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EXHIBIT – 4

9830 South 51st Street, Suite A-127 Phoenix, AZ 85044
ACL #AE090871

SITE CHARACTERIZATION REPORT
Former Commercial Carriers Facility
902-904 South 12th Street
Phoenix, Arizona
ADEQ LUST File #4148.01
ADEQ Facility ID #0-004589

2/27/96

Terranext Project No. 03102810

Prepared For:

Southern Pacific Transportation Company
One Market Plaza
San Francisco, California 94105

February 27, 1996

UP-1241

Telephone: 602 496•4100 Facsimile: 602 496•4399 www.terranext.com

SITE CHARACTERIZATION REPORT
Former Commercial Carriers Facility
902-904 South 12th Street
Phoenix, Arizona
ADEQ LUST File #4148.01
ADEQ Facility ID #0-004589

Prepared By:

Eric L. Stanford
Engineer III

Reviewed By:

Stephen J. Smelser, R.G.
Senior Project Manager

UP-1242

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SITE CHARACTERIZATION REPORT FORM

Note: Terranext, formerly Industrial Compliance (IC) has prepared this Site Characterization Report Form (SCRF). The company name change became effective January 1, 1996.

Check the applicable type of Site Characterization:

x Initial Site Characterization (defining the full extent of contamination)

__ Post-remedial Site Characterization (confirming that corrective actions have successfully remediated the site to approved contaminant concentrations)

1. Site Description

a) Facility ID Number: #0-004589

b) LUST Number: #4148.01

c) Facility Name: Commercial Carriers Inc., Former Lease Property

d) Facility Street Address: 902-904 South 12th Street,

City: Phoenix Zip Code: 85034

County: Maricopa Phone: (602) 254-6005

e) Legal Location: Township 1N Range: 3E Section 9, SE ¼ of SW ¼
Map USGS 7½ Minute Quadrangle Phoenix, AZ

f) Owner/Operator Conducting Corrective Actions:

Name: Southern Pacific Transportation Company (SPTCo)

Street Address: One Market Plaza, Room 225

City: San Francisco State: California Zip: 94105
Phone: (415) 541-2838 Fax: (415) 541-1734

g) Land use and ownership of each parcel of property affected by the release, if any: Based on available data, only SPTCo property has been affected by the release. The property is currently utilized as an asphalt-paved driveway.

/u/sorris/projects/03102810/scrf.rpt

UP-1243

2. Site/UST History

a) Date facility was acquired: Commercial Carriers leased the property from SPTCo in 1986.

b) Describe present property use: The site is presently an asphalt-paved driveway.

c) Describe past site uses and provide the time span for each: From 1986 to 1993 the study area (see Figure 1 and 2, Attachment A) was used as a fueling facility that included three fuel islands supplied by a 25,000-gallon capacity, fiberglass-coated steel UST used for the storage of diesel fuel. The UST was physically removed and destroyed in June 1995. IC's July 26, 1995, UST Closure Report summarizes the results of the removal activities. The study area was formerly part of a Commercial Carriers transfer facility for new vehicles en route to automotive dealerships. Commercial Carriers terminated its lease of the study area and its use of the UST in 1993. The UST was taken out of service at that time. Note that Figure 2 shows three former approximately (or less than) 1,000-gallon USTs located north of the study area. These three USTs were removed in March of 1990; however, there is no record that confirmation soil samples were collected and analyzed at the time of removal. To fulfill closure sampling requirements, three borings (SB-1 through SB-3, see Figure 2) were drilled and sampled in the approximate locations of the three USTs. Based on the results of laboratory analysis of soil samples, no releases appear to have occurred from the USTs. These three USTs were handled under a separate notification process and are not addressed in this report.

d) Date release discovered: Analytical results from soil samples (collected during the June 15, 1995, UST removal) indicating the presence of petroleum hydrocarbon impact to soil were reported June 22, 1995.

e) Date release reported to ADEQ: June 22, 1995

f) Location in the UST system where the leak occurred: Unknown. Based on analytical data from the closure activities, the most impacted soils appear to be located beneath the former location of the southern fuel dispenser on the central pump island (see Figure 3). For the purposes of this report, this location has been assumed to be the release point.

g) Estimated release volume: unknown

h) Estimated period of time over which the leak occurred: unknown

i) Substance released: diesel fuel

UP-1244

3. Soil Investigation Procedures

a) Are all sampling/boring locations shown on the site plan? (see "Required Attachments", p. A-13, A.2):

_x_ Yes __ No See Figures 3 and 5. Figure 5 is excerpted from the IC UST closure report dated July 26, 1995, and shows excavation sample locations and analytical results. Note borings SB-1 through SB-3 were completed for closure notification purposes for three approximately 1,000-gallon USTs previously (March 1990) removed from the site.

If no, describe why not: See Attachment A, Figures 3 and 5.

b) Were all soil samples collected by pushing or driving a sampler containing sleeves constructed of an inert material per Attachment C of the UST SCRF Guidance Document?

_x_ Yes __ No

If no, describe why not, and alternative method used: N/A

c) Describe how sleeves were sealed and labeled: Ends of sample sleeves were covered with Teflon™ film, aluminum foil, and plastic end caps. Each sample was then labeled with site name, sample I.D., and date, in accordance with Terranext Standard Operating Procedures (See Attachment C, Appendix 1).

d) Were all soil samples preserved at approximately 4 degrees Centigrade prior to delivery to the laboratory?

_x_ Yes __ No

If no, describe why not: N/A

e) Describe decontamination procedures for soil sampling equipment: Sampling equipment (brass tubes and split-spoon device) was scrubbed and washed in a water/Liquinox™ soap solution, rinsed in tap water, and final rinsed in deionized water before each sampling event. Augers were steam cleaned between borings.

f) Total number of borings drilled at the site: Eleven (11) (i.e., SB-4 through SB-14), See Attachment A, Figure 3. As indicated in Section 2 of this report, three additional borings (SB-1 through SB-3) were conducted for a separate UST site on an adjacent parcel of land. Results of these soil borings are subject to separate notification and are not addressed herein. Soil boring SB-14 was advanced for the purpose of installing monitoring well MW-1, and to further characterize the vertical extent of petroleum hydrocarbon impact beneath the suspected release point.

UP-1245

4. **Vertical Extent of Soil Contamination** (**NOTE:** Multiple copies of this section should be submitted if there are multiple release points at the facility.)

Provide the following information for the boring located closest to the suspected release location.

a) Horizontal distance from the suspected release location: 1 (ft)

b) For the deepest sample collected from the boring, provide:

1) Sample identifier: SB-8/11.5' (soil boring #8 @ 11.5 feet below grade)

2) Lithology: Sand, Gravel, and Cobbles with some silt (GW)

3) PID result: 134

4) [1]Odors?: present

5) Staining?: not apparent

6) Laboratory results (mg/kg): B NA T NA E NA X NA TPH 26,000

Note: NA = not analyzed for investigation of diesel release

Other (list compounds and results for any detections) not analyzed

NOTE: For non-detects, list the numerical reporting limit, for example, "<0.25". Do not use "ND".

7) Holding time (hours): <14 days, soil was analyzed by ADHS Method 418.1 AZ

NOTE: Soil samples to be analyzed for BTEX or other VOCs to define the extent of contamination generally must be extracted within 72 hours of collection. ADEQ may extend the 72 hour limit to 120 hours with site-specific pre-approval. ADEQ may not consider samples exceeding the extraction holding time as valid and may require additional sampling.

8) Depth (below ground surface) at which sample was collected: 11.5 (ft)

c) For the most contaminated sample from the boring, provide:

1) Sample identifier: SB-8/6.5'

2) Lithology: Sandy Silt (ML)

3) PID result: 162

UP-1246

[1] Investigators should not purposefully seek to determine whether odors are present in a sample. This would be contrary to acceptable health and safety practices. Note only odors observed during the normal course of investigations.

4) [1]Odors?: present

5) Staining?: not apparent

6) Laboratory results (mg/kg): B NA T NA E NA X NA TPH 40,000

NA = not analyzed for investigation of diesel release.

Other (list compounds and results for any detections) not analyzed

NOTE: For non-detects, list the numerical reporting limit, for example, "<0.25". Do not use "ND".

7) Holding time (hours): <14 days, soil was analyzed for ADHS Method 418.1 AZ only.

NOTE: Soil samples to be analyzed for BTEX or other VOCs to define the extent of contamination generally must be extracted within 72 hours of collection. ADEQ may extend the 72 hour limit to 120 hours with site-specific pre-approval. ADEQ may not consider samples exceeding the extraction holding time as valid and may require additional sampling.

8) Depth, below ground surface, at which sample was collected 6.5 (feet)

d) Suspected depth to groundwater at the site: Approximately 60 feet below ground surface (data obtained from on-site monitoring well installed by Terranext).

e) Source of depth to water data (include date): Direct measurement from on-site ground water monitoring well obtained on January 22, 1996.

UP-1247

[1] Investigators should not purposefully seek to determine whether odors are present in a sample. This would be contrary to acceptable health and safety practices. Note only odors observed during the normal course of investigations.

5. **Horizontal Extent of Soil Contamination (NOTE:** Multiple copies of this section should be submitted if there are multiple release points at the facility.)

a) Provide the requested information below for the boring locations which are believed to define the horizontal extent of contamination in at least three directions.

	Location 1	Location 2	Location 3
	(SB-4)	(SB-6)	(SB-13)[1]
Horizontal distance from release	25'	15'	52'
Compass direction from release (NE, etc.)	N-NW	SE	W-SW
Total depth of borehole	16'	13.5'	16'
For most contaminated sample:			
Identifier:	SB-4/6.5'	SB-6/6.5'	SS-6'
Depth:	6.5'	6.5'	16'
Lithology:	sandy silt (ML)	sandy silt (ML)	sandy silt (ML)
PID results:	3.3	0	NA
[1]Odors?	none	none	none
Staining?	none	none	none
Holding time:	<14 days[2]	<14 days[2]	<14 days[2]
Lab results (mg/kg):	B: NA	B: NA	B: NA
	T: NA	T: NA	T: NA
	E: NA	E: NA	E: NA
	X: NA	X: NA	X: NA
	TPH: <20	TPH: <20	TPH: 76

Note: BTEX analysis was not conducted, since the hydrocarbon release was from diesel fuel UST system.

[1]SS-6 was collected from the UST excavation at a depth of 16 feet below ground surface on June 15, 1995 during the UST removal. This sample was collected within an estimated two feet of the same planimetric location as SB-13.

[2] <14 days for soil samples analyzed by ADHS Method 418.1 AZ.

UP-1248

For deepest sample:	Location 1 (SB-4)	Location 2 (SB-6)	Location 3 (SB-13)[1]
Identifier:	SB-4/16.5'	SB-6/15.5'	SB-13/19.5'
Depth:	16.5	13'	19.5'
Lithology:	Sand, Gravel, and Cobbles with some silt (GW)	Sand, Gravel, and Cobbles with some silt (GW)	Sand, Gravel, and Cobbles with some silt (GW)
PID result:	0	0	0
[1]Odors?	none	none	none
Staining?	none	none	none
Holding time:	<14 days[2]	<14 days[2]	<14 days[2]
Lab results (mg/kg):	B: NA	B: NA	B: NA
	T: NA	T: NA	T: NA
	E: NA	E: NA	E: NA
	X: NA	X: NA	X: NA
	TPH: <20	TPH: <20	TPH: 40

Note: BTEX analysis was not conducted, since the hydrocarbon release was from diesel fuel UST system.

[1]SS-6 was collected from the UST excavation at a depth of 16 feet bgs on June 15, 1995 during the UST removal. This sample was collected within an estimated two feet of the same planimetric location as SB-13.

[2] < 14 days for soil samples analyzed by ADHS Method 418.1 AZ.

If other compounds are found in any of the three samples, identify sample number, compound and concentration: not analyzed

b) Attach maps and cross-sections depicting the extent of soil contamination per the "Required Attachments", p. A-13, A.3 and A.4. See Attachment A.

Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Detailed Site Map
Figure 4 - Cross-Section A-A'
Figure 5 - Soil Sample Location Map[1]

c) Attach copies of excavation and/or boring logs per the "Required Attachments", p. A-15, C.4 and/or C.5. See Attachment C, Appendix 2.

[1] = Excerpted from IC's UST closure report dated July 26, 1995.

UP-1249

6. Groundwater Investigations

a) Are all sampled monitor well locations shown on the attached groundwater conditions map?

__ Yes _x_ No

If no, please explain: _The monitor well MW-1 location is shown on Figure 3, Detailed Site Map. A ground water conditions map was not generated for the site, since monitoring well MW-1 was installed specifically to establish whether petroleum hydrocarbons were present in ground water beneath the site, not to establish the ground water conditions.

b) Does the screened interval of every monitor well extend across the groundwater surface?

_x_ Yes __ No

If no, explain and provide the distances that the tops of the screens are submerged or the approximate distance the bottom of the screen is above the groundwater surface: ___N/A__

c) Was a measuring point established at the north side of the top of the well casing by a licensed surveyor?

_x_ Yes __ No

What is the measuring point referenced to: _A brass cap located in the intersection of Buckeye Road and 12th Street which has an established elevation of 1087.82 feet above mean sea level, City of Phoenix Datum (See Attachment C, Appendix 3.

d) Describe the device used to measure depth to water/product: _QED Sample Pro - Oil/Water Interface Probe

e) Was free-product detected in the monitor wells?

__ Yes _x_ No

Affected wells and apparent thickness of product: __N/A___

NOTE: If free product is detected, attach a "Free Product Response Summary Form" (see Attachment D) to this report.

f) Were the wells purged prior to sampling?

_x_ Yes __ No

If no, explain: __N/A___

UP-1250

If yes, describe purging method and how purging was deemed complete: The well was purged by pumping a minimum of three well-casing volumes of ground water. The pumping was accomplished using a Grundfos 2-inch submersible pump. Field parameters were collected consisting of pH, temperature, and conductivity for each ground water casing volume removed to confirm completion of purging (See Attachment C, Appendix 4).

g) Attach field notes and a table (if wells were purged) describing the groundwater sampling procedures per the "Required Attachments", p. A-14, B.4 (See Attachment C, Appendix 4).

h) Attach a table which provides well construction data and the results of groundwater measurements per the "Required Attachments", p. A-14, B.3. (See Attachment C, Appendix 3).

i) Describe the sampling equipment used to collect groundwater samples: Samples were collected using a disposable polyethylene bailer.

j) How was the sampling equipment decontaminated between sample collections: Decontamination was not required because a disposable bailer was used and only one well was sampled.

k) Describe the groundwater sample containers: Samples to be analyzed for VOCs were collected in 40 milliliter (ml) vials with zero headspace. Samples to be analyzed for TPH were collected in 500 ml amber bottles.

l) Describe sample preservation: VOC samples were preserved with hydrochloric acid (HCL) and TPH samples were preserved with sulfuric acid (H_2SO_4). Samples were then stored in a cooler with ice prior to delivery to a state-certified laboratory for analysis.

m) Direction of groundwater flow: N/A

n) Groundwater gradient: N/A

o) Holding time for groundwater samples (days): All samples were analyzed by the laboratory within the applicable holding times.

p) Attach a summary table of groundwater sampling analytical results per the "Required Attachments", p. A-14, B.5. (See Attachment B, Table 2, Ground Water Sample Analytical Results.)

NOTE: One ground water sample was obtained from monitoring well MW-1 on January 22, 1996. The ground water sample was analyzed for TPH by EPA Method 418.1 and VOCs by EPA Method 502.2. **The results of laboratory analysis did not indicate detectable concentrations of TPH or BTEX in the ground water sample.** Several VOCs were detected in the ground water sample; however, these compounds are known to be present in ground water in the vicinity of the subject site, which is situated within the ADEQ East Washington Water Quality Assurance Revolving Fund (WQARF) Study Area.

UP-1251

7. Analytical Chemistry Procedures

a) Name, address, and license number of the ADHS licensed laboratory performing the analyses: Analytical Technologies, Inc., 9830 South 51st Street, Suite B-113, Phoenix, Arizona 85044 License #AZ0061

b) List analytical methodologies used:

	Soil	Groundwater
BTEX	N/A	N/A
TPH	ADHS Method 418.1 AZ	EPA Method 418.1
VOCs	N/A	EPA Method 502.2

c) Attach the chain-of-custody and copies of laboratory reports per the "Required Attachments", p. A-14, C.1 and C.2. See Attachment C, Appendix 5.

d) An Investigative Rationale Summary describing Terranext's approach to the investigation and a Site Specific QA/QC Narrative summarizing the QA/QC procedures followed during the field investigation and laboratory analyses (including conclusions as to the adequacy of the QA/QC and the acceptability of the analytical data) is presented in Attachment C, Appendix 6.

UP-1252

8. Owner/Operator Certifications

a) I certify that investigation derived wastes were disposed of in accordance with solid and/or hazardous waste regulations, rules, and guidance.

_____ _____

Signature Date

b) I certify that the laboratory indicated was licensed to perform the analyses described in Section 7.b., p. A-10.

_____ _____

Signature Date

Next Action Place an "X" next to each intended action listed below which applies to this site.

__ Submit Corrective Action Plan (CAP) (Required if groundwater contaminated at concentrations greater than Aquifer Water Quality Standards, free product is present, or the intended corrective action technology involves discharge of a pollutant which could impact an aquifer. Must be submitted within 330 days of the date the release or suspected release was reported.)

__ Initiate monthly water level measurements and quarterly sampling (Required if monitor wells were installed at the site.)

__ Remediate subsurface soils at site to ADEQ Suggested Soil Cleanup Levels (SSCL) without CAP (must be completed within 24 months of the reporting of the release or suspected release, or a CAP will be required)

_x_ Request closure (attach "Corrective Action Summary" per Required Attachments, p. A-15, C.8) (See Attachment C, Appendix 7).

__ Other (attach description of intended action)

"I hereby certify, under penalty of law, that this submittal and all attachments were prepared under my direction and supervision, and that the information submitted is true, accurate, and complete to the best of my knowledge."

_____ _____

Signature (UST owner or operator or authorized agent) Date

_____ _____

Name (Printed) Title

UP-1253

9. Consultant Information

Signature: _____ Date: _____

Name (print): Stephen J. Smelser, R.G. Title: Senior Project Manager

Company Name: Terranext

Street Address: 9830 South 51st Street, Suite A-127

City: Phoenix State: Arizona Zip: 85044

Phone: (602) 496-4100 Fax: (602) 496-4399

Where registration is required by the Board of Technical Registration, please affix seal below:

ADEQ would appreciate receiving the consultant's response to the following question:

"In your professional opinion, has the extent of contamination at this site been completely defined?"

__ Yes __ No

UP-1254

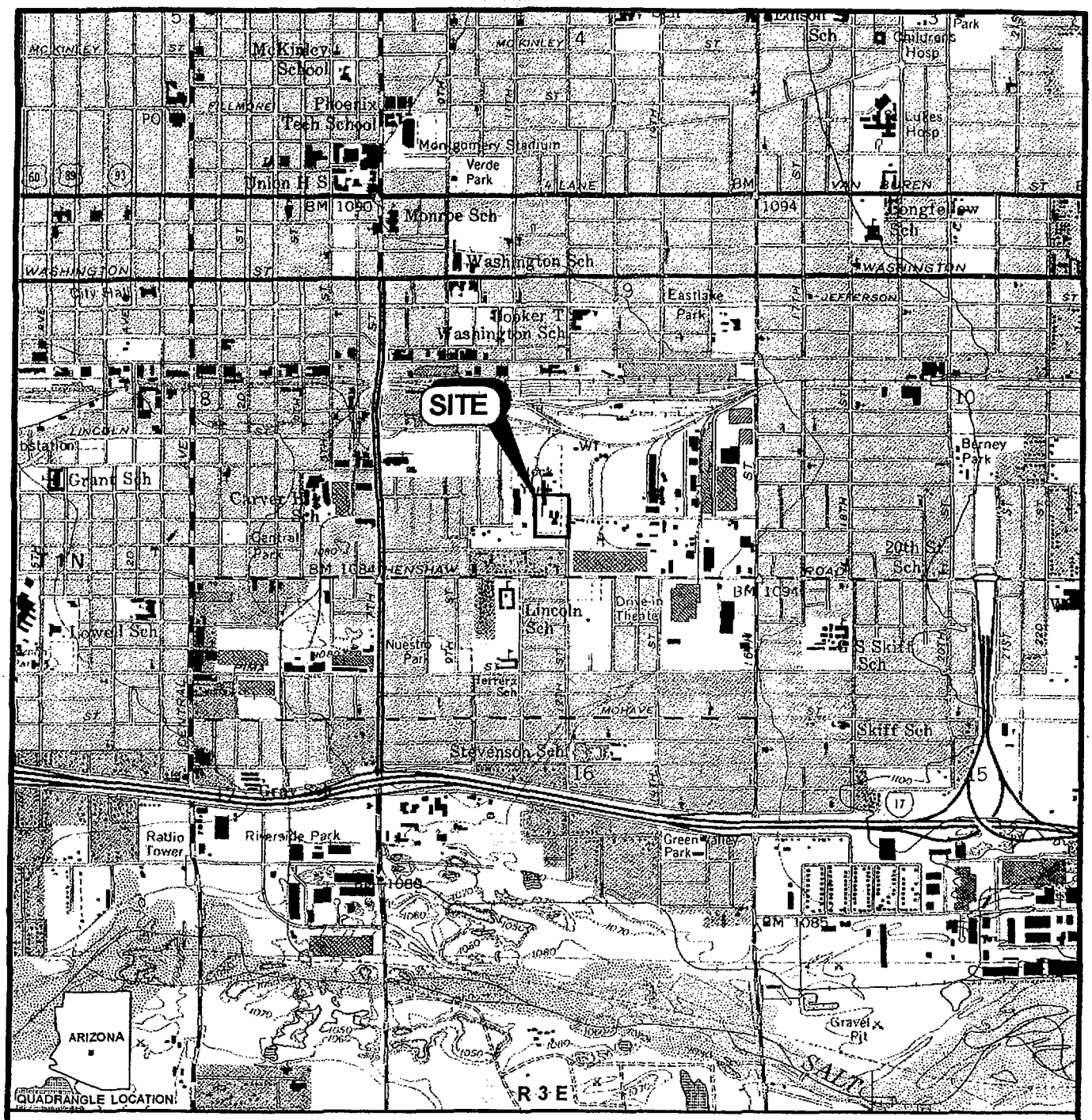
ATTACHMENT A

FIGURES

Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Detailed Site Map
Figure 4 - Cross-Section A-A'
Figure 5 - Soil Sample Location Map[1]

UP-1255

[1] = Excerpted from IC's UST closure report dated July 26, 1995.



SOURCE: USGS QUAD MAP - PHOENIX, ARIZONA, 1982.

1/2 0 1MILE

APPROXIMATE SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

APPROXIMATE SCALE (FEET)

N

PROJ.#: 03102810	DATE: 02/21/96
DRAWN BY: JAH	SCALE: 1" = 2,000'
DESIGNED BY: -	PAGE #: -
APPROVED BY: SJS	

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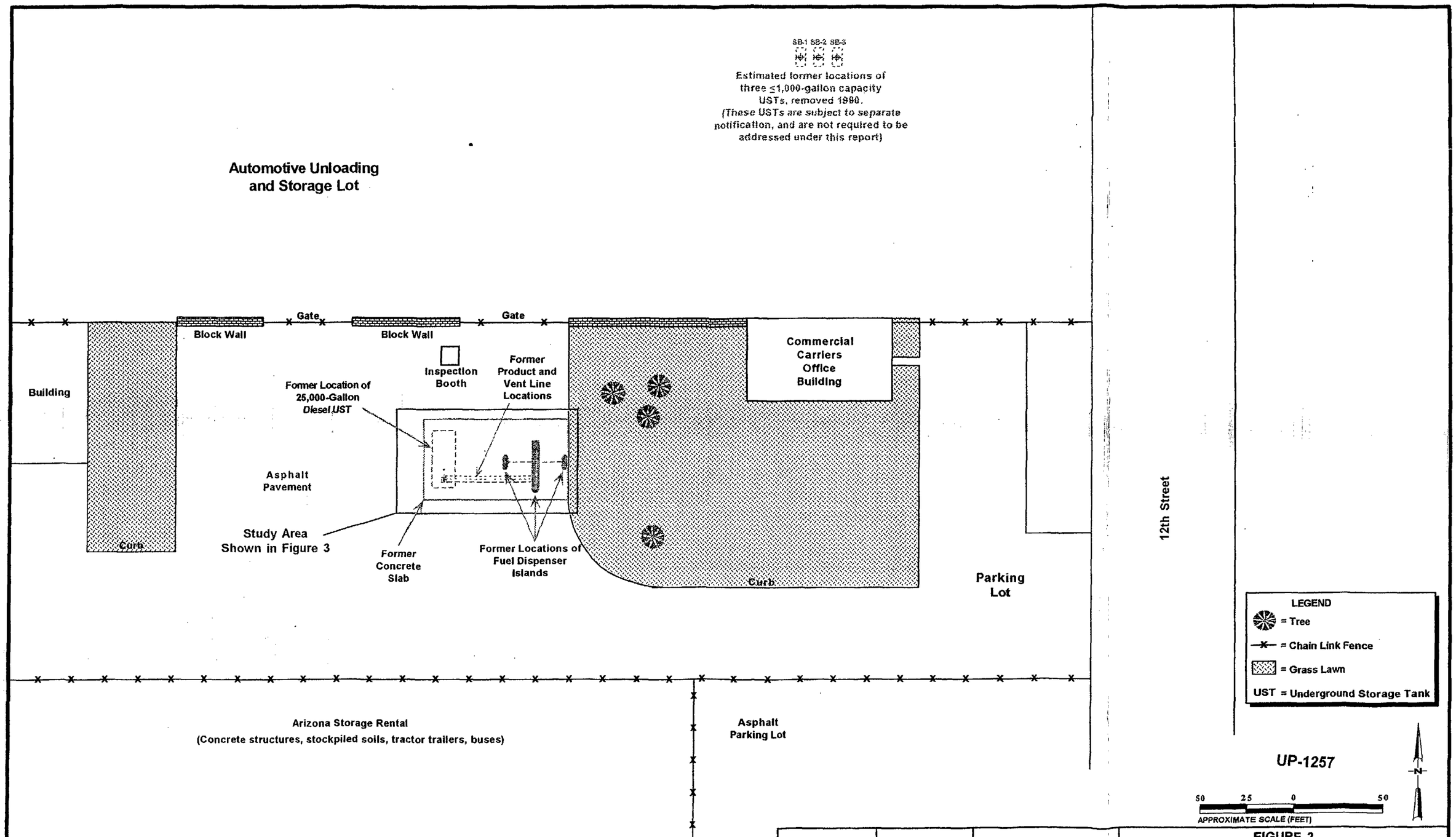
UP-1256

FIGURE 1
SITE LOCATION MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

D:\CANVAS\PRJFILES\03102810\2810TOPO



PROJ.#: 03102810	DATE: 02/21/96
DRAWN BY: JAH	SCALE: 1" = 50'
DESIGNED BY: -	PAGE #: -
APPROVED BY: SJS	

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FIGURE 2
SITE MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

D:\CANVAS\PRJFILES\03102810\2810FG2

~~INDUSTRIAL COMPLIANCE~~ Terranext

GROUND WATER PURGE AND SAMPLE FORM (Continued)

Project Name: Commercial Carriers Well Number: MW-1 Date: 1-22-96

Project Number: 03102810 Recorded By: ELS / SCK

SAMPLE DATA

Sample No.	No. of Containers	Container Type	Preservative	Field Filtration	Volume Filled (ml or L)	Turbidity (NTUs)	Appearance	Chilled to 4°C?	Analysis Method Requested	Comments
MW-01 01	500 ml (2) Ambers	glass	H_2SO_4	—	Full	—	clear	yes	418.1	
MW-01 01	(2)	40 ml glass VOA	HCl	—	Full	—	clear	yes	502.2	
MW-0D 01	(2)	40 ml glass VOA	HCL	—	Full	—	clear	yes	502.2	Duplicate

Time Sampled: 11:45 Depth Sampled (ft.): Top of Water Equipment (e.g. weighted disposable teflon bailer): Wtd Dis. Tef Bailer

Reusable Equipment Decontaminated Prior to Sampling (N/A if not required): N/A

PURGE WATER MANAGEMENT

Total Volume of Water Purged: 46 Management Method: Drum and on site

Drum Designations/Volume Per Drum (gallons, if applicable): MW-1

Comments:

WELL HEAD CONDITIONS

Condition of Well Vault: O.K. Condition of Well Casing (Cap) Seal: O.K.

Appearance of Interior of Well Casing: OK. Condition of Security Mechanism: O.K.

Comments:

GENERAL NOTES

Weather Conditions: Cool - warm Atmospheric Ambient Temp. and Relative Humidity (if avail.):

Seasonal Climatic Conditions: Relatively dry Year

Analytical Laboratory to Which Samples Were Submitted (Lab Project ID #, if avail.): Analytical Technologies

Comments: Well Head surveyed on morning sampling conducted.

UP-1258

INDUSTRIAL COMPLIANCE
GROUND WATER LEVEL DATA FORM

PROJECT NAME: Commercial Carriers PROJECT NUMBER: 0310 2810

DATE: 1-22-96 RECORDED BY: EGS / SCK MEASURING DEVICE#: QED Sample Pro - Water Level Meter

WEATHER CONDITIONS: Sunny, breezy, cool. TOC N'side = 1086.05'

WELL NO.	TIME	DEPTH TO PRODUCT*	DEPTH TO GW*	FREE-PRODUCT THICKNESS	GROUND WATER ELEVATION	PHYSICAL OBSERVATIONS/COMMENTS
MW 1	1015	-	58.65			TD = 78.33'

* As measured from top of north side or highpoint if cut uneven, unless otherwise noted

UP-1259

/u/sorris/forms/gwlevel.frm

TERRANEXT
GROUND WATER PURGE AND SAMPLE FORM

Project Name: Commercial Carriers Well Number: MW-1 Date: 1-22-96

Project Number: 03102810 Recorded By: ELS/SCK

Static Water Level (ft.): 58.65 Measuring Point Description: ToC N-Side

Water Level Measurement Method: Q.E.D. w/c meter Purge Method: 2" red; - flow Grundfos™

Time Start Purge: 11:15 Purge Depth (ft.): 74

Time End Purge: 11:39

Time Sampled: 11:45

Comments: Duplicate sample given false time of collection (i.e. 10:30)

Well Volume Calculation (Fill in prior to purging)	Total Well Depth (ft)		Depth to Water (ft)		Water Column (ft)		Cross-sectional Area for Casing Diameter (ft²) 2"=0.16 / 3"=0.36 / 4"=0.64 / 6"=1.44 / Other		Casing Volume (gals.)
	78.33	-	58.65	=	19.68	X		=	12.59

Time	11:15	11:22	11:30	11:38			
Volume Purged (gal)	~1	14	30	46			
Purge Rate (gpm)	~2	~2	~2	~2			
Temperature (°C or °F)	70	75.9	71.7	76.1			
pH	7.07	7.23	7.44	7.36			
Specific Conductivity µmhos/cm (uncorrected)	2,170	2,280	2,310	2,290			
Dissolved Oxygen (mg/L)	—	—	—	—			
Turbidity/Appearance	Slightly cloudy	clear	clear	clear			
Odor	None observed	None observed	None observed	None observed			
Depth of Purge Intake (ft)	74	74	74	74			
Depth to Water (ft)	← NOT ~~~0~~ sck	MEAS ~~~1~~ sck	URED ~~~2~~ sck	→ ~~~3.6~~ sck			
Number of Casing Volumes Removed	~0	~1	~2	~3.6			
Dewatered?	No	No	No	No			

UP-1260

APPENDIX 4

Field Notes

INDUSTRIAL COMPLIANCE
GROUND WATER PURGE AND SAMPLE FORM

Project Name: Commercial Carriers Well Number: MW-1 Date: 1-13-96

Project Number: 03102810 Recorded By: Eric L. Stanford

Static Water Level (ft.): 58', 9" Measuring Point Description: T.O.C.

Water Level Measurement Method: Sounder Purge Method: 4" Grundfos

Time Start Purge: Purge Depth (ft.):

Time End Purge:

Time Sampled:

Comments: Well Development of MW-1. Approximately 4" formation sand after swabbing. . . . . Pump lowered, then raised, then slowly lowered

Well Volume Calculation (Fill in prior to purging)	Total Well Depth (ft)		Depth to Water (ft)		Water Column (ft)		Cross-sectional Area for Casing Diameter (ft²) 2"=0.16 / 3"=0.36 / 4"=0.64 / 6"=1.44 / Other			Casin Volun (gals.)
		-		=		X			=	

Time	9:45	9:52	9:57	10:03 ~~10~~	10:10	10:15	
Volume Purged (gal)	55 gal	70 gal	85 ga	110 gallons	130 gals	165 gallons	
Purge Rate (gpm)							
Temperature (°C or °F)	75.5	74.9	72.5	72.9	72.8	72.8	
pH	8.19	8.17	8.17	8.17	7.95	7.90	
Specific Conductivity µmhos/cm (uncorrected)	3.03	2.02	1.88	2.01	2.55	2.62	
Dissolved Oxygen (mg/L)							
Turbidity/Appearance	Cloudy	Cloudy	sl. cloudy	clearing	clear	clear	
Odor	~~cloudy~~ None	~~cloudy~~ None	None	none	→	→	
Depth of Purge Intake (ft)							
Depth to Water (ft)							
Number of Casing Volumes Removed							
Dewatered?							

UP-1262

APPENDIX 3

Well-Head Survey Data

UP-1263

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CELLA BARR ASSOCIATES

5062 NORTH 19TH AVENUE
PHOENIX, AZ 85015-5119
[602] 242-2999
FAX [602] 246-7247

RECEIVED
JAN 25 1996

January 23, 1996

Steve Smelser
Terranext
9830 South 51st Street
Suite A-127
Phoenix, AZ 85044

RE: Monitor Well
Commercial Carriers
902 S. 12th Street

Dear Steve:

We have completed our survey for the elevation of the monitor well at 902 South 12th Street.

The elevation of the north rim of the well cover is 1086.40 feet. The elevation of the north rim of the well (top of PVC) is 1086.05 feet.

These elevations are based on a brass cap found in a hand hole in the intersection of Buckeye Road and 12th Street which has an elevation 1087.82 feet, City of Phoenix Datum.

Should you have any questions, please call.

Sincerely,

CELLA BARR ASSOCIATES

Larry E. Richardson

Larry E. Richardson, RLS

LER:pal

UP-1264

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Well Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
						GW	WELL GRADED GRAVEL WITH SILT, SAND, AND COBBLES: (continued).	
							Note: @ 43', moisture content increases from damp to moist.	
SS-2	NR	60/5"	45				SS-2 refusal on cobbles, chunk of cobble wedges in brass sleeve.	
			50					
SS-3	NR	50/6" 50/1"	55				SS-3 had two pieces of cobble cored into nose @ first brass sleeve.	
			60				Ground water encountered at 59.20' bgs (measured with water level indicator @ 9:50 a.m.)	
			65					
			70					
			75					
			80	End cap				
			85					

Boring Terminated @ 82' bgs.

UP-1265

PROJ.#: 03102810	DATE: 01/12/96	TerraNext	BORING/WELL NO. SB-14/MW-1
DRAWN BY: JAH	SCALE: NA		FORMER COMMERCIAL CARRIERS LEASE PROPERTY
DESIGNED BY: -	PAGE #: 2 of 2		902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
APPROVED BY: ELS			

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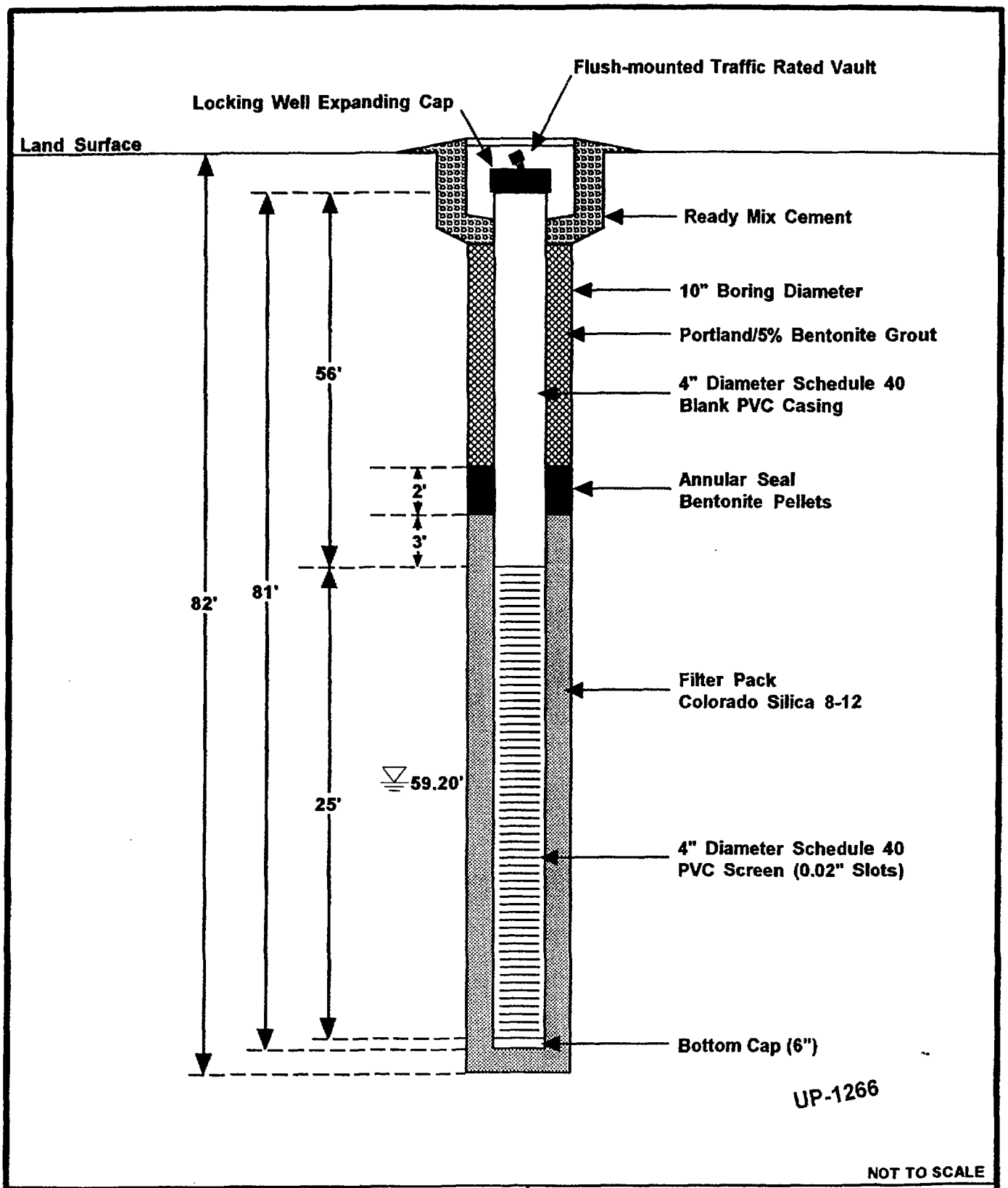

NOT TO SCALE

PROJ.#: 03102810	DATE: 02/21/96	TerraNext	AS-BUILT WELL CONSTRUCTION DETAIL FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: N A		
DESIGNED BY: -	PAGE #: 1		
APPROVED BY: ELS			

D:\CANVAS\PROJECT\03102810\02810MWEL

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
			16			FILL	Gravel fill, loose.	
			17					
			18			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	
SB-13 /19.5'	0.9	38 50/5"	19				Auger refusal @ 19.5' bgs.	0

UP-1267

PROJ.#: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-13 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 2 of 2		
APPROVED BY: SCK			

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Logged By:	E. STANFORD	Boring Diameter:	10" DIAMETER OUTER CASING
Drilling Method:	AP1000 DUAL WALL PERCUSSION HAMMER	Ground Elevation:	1086.40 FEET ABOVE MEAN SEA LEVEL
Rig Type:	TRUCK-MOUNTED AP1000 PERCUSSION HAMMER	Depth to Water:	59.20' bgs
Driller/Company:	M. QUINONES/LAYNE ENVIRONMENTAL	Total Depth:	82' bgs

WELL CONSTRUCTION SPECIFICS

Screen Placement	from	50	ft.	to	75	ft.	Slot Size	0.028	inches	Diameter	4	inches	Completion Type:
Blank Casing	from	0	ft.	to	50	ft.	Schedule	40		Diameter	4	inches	Aboveground __
Filter Pack	from	47	ft.	to	82	ft.	Size	8-12		Type	SAND		At Grade X
Bentonite Pellets	from	45	ft.	to	47	ft.	Type	PELLETS		Size	1/4	inches	Hydrated __
Cement/Bentonite	from	0	ft.	to	45	ft.	Size	PORTLAND TYPE II CEMENT		Percent Bentonite	5%		

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Well Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							@ 4" asphalt (re-asphalt)	
			5, 10			SM-ML	SILTY SAND - SANDY SILT: brown, damp, slight clay content @ 5%, little fine to medium gravel, damp to moist, medium dense to very dense. Noticeable hydrocarbon odor.	
			15, 20, 25, 30			GW	WELL GRADED GRAVEL WITH SILT, SAND, AND COBBLES: 60% subrounded, grey gravels, 5% or less clay, 20% to 25% fine to coarse brown, subrounded sand, ~10% to 15% grey subrounded cobbles, moist to saturated, very dense. @ 18', blows/foot of casing drive increasing. Small cobbles to medium cobbles @ 19' to 20'. No noticeable odor.	
SS-1	NR	10 50/5"	35				(Sample SS-1 had only cobble fragments.) Note: @ 38', cobble fragments indicate larger pieces being broken.	

UP-1268

PROJ.#: 03102810	DATE: 01/12/96	TerraNext	BORING/WELL NO. SB-14/MW-1 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 1 of 2		
APPROVED BY: ELS			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	12' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FD/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, moist, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-12 /6.5'	1.5	3 3 4	6					0
			7					
			8					
			9					
			10					
SB-12 /11.5'	1.5	5 8 14	11					0
SB-12 /12'	0.4	50/5"	12			GW	SAND, GRAVEL, AND COBBLES: with some silt, very dense, hydrocarbon odor was noted from 11.75' to 12'. Auger refusal @ 12' bgs.	2.5

UP-1269

PROJ.#: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-12 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 1 of 1		
APPROVED BY: SCK			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	19.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			FILL	Gravel fill, very loose.	
			2					
			3					
			4					
			5					
SB-13 /6.5'	1.5	1 1 1	6					0
			7					
			8					
			9					
			10					
			11					
			12					
			13					
			14				UP-1270	

PROJ. #: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-13
DRAWN BY: JAH	SCALE: NA		FORMER COMMERCIAL CARRIERS LEASE PROPERTY
DESIGNED BY: -	PAGE #: 1 of 2		902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
APPROVED BY: SCK			

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Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
SB-10 /16.5'	0.4	50/12"	16			GW	SAND, GRAVEL, AND COBBLES: with slight hydrocarbon odor. Auger refusal @ 16.5' bgs.	0.8

UP-1271

PROJ.#: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-10 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 2 of 2		
APPROVED BY: SCK			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	14' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-11 /6.5'	1.5	4 4 5	6					0
			7					
			8					
			9					
			10					
SB-11 /11.5'	1.5	3 4 3	11					0
			12					
						GW	SAND, GRAVEL, AND COBBLES: brown, moist, very dense, trace silt, no apparent odor.	
SB-11 /14'	1.3	15 19 30	13 14				Auger refusal @ 14' bgs.	0

UP-1272

PROJ. #: 03102810	DATE: 10/10/95	
DRAWN BY: JAH	SCALE: NA	
DESIGNED BY: -	PAGE #: 1 of 1	
APPROVED BY: SCK		

TerraNext

BORING LOG SB-11
FORMER COMMERCIAL CARRIERS
LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

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Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
SB-9 /15.5'	0.2	50/6"				GW	SAND, GRAVEL, AND COBBLES: (continued). Auger refusal @ 15.5' bgs.	0

UP-1273

PROJ.#: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-9 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 2 of 2		
APPROVED BY: SCK			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	16.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-10 /6.5'	1.5	4 3 5	6					0
			7					
			8					
			9					
			10			SM	SILTY SAND: moist, dense, with some gravels, no apparent hydrocarbon odor.	
SB-10 /11.5'	1.5	8 14 16	11					0
			12					
			13					
			14					

UP-1274

PROJ.#: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-10 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 1 of 2		
APPROVED BY: SCK			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	13' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FD/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, dry, stiff, with gravel, apparent hydrocarbon odor noted.	
			2					
			3					
			4					
			5					
SB-8 /6.5'	1.5	7 6 5	6					162
			7					
			8					
			9					
			10			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, dense.	
SB-8 /11.5'	1.4	18 15 21	11					132
			12					
	NR	50/4"	13				Becomes very dense. Auger refusal @ 13' bgs.	0

UP-1275

PROJ. #: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-8 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 1 of 1		
APPROVED BY: SCK			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	15.5' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-9 /6.5'	1.5	3 3 3	6					28
			7					
			8					
			9					
			10					
SB-9 /11.5'	1.5	16 11 13	11			ML	SANDY SILT: brown, dry, very stiff, with some fine to coarse gravels, no apparent hydrocarbon odor.	17
			12					
			13					
			14			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	0

PROJ. #: 03102810	DATE: 10/10/95
DRAWN BY: JAH	SCALE: NA
DESIGNED BY: -	PAGE #: 1 of 2
APPROVED BY: SCK	

TerraNext

BORING LOG SB-9

FORMER COMMERCIAL CARRIERS
LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							3" Asphalt. 10" Aggregate Base Course.	
			1			ML	SANDY SILT: brown, dry, stiff, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-6 /6.5'	1.5	4 4 5	6					0
			7					
			8					
			9					
			10					
SB-6 /11'	0.9	12 14 14	11			GW	SAND, GRAVEL, AND COBBLES: with some silt, no apparent hydrocarbon odor.	0
SB-6 /13'	0.75	27 42 45	12 13				Auger refusal @ 13' bgs.	0

UP-1277

PROJ.#: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-6
DRAWN BY: JAH	SCALE: NA		FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DESIGNED BY: -	PAGE #: 1 of 1		
APPROVED BY: SCK			

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt. 10" Aggregate Base Course.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-7 /6.5'	1.5	5 4 4	6					0
			7					
			8					
			9					
			10				Becomes gravelly at 10'.	
SB-7 /11.5'	1.5	14 14 14	11			GW	SAND, GRAVEL, AND COBBLES: with some silt, medium dense, no apparent hydrocarbon odor.	0
SB-7 /13'	1.0	18 27 30	12 13				Becomes very dense. Auger refusal @ 13' bgs.	0

UP-1278

PROJ. #: 03102810	DATE: 10/10/95	TerraNext	BORING LOG SB-7
DRAWN BY: JAH	SCALE: NA		FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DESIGNED BY: -	PAGE #: 1 of 1		
APPROVED BY: SCK			

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Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
	NR	8 13 13	16 17			GW	SAND, GRAVEL, AND COBBLES: with silt, dense, no apparent hydrocarbon odor. Auger refusal @ 17' bgs.	0

UP-1279

PROJ.#: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-4 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 2 of 2		
APPROVED BY: SCK			

D:\AUTOCAD\PROJECT\03102810\SB4P2

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13.5' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	PID/FID (ppm)
							7" Concrete.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-5 /6.5'	1.5	3 4 4	6					0
			7					
			8					
			9					
			10					
SB-5 /11.5'	0.9	14 14 17	11				Cobbles noted at 11'.	0
						GW	SAND, GRAVEL, AND COBBLES: with some silt, very dense, no apparent hydrocarbon odor.	
			12					
SB-5 /13.5'	0.75	10 27 32	13				Auger refusal @ 13.5' bgs.	0

UP-1280

PROJ.#: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-5 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 1 of 1		
APPROVED BY: SCK			

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Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
			16			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor. Auger refusal @ 16' bgs.	

