤ 2 ☐ > 2-4 ☐ 4-7 ☒ 7 ☐ 7-10 ☐ 10- ≤ 12.5 ☐ ≥ 12.5 ☐ Range _____ - _____ ☐ NA

8. Liquid Flash Point: ☐ < 73°F ☐ 73-99°F ☐ 100-139°F ☒ 140-199°F ☐ ≥ 200°F ☐ None ☒ Closed Cup ☐ Open Cup
for pure creosote

E. CHEMICAL COMPOSITION

	RANGE MIN.	RANGE MAX.	
1. Creosote	5	20	%
Soil	80	95	%
			%
			%
			%
			%
			%
			%
			%
			%
			%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%. TOTAL: _____ %

2. Indicate if this waste contains any of the following:

	NONE	LESS THAN	ACTUAL
PCB's	☒	☐ < 50 ppm	ppm
Cyanides	☒	☐ < 50 ppm	ppm
Phenolics	☐	☐ < 50 ppm	3,000 ppm
Sulfides	☐	☐ < 50 ppm	2 ppm

F. METALS Indicate if this waste contains any of the following:
1. ☐ EP TOX/TCLP or 2. ☒ Total

METAL	LESS THAN	or	ACTUAL (Parts Per Million)
Arsenic	☐ < 5	☐ < 500	0.22
Barium	☐ < 100		2.2
Cadmium	☐ < 1	☐ < 100	0.09
Chromium	☐ < 5		0.43
Lead	☐ < 5	☐ < 500	0.19
Mercury	☐ < 0.2	☐ < 20	<0.005
Selenium	☐ < 1	☐ < 100	0.11
Silver	☐ < 5		0.13
Chromium-Hex	☐ < 5	☐ < 500	NA
Copper	☐ < 5		2.8
Nickel	☐ < 5	☐ < 134	24
Thallium	☐ < 5	☐ < 130	NA
Zinc	☐ < 5		20
	☐ <		
	☐ <		
	☐ <		

GENERATOR'S WASTE MATERIAL PROFILE SHEET (Continued)

J 09414
Waste Profile Sheet Code

G. OTHER HAZARDOUS CHARACTERISTICS

1. Is this waste a listed solvent waste as defined by 40 CFR 261.31 (F001, F002, F003, F004, or F005)? ☐ Yes ☒ No
2. Does this waste contain greater than 1000 ppm total halogenated organic compounds? ☐ Yes ☒ No
3. Indicate if this waste is any of the following:
   - ☐ RCRA Reactive
   - ☐ Water Reactive
   - ☐ Explosive
   - ☐ Shock Sensitive
   - ☐ Pyrophoric
   - ☐ Radioactive
   - ☐ Etiological
   - ☐ Pesticide Manufacturing Waste
   - ☐ Other _____
   - ☒ None of the above

H. COMPLETE ONLY FOR WASTES INTENDED FOR FUELS or INCINERATION NA

	LESS THAN	or ACTUAL
Beryllium	☐ < 5000 ppm	_____ ppm
Potassium	☐ < 5000 ppm	_____ ppm
Sodium	☐ < 5000 ppm	_____ ppm
Total Sulfur	[illegible] %	_____ %
Total Chlorine	☐ < [illegible] %	_____ %
[illegible]	☐ < [illegible] %	_____ %
[illegible]		_____ %

I. OPTIONAL — RECLAMATION, FUELS, OR INCINERATION PARAMETERS Provide if information is available. NA

Range

1. Heat Value (BTU/lb): _____ 2. Water: _____ %
3. Viscosity (cps): _____ @ ☐ _____ °F ☐ 100°F ☐ 150°F
4. Ash: _____ % 5. Settleable solids: _____ %
6. Vapor Pressure @ STP (mm/Hg): _____
7. Is this waste a pumpable liquid? ☐ Yes ☐ No
   Type of pump? _____
8. Can this waste be heated to improve flow? ☐ Yes ☐ No
9. Is this waste soluble in water? ☐ Yes ☐ No
10. Particle size: With the solid portion of this waste pass through a 1/8 inch screen? ☐ Yes ☐ No

J. CONSIDERATION INFORMATION

1. Is this a DOT Hazardous Material? ☒ Yes ☐ No 2. Anticipated Annual Volume/Units: 4,000 / lbs
3. Proper Shipping Name: US Hazardous waste, Solid, N.O.S.
4. Hazard Class: [illegible] 5. I.D. #: NA 9189
6. Additional Description: Concrete
7. Method of Shipment: ☐ Bulk Liquid ☐ Bulk Solid ☒ Drum (Type/Size): 17E / 55 Other: _____
8. CERCLA Reportable Quantity (RQ): 1 9. RQ Units (lb/kg): lb
10. USEPA Hazardous Waste? ☒ Yes ☐ No 11. USEPA Hazardous Waste Number(s): U051
12. State Hazardous Waste? ☒ Yes ☐ No 13. State Hazardous Waste Number(s): U051