UP-1281

PROJ. #: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-3 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 2 of 2		
APPROVED BY: SCK			

D:\AUTOCAD\PROJECT\03102810\SB3P2

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	17' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							2" Asphalt. 10-12" Aggregate Base Course.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-4 /6.5'	1.5	3 4 4	6					3.3
			7					
			8					
			9					
			10			SM	SILTY SAND: (fine grained), dry, medium dense, no apparent hydrocarbon odor.	
SB-4 /11.5'	1.5	4 11 13	11					0
			12					
			13			GW	SAND, GRAVEL, AND COBBLES: with silt, dense, no apparent hydrocarbon odor.	
			14					

UP-1282

PROJ. #: 03102810	DATE: 10/09/95	TerraNext
DRAWN BY: JAH	SCALE: NA	
DESIGNED BY: -	PAGE #: 1 of 2	
APPROVED BY: SCK		

BORING LOG SB-4
FORMER COMMERCIAL CARRIERS
LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

D:\AUTOCAD\PROJECT\03102810\SB4P1

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13' bgs

Sample Number	Recov. Feet	Blows/6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							7" Concrete.	
			1			SM	SILT/SAND: loose, with rounded gravels (Possibly UST Backfill).	
			2					
			3					
			4					
			5			ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
SB-2 /6'	1.5	4 4 6	6					4.2
			7					
			8					
			9					
			10					
SB-2 /11.5'	1.5	3 3 4	11					0
			12					
SB-2 /13'	0.2	50/5"	13			GW	SAND, GRAVEL, AND COBBLES: with some silt, very dense, no apparent hydrocarbon odor. Auger refusal @ 12.5' bgs.	

UP-1283

PROJ.#: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-2
DRAWN BY: JAH	SCALE: NA		FORMER COMMERCIAL CARRIERS LEASE PROPERTY
DESIGNED BY: -	PAGE #: 1 of 1		902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
APPROVED BY: SCK			

D:\AUTOCAD\PROJECT\03102810\SB2P1

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	16' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							Concrete 7" thick.	
			1			ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-3 /6.5'	1.5	4 5 6	6					0
			7					
			8					
			9					
			10					
SB-3 /11.5'	1.5	4 5 4	11					0
			12			SW	GRAVELLY SAND: moist, dense, rounded gravels, no apparent hydrocarbon odor.	
SB-3 /13'	0.9	18 19 19	13					0
			14			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	
SB-3 /15'	1.3	25 27 29						0

PROJ. #: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-3 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 1 of 2		
APPROVED BY: SCK			

G:\AUTOCAD\PROJECT\03102810\SB3P1

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	16.75' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							Concrete 7" thick.	
			1			ML	SILT: brown, moist, firm, with sand, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-1 /6.5'	1.5	4 3 5	6					14
			7					
			8					
			9					
			10					
SB-1 /10.5'	1.5	3 3 2	11					8.4
			12					
			13			GW	SAND, GRAVEL, AND COBBLES: with some silt, dense to very dense.	--
			14					

UP-1285

PROJ.#: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-1
DRAWN BY: JAH	SCALE: NA		FORMER COMMERCIAL CARRIERS LEASE PROPERTY
DESIGNED BY: -	PAGE #: 1 of 2		902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
APPROVED BY: SCK			

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Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
SB-1 /16.5'	0.5	24 24 22	16			GW	SAND, GRAVEL, AND COBBLES: with some silt, dense to very dense.	0
SB-1 /16.75'	0.25	50/3"	17				Auger refusal @ 16.75' bgs.	0

UP-1286

PROJ. #: 03102810	DATE: 10/09/95	TerraNext	BORING LOG SB-1 FORMER COMMERCIAL CARRIERS LEASE PROPERTY 902-904 SOUTH 12TH STREET PHOENIX, ARIZONA
DRAWN BY: JAH	SCALE: NA		
DESIGNED BY: -	PAGE #: 2 of 2		
APPROVED BY: SCK			

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APPENDIX 2

Soil Boring Logs/ Monitoring Well Construction Detail

UP-1287

TerraNext

Lithology

GW	Well graded gravels, gravel and sand mixtures
GP	Poorly graded gravels or gravel and sand mixtures
GM	Silty gravels, gravel and silt mixtures
GC	Clayey gravels, gravel sand clay mixtures
SW	Well graded sands gravelly sands
SP	Poorly graded sands or gravelly sands
SM	Silty sands, sandy silt mixture
SC	Clayey sands, sand clay mixtures
ML	Inorganic silts and very fine sands
CL	Inorganic clays
OL	Organic silts and organic silty clays
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils
CH	Inorganic clays or high elasticity
OH	Organic clays of medium to high elasticity, organic silts
PT	Peat and or other highly organic soils

Well Construction

- Bentonite/Cement Grout
- Bentonite Pellets
- Filter Pack
- Screen
- Backfill

Ground water elevation encountered during time of drilling

Static ground water elevation

Soil Sample Interval

Sample collected for submittal to an Arizona-Licensed analytical laboratory

— — — Gradational or approximate contact

——— Abrupt contact

All contacts are approximate

NOTES:

<	denotes concentration less than detectable level as listed
NA	Not Available
NM	Not Measured
NE	Not Encountered
ND	Not Detected
NR	Not Recovered
HC	Hydrocarbon
HSA	Hollow Stem Auger
BGS	Below Ground Surface

PROJ. #: 03102810	DATE: 02/28/96
DRAWN BY: JAH	SCALE: NA
DESIGNED BY: -	PAGE #: -
APPROVED BY: SCK	

TerraNext

BORING LOG KEY
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

D:\AUTOCAD\PROJECT\03102810\2810BKEY

UP-1288

TERRANEXT STANDARD OPERATING PROCEDURES
SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification procedures ensure proper designation and labeling of samples upon their collection. Each sample container submitted for analysis is labeled to identify the project job number, date and time of sample collection, and an identification number unique to the sample. Any in-field measurements, sampling methodology, or other pertinent sampling observations may be recorded on field sheets, boring log, or field notes.

Chain-of-custody (COC) procedures document sample possession from the time of collection to its arrival at the laboratory. Before sample shipment, COC forms are ledgeably completed and signed by the sampler. COC forms are used to record date, time, possession, quantity, and type(s) of samples along with the requested analysis. During shipment, the person with custody of the samples will relinquish them to the next person by signing the COC form(s) and noting the date and time.

At the laboratory, the sample-control officer will verify sample integrity, correct preservation, collection in the proper containers, and ensure adequate volume has been submitted for analysis. The samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the COC forms and the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

TERRANEXT STANDARD OPERATING PROCEDURES
LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Arizona approved analytical laboratories routinely conduct instrument calibration, and perform analysis of replicates, spikes, blanks, spiked blanks. In addition, certified reference materials are analyzed at method-specific frequencies to monitor precision and bias. Laboratory Quality Assurance/Quality Control (QA/QC) programs typically include:

A) Multi-level review of raw data and client reports to insure that QA is met.

B) Participation in state and federal laboratory accreditation/certification programs.

C) Participation in both U.S. EPA Performance Evaluation studies (water supply and water pollution studies) and inter-laboratory performance evaluation programs.

D) Standard operating procedures describing routine and periodic instrument preventative maintenence.

E) "Out-of-Control"/Corrective Action documentation procedures.

TERRANEXT STANDARD OPERATING PROCEDURES
GROUND WATER PURGING AND SAMPLING

Prior to ground water sampling, each well is purged by evacuating a minimum of three well-casing volumes of ground water. When required, purging will continue until either the discharge water temperature, conductivity, or pH stabilize, or the well is bailed dry. When practical, the ground water sample should be taken when the water level in the well recovers to at least 80 percent of its original static level.

The sampling equipment consists of either a disposable Teflon bailer, polyethylene bailer, or stainless steel bladder pump with a Teflon bladder. Depending on the intended laboratory analysis, specific glass or plastic container(s) are utilized for sample storage (i.e., 500-ml amber glass bottle and 40-ml vial, with Teflon septa, are used as sample containers for TPH and BTEX analysis, respectively).

The ground water sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped and examined for the presence of air bubbles. If air bubbles are observed in the vial, additional sample is added to the vial and the process is repeated. If none are present, the vial is labeled and refrigerated for delivery, under chain-of-custody, to the analytical laboratory. Label information should include a unique sample and project identification number, date, time, type(s) of analysis requested, and the sampler's name.

To minimize the potential for cross-contamination between wells, all well purging and water sampling equipment is either steam-cleaned or properly washed between use. As a second precautionary measure, wells may be sampled in order of least to highest concentrations as established by previous analyses.

For quality control and back-up purposes, a duplicate ground water sample may be collected from each well. When required, a trip blank is prepared at the laboratory and placed in the transport cooler. It is labeled similar to the well samples, remains in the cooler during transport, and is analyzed by the laboratory along with the ground water samples. In addition, a field blank may be prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been either steam-cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis demonstrates the effectiveness of the in-field cleaning procedures to prevent cross-contamination.

TERRANEXT STANDARD OPERATING PROCEDURES
LIQUID LEVEL MEASUREMENTS USING WATER-LEVEL OR INTERFACE PROBE IN WELLS

Field equipment used for gauging liquid levels in wells includes the measuring probe (water level or interface) and product bailer(s). Equipment also includes cleaning supplies (rinse buckets, Liquinox or other cleaning soap, spray bottles, and deionized water) to be used in decontaminating the equipment between wells.

Prior to obtaining a water level measurement, the water-level indicator (WLI) probe tip is lowered into the well until it touches bottom. Using the top-of-casing or top-of-wellhead vault as an established reference point, the probe cord measurement corresponding to the top of the casing point is noted. The distance between the probe end and the marking on the cord referenced to the casing point is the total well depth. When obtaining a depth-to-ground water (DTW) measurement, the WLI will emit a steady tone when the probe tip is submerged in water and no sound when the probe tip is in air. The measurement is made accordingly at the air-water interface. This measurement is then recorded on the field data sheet. The probe cord (or halyard) may be graduated in tenths of an inch or hundredths of a foot increments.

When using the interface probe to measure liquid levels, the probe is first electrically grounded to either the metal stove-pipe or another metal object nearby. When no ground is available, reproducible measurements can be obtained by clipping the ground lead to the handle of the interface probe case. The probe tip is then lowered into the well and submerged in the ground water. An oscillating (beeping) tone indicates that the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a steady tone. In either case, this is the DTW indicator and the DTW measurement is made accordingly. The steady tone indicates floating hydrocarbons. In this case, the probe is slowly raised until the steady tone ceases. This is the depth-to-product (DTP) indicator and the DTP measurement is made accordingly.

The process of lowering and raising the probe must be repeated several times to ensure accurate measurements. The DTW and DTP measurements are recorded on the field data sheet. When floating product is detected by the probe's response, a product bailer is lowered partially through the product-water interface to confirm the product on the water surface, and as further indication of product thickness, particularly in cases where the product layer is thin. This measurement is recorded on the data sheet as product thickness.

In order to avoid cross-contamination of wells during the liquid level measurement process, wells are measured in the order of "clean" to "dirty" (where such information is available). In addition, measurement equipment is cleaned with a cleaning solution and thoroughly rinsed with deionized water prior to use, between well measurements, and at the completion of the job.

TERRANEXT STANDARD OPERATING PROCEDURES
HOLLOW-STEM AUGER MONITORING WELL INSTALLATION AND DEVELOPMENT

Boreholes for monitoring wells are drilled using a truck-mounted, hollow-stem auger drill rig. The borehole diameter will be a minimum of 4 inches larger than the outside diameter of the casing when installing well screen. The hollow-stem auger provides minimal interruption of drilling while permitting soil sampling at desired intervals. Soil samples are collected either by hammering or hydraulically pushing a conventional split-spoon sampler containing pre-cleaned brass tubes. During drilling, an Terranext geologist or engineer logs each borehole and observes drill cuttings for indications of both the first recognizable occurrence of ground water and volatile hydrocarbons using either a portable photo-ionization detector (PID), flame ionization detector (FID), or an explosimeter. The sampler is washed in a solution of Liquinox and water and double-rinsed with deionized water between sampling intervals. Drilling equipment is either steam-cleaned or washed between boreholes to minimize the potential for cross-contamination.

Monitoring wells are typically cased with threaded, factory-perforated and blank schedule 40 PVC. Typically, the perforated interval consists of slotted casing, generally ranging from 0.010 to 0.030-inch wide, by 1.25 to 1.5-inch long slots, at 74 to 103 slots per foot. A PVC slip or threaded cap is secured to the bottom of the casing using no solvents or cements. Centering devices (e.g., centralizers) may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to installation.

After the casing is set in the borehole or hollow-stem auger, sand or gravel filter material is carefully poured into the annular space to fill from the borehole bottom to a point ten feet above the top of the perforated interval of the casing. A 2 to 3-foot thick bentonite plug is set above this filter material to prevent grout from infiltrating into the filter pack. Either neat cement, containing 3 to 5 percent bentonite, or sand-cement grout is then tremmied into the annular space from the top of the bentonite plug to near surface. A traffic-rated vault is then installed around each wellhead for wells located on asphalt or concrete surfaces , while steel "stovepipes" may be set over wellheads in landscaped or unpaved areas.

Following installation, each well is developed to remove sediments from the well, and to improve well performance by removing fine material from the filter pack which may accumulate in the well from the formation. Well development techniques used may include pumping, surging, bailing, swabbing, jetting, flushing, and air-lifting. Development water is collected either in drums or tanks for temporary storage, and is properly disposed of pending receipt of laboratory analytical results. To minimize the potential for cross-contamination between wells, development equipment is either steam cleaned or washed prior to use.

TERRANEXT STANDARD OPERATING PROCEDURES
SOIL BORING SAMPLING

During drilling, soil samples may be collected in thin-walled brass tubes, of varying diameters and lengths (e.g., 6 inches long by 2 inches in diameter). Three of the selected tubes are set in an 18-inch long split-spoon sampler of the appropriate inside-diameter.

Where possible, the split-spoon sampler is driven its entire length using either a 140-pound drop hammer or driven hydraulically. The sampler is retrieved from the borehole and the brass tubes, containing the soil samples, are removed. Upon removal from the sampler, the selected brass tubes are immediately sealed with Teflon sheets and capped with plastic end-caps. The samples are then labeled, and placed in a cooler with ice for delivery, under chain-of-custody, to the analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds (VOC) prior to laboratory analysis.

A portion of the soil sample collected at each sampling interval is analyzed in the field using either a portable photo-ionization detector (PID), flame ionization detector (FID), or an explosimeter. The purpose of this field analysis is to qualitatively assess the presence or absence of hydrocarbons, and to help in the selection of samples to be analyzed at the laboratory. The soil sample is sealed in either a glass jar or plastic bag to allow for some volatilization of the VOCs. The PID is then used to measure the concentrations of hydrocarbons within the container's headspace. The data is recorded on the boring logs at the depth corresponding to the sampling point.

The remaining portion of the soil sample is used to classify the soil and/or stratigraphic profile beneath the project site. Drilling and sampling equipment are either steam-cleaned, or washed in solution of Liquinox and water and double-rinsed in deionized water, prior to use at each site and between boreholes to minimize the potential for cross-contamination.

In the event that soil samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored in a refrigerator at the Terranext office, until the first opportunity for submittal.

TERRANEXT STANDARD OPERATING PROCEDURES
UST SYSTEM REMOVAL, EXCAVATION AND SAMPLING

Prior to on-site activity, Terranext personnel will locate underground utilities, pipelines, or structures adjacent to the UST using as-built diagrams and confirmed markings by "Blue Stake" and/or a private locating service. Terranext field technicians will then remove the concrete and/or asphalt cover and associated backfill material overlying the UST. Excavation of the overlying material is then performed until the top half of the UST is exposed. Each opened UST will then be vented and inerted of hydrocarbon vapors, using a minimum of 25 pounds of dry ice (carbon dioxide) per 1,000-gallon capacity. Prior to removal of the UST, lower explosive limit (LEL) readings will be obtained from each venting UST, until reduced LEL conditions are met.

During the UST removal, the local fire marshal is required to be present to help insure overall site safety and inspection of the UST. The UST is secured to the lifting equipment (either a large backhoe or excavator) by heavy gauge chains or cables, and is carefully lifted from the UST basin. Lifting equipment for USTs of 10,000-gallon capacity or greater will require a crane. Upon removal, the UST is visually inspected, stripped of debris, and marked with an identification number. The UST is then loaded and secured onto a transport vehicle and prepared for delivery to an approved disposal or recycling facility.

Subsequent to the UST removal, soil sampling is conducted under the direction of an Terranext site supervisor, geologist, or engineer. The soil sampling protocol typically includes the collection of one sample at opposite ends beneath each UST location (two samples per UST location). If necessary, the former product piping trenches are sampled at 10 to 20 foot intervals, depending on the total length of the trench. Each soil sample is collected from native soil at a depth not to exceed two feet beneath the base of the former UST or piping location. The soil sample is then collected either from the bucket of the excavating equipment or by hand using a decontaminated trowel or shovel. Upon recovery, the sample is placed in a jar, labeled, and stored in a cooler with ice for delivery (along with chain-of-custody documentation) to an analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds prior to laboratory analysis. An additional portion of the sampled soil may be sealed in a jar for later screening using a portable photoionization detector (PID), and for the description of the excavated materials. Conditions noted during soil sampling may include sample location(s) and depths, PID readings, ground water seepages or accumulations in the excavation(s), and other pertinent information.

APPENDIX 1

Terranext Standard Operating Procedures

UP-1296

Terranext

ATTACHMENT C

APPENDICES

Appendix 1 - Terranext Standard Operating Procedures
Appendix 2 - Soil Boring Logs/ Monitoring Well Construction Detail
Appendix 3 - Well-Head Survey Data
Appendix 4 - Field Notes
Appendix 5 - Laboratory Analytical Reports and Chain-of-Custody Documentation
Appendix 6 - Investigative Rationale Summary/ Site Specific QA/QC Narrative
Appendix 7 - Corrective Action Summary

TABLE 2
GROUND WATER SAMPLE ANALYTICAL RESULTS
Former Commercial Carriers Lease Property

Sample ID (Well No.)	Date Sampled	EPA Method 418.1 (TPH) (mg/l)	EPA Method 502.2 (VOC)			
			Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)
W-01-01 (MW-1)	1/22/96	<1	<0.5	<0.5	<0.5	<1.0
W-00-01[a] (MW-1)	1/22/96	NA	<0.5	<0.5	<0.5	<1.0
Trip Blank	1/22/96	NA	<0.5	<0.5	<0.5	<1.0
ADEQ AWQS		NE	5	1,000	700	10,000

TPH = total petroleum hydrocarbons
VOC = volatile organic compounds
mg/l = milligrams per liter
µg/l = micrograms per liter
AWQS = Aquifer Water Quality Standards (ADEQ, February 1995)
NA = not analyzed
NE = none established

TABLE 1 (Continued)
SOIL SAMPLE ANALYTICAL RESULTS, OCTOBER 1995
Former Commercial Carriers Lease Property

Soil Sample No.	Boring No. and Sample Depth (feet bgs)	Date Sampled	ADHS Method 418.1 AZ	
			TPH (mg/kg)	Moisture Content (%)
SB-11/6.5'	SB-11 at 6.5	10/10/95	<20	17
SB-11/11.5'	SB-11 at 11.5	10/10/95	<20	15
SB-11/14'	SB-11 at 14	10/10/95	<20	5
SB-12/6.5'	SB-12 at 6.5	10/10/95	<20	14
SB-12/11'	SB-12 at 11	10/10/95	<20	15
SB-12/12'	SB-12 at 12	10/10/95	20	13
SB-13/19.5'	SB-13 at 19.5	10/10/95	40	2

bgs - below ground surface
ADHS - Arizona Department of Health Services
TPH - total petroleum hydrocarbons
mg/kg - milligrams per kilogram
< - less than indicated laboratory detection limit

UP-1299

TerraNext

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS, OCTOBER 1995
Former Commercial Carriers Lease Property

Soil Sample No.	Boring No. and Sample Depth (feet bgs)	Date Sampled	ADHS Method 418.1 AZ	
			TPH (mg/kg)	Moisture Content (%)
SB-1/10'	SB-1 at 10	10/09/95	<20	19
SB-1/16.5'	SB-1 at 16.5	10/09/95	<20	3
SB-2/11.5'	SB-2 at 11.5	10/09/95	<20	12
SB-2/13'	SB-2 at 13	10/09/95	<20	15
SB-3/11.5'	SB-3 at 11.5	10/09/95	<20	19
SB-3/15'	SB-3 at 15	10/09/95	<20	2
SB-4/6.5'	SB-4 at 6.5	10/09/95	<20	15
SB-4/11.5'	SB-4 at 11.5	10/09/95	<20	15
SB-4/16'	SB-4 at 16	10/09/95	<20	4
SB-5/6.5'	SB-5 at 6.5	10/09/95	<20	12
SB-5/11.5'	SB-5 at 11.5	10/09/95	190	3
SB-5/13.5'	SB-5 at 13.5	10/09/95	56	7
SB-6/6.5'	SB-6 at 6.5	10/09/95	<20	10
SB-6/11'	SB-6 at 11	10/09/95	<20	3
SB-6/13.5'	SB-6 at 13.5	10/09/95	<20	12
SB-7/6.5'	SB-7 at 6.5	10/10/95	<20	14
SB-7/11.5'	SB-7 at 11.5	10/10/95	<20	5
SB-7/13'	SB-7 at 13	10/10/95	<20	11
SB-8/6.5'	SB-8 at 6.5	10/10/95	40,000	12
SB-8/11.5'	SB-8 at 11.5	10/10/95	26,000	4
SB-9/6.5'	SB-9 at 6.5	10/10/95	<20	13
SB-9/11'	SB-9 at 11	10/10/95	<20	16
SB-9/15.5'	SB-9 at 15.5	10/10/95	<20	10
SB-10/6.5'	SB-10 at 6.5	10/10/95	<20	15
SB-10/11'	SB-10 at 11	10/10/95	<20	15
SB-10/16.5'	SB-10 at 16.5	10/10/95	<20	2

/u/sorris/projects/03102810/scrfsoil.tbl

TerraNext

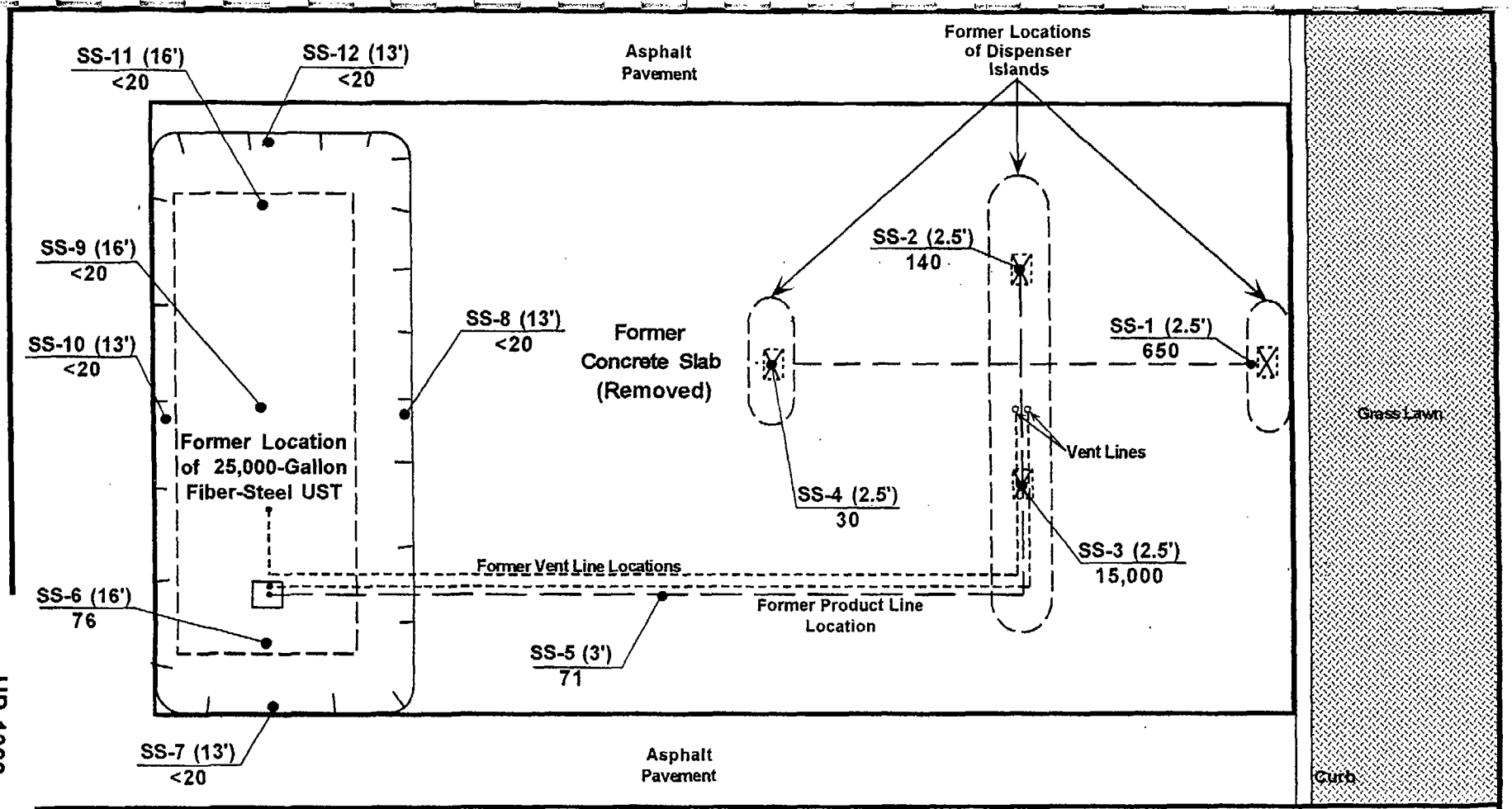
ATTACHMENT B

TABLES

Table 1: Soil Sample Analytical Results
Table 2: Ground Water Sample Analytical Results

UP-1301

TerraNext



UP-1302

LEGEND

= Former Fuel Dispenser

= Excavation Perimeter

= Former UST

Soil Sample Location and #
(sample depth in feet)
TPH Concentration

TPH = Total Petroleum Hydrocarbons in mg/kg

< = Less than indicated detection limit

UST = Underground Storage Tank

5 0 5 10 15 20 25 30 35 FEET
APPROXIMATE SCALE (FEET)

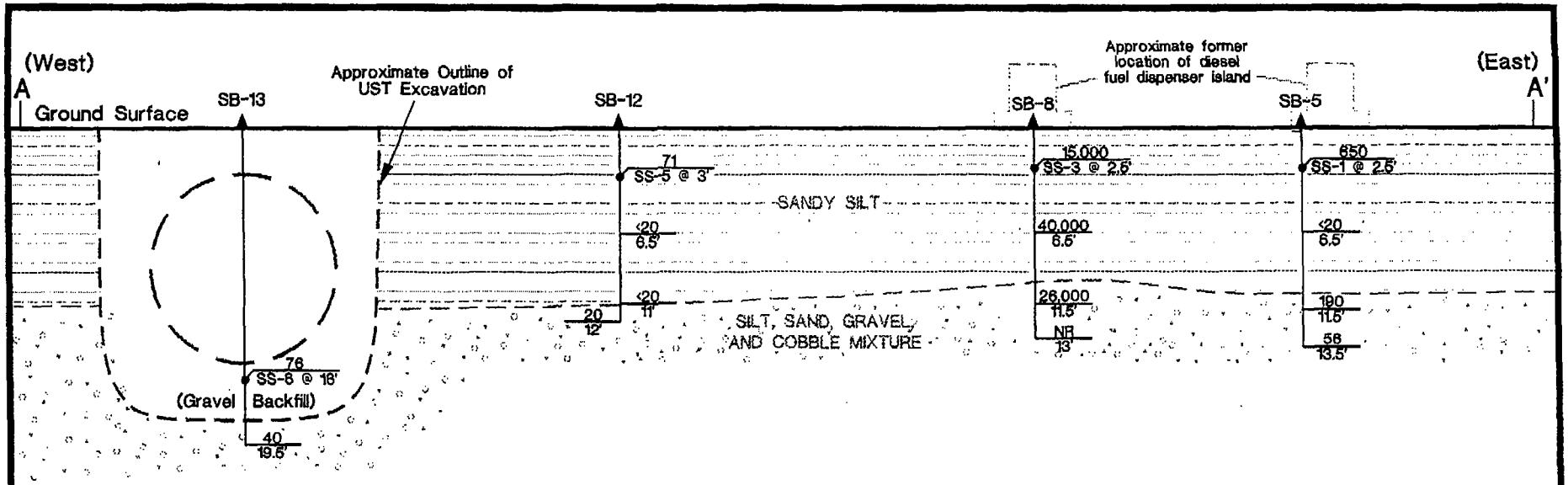
N

PROJ.#: 03102810	DATE: 02/21/96
DRAWN BY: JAH	SCALE: 1" = 10'
DESIGNED BY: -	PAGE #: -
APPROVED BY: SJS	

TerraNext

FIGURE 5
SOIL SAMPLE LOCATION MAP
FORMER COMMERCIAL CARRIERS
LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX,ARIZONA

D:\CANVAS\PRJFILES\03102810\2810SAMP



LEGEND

NR	No Recovery
TPH	Total Petroleum Hydrocarbons by ADHS Method 418.1 AZ
UST	Underground Storage Tank
SB-5	Soil Boring Number
50 / 6.5'	Soil sample location depicting TPH concentration (mg/kg) over sample depth bgs.
71 / SS-5 @ 3'	Approximate location of soil sample collected during UST removal (June 1995). TPH concentraton (mg/kg) is displayed over soil sample number and depth.
<	Less than indicated detection limit
	Approximate Former UST Location (25,000-gallon capacity, diesel)
	Sandy Silt (ML)
	Predominantly gravels and cobbles with silt/sand mixtures.

10 5 0 10
APPROXIMATE SCALE (FEET)

N

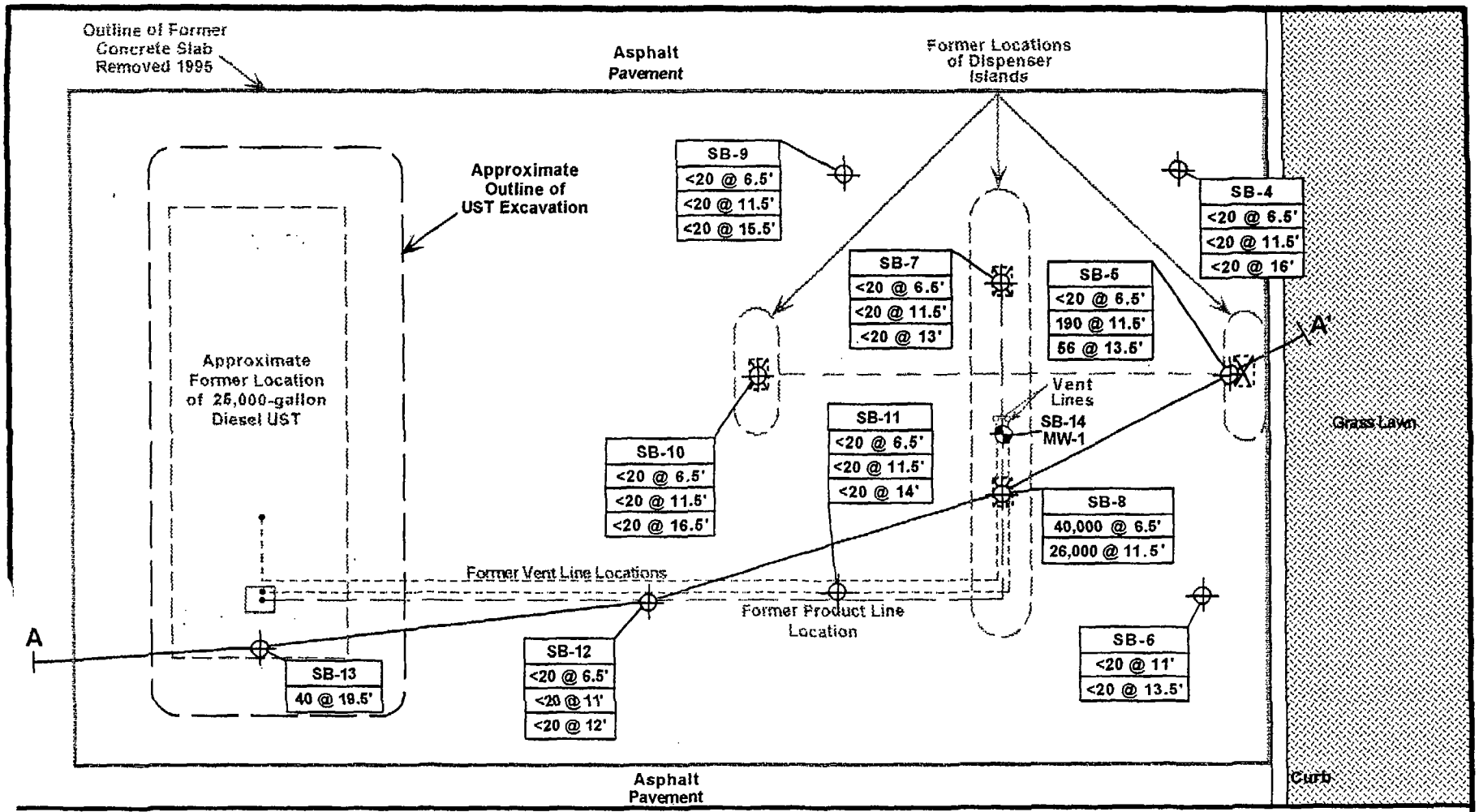
UP-1303

PROJ.#: 03102810	DATE: 02/21/96
DRAWN BY: JAH	SCALE: 1" = 10'
DESIGNED BY: -	PAGE #: -
APPROVED BY: SJS	

TerraNext

FIGURE 4
CROSS-SECTION A-A'
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

D:\AUTOCAD\PROJECT\03102810\2810CRSA



UP-1304

LEGEND

- SB-1 / <20 @ 10' / <20 @ 16.5' = Soil Boring Number / TPH at indicated depth in feet
- A—A' = Cross-Section Location
- = Former Fuel Dispenser
- = Excavation Perimeter
- = Soil Boring Location
- = Monitor Well MW-1 Location
- UST = Underground Storage Tank
- TPH = Total Petroleum Hydrocarbons in mg/kg by ADHS Method 418.1 AZ

10 5 0 10
APPROXIMATE SCALE (FEET)

N

PROJ.#: 03102810	DATE: 02/15/96
DRAWN BY: JAH	SCALE: 1" = 10'
DESIGNED BY: -	PAGE #: -
APPROVED BY: ELS	

TerraNext

FIGURE 3
DETAILED SITE MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

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APPENDIX 5

Laboratory Analytical Reports and Chain-of-Custody Documentation

UP-1305

TerraNext

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 510648

October 27, 1995

Industrial Compliance Southwest, Inc.
9830 S. 51st Street
Suite A127
Phoenix, AZ 85044

Project Name/Number: None given

Attention: Steve Kaminski

On 10/10/95, Analytical Technologies, Inc., received a request to analyze soil sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

ND indicates that the compound was not detected.

EPA method 8010 analysis was cancelled on 10/11/95 for samples SB-1/10', SB-2/11.5', and SB-3/11.5'.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyer
Project Manager

MT/paw

Enclosure

ADHS License No. AZ0061
Sherman McCutcheon, Laboratory Manager

Analytical Technologies, Inc.

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED DATE RECEIVED : 10/10/95
PROJECT # : 03102810
PROJECT NAME : (NONE) REPORT DATE : 10/24/95

ATI I.D. : 510648

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	SB-1/10'	SOIL	10/09/95
02	SB-1/16.5'	SOIL	10/09/95
03	SB-2/11.5'	SOIL	10/09/95
04	SB-2/13'	SOIL	10/09/95
05	SB-3/11.5'	SOIL	10/09/95
06	SB-3/15'	SOIL	10/09/95
07	SB-4/6.5'	SOIL	10/09/95
08	SB-4/11.5'	SOIL	10/09/95
09	SB-4/16'	SOIL	10/09/95
10	SB-5/6.5'	SOIL	10/09/95
11	SB-5/11.5'	SOIL	10/09/95
12	SB-5/13.5'	SOIL	10/09/95
13	SB-6/6.5'	SOIL	10/09/95
14	SB-6/11'	SOIL	10/09/95
15	SB-6/13.5'	SOIL	10/09/95
16	SB-7/6.5'	SOIL	10/10/95
17	SB-7/11.5'	SOIL	10/10/95
18	SB-7/13'	SOIL	10/10/95
19	SB-8/6.5'	SOIL	10/10/95
20	SB-8/11.5'	SOIL	10/10/95
21	SB-9/6.5'	SOIL	10/10/95
22	SB-9/11'	SOIL	10/10/95
23	SB-9/15.5'	SOIL	10/10/95
24	SB-10/6.5'	SOIL	10/10/95
25	SB-10/11'	SOIL	10/10/95
26	SB-10/16.5'	SOIL	10/10/95
27	SB-11/6.5'	SOIL	10/10/95
28	SB-11/11.5'	SOIL	10/10/95
29	SB-11/14'	SOIL	10/10/95
30	SB-12/6.5'	SOIL	10/10/95
31	SB-12/11'	SOIL	10/10/95
32	SB-12/12'	SOIL	10/10/95
33	SB-13/19.5'	SOIL	10/10/95

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	33

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/27/95

PARAMETER	UNITS	01	02	03	04	05
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		19	3	12	15	19

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	06	07	08	09	10
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		2	15	15	4	12

UP-1309

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	11	12	13	14	15
PETROLEUM HYDROCARBONS,418.1	MG/KG	190	56	<20	<20	<20
418.1 AZ PERCENT MOISTURE		3	7	10	3	12

UP-1310

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	16	17	18	19	20
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	20	40000	26000
418.1 AZ PERCENT MOISTURE		14	5	11	12	4

UP-1311

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	21	22	23	24	25
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		13	16	10	15	15

UP-1312

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	26	27	28	29	30
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		2	17	15	5	14

UP-1313

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	31	32	33
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	20	40
418.1 AZ PERCENT MOISTURE		15	13	2

UP-1314

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE) ATI I.D. : 510648

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
PETROLEUM HYDROCARBONS	MG/KG	51062501	2900	2900	0	4300	1500	93
PETROLEUM HYDROCARBONS	MG/KG	51063701	<20	<20	NA	190	200	95

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

UP-1315

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064802

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-1/16.5'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	105
TIME EXT	13:00

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064804

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-2/13'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	119
TIME EXT	13:00

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064806

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-3/15'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	122
TIME EXT	13:00

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	ATI I.D.	: 510648
PROJECT #	: 03102810	DATE EXTRACTED	: 10/12/95
PROJECT NAME	: (NONE)	DATE ANALYZED	: 10/13/95
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	120
TIME EXT	13:00

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 510648

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)
REF I.D. : 51064901

DATE ANALYZED : 10/12/95
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.025	1.0	1.2	120	1.2	120	0
TRICHLOROETHENE	<0.025	1.0	1.2	120	1.2	120	0
TETRACHLOROETHENE	<0.025	1.0	1.2	120	1.3	130	8
BROMODICHLOROMETHANE	<0.025	1.0	1.1	110	1.1	110	0
CHLOROFORM	<0.025	1.0	1.2	120	1.2	120	0
1,1,1-TRICHLOROETHANE	<0.025	1.0	1.2	120	1.2	120	0
CHLOROBENZENE	<0.025	1.0	1.2	120	1.2	120	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

UP-1320

AnalyticalTechnologies, Inc., Phoenix, Arizona
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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 1 OF 4

ATI LAB I.D. 510649

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER: Abel Ramirez, Jr.

COMPANY: Industrial Compliance
ADDRESS: 9830 S. 51st Street, Suite A127
Phoenix, AZ. 85044
PHONE: (602) 496-1400
FAX:

BILL TO: Same as above
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards - Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-1/10'	10/9/95		Soil	1	X					X															1
SB-1/16.5'				2						X															1
SB-2/11.5'				3						X															1
SB-2/13'				4						X															1
SB-3/11.5'				5						X															1
SB-3/15'				6						X															1
SB-4/6.5'				7																					1
SB-4/11.5'				8																					1
SB-4/16'				9																					1

UP-1321

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102810		NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y/N/NA (N)
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Abel Ramirez Time: 5:50	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez, Jr. Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

AnalyticalTechnologies, Inc., Phoenix, Arizona
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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 2 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER:

COMPANY:
ADDRESS:
PHONE:
FAX:

BILL TO:
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards - Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-5/ 6.5'	10/9/95	UP-1322	Soil	10	X																				1
SB-5/ 11.5'	↓	↓	↓	11	↓																				1
SB-5/ 13.5'	↓	↓	↓	12	↓																				1
SB-6/ 6.5'	↓	↓	↓	13	↓																				1
SB-6/ 11'	↓	↓	↓	14	↓																				1
SB-6/ 13.5'	↓	↓	↓	15	↓																				1
SB-7/ 6.5'	10/10/95	↓	↓	16	↓																				1
SB-7/ 11.5'	↓	↓	↓	17	↓																				1
SB-7/ 13'	↓	↓	↓	18	↓																				1

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102810		NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y/N/NA
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [illegible] Time: 5:50PM	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez, Jr. Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: [illegible] Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Heather Loescher Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

AnalyticalTechnologies, Inc., Phoenix, Arizona
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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 3 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER:

COMPANY: IC
ADDRESS: 9830 S. 51st, Suite A-127
Phoenix, AZ 85044
PHONE: 496-4400
FAX: 496-4399

BILL TO:
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-8/6.5'	10/10/95		Soil	19	X																				1
SB-8/11.5'				20																					1
SB-9/6.5'				21																					1
SB-9/11'				22																					1
SB-9/15.5'				23																					1
SB-10/6.5'				24																					1
SB-10/11'				25																					1
SB-10/16.5'				26																					1
SB-11/6.5'				27																					1

UP-1323

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO: 03102410		NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y/N/NA
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	Blue

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 5:50PM	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: [signature] Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: [signature] Date: October 10/95
Company:	Company:	Analytical Technologies, Inc.

AnalyticalTechnologies, Inc., Phoenix, Arizona
San Diego • Phoenix • Seattle • Pensacola • Ft. Collins • Portland

CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 4 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER:

COMPANY: IC
ADDRESS: 9830 South 51st Street, Suite A-127
Phoenix, AZ 85044
PHONE: 496-4400
FAX: 496-4399

BILL TO: Same as above
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
S8-11/11.5'	10/10/95	UP-1324	Soil	28	X																				1
S8-11/14'				29																					1
S8-12/6.5'				30																					1
S8-12/11'				31																					1
S8-12/12'				32																					1
S8-13/19.5'				33																					1

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102810		NO. CONTAINERS	6
PROJ. NAME:		CUSTODY SEALS	Y/N/NA
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 5:50PM	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Heather L. Oswington Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Heather L. Oswington Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

SAMPLE CONTROL LOGIN CHECK LIST

ACCESSION #: 510648 SC INIT: [illegible]

CLIENT I.D.: INDUSTRIAL COMPLIANCE DATE: 10/10/95

Is this a UST Project?	Y	N	If no, stop.
Are these soil samples?	Y	N	If no, stop.
Were samples received in Sleeves constructed of an Inert material (Brass, Teflon or Stainless Steel)?	Y	N	If no, see comments.
Chain of Custody seals?	Y	N	If no, see comments.
Teflon tape?	Y	N	If no, see comments.
Are samples headspace free?	Y	N	If no, see comments.
Are samples cool?	Y	N	If no, see comments.
Were samples received within 72 hours of sampling?	Y	N	If no, see comments.

Comments: _____

Please note that a Client signature is required to proceed with analysis if any answers are no, see comments.

I authorize ATI to analyze the samples submitted under the above Accession Number.

[illegible] 10/10/95

Authorized By Date

I:\WP51\TABLES\SCCL.LST Revised: June 9, 1995

UP-1325

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 601772

January 31, 1996

Terranext
9830 S. 51st St.
Suite A-127
Phoenix, AZ 85044

Project Name/Number: Commercial Carriers/03102810

Attention: Eric Stanford

On 01/22/96, Analytical Technologies, Inc., received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA method 502.2 analysis was added on 01/22/96 for sample MW-00-01.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt

EP/jry

Enclosure

ADHS License No. AZ0061
Sherman McCutcheon, Laboratory Manager

Analytical Technologies, Inc.

CLIENT : TERRANEXT
PROJECT # : 03102810
PROJECT NAME : COMM.CARRIER

DATE RECEIVED : 01/22/96
REPORT DATE : 01/30/96

ATI I.D. : 601772

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	MW-00-01	AQUEOUS	01/22/96
02	MW-01-01	AQUEOUS	01/22/96
03	TRIP BLANK	AQUEOUS	01/22/96

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	3

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from th date of this report. If an extended storage period is required, please contac our sample control department before the scheduled disposal date.

UP-1327

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 601772

CLIENT : TERRANEXT
PROJECT # : 03102810
PROJECT NAME : COMM.CARRIER

DATE RECEIVED : 01/22/96
REPORT DATE : 01/30/96

PARAMETER	UNITS	02
PETROLEUM HYDROCARBONS,418.1	MG/L	<1

UP-1328

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : TERRANEXT
PROJECT # : 03102810
PROJECT NAME : COMM.CARRIER ATI I.D. : 601772

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
PETROLEUM HYDROCARBONS	MG/L	60176101	<1	<1	NA	9	9	100

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

UP-1329

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 60177201

TEST : EPA METHOD 502.2

CLIENT	: TERRANEXT	DATE SAMPLED	: 01/22/96
PROJECT #	: 03102810	DATE RECEIVED	: 01/22/96
PROJECT NAME	: COMM.CARRIER	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-00-01	DATE ANALYZED	: 01/25/96
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
VINYL CHLORIDE	<0.5
BENZENE	<0.5
CARBON TETRACHLORIDE	<0.5
1,2-DICHLOROETHANE	<0.5
TRICHLOROETHYLENE (TCE)	2.2
PARA-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHYLENE	<0.5
1,1,1-TRICHLOROETHANE	<0.5
CIS-1,2-DICHLOROETHYLENE	3.0
1,2-DICHLOROPROPANE	<0.5
ETHYLBENZENE	<0.5
CHLOROBENZENE	<0.5
ORTHO-DICHLOROBENZENE	<0.5
TETRACHLOROETHYLENE	<0.5
TOLUENE	<0.5
TRANS-1,2-DICHLOROETHYLENE	<0.5
META,PARA-XYLENE (TOTAL)	<0.5
O-XYLENE/STYRENE	<0.5
CHLOROMETHANE	<5
BROMOMETHANE	<2
CHLOROETHANE	<2
DIBROMOMETHANE	<0.5
1,1-DICHLOROPROPENE	<0.5
1,3-DICHLOROPROPANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5
2,2-DICHLOROPROPANE	3.0
CHLOROFORM	1.1
BROMOFORM	<0.5
BROMODICHLOROMETHANE	<0.5
CHLORODIBROMOMETHANE	<0.5
DICHLOROMETHANE	<2
ORTHO-CHLOROTOLUENE	<0.5
PARA-CHLOROTOLUENE	<0.5
META-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
1,1,1,2-TETRACHLOROETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
BROMOBENZENE	<0.5
DICHLORODIFLUOROMETHANE	6.4
TRICHLOROFLUOROMETHANE	<1

(CONTINUED NEXT PAGE)

AnalyticalTechnologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 60177201

TEST : EPA METHOD 502.2

COMPOUNDS	RESULTS
BROMOCHLOROMETHANE	<0.5
1,2-DIBROMOETHANE	<0.5
ISO-PROPYLBENZENE	<0.5
N-PROPYLBENZENE	<0.5
1,3,5-TRIMETHYLBENZENE	<0.5
1,2,4-TRIMETHYLBENZENE	<0.5
TERT-BUTYLBENZENE	<0.5
SEC-BUTYLBENZENE	<0.5
P-ISOPROPYLTOLUENE	<0.5
N-BUTYLBENZENE	<0.5
1,2-DIBROMO-3-CHLOROPROPANE	<0.5
1,2,4-TRICHLOROBENZENE	<0.5
NAPHTHALENE	<0.5
1,2,3-TRICHLOROBENZENE	<0.5
HEXACHLOROBUTADIENE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5

SURROGATE PERCENT RECOVERIES

1-CHLORO-2-FLUOROBENZENE (PID) %	98
BROMOFLUOROBENZENE (HALL) %	109

UP-1331

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 60177202

TEST : EPA METHOD 502.2

CLIENT	: TERRANEXT	DATE SAMPLED	: 01/22/9
PROJECT #	: 03102810	DATE RECEIVED	: 01/22/9
PROJECT NAME	: COMM.CARRIER	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-01-01	DATE ANALYZED	: 01/25/9
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
VINYL CHLORIDE	<0.5
BENZENE	<0.5
CARBON TETRACHLORIDE	<0.5
1,2-DICHLOROETHANE	<0.5
TRICHLOROETHYLENE (TCE)	2.3
PARA-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHYLENE	<0.5
1,1,1-TRICHLOROETHANE	<0.5
CIS-1,2-DICHLOROETHYLENE	3.2
1,2-DICHLOROPROPANE	<0.5
ETHYLBENZENE	<0.5
CHLOROBENZENE	<0.5
ORTHO-DICHLOROBENZENE	<0.5
TETRACHLOROETHYLENE	<0.5
TOLUENE	<0.5
TRANS-1,2-DICHLOROETHYLENE	<0.5
META,PARA-XYLENE (TOTAL)	<0.5
O-XYLENE/STYRENE	<0.5
CHLOROMETHANE	<5
BROMOMETHANE	<2
CHLOROETHANE	<2
DIBROMOMETHANE	<0.5
1,1-DICHLOROPROPENE	<0.5
1,3-DICHLOROPROPANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5
2,2-DICHLOROPROPANE	3.2
CHLOROFORM	1.2
BROMOFORM	<0.5
BROMODICHLOROMETHANE	<0.5
CHLORODIBROMOMETHANE	<0.5
DICHLOROMETHANE	<2
ORTHO-CHLOROTOLUENE	<0.5
PARA-CHLOROTOLUENE	<0.5
META-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
1,1,1,2-TETRACHLOROETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
BROMOBENZENE	<0.5
DICHLORODIFLUOROMETHANE	6.1
TRICHLOROFLUOROMETHANE	<1

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 60177202

TEST : EPA METHOD 502.2

COMPOUNDS	RESULTS
BROMOCHLOROMETHANE	<0.5
1,2-DIBROMOETHANE	<0.5
ISO-PROPYLBENZENE	<0.5
N-PROPYLBENZENE	<0.5
1,3,5-TRIMETHYLBENZENE	<0.5
1,2,4-TRIMETHYLBENZENE	<0.5
TERT-BUTYLBENZENE	<0.5
SEC-BUTYLBENZENE	<0.5
P-ISOPROPYLTOLUENE	<0.5
N-BUTYLBENZENE	<0.5
1,2-DIBROMO-3-CHLOROPROPANE	<0.5
1,2,4-TRICHLOROBENZENE	<0.5
NAPHTHALENE	<0.5
1,2,3-TRICHLOROBENZENE	<0.5
HEXACHLOROBUTADIENE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5

SURROGATE PERCENT RECOVERIES

1-CHLORO-2-FLUOROBENZENE (PID) %	98
BROMOFLUOROBENZENE (HALL) %	109

UP-1333

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 60177203

TEST : EPA METHOD 502.2

CLIENT	: TERRANEXT	DATE SAMPLED	: 01/22/96
PROJECT #	: 03102810	DATE RECEIVED	: 01/22/96
PROJECT NAME	: COMM.CARRIER	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/24/96
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
VINYL CHLORIDE	<0.5
BENZENE	<0.5
CARBON TETRACHLORIDE	<0.5
1,2-DICHLOROETHANE	<0.5
TRICHLOROETHYLENE (TCE)	<0.5
PARA-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHYLENE	<0.5
1,1,1-TRICHLOROETHANE	<0.5
CIS-1,2-DICHLOROETHYLENE	<0.5
1,2-DICHLOROPROPANE	<0.5
ETHYLBENZENE	<0.5
CHLOROBENZENE	<0.5
ORTHO-DICHLOROBENZENE	<0.5
TETRACHLOROETHYLENE	<0.5
TOLUENE	<0.5
TRANS-1,2-DICHLOROETHYLENE	<0.5
META,PARA-XYLENE (TOTAL)	<0.5
O-XYLENE/STYRENE	<0.5
CHLOROMETHANE	<5
BROMOMETHANE	<2
CHLOROETHANE	<2
DIBROMOMETHANE	<0.5
1,1-DICHLOROPROPENE	<0.5
1,3-DICHLOROPROPANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5
2,2-DICHLOROPROPANE	<0.5
CHLOROFORM	<0.5
BROMOFORM	<0.5
BROMODICHLOROMETHANE	<0.5
CHLORODIBROMOMETHANE	<0.5
DICHLOROMETHANE	<2
ORTHO-CHLOROTOLUENE	<0.5
PARA-CHLOROTOLUENE	<0.5
META-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
1,1,1,2-TETRACHLOROETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
BROMOBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<5
TRICHLOROFLUOROMETHANE	<1

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 60177203

TEST : EPA METHOD 502.2

COMPOUNDS	RESULTS
BROMOCHLOROMETHANE	<0.5
1,2-DIBROMOETHANE	<0.5
ISO-PROPYLBENZENE	<0.5
N-PROPYLBENZENE	<0.5
1,3,5-TRIMETHYLBENZENE	<0.5
1,2,4-TRIMETHYLBENZENE	<0.5
TERT-BUTYLBENZENE	<0.5
SEC-BUTYLBENZENE	<0.5
P-ISOPROPYLTOLUENE	<0.5
N-BUTYLBENZENE	<0.5
1,2-DIBROMO-3-CHLOROPROPANE	<0.5
1,2,4-TRICHLOROBENZENE	<0.5
NAPHTHALENE	<0.5
1,2,3-TRICHLOROBENZENE	<0.5
HEXACHLOROBUTADIENE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5

SURROGATE PERCENT RECOVERIES

1-CHLORO-2-FLUOROBENZENE (PID) %	99
BROMOFLUOROBENZENE (HALL) %	111

UP-1335

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : EPA METHOD 502.2

CLIENT	: TERRANEXT	ATI I.D.	: 601772
PROJECT #	: 03102810	DATE EXTRACTED	: 01/24/96
PROJECT NAME	: COMM.CARRIER	DATE ANALYZED	: 01/24/96
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
VINYL CHLORIDE	<0.5
BENZENE	<0.5
CARBON TETRACHLORIDE	<0.5
1,2-DICHLOROETHANE	<0.5
TRICHLOROETHYLENE (TCE)	<0.5
PARA-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHYLENE	<0.5
1,1,1-TRICHLOROETHANE	<0.5
CIS-1,2-DICHLOROETHYLENE	<0.5
1,2-DICHLOROPROPANE	<0.5
ETHYLBENZENE	<0.5
CHLOROBENZENE	<0.5
ORTHO-DICHLOROBENZENE	<0.5
TETRACHLOROETHYLENE	<0.5
TOLUENE	<0.5
TRANS-1,2-DICHLOROETHYLENE	<0.5
META,PARA-XYLENE (TOTAL)	<0.5
O-XYLENE/STYRENE	<0.5
CHLOROMETHANE	<5
BROMOMETHANE	<2
CHLOROETHANE	<2
DIBROMOMETHANE	<0.5
1,1-DICHLOROPROPENE	<0.5
1,3-DICHLOROPROPANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5
2,2-DICHLOROPROPANE	<0.5
CHLOROFORM	<0.5
BROMOFORM	<0.5
BROMODICHLOROMETHANE	<0.5
CHLORODIBROMOMETHANE	<0.5
DICHLOROMETHANE	<2
ORTHO-CHLOROTOLUENE	<0.5
PARA-CHLOROTOLUENE	<0.5
META-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
1,1,1,2-TETRACHLOROETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
BROMOBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<5
TRICHLOROFLUOROMETHANE	<1
BROMOCHLOROMETHANE	<0.5
1,2-DIBROMOETHANE	<0.5

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

ATI I.D. : 601772

TEST : EPA METHOD 502.2

COMPOUNDS	RESULTS
ISO-PROPYLBENZENE	<0.5
N-PROPYLBENZENE	<0.5
1,3,5-TRIMETHYLBENZENE	<0.5
1,2,4-TRIMETHYLBENZENE	<0.5
TERT-BUTYLBENZENE	<0.5
SEC-BUTYLBENZENE	<0.5
P-ISOPROPYLTOLUENE	<0.5
N-BUTYLBENZENE	<0.5
1,2-DIBROMO-3-CHLOROPROPANE	<0.5
1,2,4-TRICHLOROBENZENE	<0.5
NAPHTHALENE	<0.5
1,2,3-TRICHLOROBENZENE	<0.5
HEXACHLOROBUTADIENE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5

SURROGATE PERCENT RECOVERIES

1-CHLORO-2-FLUOROBENZENE (PID) %	104
BROMOFLUOROBENZENE (HALL) %	111

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : EPA METHOD 502.2

CLIENT	: TERRANEXT	ATI I.D.	: 601772
PROJECT #	: 03102810	DATE EXTRACTED	: 01/23/96
PROJECT NAME	: COMM.CARRIER	DATE ANALYZED	: 01/23/96
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
VINYL CHLORIDE	<0.5
BENZENE	<0.5
CARBON TETRACHLORIDE	<0.5
1,2-DICHLOROETHANE	<0.5
TRICHLOROETHYLENE (TCE)	<0.5
PARA-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHYLENE	<0.5
1,1,1-TRICHLOROETHANE	<0.5
CIS-1,2-DICHLOROETHYLENE	<0.5
1,2-DICHLOROPROPANE	<0.5
ETHYLBENZENE	<0.5
CHLOROBENZENE	<0.5
ORTHO-DICHLOROBENZENE	<0.5
TETRACHLOROETHYLENE	<0.5
TOLUENE	<0.5
TRANS-1,2-DICHLOROETHYLENE	<0.5
META,PARA-XYLENE (TOTAL)	<0.5
O-XYLENE/STYRENE	<0.5
CHLOROMETHANE	<5
BROMOMETHANE	<2
CHLOROETHANE	<2
DIBROMOMETHANE	<0.5
1,1-DICHLOROPROPENE	<0.5
1,3-DICHLOROPROPANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5
2,2-DICHLOROPROPANE	<0.5
CHLOROFORM	<0.5
BROMOFORM	<0.5
BROMODICHLOROMETHANE	<0.5
CHLORODIBROMOMETHANE	<0.5
DICHLOROMETHANE	<2
ORTHO-CHLOROTOLUENE	<0.5
PARA-CHLOROTOLUENE	<0.5
META-DICHLOROBENZENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
1,1,1,2-TETRACHLOROETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
BROMOBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<5
TRICHLOROFLUOROMETHANE	<1
BROMOCHLOROMETHANE	<0.5
1,2-DIBROMOETHANE	<0.5

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

ATI I.D. : 601772

TEST : EPA METHOD 502.2

COMPOUNDS	RESULTS
ISO-PROPYLBENZENE	<0.5
N-PROPYLBENZENE	<0.5
1,3,5-TRIMETHYLBENZENE	<0.5
1,2,4-TRIMETHYLBENZENE	<0.5
TERT-BUTYLBENZENE	<0.5
SEC-BUTYLBENZENE	<0.5
P-ISOPROPYLTOLUENE	<0.5
N-BUTYLBENZENE	<0.5
1,2-DIBROMO-3-CHLOROPROPANE	<0.5
1,2,4-TRICHLOROBENZENE	<0.5
NAPHTHALENE	<0.5
1,2,3-TRICHLOROBENZENE	<0.5
HEXACHLOROBUTADIENE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5

SURROGATE PERCENT RECOVERIES

1-CHLORO-2-FLUOROBENZENE (PID) %	102
BROMOFLUOROBENZENE (HALL) %	108

UP-1339

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 601772

TEST : EPA METHOD 502.2

CLIENT : TERRANEXT
PROJECT # : 03102810
PROJECT NAME : COMM.CARRIER
REF I.D. : 60149917

DATE ANALYZED : 01/25/96
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHYLENE	<0.5	10	10	100	10	100	0
TRICHLOROETHENE	<0.5	10	10	100	9.9	99	1
TETRACHLOROETHENE	<0.5	10	10	100	10	100	0
BENZENE	<0.5	10	10	100	9.9	99	1
BROMODICHLOROMETHANE	<0.5	10	9.8	9.8	9.4	94	4
CHLOROFORM	<0.5	10	10	100	10	100	0
1,1,1-TRICHLOROETHANE	<0.5	10	9.8	98	10	100	2
TOLUENE	<0.5	10	10	100	9.9	99	1
CHLOROBENZENE	<0.5	10	10	100	9.9	99	1
N-BUTYLBENZENE	<0.5	10	9.9	99	9.9	99	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

UP-1340

AnalyticalTechnologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 601772

TEST : EPA METHOD 502.2

CLIENT : TERRANEXT
PROJECT # : 03102810
PROJECT NAME : COMM.CARRIER
REF I.D. : 60149918

DATE ANALYZED : 01/23/96
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHYLENE	<0.5	10	10	100	10	100	0
TRICHLOROETHENE	<0.5	10	9.9	99	10	100	1
TETRACHLOROETHENE	<0.5	10	11	110	10	100	10
BENZENE	<0.5	10	10	100	10	100	0
BROMODICHLOROMETHANE	<0.5	10	9.7	97	9.5	95	2
CHLOROFORM	<0.5	10	10	100	9.9	99	1
1,1,1-TRICHLOROETHANE	<0.5	10	10	100	10	100	0
TOLUENE	<0.5	10	10	100	10	100	0
CHLOROBENZENE	<0.5	10	10	100	9.9	99	1
N-BUTYLBENZENE	<0.5	10	10	100	9.8	98	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

UP-1341

AnalyticalTechnologies, Inc., Phoenix, Arizona
San Diego • Phoenix • Seattle • Pensacola • Ft. Collins • Portland

CHAIN OF CUSTODY

DATE: 22 Jan 96 PAGE: 1 OF 1

ATI LAB I.D. 601772

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER: E. Stanford

COMPANY: Terranext
ADDRESS: 9830 S. 51st St.
Ste. A-127 PHX AZ 85040
PHONE: 602 496-4100
FAX: 602 496 4399

BILL TO: Terranext - Lakewood, Co.
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1) 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
MW-00-01	22 Jan	10:30	Water	1						HOLD**															2
MW-01-01	22 Jan	11:45	Water	2	X							X													4
Trip blank*	22 Jan	8:50 am		3								X													1

UP-1342

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.:	03102810	NO. CONTAINERS	7
PROJ. NAME:	Commercial Carriers	CUSTODY SEALS	Y/N/NA
P.O. NO.:		RECEIVED INTACT	4
SHIPPED VIA:		BLUE ICE/ICE	

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☑ ~~2 WEEK~~

Comments:
* Prepared by lab.
** Hold till further notice

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Eric L. Stanford Time: 1315	Signature: Time:	Signature: Time:
Printed Name: Eric L. Stanford Date: 1-22-96	Printed Name: Date:	Printed Name: Date:
Company: Terranext Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Time: 1315
Printed Name: Date:	Printed Name: Date:	Printed Name: Eric Kraisanen Date: 1/22/96
Company:	Company:	Analytical Technologies, Inc.

APPENDIX 6

Investigative Rationale Summary/ Site Specific QA/QC Narrative

UP-1343

TerraNext

Investigative Rationale Summary

Based on the limited petroleum hydrocarbon impact to soils identified during the UST closure sampling activities, it was anticipated that the petroleum hydrocarbon impact would attenuate at shallow depths. Therefore, the site investigation was conducted using hollow-stem auger drill rig methodologies. When it was discovered that the petroleum hydrocarbon impact extended to the more coarse-grained soils in the central soil boring (SB-8), a reasonable attempt was made to penetrate the coarse sediments using the hollow-stem auger drill rig. Subsequently, it became apparent that the auger methods could only penetrate to a depth of approximately 13 feet below ground surface.

Soil borings were advanced using a hollow-stem auger drill rig equipped to drill a 7.0-inch diameter boring. Soil samples were collected by driving a split-spoon sampler according to Terranext Standard Operating procedures included in Attachment C, Appendix 2. The assessment of the lateral and vertical extent of petroleum hydrocarbon-impacted soils (identified during UST removal activities) was the objective which dictated placement of the soil boring locations and the selected sample depths. The soil borings were placed at locations considered appropriate to meet the objectives of the investigation, and to further assess subsurface conditions at the site.

Following the initial subsurface investigation, an additional soil boring (SB-14) was advanced to the north of soil boring SB-8, in the vicinity of the former center pump dispenser island. The purpose of this boring was to further characterize the vertical extent of petroleum hydrocarbons in subsurface soils, and to install a ground water monitoring well to assess the potential impact to ground water. In order to penetrate the coarse, granular subsurface materials, a truck-mounted AP-1000, dual-wall percussion hammer drill rig was utilized. During advancement of the boring, soil sampling was attempted in apparent fine-grained materials; however, adequate samples could not be recovered due to refusal on coarse gravels and cobbles.

Site Specific QA/QC Narrative

The laboratory analytical reports do not indicate QA/QC parameters which are not within the laboratory's QA/QC limits.

APPENDIX 7

Corrective Action Summary

UP-1345

TerraNext

Corrective Action Summary

Based on field and laboratory data, it appears that residual TPH concentrations, exceeding current ADEQ Health-Based Guidance Levels (HBGLs), remain in the subsurface soils in the vicinity of soil boring SB-8 (the assumed release point). Analytical results indicate TPH concentrations of 40,000 mg/kg and 26,000 mg/kg in soil boring SB-8 at depths of 6.5 feet bgs and 11.5 feet bgs, respectively. Visual assessment of soil cuttings generated during the advancement of soil boring SB-14/MW-1 did not indicate the the presence of petroleum hydrocarbon-impacted soils below a depth of approximately 14 feet below ground surface. In addition, a ground water sample collected from monitoring well MW-1 did not indicate the presence of detectable TPH concentrations in ground water beneath the assumed release point.

In light of the limited vertical and lateral extent of the impacted soils at the subject site, the current site usage (i.e., industrial use verses residential use), and the fact that petroleum hydrocarbons were not detected in ground water beneath the site, a risk assessment was conducted to evaluate the risk associated with the petroleum hydrocarbon-impacted soils currently located at the subject site. To facilitate the evaluation, Terranext utilized ADEQ's *LUST Interim Soil Remediation Guidance* document, dated July 28, 1995. The specific portion of the guidance document utilized for this assessment consisted of the *Category 1: predetermined risk based standards*. Under Category 1, cleanup is allowed to the residential or nonresidential HBGLs, provided the criteria for ground water protection, ecological risk, and public nuisance are met. The *Category 1 Soil Cleanup Criteria* includes a checklist which presents predetermined ground water protection levels for gasoline and diesel, and is designed to estimate the BTEX and TPH concentrations that can remain in the subsurface soils at a site without posing a threat to ground water. According to the *Category 1 Soil Cleanup Criteria*, where monitoring wells have been installed and there is no contamination of ground water, the TPH HBGLs may be used to achieve Category 1 site cleanup throughout the soil column.

The *Category 1 Soil Cleanup Criteria* checklist rates a site as having low, medium, or high leaching potential with regard to petroleum hydrocarbon compounds in subsurface soils. The rating is based on the following criteria: the minimum depth to ground water from the deepest impacted soil sample; the presence of fractures in the subsurface; the average annual precipitation; the presence of man-made conduits which would enhance vertical migration; and, the presence of unique site features (e.g., recharge areas, coarse soils, and nearby wells). Based on existing site information and data obtained from the Arizona Department of Water Resources (ADWR) and the Arizona State University Office of Climatology, the *Category 1 Soil Cleanup Criteria* checklist was completed for the former Commercial Carriers site and is included with this summary. The completed checklist indicates that the former Commercial Carriers site has a medium leaching potential (the site score is 43 points, a medium leaching potential ranges between 41 and 48 points). Based on this rating, the maximum allowable concentrations of TPH which would be permitted to remain in the

subsurface soils would be 7,000 mg/kg for residential locations or 24,500 mg/kg for industrial locations. These TPH concentrations are the established ADEQ HBGLs for the particular site usage.

Based on the field and laboratory data from the initial UST closure and the subsequent site assessment, Terranext recommends that the petroleum hydrocarbon-impacted soils be left in place, and that no further work be required. This recommendation is based on: the knowledge that the source of the release has been removed; the petroleum hydrocarbon-impacted soils appear to be restricted to a limited area that is paved with asphaltic concrete; the medium leaching potential of the subsurface soils, based on the ADEQ risk assessment guidelines; the higher viscosity of diesel fuels which results in a reduced migration rate; and the results of laboratory analysis which did not indicate the presence of detectable concentrations of petroleum hydrocarbons in ground water beneath the site.

ADEQ UST INTERIM CATEGORY 1 SOIL CLEANUP CRITERIA Predetermined Ground Water Protection Levels for Gasoline and Diesel July 28, 1995						
SITE FEATURE	SCORE	SCORE 10 PTS IF CONDITION IS MET	SCORE	SCORE 9 PTS IF CONDITION IS MET	SCORE	SCORE 5 PTS IF CONDITION IS MET
Minimum depth to ground water from the soil sample (feet)		>100		51-100	5	25-50*
Fractures in subsurface (applies to foothills or mountain areas)	10	None		Unknown		Present
Average Annual Precipitation (inches), including irrigation and other sources of water on an annual basis		<10	9	10-25		26-40**
Man-made conduits which increase vertical migration of leachate	10	None		Unknown		Present
Unique site features: recharge area, coarse (matrix larger than fine sand) soil, nearby wells, etc.		None	9	At least one		More than one
COLUMN TOTALS→TOTAL PTS	20	+	18	+	5	=43
RANGE OF TOTAL POINTS	49 pts or more		41 - 48 pts		40 pts or less	
MAXIMUM ALLOWABLE B/T/E/X LEVELS (mg/kg)	1/50/50/50		.3/.3/1/1		<(.05/.1/.1/.15)***	
MAXIMUM ALLOWABLE TPH LEVELS (mg/kg) — GASOLINE	HBGL		HBGL		20****	
MAXIMUM ALLOWABLE TPH LEVELS (mg/kg) — DIESEL	HBGL		HBGL		100****	
LEACHING POTENTIAL	Low		Medium		High	

Footnotes:

* If depth is less than 25 feet, score 0 points. ADEQ may require ground water monitoring wells where contamination is detected in this interval.

** If precipitation is over 40 inches, score 0 points.

*** The leaching potential screen requires non-detection of BTEX contaminants for situations that score <40 points. The standards posted are analytical non-detection reporting limits that are acceptable to ADEQ UST.

****HBGLs may be used if ground water monitoring wells show that the release has not impacted ground water. (Modified from State of California LUST Manual)

The above table is designed to estimate the BTEX and TPH concentrations that can be left in place without threatening the ground water. Three levels of BTEX and TPH concentrations have been selected corresponding to site categories designated as having low, medium, or high leaching potential. To use the table, find the appropriate description for each of the site features. Score each site feature using the weighing system shown at the top of each column. Sum the points for each column and total them. Match the total points to the allowable BTEX and TPH levels.

FILE COVER

PHOENIX, AZ

C. S. 5450

FILE E933185/071-02

SECTION I

FROM APRIL 4, 1988

TO

DEPARTMENT ENVIRONMENTAL ~~ENGINEERING~~

SUBJECT: LEASE PROPERTY - PHOENIX, AZ
DIESEL TANKS/COMMERCIAL INC.

REMARKS	SUSPENSE DATE	INT. OF PARTY HANDLING

RECORD OF PREVIOUS SECTIONS

Sec.	1–	19	,	To	19
Sec.	2–	19	,	To	19
Sec.	3–	19	,	To	19
Sec.	4–	19	,	To	19
Sec.	5–	19	,	To	19
Sec.	6–	19	,	To	19
Sec.	7–	19	,	To	19
Sec.	8–	19	,	To	19
Sec.	9–	19	,	To	19
Sec.	10–	19	,	To	19

UP-1349

CROSS REFERENCES:

SF 544943

TO: Ana Nathe - SPES

FROM: Tim Becker - SPT Co.

SUBJECT: Underground Tank Investigation - Phoenix, AZ

DATE: 3/5/90

MESSAGE: Per our telephone conversation on Friday, enclosed are the documents involved with this site. We need to do the following: 1) fill out the notification form for the tanks @ the site. 2) Notify the state formally of our contamination. 3) Wait for response from the state before taking further action.

SIGNED

REPLY: I will also prepare a work order request specific to this site. If you have any questions, call me @ x2385.

Thanks
Tim Becker

SIGNED

DATE / /

REDIFORM 4S-472

SEND PARTS 1 AND 3 INTACT
PART 3 WILL BE RETURNED WITH REPLY

PAK (50 SETS) 4P472

DETACH AND FILE FOR FOLLOW-UP

SF 544944

UP-1350

TPB

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Rose Mofford, Governor
Randolph Wood, Director

April 11, 1989

Southern Pacific Transportation
Attn: G L Murdock
One Market Plaza
San Francisco, Ca 94105

Dear Mr. Murdock:

Concerning your letter dated April 7, 1989, to Jon Hudson regarding Notification to Remove Underground Storage tanks, our database shows notification forms for "904 S 12 Street" and "13th Street and Harrison" only. Please complete forms and return to me as soon as possible. If you have any questions on this matter, feel free to contact me at (602)257-2203.

Sincerely,

Barbara Herron

Barbara Herron
UST Compliance Unit

cc: Lisa Lund, Acting Manager, UST Compliance

UP-1351

SF 544945

Phoenix: 258-0868

UNISERVE
TECHNOLOGIES
INCORPORATED
Environmental Remediation Specialists

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027-2835

February 5, 1990

Mr. Tim Becker
Southern Pacific Transportation Co.
One Market Plaza, Room 1004
San Francisco, CA 94105

Dear Mr. Becker:

Enclosed please find 2 copies of Uniserve Technologies, Inc.'s report covering work performed to date at the Southern Pacific facility located at 733 East Southern Pacific Drive in Phoenix, Arizona.

As we discussed during our previous telephone conversations, this facility is located in a WQARF study area. Accordingly, there is considerable data which can be obtained from ADEQ on the quality of the water beneath this site. Please contact me after you review the report so we can discuss available alternatives.

If you should have any questions while you are reviewing this report, please do not hesitate to call.

Very truly yours,

J.R. Henzel, Jr.
President
Uniserve Technologies, Inc.

JRH:mks
Enclosure

UP-1352

SF 544946

UNISERVE
TECHNOLOGIES
INCORPORATED
Environmental Remediation Specialists

Phoenix: 258-0868

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027-2835

U S T REMOVAL & ENVIRONMENTAL SITE ASSESSMENT
SOUTHERN PACIFIC TRANSPORTATION CO.
733 EAST SOUTHERN PACIFIC
PHOENIX, ARIZONA 85034

01/17/90

Prepared for:

Southern Pacific Transportation
One Market Plaza
San Francisco, California 94105

Prepared By :

Uniserve Technologies, Inc.
21411 N. 11th Avenue, Suite 4
Phoenix, Arizonia 85027

UP-1353

SF 544947

U S T Removal & Environmental Site Assessment
Southern Pacific Transportation Co.
733 East Southern Pacific Dr.
Phoenix, Arizona 85034

1. Introduction

During the month of March, 1989, management of Southern Pacific Transportation Co. (SPTC) decided to permanently close the three (3) underground storage tanks located at the above referenced address. Tank size, contents and construction are as follows:

Tank Size	Contents	Construction
10,000/gal.	Diesel	Steel
10,000/gal.	Diesel	Steel
2,000/gal.	Gasoline	Steel

These three tanks represent all underground tanks known to exist at the location. The tanks were approximately 20 years old. The decision to remove the tanks was based on the fact that the tanks were no longer needed in the facility's operations. There had been no previous indication of a release from the tanks and the tanks were not tightness tested prior to removal.

2. General Background of the Facility

The facility in question is located at 733 E. Southern Pacific Drive, Phoenix, AZ 85034. The legal description of the property is as follows:

PART OF TRACT A OF THE N 619 FEET OF THE SW 1/4, S-9, T-1N, R-3E.

It is currently leased to Southern Pacific Transportation Co. The property is occupied by an office building and is used by SPTC as a freight unloading and storage yard. A general site map of this location contained in Exhibit A. A detailed site map and well map of this location is shown in Exhibit B.

With the advent of the new UST regulations, management of SPTC determined that it would not be cost effective to update the company's tanks.

Accordingly the decision was made to remove the tanks and to begin sourcing the company's fuel requirements from an independent fuel supplier. On April 14, 1989, Uniserve Technologies, Inc. (U.T.I.) was awarded the contract to remove the USTs.

3. UST Removal and Soil Sampling Procedures

The two 10,000 gallon diesel tanks were bedded in a north - south direction directly south of the fuel dispensing island. The 2,000 gallon gasoline tank was bedded in an east - west direction west of the fuel dispenser. A suction system was used to dispense product for these three tanks. (See site maps in Exhibit B for tank locations.)

The tank and product line removal was performed on April 18, 1989. The tanks and product lines were excavated and removed using a Case 580 backhoe. The soil beneath the North end of the west 10,000 gallon tank exhibited some minor staining when the tank was removed from the excavation. This suggested a possible release from the tank or related piping at this point. No visible structural flaws were noted on the tank or piping.

Immediately upon removal, soil samples were taken from beneath each tank in accordance with the tank closure site assessment provisions contained in the new EPA UST regulations. (See sample locations in Exhibit C.) The samples were taken at a depth of 2' below tank bottom grade with a soil scoop. To prevent possible cross contamination of soil samples, the soil scoop was decontaminated between each sample by washing in Alconox laboratory detergent and rinsing in deionized water.

Due to the possible presence of volatile organic compounds, all samples were placed in airtight 8 oz. glass sample jars with teflon seals. These containers were sealed, labeled and placed on ice. The samples were transported to Copper State Analytical Laboratory on April 19,1989. Chain of custody records were maintained and accompanied the transfer of samples from field technicians to laboratory personnel. These records appear in Exhibit D.

4. Analytical Chemistry Procedures

All soil samples were collected in general accordance with SW-846, U.S. Environmental Protection Agency Document "Test Methods for Evaluating Solid Waste".

The samples taken from beneath the 10,000 gallon diesel tanks were analyzed for total petroleum hydrocarbons using EPA Method 418.1. The samples taken from beneath the 2,000 gallon gasoline tank were analyzed for total petrolium hydrocarbons using EPA method 8015 and for aromatic volatile organic compounds using EPA method 8020.

5. Grab Sample Analytical Chemistry Results

On April 30, 1989, U.T.I. received the results of its soil grab samples from CopperState Analytical Laboratory. The sample results indicated levels of contamination above A.D.E.Q. action levels in sample # 20067 taken from beneath the north end of the west 10,000 gallon diesel tank. (See laboratory analysis in Exhibit E).

A telephone conference between U.T.I. and SPTC's management was held at 2:30 PM on May 2 to discuss the sample results. During the meeting, SPTC's management requested U.T.I.'s assistance in performing additional site investigations to determine if there may have been a reportable release.

6. Subsurface Exploration and Soil Sampling Procedures

In order to define the vertical extent of potential subsurface contamination, a drilling program was initiated at the site on August 24,1989. A total of 1 boring was drilled at the site with a Becker Rig truck mounted drilling rig at the location shown in Exhibit F. This rig advances a double casing by driving. During driving, compressed air is continuously forced down the annulus and returned up the center of the casing. The air stream picks up the soil as it enters through the bit and instantly lifts it to the surface.

During drilling, soil samples were obtained on 5' intervals for the full length of the boring. Where possible a split spoon sampler was used; however, the gravel and cobbles minimized usage of the split spoon sampler and deeper samples were obtained from cuttings. All non-sample cuttings were collected and placed on 10 mil plastic in the order in which they were taken from the hole.

When used, the split spoon sampler was decontaminated between samples by washing in Alconex laboratory detergent and rinsing in deionized water to prevent potential cross contamination of samples.

Samples for analytical testing were placed in precooled airtight 8 oz. glass sample jars with teflon seals. These containers were sealed, labeled, placed on ice and transported to the laboratory. Chain of Custody records were maintained and accompanied the transfer of samples from field technicians to laboratory personnel. These records are presented in Exhibit J. Geological logs were maintained for each boring in general accordance with ASTM Method D-2487 and are presented in Exhibit G.

7. Hydrogeology

Surface soils encountered in the boring consisted of sandy gravels to muddy gravels extending to depths of 60 feet. Minor clayey silt lenses were encountered at depths of 25' to 30'. (See Graphic Boring log in Exhibit G)

Arizona Department of Water Resources well records were consulted for depth to groundwater and aquifer flow direction. Depth to water beneath the site is estimated to be approximately 70 feet below the land surface. Regional aquifer flow is generally to the west-northwest (Source DWR well map 1982).

There are eleven (11) wells located within a 1/2 mile radius of the site of excavation. Information obtained from the Department of Water Resources basic data section on the wells is as follows:

	Site ID#	Owner	Use
1.	606389	G. Heileman Brewing	Industrial
2.	801051	Phx. Elementary Schools	Irrigation
3.	520333	Tierray Turbines	None
4.	515631	Southwest Gas	None
5.	086549	Arizona Public Service	Monitoring
6.	506148	Howard & Needles	Monitoring
7.	520332	Tierray Turbines	Monitoring
8.	520330	Tierray Turbines	Monitoring
9.	086546	Arizona Public Service	None
10.	332629112041501	Unknown	Test
11.	332643112032301	Unknown	None

(See detailed well location map in Exhibit B)

8. Analytical Chemistry Procedures

All soil samples were collected and analyzed in general accordance with SW-846, U.S. Environmental Protection Agency Document, "Test Methods for Evaluating Solid Waste." Samples were analyzed for Total Petroleum Hydrocarbons using EPA Method 418.1.

9. Analytical Chemistry Test Results

Analytical test results of soil samples collected during subsurface exploration are presented in Exhibit I. These results indicated TPHC concentrations exceeding ADEQ soil action levels at maximum depths of 60'.

10. Conclusions and Recommendations

Based upon the limited subsurface exploration and analytical chemistry test results, it appears that the contamination resulting from the former UST's at this location may extend to groundwater. Additional Investigation will be required to determine the extent of contaminant migration at this facility. Preliminary research should be performed on other LUST incidents in this area and available well sampling data should be reviewed as part of this investigation work.

Based upon the work performed at this site, UTI recommends the following actions:

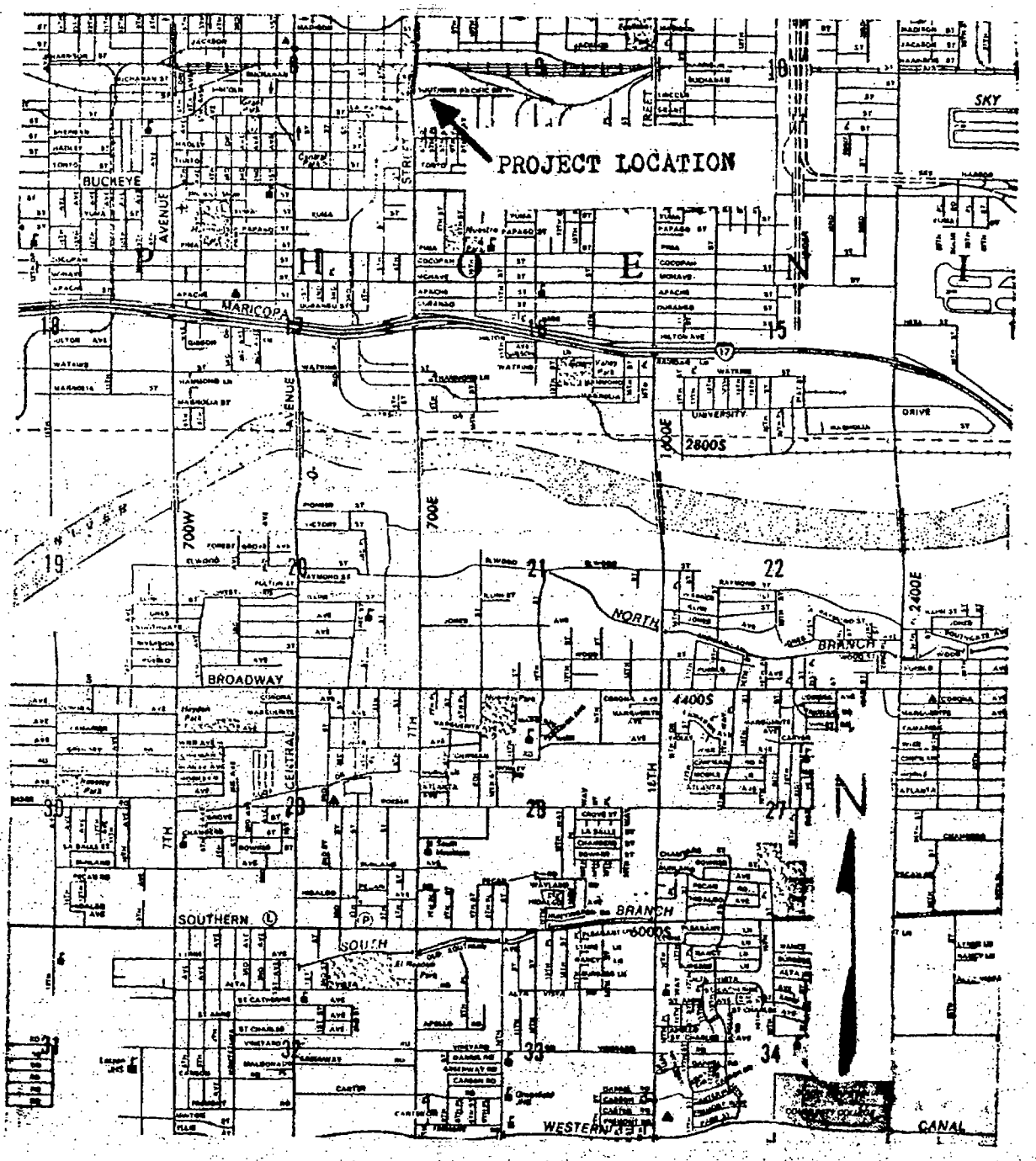
-A copy of this report should be forwarded to the Arizona Department of Environmental Quality; 2005 North Central Avenue, Phoenix, Arizona.

-Preliminary research of area LUST incidents should be reviewed prior to developing a plan for further site investigations.

UP-1358

SF 544952

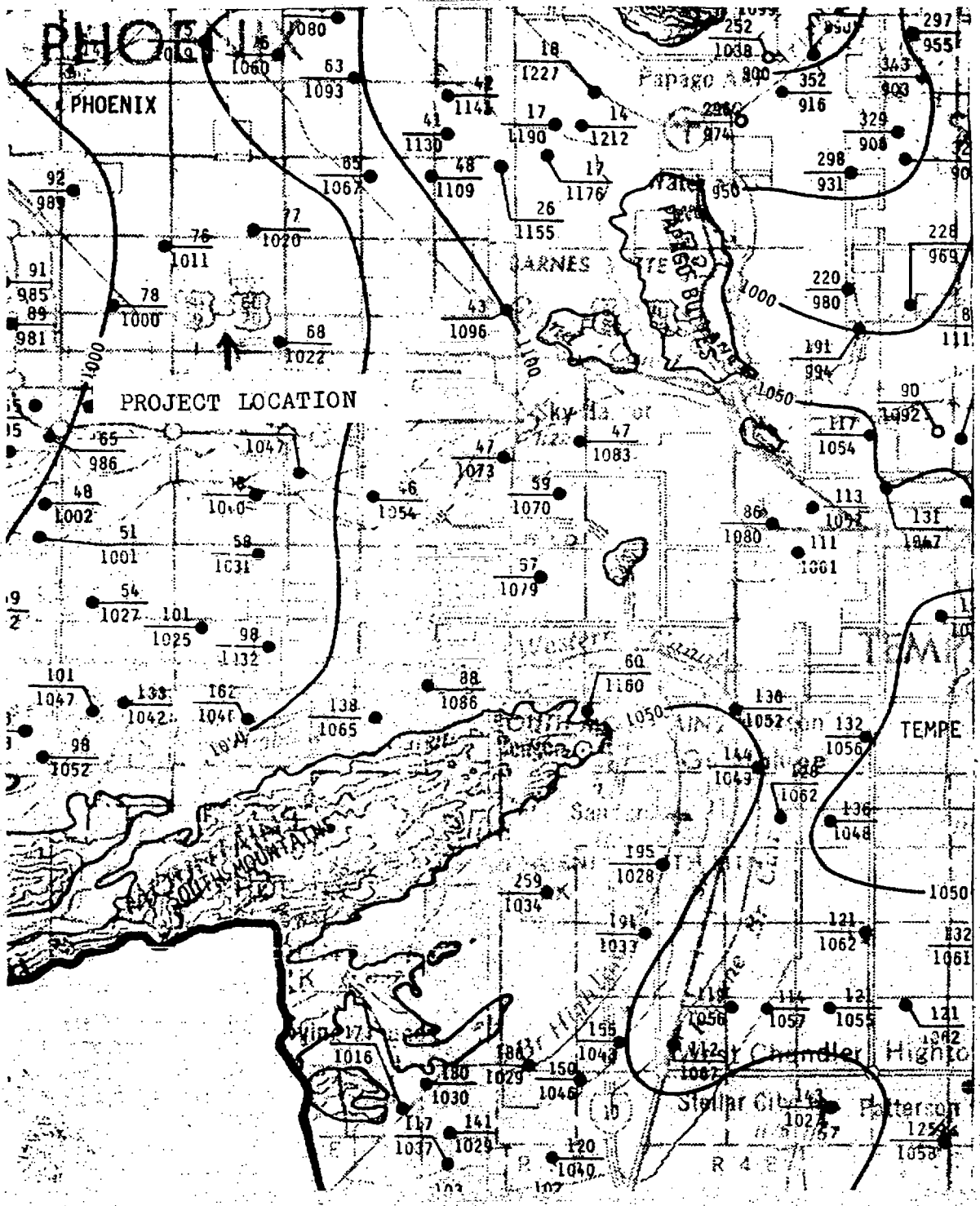
EXHIBIT A



UP-1359

SF 544953

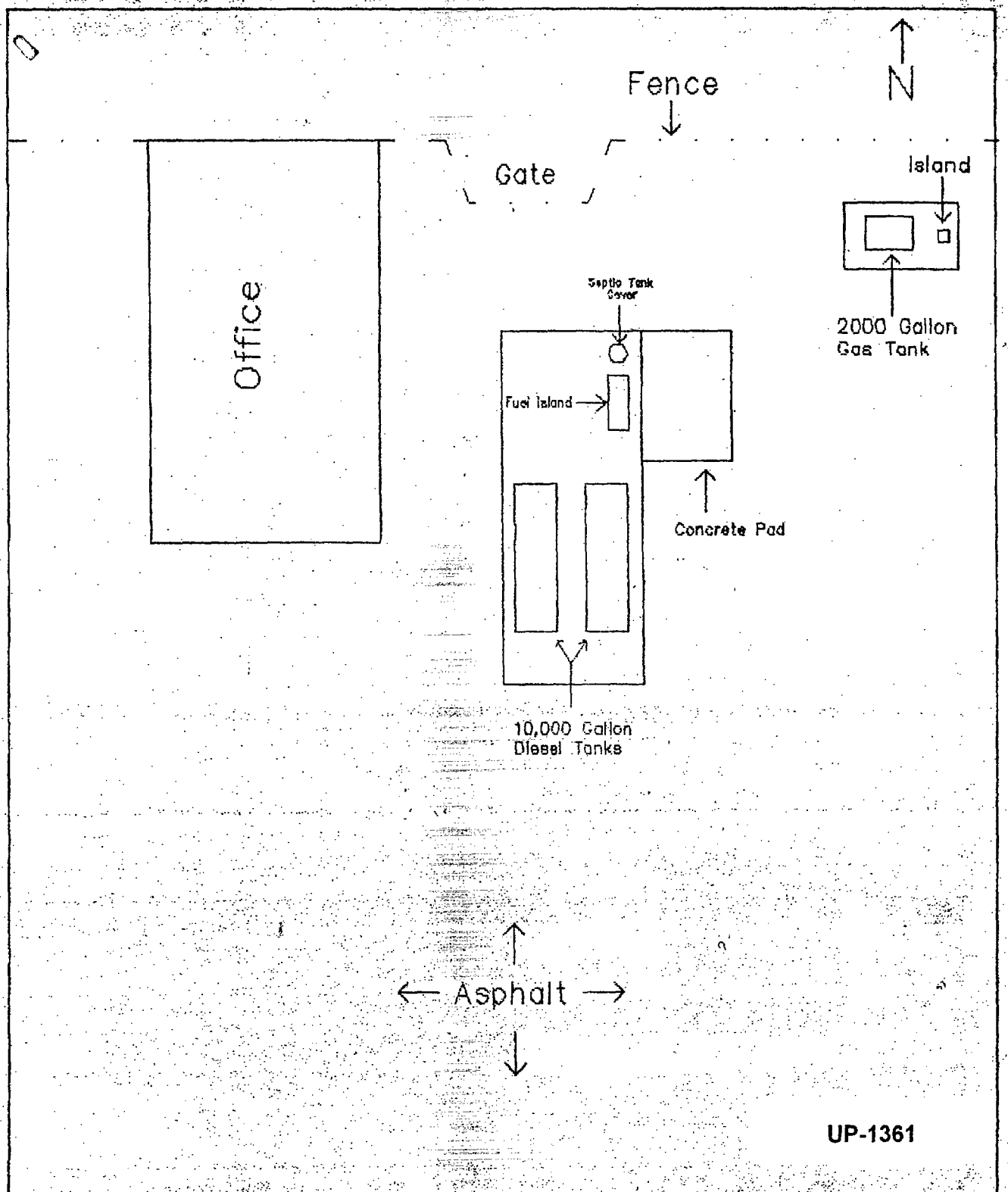
VICINITY MAP
EXHIBIT B



UP-1360

SF 544954

EXHIBIT B



Southern Pacific R.R.
Detailed Site Map
733 E. S.P. Drive Phoenix, Az.