6/22/89 CAS

K. SPECIAL HANDLING INFORMATION

☐ Additional Page(s) Attached

L. GENERATOR CERTIFICATION I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material, and all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

1. Jack L Stephenson
Signature

2. Purchasing Agent
Title

3. Jack L Stephenson
Name (Type or Print)

4. 6/5/89
Date

LAIDLAW ENVIRONMENTAL SERVICES

DRUM INVENTORY SHEET

CUTOMER SITE: Koppers

Non-Radioactive Non-Dioxin Non-Explosive

Page 1 of 1

Container # 980305-ORKOP-001 & ORKOP-651 DLTA 008

Stream/Suffix # M# 01841

generic profiled ✓

Date: 3-5-98

Packed by: Koppers

Drum Type/Size: 55g SD

WASTE TYPE:
- ☐ INCIN LP
- ☐ Appendix IV LP
- ☐ Dioxin LP
- ☐ Mercury LP
- ☐ Non DOT LP
- ☐ Non RCRA LP
- ☐ State Reg LP
- ☐ Aerosols
- ☐ PCB
- ☑ Cont/Reg
- ☐ Cont/DOT
- ☐ Cont/State
- ☐ Cont/Non
- ☐ Cont/Spec
- ☐ Cont/GnrLA
- ☐ Tranship
- ☐ _____

☐ Div. 2.1	☐ Div 2.2	☐ Div. 2.3
☐ Dlass 3	☑ Div. 4.1	☐ Div. 4.2
☐ Div. 4.3	☐ Div 5.1	☐ Div 5.2
☐ Div.6.1	☐ Div . 6.2	☐ Class 8
☐ Class 9	☐ NHaz Solid	☐ NHas liq.

DISPOSAL

☐ Labpack	☐ LP-BSB	☐ Aero
☐ Kiln burn	☐ Educt/DA	☐ Repack
☐ Shred	☐ Fuel	☐ Blend
☐ Dioxin	☐ Treat	☐ TOX
☐ Landfill	☐ Recycle	☐ PCB
☐ S & E	☐ HG	☑ Delta

OSHA Carcinogen ☐ YES ☑ NO

INFECTIOUS/MEDICAL WASTE ☐ YES ☐ NO

ASPESTOS: ☐ YES ☑ NO

REPORTING CODES
- Form R009
- Source A57
- Origin 1
- Sys MC43

Complete if RCRA metals are present:
Waste can be incinerated because: INCIN LP
☐ >5000TUs ☐ Org/Debris ☐ Organic UHC

Comments/etc: 4.1/Delta

RQ (D001)

DOT name Waste flammable solids, organic, n.o.s. Packing Group 4.1, UN1325, PG III PIH Description

WASTE DESCTIPTION	CONT. TYPE	CONTAINER SIZE	WEIGHT/VOLUME	RCRA WASTE CODES	STATE CODE	COMMENTS
Creosote and debris	M	55g	2 x 400 lbs	D001, U051		

2 Drums

Comments / Approval Information:

Estimated Weight ~800 lbs ☐ Net ☑ Gross

APPLY BARCODE HERE

RES 50-300 10/97

Koppers006003

FORM B1 ***(Must be accompanied by Form A)***

Generator Name/Location Koppers, Portland, OR Page 2 of 2

EPA I.D. Number : ORD027734359 Manifest : 01841

Waste Profile or ARF	Category No.	EPA or State Waste Code	Variance Date	Description/Sub Category	Treatability Group (WW or NWW)	Waste Constituents or Legend #
ORKOP-651DLTA	2	D001		Debris w/ creosote	NWW	7

CONSTITUENTS IN SOLVENT, CALIFORNIA LIST AND CHARACTERISTIC WASTES.