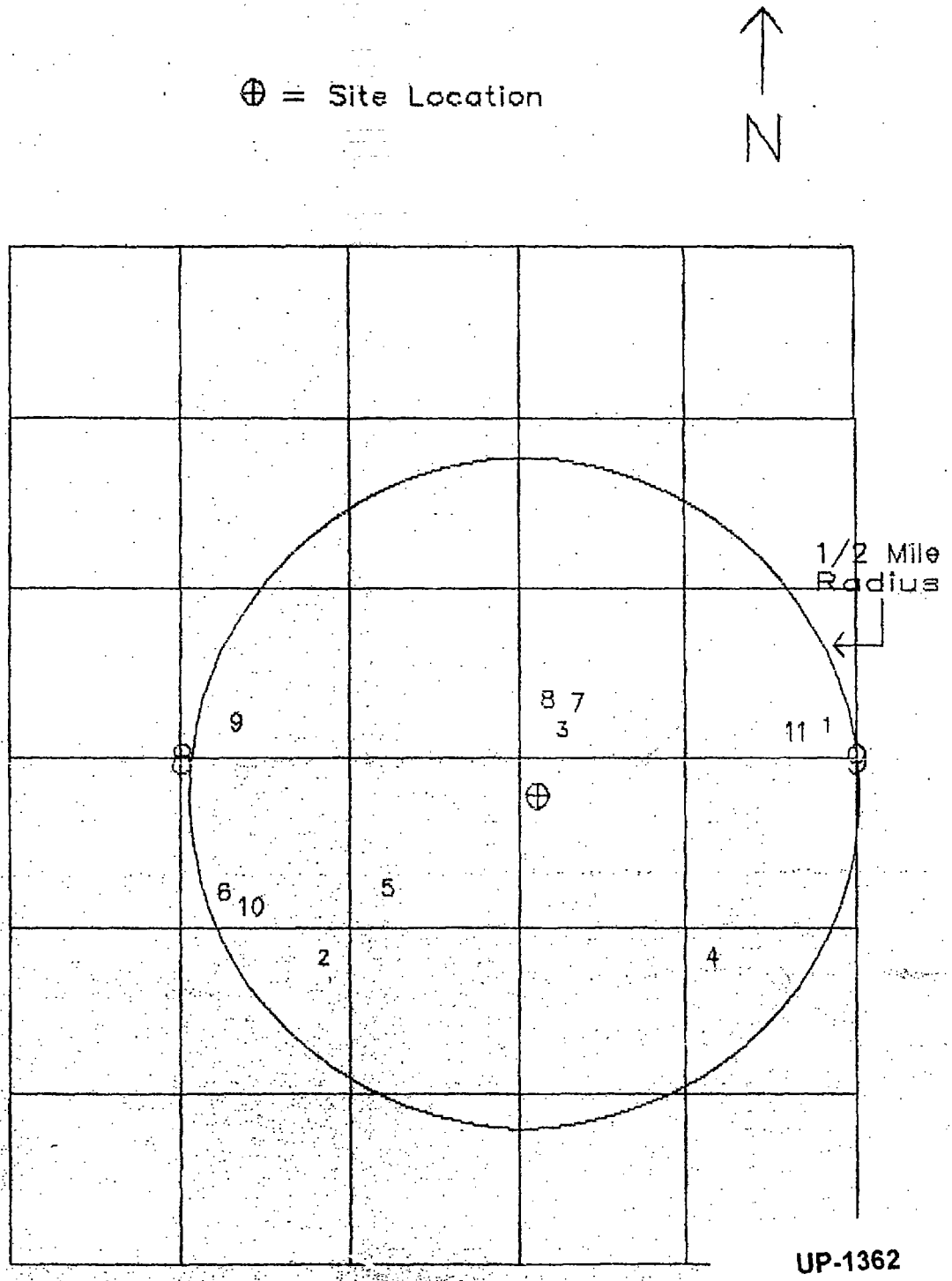
U.T.I. Unlserve Technologies Incorporated

Client: Southern Pacific

Date: 01/17/90 Scale: 1" = 25'

SF 544955

EXHIBIT B



UP-1362

Southern Pacific R.R.
Well Location Diagram
733 E. S.P. Drive Phoenix, Az.

U.T.I. Uniserve Technologies Incorporated

Client: Southern Pacific R.R.

Date: 01/17/90 Scale: 1" = 1200'

SF 544956

Southern Pacific Transportation
733 East Southern Pacific Dr.
UST Removal - Site Map

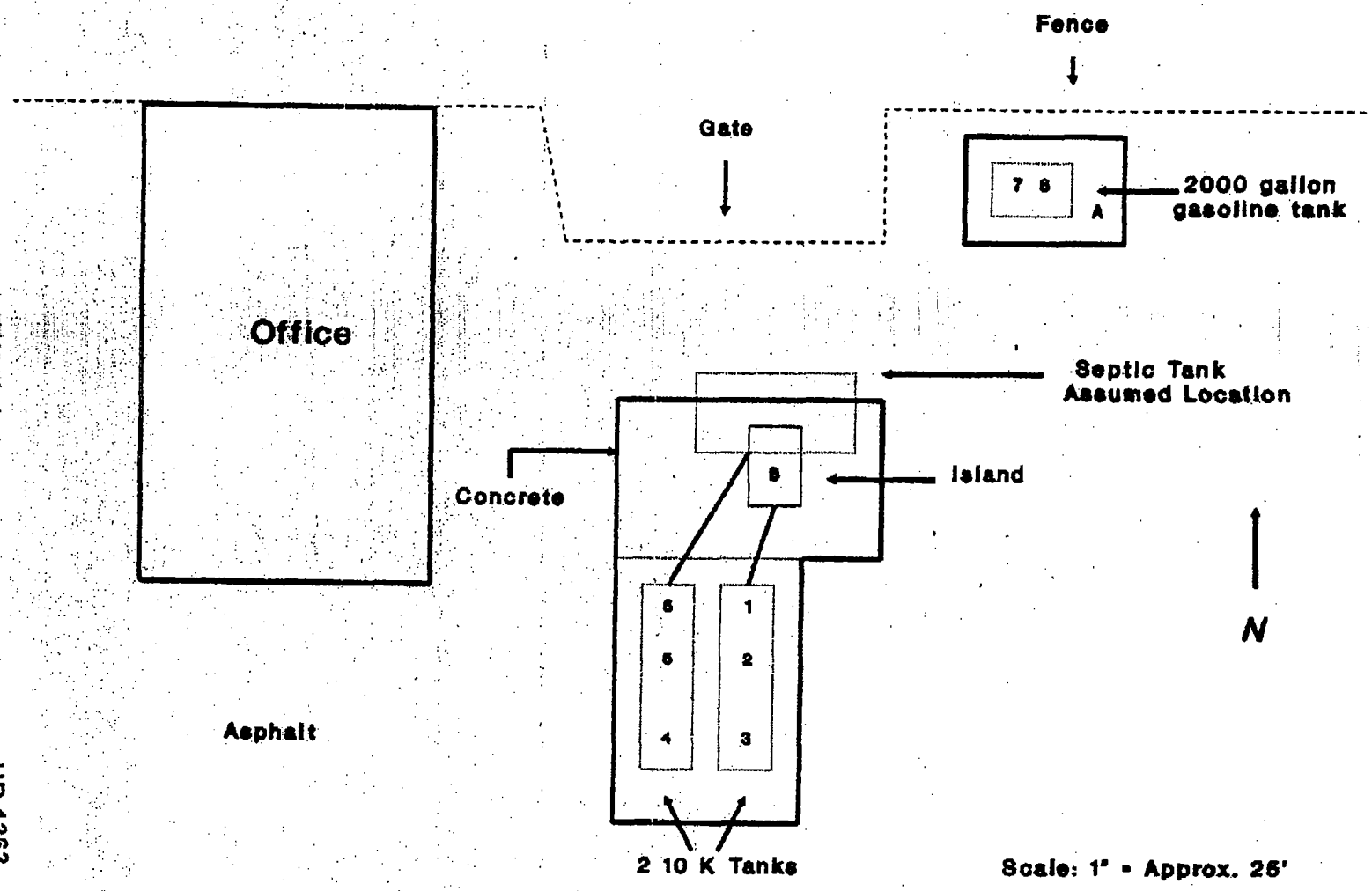


EXHIBIT C

UP-1363

SF 544957

EXHIBIT D

COPPER STATE ANALYTICAL LAB, INC.

710 E. EVANS • TUCSON, AZ 85713

(602) 884-5811 • (602) 797-0788

ARIZONA STATE CERTIFIED LAB NO. 0078

D.A. SHAH
Director

Chain of Custody

PROJ. MGR. Robert Weiss
COMPANY Uniserve Technologies
ADDRESS 2141 N. 11th Ave
Phx Az. 85027

SAMPLER'S (SIGNATURE) Robert Weiss PHONE NO. 258-0868

ANALYSIS REQUESTED

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	HALOGENATED VOLATILES 601 / 8010	AROMATIC VOLATILES 602 / 8020	BTEX / TPHC 8020 / 8015	PHENOLS, SUB PHENOLS 604 / 8040	PESTICIDES / PCB 608 / 8080	PHTHLATE ESTERS 606 / 8060	SWDA-ORGANIC TNM's / 502.2	APPENDIX A ORGANIC SCAN	PETROLEUM HYDROCARBONS 418.1	BASE / NEU / ACID CMPDS GC / MS 625 / 8270	VOLATILE CMPDS. GC / MS 624 / 8240	TOTAL PHENOLS METHOD NO. 420.1	PRIORITY POLLUTANT METALS (13)	TOTAL COLIFORM FECAL COLIFORM	EP TOXICITY METALS (8)	SWDA-INORGANICS PRIMARY / SECONDARY	OIL & GREASE METHOD NO. 413.1	COD EPA 410.1 / BOD-5 EPA 405.1	EPA 180		NUMBER OF CONTAINERS
SP#1	4/19/89	12:05	Soil	20062		8015																			1
SP#2	" "	12:11	" "	20063		8015																			1
SP#3	" "	12:18	" "	20064		8015																			1
SP#4	" "	12:27	" "	20065		8015																			1
SP#5	" "	12:30	" "	20066		8015																			1
SP#6	" "	12:38	" "	20067		8015																			1
SP#7	" "	10:10	" "	20068		8015 - 8020 BTex																			1
SP#8	" "	10:15	" "	20069		8015 - 8020 BTex																			1

733 East Southern Pacific Dr Phx Az.

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT:	Southern	TOTAL NO. OF CONTAINERS	8
P.O. #:	Pacific R.R.	CHAIN OF CUSTODY SEALS	✓
SHIPPING ID. NO.:		REC'D GOOD CONDITION/COLD	✓
VIA:	Greyhound	CONFORM TO RECORD	✓

RELINQUISHED BY: Robert Weiss DATE: 4-19-89
COMPANY: Uniserve Technologies TIME: 9:00
RELINQUISHED BY: [signature] DATE: 4-19-89
COMPANY: CSAL TIME: 2:15

SPECIAL INSTRUCTIONS/COMMENTS:
SP#1 East Diesel tank North end 15' SP#4 West diesel tank South end 14' SP#7 Gas West end 1'
SP#2 " " Middle 14' SP#5 " " Middle 14'
SP#3 " " South end 14' SP#6 " " North end 15' SP#8 Gas East end 8:00 A.

* 8015 CALIFORNIA MODIFIED

UP-1364

SF 544958

COPPER STATE ANALYTICAL LAB, INC.

COMPLETE ANALYTICAL SERVICES — CSA

710 E. EVANS • TUCSON, AZ 85713

(602) 884-5811 • (602) 797-0788

ARIZONA STATE CERTIFIED LAB NO. 0078

D.A. SHAH
Director

Chain of Custody

PROJ. MGR. Robert Weiss
COMPANY 2141 N. 17th AVENUE
ADDRESS PHOENIX AZ 85207

SAMPLER'S (SIGNATURE) Robert Weiss
PHONE NO. 258 0868

ANALYSIS REQUESTED

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	HALOGENATED VOLATILES 601 / 8010	AROMATIC VOLATILES 602 / 8020	BTEX / TPHC 8020 / 8015	PHENOLS, SUB PHENOLS 604 / 8040	PESTICIDES / PCB 608 / 8080	PHTHLATE ESTERS 606 / 8060	SWDA-ORGANIC THM's / 502.2	APPENDIX A ORGANIC SCAN	PETROLEUM HYDROCARBONS 418.1	BASE / NEU / ACID CMPDS GC / MS 625 / 8270	VOLATILE CMPDS. GC / MS 624 / 8240	TOTAL PHENOLS METHOD NO. 420.1	PRIORITY POLLUTANT METALS (13)	TOTAL COLIFORM FECAL COLIFORM	EP TOXICITY METALS (8)	SWDA-INORGANICS PRIMARY / SECONDARY	OIL & GREASE METHOD NO. 413.1	COD EPA 410.1	BOD-5 EPA 405.1	pH EPA 150.1		NUMBER OF CONTAINERS
#A	4/20/89	1020	Soil	20000			8015 - 8020																			
#B	"	508	"	20001			8015																			

UP-1365

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT:	TOTAL NO. OF CONTAINERS	2
P.O. #:	CHAIN OF CUSTODY SEALS	
SHIPPING ID. NO.:	REC'D GOOD CONDITION/COLD	✓
VIA: Courier	CONFORM TO RECORD	

RELINQUISHED BY: Robert Weiss DATE: 4-20-89
COMPANY: Universe Technologies TIME: 8:00 AM
RELINQUISHED BY: [illegible] DATE: 4-20-89
COMPANY: CSAC TIME: 1:10 pm

SPECIAL INSTRUCTIONS/COMMENTS:

SF 544959

* 8015 CALIFORNIA MODIFIED
** TEST REQUIRED BUT NOT LISTED

EXHIBIT D

EXHIBIT E

COPPER STATE ANALYTICAL LAB, INC.

ARIZONA STATE CERTIFIED LAB NO. 0078

710 E. EVANS • TUCSON, AZ 85713

PH. (602) 884-5811 PH. (602) 797-0788 FAX # (602) 884-5812

D.A. SHAH
DIRECTOR
AZ Reg #8888

IN BUSINESS SINCE 1966

Uniserve Technologies
21411 North 11th Ave.
Phoenix, Arizona 85027

Received:-04/20/89
Reported:-04/28/89

Sample Type:-Soil
Sampler :-R.Weiss
Dt.Extracted:-04/20/89

Dt.Analysed:-04/24/89

Total Petroleum Hydrocarbon
California DHS Modified EPA 8015 (GC)

CSAL ID No.	Sample ID	Detection Limit Mg / Kg	Results Mg / Kg
20090	A	4	629
20091	B	4	273

==========END EPA 8015 (Modified)==========

DL=Detection Limit of the instrument
PPM=Mg / Kg
ND=Not Detected

Analyst D. A. Shah

UP-1366

SF 544960

EXHIBIT E

COPPER STATE ANALYTICAL LAB, INC.

ARIZONA STATE CERTIFIED LAB NO. 0078
710 E. EVANS • TUCSON, AZ 85713
PH. (602) 884-5811 PH. (602) 797-0788 FAX # (602) 884-5812

D.A. SHAH
DIRECTOR
AZ Reg. #[illegible]

IN BUSINESS SINCE 1966

Uniserve Technologies
21411 North 11th Ave.
Phoenix, Arizona 85027

Received:-04/20/89
Reported:-04/28/89

Sample Type :-Soil
Sampler :-R.Weiss
Dt.Extracted :-04/20/89 Dt.Analysed:-04/24/89

EPA Method 8020

CSAL ID No.	Sample ID	Benzene ug / Kg	Toluene ug / Kg	Ethyl Benzene ug / Kg	Total Xylene ug / Kg
20090	A	<40	90	70	11,340
Detection Limit ug / Kg		40	40	40	40

==========END EPA 8020==========

DL=Detection Limit of the instrument.
PPB=ug / Kg
ND = Not Detected

Analyst D.A. Shah

UP-1367

SF 544961

EXHIBIT E

COPPER STATE ANALYTICAL LAB, INC.

D.A. SHAH
DIRECTOR
AZ Reg. #[illegible]

ARIZONA STATE CERTIFIED LAB NO. 0078

710 E. EVANS • TUCSON, AZ 85713

IN BUSINESS SINCE 1968

PH. (602) 884-5811 PH. (602) 797-0788 FAX # (602) 884-5812

COMPLETE ANALYTICAL SERVICES CSA

Uniserve Technologies
21411 North 11th Ave.
Phoenix, Arizona 85027

Received:-04/19/89
Reported:-04/28/89

Sample Type:-Soil
Sampler :-R.Weiss
Dt.Extracted:-04/20/89

Client RF :-Southern Pacific

Dt.Analysed:-04/24/89

Total Petroleum Hydrocarbon
California DHS Modified EPA 8015 (GC)

CSAL ID No.	Sample ID	Detection Limit Mg / Kg	Results Mg / Kg
20062	SP #1	4	<4
20063	SP #2	4	<4
20064	SP #3	4	<4
20065	SP #4	4	<4
20066	SP #5	4	<4
20067	SP #6	4	1857
20068	SP #7	4	<4
20069	SP #8	4	<4

==========END EPA 8015 (Modified)==========

DL=Detection Limit of the instrument
PPM=Mg / Kg
ND=Not Detected

Analyst D.A. Shah

UP-1368

SF 544962

EXHIBIT E

COPPER STATE ANALYTICAL LAB, INC.

ARIZONA STATE CERTIFIED LAB NO. 0078
710 E. EVANS • TUCSON, AZ 85713
PH. (602) 884-5811 PH. (602) 797-0788 FAX # (602) 884-5812

D.A. SHAH
DIRECTOR
AZ Reg. 18888
IN BUSINESS SINCE 1961

COMPLETE ANALYTICAL SERVICES CSA

Uniserve Technologies
21411 North 11th Ave.
Phoenix, Arizona 85027

Received:-04/19/89
Reported:-04/28/89

Sample Type :-Soil
Sampler :-R.Weiss
Dt.Extracted :-04/20/89

Client RF :-Southern Pacific R.R.
Dt.Analysed:-04/24/89

EPA Method 8020

CSAL ID No.	Sample ID	Benzene ug / Kg	Toluene ug / Kg	Ethyl Benzene ug / Kg	Total Xylene ug / Kg
20068	SP #7	<40	90	<40	100
20069	SP #8	<40	70	<40	50
Detection Limit ug / Kg		40	40	40	40

==========END EPA 8020==========

DL=Detection Limit of the instrument.
PPB=ug / Kg
ND = Not Detected

Analyst D. A. Shah (4/25)

UP-1369

SF 544963

Southern Pacific Transportation
733 East Southern Pacific Dr.
Becker Rig - Boring Location

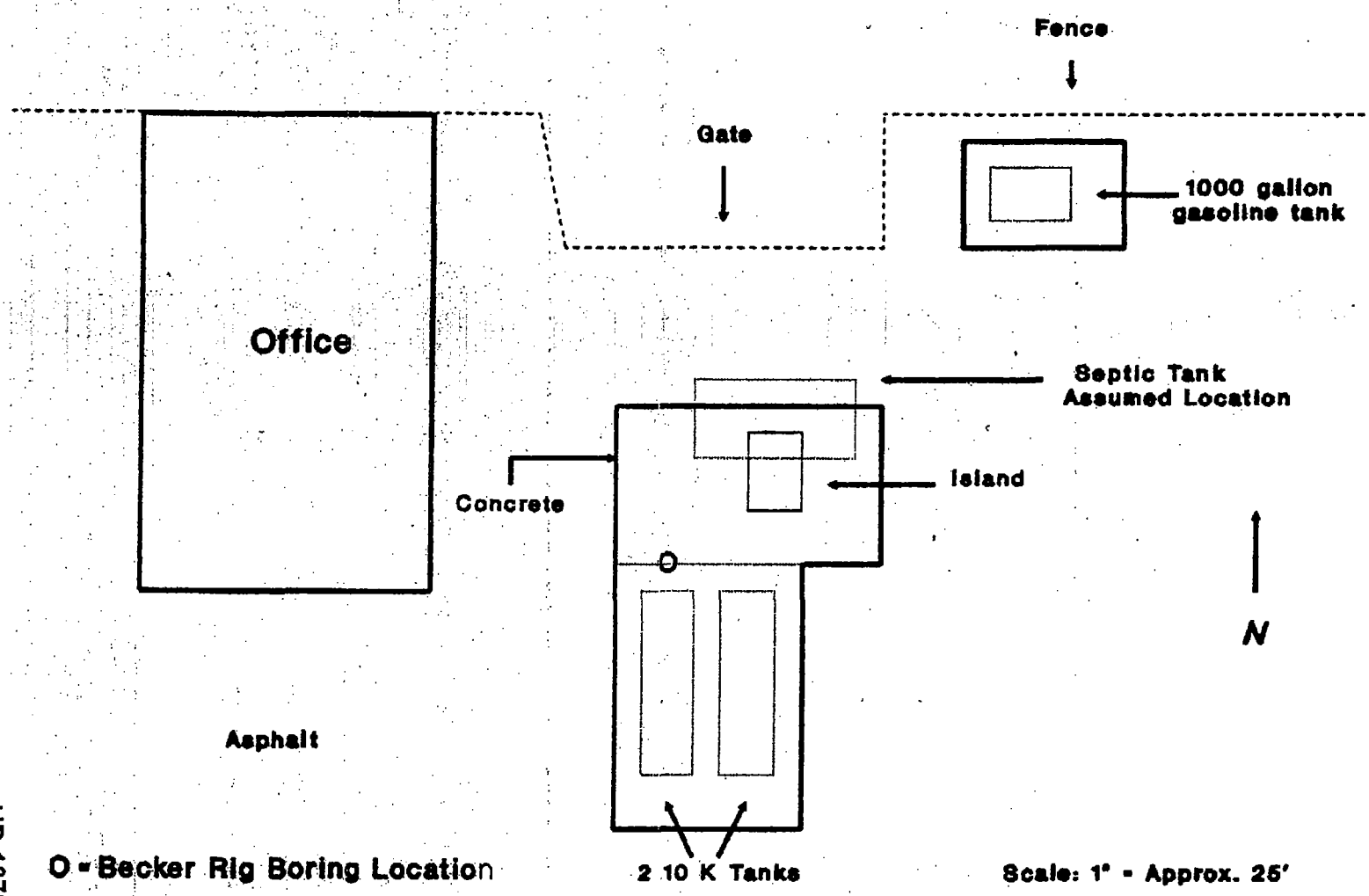


EXHIBIT F

UP-1370

SF 544964

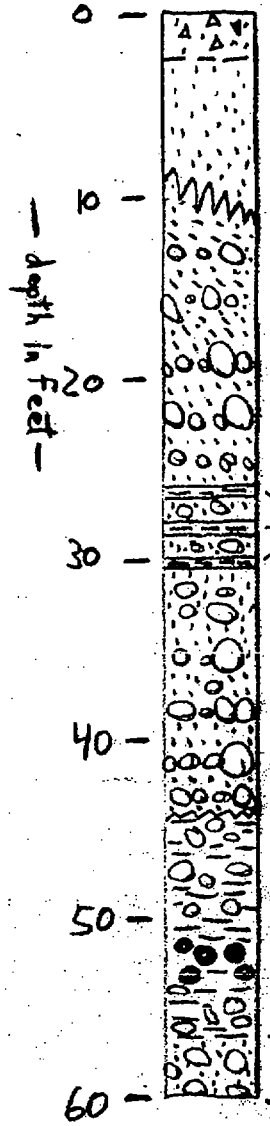
EXHIBIT G

Southern Pacific Railroad

733 E. Southern Pacific Drive, Phoenix

R. Scarborough
22 Aug. 1987

Borehole No. 1



Fill sands with angular pebbles

Fill sands – moist with diesel, and with chunks of black tarry substance – probably infill material for tank placement.

sG

clayey silt lenses or thin layers

sG

mG

← black 'tar'-coated pebbles from 51-53'

mG

sG, moist with water – water table perhaps 62-64!

TD about 60-61'.

sG = sandy gravel, more gravel than sand.
mG = muddy gravel (mud = clay plus silt)
Clayey silt lenses at 25-30' may be described as mud.

UP-1371

SF 544965

EXHIBIT G

LOG OF BORING NO. Hole #1

Project Southern Pacific Job No.

Elevation Datum

Type/Size Boring Rig Type Layne Becker Rig

Groundwater Conditions Date 22 Aug 89

Depth, Ft	Blows/foot C	Blows/foot N/R	Sample Type	Dry Density	Water Content	Unified Class.	Description
10'	07:07 10 blows for 18"			Bkg SS	-1.0 130-250		Moderate odor. Lower 6" slightly sandy silts, very slight clay content. Upper 12" sandy silts with bunker cel (asphalt like)
15'	07:19 11/20/32			Bkg SS	10 150		Moderate odor. Sands and gravels clasts 1-3", few to 5". Sands fairly clean, but much diesel makes it moist.
20'	07:28 21/36 for 14"			Bkg SS	30 100-150		Sands and gravels. Ditto as above. Moderate odor.
25'	07:40 20/40 for 5"			Sample 80% grab			25-30': Ditto as above. Still moderate odor of diesel plus a thin moist layer of clayey silt coming up in pats 1" thick. Med dark brwn color.
30'	07:55 No SS for 25 blows			Bkg 9 Grab is 50. Sample is 100% grab.			

UP-1372

SF 544966

EXHIBIT G

LOG OF BORING NO. Hole #1

Project Southern Pacific Job No.

Elevation Datum

Type/Size Boring Rig Type Layne Becker Rig

Groundwater Conditions Date 22 Aug 89

Depth, Ft	Blows/foot C	Blows/foot N/R	Sample Type	Dry Density	Water Content	Unified Class.	Description
35'	08:05 25 Blows for 3"			Bkg 8 SS 60-80 Sample 90% grab			Grab 30-35': No more clays noted. Clasts 1"-2", few 3-4" Sandy gravels moist with diesel.
40'	08:16 30 blows for 6"			Bkg 2 SS to 70 Sample 70% grab			Moderate odor. Ditto as above. Sands and gravels. Moist with diesel.
45'	08:23 Grab to 50			Bkg 3 No SS attempted			Sands and gravels. Matrix at 45' is more clayey, silty.
50'	08:36 12/33 for 10"			Bkg -3 SS 80-140 Grab 60-110			More silt and clay matrix. Gravelly clasts 1-3". Black coated pebbles up from 51-52'
55'	08:56 grab 60-90			Bkg +3 Grab 60-90			Moderate odor. Clay-silt matrix gravels.
59'				Bkg 0.5 Gab to 130			Moderate odor. Ditto as above. Sample is moist with water and diesel. More sand than clay-silt.

UP-1373

SF 544967

EXHIBIT G

LOG OF BORING NO. Hole #1

Project Southern Pacific Job No.

Elevation Datum

Type/Size Boring Rig Type Layne Becker Rig

Groundwater Conditions Date 22 Aug 89

Depth, Ft	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density	Water Content	Unified Class.	Description
60'	08:55 16/38/36 for 18"			Bkg 5 SS 30-45 Sample is SS		100%	Good SS: Mixture of sandy layers and pebbley gravelly layers. Several ground up rocks in SS. At least 14" in SS. Matrix is clean sand, no clay silts noticable. Water table probably at 62-64' or so.

UP-1374

SF 544968

CHAIN OF CUSTODY RECORD

JOB NO.

PROJECT NAME: 733 E. SP. Drive

SAMPLERS: (SIGNATURE) Robert Scarborough

SAMPLE IDENTIFICATION 733 E. SP	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	VACSAM	SOIL SCOOP	SOIL AUGAR	SPLIT-SPOON	8010	8015	8020	418.1	OTHER	REMARKS (PHYSICAL APPEARANCE, etc.)
733 B-H #1 10'	8/22/89	0707				1				X				X		diesel odor
" " 15'	" "	0719				1				X						" "
" " 20'	" "	0728				1				X				X		" "
" " 25'	" "	0740		80%		1				20%						" "
" " 30'	" "	0755		X		1								X		" "
" " 35'	" "	0805		90%		1				10%						" "
" " 40'	" "	0816		70%		1				30%				X		" "
~~" " 45'~~	~~" "~~	~~0823~~		~~X~~		1										" "
" " 50	" "	0836		20%		1				80%				X		" "
~~" " 55~~	~~" "~~	~~0845~~		~~X~~		1										" "
" " 60	" "	0855				1				X				X		" "
Rinse Water														X		

UP-1375

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
			[illegible]				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	
Robert Scarborough	22 Aug	1415	[illegible]				

SF 544969

UNISERVE TECHNOLOGIES INCORPORATED

Phoenix: (602) 258-0868

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027

White - Testing Laboratory • Yellow - Field Sampler • Pink - Department Job File

EXHIBIT I

COPPER STATE ANALYTICAL LAB, INC.

ARIZONA STATE CERTIFIED LAB NO. 0078

710 E. EVANS • TUCSON, AZ 85713

PH. (602) 884-5811 PH. (602) 797-0788 FAX # (602) 884-5812

D.A. SHAH
DIRECTOR
AZ REG. #[illegible]

IN BUSINESS SINCE 1966

Uniserve Technologies Inc.
21411 N.11 th Ave., Suite 4
Phoenix, Arizona 85027
Mr.Robert Wise

Date Received:-08/22/89
Date Analysed:-08/24/89
date Reported:-08/26/89

Project Name:-733 East S.P.Drive

Total Petroleum Hydrocarbon
Method No. EPA 418.1 (IR)

CSAL ID No.	Sample ID	DL Mg/Kg	Results Mg/Kg
22475	733 B-H#1-10'	10	27,370
22476	733 B-H#1-20'	10	7,444
22477	733 B-H#1-30'	10	14,556
22478	733 B-H#1-40'	10	9,134
22479	733 B-H#1-50'	10	5,056
22480	733 B-H#1-60'	10	2,316
22481	Rinse Water	0.4	3.2

==========END EPA 418.1==========

DL=Detection Limit of the instrument.
PPM=Mg / Kg
ND = Not Detected

Analyst D. A. Shah

UP-1376

SF 544970

INVOICE

ORIGINAL

UNISERVE TECHNOLOGIES INCORPORATED

Phoenix: (602) 258-0868

#3012

TPB

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027

INVOICE DATE 5/3/89

Mr. M. E. Ransom
Asst. Mgr., Environmental Engineering
Southern Pacific Transportation Co.
One Market Plaza, Rm. 1004
San Francisco, CA 94105

JOB # -429

CUSTOMERS ORDER NO.

JOB LOCATION 733 E. Southern Pacific Drive, Arizona

QUANTITY	JOB DESCRIPTION	RATE	AMOUNT
	Remove and dispose of three (3) Underground Storage Tanks per original contract.		$ (b) (4) [redacted]
	Net 15 Days	TOTAL	$ [redacted]

E.A.C. FE99 | E.I.N. 440
W.O. 10,000 | EXP. DES 490
APPROVED: [signature]
FOR VICE PRESIDENT-SYSTEM OPERATIONS

Contract Agreement

PLEASE PAY FROM THIS INVOICE NO STATEMENT WILL BE SENT

To Voucher Bureau 9/11/89

UP-1377

SF 544971

ORIGINAL

INVOICE

UNISERVE TECHNOLOGIES INCORPORATED

Phoenix: (602) 258-0868

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027

#3015

TPB

INVOICE DATE 5/3/89

JOB # -429

Mr. M. E. Ransom
Asst. Mgr., Environmental Engineering
Southern Pacific Transportation Co.
One Market Plaza, Rm. 1004
San Francisco, CA 94105

MERS NO.

JOB LOCATION

ANTITY	JOB DESCRIPTION	RATE	AMOUNT
	Repair damage to septic tank at 733 E. Southern Pacific Drive in Phoenix, Arizona to include installation of concrete riser columns, steel access lid and 6 inch thick concrete cap over tank due to heavy traffic area.		(b) (4) [redacted]
		TOTAL	$ [redacted]

E.A.C. FE99 | E.I.N. 440
W.O. 10000 | EXP. DES 4901
APPROVED
FOR VICE PRESIDENT-SYSTEM OPERATIONS
Contract Agreement

PLEASE PAY FROM THIS INVOICE NO STATEMENT WILL BE SENT

UP-1378

SF 544972

July 25, 1989

To: Mr. Tim Becker, Environmental Engineering
San Francisco

From: Edward Fisher
Los Angeles

Re: Attached copies of invoices for underground tank removal and related repair work at Phoenix, Arizona.

All improvements on this property are under Operating Department control. Therefore suggest invoice be paid by same.

Please contact me at 6289 in Los Angeles if there are any questions.

EAF:ra04

CC: M.L. WELLS - TUCSON - w/attachments

Copy sent in company mail and faxed on 8/23/89

UP-1379

SF 544973

FILE

Phoenix: 258-0868

UNISERVE TECHNOLOGIES INCORPORATED

Environmental Remediation Specialists

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027-2835

August 30, 1989

Southern Pacific Transportation Co.
Southern Pacific Building
One Market Plaza, Room 1007
San Francisco, CA 94105

T. P. B.
SEP 7 1989

ATTN: Mr. Tim Becker - Environmental Engineer
RE: Drilling work performed at 733 E. Southern Pacific in Phoenix, Arizona

Dear Tim:

Enclosed with this letter are copies on the laboratory report for analysis performed on the soil samples taken during our drilling work at the Phoenix yard and a site map which shows a location of the boring. The sample taken from the 60'depth was wet which would seem to indicate that product has reached groundwater at this location. Given this result, we terminated drilling operations after only one boring since any future borings should be placed with the intention of using the hole to install a monitoring/recovery well.

At this point in time, you should notify A.D.E.Q. that contamination was found at this location while performing a post-closure site assessment. (ADEQ UST compliance, John Hudson at (602) 257-6962). The fact that the property is leased can be used as a reason for performing the assessment with a drill rig.

We will prepare a draft copy of a formal report which will outline the work performed to date at this site and send it to you for your review. The report will be constructed in such a fashion that it will be sufficient to address the requirements of ADEQ's 14 day letter which you will receive after they are notified.

We will also send you a report under separate cover which will contain our recommendations for the further work which will be required by ADEQ to define the extent of the contamination at this site. This will give us an opportunity to develop a suitable game plan well in advance of it being required.

If you have any questions concerning the enclosed information, please do not hesitate to call me.

Very truly yours,

J.R. Henzel, Jr.
President
Uniserve Technologies, Inc.

UP-1380

JRH:mks

SF 544975

COPPER STATE ANALYTICAL LAB, INC.

ARIZONA STATE CERTIFIED LAB NO. 0078

710 E. EVANS • TUCSON, AZ 85713

PH. (602) 884-5811 PH. (602) 797-0788 FAX # (602) 884-5812

D.A. SHAH
DIRECTOR
AZ Reg. #[illegible]

IN BUSINESS SINCE 1966

Uniserve Technologies Inc.
21411 N.11 th Ave., Suite 4
Phoenix, Arizona 85027
Mr.Robert Wise

Date Received:-08/22/89
Date Analysed:-08/24/89
date Reported:-08/26/89

Project Name:-733 East S.P.Drive

Total Petroleum Hydrocarbon
Method No. EPA 418.1 (IR)

CSAL ID No.	Sample ID	DL Mg/Kg	Results Mg/Kg
22475	733 B-H#1-10'	10	27,370
22476	733 B-H#1-20'	10	7,444
22477	733 B-H#1-30'	10	14,556
22478	733 B-H#1-40'	10	9,134
22479	733 B-H#1-50'	10	5,056
22480	733 B-H#1-60'	10	2,316
22481	Rinse Water	0.4	3.2

==========END EPA 418.1==========

DL=Detection Limit of the instrument.
PPM=Mg / Kg
ND = Not Detected

Analyst D. A. Shah

UP-1381

SF 544976

CHAIN OF CUSTODY RECORD

JOB NO.

PROJECT NAME: 733 E. SP Drive

SAMPLERS: (SIGNATURE) Robert Scarborough

	SAMPLE IDENTIFICATION	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	VACSAM	SOIL SCOOP	SOIL AUGAR	SPLIT-SPOON	8010	8015	8020	418.1	OTHER	REMARKS (PHYSICAL APPEARANCE, etc.)
	733 E. SP																
24	733 B-H #1 10'	8/22/89	0707				1				X				X		diesel odor
	" 15'	" "	0719				1				X						"
26	" 20'	" "	0728				1				X				X		"
	" 25'	" "	0740		80%		1				20%						"
27	" 30'	" "	0755		X		1								X		"
	" 35'	" "	0805		90%		1				10%						"
28	" 40'	" "	0816		70%		1				30%				X		"
	~~" 45'~~	~~" "~~	~~0823~~		~~X~~		1										"
29	" 50	" "	0836		20%		1				80%				X		"
	~~" 55~~	~~" "~~	~~0845~~		~~X~~		1										"
30	" 60	" "	0855				1				X				X		"
31	Rinse Water														X		

UP-1382

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
			Maria Calderon				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	
Robert Scarborough	22 Aug	1415	[illegible]	8/22/89	1415		

SF 544977

UNISERVE TECHNOLOGIES INCORPORATED

Phoenix: (602) 258-0868

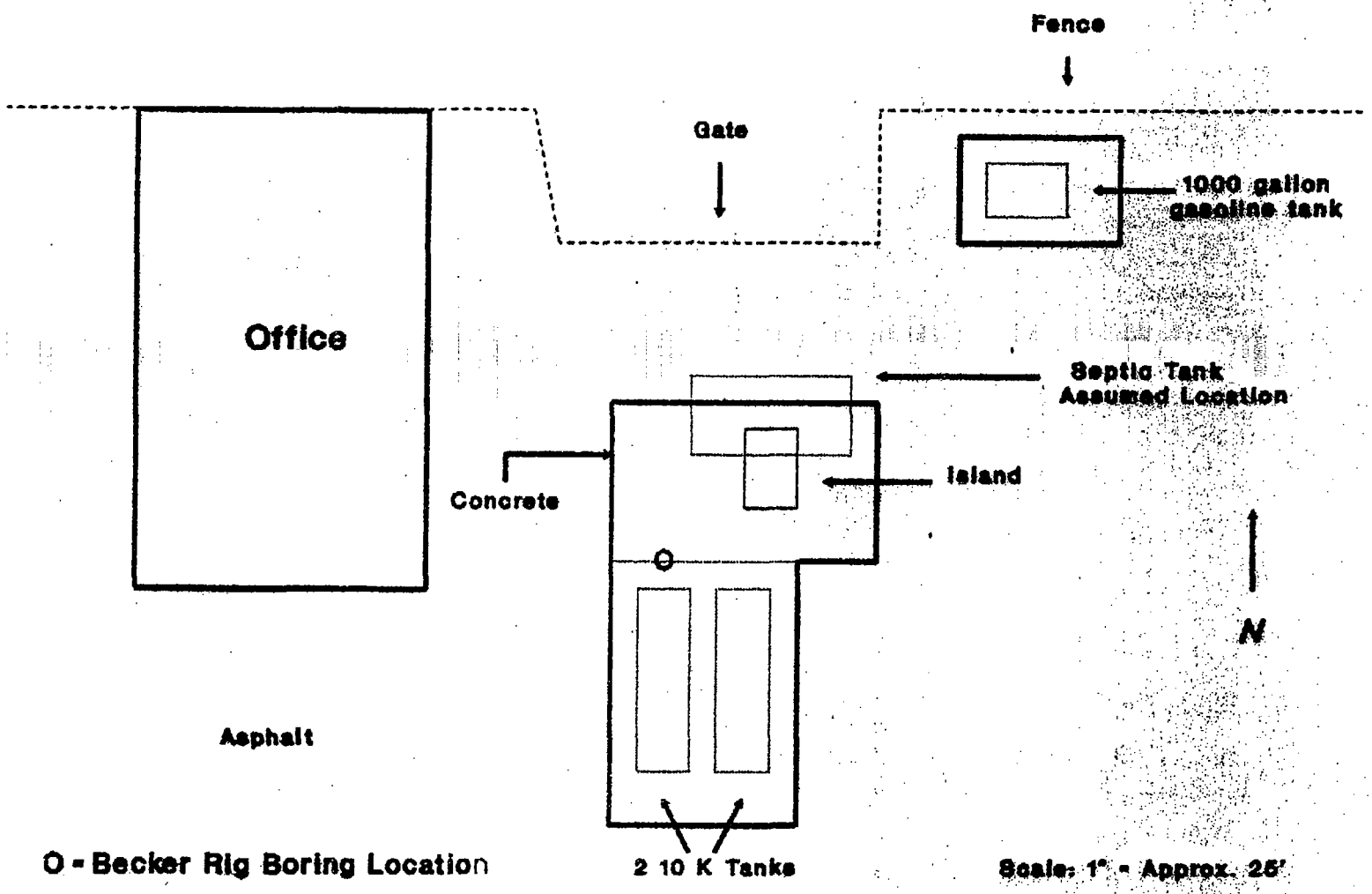
21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027

White - Testing Laboratory • Yellow - Field Sampler • Pink - Department Job File

Southern Pacific Transportation

733 East Southern Pacific Dr.

Becker Rig - Boring Location



UP-1383

SF 544978

July 25, 1989

To: Mr. Tim Becker, Environmental Engineering
San Francisco

From: Edward Fisher
Los Angeles

Re: Attached copies of invoices for underground tank removal and related repair work at Phoenix, Arizona.

All improvements on this property are under Operating Department control. Therefore suggest invoice be paid by same.

Please contact me at 6289 in Los Angeles if there are any questions.

EAF:ra04

CC: M.L. WELLS - TUCSON - w/attachments

Copy sent via intra company and faxed on 8/23/89

UP-1384

SF 544979

FILE

INVOICE

#3015

TPB

UNISERVE TECHNOLOGIES INCORPORATED
Phoenix: (602) 258-0868
21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027

INVOICE DATE 5/3/89

JOB # -429

Mr. M. E. Ransom
Asst. Mgr., Environmental Engineering
Southern Pacific Transportation Co.
One Market Plaza, Rm. 1004
San Francisco, CA 94105

MERS NO.	JOB LOCATION

ANTITY	JOB DESCRIPTION	RATE	AMOUNT
	Repair damage to septic tank at 733 E. Southern Pacific Drive in Phoenix, Arizona to include installation of concrete riser columns, steel access lid and 6 inch thick concrete cap over tank due to heavy traffic area.		$ (b) (4)
		TOTAL	[redacted]

PLEASE PAY FROM THIS INVOICE NO STATEMENT WILL BE SENT

UP-1385

SF 544980

INVOICE

#3012

TPB

UNISERVE TECHNOLOGIES INCORPORATED

Phoenix: (602) 258-0868

21411 N. 11th Ave., Suite 4 • Phoenix, Arizona 85027

INVOICE DATE 5/3/89

JOB # -429

Mr. M. E. Ransom
Asst. Mgr., Environmental Engineering
Southern Pacific Transportation Co.
One Market Plaza, Rm. 1004
San Francisco, CA 94105

CUSTOMERS ORDER NO. FE99-92-30921 JOB LOCATION 733 E. Southern Pacific Drive, Arizona

QUANTITY	JOB DESCRIPTION	RATE	AMOUNT
	Remove and dispose of three (3) Underground Storage Tanks per original contract.		$ (b) (4)
	Net 15 Days	TOTAL	$ (b) (4)

PLEASE PAY FROM THIS INVOICE NO STATEMENT WILL BE SENT

UP-1386

SF 544981

E 626/562-UGT

April 7, 1989

Mr. Jon Hudson
Arizona Department of Environmental Quality
Central Palma Plaza
2005 N. Central Ave.
Phoenix, AZ 85004

SUBJECT: Notification to Remove Underground Storage Tanks

Dear Mr. Hudson:

Pursuant to the notification requirements for the removal of underground storage tanks, please accept this letter as our intent to remove three tanks at our facility on 7th Street in Phoenix. The work is expected to begin during the week of April 10, 1989.

If you have any questions on this matter, please contact Mr. Tim Becker at 415/541-2385.

Sincerely,

G. L. MURDOCK
Per R.G.S.

bc: Mr. D. W. Long
Mr. L. W. Pepple
Mr. M. L. Wells
Mr. D. T. Wickersham

c5nopTPB

R.G.S.
APR 7 1989

UP-1387

SF 544982

April 5, 1989

E 933185/071-02-C

Universe Technologies, Inc.
21411 N. 11th Avenue
Phoenix, AZ 85027-2835

Gentlemen:

Attached are duplicate counterparts of our proposed agree- with you to excavate, remove and dispose of three fuel tanks (two 10,000 gallon and one 4,000 gallon), and compact, backfill and pave as required.

If you find the attached satisfactory, please execute the agreement in duplicate in the spaces which we have marked with the letter "X", affix your corporate seal to each counterpart of agreement, and arrange to have your insurance broker complete insurance endorsement Form 7345-B.

The two executed counterparts should be returned to us at the above-mentioned address, Attn.: Ms. Joni F. Heyward, Supervisor of Contracts, in order that we may arrange for execution on behalf of Southern Pacific Transportation Company. A fully executed counterpart will then be sent to you.

Your prompt attention to the matter will be appreciated.

Yours very truly,

G. L. MURDOCK
Per J.F.H

ttach.

bc: Mr. M. E. Ransom - S.F.
(Attn.: Mr. T.P. Becker)
Mr. Bill Bentley - Tucson

UP-1388

SF 544983

April 5, 1989

E 933185/071-02-C

Universe Technologies, Inc.
21411 N. 11th Avenue
Phoenix, AZ 85027-2835

Gentlemen:

Attached are duplicate counterparts of our proposed agree- with you to excavate, remove and dispose of three fuel tanks (two 10,000 gallon and one 4,000 gallon), and compact, backfill and pave as required.

If you find the attached satisfactory, please execute the agreement in duplicate in the spaces which we have marked with the letter "X", affix your corporate seal to each counterpart of agreement, and arrange to have your insurance broker complete insurance endorsement Form 7345-B.

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Your prompt attention to the matter will be appreciated.

Yours very truly,

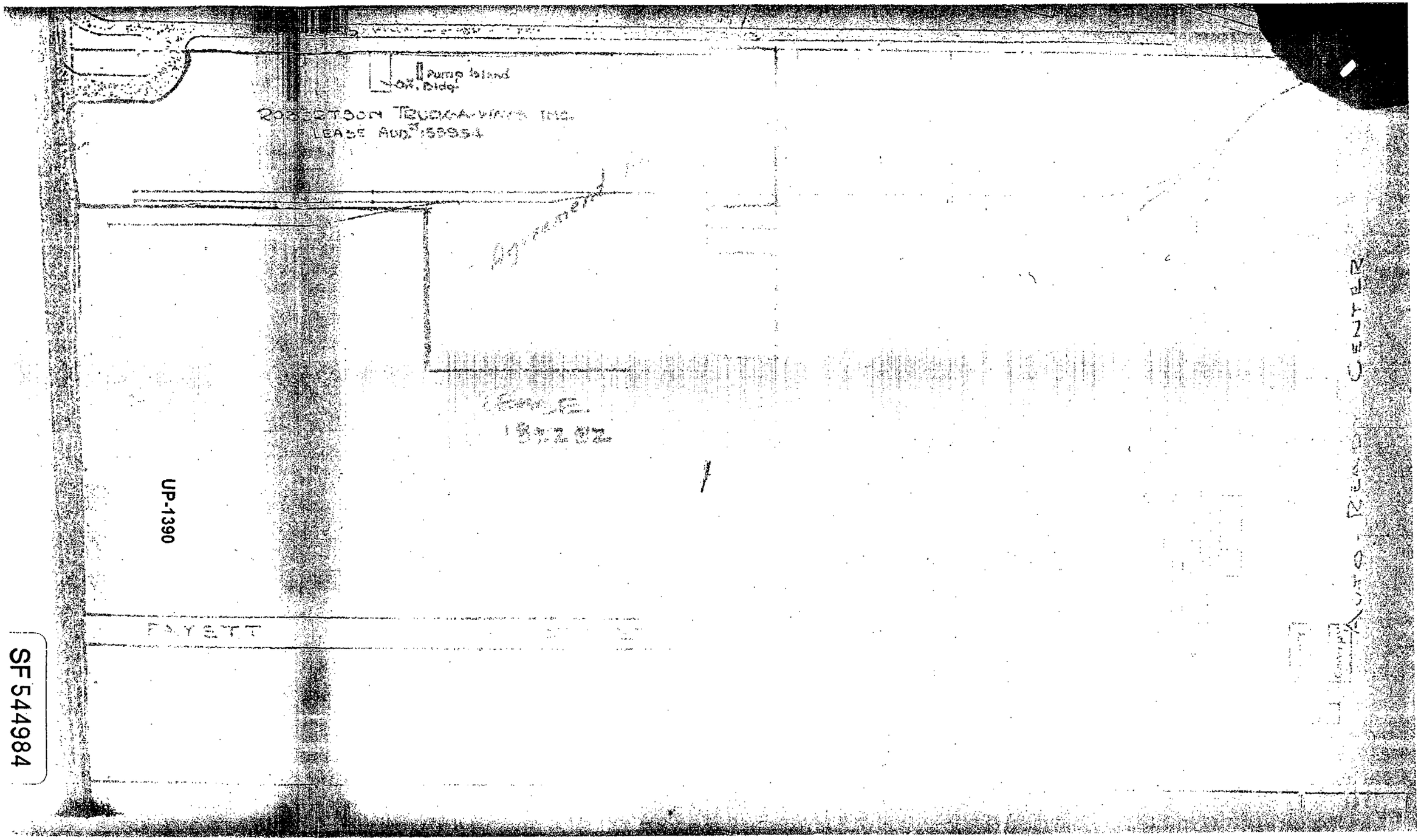
G. L. MURDOCK
Per J.F.H

Attach.

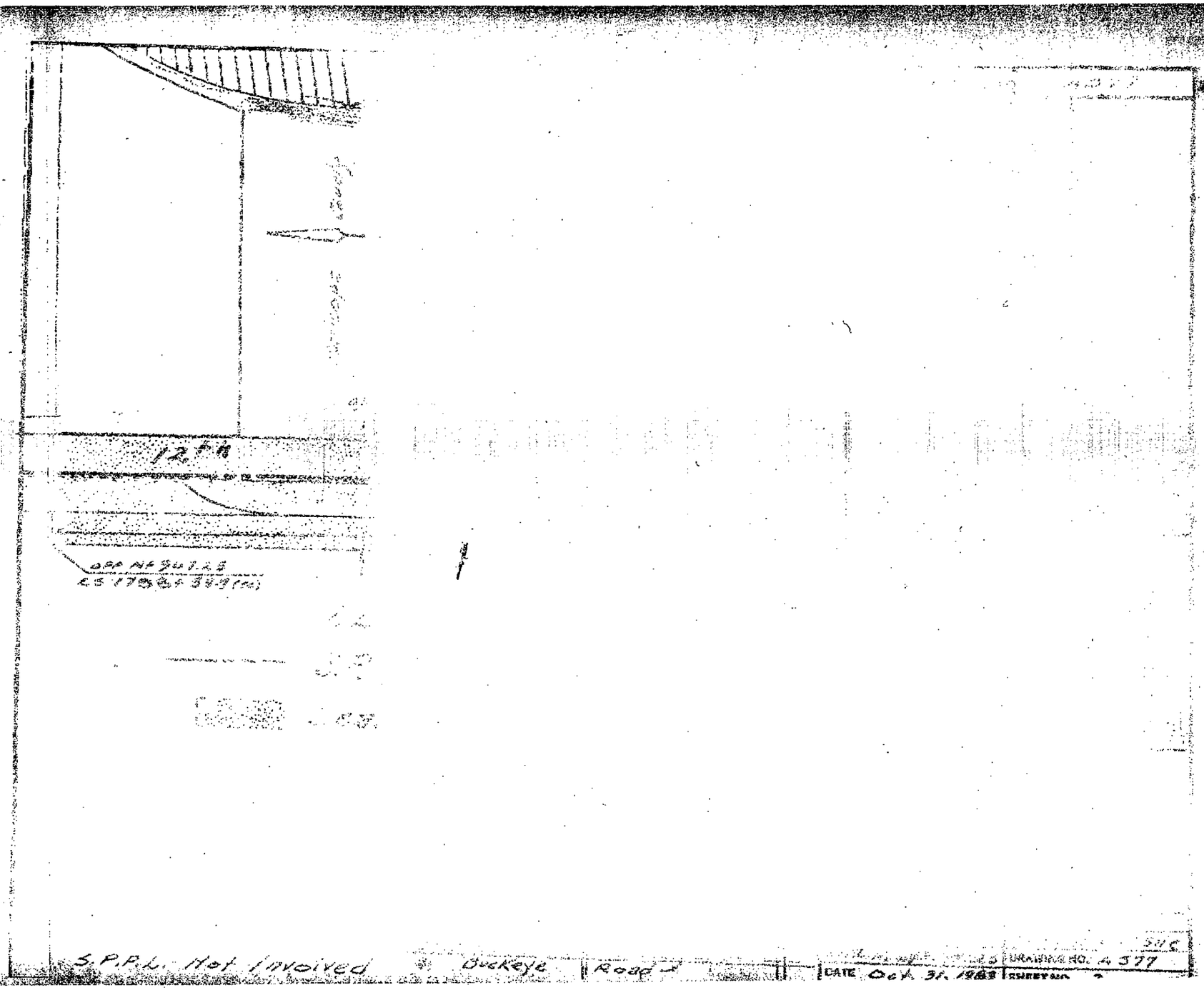
bc: Mr. M. E. Ransom - S.F.
(Attn.: Mr. T.P. Becker)
Mr. Bill Bentley - Tucson

UP-1389

SF 544983


Pump Island
Ox. Bldg.
ROBERTSON TRUCK-A-WAYS INC.
LEASE AUD. #159954
Agreement
LEASE
189282
FAYETT
AUTO-READY CENTER
UP-1390

SF 544984



UP-1391

SF 544985

OBP

UNISERVE TECHNOLOGIES INCORPORATED
Environmental Remediation Specialists

Phoenix: 258-0868

21411 N. 11th Ave. • Phoenix, Arizona 85027-2835

Want to do this with proper authority, as soon as possible

W. C. D.
OCT 31 1988

October 18, 1988

Southern Pacific Transportation Co.
400 E. Toole
Tucson, AZ 85701

T. P. B.
NOV 7 1988

ATTN: Mr. Bill Bentley
RE : Underground storage tank removal - Phoenix yard

Dear Mr. Bently,

In accordance with your request for bid, Uniserve technologies, Inc. proposes to furnish all labor, materials, transportation and equipment required to remove and dispose of two (2) 10,000 gallon diesel and one (1) gasoline underground storage tanks. Scope of work as follows:

- Obtain required permits.
- Remove and dispose of any product remaining in tanks.
- Purge tanks to N.F.P.A. standards.
- Sawcut and remove west concrete pad, dispensers and island.
- Remove product lines and vent lines.
- Excavate, remove and dispose of tanks.
- Backfill and compact tanks hole with A.B.C.
- Resurface 10000 gallon hole with asphalt to a thickness of 3"
- Resurface 4000 gallon hole with asphalt to a thickness of 2"
- Take and analyze 2 soil samples from beneath each tank.
- Provide written report documenting removal and analysis.

Our quote for the above work is $ 12905.00

Due to the lack of as built drawings U.T.I. will require a disclaimer of responsibility for any underground utilities. Client to provide water tap for use by U.T.I.

We welcome the opportunity to be of service to your organization.

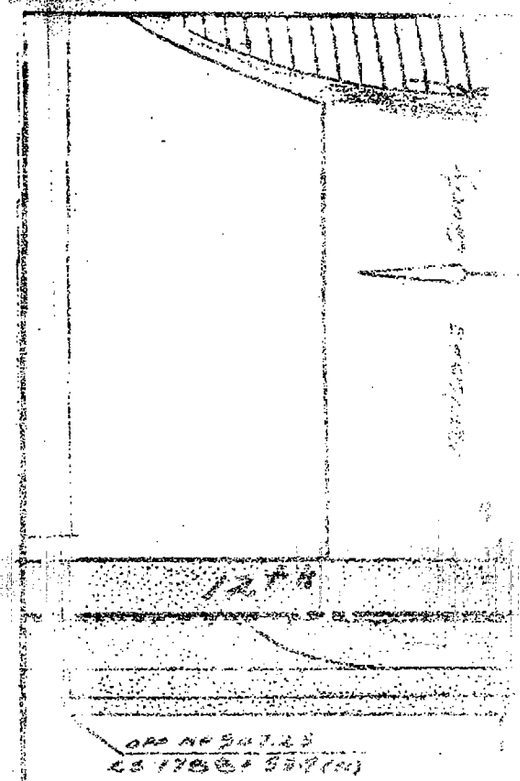
Very truly yours,

J. R. Henzel Jr.
President
Uniserve Technologies, Inc.

JRH/sg

UP-1392

SF 544988

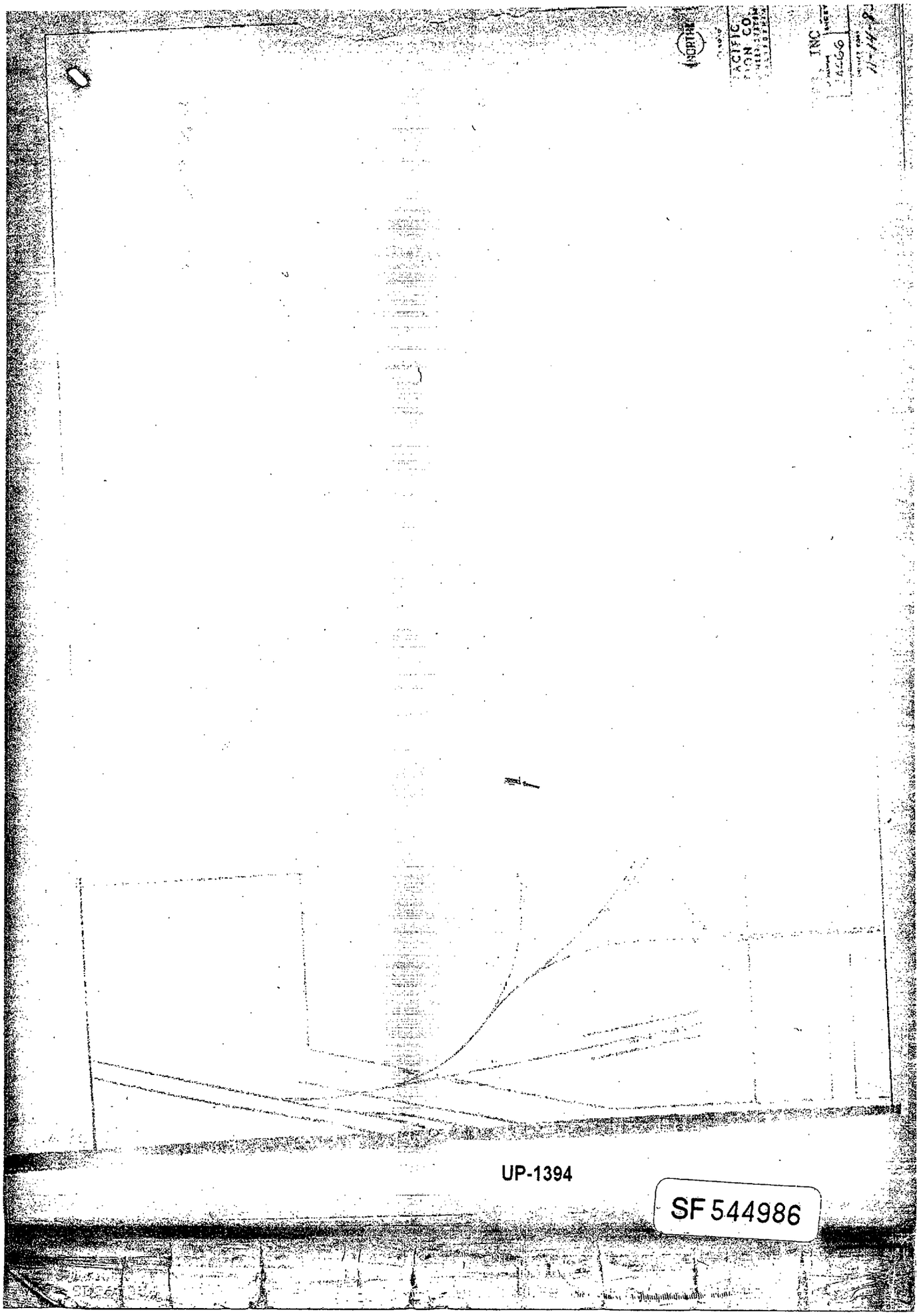


S.P.R.L. Not Involved | Buckeye | Road

DATE Oct. 31, 1983 | SHEET NO. 3 | DRAWING NO. A 377

UP-1393

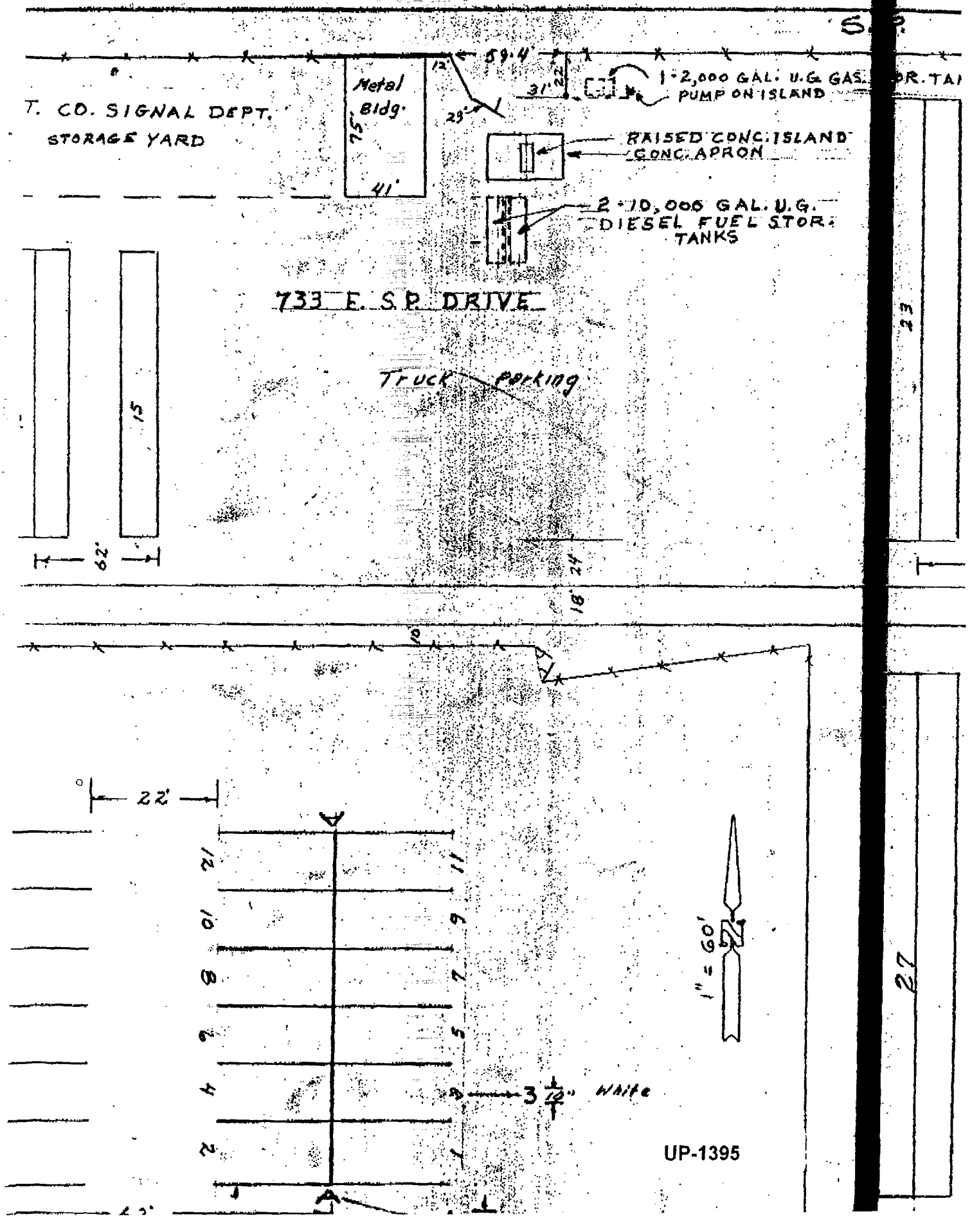
SF 544985



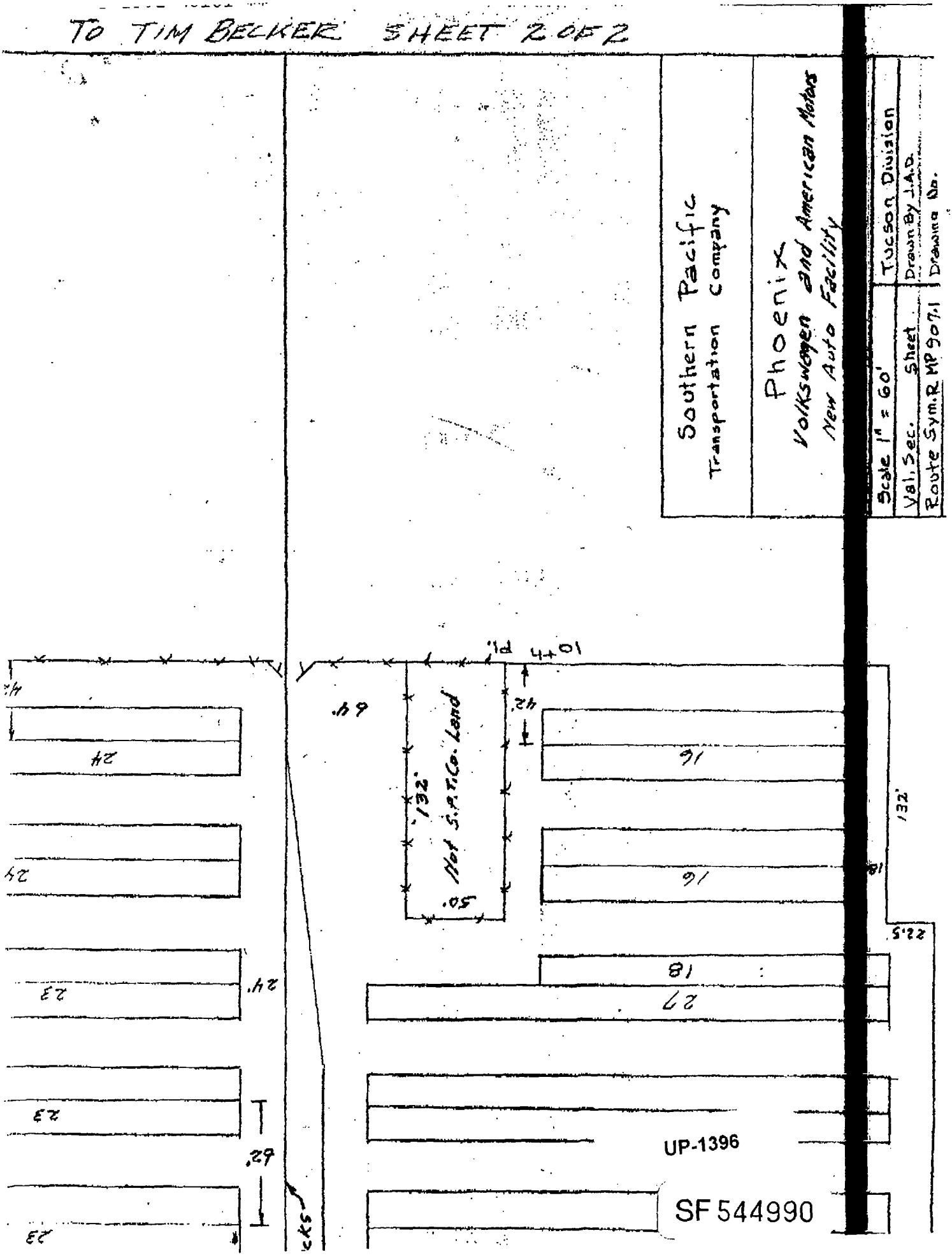
UP-1394

SF 544986

TO TIM BECKER SHEET 1 OF 2



TO TIM BECKER SHEET 2 OF 2



PMT-361

PACIFIC MOTOR TRUCKING COMPANY

904 S. 12TH ST.
PHOENIX, AZ. 85034

932185/023-6

MER

APRIL 4, 1988

MR. G. L. MURDOCK, CHIEF ENGINEER
SOUTHERN PACIFIC TRANSPORTATION CO.
SOUTHERN PACIFIC BUILDING
ONE MARKET PLAZA
SAN FRANCISCO, CA. 94105

DEAR MR. MURDOCK:

REFERS TO THE ATTACHED LETTER THAT COMMERCIAL CARRIERS IN PHOENIX, ARIZONA HAS RECEIVED FROM THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY ADVISING THAT THEY ARE IN RECEIPT OF A REPORT FROM THE MARICOPA COUNTY HEALTH SERVICES LISTING LOCATIONS AND OWNERSHIP OF STORAGE TANKS NOT APPEARING IN THEIR RECORDS AND REQUEST THAT CERTAIN FORMS BE COMPLETED AND RETURNED TO THEIR OFFICE WITHIN FOURTEEN DAYS FROM RECEIPT OF THEIR LETTER.

IN VIEW OF THE FACT THAT THESE UNDERGROUND FUEL TANKS ARE OWNED BY SOUTHERN PACIFIC TRANSPORTATION I AM FORWARDING THIS INFORMATION TO YOU FOR HANDLING.

AS A MATTER OF INFORMATION, THE DIESEL FUEL TANKS LOCATED AT 735 E. S.P. DR., WHICH IS THE YARD WHERE THE VOLKSWAGENS AND AMCS ARE UNLOADED, ARE NOT BEING USED AND THEY PROBADLY WILL HAVE TO BE REMOVED IN ORDER TO COMPLY WITH NEW REGULATIONS.

Mark Newton
MARK NEWTON

x2560
x2559

CC: D. E. WILLIAMS, VP, P.M.T.
L. T. PROCOPIO, TM, COMMERCIAL CARRIERS

Tracy Collins w/call back on location.

735 E. SP Dr.
Phoenix, AZ

LEASE Property

UP-1397

uthern Pacific
portation Company

SF 544991

John
Give to Newt.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Rose Mofford, Acting Governor
EVAN MECHAM, GOVERNOR
GERALD H. TELETZKE, PH.D., DIRECTOR

March 29, 1988
REF#: 1113UST

RECEIVED
MAR 30 1988
CCI - PHX

Commercial Inc.
Box 20425
Phoenix, Arizona 85036

To Whom It May Concern:

The Arizona Department of Environmental Quality is in receipt of a report from the Maricopa County Health Services listing locations and ownership of storage tanks not appearing in our records. Arizona Revised Statute §49-1002 requires owners of underground storage tanks (UST) to notify our Department in writing of the existence and location of these structures. This notification was due May of 1986. Enclosed, please find a copy of A.R.S. §49-1002 and the required notification forms. If your storage tank is subject to notification, please fill out the forms completely and return them to our Office within fourteen days of the receipt of this letter.

Please note that certain underground tanks are exempt from the notification requirements (see A.R.S. §49-1011, Chapter 6, Article 11). If you believe that these requirements do not apply to your tank, please call us, or notify us in writing. If you have any questions, please call me at 257-6962. Thank you.

Sincerely,

Michael J. Crumrine

Michael J. Crumrine
Water Pollution Compliance Unit

MJC:lm

UP-1398

Industrial Compliance
9830 S. 51st., Suite A-127 Phoenix, Arizona 85044 602/496-4100 Fax 602/496-4399
Arizona Contractor's License #AE090871

July 26, 1995

IC Project No. 03102810

Mr. Michael J. Grant
Senior Environmental Project Manager
Southern Pacific Lines
One Market Plaza, Room 225
San Francisco, California 94105

Re: Underground Storage Tank Closure Report for the Former Commercial Carriers Lease Property, 902-904 South 12th Street, Phoenix, Arizona

Dear Mr. Grant:

Industrial Compliance (IC) is pleased to submit this report documenting the removal of a 25,000-gallon diesel underground storage tank (UST) and the collection of soil samples at the above-referenced facility on June 14 and 15, 1995. The UST was located on Southern Pacific Transportation Company (SPTCo) property that was formerly leased to Commercial Carriers (Figures 1 and 2). Work was conducted in accordance with the Arizona Department of Environmental Quality (ADEQ) Tank Closure Procedures revised January 1994. In addition, the soils beneath the UST system were sampled and analyzed for the presence of petroleum hydrocarbons in accordance with Title 40, Code of Federal Regulations, Part 280.72 (40 CFR 280.72). This report documents the activities completed at the site and includes figures, UST information, analytical results, regulatory permits, and the UST destruction certificate.

PROJECT BACKGROUND

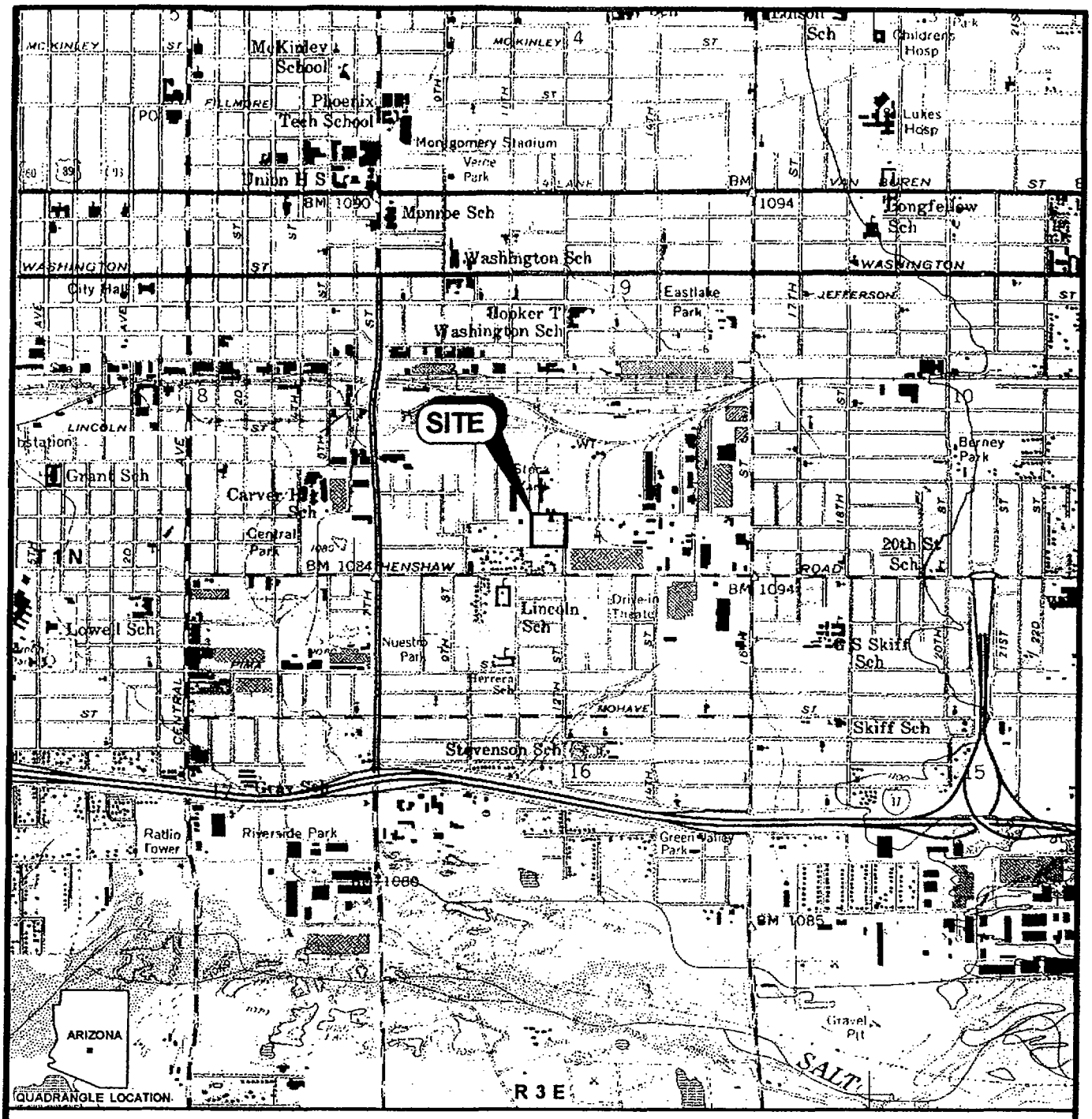
The SPTCo Operations Department (Intermodal) reportedly installed the UST at the subject site in 1986. Commercial Carriers subsequently leased the property from SPTCo and operated the UST and its associated pumps until 1993. In 1993, Commercial Carriers terminated its use of the UST and the associated lease area; however, the company still leases the adjacent office building.

The fueling facility at the site consisted of a central dispenser island with two fuel dispensers and two smaller satellite dispenser islands with one fuel dispenser each. A 25,000-gallon capacity, fiberglass-coated steel UST utilized for the storage of diesel fuel was located west of the three dispenser islands. The main product distribution line was composed of fiberglass and connected the south end of the UST to the south end of the central dispenser island (Figure 2).

/u/aramir/reports/SPphoenix

UP-1399

BXI 85460465



SOURCE: USGS QUAD MAP - PHOENIX, ARIZONA, 1982.

1/2 0 1MILE

APPROXIMATE SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

APPROXIMATE SCALE (FEET)

N

Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 07/07/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SITE LOCATION MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 1

Page -

Scale AS SHOWN

UP-1400

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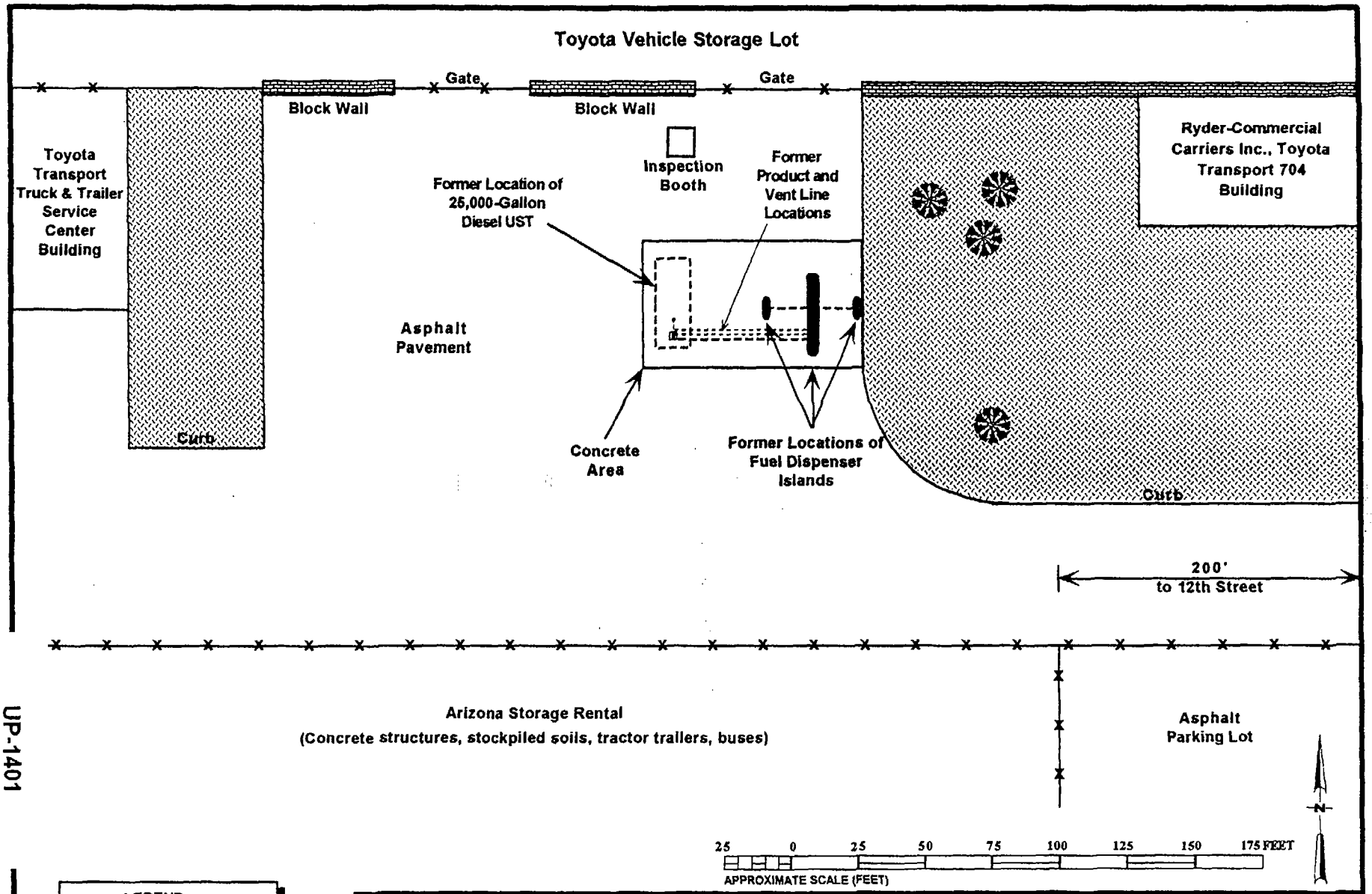


LEGEND
= Tree
= Chain Link Fence
= Grass Lawn

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 07/12/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SITE VICINITY MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 2
Page -
Scale AS SHOWN

D:\CANVAS\PRJFILES\03102810\2810FIG2

UP-1401

UST SYSTEM REMOVAL AND SOIL SAMPLING ACTIVITIES

On June 14 and 15, 1995, IC excavated and removed one 25,000-gallon UST, the associated product distribution lines, and four fuel dispensers from the former Commercial Carriers fueling facility. The UST removal activities were conducted in the presence of a City of Phoenix Fire Department Inspector and in accordance with the IC Standard Operating Procedures included as Appendix A.

To facilitate removal of the UST and the associated product and vent lines, the fuel dispensers, dispenser islands, and surrounding concrete slab were dismantled and/or removed. Following the removal of the UST and the product distribution lines, IC personnel assessed the condition of the UST system. Both the UST and the associated product distribution lines appeared structurally intact with no indications of corrosion or perforations. Moreover, the backfill and native soils immediately surrounding the UST were not visibly impacted by petroleum hydrocarbons. A copy of the ADEQ/Phoenix Fire Department On-Site UST Closure Report is included as Appendix B.

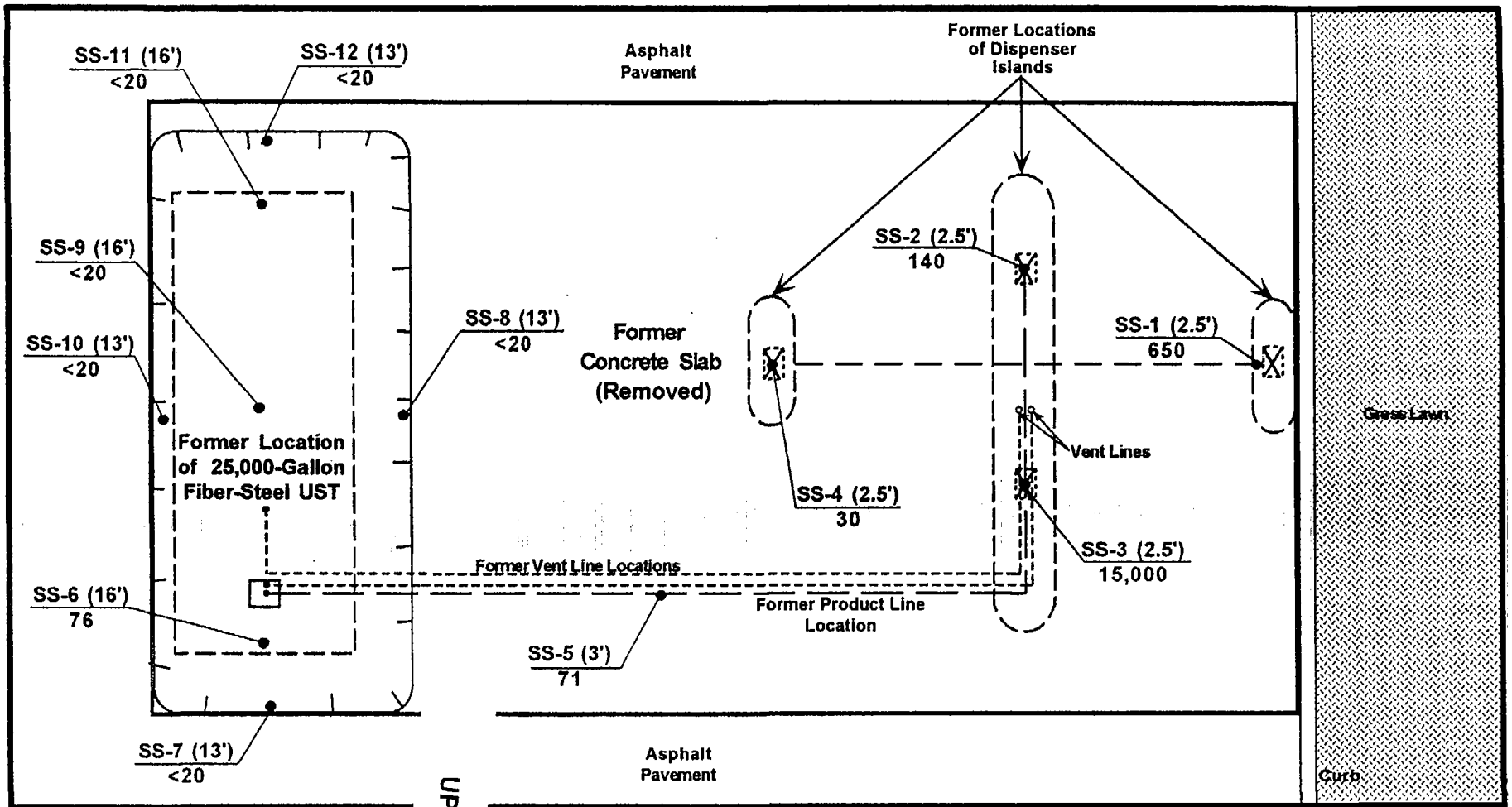
A total of 12 soil samples (i.e., SS-1 through SS-12) were collected from the UST excavation and from beneath the former fuel dispenser and product line locations. The soil samples were submitted for analysis to Analytical Technologies, Inc. (ATI) of Phoenix, Arizona. Figure 3 depicts the soil sample locations, the depths at which the samples were collected, and the corresponding analytical results. In addition, the soil sample analytical results are summarized on Table 1 and the laboratory report and chain-of-custody form are included as Appendix C.

Following its removal, IC delivered the UST to the Emco Recycling facility in Tempe, Arizona for destruction. A copy of the UST Destruction Certificate is included as Appendix D. The UST excavation was subsequently backfilled with pea gravel to approximately three feet below ground surface (bgs). Aggregate base course (ABC) fill material was then placed and compacted from a depth of three feet bgs to near surface grade. The backfilled area was subsequently paved to surface grade with asphaltic concrete.

ANALYTICAL PROCEDURES AND SOIL SAMPLE RESULTS

Soil samples SS-1 through SS-12 were submitted to ATI on June 15, 1995, and were analyzed for total petroleum hydrocarbons (TPH) using Arizona Department of Health Services (ADHS) Method 418.1 AZ.

Results of the laboratory analyses of the soil samples indicated detectable concentrations of TPH in six of the 12 samples analyzed. Three of the six samples exceeded the ADEQ Suggested Soil Cleanup Level (SSCL) of 100 milligrams per kilogram (mg/kg) for TPH in



UP-1403

LEGEND

- = Former Fuel Dispenser
- = Excavation Perimeter
- = Former UST
- Soil Sample Location and # (sample depth in feet) / TPH Concentration

TPH = Total Petroleum Hydrocarbons in mg/kg

< = Less than indicated detection limit

UST = Underground Storage Tank

5 0 5 10 15 20 25 30 35 FEET

APPROXIMATE SCALE (FEET)

N

Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 07/07/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SOIL SAMPLE LOCATION MAP

FORMER COMMERCIAL CARRIERS LEASE PROPERTY

902-904 SOUTH 12TH STREET

PHOENIX, ARIZONA

Figure 3

Page -

Scale AS SHOWN

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TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
902-904 12th Street, Phoenix, Arizona
June 14-15, 1995 UST Closure

Sample No.	Sample Depth (feet bgs)	Analytical Results TPH by ADHS 418.1 AZ	
		Sample Locations	TPH (mg/kg)
SS-1	2.5	East Dispenser Island	650
SS-2	2.5	Central Dispenser Island (north)	140
SS-3	2.5	Central Dispenser Island (south)	15,000
SS-4	2.5	West Dispenser Island	30
SS-5	3	Main Product Line	71
SS-6	16	UST excavation (bottom - south end)	76
SS-7	13	UST excavation (south wall)	<20
SS-8	13	UST excavation (east wall)	<20
SS-9	16	UST excavation (bottom - central area)	<20
SS-10	13	UST excavation (west wall)	<20
SS-11	16	UST excavation (bottom - north end)	<20
SS-12	13	UST excavation (north wall)	<20
SSCL			100

bgs = below ground surface
TPH = total petroleum hydrocarbons
mg/kg = milligrams per kilogram
< = less than indicated detection limit
SSCL = ADEQ Suggested Soil Cleanup Level for TPH (January 1994)

soil. Analyses of soil samples SS-1, SS-2, and SS-3, collected from beneath the former east and central dispenser island locations indicated concentrations of TPH at 650, 140, and 15,000 mg/kg, respectively. The TPH concentrations present in this area indicate that a release of diesel fuel may have occurred from the piping or fittings beneath these dispensers. Analysis of soil sample SS-4, which was collected from beneath the west dispenser island, indicated a TPH concentration of 30 mg/kg. Analysis of soil sample SS-5, which was collected from beneath the former product line location equidistant between the UST and the central fuel island, indicated a TPH concentration of 71 mg/kg. The concentrations of TPH present in samples SS-4 and SS-5 did not exceed the ADEQ SSCLs. Soil samples SS-6 through SS-12 were collected from the sidewalls and the bottom of the UST excavation. Analysis of soil sample SS-6, collected from the south end of the UST excavation, indicated a TPH concentration of 76 mg/kg; however, this concentration did not exceed the ADEQ SSCL of 100 mg/kg for TPH in soil. The remaining soil samples (SS-7 through SS-12) did not indicate concentrations of TPH exceeding the laboratory method detection limits of 20 mg/kg.

REFERENCES

Arizona Department of Environmental Quality, January 1994, *Tank Closure Procedures.*

Industrial Compliance, May 1995, *Proposal to Excavate and Remove a 25,000-Gallon Diesel UST and Collect Soil Samples at the Former Commercial Carriers Lease Property.*

United States Geological Survey, 1982, *Phoenix, Arizona Quadrangle Topographic Map.*

IC appreciates the opportunity to present this letter report and to provide professional environmental consulting services to SPTCo. Should you have any questions concerning this proposal, please contact Stephen J. Smelser at (800) 397-0796.

Sincerely,

INDUSTRIAL COMPLIANCE

REGISTERED GEOLOGIST
CERTIFICATE NO.
26394
STEPHEN J.
SMELSER
Date Signed 7-26-95
ARIZONA, U.S.A.

Abel Ramirez, Jr., R.G.
Project Geologist

Stephen J. Smelser, R.G.
Senior Project Manager

SJS/AR/sgo

Attachments

APPENDIX A

IC STANDARD OPERATING PROCEDURES

IC STANDARD OPERATING PROCEDURES
UST SYSTEM REMOVAL, EXCAVATION AND SAMPLING

Prior to on-site activity, IC personnel will locate underground utilities, pipelines, or structures adjacent to the UST using as-built diagrams and confirmed markings by "Blue Stake" and/or a private locating service. IC field technicians will then remove the concrete and/or asphalt cover and associated backfill material overlying the UST. Excavation of the overlying material is then performed until the top half of the UST is exposed. Each opened UST will then be vented and inerted of hydrocarbon vapors, using a minimum of 25 pounds of dry ice (carbon dioxide) per 1,000-gallon capacity. Prior to removal of the UST, lower explosive limit (LEL) readings will be obtained from each venting UST, until reduced LEL conditions are met.

During the UST removal, the local fire marshal is required to be present to help insure overall site safety and inspection of the UST. The UST is secured to the lifting equipment (either a large backhoe or excavator) by heavy gauge chains or cables, and is carefully lifted from the UST basin. Lifting equipment for USTs of 10,000-gallon capacity or greater will require a crane. Upon removal, the UST is visually inspected, stripped of debris, and marked with an identification number. The UST is then loaded and secured onto a transport vehicle and prepared for delivery to an approved disposal or recycling facility.