F001 - F005 spent solvents

Legend #	Constituent Name
1	Acetone
2	Benzene
3	n-Butyl alcohol
*4	Carbon disulfide
5	Carbon tetrachloride
6	Chlorobenzene
7	Cresol (m-and p-isomers)
8	o-Cresol
*9	Cyclohexanone
10	1,2-Dichlorobenzene
11	Ethyl Acetate
12	Ethyl Benzene
13	Ethyl Ether
14	Isobutyl alcohol
*15	Methanol
16	Methylene Chloride
17	Methyl Ethyl Ketone
18	Methyl isobutyl ketone
19	Nitrobenzene
20	Pyridine
21	Tetrachloroethylene
22	Toluene
23	1,1,1-Trichloroethane
24	1,1,2-Trichloroethane
25	Trichlorothylene
26	1,1,2-Trichloro-1,2,2-trifluoroethane
27	Trichloromonofluoro-methane
28	Xylenes (total)

Legends 29-31 RESERVED

** If these constituents are present alone or in any combination of the three, then non waste water forms of these constituents must be treated to TCLP levels as indicated in §268.40.*

Technology-Based standards For F005 when the constituent is the only listed F00-F005 solvent

Legend #	Constituent Name
32	2-Ethoxyethanool
33	2-Nitropropane

Legends 34-43 RESERVED

CALIFORNIA LIST WASTES

Legend #	Constituent Name
44	Nickel
45	Thallium
46	Cyanide (Liquid)
47	Liquid Polychlorinated Biphenyls (PCB's)
48	Halogenated Organic compounds (HOC's)

SEE BACK FOR THE UNIVERSAL TREATMENT STANDARDS (UTS), Legends 49 - 264

Revised 6/96 585-7512A-585003

Sec. 268.48 Table UTS — Universal Treatment Standards

Legend #	Regulated constituent — common name	Wastewater standard. Concentration in mg/ /2/	Nonwastewater standard. Concentration in mg/kg /3/ unless noted as "mg/l TCLP"
49	Acenaphthylene	0.059	3.4
50	Acenaphthene	0.059	3.4
51	Acetone	0.28	160
52	Acetonitrile	5.6	1.8
53	Acetophenone	0.010	9.7
54	2-Acetylaminofluorene	0.059	140
55	Acrolein	0.29	NA
56	Acrylamide	19	23
57	Acrylonitrile	0.24	84
58	Aldrin	0.021	0.066
59	4-Aminobiphenyl	0.13	NA
60	Aniline	0.81	14
61	Anthracene	0.059	3.4
62	Aramite	0.36	NA
63	alpha-BHC	0.00014	0.066
64	beta-BHC	0.00014	0.066
65	delta-BHC	0.023	0.066
66	gamma-BHC	0.0017	0.066
67	Benzene	0.14	10
68	Benz (a) anthracene	0.059	3.4
69	Benzal chloride	0.055	6.0
70	Benzo (b) fluoranthene (difficult to distinguish from benzo (k) fluoranthene)	0.11	6.8
71	Benzo (k) fluoranthene (difficult to distinguish from benzo (b) fluranthene)	0.11	6.8
72	Benzo (g, h, i) perylene	0.0055	1.8
73	Benzo (a) pyrene	0.061	3.4
74	Bromodichloromethane	0.35	15
75	Methyl bromide (Bromomethane)	0.11	15
76	4-Bromophenyl phenyl ether	0.055	15
77	n-Butyl alcohol	5.6	2.6
78	Butyl benzyl phthalate	0.017	28
79	2-sec-Butyl-4, 6-dinitrophenol (Dinoseb)	0.066	2.5
80	Carbon disulfide	3.8	4.8 mg/l TCLP
81	Carbon tetrachloride	0.057	6.0
82	Chlodane (alpha and gamma isomers)	0.0033	0.26
83	p-Chloroaniline	0.46	16
84	Chlorobenzene	0.057	6.0
85	Chlorobenzilate	0.10	NA
86	2-Chloro-1, 3-butadiene	0.057	0.28
87	Chlorodibromomethane	0.057	15
88	Chloroethane	0.27	6.0
89	bis (2-chloroethoxy) methane	0.036	7.2
90	bis (2-Chloroethyl) ether	0.033	6.0
91	Chloroform	0.046	6.0
92	bis-(2-Chloroisopropyl) ether	0.055	7.2
93	p-Chloro-m-cresol	0.018	14
94	2-Chloroethyl vinyl ether	0.062	NA
95	Chloromethane (Methyl chloride)	0.19	30
96	2-Chloronaphthalene	0.055	5.6
97	2-Chlorophenol	0.044	5.7
98	3-Chloropropylene	0.036	30
99	Chrysene	0.059	3.4
100	o-Cresol	0.11	5.6
101	m-Cresol (difficult to distinguish from p-cresol)	0.77	5.6
102	p-Cresol (difficult to distinguish from m-cresol)	0.77	5.6
103	Cyclohexanone	0.36	0.75 mg/l TCLP
104	1, 2-Dibromo-3-chloropropane	0.11	15
105	Ethylene dibromide (1, 2-Dibromoethane)	0.028	15
106	Dibromomethane	0.11	15
107	2, 4-D (2, 4-Dichlorophenoxyacetic acid)	0.72	10
108	o, p'-DDD	0.023	0.087
109	p,p'-DDD	0.023	0.087
110	o,p"-DDE	0.031	0.087
111	p,p'-DDE	0.031	0.087
112	o,p'-DDT	0.0039	0.087
113	p,p'-DDT	0.0039	0.087
114	Dibenz (a ,h) anthracene	0.055	8.2
115	Dibenz (a, e) pyrene	0.061	NA
116	m-Dichlorobenzene	0.036	6.0
117	o-Dichlorobenzene	0.088	6.0
118	p-dichlorobenzene	0.090	6.0
119	Dichlorodifluoromethane	0.23	7.2
120	1,1-Dichloroethane	0.059	6.0
121	1,2-Dichloroethane	0.21	6.0
122	1,1-Dichloroethylene	0.025	6.0
123	trans-1,2-Dichloroethylene	0.054	30
124	2,4-Dichlorophenol	0.044	14
125	2,6-Dichlorophenol	0.044	14
126	1,2-Dichloropropane	0.85	18
127	cis-1,3-Dichloropropylene	0.036	18
128	trans-1,3-Dichloropropylene	0.036	18
129	Dieldrin	0.017	0.13
130	Diethyl phthalate	0.20	28
131	2-4-Dimethyl phenol	0.036	14
132	Dimethyl phthalate	0.047	28
133	Di-n-butyl phthalate	0.057	28
134	1,4-Dinitrobenzene	0.32	2.3
135	4,6-Dinitro-o-cresol	0.28	160
136	2,4-Dinitrophenol	0.12	160
137	2,4-Dinitrotoluene	0.32	140
138	2,6-Dinitrotoluene	0.55	28
139	Di-n-octyl phthalate	0.017	28
140	p-Dimethylaminoazobenzene	0.13	NA
141	Di-n-propylnitrosamne	0.40	14
142	1,4-Dioxane	NA	170
143	Diphenylamine (difficult to distinguish from diphenylnitrosamine)	0.92	13
144	Diphenylnitrosamine (difficult to distinguish from diphenylamine)	0.92	13
145	1,2-Diphenylhydrazine	0.087	NA
146	Disulfoton	0.017	6.2
147	Endosulfan I	0.023	0.066
148	Endosulfan II	0.029	0.13
149	Endosulfan sulfate	0.029	0.13
150	Endrin	0.0028	0.13
151	Endrin Aldehyde	0.025	0.13