Subsequent to the UST removal, soil sampling is conducted under the direction of an IC site supervisor, geologist, or engineer. The soil sampling protocol typically includes the collection of one sample at opposite ends beneath each UST location (two samples per UST location). If necessary, the former product piping trenches are sampled at 10 to 20 foot intervals, depending on the total length of the trench. Each soil sample is collected from native soil at a depth not to exceed two feet beneath the base of the former UST or piping location. The soil sample is then collected either from the bucket of the excavating equipment or by hand using a decontaminated trowel or shovel. Upon recovery, the sample is placed in a jar, labeled, and stored in a cooler with ice for delivery (along with chain-of-custody documentation) to an analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds prior to laboratory analysis. An additional portion of the sampled soil may be sealed in a jar for later screening using a portable photoionization detector (PID), and for the description of the excavated materials. Conditions noted during soil sampling may include sample location(s) and depths, PID readings, ground water seepages or accumulations in the excavation(s), and other pertinent information.

IC STANDARD OPERATING PROCEDURES
SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification procedures ensure proper designation and labeling of samples upon their collection. Each sample container submitted for analysis is labeled to identify the project job number, date and time of sample collection, and an identification number unique to the sample. Any in-field measurements, sampling methodology, or other pertinent sampling observations may be recorded on field sheets, boring log, or field notes.

Chain-of-custody (COC) procedures document sample possession from the time of collection to its arrival at the laboratory. Before sample shipment, COC forms are ledgeably completed and signed by the sampler. COC forms are used to record date, time, possession, quantity, and type(s) of samples along with the requested analysis. During shipment, the person with custody of the samples will relinquish them to the next person by signing the COC form(s) and noting the date and time.

At the laboratory, the sample-control officer will verify sample integrity, correct preservation, collection in the proper containers, and ensure adequate volume has been submitted for analysis. The samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the COC forms and the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

IC STANDARD OPERATING PROCEDURES
LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Arizona approved analytical laboratories routinely conduct instrument calibration, and perform analysis of replicates, spikes, blanks, spiked blanks. In addition, certified reference materials are analyzed at method-specific frequencies to monitor precision and bias. Laboratory Quality Assurance/Quality Control (QA/QC) programs typically include:

A) Multi-level review of raw data and client reports to insure that QA is met.

B) Participation in state and federal laboratory accreditation/certification programs.

C) Participation in both U.S. EPA Performance Evaluation studies (water supply and water pollution studies) and inter-laboratory performance evaluation programs.

D) Standard operating procedures describing routine and periodic instrument preventative maintenence.

E) "Out-of-Control"/Corrective Action documentation procedures.

APPENDIX B

ADEQ/PHOENIX FIRE DEPARTMENT UST CLOSURE REPORT

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY/PHOENIX FIRE DEPARTMENT
ON-SITE UNDERGROUND STORAGE TANK CLOSURE REPORT

This Report Does Not Constitute a Site Assessment Required Pursuant to A.R.S. 49-1008 (40 CFR §280.72)
Pursuant to A.R.S. 49-1004, Notify ADEQ Within 24 Hours of a Confirmed or Suspected Release
ADEQ UST Phone No. - (602) 207-4261
ADEQ Watts Line (within Arizona only) - 1-800-234-5677

RECEIVED JUN 1 6 1995 INDUSTRIAL COMPLIANCE

Suspected Contamination ☐ ADEQ Notified ☐ Date: 6/8/95

Part 1 of 2

CLOSURE INFORMATION

Permit No.: 73418 ADEQ Closure No.: R4589 Date of Closure: 6/15/95

Type of Closure: Temporary [ ] Permanent [✓]

How Closed: Removed [✓] Abandoned In Place [ ]

Facility Name: Commercial Carriers
Type of Facility: Transportation of Vehicles
Street Address: 802-904 S. 12th St.
City: Phoenix State: AZ Zip

Owner's Name: Southern Pacific Trans. Co.
Owner Contact Name: Mike Grant
Street Address: One Market Plaza
City: San Francisco State: CA Zip 94105

Contractor: Industrial Compliance Contact Name: Eric Kelley Phone No.: 496-4100
License No.: AE090871 Type of License: A B-1 L-57 L-5 Other AE-Haz. Matl. Abat. and Certain.

Laboratory: Analytical Technologies, Inc. Contact Name: Mary Tyer Phone No.: 496-4400

Consultant: Industrial Compliance Contact Name: Steve Smulac Phone No.: 496-4100

INSPECTION INFORMATION

Inspector: FUSSELMAN No.: 0531
LEL % at Time of Removal: 0
O_2 % at Time of Removal: 0
Check one of the Following:
[ ] Inert Gas [ ] Air Blower
[ ] Air Evacuator [ ] Other
[✓] Dry Ice (2.5 lbs/100 gallons)

SAMPLING INFORMATION

Number of Samples Obtained Below Tank(s): 11
Sample Collection Depth Below Tank(s): 2'
Number of Samples Obtained Along Piping: 1
Time Between Removal and Sampling: 24 HRS
Sample Preservation Method: ICE CHEST
Water in Excavation Sampled: Yes [ ] No [ ] N/A [ ]

TANK ABANDONED IN PLACE

Reason for Abandonment in Place:
[ ] Under Permanent Structure
[ ] Removal will Undermine Structure
[ ] Unaccessible to Heavy Equipment
[ ] Other
Tank and Piping Cleaned Before Filling: Yes [ ] No [ ]

NA

Fill Material (check one):
[ ] Soil Slurry
[ ] Sand
[ ] Concrete
[ ] Other
All Piping and Vents Capped or Removed: Yes [ ] No [ ]

NA

TANK INFORMATION

Tank No.	Size (gallons)	Material of Construction	Contents Stored	Holes in Tank (show location on sketch)	Holes in Piping (show location on sketch)
1	25000	Glasteel	Diesel	None	None

UP-1411

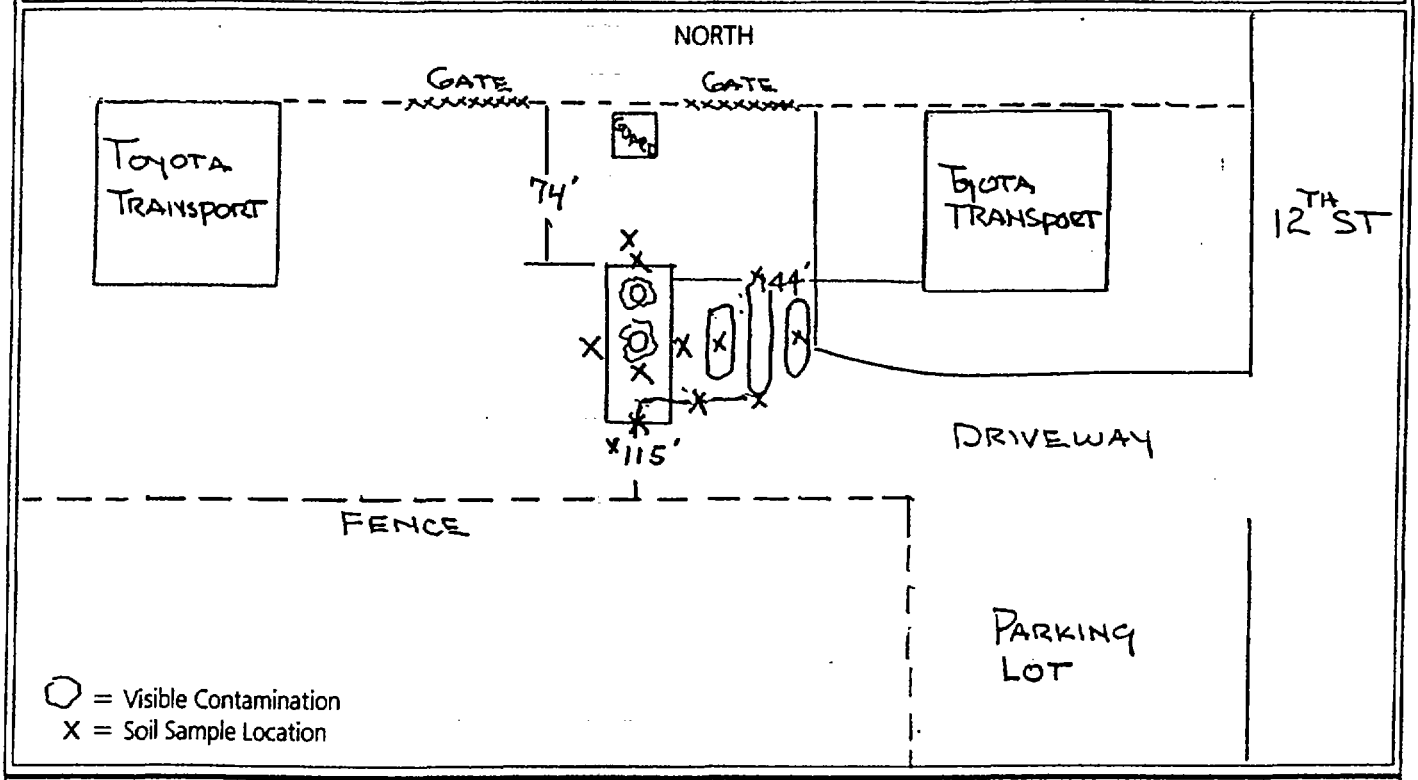
ON-SITE UNDERGROUND STORAGE TANK CLOSURE REPORT

Continued...

VISUAL EXCAVATION ASSESSMENT

Stained Soil (show location on sketch):	Yes [✓]	No [ ]	Depth of Excavation:	16'
Petroleum Odor In Soil:	Yes [✓]	No [ ]	Depth to Groundwater:	NA
Free Water In Excavation:	Yes [ ]	No [✓]	Soil Type(s):	
Sheen or Free Product On Water	Yes [ ]	No [✓]	[ ] Fill [ ] Clay	[✓] Sand
Evidence of Spills and/or Overfills:	Yes [✓]	No [ ]	[ ] Caliche [✓] Cobbles	[ ] Gravel

SITE SKETCH



COMMENTS

ALL MEASURMENTS APPROX. to CENTER TANK

Evidence of overfill spillage

UP-1412

Inspector's Signature: Clarence Fuselman ID 0531 Date: 6/15/95

Copy Received By: _____ Representing: _____ Date: __/__/__

Page ___ of ___

APPENDIX C

LABORATORY REPORT
AND CHAIN-OF-CUSTODY FORM

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 506802

June 22, 1995

Industrial Compliance Southwest, Inc.
9830 S. 51st Street
Suite A127
Phoenix, AZ 85044

Project Name/Number: Commercial Carriers/03102810

Attention: Abel Ramirez, Jr.

On 06/15/95, Analytical Technologies, Inc., received a request to analyze soil sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyer
Project Manager

MT/jmf

Enclosure

ADHS License No. AZ0061
Elizabeth Proffitt, Laboratory Manager

RECEIVED
JUN 23 1995
INDUSTRIAL COMPLIANCE

UP-1414

Analytical Technologies, Inc.

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED DATE RECEIVED : 06/15/9
PROJECT # : 03102810
PROJECT NAME : COMM CARRIER REPORT DATE : 06/22/9
ATI I.D. : 506802

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTE
01	SS-1	SOIL	06/14/9
02	SS-2	SOIL	06/14/9
03	SS-3	SOIL	06/14/9
04	SS-4	SOIL	06/14/9
05	SS-5	SOIL	06/14/9
06	SS-6	SOIL	06/15/9
07	SS-7	SOIL	06/15/9
08	SS-8	SOIL	06/15/9
09	SS-9	SOIL	06/15/9
10	SS-10	SOIL	06/15/9
11	SS-11	SOIL	06/15/9
12	SS-12	SOIL	06/15/9

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	12

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from th date of this report. If an extended storage period is required, please contac our sample control department before the scheduled disposal date.

UP-1415

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 506802

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : COMM CARRIER

DATE RECEIVED : 06/15/
REPORT DATE : 06/22/

PARAMETER	UNITS	01	02	03	04	05
PETROLEUM HYDROCARBONS,418.1	MG/KG	650	140	15000	30	71
418.1 AZ PERCENT MOISTURE		4	4	16	13	16

UP-1416

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 506802

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : COMM CARRIER

DATE RECEIVED : 06/15/
REPORT DATE : 06/22/

PARAMETER	UNITS	06	07	08	09	10
PETROLEUM HYDROCARBONS,418.1	MG/KG	76	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		2	7	12	3	11

UP-1417

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 506802

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : COMM CARRIER

DATE RECEIVED : 06/15/
REPORT DATE : 06/22/

PARAMETER	UNITS	11	12
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20
418.1 AZ PERCENT MOISTURE		5	19

UP-1418

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : COMM CARRIER ATI I.D. : 506802

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% RE
PETROLEUM HYDROCARBONS	MG/KG	50686505	<20	<20	NA	220	210	1(
PETROLEUM HYDROCARBONS	MG/KG	50680210	<20	<20	NA	210	210	1(

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 1($$

UP-1419

P.O.#: 11468

Industrial Compliance Southwest

CHAIN-OF-CUSTODY RECORD

ATI # 506802

Project Number 03102810
Project Location Phoenix, AZ (Commercial Campus)
Laboratory ATI
Sampler(s) Abel Ramirez, Jr.

	SAMPLE IDENTITY	DATE SAMPLED	TIME	MATRIX: SOIL	MATRIX: WATER	COMPOSITE	GRAB	SOIL AND WATER ANALYSIS METHOD: 418.1 AZ						PRESERVATIVE: YES	PRESERVATIVE: NO	CUSTODY SEAL: YES	CUSTODY SEAL: NO	TOTAL
1	SS-1	6/14/95		X														1
2	SS-2			X														1
3	SS-3			X														1
4	SS-4			X														1
5	SS-5			X														1
6	SS-6	6/15/95		X														1
7	SS-7			X														1
8	SS-8			X														1
9	SS-9			X														1
10	SS-10			X														1
11	SS-11			X														1
12	SS-12			X														1
																	TOTAL	12

UP-1420

ASBESTOS: SAMPLING METHOD: BULK	PERSONAL AIR	STATIC AIR	AGGRESSIVE AIR		ANALYSIS METHOD: PLM	PCM	TEM	TOTAL VOLUME (LITERS)	TOTAL
								TOTAL	

Relinquished by: [signature]	Organization: IC	Date 6/15/95	Time 1636	
Received by: [signature]	Organization: ATI	Date 6/15/95	Time 4:36 pm	
Relinquished by:	Organization:	Date	Time	
Received by:	Organization:	Date	Time	
Relinquished by:	Organization:	Date	Time	
Received by:	Organization:	Date	Time	

Remarks
Standard Turnaround

Delivery Method: ☐ In Person ☐ Common Carrier _____ (Specify)

Page 1 of 1

APPENDIX D

UST DESTRUCTION CERTIFICATE

EMCO RECYCLING

P O BOX 21366 PHOENIX AZ 85036

(602) 447-3000 FAX (602) 417-3020

C E R T I F I C A T E O F D E S T R U C T I O N

THIS IS TO CERTIFY THAT ON JUNE 19, 1995, THE FOLLOWING TANK(S) WAS/WERE DESTROYED BEYOND ITS/THEIR ORIGINAL USE. THE MATERIAL WAS PROCESSED FOR RECYCLING PURPOSES ONLY.

PRODUCT	QUANTITY	CAPACITY	REMARKS
DIESEL	1	25000	
GASOLINE			
LUBE OIL			
WASTE OIL			
JET A			

LOCATION OF TANK(S):

SOUTHERN PACIFIC TRANS. CO
902 S 12TH ST
PHOENIX AZ

OWNER OF TANK(S):

SOUTHERN PACIFIC TRANS. CO
ONE MARKET PLAZA
SAN FRANCISCO CA 94105

REMOVAL CONTRACTOR:

INDUSTRIAL COMPLIANCE
9830 S 51ST ST
SUITE A-127
PHOENIX AZ 85044

TRANSPORTED TO:

EMCO RECYCLING
3700 W LOWER BUCKEYE
PHOENIX AZ 85009

DATE RECEIVED: JUNE 15, 1995

COMMENTS: ADEQ #: R-4589

DISPOSAL COST: $300.00

TRANSPORTATION COST:

TOTAL COST: $300.00

AUTHORIZED SIGNATURE:

UP-1422

Industrial Compliance

9830 S. 51st., Suite A-127 Phoenix, Arizona 85044 602/496-4100 Fax 602/496-4399
Arizona Contractor's License #AE090871

INTERIM SITE CHARACTERIZATION REPORT
Former Commercial Carriers Facility
902-904 South 12th Street
Phoenix, Arizona
ADEQ LUST File #4148.01
ADEQ Facility ID #0-004597

11/9/95

IC Project No. 03102810

Prepared For:

Southern Pacific Transportation Company
One Market Plaza
San Francisco, California 94105

November 9, 1995

REGISTERED GEOLOGIST
CERTIFICATE NO.
26394
STEPHEN J.
SMELSER
Date Signed 11-9-95
ARIZONA, U.S.A.

INTERIM SITE CHARACTERIZATION REPORT
Former Commercial Carriers Facility
902-904 South 12th Street
Phoenix, Arizona
ADEQ LUST File #4148.01
ADEQ Facility ID #0-004589

Prepared By:

Steve Kaminski
Geologist III

Reviewed By:

REGISTERED GEOLOGIST
CERTIFICATE NO.
26394
STEPHEN J.
SMELSER
Date Signed 11-1-95
ARIZONA U.S.A.

Stephen J. Smelser, R.G.
Senior Project Manager

UP-1424

SITE CHARACTERIZATION REPORT FORM

Check the applicable type of Site Characterization:

x Initial Site Characterization (Interim)

__ Post-remedial Site Characterization (confirming that corrective actions have successfully remediated the site to approved contaminant concentrations)

1. Site Description

a) Facility ID Number: #0-004589

b) LUST Number: #4148.01

c) Facility Name: Commercial Carriers Inc., Former Lease Property

d) Facility Street Address: 902-904 South 12th Street,

City: Phoenix Zip Code: 85034

County: Maricopa Phone: (602) 254-6005

e) Legal Location: Township 1N Range: 3E Section 9, SE ¼ of SW ¼
Map USGS 7½ Minute Quadrangle Phoenix, AZ

f) Owner/Operator Conducting Corrective Actions:

Name: Southern Pacific Transportation Company (SPTCo)

Street Address: One Market Plaza, Room 225

City: San Francisco State: California Zip: 94105
Phone: (415) 541-2838 Fax: (415) 541-1734

g) Land use and ownership of each parcel of property affected by the release, if any: Based on available data, only SPTCo property has been affected by the release. The property is currently utilized as an asphalt-paved driveway.

/u/sorris/projects/03102810/scrf.rpt

UP-1425

2. Site/UST History

a) Date facility was acquired: Commercial Carriers leased the property from SPTCo in 1986.

b) Describe present property use: The site is presently an asphalt-paved driveway.

c) Describe past site uses and provide the time span for each: From 1986 to 1993 the study area (see Figure 2) was used as a fueling facility that included three fuel islands supplied by a 25,000-gallon capacity, fiberglass-coated steel UST used for the storage of diesel fuel. The UST was physically removed and destroyed in June 1995. Industrial Compliance's (IC's) July 26, 1995, UST Closure Report summarizes the results of the removal activities. The study area was formerly part of a Commercial Carriers transfer facility for new vehicles en route to automotive dealerships. Commercial Carriers terminated its lease of the study area and its use of the UST in 1993. The UST was taken out of service at that time. Note that Figure 2 shows three former approximately (or less than) 1,000-gallon USTs located north of the study area. These three USTs were removed in March of 1990; however, there is no record that confirmation soil samples were collected and analyzed the time of removal. To fulfill closure sampling requirements, three borings (SB-1 through SB-3, see Figure 2) were drilled and sampled in the approximate locations of the three USTs. Based on the results of laboratory analysis of soil samples, no releases appear to have occurred from the USTs. These three USTs are currently being handled under a separate notification process and will not be addressed in this report.

d) Date release discovered: Analytical results from soil samples (collected during the June 15, 1995, UST removal) indicating the presence of petroleum hydrocarbon impact to soil were reported June 22, 1995.

e) Date release reported to ADEQ: June 22, 1995

f) Location in the UST system where the leak occurred: Unknown. Based on analytical data from the closure activities, the most impacted soils appear to be located beneath the former location of the southern fuel dispenser on the central pump island (see Figure 3). For the purposes of this report, this location has been assumed to be the release point.

g) Estimated release volume: unknown

h) Estimated period of time over which the leak occurred: unknown

i) Substance released: diesel fuel

UP-1426

3. Soil Investigation Procedures

a) Are all sampling/boring locations shown on the site plan? (see "Required Attachments", p. A-13, A.2):

_x_ Yes __ No

See Figures 3 and 5. Figure 5 is excerpted from the IC UST closure report dated July 26, 1995, and shows excavation sample locations and analytical results. Note borings SB-1 through SB-3 were completed for closure notification purposes for three approximately 1,000-gallon USTs previously (March 1990) removed from the site.

If no, describe why not: See Attachment A, Figure 3, Soil Boring Sample Location Map

b) Were all soil samples collected by pushing or driving a sampler containing sleeves constructed of an inert material per Attachment C?

_x_ Yes __ No

If no, describe why not, and alternative method used: N/A

c) Describe how sleeves were sealed and labeled: Ends of sample sleeves were covered with Teflon™ film, aluminum foil, and plastic end caps. Each sample was then labeled with site name, sample I.D., and date.

d) Were all soil samples preserved at approximately 4 degrees Centigrade prior to delivery to the laboratory?

_x_ Yes __ No

If no, describe why not: N/A

e) Describe decontamination procedures for soil sampling equipment: Sampling equipment (brass tubes and split-spoon device) was scrubbed and washed in a water/Liquinox™ soap solution, rinsed in tap water, and final rinsed in deionized water before each sampling event. Augers were steam cleaned between borings.

f) Total number of borings drilled at the site: Ten (10) (i.e., SB-4 through SB-13), See Attachment A, Figure 3. As indicated in Section 2 of this report, three additional borings (SB-1 through SB-3) were conducted for a separate UST site on an adjacent parcel of land. Results of these soil borings are subject to separate notification and are not addressed herein.

UP-1427

4. **Vertical Extent of Soil Contamination** (**NOTE:** Multiple copies of this section should be submitted if there are multiple release points at the facility.)

Provide the following information for the boring located closest to the suspected release location.

a) Horizontal distance from the suspected release location: 1 (ft)

b) For the deepest sample collected from the boring, provide:

1) Sample identifier: SB-8/11.5' (soil boring #8 @ 11.5 feet below grade)

2) Lithology: Sandy Gravel, and Cobbles with some silt (GW)

3) PID result: 134

4) [1]Odors?: present

5) Staining?: not apparent

6) Laboratory results (mg/kg): B NA T NA E NA X NA TPH 26,000

Note: NA = not analyzed for investigation of diesel release

Other (list compounds and results for any detections) not analyzed

NOTE: For non-detects, list the numerical reporting limit, for example, "<0.25". Do not use "ND".

7) Holding time (hours): <14 days, soil was analyzed by ADHS Method 418.1 AZ

NOTE: Soil samples to be analyzed for BTEX or other VOCs to define the extent of contamination generally must be extracted within 72 hours of collection. ADEQ may extend the 72 hour limit to 120 hours with site-specific pre-approval. ADEQ may not consider samples exceeding the extraction holding time as valid and may require additional sampling.

8) Depth (below ground surface) at which sample was collected: 11.5 (ft)

c) For the most contaminated sample from the boring, provide:

1) Sample identifier: SB-8/6.5'

2) Lithology: Sandy Silt (ML)

UP-1428

[1] Investigators should not purposefully seek to determine whether odors are present in a sample. This would be contrary to acceptable health and safety practices. Note only odors observed during the normal course of investigations.

4) [1]Odors?: present

5) Staining?: not apparent

6) Laboratory results (mg/kg): B NA T NA E NA X NA TPH 40,000

NA = not analyzed for investigation of diesel release.

Other (list compounds and results for any detections) not analyzed

NOTE: For non-detects, list the numerical reporting limit, for example, "< 0.25". Do not use "ND".

7) Holding time (hours): < 14 days, soil was analyzed for ADHS Method 418.1 AZ only.

NOTE: Soil samples to be analyzed for BTEX or other VOCs to define the extent of contamination generally must be extracted within 72 hours of collection. ADEQ may extend the 72 hour limit to 120 hours with site-specific pre-approval. ADEQ may not consider samples exceeding the extraction holding time as valid and may require additional sampling.

8) Depth, below ground surface, at which sample was collected 6.5 (feet)

d) Suspected depth to groundwater at the site: approximately 75 feet (data from well located ~1/2 mile NE of the site).

e) Source of depth to water data (include date): Arizona Department of Water Resources, Basic Data Section (November 1991 measurement).

UP-1429

[1] Investigators should not purposefully seek to determine whether odors are present in a sample. This would be contrary to acceptable health and safety practices. Note only odors observed during the normal course of investigations.

5. **Horizontal Extent of Soil Contamination (NOTE:** Multiple copies of this section should be submitted if there are multiple release points at the facility.)

a) Provide the requested information below for the boring locations which are believed to define the horizontal extent of contamination in at least three directions.

	Location 1	Location 2	Location 3
	(SB-4)	(SB-6)	(SB-13)[1]
Horizontal distance from release	25'	15'	52'
Compass direction from release (NE, etc.)	N-NW	SE	W-SW
Total depth of borehole	16'	13.5'	16'
For most contaminated sample:			
Identifier:	SB-4/6.5'	SB-6/6.5'	SS-6'
Depth:	6.5'	6.5'	16'
Lithology:	sandy silt (ML)	sandy silt (ML)	sandy silt (ML)
PID results:	3.3	0	NA
[1]Odors?	none	none	none
Staining?	none	none	none
Holding time:	<14 days[2]	<14 days[2]	<14 days[2]
Lab results (mg/kg):	B: NA	B: NA	B: NA
	T: NA	T: NA	T: NA
	E: NA	E: NA	E: NA
	X: NA	X: NA	X: NA
	TPH: <20	TPH: <20	TPH: 76

Note: BTEX analysis was not conducted, since the hydrocarbon release was from diesel fuel UST system.

[1]SS-6 was collected from the UST excavation at a depth of 16 feet bgs on June 15, 1995 during the UST removal. This sample was collected within an estimated two feet of the same planimetric location as SB-13.

[2] <14 days for soil samples analyzed by ADHS Method 418.1 AZ.

UP-1430

For deepest sample:	Location 1 (SB-4)	Location 2 (SB-6)	Location 3 (SB-13)[1]
Identifier:	SB-4/16.5'	SB-6/15.5'	SB-13/19.5'
Depth:	16.5	13'	19.5'
Lithology:	Sand, Gravel, and Cobbles with some silt (GW)	Sand, Gravel, and Cobbles with some silt (GW)	Sand, Gravel, and Cobbles with some silt (GW)
PID result:	0	0	0
[1]Odors?	none	none	none
Staining?	none	none	none
Holding time:	<14 days[2]	<14 days[2]	<14 days[2]
Lab results (mg/kg):	B: NA	B: NA	B: NA
	T: NA	T: NA	T: NA
	E: NA	E: NA	E: NA
	X: NA	X: NA	X: NA
	TPH: <20	TPH: <20	TPH: 40

Note: BTEX analysis was not conducted, since the hydrocarbon release was from diesel fuel UST system.

[1]SS-6 was collected from the UST excavation at a depth of 16 feet bgs on June 15, 1995 during the UST removal. This sample was collected within an estimated two feet of the same planimetric location as SB-13.

[2] < 14 days for soil samples analyzed by ADHS Method 418.1 AZ.

If other compounds are found in any of the three samples, identify sample number, compound and concentration: not analyzed

b) Attach maps and cross-sections depicting the extent of soil contamination per the "Required Attachments", p. A-13, A.3 and A.4. See Attachment A.

Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Detailed Site Map
Figure 4 - Cross-Section A-A'
Figure 5 - Soil Sample Location Map[1]

c) Attach copies of excavation and/or boring logs per the "Required Attachments", p. A-15, C.4 and/or C.5. See Attachment C.

[1] = Excerpted from IC's UST closure report dated July 26, 1995.

UP-1431

6. Groundwater Investigations

a) Are all sampled monitor well locations shown on the attached groundwater conditions map?

_-_ Yes _-_ No

If no, please explain: N/A

b) Does the screened interval of every monitor well extend across the groundwater surface?

_-_ Yes _-_ No

If no, explain and provide the distances that the tops of the screens are submerged or the approximate distance the bottom of the screen is above the groundwater surface: N/A

c) Was a measuring point established at the north side of the top of the well casing by a licensed surveyor?

_-_ Yes _-_ No

What is the measuring point referenced to: N/A

d) Describe the device used to measure depth to water/product: N/A

e) Was free-product detected in the monitor wells?

_-_ Yes _-_ No

Affected wells and apparent thickness of product: N/A

NOTE: If free product is detected, attach a "Free Product Response Summary Form" (see Attachment D) to this report.

f) Were the wells purged prior to sampling?

_-_ Yes _-_ No

If no, explain: N/A

If yes, describe purging method and how purging was deemed complete: N/A

g) Attach field notes and a table (if wells were purged) describing the groundwater sampling procedures per the "Required Attachments", p. A-14, B.4.

h) Attach a table which provides well construction data and the results of groundwater measurements per the "Required Attachments", p. A-14, B.3.

i) Describe the sampling equipment used to collect groundwater samples: N/A

j) How was the sampling equipment decontaminated between sample collections: N/A

k) Describe the groundwater sample containers: N/A

l) Describe sample preservation: N/A

m) Direction of groundwater flow: N/A

n) Groundwater gradient: N/A

o) Holding time for groundwater samples (days): N/A

p) Attach a summary table of groundwater sampling analytical results per the "Required Attachments", p. A-14, B.5.

UP-1433

7. Analytical Chemistry Procedures

a) Name, address, and license number of the ADHS licensed laboratory performing the analyses: Analytical Technologies, Inc., 9830 South 51st Street, Suite B-113, Phoenix, Arizona 85044 License #AZ0061

b) List analytical methodologies used:

	Soil	Groundwater
BTEX	N/A	----
TPH	ADHS Method 418.1 AZ	----
VOCs	N/A	----

c) Attach the chain-of-custody and copies of laboratory reports per the "Required Attachments", p. A-14, C.1 and C.2. See Attachment C.

d) Attach a narrative describing the QA/QC procedures followed during the field investigation and laboratory analyses pertaining to this site per the "Required Attachments", A-14, C.3. Include conclusions as to the adequacy of the QA/QC and the acceptability of the analytic data.

See Attachment C for IC Standard Operating Procedures and information regarding site specific QA/QC issues.

UP-1434

8. Owner/Operator Certifications

a) I certify that investigation derived wastes were disposed of in accordance with solid and/or hazardous waste regulations, rules, and guidance.

_____ _____

Signature Date

b) I certify that the laboratory indicated it was licensed to perform the analyses described in Section 7.b., p. A-10.

_____ _____

Signature Date

Next Action Place an "X" next to each intended action listed below which applies to this site.

__ Submit Corrective Action Plan (CAP) (Required if groundwater contaminated at concentrations greater than Aquifer Water Quality Standards, free product is present, or the intended corrective action technology involves discharge of a pollutant which could impact an aquifer. Must be submitted within 330 days of the date the release or suspected release was reported.)

__ Initiate monthly water level measurements and quarterly sampling (Required if monitor wells were installed at the site.)

__ Remediate subsurface soils at site to ADEQ Suggested Soil Cleanup Levels (SSCL) without CAP (must be completed within 24 months of the reporting of the release or suspected release, or a CAP will be required)

__ Request closure (attach "Corrective Action Summary" per Required Attachments, p. A-15, C.8)

_X_ Other (attach description of intended action) (see Attachment C, Appendix 4)

"I hereby certify, under penalty of law, that this submittal and all attachments were prepared under my direction and supervision, and that the information submitted is true, accurate, and complete to the best of my knowledge."

_____ _____

Signature (UST owner or operator or authorized agent) Date

_____ _____

Name (Printed) Title

UP-1435

9. Consultant Information

Signature: _____ Date: _____

Name (print): Stephen J. Smelser, R.G. Title: Senior Project Manager

Company Name: Industrial Compliance

Street Address: 9830 South 51st Street, Suite A-127

City: Phoenix State: Arizona Zip: 85044

Phone: (602) 496-4100 Fax: (602) 496-4399

Where registration is required by the Board of Technical Registration, please affix seal below:

ADEQ would appreciate receiving the consultant's response to the following question:

"In your professional opinion, has the extent of contamination at this site been completely defined?"

__ Yes x No

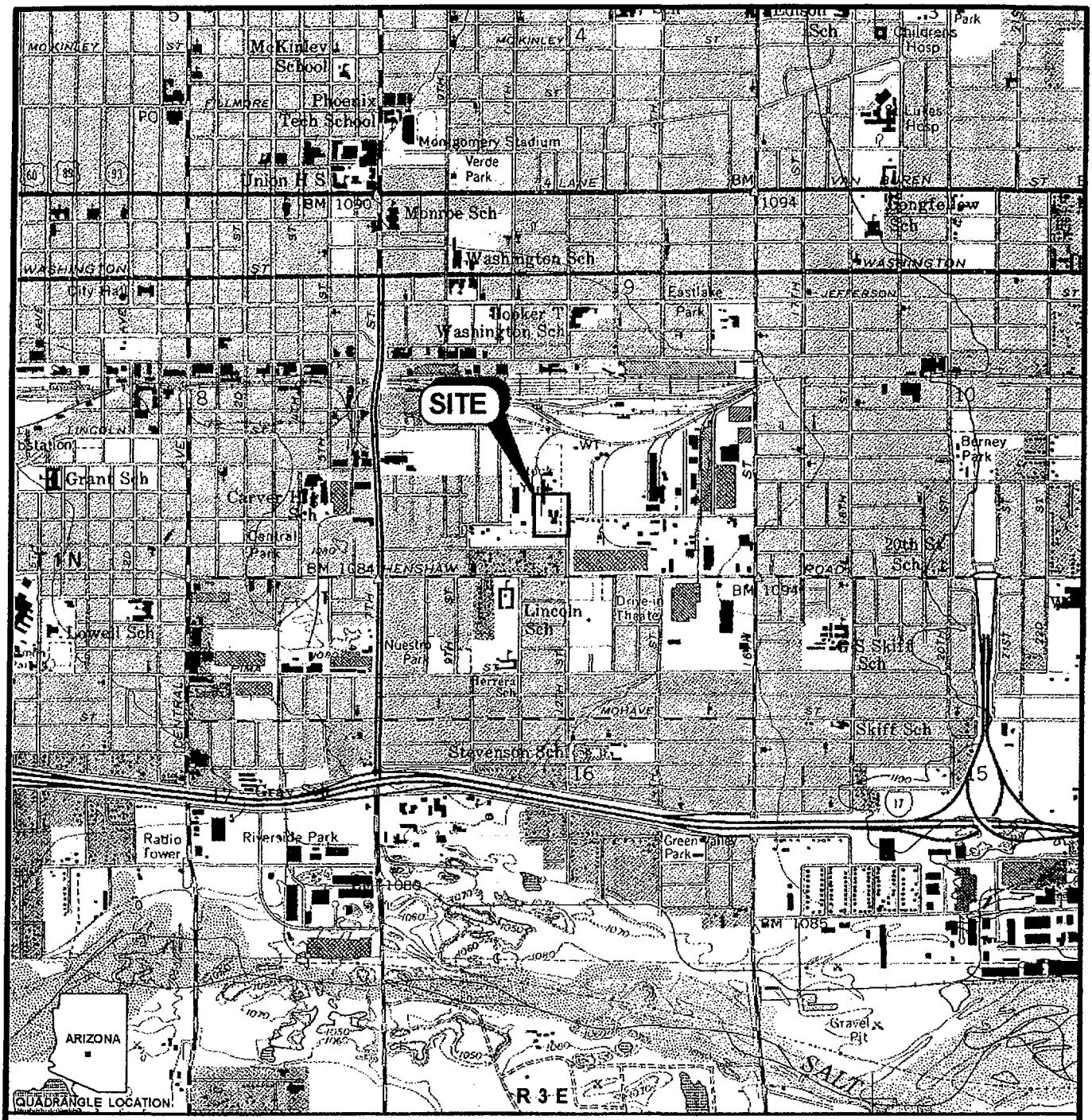
UP-1436

ATTACHMENT A

FIGURES

Figure 1 - Site Location Map
Figure 2 - Site Vicinity Map
Figure 3 - Site Map
Figure 4 - Cross-Section A-A'
Figure 5 - Soil Sample Location Map[1]

[1] = Excerpted from IC's UST closure report dated July 26, 1995.



SOURCE: USGS QUAD MAP - PHOENIX, ARIZONA, 1982.

1/2 0 1MILE

APPROXIMATE SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

APPROXIMATE SCALE (FEET)

N

Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SITE LOCATION MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 1

Page -

Scale AS SHOWN

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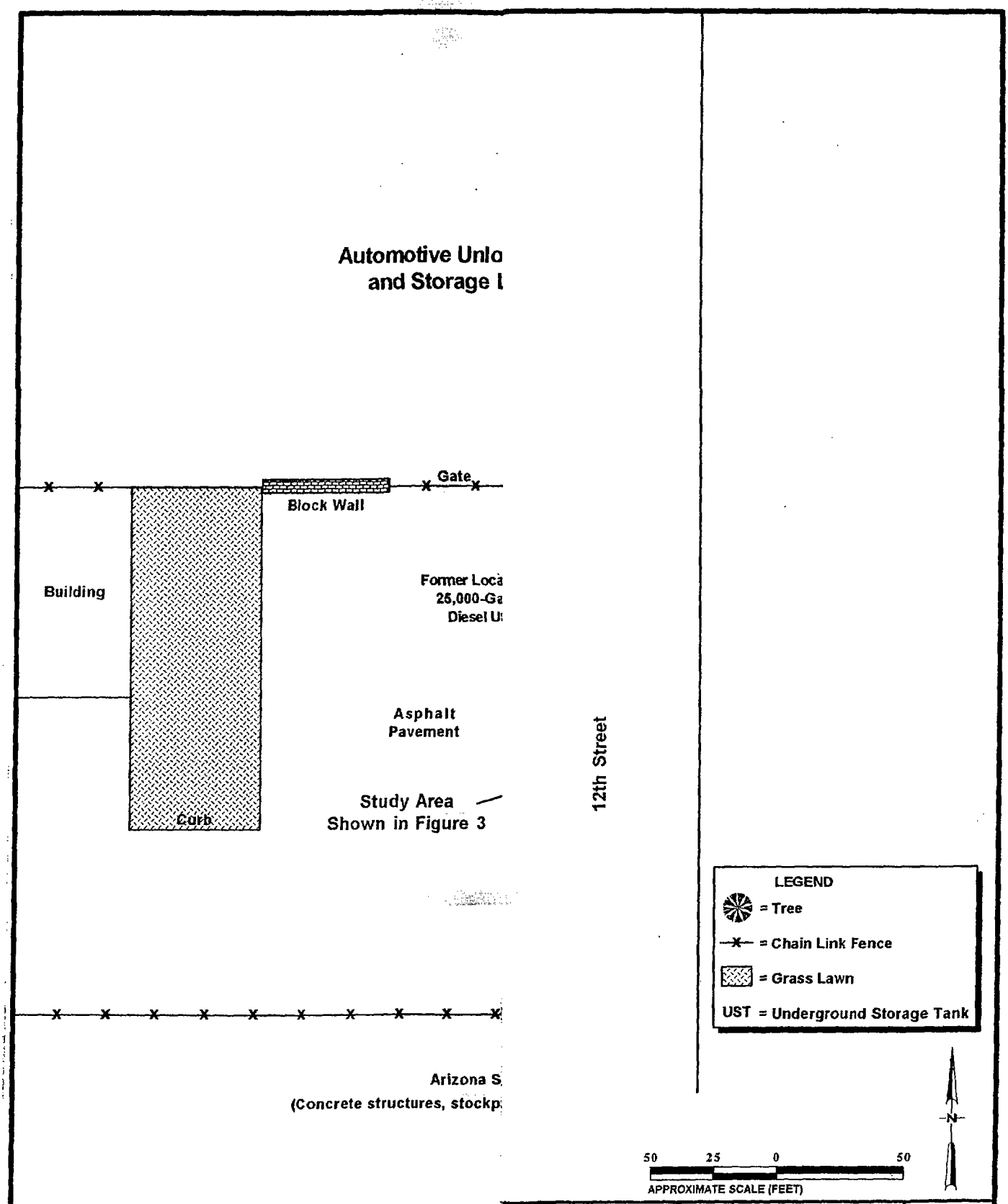
UP-1438



SITE MAP
OMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 2
Page -
Scale AS SHOWN

UP-1439

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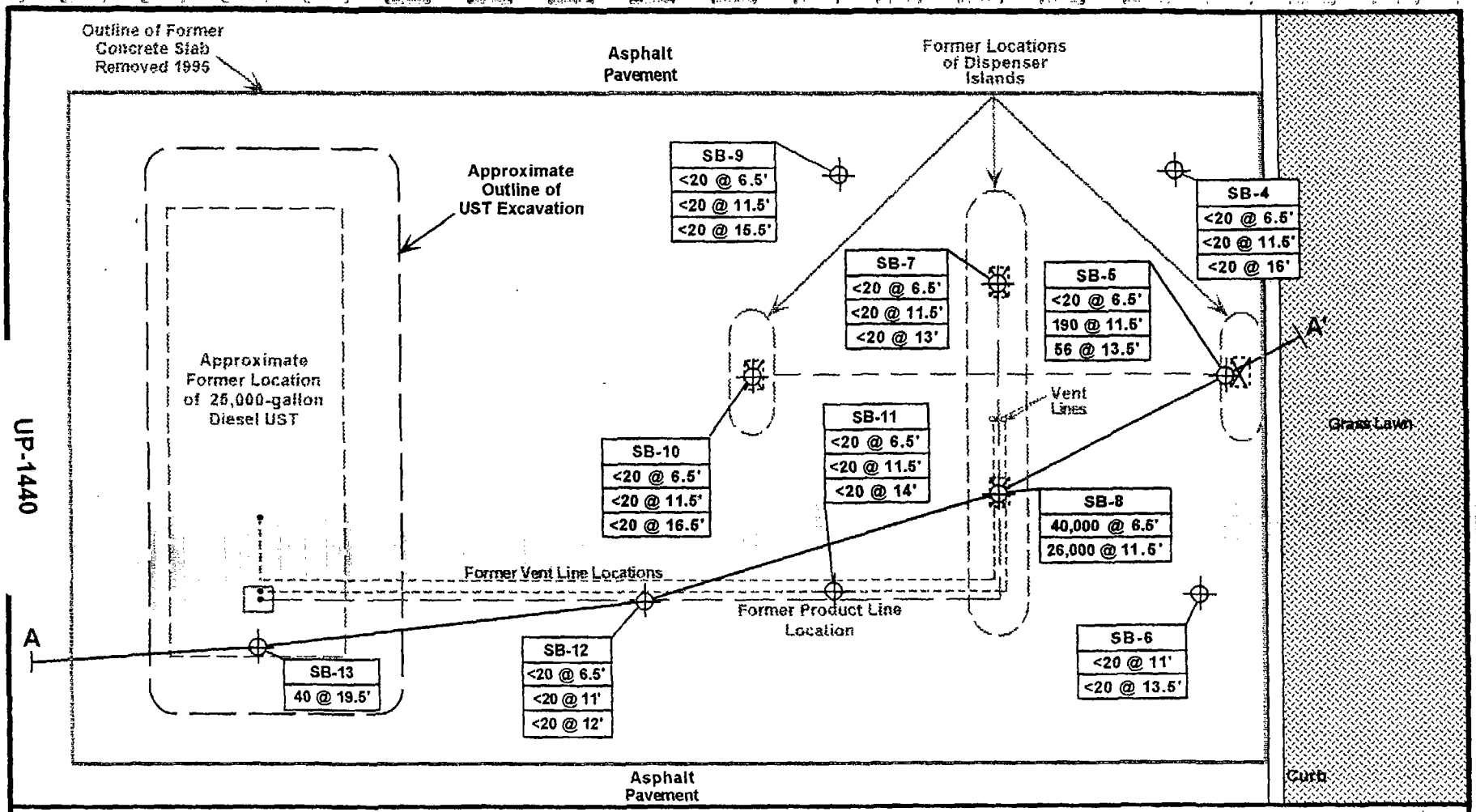

UP-1440

LEGEND

- SB-1 / <20 @ 10' / <20 @ 16.5' = Soil Boring Number / TPH at indicated depth in feet
- A——A' = Cross-Section Location
- = Former Fuel Dispenser
- = Excavation Perimeter
- = Soil Boring Location
- UST = Underground Storage Tank
- TPH = Total Petroleum Hydrocarbons in mg/kg by ADHS Method 418.1 AZ

10 5 0 10
APPROXIMATE SCALE (FEET)

N

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

DETAILED SITE MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 3
Page -
Scale AS SHOWN

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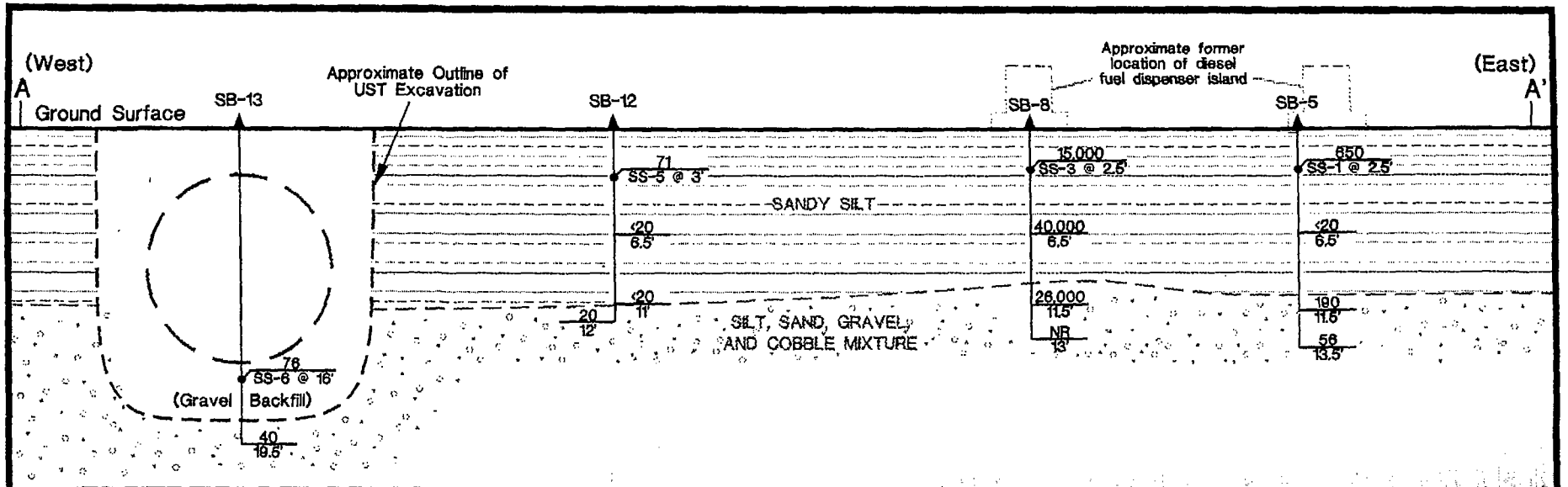


LEGEND

NR	No Recovery
TPH	Total Petroleum Hydrocarbons by ADHS Method 418.1 AZ
UST	Underground Storage Tank
SB-5	Soil Boring Number
60 / 6.5'	Soil sample location depicting TPH concentration (mg/kg) over sample depth bgs.
71 / SS-5 @ 3'	Approximate location of soil sample collected during UST removal (June 1995). TPH concentraton (mg/kg) is displayed over soil sample number and depth.
<	Less than indicated detection limit
	Approximate Former UST Location (25,000-gallon capacity, diesel)
	Sandy Silt (ML)
	Predominantly gravels and cobbles with silt/sand mixtures.