152	Ethyl acetate	0.34	33
153	Ethyl cyanide (Propanenitrile)	0.24	360
154	Ethyl benzene	0.057	10
155	Ethyl ether	0.12	160
156	bis (2-Ethylhexyl) phthalate	0.28	28
157	Ethyl methacrylate	0.14	160
158	Ethylene oxide	0.12	NA
159	Famphur	0.017	15
160	Fluoranthene	0.068	3.4
161	Fluorene	0.059	3.4
162	Heptachlor	0.0012	0.066
163	Heptachlor epoxide	0.016	0.066
164	Hexachlorobenzene	0.055	10
165	Hexachlorobutadiene	0.055	5.6
166	Hexachlorocyclopentadiene	0.057	2.4
167	HxCDDs (All Hexachlorodibenzo-p-dioxins)	0.000063	0.001
168	HxCDFs (All Hexachlorodibenzofurans)	0.000063	0.001
169	Hexachloroethane	0.055	30
170	Hexachloropropylene	0.035	30
171	Indeno (1, 2, 3-c, d) pyrene	0.0055	3.4
172	Iodomethane	0.19	65
173	Isobutyl alcohol	5.6	170
174	Isodrin	0.021	0.066
175	Isosafrole	0.081	2.6
176	Kepone	0.0011	0.13
177	Methacrylonitrile	0.24	84
178	Methanol	5.6	0.75 mg/l TCLP
179	Methapyrilene	0.081	1.5
180	Methoxychlor	0.25	0.18
181	3-Methylcholanthrene	0.0055	15
182	4,4-Methylene bis (2-chloroaniline)	0.50	30
183	Methylene chloride	0.089	30
184	Methyl ethyl ketone	0.28	36
185	Methyl isobutyl ketone	0.14	33
186	Methyl methacrylate	0.14	160
187	Methyl methansulfonate	0.18	NA
188	Methyl parathion	0.014	4.6
189	Naphthalene	0.059	5.6
190	2-Naphthylamine	0.52	NA
191	o-Nitroaniline	0.27	14
192	p-Nitroaniline	0.028	28
193	Nitrobenzene	0.068	14
194	5-Nitro-o-toluidine	0.32	28
195	o-Nitrophenol	0.028	13
196	p-Nitrophenol	0.12	29
197	N-Nitrosodiethylamine	0.40	28
198	N-Nitrosodimethylamine	0.40	2.3
199	N-Nitroso-di-n-butylamine	0.40	17
200	N-Nitrosomethylethylamine	0.40	2.3
201	N-Nitrosomorpholine	0.40	2.3
202	N-Nitrosopiperidine	0.013	35
203	N-Nitrosopyrrolidine	0.013	35
204	Parathion	0.014	4.6
205	Total PCBs (sum of all PCB isomers, or all Aroclors)	0.10	10
206	Pentachlorobenzene	0.055	10
207	PeCDDs (All Pentachlorodibenzo-p-dioxins)	0.000063	0.001
208	PeCDFs (All Pentachlorodibenzofurans)	0.000035	0.001
209	Pentachloroethane	0.055	6.0
210	Pentachloronitrobenzene	0.055	4.8
211	Pentachlorophenol	0.089	7.4
212	Phenacetin	0.081	16
213	Phenanthrene	0.059	5.6
214	Phenol	0.039	6.2
215	Phorate	0.021	4.6
216	Phthalic acid	0.055	28
217	Phthalic anhydride	0.055	28
218	Pronamide	0.093	1.5
219	Pyrene	0.067	8.2
220	Pyridine	0.014	16
221	Safrole	0.081	22
222	Silvex (2,4,5-TP)	0.72	7.9
223	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	0.72	7.9
224	1,2,4,5-Tetrachlorobenzene	0.055	14
225	TCDDs (All Tetrachlorodibenzo-p-dioxins)	.000063	.001
226	TCDFs (All Tetrachlorodibenzofurans)	.000063	.001
227	1,1,1,2-Tetrachloroethane	0.057	6.0
228	1,1,2,2-Tetrachloroethane	0.057	6.0
229	Tetrachloroethylene	0.056	6.0
230	2,3,4,6-Tetrachlorophenol	0.030	7.4
231	Toluene	0.080	10
232	Toxaphene	0.0095	2.6
233	Bromoform (Tribromomethane)	0.63	15
234	1,2,4-Trichlorobenzene	0.055	19
235	1,1,1-Trichloroethane	0.054	6.0
236	1,1,2-Trichloroethane	0.054	6.0
237	Trichloroethylene	0.054	6.0
238	Trichloromonofluoromethane	0.020	30
239	2,4,5-Trichlorophenol	0.18	7.4
240	2,4,6-Trichlorophenol	0.035	7.4
241	1,2,3-Trichloropropane	0.85	30
242	1,1,2-Trichloro-1,2,2-trifluoroethane	0.057	30
243	tris-(2,3-Dibromopropyl) phosphate	0.11	0.10
244	Vinyl chloride	0.27	6.0
245	Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)	0.32	30
246	Antimony	1.9	2.1 mg/l TCLP
247	Arsenic	1.4	5.0 mg/l TCLP
248	Barium	1.2	7.6 mg/l TCLP
249	Beryllium	.082	0.014 mg/l TCLP
250	Cadmium	0.69	0.19 mg/l TCLP
251	Chromium (Total)	2.77	0.86 mg/l TCLP
252	Cyanides (Total) /4/	1.2	590
253	Cyanides (Amenable) /4/	0.86	30
254	Fluoride	35	NA
255	Lead	0.69	0.37 mg/l TCLP
256	Mercury — Nonwastewater from Retort	NA	0.20 mg/l TCLP
257	Mercury — All others	0.15	0.025 mg/l TCLP
258	Nickel	3.98	5.0 mg/l TCLP
259	Selenium	0.82	0.16 mg/l TCLP
260	Silver	0.43	0.30 mg/l TCLP
261	Sulfide	14	NA
262	Thallium	1.4	0.078 mg/l TCLP
263	Vanadium	4.3	0.23 mg/l TCLP
264	Zinc/5/	2.61	5.3 mg/l TCLP

/2/ Concentration standards for wastewaters are expressed in mg/l are based on analysis of composite samples.

/3/ Except for Metals (EP or TCLP) and Cyanides (Total and Amenable) the nonwastewater treatment standards expressed as a concentration were established, in part, based upon incineration in units operated in accordance with the technical requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may comply with these treatment standards according to provisions in 40 CFR 268.40 (d). All concentration standards for nonwastewaters are based on analysis of grab samples.

/4/ Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"; EPA Publication SW-846m as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

/5/ Zinc is not an "underlying hazardous constituent" in characteristic wastes, according to the definition at 268.2(i).

Note: NA means not applicable.

Koppers006005

LAIDLAW ENVIRONMENTAL SERVICES

FORM A

Customer Notification And Certification

Generator Name/Location: Koppers, Portland, OR

EPA I.D. Number: ORD027734359

Waste Profile or ARF Designation: ORKOP-651DLTA

Manifest Number: 01841, ~~01840~~

EPA Waste Number(s): D001

Waste Analysis Available? Yes (attached) ____ No ✓ On file at receiving facility ____

Unrestricted Waste Notification (*Category 1*)

Mark the statement below if you generate a waste that is not a land disposal restricted waste (the waste has no applicable treatment standards).

☐ *I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR §268, Subpart D or any applicable prohibitions set forth in 40 CFR §268.32 or RCRA Section 3004(d).*

Restricted Waste/Debris Notification (*Category 2*)

Mark statement (2a) below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards). NOTE-1: A waste may pass one or more standards and require treatment or be varianced for others. In this case, all applicable categories must be checked. NOTE-2: D001, D002 and D012 - D043 wastes must be evaluated for underlying constituents found in 40 CFR §268. 48 (Table UTS), that are reasonably expected to be present. A list of these constituents must be included on FORM B, or attached to and accompany this notification with each waste shipment. Mark statement (2b) if you generate a debris waste that will be treated to the alternate debris standards located in 40 CFR §268.45.

☑ **(2a) Restricted Waste Notification**

I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is subject to the treatment standards specified in 40 CFR §268 Subpart D. The waste: (a) must be treated to the appropriate regulatory treatment standard, by the appropriate regulatory treatment method; (b) qualifies for a variance as described in category 3 below; or (c) meets some or all of the standards as described in Category 4 below.

☐ **(2b) Alternate Debris Treatment Notification: This hazardous debris is subject to the alternate treatment standards of 40 CFR §268.45.**

The waste contains the following contaminants subject to treatment [check all that apply]:

____§268.45(b)(1) - Toxicity characteristic debris;

____§268.45(b)(2) - Debris contaminated with listed waste;

____§268.45(b)(3) - Cyanide reactive debris.

Restricted Waste Variance Notification (*Category 3*)

Mark the statement below and list the applicable variance date on Form B, if you generate a waste which does not require treatment prior to land disposal because of a variance (including a case-by-case extension under 40 CFR §268.5, a nationwide variance under 40 CFR §268 Subpart C, a no migration petition under 40 CFR §268.6, or other applicable variance).

☐ *I notify pursuant to 40 CFR §268.7(a)(3) that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that this waste is subject to a national capacity variance under 40 CFR §268 Subpart C, or a case-by-case extension under 40 CFR §268.5, or an exemption under 40 CFR §268.6.*

Restricted Waste Certification (Treatment Standards Met) (*Category 4*)

Mark the certification statement below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards), and the waste meets the standards as generated. Note: All applicable constituent standards must be accounted for. A waste may pass one or more standards and require treatment or be variance for other constituents. In this case, all applicable categories must be checked.

☐ *I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA § 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.*

SIGNATURE: T. L. Turner DATE: 3-5-98

PRINT NAME: T. L. TURNER TITLE: General Foreman

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name — 6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name — 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address — 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description *(Including Proper Shipping Name, Hazard Class and ID Number)*	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.						
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

Style CF17-6 LABELMASTER, AN AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

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Koppers006007

Public reporting burden for this collection of information is estimated to average: 37 minutes for generators, 15 minutes for transporters, and 10 minutes for treatment, storage and disposal facilities. This includes time for reviewing instructions, gathering data, and completing and reviewing the form. Send comments regarding the burden estimate, including suggestions for reducing this burden, to: Chief, Information Policy Branch, PM–223, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. 0 R D 0 2 7 7 3 4 3 5 9 0 1 8 4 1 — Manifest Document No.

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
KOPPERS INDUSTRIES, INC.
7540 NW ST HELENS ROAD, PORTLAND, OR 97210

4. Generator's Phone (503) 286-3621

A. State Manifest Document Number

B. State Generator's ID: EXEMPT

5. Transporter 1 Company Name: LAIDLAW ENV. SVCS. CALF (SEA)

6. US EPA ID Number: C A D 0 0 0 0 8 [illegible]

C. State Transporter's ID

D. Transporter's Phone: [illegible]

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES, INC.
3842 PROGRESS WAY
DELTA, IL 946 [illegible]

10. US EPA ID Number: P S 8 3 8 8

G. State Facility's ID

H. Facility's Phone: [illegible]

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	NO	WASTE FLAMMABLE SOLIDS, ORGANIC, N.O.S., (CREOSOTE), 4, NH1329, (II, EQ-1B CREOSOTE)	002	DM	00800	P	D001
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Additional a. 0051, 950305-CRKOP-001, CRKOP-651DLTA
EPA Waste b. 7008
Codes c.
d.