10 5 0 10

APPROXIMATE SCALE (FEET)

N

UP-1441

Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.

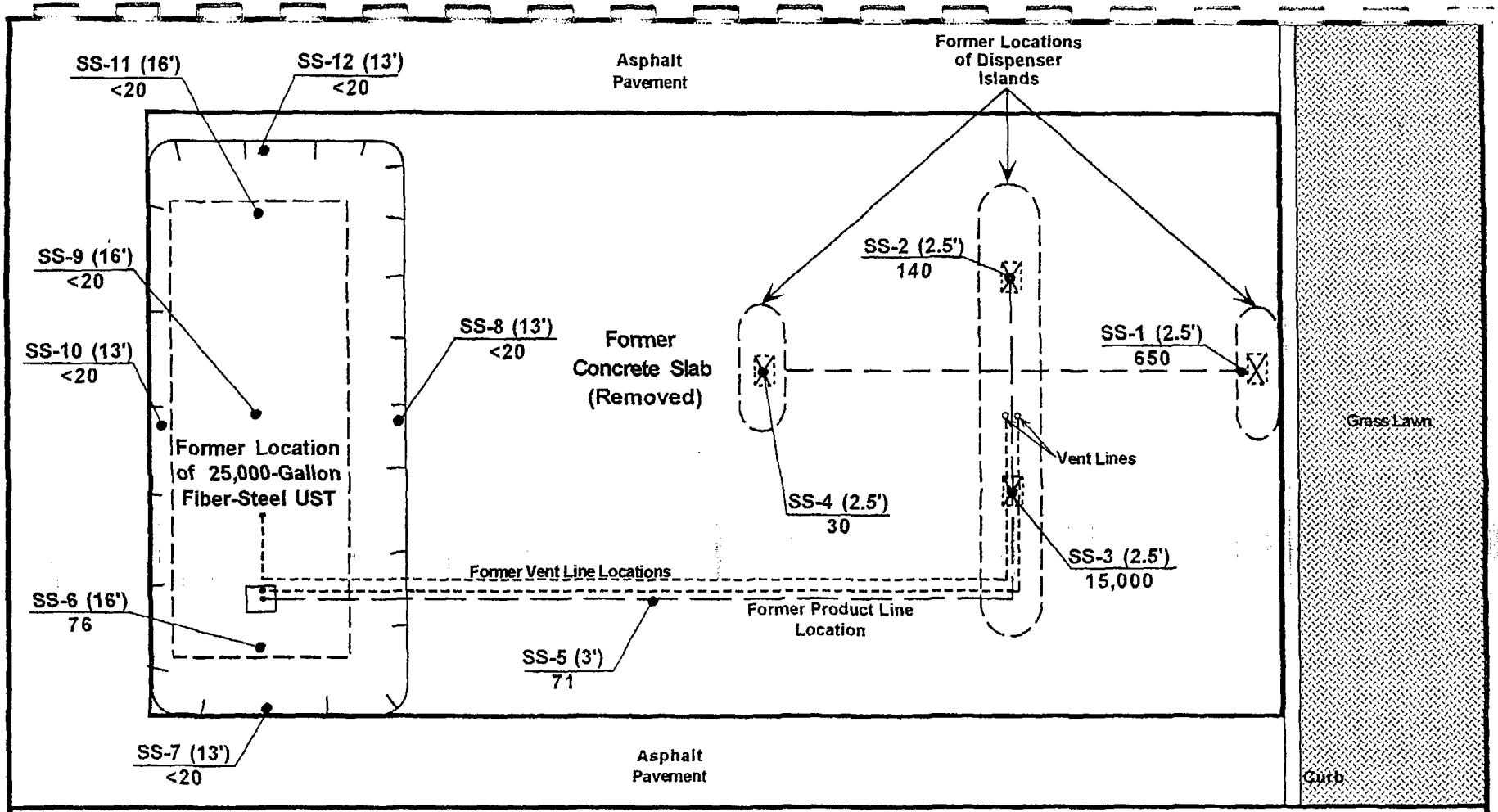
Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

CROSS-SECTION A-A'
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 4

Page -

Scale AS SHOWN



LEGEND

= Former Fuel Dispenser

= Excavation Perimeter

= Former UST

Soil Sample Location and # (sample depth in feet)
TPH Concentration

TPH = Total Petroleum Hydrocarbons in mg/kg

< = Less than indicated detection limit

UST = Underground Storage Tank

5 0 5 10 15 20 25 30 35 FEET
APPROXIMATE SCALE (FEET)

N

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 07/07/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SOIL SAMPLE LOCATION MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 5

Page -

Scale AS SHOWN

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UP-1442

ATTACHMENT B

TABLES

Table 1: Soil Sample Analytical Results

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS, OCTOBER 1995
Former Commercial Carriers Lease Property

Soil Sample No.	Boring No. and Sample Depth (feet bgs)	Date Sampled	ADHS Method 418.1 AZ	
			TPH (mg/kg)	Moisture Content (%)
SB-1/10'	SB-1 at 10	10/09/95	<20	19
SB-1/16.5'	SB-1 at 16.5	10/09/95	<20	3
SB-2/11.5'	SB-2 at 11.5	10/09/95	<20	12
SB-2/13'	SB-2 at 13	10/09/95	<20	15
SB-3/11.5'	SB-3 at 11.5	10/09/95	<20	19
SB-3/15'	SB-3 at 15	10/09/95	<20	2
SB-4/6.5'	SB-4 at 6.5	10/09/95	<20	15
SB-4/11.5'	SB-4 at 11.5	10/09/95	<20	15
SB-4/16'	SB-4 at 16	10/09/95	<20	4
SB-5/6.5'	SB-5 at 6.5	10/09/95	<20	12
SB-5/11.5'	SB-5 at 11.5	10/09/95	190	3
SB-5/13.5'	SB-5 at 13.5	10/09/95	56	7
SB-6/6.5'	SB-6 at 6.5	10/09/95	<20	10
SB-6/11'	SB-6 at 11	10/09/95	<20	3
SB-6/13.5'	SB-6 at 13.5	10/09/95	<20	12
SB-7/6.5'	SB-7 at 6.5	10/10/95	<20	14
SB-7/11.5'	SB-7 at 11.5	10/10/95	<20	5
SB-7/13'	SB-7 at 13	10/10/95	<20	11
SB-8/6.5'	SB-8 at 6.5	10/10/95	40,000	12
SB-8/11.5'	SB-8 at 11.5	10/10/95	26,000	4
SB-9/6.5'	SB-9 at 6.5	10/10/95	<20	13
SB-9/11'	SB-9 at 11	10/10/95	<20	16
SB-9/15.5'	SB-9 at 15.5	10/10/95	<20	10
SB-10/6.5'	SB-10 at 6.5	10/10/95	<20	15
SB-10/11'	SB-10 at 11	10/10/95	<20	15
SB-10/16.5'	SB-10 at 16.5	10/10/95	<20	2

/u/sorris/projects/03102810/scrfsoil.tbl

TABLE 1 (Continued)
SOIL SAMPLE ANALYTICAL RESULTS, OCTOBER 1995
Former Commercial Carriers Lease Property

Soil Sample No.	Boring No. and Sample Depth (feet bgs)	Date Sampled	ADHS Method 418.1 AZ	
			TPH (mg/kg)	Moisture Content (%)
SB-11/6.5'	SB-11 at 6.5	10/10/95	<20	17
SB-11/11.5'	SB-11 at 11.5	10/10/95	<20	15
SB-11/14'	SB-11 at 14	10/10/95	<20	5
SB-12/6.5'	SB-12 at 6.5	10/10/95	<20	14
SB-12/11'	SB-12 at 11	10/10/95	<20	15
SB-12/12'	SB-12 at 12	10/10/95	20	13
SB-13/19.5'	SB-13 at 19.5	10/10/95	40	2

bgs - below ground surface
ADHS - Arizona Department of Health Services
TPH - total petroleum hydrocarbons
mg/kg - milligrams per kilogram
< - less than indicated laboratory detection limit

ATTACHMENT C

APPENDICES

Appendix 1 - Laboratory Analytical Report
Appendix 2 - Standard Operating Procedures
Appendix 3 - Soil Boring Logs
Appendix 4 - Investigative Rationale

APPENDIX 1

Laboratory Analytical Report

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. **510648**

October 27, 1995

Industrial Compliance Southwest, Inc.
9830 S. 51st Street
Suite A127
Phoenix, AZ 85044

Project Name/Number: None given

Attention: Steve Kaminski

On **10/10/95**, Analytical Technologies, Inc., received a request to analyze **soil** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

ND indicates that the compound was not detected.

EPA method 8010 analysis was cancelled on 10/11/95 for samples SB-1/10', SB-2/11.5', and SB-3/11.5'.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyer
Project Manager

MT/paw

Enclosure

ADHS License No. AZ0061
Sherman McCutcheon, Laboratory Manager

Analytical Technologies, Inc.

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED DATE RECEIVED : 10/10/95
PROJECT # : 03102810
PROJECT NAME : (NONE) REPORT DATE : 10/24/95
ATI I.D. : 510648

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	SB-1/10'	SOIL	10/09/95
02	SB-1/16.5'	SOIL	10/09/95
03	SB-2/11.5'	SOIL	10/09/95
04	SB-2/13'	SOIL	10/09/95
05	SB-3/11.5'	SOIL	10/09/95
06	SB-3/15'	SOIL	10/09/95
07	SB-4/6.5'	SOIL	10/09/95
08	SB-4/11.5'	SOIL	10/09/95
09	SB-4/16'	SOIL	10/09/95
10	SB-5/6.5'	SOIL	10/09/95
11	SB-5/11.5'	SOIL	10/09/95
12	SB-5/13.5'	SOIL	10/09/95
13	SB-6/6.5'	SOIL	10/09/95
14	SB-6/11'	SOIL	10/09/95
15	SB-6/13.5'	SOIL	10/09/95
16	SB-7/6.5'	SOIL	10/10/95
17	SB-7/11.5'	SOIL	10/10/95
18	SB-7/13'	SOIL	10/10/95
19	SB-8/6.5'	SOIL	10/10/95
20	SB-8/11.5'	SOIL	10/10/95
21	SB-9/6.5'	SOIL	10/10/95
22	SB-9/11'	SOIL	10/10/95
23	SB-9/15.5'	SOIL	10/10/95
24	SB-10/6.5'	SOIL	10/10/95
25	SB-10/11'	SOIL	10/10/95
26	SB-10/16.5'	SOIL	10/10/95
27	SB-11/6.5'	SOIL	10/10/95
28	SB-11/11.5'	SOIL	10/10/95
29	SB-11/14'	SOIL	10/10/95
30	SB-12/6.5'	SOIL	10/10/95
31	SB-12/11'	SOIL	10/10/95
32	SB-12/12'	SOIL	10/10/95
33	SB-13/19.5'	SOIL	10/10/95

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	33

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

UP-1449

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/27/95

PARAMETER	UNITS	01	02	03	04	05
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		19	3	12	15	19

UP-1450

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	06	07	08	09	10
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		2	15	15	4	12

UP-1451

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	11	12	13	14	15
PETROLEUM HYDROCARBONS,418.1	MG/KG	190	56	<20	<20	<20
418.1 AZ PERCENT MOISTURE		3	7	10	3	12

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	16	17	18	19	20
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	20	40000	26000
418.1 AZ PERCENT MOISTURE		14	5	11	12	4

UP-1453

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	21	22	23	24	25
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		13	16	10	15	15

UP-1454

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	26	27	28	29	30
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		2	17	15	5	14

UP-1455

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/95
REPORT DATE : 10/24/95

PARAMETER	UNITS	31	32	33
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	20	40
418.1 AZ PERCENT MOISTURE		15	13	2

UP-1456

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE) ATI I.D. : 510648

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
PETROLEUM HYDROCARBONS	MG/KG	51062501	2900	2900	0	4300	1500	93
PETROLEUM HYDROCARBONS	MG/KG	51063701	<20	<20	NA	190	200	95

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

UP-1457

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064802

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-1/16.5'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	105
TIME EXT	13:00

UP-1458

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064804

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-2/13'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	119
TIME EXT	13:00

UP-1459

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064806

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-3/15'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	122
TIME EXT	13:00

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	ATI I.D.	: 510648
PROJECT #	: 03102810	DATE EXTRACTED	: 10/12/95
PROJECT NAME	: (NONE)	DATE ANALYZED	: 10/13/95
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	120
TIME EXT	13:00

UP-1461

Analytical Technologies, Inc.

QUALITY CONTROL DATA

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)
REF I.D. : 51064901

DATE ANALYZED : 10/12/95
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.025	1.0	1.2	120	1.2	120	0
TRICHLOROETHENE	<0.025	1.0	1.2	120	1.2	120	0
TETRACHLOROETHENE	<0.025	1.0	1.2	120	1.3	130	8
BROMODICHLOROMETHANE	<0.025	1.0	1.1	110	1.1	110	0
CHLOROFORM	<0.025	1.0	1.2	120	1.2	120	0
1,1,1-TRICHLOROETHANE	<0.025	1.0	1.2	120	1.2	120	0
CHLOROBENZENE	<0.025	1.0	1.2	120	1.2	120	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

UP-1462

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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 1 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER: Abel Ramirez, Jr.

COMPANY: Industrial Compliance
ADDRESS: 9830 S. 51st Street, Suite A127
Phoenix, AZ. 85044
PHONE: (602) 496-4100
FAX:

BILL TO: Same as above
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-1/10'	10/9/95		Soil	1	X					X															1
SB-1/16.5'				2						X															1
SB-2/11.5'				3						X															1
SB-2/13'				4						X															1
SB-3/11.5'				5						X															1
SB-3/15'				6						X															1
SB-4/6.5'				7																					1
SB-4/11.5'				8																					1
SB-4/16'				9																					1

UP-1463

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.:	03102810	NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y / N / NA
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 5:50	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez, Jr. Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Heather L Oeschger Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Heather L Oeschger Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 2 OF 4

ATI LAB I.D. 50648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER:

COMPANY:
ADDRESS:
PHONE:
FAX:

BILL TO:
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)		Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.			Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)			SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal			The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)		NUMBER OF CONTAINERS
SB-5/ 6.5'	10/9/95		Soil	10	X																												1
SB-5/ 11.5'	↓		↓	11	↓																												1
SB-5/ 13.5'				12																													1
SB-6/ 6.5'				13																													1
SB-6/ 11'				14																													1
SB-6/ 13.5'	↓			15																													1
SB-7/ 6.5'	10/10/95			16																													1
SB-7/ 11.5'				17																													1
SB-7/ 13'			↓	18	↓																												1

UP-1464

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102810		NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y / N / NA (Y)
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [illegible] Time: 5:50PM	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez, Jr. Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: [illegible] Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: [illegible] Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 3 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER:

COMPANY: IC
ADDRESS: 9830 S. 51st, Suite A-127
Phoenix, AZ 85044
PHONE: 496-4400
FAX: 496-4399

BILL TO:
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards - Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-8/6.5'	10/10/95		Soil	19	X																				1
SB-8/11.5'				20																					1
SB-9/6.5'				21																					1
SB-9/11'				22																					1
SB-9/15.5'				23																					1
SB-10/6.5'				24																					1
SB-10/11'				25																					1
SB-10/16.5'				26																					1
SB-11/6.5'				27																					1

UP-1465

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102410		NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y/N/NA
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Mel Ramirez Time: 5:50 PM	Signature: Time:	Signature: Time:
Printed Name: Mel Ramirez Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Jonathan of Courier 1750 Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Arthur Cracker Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

AnalyticalTechnologies, Inc., Phoenix, Arizona
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CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 4 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER:

COMPANY: IC
ADDRESS: 9830 South 51st Street, Suite A-127
Phoenix, AZ 85044
PHONE: 496-4400
FAX: 496-4399

BILL TO: Same as above
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-11/11.5'	10/10/95		Soil	28	X																				1
SB-11/14'				29																					1
SB-12/6.5'				30																					1
SB-12/11'				31																					1
SB-12/12'				32																					1
SB-13/19.5'				33																					1

UP-1466

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102810		NO. CONTAINERS	6
PROJ. NAME:		CUSTODY SEALS	Y/N/NA 0
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Abel Ramirez Time: 5:50PM	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Heather L. Castillo Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Heather L. Castillo Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

SAMPLE CONTROL LOGIN CHECK LIST

ACCESSION #: 510648 SC INIT: [illegible]

CLIENT I.D.: INDUSTRIAL COMPLIANCE DATE: 10/10/95

Is this a UST Project?	Y	N	If no, stop.
Are these soil samples?	Y	N	If no, stop.
Were samples received in Sleeves constructed of an Inert material (Brass, Teflon or Stainless Steel)?	Y	N	If no, see comments.
Chain of Custody seals?	Y	N	If no, see comments.
Teflon tape?	Y	N	If no, see comments.
Are samples headspace free?	Y	N	If no, see comments.
Are samples cool?	Y	N	If no, see comments.
Were samples received within 72 hours of sampling?	Y	N	If no, see comments.

Comments: _____

Please note that a Client signature is required to proceed with analysis if any answers are no, see comments.

I authorize ATI to analyze the samples submitted under the above Accession Number.

[illegible] 10/10/95

Authorized By Date

I:\WP51\TABLES\SCCL.LST Revised: June 9, 1995

UP-1467

APPENDIX 2

Standard Operating Procedures

IC STANDARD OPERATING PROCEDURES
SOIL CLASSIFICATION

Soil samples are classified according to the Unified Soil Classification System (USCS). The USCS classifies soils by grain size (ranging from cobble-sized three-inch diameter clasts to fine clay-sized particles) and relative quantity. Representative portions of the samples may be submitted under chain-of-custody to an analytical or engineering laboratory for further examination and verification of the in-field classification, and analysis of the soil mechanical and/or petrophysical properties.

Soil types are generally described and depicted on logs of excavations, soil borings, field reports or geologic cross-sections, together with corresponding locations and depths of the sampling point(s), along with other pertinent information.

IC STANDARD OPERATING PROCEDURES
SOIL BORING SAMPLING

During drilling, soil samples may be collected in thin-walled brass tubes, of varying diameters and lengths (e.g., 6 inches long by 2 inches in diameter). Three of the selected tubes are set in an 18-inch long split-spoon sampler of the appropriate inside-diameter.

Where possible, the split-spoon sampler is driven its entire length using either a 140-pound drop hammer or driven hydraulically. The sampler is retrieved from the borehole and the brass tubes, containing the soil samples, are removed. Upon removal from the sampler, the selected brass tubes are immediately sealed with Teflon sheets and capped with plastic end-caps. The samples are then labeled, and placed in a cooler with ice for delivery, under chain-of-custody, to the analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds (VOC) prior to laboratory analysis.

A portion of the soil sample collected at each sampling interval is analyzed in the field using either a portable photo-ionization detector (PID), flame ionization detector (FID), or an explosimeter. The purpose of this field analysis is to qualitatively assess the presence or absence of hydrocarbons, and to help in the selection of samples to be analyzed at the laboratory. The soil sample is sealed in either a glass jar or plastic bag to allow for some volatilization of the VOCs. The PID is then used to measure the concentrations of hydrocarbons within the container's headspace. The data is recorded on the boring logs at the depth corresponding to the sampling point.

The remaining portion of the soil sample is used to classify the soil and/or stratigraphic profile beneath the project site. Drilling and sampling equipment are either steam-cleaned, or washed in solution of Liquinox and water and double-rinsed in deionized water, prior to use at each site and between boreholes to minimize the potential for cross-contamination.

In the event that soil samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored in a refrigerator at the IC office, until the first opportunity for submittal.

IC STANDARD OPERATING PROCEDURES
SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification procedures ensure proper designation and labeling of samples upon their collection. Each sample container submitted for analysis is labeled to identify the project job number, date and time of sample collection, and an identification number unique to the sample. Any in-field measurements, sampling methodology, or other pertinent sampling observations may be recorded on field sheets, boring log, or field notes.

Chain-of-custody (COC) procedures document sample possession from the time of collection to its arrival at the laboratory. Before sample shipment, COC forms are ledgeably completed and signed by the sampler. COC forms are used to record date, time, possession, quantity, and type(s) of samples along with the requested analysis. During shipment, the person with custody of the samples will relinquish them to the next person by signing the COC form(s) and noting the date and time.

At the laboratory, the sample-control officer will verify sample integrity, correct preservation, collection in the proper containers, and ensure adequate volume has been submitted for analysis. The samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the COC forms and the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

IC STANDARD OPERATING PROCEDURES
LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Arizona approved analytical laboratories routinely conduct instrument calibration, and perform analysis of replicates, spikes, blanks, spiked blanks. In addition, certified reference materials are analyzed at method-specific frequencies to monitor precision and bias. Laboratory Quality Assurance/Quality Control (QA/QC) programs typically include:

A) Multi-level review of raw data and client reports to insure that QA is met.

B) Participation in state and federal laboratory accreditation/certification programs.

C) Participation in both U.S. EPA Performance Evaluation studies (water supply and water pollution studies) and inter-laboratory performance evaluation programs.

D) Standard operating procedures describing routine and periodic instrument preventative maintenence.

E) "Out-of-Control"/Corrective Action documentation procedures.

APPENDIX 3

Soil Boring Logs

UP-1473

Lithology

GW	Well graded gravels, gravel and sand mixtures
GP	Poorly graded gravels or gravel and sand mixtures
GM	Silty gravels, gravel and silt mixtures
GC	Clayey gravels, gravel sand clay mixtures
SW	Well graded sands gravelly sands
SP	Poorly graded sands or gravelly sands
SM	Silty sands, sandy silt mixture
SC	Clayey sands, sand clay mixtures
ML	Inorganic silts and very fine sands
CL	Inorganic clays
OL	Organic silts and organic silty clays
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils
CH	Inorganic clays or high elasticity
OH	Organic clays of medium to high elasticity, organic silts
PT	Peat and or other highly organic soils

Well Construction

- Bentonite/Cement Grout
- Bentonite Pellets
- Filter Pack
- Screen
- Backfill

Ground water elevation encountered during time of drilling

Static ground water elevation

Soil Sample Interval

Sample collected for submittal to an Arizona-Licensed analytical laboratory

Gradational or approximate contact

Abrupt contact

All contacts are approximate

NOTES:

<	denotes concentration less than detectable level as listed
NA	Not Available
NM	Not Measured
NE	Not Encountered
ND	Not Detected
NR	Not Recovered
HC	Hydrocarbon
HSA	Hollow Stem Auger
BGS	Below Ground Surface

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

BORING LOG KEY
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure -
Page -
Scale -

UP-1474

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	16.75' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							Concrete 7" thick.	
			1			ML	SILT: brown, moist, firm, with sand, no apparent hydrocarbon odor.	
			2					
			3					
			4					
SB-1 /6.5'	1.5	4 3 5	5 6					14
			7					
			8					
			9					
SB-1 /10.5'	1.5	3 3 2	10 11					8.4
			12					
			13			GW	SAND, GRAVEL, AND COBBLES: with some silt, dense to very dense.	
			14					

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1475

Boring: SB-1
Page: 1 of 2
Scale: NA

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Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
SB-1 /16.5'	0.5	24 24 22	16			GW	SAND, GRAVEL, AND COBBLES: with some silt, dense to very dense.	0
SB-1 /16.75'	0.25	50/3"	17				Auger refusal @ 16.75' bgs.	0

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-1
Page: 2 of 2
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							7" Concrete.	
			1			SM	SILT/SAND: loose, with rounded gravels (Possibly UST Backfill).	
			2					
			3					
			4					
			5			ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
SB-2 /6'	1.5	4 4 6	6					4.2
			7					
			8					
			9					
			10					
SB-2 /11.5'	1.5	3 3 4	11					0
			12					
SB-2 /13'	0.2	50/5"	13			GW	SAND, GRAVEL, AND COBBLES: with some silt, very dense, no apparent hydrocarbon odor. Auger refusal @ 12.5' bgs.	

Industrial Compliance
A Subsidiary of 3P Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1477

Boring: SB-2
Page: 1 of 1
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	16' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	PID/FID (ppm)
							Concrete 7" thick.	
			1			ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-3 /6.5'	1.5	4 5 6	6					0
			7					
			8					
			9					
			10					
SB-3 /11.5'	1.5	4 5 4	11					0
			12					
SB-3 /13'	0.9	18 19 19	13			SW	GRAVELLY SAND: moist, dense, rounded gravels, no apparent hydrocarbon odor.	0
SB-3 /15'	1.3	25 27 29	14			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	0

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1478

Boring: SB-3
Page: 1 of 2
Scale: NA

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Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
			16			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor. Auger refusal @ 16' bgs.	

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1479

Boring: SB-3
Page: 2 of 2
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	17' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							2" Asphalt. 10-12" Aggregate Base Course.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
SB-4 /6.5'	1.5	3 4 4	5 6					3.3
			7					
			8					
			9					
SB-4 /11.5'	1.5	4 11 13	10 11			SM	SILTY SAND: (fine grained), dry, medium dense, no apparent hydrocarbon odor.	0
			12					
			13			GW	SAND, GRAVEL, AND COBBLES: with silt, dense, no apparent hydrocarbon odor.	
			14				UP-1480	

Industrial Compliance

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SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

Boring: SB-4

Scale: NA

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Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
	NR	8 13 13	16 17			GW	SAND, GRAVEL, AND COBBLES: with silt, dense, no apparent hydrocarbon odor. Auger refusal @ 17' bgs.	0

Industrial Compliance
A Subsidiary of SF Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1481

Boring: SB-4
Page: 2 of 2
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							7" Concrete.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-5 /6.5'	1.5	3 4 4	6					0
			7					
			8					
			9					
			10					
SB-5 /11.5'	0.9	14 14 17	11				Cobbles noted at 11'.	0
						GW	SAND, GRAVEL, AND COBBLES: with some silt, very dense, no apparent hydrocarbon odor.	
			12					
SB-5 /13.5'	0.75	10 27 32	13				Auger refusal @ 13.5' bgs.	0

UP-1482

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-5
Page: 1 of 1
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							3" Asphalt. 10" Aggregate Base Course.	
			1			ML	SANDY SILT: brown, dry, stiff, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-6 /6.5'	1.5	4 4 5	6					0
			7					
			8					
			9					
			10					
SB-6 /11'	0.9	12 14 14	11			GW	SAND, GRAVEL, AND COBBLES: with some silt, no apparent hydrocarbon odor.	0
SB-6 /13'	0.75	27 42 45	12 13				Auger refusal @ 13' bgs.	0

Industrial Compliance
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Project No.: 03102810	Boring Date: 10/09/95
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SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-6
Page: 1 of 1
Scale: NA

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UP-1483

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	13' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt. 10" Aggregate Base Course.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-7 /6.5'	1.5	5 4 4	6					0
			7					
			8					
			9					
			10				Becomes gravelly at 10'.	
SB-7 /11.5'	1.5	14 14 14	11			GW	SAND, GRAVEL, AND COBBLES: with some silt, medium dense, no apparent hydrocarbon odor.	0
SB-7 /13'	1.0	18 27 30	12 13				Becomes very dense. Auger refusal @ 13' bgs.	0

UP-1484

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SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Project No.: 03102810	Boring Date: 10/10/95	Boring	SB-7
Drafted By: J. HURTADO	Checked By: S. KAMINSKI	Page	1 of 1
		Scale	NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	13' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, dry, stiff, with gravel, apparent hydrocarbon odor noted.	
			2					
			3					
			4					
			5					
SB-8 /6.5'	1.5	7 6 5	6					162
			7					
			8					
			9					
			10			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, dense.	
SB-8 /11.5'	1.4	18 15 21	11					132
	NR	50/4"	12				Becomes very dense.	0
			13				Auger refusal @ 13' bgs.	

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Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1485

Boring: SB-8
Page: 1 of 1
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	15.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-9 /6.5'	1.5	3 3 3	6					28
			7					
			8					
			9					
			10			ML	SANDY SILT: brown, dry, very stiff, with some fine to coarse gravels, no apparent hydrocarbon odor.	
SB-9 /11.5'	1.5	16 11 13	11					1.7
			12					
			13					
			14			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	0

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SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

Boring: SB-9
Page: 1 of 2
Scale: NA

UP-1486

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Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
SB-9 /15.5'	0.2	50/6"				GW	SAND, GRAVEL, AND COBBLES: (continued). Auger refusal @ 15.5' bgs.	0

Industrial Compliance
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Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-9
Page: 2 of 2
Scale: NA

UP-1487

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	16.5' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, dry, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
SB-10 /6.5'	1.5	4 3 5	5 6					0
			7					
			8					
			9					
SB-10 /11.5'	1.5	8 14 16	10 11			SM	SILTY SAND: moist, dense, with some gravels, no apparent hydrocarbon odor.	0
			12					
			13					
			14					

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-10
Page: 1 of 2
Scale: NA

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UP-1488

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
SB-10 /16.5'	0.4	50/12"	16			GW	SAND, GRAVEL, AND COBBLES: with slight hydrocarbon odor. Auger refusal @ 16.5' bgs.	0.8

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-10
Page: 2 of 2
Scale: NA

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UP-1489

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	14' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-11 /6.5'	1.5	4 4 5	6					0
			7					
			8					
			9					
			10					
SB-11 /11.5'	1.5	3 4 3	11					0
			12					
						GW	SAND, GRAVEL, AND COBBLES: brown, moist, very dense, trace silt, no apparent odor.	
SB-11 /14'	1.3	15 19 30	13 14				Auger refusal @ 14' bgs.	0

Industrial Compliance
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SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Project No: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

Boring: SB-11
Page: 1 of 1
Scale: NA

UP-1490

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	12' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FD/PID (ppm)
							4" Asphalt.	
			1			ML	SANDY SILT: brown, moist, firm, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-12 /6.5'	1.5	3 3 4	6					0
			7					
			8					
			9					
			10					
SB-12 /11.5'	1.5	5 8 14	11					0
SB-12 /12'	0.4	50/5"	12			GW	SAND, GRAVEL, AND COBBLES; with some silt, very dense, hydrocarbon odor was noted from 11.75' to 12'. Auger refusal @ 12' bgs.	2.5

Industrial Compliance
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SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

Boring: SB-12
Page: 1 of 1
Scale: NA

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UP-1491

Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK/HEBER MINING & EXPLORATION	Total Depth:	19.5' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							4" Asphalt.	
			1			FILL	Gravel fill, very loose.	
			2					
			3					
			4					
			5					
SB-13 /6.5'	1.5	1 1 1	6					0
			7					
			8					
			9					
			10					
			11					
			12					
			13					
			14					

Industrial Compliance
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Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-13

Scale: NA

UP-1492

D:\AUTOCAD\DWGFILES\03102810\SB13P1

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
			16			FILL	Gravel fill, loose.	
			17					
			18			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	
SB-13 /19.5'	0.9	38 50/5"	19				Auger refusal @ 19.5' bgs.	0

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/10/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1493

Boring: SB-13
Page: 2 of 2
Scale: NA

D:\AUTOCAD\DWGFILES\03102810\SB13P2

APPENDIX 4

Investigative Rationale Summary

Site Specific QA/QC Narrative

And

Conclusion and Proposed Actions

Investigative Rationale Summary

Based on the limited petroleum hydrocarbon impact to soils identified during the UST closure sampling activities, it was anticipated that the petroleum hydrocarbon impact would attenuate at shallow depths. Therefore, the site investigation was conducted using hollow-stem auger drill rig methodologies. When it became apparent that the level of impact was actually increasing with depth at the central soil boring (SB-8), a reasonable attempt was made to penetrate the coarse sediments. It became apparent that the auger methods could only penetrate to a depth of approximately 13 feet bgs.

Soil borings were advanced using a hollow-stem auger drill rig equipped to drill a 7.0-inch diameter boring. Soil samples were collected by driving a split-spoon sampler according to IC standard operating procedures included in Attachment C, Appendix 2. The assessment of the lateral and vertical extent of petroleum hydrocarbon-impacted soils (identified during UST removal activities) was the objective which dictated placement of the soil boring locations and the selected sample depths. The soil borings were placed at locations considered appropriate to meet the objectives of the investigation, and to further assess subsurface conditions at the site.

Site Specific QA/QC Narrative

The laboratory analytical report does not indicate QA/QC parameters which are not within the laboratory's QA/QC limits.

Conclusions and Proposed Actions

Ten soil borings (SB-4 through SB-13) were drilled in the proximity of the former fueling dispenser, fuel line, and UST locations. Based on analytical data from soil samples collected during this investigation, it is apparent that petroleum hydrocarbon-impacted soils are present beneath the site at depths of at least 19 feet bgs. Due to the coarse grained nature of the subsoils in the study area, the following actions are proposed:

- drill and install one ground water monitoring well to assess the potential presence of petroleum-hydrocarbon impacted ground water,
- if practicable additional soil samples will be collected and analyzed to assess the vertical extent of diesel-impacted subsoils, and
- present the results of these data to ADEQ in the form of a complete SCRF.

Industrial Compliance
9830 S. 51st., Suite A-127 Phoenix, Arizona 85044 602/496-4100 Fax 602/496-4399
Arizona Contractor's License #AE090871

November 27, 1995

Arizona Department of Environmental Quality
UST Section
3033 North Central Avenue
Phoenix, Arizona 85012

Re: Revised Notification For Underground Storage Tanks Form for Underground Storage Tanks Previously Located at 902-904 South 12th Street in Phoenix, Arizona (ADEQ Facility ID #0-004589)

To Whom it May Concern:

On behalf of the Southern Pacific Transportation Company (SPTCo), Industrial Compliance (IC) is submitting this revised Notification For Underground Storage Tanks (USTs) Form which describes the closure of three USTs previously located at the above-referenced facility. The USTs were reportedly installed at the facility after 1970 and were operated by Commercial Carriers until approximately March 1990 when they were removed from the site.

During a recent (May 5, 1995) telephone conversation with the Arizona Department of Environmental Quality (ADEQ), Mr. Garrett Fleming (ADEQ - UST Section) indicated that a revised notification form had not been submitted to ADEQ following removal and closure of the three USTs. Mr. Fleming further indicated that since SPTCo had not submitted the revised notification form, it was in violation of the UST regulations. Therefore, IC has prepared the enclosed notification form on SPTCo's behalf to satisfy ADEQ's notification requirements.

IC and SPTCo appreciate your assistance and cooperation with this important project. Should you have any questions or require additional information please contact me at (602)496-4100.

Sincerely,

Stephen J. Smelser, R.G.
Senior Project Manager

SJS/

UP-1496

/u/sorris/projects/03102810/clos.ltr2

ARIZONA DEPARTMENT OF
ENVIRONMENTAL QUALITY
UST SECTION
3033 NORTH CENTRAL AVENUE
PHOENIX, ARIZONA 85012
(602) 207-4345
In-state toll-free (800) 234-5677 ext. 4345

State Use Only

Fac.#_____ Owner I.D._____

Reviewer's Initials:_____

Data Entry Initials:_____

Date Entered:_____ Fileroom:____

Date Received:

NOTIFICATION FOR UNDERGROUND STORAGE TANKS FORM

Please type or print in black ink

Revised: /

1. TYPE OF NOTIFICATION (Please check one)

[ ] a. New Facility [ ] b. Amendment to an Existing Facility [X] c. Closure at a Facility

2. OWNERSHIP OF TANK(S)

Southern Pacific Transportation Company

Owner Name

One Market Plaza

Mailing Address

San Francisco, California 94105

City State Zip Code

San Francisco

County

(415) 541-1505

Telephone Number (include Area Code)

3. OPERATOR OF TANK(S)

Southern Pacific Transportation Company

Corporation or Business Name

Michael J. Grant Manager, Environmental Field Operations

Contact Person Job T

One Market Plaza

Mailing Address

San Francisco, California 94105

City State Zip C

(415) 541-1505

Telephone Number (include Area Code)

4. LOCATION OF TANK(S) (P.O. Boxes NOT acceptable)

Commercial Carriers (former lease)

Facility Name & Company Site I.D. (if applicable) Parcel Number

902-904 South 12th Street

Physical Address (P.O. Box numbers NOT acceptable)

Phoenix Arizona 85003

City State Zip Code

Maricopa

County

5. TYPE OF OWNER (Mark all that apply)

[ ] Federal Government
[ ] Local Government (i.e., City, County, Public Schools)
[ ] Private
[ ] State Government
[X] Commercial
[ ] Indian Country (Within boundaries of Indian Country)

UP-1497

6. TYPE OF FACILITY (Mark all that apply)

[ ] Gas Station
[ ] Petroleum Distributor
[ ] Air Taxi (Airline)
[ ] Utilities
[ ] Automobile Dealership
[ ] Railroad
[ ] Federal: Non-Military
[ ] Federal: Military
[ ] Industrial
[ ] Contractor
[X] Trucking/Transport
[ ] Farm*
[ ] Residential*
[ ] Other (explain):

***Please check Glossary in Instruction Manual to determine if tanks are required to be registered**

7. **FINANCIAL RESPONSIBILITY REQUIREMENTS** - Mark the boxes which describe the financial assurance mechanisms being used to satisfy responsibility requirements.

X	Self-Insurance		Guarantee		State Assurance Fund
	Commercial Insurance		Surety Bond		Trust Fund
	Risk Retention Group		Letter of Credit		Other Method Allowed (specify):

8. **MAP AND DIAGRAM** - Be sure to include buildings and cross streets in the facility drawing.

N ↑ See Attached Figures

Legend - Use all symbols that apply

- ○ Fill Tubes
- ● Vent Lines
- ◆ Dispensers
- ═══ Piping
- ▭ Tank *(Tank numbering must match with Sections 9 & 10)*
- ◘ Manway to Suction Pump
- ▲ Vapor Monitoring Wells
- * Groundwater Monitoring Wells
- ⌂ Manway to Automatic Tank Gauging
- ■ Manway to Submersible Pump and Line Leak Detector

UP-1498

9. DESCRIPTION OF UNDERGROUND STORAGE TANK(S)

Tank Identification Number (Assign sequential numbers, e.g., 1, 2, 3,...)	Tank No. 2[a]	Tank No. 3	Tank No. 4	Tank No.	Tank No.
a) Date of Installation	Post 1970	Post 1970	Post 1970		
b) Total Gallon Capacity	<1,000	<1,000	<1,000		
c) Substance Currently or Last Stored:	Not Available				
Gasoline					
Diesel [b]	X	X	X		
Kerosene					
Heating Oil					
Used Oil [b]	X	X	X		
New Oil					
Other (please specify)	NA	NA	NA		
Hazardous Substance					
CERCLA Name and/or					
CAS Number					
Mixture of Substances					
Please specify					
d) Material of Construction (Tank) Mark all that apply					
Asphalt-coated or Bare Steel					
Cathodically Protected Steel	X	X	X		
Epoxy-coated Steel					
Composite (Steel with Fiberglass)					
Fiberglass Reinforced Plastic					
Lined Interior					
Double-Walled					
Polyethylene Tank Jacket					
Concrete					
Excavation Liner					
Unknown					
If not listed, please describe tank construction					
If tank has been repaired, indicate date of repair	NA	NA	NA		

UP-1499

a= Tank No.1 removed under Permit No. 73418 dated June 1995.

b= Based on the type of business (i.e., trucking company), USTs are assumed to have contained diesel fuel or waste oil.

NA= Not available

9. DESCRIPTION OF UNDERGROUND STORAGE TANK(S)

Tank Identification Number (Assign sequential numbers, e.g., 1, 2, 3,...)	Tank No. 2[a]	Tank No. 3	Tank No. 4	Tank No. ____	Tank No.
e) Material of Construction (Product Piping) Mark all that apply					
Bare Steel					
Galvanized Steel					
Fiberglass Reinforced Plastic					
Copper					
Cathodically Protected	X	X	X		
Double Walled					
Secondary Containment					
Unknown					
Other (please specify)					
f) Product Piping Type Mark only one					
Suction: No check valve at tank					
Suction: Check valve at tank					
Gravity Feed					
Pressure					
Is manway to submersible pump sealed and/or bolted?	Yes / No	Yes / No	Yes / No	Yes / No	Yes
If piping has been repaired, indicate date of repair	NA	NA	NA		

g) Release Detection Mark all that apply	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Pi
Manual Tank Gauging (Only tanks of 550 gallons or less)										
Tank Tightness Testing with Manual Tank Gauging (Only tanks of 551 through 2,000 gallons)										
Tank Tightness Testing with Inventory Controls										
Automatic Tank Gauging										
Vapor Monitoring										
Groundwater Monitoring										
Interstitial Monitoring (double walled tank/piping)										
Interstitial Monitoring (secondary containment)										
Automatic Line Leak Detectors										
Line Tightness Testing										
Other method allowed by ADEQ										
Please Specify										
h) Emergency Generator Mark box if tank is connected to an Emergency Generator										

a= Tank No. 1 removed under Permit No. 73418 dated June 1995.
NA= Not available

10. STATUS OF TANK(S)

Tank Identification Number (Assign sequential numbers, e.g., 1, 2, 3,...)	Tank No. 2a		Tank No. 3		Tank No. 4		Tank No.		Tank No.	
a) Currently in Use Not applicable										
b) Temporary Closure of Tank Not applicable										
(1) Date of temporary tank closure										
(2) Request to extend temporary closure period beyond 12 months										
Site assessment completed to extend temporary closure period? (Indicate yes or no with checkmark)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	
c) Permanent Closure of Tank	X		X		X					
Date the tank was last used	NA		NA		NA					
Date of closure by removal from ground	March 1990		March 1990		March 1990					
Date of closure in ground										
Specify Inert Material Used for In-Ground Closure										
Closure site assessment completed? (Indicate yes or no with checkmark)	(Yes)	No	(Yes)	No	(Yes)	No	Yes	No	Yes	
d) Change-in-Service										
Date of change-in-service										
Closure site assessment completed? (Indicate yes or no with checkmark)	(Yes)	No	(Yes)	No	(Yes)	No	Yes	No	Yes	
e) Evidence of Release (leak)? (Indicate yes or no with checkmark)	Yes	(No)	Yes	(No)	Yes	(No)	Yes	No	Yes	

The space below is provided for your comments:

a= Tank No. 1 removed under permit No. 73418 dated June 1995

NA= Not available

Due to the type of business conducted at the facility (i.e., trucking company), and the sizes of the USTs, it was assumed that the USTs were utilized for the storage of diesel fuel or waste oil. Therefore, conformatory soil samples were analyzed for TPH and VOCs only (see attached).

11. CERTIFICATION

I certify under penalty of State law that I have personally examined and am familiar with the information submitted in this and all attac documents and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete.

Name and Official Title of Owner or Owner's Authorized Representative (print please)	Signature	Date Signed
M.J. Grant, Sr. Env. Project Manager.	M Grant	11-20-95

UP-1501

12. TANK INSTALLATION OR UPGRADE CERTIFICATION (To be completed by Installer)

Tank Identification Number (Assign sequential numbers, e.g., 1, 2, 3,...)	Tank No. ____	Tank No. ____	Tank No. ____	Tank No. ____	Tank No. ____
a) Installation (Mark all that apply)					
(1) Installer certified by tank and piping manufacturers	☐	☐	☐	☐	☐
(2) Installation inspected by a registered engineer	☐	☐	☐	☐	☐
(3) Manufacturer's installation checklists have been completed	☐	☐	☐	☐	☐
(4) Another method allowed by ADEQ (please specify)					
b) Spill and Overfill Protection					
(1) Spill device installed	☐	☐	☐	☐	☐
Date installed					
(2) Overfill device installed	☐	☐	☐	☐	☐
Date installed					
c) Corrosion Protection					
Corrosion Protection installed	☐	☐	☐	☐	☐
Date installed					

I CERTIFY UNDER PENALTY OF STATE LAW THAT THE INFORMATION CONTAINED IN THIS SECTION IS TRUE TO THE BEST OF MY BELIEF AND KNOWLEDGE.

Installer:

Name _____ Signature _____ Date _____

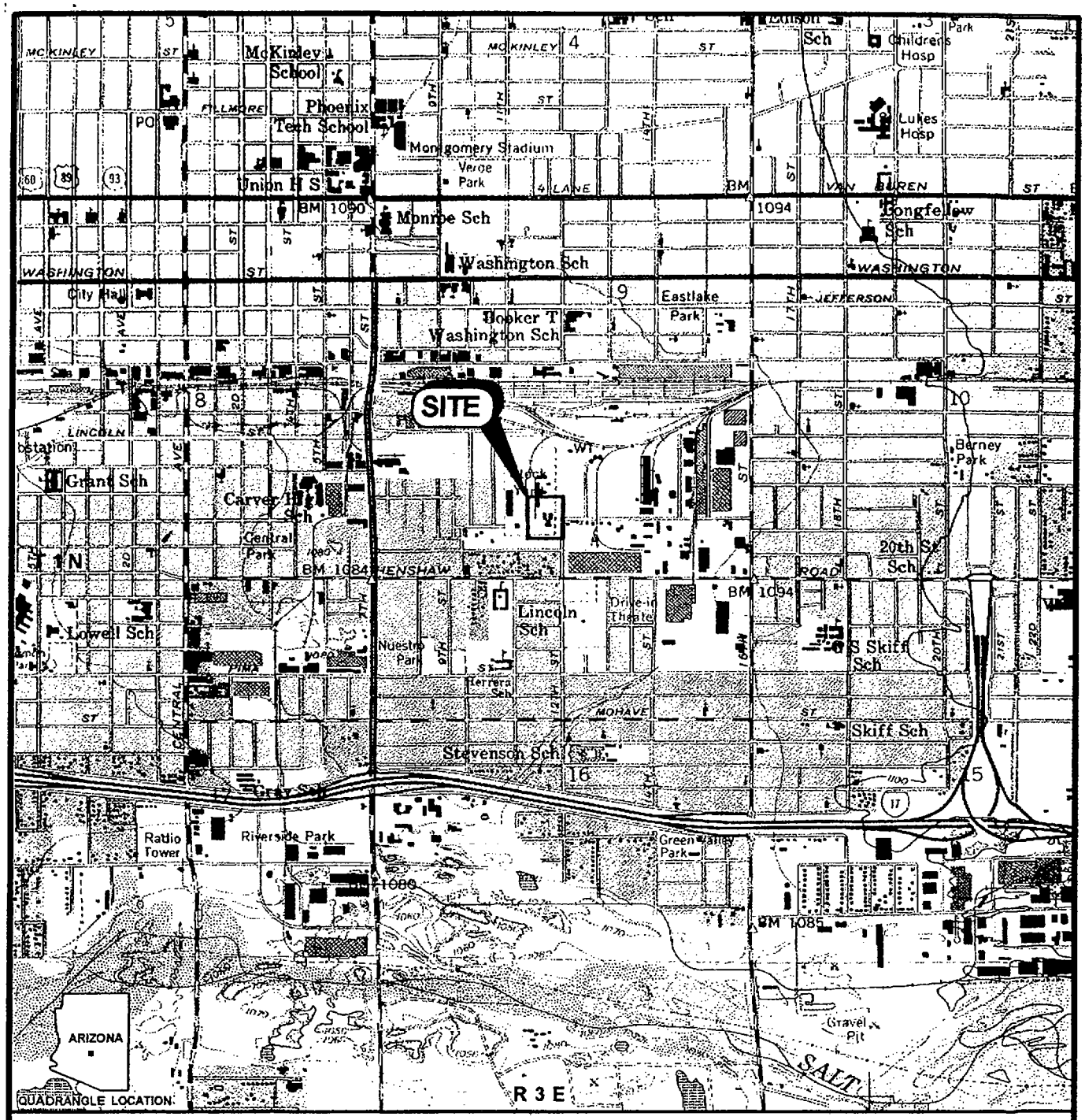
Position _____ Company _____

NOTE: Arizona Revised Statutes (A.R.S.), Title 49, Chapter 6, Section §49-1002 requires owners of underground storage tanks (USTs) to notify the Arizona Department of Environmental Quality (ADEQ) of their USTs, on forms prescribed by the Department. The *Notification for Underground Storage Tanks* form is designed to serve two purposes: 1) to register the USTs located at a specific facility and 2) to inform ADEQ of any changes (amendments) at an UST facility, (i.e., installation, closure, method of release detection, change in ownership). Owners and operators of USTs are required to notify ADEQ of all changes at a facility within thirty (30) days of that change.