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Approval a.
Numbers b.
c.
d.
NO#: 1841
Emergency
Contact: 1-800 535-5053 (2911)
Infotrac

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Year

GENERATOR — TRANSPORTER — FACILITY

Style CF17-6 LABELMASTER, AN AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

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GENERATOR COPY

Koppers006009

Public reporting burden for this collection of information is estimated to average 37 minutes for generators, 15 minutes for transporters, and 10 minutes for treatment, storage and disposal facilities. This includes time for reviewing instructions, gathering data, and completing and reviewing the form. Send comments regarding the burden estimate, including suggestions for reducing this burden, to: Chief, Information Policy Branch, PM–223, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

Koppers006010

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Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. | Manifest Document No.: ORD027734359 | 011841

22. Page: 2 of 2 | Information in the shaded areas is not required by Federal law.

23. Generator's Name: Koppers Industries Inc, 7540 N.W. St Helens Road Portland, OR. 97210

L. State Manifest Document Number

M. State Generator's ID

24. Transporter ____ Company Name: MP Environmental | 25. US EPA ID Number: CAT000624247

N. State Transporter's ID

O. Transporter's Phone: 1-800-245-9518

26. Transporter ____ Company Name | 27. US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

28. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	29. Containers No.	29. Containers Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.						
b.						
c.						
d.						
e.						
f.						
g.						
h.						
i.						

S. Additional Descriptions for Materials Listed Above

T. Handling Codes for Wastes Listed Above

RECEIVED

MAR - 2 [illegible]

KOPPERS INDS., INC.
PORTLAND, OR

32. Special Handing Instructions and Additional Information

TRANSPORTER

33. Transporter ____ Acknowledgement of Receipt of Materials

Printed/Typed Name: Wayne Martin | Signature: Wayne Martin | Date: Month 03 Day 18 Year 98

34. Transporter ____ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

35. Discrepancy Indication Space

EPA Form 8700-22A (Rev. 10-92) Previous editions are obsolete.

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ORIGINAL - RETURN TO GENERATOR

Koppers006011

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Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. ORD027134359 | Manifest Document No. 01840 | 22. Page 2 | Information in the shaded areas is not required by Federal law.

23. Generator's Name
KOPPERS INDUSTRIES, INC.
7540 NW ST HELENS RD
PORTLAND, OR 97210

L. State Manifest Document Number

M. State Generator's ID

24. Transporter 3 Company Name | 25. US EPA ID Number | N. State Transporter's ID | O. Transporter's Phone

26. Transporter ___ Company Name | 27. US EPA ID Number | P. State Transporter's ID | Q. Transporter's Phone

28. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	29. Containers No.	29. Containers Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.						
b.						
c.						
d.						
e.						
f.						
g.						
h.						
i.						

S. Additional Descriptions for Materials Listed Above

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter ___ Acknowledgement of Receipt of Materials

Printed/Typed Name: JAMES H. BERRYHILL | Signature: James H. Berryhill | Date: Month 03 Day 22 Year 98

34. Transporter ___ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

35. Discrepancy Indication Space

Style CF 18 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621-5808

EPA Form 8700-22A (Rev. 9-88) Previous editions are obsolete.

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ORIGINAL-RETURN TO GENERATOR

Koppers006012

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UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. OED 027734359 | Manifest Document No. 01840 | 22. Page 2 | Information in the shaded areas is not required by Federal law.

23. Generator's Name: KOPPERS INDUSTRIES, INC. 1510 NW 17 HEUSLER PORTLAND, OR 97210

RECEIVED

L. State Manifest Document Number

M. State Generator's ID

24. Transporter 3 Company Name | 25. US EPA ID Number

N. State Transporter's ID

O. Transporter's Phone

26. Transporter ___ Company Name: KOPPERS INDS., INC. PORTLAND, OR | US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

28. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	H. Waste No.
a.						
b.						
c.						
d.						
e.						
f.						
g.						
h.						
i.						

GENERATOR

S. Additional Descriptions for Materials Listed Above

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter ___ Acknowledgement of Receipt of Materials | Date

Printed/Typed Name: James H. Berisch | Signature: James H. Berisch | Month 03 Day 22 Year 98

34. Transporter ___ Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

FACILITY

35. Discrepancy Indication Space

Style OF 18 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621-5808 EPA Form 8700-22A (Rev. 9-88) Previous editions are obsolete

ORIGINAL-RETURN TO GENERATOR

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Koppers006013

GRASSY SWD # 11850

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Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. / Manifest Document No.: ORD027734359 01840

2. Page 1 of 2

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
KOPPERS INDUSTRIES, INC.
7540 NW ST HELENS ROAD, PORTLAND, OR 97210

4. Generator's Phone (503)286-3681

A. State Manifest Document Number

B. State Generator's ID: EXEMPT

5. Transporter 1 Company Name: LAIDLAW ENV. SVCS. CALF (SEA)

6. US EPA ID Number: CAD000083121

C. State Transporter's ID

D. Transporter's Phone (253) 288-2800

7. Transporter 2 Company Name: Laidlaw Envir. Serv.

8. US EPA ID Number: TXD988023305

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
USPCI/LAIDLAW LAIDLAW ENVIRONMENTAL (GRASSY)
3 MILES EAST, 7 MILES NORTH EXIT 41 OFF I-80
KNOLLS, UT 84029-

10. US EPA ID Number: UTD991301748

G. State Facility's ID

H. Facility's Phone (801) 323-8900

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NON HAZARDOUS WASTE, SOLID, (TAR)		006	DM	03600	P	~~D001~~ nme
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes: a. ~~U051~~ 980305-ORKOP-002-007, ORKOP-G980310; b.; c. GM98-0310; d.

K. Handling Codes for Wastes Listed Above
a. M132
b.
c.
d.

15. Special Handling Instructions and Additional Information
Approval Numbers: a. GMNHDIRECT TI; b.; c.; d.
WO#: 1840
Emergency Contact: 1-800-535-5053 (291) Infotrac

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: T.J. Turnen — Signature: [signature] — Month Day Year: 3 13 98

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Greg Montello — Signature: [signature] — Month Day Year: 03 05 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Leo Todd — Signature: Leo Todd — Month Day Year: 03 10 98

19. Discrepancy Indication Space
1998001385 D

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Eva Todd — Signature: Eva Todd — Month Day Year: 03 24 98

GENERATOR / TRANSPORTER / FACILITY

Style CF17-6 LABELMASTER, AN AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

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ORIGINAL-RETURN TO GENERATOR

GRASSY SWD # 11850

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ORD027734359018 40
Manifest Document No.
2. Page 1 of 2
Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address: KOPPERS INDUSTRIES, INC. 7540 NW ST HELENS ROAD, PORTLAND, OR 97210
4. Generator's Phone: 503 286-3681
A. State Manifest Document Number
B. State Generator's ID: EXEMPT

5. Transporter 1 Company Name: LAIDLAW ENV. SVCS. CALF (SEA)
6. US EPA ID Number: CAD000083121
C. State Transporter's ID
D. Transporter's Phone: (253) 298-2800

7. Transporter 2 Company Name: Laidlaw Envir. Serv.
8. US EPA ID Number: TXD988023305
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address: USPCI/LAIDLAW LAIDLAW ENVIRONMENTAL (GRASSY) 3 MILES EAST, 7 MILES NORTH EXIT 41 OFF I-80 KNOLLS, UT 84029-
10. US EPA ID Number: UTD991301748
G. State Facility's ID
H. Facility's Phone: (801) 323-8900

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. NON HAZARDOUS WASTE, SOLID, (TAR)	006	DM	3600	P	D-0-0-1
b.					
c.					
d.					

Public reporting burden for this collection of information is estimated to average: 37 minutes for generators, 15 minutes for transporters, and 10 minutes for treatment, storage and disposal facilities. This includes time for reviewing instructions, gathering data, and completing and reviewing the form. Send comments regarding the burden estimate including suggestions for reducing this burden, to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

15. Special Handling Instructions and Additional Information
Approval Numbers: a. GMNDIRECT TI; b.; c.; d.
WO#: 1840
Emergency Contact: 1-800-535-5053 (291) Infotrac

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Printed/Typed Name: [signature] Signature: [signature] Month Day Year: 3 13 98

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Greg Pantello Signature: [signature] Month Day Year: 0 3 6 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Leo Tedd Signature: [signature] Month Day Year: 03 10 98

19. Discrepancy Indication Space
1998001385-D

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Eva Todd Signature: [signature] Month Day Year: 03 24 98

Style CF17C ... LABELMASTER, AN AMERICAN LABELMARK CO., CHICAGO, IL 60648 (800)621-5808 EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

ORIGINAL RETURN TO GENERATOR

Koppers006015