PENALTIES: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000.00 for each tank for which notification is not given or for which false information is submitted.

UP-1502

ATTACHMENT A
FIGURES



SOURCE: USGS QUAD MAP - PHOENIX, ARIZONA, 1982.

1/2 0 1MILE

APPROXIMATE SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

APPROXIMATE SCALE (FEET)

N

Industrial Compliance

A Subsidiary of SF Environmental Systems, Inc.

Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SITE LOCATION MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure 1

Page -

Scale AS SHOWN

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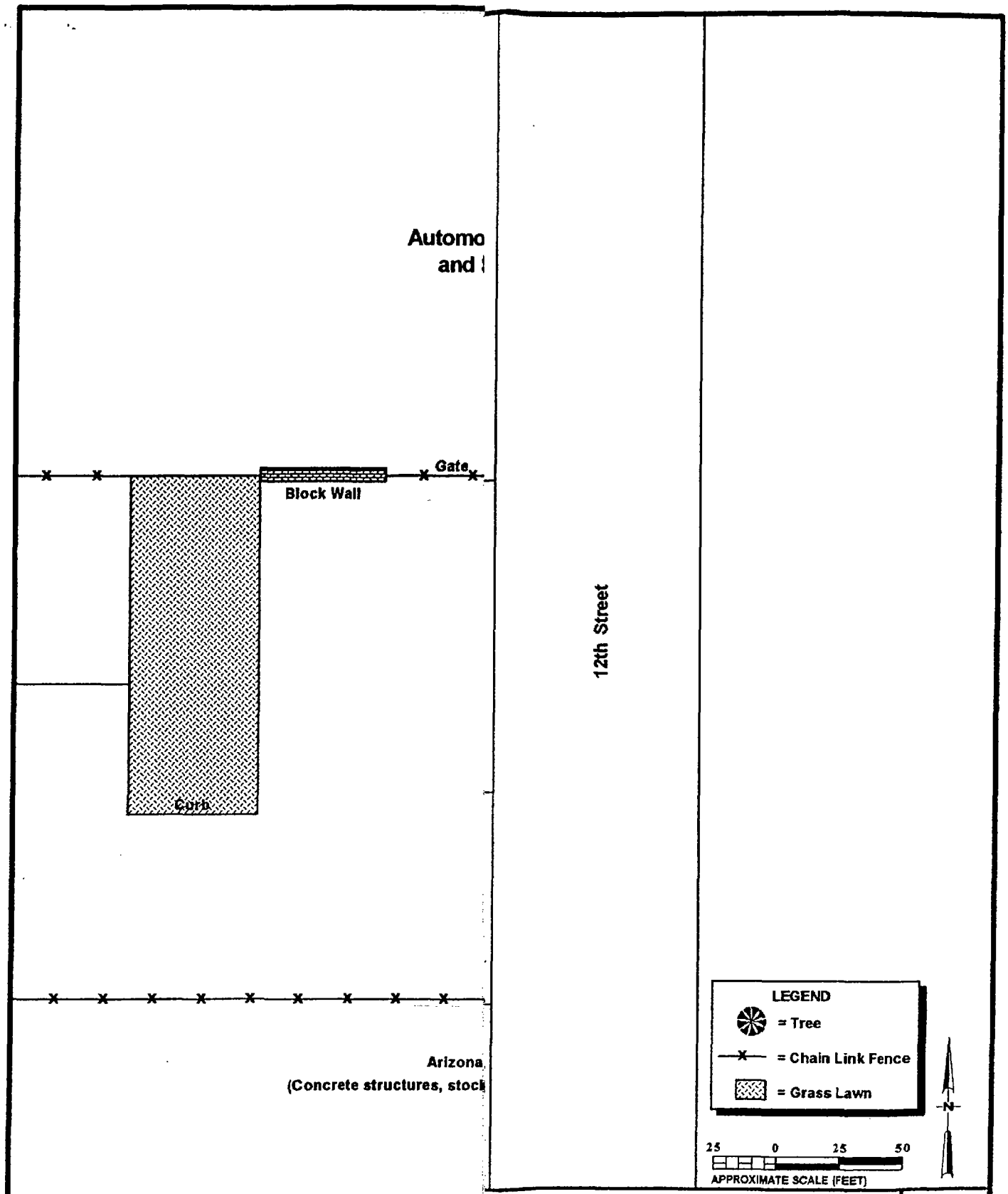
UP-1504



SITE MAP
COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure	Page	Scale
2	-	AS SHOWN

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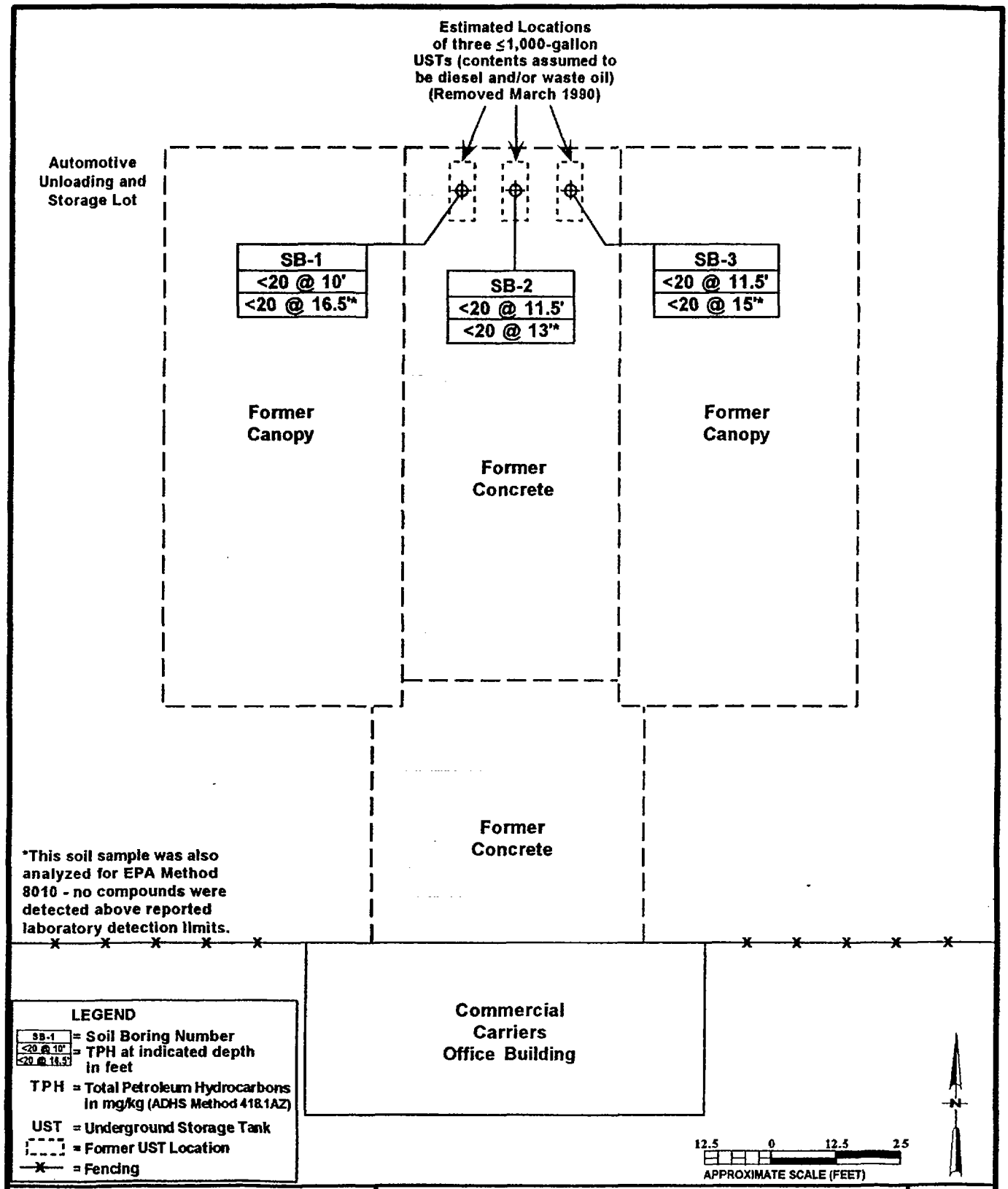
UP-1505



Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. SMELSER

SOIL BORING LOCATION MAP
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1506

Figure 3

Page -

Scale AS SHOWN

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ATTACHMENT B

LABORATORY REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 510648

October 27, 1995

Industrial Compliance Southwest, Inc.
9830 S. 51st Street
Suite A127
Phoenix, AZ 85044

Project Name/Number: None given

Attention: Steve Kaminski

On **10/10/95**, Analytical Technologies, Inc., received a request to analyze **soil** sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

ND indicates that the compound was not detected.

EPA method 8010 analysis was cancelled on 10/11/95 for samples SB-1/10', SB-2/11.5', and SB-3/11.5'.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyer
Project Manager

MT/paw

Enclosure

ADHS License No. AZ0061
Sherman McCutcheon, Laboratory Manager

Analytical Technologies, Inc.

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED DATE RECEIVED : 10/10/
PROJECT # : 03102810
PROJECT NAME : (NONE) REPORT DATE : 10/24/

ATI I.D. : 510648

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECT
01	SB-1/10'	SOIL	10/09/
02	SB-1/16.5'	SOIL	10/09/
03	SB-2/11.5'	SOIL	10/09/
04	SB-2/13'	SOIL	10/09/
05	SB-3/11.5'	SOIL	10/09/
06	SB-3/15'	SOIL	10/09/

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	33

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from th date of this report. If an extended storage period is required, please contac our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/9!
REPORT DATE : 10/27/9!

PARAMETER	UNITS	01	02	03	04	05
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20	<20	<20	<20	<20
418.1 AZ PERCENT MOISTURE		19	3	12	15	19

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 510648

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)

DATE RECEIVED : 10/10/9
REPORT DATE : 10/24/9

PARAMETER	UNITS	06	07	08	09	10
PETROLEUM HYDROCARBONS,418.1	MG/KG	<20				
418.1 AZ PERCENT MOISTURE		2				

UP-1511

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE) ATI I.D. : 510648

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% RE
PETROLEUM HYDROCARBONS	MG/KG	51062501	2900	2900	0	4300	1500	93
PETROLEUM HYDROCARBONS	MG/KG	51063701	<20	<20	NA	190	200	95

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 10$$

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064802

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/9
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/9
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/9
CLIENT I.D.	: SB-1/16.5'	DATE ANALYZED	: 10/13/9
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	105
TIME EXT	13:00

UP-1513

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064804

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-2/13'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	119
TIME EXT	13:00

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 51064806

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	DATE SAMPLED	: 10/09/95
PROJECT #	: 03102810	DATE RECEIVED	: 10/10/95
PROJECT NAME	: (NONE)	DATE EXTRACTED	: 10/12/95
CLIENT I.D.	: SB-3/15'	DATE ANALYZED	: 10/13/95
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	122
TIME EXT	13:00

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT	: INDUSTRIAL COMPLIANCE INCORPORATED	ATI I.D.	: 510648
PROJECT #	: 03102810	DATE EXTRACTED	: 10/12/9
PROJECT NAME	: (NONE)	DATE ANALYZED	: 10/13/9
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.025
BROMOFORM	<0.025
BROMOMETHANE	<0.1
CARBON TETRACHLORIDE	<0.025
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.025
CHLOROFORM	<0.025
CHLOROMETHANE	<0.025
DIBROMOCHLOROMETHANE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
DICHLORODIFLUOROMETHANE	<0.025
1,1-DICHLOROETHANE	<0.025
1,2-DICHLOROETHANE	<0.025
1,1-DICHLOROETHENE	<0.025
CIS-1,2-DICHLOROETHENE	<0.025
1,2-DICHLOROPROPANE	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.05
TETRACHLOROETHENE	<0.025
1,1,1-TRICHLOROETHANE	<0.025
1,1,2-TRICHLOROETHANE	<0.025
TRICHLOROETHENE	<0.025
TRICHLOROFLUOROMETHANE	<0.025
TRICHLOROTRIFLUOROETHANE	<0.10
VINYL CHLORIDE	<0.025
2-CHLOROETHYL VINYL ETHER	ND
TRANS-1,2-DICHLOROETHENE	<0.025

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	120
TIME EXT	13:00

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 510648

TEST : VOLATILE HALOCARBONS (EPA METHOD 8010)

CLIENT : INDUSTRIAL COMPLIANCE INCORPORATED
PROJECT # : 03102810
PROJECT NAME : (NONE)
REF I.D. : 51064901

DATE ANALYZED : 10/12/95
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPI
1,1-DICHLOROETHENE	<0.025	1.0	1.2	120	1.2	120	0
TRICHLOROETHENE	<0.025	1.0	1.2	120	1.2	120	0
TETRACHLOROETHENE	<0.025	1.0	1.2	120	1.3	130	8
BROMODICHLOROMETHANE	<0.025	1.0	1.1	110	1.1	110	0
CHLOROFORM	<0.025	1.0	1.2	120	1.2	120	0
1,1,1-TRICHLOROETHANE	<0.025	1.0	1.2	120	1.2	120	0
CHLOROBENZENE	<0.025	1.0	1.2	120	1.2	120	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AnalyticalTechnologies, Inc., Phoenix, Arizona
San Diego • Phoenix • Seattle • Pensacola • Ft. Collins • Portland

CHAIN OF CUSTODY

DATE: 10/10/95 PAGE: 1 OF 4

ATI LAB I.D. 510648

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER: Abel Ramirez, Jr.

COMPANY: Industrial Compliance
ADDRESS: 9830 S. 51st Street, Suite A127
Phoenix, AZ. 85044
PHONE: (602) 496-4400
FAX:

BILL TO: Same as above
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD.8015) Fuel Fingerprint	M8015) Gas	(BLS-191) Diesel	BTXE/MTBE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	SDWA Volatiles (502.1/503.1), 502.2 Reg. & Unreg.	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	Polynuclear Aromatics (610/8310)	SDWA Primary Standards - Arizona	SDWA Secondary Standards - Arizona	SDWA Primary Standards • Federal	SDWA Secondary Standards - Federal	The 13 Priority Pollutant Metals	RCRA Metals by Total Digestion	RCRA Metals by TCLP (1311)	NUMBER OF CONTAINERS
SB-1/10'	10/9/95		Soil	1	X					X															1
SB-1/16.5'				2						X															1
SB-2/11.5'				3						X															1
SB-2/13'				4						X															1
SB-3/11.5'				5						X															1
SB-3/15'				6						X															1
SB-4/6.5'				7																					1
SB-4/11.5'				8																					1
SB-4/16'				9																					1

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PROJECT INFORMATION		SAMPLE RECEIPT	
PROJ. NO.: 03102810		NO. CONTAINERS	9
PROJ. NAME:		CUSTODY SEALS	Y / N / (NA)
P.O. NO.:		RECEIVED INTACT	Y
SHIPPED VIA:		BLUE ICE/ICE	BLUE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEK

Comments:

SAMPLED & RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 5:50	Signature: Time:	Signature: Time:
Printed Name: Abel Ramirez, Jr. Date: 10/10/95	Printed Name: Date:	Printed Name: Date:
Company: IC Phone:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: [signature] Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Heather C. Oeschger Date: 10/10/95
Company:	Company:	Analytical Technologies, Inc.

SAMPLE CONTROL LOGIN CHECK LIST

ACCESSION #: 510648 SC INIT: [illegible]

CLIENT I.D.: INDUSTRIAL COMPLIANCE DATE: 10/10/95

Is this a UST Project?	Y	N	If no, stop.
Are these soil samples?	Y	N	If no, stop.
Were samples received in Sleeves constructed of an Inert material (Brass, Teflon or Stainless Steel)?	Y	N	If no, see comments.
Chain of Custody seals?	Y	N	If no, see comments.
Teflon tape?	Y	N	If no, see comments.
Are samples headspace free?	Y	N	If no, see comments.
Are samples cool?	Y	N	If no, see comments.
Were samples received within 72 hours of sampling?	Y	N	If no, see comments.

Comments:

Please note that a Client signature is required to proceed with analysis if any answers are no, see comments.

I authorize ATI to analyze the samples submitted under the above Accession Number.

[illegible] 10/10/95

Authorized By Date

I:\WP51\TABLES\SCCL.LST Revised: June 9, 1995

UP-1519

ATTACHMENT C
SOIL BORING LOGS

Lithology

GW	Well graded gravels, gravel and sand mixtures
GP	Poorly graded gravels or gravel and sand mixtures
GM	Silty gravels, gravel and silt mixtures
GC	Clayey gravels, gravel sand clay mixtures
SW	Well graded sands gravelly sands
SP	Poorly graded sands or gravelly sands
SM	Silty sands, sandy silt mixture
SC	Clayey sands, sand clay mixtures
ML	Inorganic silts and very fine sands
CL	Inorganic clays
OL	Organic silts and organic silty clays
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils
CH	Inorganic clays or high elasticity
OH	Organic clays of medium to high elasticity, organic silts
PT	Peat and or other highly organic soils

Well Construction

- Bentonite/Cement Grout
- Bentonite Pellets
- Filter Pack
- Screen
- Backfill

- Ground water elevation encountered during time of drilling
- Static ground water elevation
- Soil Sample Interval
- Sample collected for submittal to an Arizona-Licensed analytical laboratory
- Gradational or approximate contact
- Abrupt contact

All contacts are approximate

NOTES:

<	denotes concentration less than detectable level as listed
NA	Not Available
NM	Not Measured
NE	Not Encountered
ND	Not Detected
NR	Not Recovered
HC	Hydrocarbon
HSA	Hollow Stem Auger
BGS	Below Ground Surface

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Date: 11/02/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

BORING LOG KEY
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Figure -
Page -
Scale -

UP-1521

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	16.75' bgs

Sample Number	Recov. Feet	Blows/ 6-Inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
							Concrete 7" thick.	
			1			ML	SILT: brown, moist, firm, with sand, no apparent hydrocarbon odor.	
			2					
			3					
			4					
			5					
SB-1 /6.5'	1.5	4 3 5	6					14
			7					
			8					
			9					
			10					
SB-1 /10.5'	1.5	3 3 2	11					8.4
			12					
			13			GW	SAND, GRAVEL, AND COBBLES: with some silt, dense to very dense.	
			14				UP-1522	

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-1
Page: 1 of 2
Scale: NA

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Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
		24				GW	SAND, GRAVEL, AND COBBLES: with some silt, dense to very dense.	
SB-1 /16.5'	0.5	24	16					0
		22						
SB-1 /16.75'	0.25	50/3"	17				Auger refusal @ 16.75' bgs.	0

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

UP-1523

Boring: SB-1
Page: 2 of 2
Scale: NA

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Logged By:	A. RAMIREZ	Hole Diameter:	7"
Drilling Method:	HOLLOW STEM AUGER	Ground Elevation:	NM
Rig Type:	CME-75	Depth to Water:	NE
Driller/Company:	MARK & MATT/HEBER MINING & EXPLORATION	Total Depth:	16' bgs

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	USCS Log	Sample Description	FID/PID (ppm)
					Concrete 7" thick.	
			1	ML	SANDY SILT: brown, moist, stiff, no apparent hydrocarbon odor.	
			2			
			3			
			4			
SB-3 /6.5'	1.5	4 5 6	5 6			0
			7			
			8			
			9			
SB-3 /11.5'	1.5	4 5 4	10 11			0
SB-3 /13'	0.9	18 19 19	12 13	SW	GRAVELLY SAND: moist, dense, rounded gravels, no apparent hydrocarbon odor.	0
SB-3 /15'	1.3	25 27 29	14	GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor.	0

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG

FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-3
Page: 1 of 2
Scale: NA

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UP-1524

Sample Number	Recov. Feet	Blows/ 6-inches	Depth Feet	Boring Detail	Lithology	USCS Log	Sample Description	FID/PID (ppm)
			16			GW	SAND, GRAVEL, AND COBBLES: with some silt, moist, very dense, no apparent hydrocarbon odor. Auger refusal @ 16' bgs.	

Industrial Compliance
A Subsidiary of SP Environmental Systems, Inc.

Project No.: 03102810	Boring Date: 10/09/95
Drafted By: J. HURTADO	Checked By: S. KAMINSKI

SOIL BORING LOG
FORMER COMMERCIAL CARRIERS LEASE PROPERTY
902-904 SOUTH 12TH STREET
PHOENIX, ARIZONA

Boring: SB-3
Page: 2 of 2
Scale: NA

UP-1525

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2094957

EXHIBIT – 5

MATERIAL SAFETY DATA SHEETS

"MSDS"

FOR VEHICLES IN

ENGINEERING SERVICES

AND

MAINTENANCE OPERATIONS

UP-1527

MATERIAL SAFETY DATA SHEETS

"MSDS"

FOR VEHICLES IN

ENGINEERING SERVICES

AND

MAINTENANCE OPERATIONS

UP-1528

HAZARD COMMUNICATION: INFORMATION & TRAINING

Union Pacific Railroad
April, 1994

INTRODUCTION

The OSHA Hazard Communication Standard requires that employees, who work or may be exposed to potentially hazardous chemicals in their work place, be informed about and trained in the proper handling of hazardous chemicals.

COURSE OBJECTIVES

At the conclusion of this training program, it is the objective of this program that employees will be able to:

1. Outline the basic requirements of the OSHA Hazard Communication Standard and the UPRR written program,
2. Identify work tasks that may involve hazardous chemicals in their work place,
3. State the location where the written Hazard Communication Program is kept,
4. Name the location where the list of hazardous chemicals in their facility is kept,
5. Describe how to obtain a Material Safety Data Sheet (MSDS),
6. List methods of detecting chemical releases in the work place,
7. Describe potential physical and health hazards associated with the chemicals in the work place, and
8. Name methods that employees can take to protect themselves from exposure to hazardous chemicals.

RECORDING EMPLOYEE ATTENDANCE

Pass out form 15204, Technical Training Student Record, after you have completed the program name, trainer's name, class location, date blocks, and products discussed.

Have employees print the following information on the form:

** Name
** Social Security Number
** Title
** Work Location
** Supervisor's Name

Ensure that this form is completed and collected prior to the end of class. After collecting form 15204, make the following distribution:

white	- Manager of Safety Services
yellow	- PINS
pink	- Trainer
goldenrod	- Written Plan

NOTE: Use PINS Code SF-03 on form 15204

VIDEO PRESENTATION

Introduce the video presentation and review the video objectives.

This video was produced by the Union Pacific Railroad to explain our Hazard Communication Program, describe how the program will impact employees, and alert employees about working safely with chemicals.

Show the first video segment: "Hazard Communication .... Your Right to Know".

Ask for questions and comments on the video contents. If any questions arise that the trainer is unsure of the correct answer, write down the question and ensure that employees are informed of the correct answer in a timely manner.

MATERIAL SAFETY DATA SHEETS - MSDS

How to Obtain a Material Safety Data Sheet.

If an employee wants a copy of a specific MSDS, they must contact their supervisor. When the employee receives the MSDS, both the employee and the supervisor will need to sign and date the Employee's Right-to-Know Request Receipt. This request form is a record that the employee actually received the requested MSDS.

Introduce the Video segment on MSDS.

This segment of the video provides an overview of the Material Safety Data Sheet and explains how employees may use information contained on the MSDS.

Have employees watch for the following information:

** description of the purpose and use of an MSDS
** three ways in which chemicals can enter the body
** basic information found on an MSDS
** what effect a trade secret has on the information presented in an MSDS
** terms defining employee exposure:

TLV	TLV-TWA
TLV-STEL	TLV-Ceiling
acute exposure	chronic exposure

Show the video segment titled: "MSDS: Cornerstone of Chemical Safety."

Ask for questions and comments regarding the video segment. If the trainer does not know the correct answer to an employee's question, write down the question and ensure that a correct answer is provided in a timely manner.

What do employees do if they do not understand something on the MSDS?

If an employee does not understand something on a MSDS, they shall ask their supervisor. If the supervisor can not provide a satisfactory answer, then the supervisor shall first contact the Manager of Safety Services, and lastly, a Manager of Industrial Hygiene and/or Manager of Safety Engineering in Omaha.

IDENTIFY HAZARDOUS CHEMICALS IN THIS WORK PLACE

Explain where the list of Hazardous Chemicals is located.

Hold up an example of the Hazard Communication Poster.

Point out the location of the hazardous chemicals that are in this specific work place. (i.e.: "We use chemicals in the following locations...)

Labels

Explain hazard markings and labels.

Labels must contain the identity of the chemical, hazard warnings, and the name and address of the manufacturer.

Explain how to read label pictograms

TRAINING MODULES

OVERVIEW OF PRODUCTS USED ON FIELD TRUCKS

Product groups associated with various job activities are listed below:

- Welding, cutting, heating, brazing
- Welding with Manganese Rods
- Motor Vehicle Oils and Fluids
- Lubricant
- Penetrating Oils and Light Lubricants
- Locomotive Fuels and Maintenance Products
- Cleaners
- Insect Repellents
- Paints and Solvents
- Creosote Treated Wood
- Miscellaneous

Each product within these groups has a specific MSDS which indicates special precautions when working with the product. Prior to using a product, the employee should be familiar with and trained in the precautions listed on the product MSDS. This review should include the following:

- Product Identification
- Hazards of Activity/Products
- Spill/Leak Information
- Protection and Precaution
- Special Precautions
- Emergency and First Aid

Following a review of the product MSDS, the trainer/foreman will ensure the completion of the product review form. This form should include the product name, trainers name, employees signature, social security number, date, and relevant comments.

PRODUCT REVIEW FORM

____
(PRODUCT)

____
(TRAINER/FOREMAN REVIEWING MSDS)

NAME	SOCIAL SECURITY NO.	DATE	

Welding

UP-1536

GENERAL CONSIDERATION FOR WELDING OPERATIONS

The type and degree of health and safety hazards depend upon the type of welding process used. Awareness of these hazards is the first step in providing protection to the welder in the work place.

The welding process may present chronic and acute hazards. There is potential for accidents of many kinds: burns, fire, eye damage, possible lung irritation and damage, slips and falls, electric shock, and noise exposure.

The welding operation can generate gases or fumes from the metal, the flux, metal surface coatings, or surface contaminants and these can cause serious lung irritation. Toxic gases such as carbon monoxide, ozone, or nitrogen dioxide may also be formed by some flames or arcs.

Proper equipment, safe work practices and diligent use of personal protective equipment are essential to avoid such occurrences. Refer to the safety and health information contained on the MSDS and product label for the specific welding product being used at your location before each use.

GENERAL CONSIDERATIONS FOR WELDING OPERATIONS USING MANGANESE CONTAINING WELDING RODS

The type and degree of health and safety hazards depend upon the type of welding process while using manganese welding rods. Awareness of these hazards is the first step in providing protection to the welder in the work place.

SUMMARY OF TOXICITY

Inhalation of manganese dust or fume primarily affects the central nervous system. High concentrations may cause the influenza-like illness termed manganese pneumonitis.

Short Term Exposure Inhalation of fumes with high concentrations of manganese and its oxides may bring about "metal fume fever." Symptoms of metal fume fever are chills and fever, upset stomach, vomiting, dryness of the throat, cough, weakness, and aching of the head and body. Symptoms often occur several hours after exposure to fumes and usually last for only a day.

Long Term Exposure Manganese fume may cause a disease quite similar to Parkinsonism after 6 months to 2 years of exposure. Prolonged or repeated exposure to manganese may effect the nervous system with difficulty in walking and balancing, weakness or cramps in the legs, hoarseness of the voice, trouble with memory and judgement, unstable emotions or unusual irritability. If high exposure continues, a person may have poor coordination, difficulty in speaking clearly, or shaking of the arms or legs. A person may also have hallucinations or uncontrollable laughter or crying.

The respiratory system may be affected by a condition known as "manganese pneumonia," which may result in symptoms and signs of coughing, fever, chills, general aching of the body, chest pain, and other signs of pneumonia.

The welding process may present other chronic and acute hazards. There is potential for accidents of many kinds: burns, fire, eye damage, possible lung irritation and damage, slips and falls, electric shock, and noise exposure.

The welding operation can also generate gases or fumes from the metal, the flux, metal surface coatings, or surface contaminants and these can cause serious lung irritation. Toxic gases such as carbon monoxide, ozone, or nitrogen dioxide may also be formed by some flames or arcs.

Proper equipment, safe work practices and diligent use of personal protective equipment are essential to avoid such occurrences. **Refer to the safety and health information contained on the MSDS and product label for the specific welding product being used at your location before each use.**

WELDING, CUTTING, HEATING AND BRAZING

1. Oxygen
2. Acetylene
3. Argon
4. Continuous Feed Welding Wire
5. Welding Rods (Electrodes)
   - 6013 Hobart: Trade Name Identification is 447A on the MSDS #HB-CE, February 1994.
   - 7014 Hobart: Trade Name Identification is 14A on the MSDS #HB-CE, February 1994.
   - 7018 Hobart: Trade Name Identification is 7018A1, 718, 718MC, 718C, or 718MC1 on the MSDS #HB-CE, February 1994.
   - Stainless Steel
6. Track Welding Rods
   - Railbuild 540W, Track-Weld, Inc.
   - Frogbuild 570W, Track-Weld, Inc.
   - Airco Micromang, Stoody Company
   - Hardsurface Electrode, Hobart
7. Brazing Rod
8. Flux (Brass and Cast Iron)
9. Boutet Weld
   - Thermit Charge
   - Paste
   - Premixed Packing Sand
10. Cutting Electrodes
11. Cadweld Welds

General Information
Oxygen Material Safety Data Sheet
Industrial Gas Division
Air Products and Chemicals, Inc.
Allentown, PA 18195
Tel. (215) 481-4911 TWX 510-651-3686
Cable-AIRPROD Telex 847416
Fax (215) 481-5900
EMERGENCY PHONE:
800-523-9374
IN PENNSYLVANIA:
800-322-9092
ISSUE DATE
Issued: 13 April 1977
REVISIONS
Rev: 1 February 1989
TRADE NAME AND SYNONYMS
Oxygen, LOX (Liquid only), GOX (Gas only)
FORMULA
O2 MW: 32.00
CHEMICAL NAME AND SYNONYMS
Oxygen
CHEMICAL FAMILY
Oxidizing gas CAS#7782-44-7

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE
N/A. Oxygen is not listed as a carcinogen by NTP, IARC, or OSHA.

SYMPTOMS IF INGESTED, CONTACTED WITH SKIN, OR VAPOR INHALED
Oxygen is nontoxic under most conditions of use and is necessary to support life. Liquid oxygen or cold gas will freeze tissues and can cause severe cryogenic (extremely low temperature) burns.

TOXICOLOGICAL PROPERTIES
Oxygen is nontoxic under usual conditions of use. Breathing pure oxygen at one atmosphere, however, may produce cough and chest pains within 8-24 hours. Concentrations of 60% may produce these symptoms in several days. At two atmospheres symptoms occur in 2-3 hours.

Partial pressure of oxygen in excess of two atmospheres may produce a variety of central nervous system manifestations including tingling of fingers and toes, visual and hearing disturbances, abnormal sensations, impaired coordination, confusion, muscle twitching, and seizures resembling those of epilepsy. Severe hazards may be present when confusion and impaired judgment lead to operational errors.

Infants exposed to oxygen levels in excess of 35-40% may suffer permanent

visual impairment or blindness due to retrolental fibroplasia.

RECOMMENDED FIRST AID TREATMENT
If cryogenic liquid or cold boil-off gas contacts a worker's skin or eyes, frozen tissues should be flooded or soaked with tepid water (105-115F; 41-46C). DO NOT USE HOT WATER. Burns which result in blistering or deeper tissue freezing should be seen promptly by a physician.

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used)
N/A
AUTO IGNITION TEMP
N/A
FLAMMABLE LIMITS
N/A
LEL
N/A
UEL
N/A
EXTINGUISHING MEDIA
N/A
ELECTRICAL CLASSIFICATION GROUP
N/A

SPECIAL FIRE FIGHTING PROCEDURES
Oxygen is nonflammable, but supports and VIGOROUSLY ACCELERATES COMBUSTION of flammables. To fight fires, shut off sources of oxygen and fight like conventional fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Oxygen is nonflammable, but supports and VIGOROUSLY ACCELERATES COMBUSTION of flammables. Some materials which are noncombustible in air will burn in the presence of oxygen.

PHYSICAL DATA
BOILING POINT (Deg. F)
@ 1 atm -297.3F (-183.0C)
FREEZING POINT (Deg. F)
@ 1 atm -361.8F (-218.8C)
VAPOR PRESSURE (psia)
N/A
SOLUBILITY IN WATER
@ 77F (25C), 1 atm 3.16% by volume
VAPOR DENSITY (lb/cu ft)
@ 70F (21.1C), 1 atm 0.08279
SPECIFIC GRAVITY (AIR=1)
@ 68F (20C), 1 atm 1.10

LIQUID DENSITY (lb/cu ft)
@ boiling point, 1 atm 71.23
SPECIFIC GRAVITY (H2O=1)
@ boiling point, 1 atm 1.14
APPEARANCE AND ODOR
Gaseous oxygen is colorless and odorless. Liquid oxygen is pale blue and odorless.

REACTIVITY DATA
STABILITY
UNSTABLE ¢ |
STABLE ¢X|

CONDITIONS TO AVOID
Materials which burn in air will burn violently in atmosphere richer than approx. 25% oxygen. Some materials will burn in pure oxygen which are nonflammable in air.

INCOMPATIBILITY (Materials to avoid)
All flammables, especially petroleum products, asphalt, other volatile flammables.

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION
MAY OCCUR ¢ |
WILL NOT OCCUR ¢X|

CONDITIONS TO AVOID
None

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Prevent liquid oxygen from contacting grease, oil, asphalt or combustibles. Ventilate area to evaporate and disperse oxygen. Flush area with large quantities of water. DO NOT ENTER areas of high oxygen concentration, which can saturate clothing and increase its flammability. Avoid smoking and contact with sources of ignition after exposure to concentration of oxygen higher than the normal atmosphere.

WASTE DISPOSAL METHOD
Allow liquid oxygen to evaporate in a well ventilated outdoor area. Vent oxygen gas to outside location. Disposal site should be remote from work areas, open flames or sources of ignition and combustibles. Flushing with water will increase the vaporization rate of the liquid. Do not attempt to dispose of residual oxygen in compressed gas cylinders. Return

cylinders to Air Products with residual pressure, the cylinder valve tightly closed and valve cap in place.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type)
N/A

VENTILATION
Prevent accumulation with natural or forced air.

LOCAL EXHAUST
As necessary

MECHANICAL (General)
As necessary

SPECIAL
None normally required

OTHER
Vents should be situated to avoid higher than normal concentration of oxygen in work areas.

PROTECTIVE GLOVES
(Liquid) Loose-fitting gloves of impermeable material, such as leather. (Gas) Leather work gloves are recommended when handling compressed gas cylinders.

EYE PROTECTION
(Liquid) Chemical goggles or safety glasses. (Gas) Safety glasses are recommended when handling high-pressure cylinders.

OTHER PROTECTIVE EQUIPMENT
N/A

SPECIAL PRECAUTIONS(*)
SPECIAL LABELING INFORMATION
Oxygen shipment must be in accordance with Department of Transportation (DOT) regulations using DOT "OXIDIZER" label. Consult DOT regulations for details on the shipment of hazardous materials.

SPECIAL HANDLING RECOMMENDATIONS
Prevent contact of liquid oxygen with exposed skin. Prevent entrapment of liquid in closed systems. Use only in well ventilated areas. Cleanliness and compatibility of materials in contact with oxygen are essential especially internal parts of piping systems. Some elastomers (o-rings, valve seats, etc.) are not compatible with oxygen. Open oxygen valves

slowly. Compressed gas cylinders contain oxygen at extremely high pressure and should be handled with care. Use a pressure-reducing regulator when connecting to lower pressure piping systems. Secure cylinders when in use. Never use direct flame to heat a compressed gas cylinder. Use a check valve to prevent back flow into storage containers. Avoid dragging, rolling, or sliding cylinders, even for a short distance. Use a suitable hand truck. For additional handling recommendations on compressed gas cylinders, consult Compressed Gas Association Pamphlet P-1.

SPECIAL STORAGE RECOMMENDATIONS
Store liquid containers and cylinders in well ventilated areas. Do not store cylinders of oxygen within 20 ft. of flammable or combustible materials, especially oil or grease. Keep cylinders away from source of heat. Storage should not be in heavy traffic areas to prevent accidental knocking over or damage from passing or falling objects. Valve caps should remain on cylinders not connected for use. Never lubricate valves or cylinder caps. Segregate full and empty cylinders. Storage areas should be free of combustible material. Avoid exposure to areas where salt or other corrosive chemicals are present. See Compressed Gas Association Pamphlet P-1 for additional storage recommendations.

SPECIAL PACKAGING RECOMMENDATIONS
Gaseous oxygen containers meet DOT specifications or American Society of Mechanical Engineers (ASME) codes. Liquid oxygen is stored in vacuum-insulated containers meeting DOT specifications or ASME codes.

OTHER RECOMMENDATIONS OR PRECAUTIONS
Oxygen is not to be used as a substitute for compressed air. Applications such as cleaning, dusting, powering pneumatic tools, etc., are not safe due to lubricating oils and other materials present. Use only with equipment specifically designed and cleaned for oxygen service. Consult Compressed Gas Association Pamphlet G-4.1, "Cleaning Equipment for Oxygen Service," for details. Liquid oxygen is cryogenic liquid. Materials of construction must be selected for compatibility with extremely low temperatures. Avoid use of carbon steel and other materials which become brittle at low temperatures. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder filled without the permission of the owner is a violation of Federal Law. If oxygen concentrations exceeding 25% are suspected or can occur, use oxygen monitoring equipment to test for oxygen-enriched atmospheres.

(*)Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation handling, storage or used of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that s/he is in full compliance.

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UP-1546

General Information
AmeriGas
INDUSTRIAL GASES DIVISION
P.O. BOX 965
VALLEY FORGE, PA 19482
EMERGENCY PHONE NUMBERS:
(215) 337-8900-Valley Forge, PA
(415) 229-3050--Martinez, CA
(713) 944-1924--So. Houston, TX
(414) 258-8970--West Allis, WI
ACETYLENE
Information contained in this material safety data sheet is offerred without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto. This information is not intended as a license to operate under or a recommendation to practice or intringe any patent of this Company or others covering any process, composition of matter or use.
Since the Company shall have no control of the use of product described herein, the Company assumes no liability for loss or damage incurred from the proper or improper use of such product.
(*) Various Governmental agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.
PRODUCT NAME: Acetylene
CAS #: 74-86-2
TRADE NAME AND SYNONYMS: Acetylene, Ethyne
DOT I.D. No.: UN 1001
DOT Hazard Class: Flammable gas
CHEMICAL NAME AND SYNONYMS: Acetylene
Formula: C2K2
ISSUE DATE AND REVISIONS: 25 November 1985
Chemical Family: Alkyne

HEALTH HAZARD DATA
TIME WEIGHTED AVERAGE EXPOSURE LIMIT: Acetylene is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial of 135 mm Hg. (ACGIH, 1985-86).
SYMPTONS OF EXPOSURE:
Inhalation: Low concentrations (10-20% in air) cause symptoms similar to that of being intoxicated. Higher concentrations so as to exclude an adequate supply or oxygen to the lungs cause unconsciousness.
TOXICOLOGICAL PROPERTIES: As a narcotic gas or intoxicant causes

hypercapnia (an excessive amount of carbon dioxide in the blood). Repeated exposures to tolerable levels has not shown deleterious effects. The major property is the exclusion of an adequate supply of oxygen to the lungs.

RECOMMENDED FIRST AID TREATMENT: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ACETYLENE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Flammable over an extremely wide range in air. Explosive reactions may occur on ignition. Reacts explosively with halogens and halogenated compounds.

PHYSICAL DATA

BOILING POINT: Sublimation point = -118.8 degrees F (-83.8 degrees C)
LIQUID DENSITY AT BOILING POINT: @ -116 DEGREES F (-82 DEGREES C) = 38.8 lb/ft3 (622 kg/m3)
VAPOR PRESSURE: @ 70 DEGREES F (21.1 DEGREES C): 645 psia (4450 kPa)
GAS DENSITY AT 70 DEGREES F, 1 atm: .0691 lb/ft3 (1.107 kg/m3)
SOLUBILITY IN WATER: Soluble
FREEZING POINT: @ 68 DEGREES F (20 DEGREES C)
EVAPORATION RATE: N/A
SPECIFIC GRAVITY (AIR=1): @ 68 DEGREES F (20 DEGREES C) = 0.906
APPEARANCE AND ODOR: Pure acetylene is a colorless gas with an ethereal odor. Commercial (carbide) acetylene has a distinctive garlic-like odor.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Gas
AUTOIGNITION TEMPERATURE: 565 DEGREES F (296 DEGREES C)
FLAMMABLE LIMITS % BY VOLUME: See 1st page 80-85
LEL: 2.2
UEL: Pure acetylene can ignite by decomposition above 30 psia (207 kPa); therefore, the UEL is 100% if the ignition source is of sufficient intensity.
EXTINGUISHING MEDIA: Carbon dioxide; dry chemical
ELECTRICAL CLASSIFICATION: Class 1, Group A
SPECIAL FIRE FIGHTING PROCEDURES: If possible, stop flow of escaping gas. Use water spray to cool surrounding containers. Keep personnel away since heated or burning cylinders can rupture violenty.
UNUSUAL FIRE AND EXPLOSION HAZARDS: GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURES ABOVE 30 PSIA (207 kPa). It requires a very low ignition energy so that fires which have been extinguished

without stopping the flow of gas can easily reignite with possible explosive force.
Acetylene has a density very similarr to that of air so when leaking it does not readily dissipate.
FLAMMABLE LIMITS % BY VOLUME: Pure acetylene can ignite by decomposition above 30 psia (207 kPa); therefore, the UEL is 100% if the ignition source is of sufficient intensity.

REACTIVITY DATA
STABILITY:
Unstable: X
Stable:
CONDITIONS TO AVOID: Do not allow the free gas (outside of cylinder) to exceed 30 psia. Cylinders should not be exposed to sudden shock or sources of heat.
INCOMPATIBILITY (Materials to avoid): Oxygen and other oxidizers including all of the halogens, and halogen compounds.
Forms explosive acetylide compounds with copper, mercury, silver, brasses containing more than 66% copper and brazing materials containing silver or copper.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon and hydrogen
HAZARDOUS POLYMERIZATION:
May Occur:
Will Not Occur: X
CONDITIONS TO AVOID: N/A

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.
WASTE DISPOSAL METHOD: Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.
VENTILATION: Hood with forced ventilation.
LOCAL EXHAUST: To prevent accumulation above the LEL.
SPECIAL: N/A
MECHANICAL (Gen.): In accordance with electrical codes.
OTHER: N/A

PROTECTIVE GLOVES: PVC or rubber in laboratory; as required for cutting and welding.
EYE PROTECTION: Safety goggles or glasses
OTHER PROTECTIVE EQUIPMENT: Safety shoes, safety shower

SPECIAL PRECAUTIONS(*)
SPECIAL LABELING INFORMATION:
DOT Shipping Name: Acetylene
DOT Hazard Class: Flammable gas
DOT Shipping Label: Flammable gas
I.D. No.: UN 1001
SPECIAL HANDLING RECOMMENDATIONS: Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when removing gas from the cylinder. DO NOT ALLOW THE FREE GAS TO EXCEED 30 PSIA (207 kPa) @ 70 DEGREES F (21. 1 DEGREES C). Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.
For additional recommendations, consult Compressed Gas Association's Pamphlets G-1, P-1, P-14 and Safety Bulletin SB-2.
SPECIAL STORAGE RECOMMENDATIONS: Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature wherey cylinders are stored to exceed 130F (54C). Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.
For additional recommendations, consult Compressed Gas Association's Pamphlets G-1, P-1, P-14, and Safety Bulletin Sb-2.
SPECIAL PACKAGING RECOMMENDATIONS: Since acetylene will explode or combust if its pressure is dispersed in a porous mass within the cylinder. Follow your supplier's instructions for the maximum withdrawal rate for each size cylinder so that solvent is not withdrawn with the acetylene.
Most metals except silver, copper, mercury or brasses with more than 66% copper are compatible (non corrosive) with acetylene.
OTHER RECOMMENDATIONS OR PRECAUTIONS: Earth-ground and bond all lines and equipment associated with the acetylene system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

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UP-1551

I - GENERAL INFORMATION
MATERIAL INFORMATION
PURCHASE ORDER 999 31

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION, INVESTIGATION, IN COMPLIANCE WITH HAZARD COMMUNICATION STANDARD 29 CFR 1900.1200. BIG THREE INDUSTRIES, INC. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED.

I - GENERAL INFORMATION
PRODUCT NAME
ARGON
EMERGENCY TELEPHONE NO.
713-868-0302
MANUFACTURERS NAME
BIG THREE INDUSTRIES, INC.
TRADE NAME/SYNONYMS
ARGON
CHEMICAL NAME AND SYNONYMS
ARGON
REVISION DATE:
08/23/89
PRODUCT ID.
UN 1006
FORMULA
AR
CHEMICAL FAMILY
RARE GAS
CAS FAMILY
7440-37-1
SECTION NOTES
MSDS INFORMATION NUMBER:
(713) 896-2140

II - HAZARDOUS INGREDIENTS

HAZARDOUS MIXTURES OF LIQUIDS AND GASES	0/0	TLV
ARGON	100	(**)

(**) NONE ESTABLISHED

III - PHYSICAL DATA
BOILING POINT
-302.6F (-185.9C) @ 1 ATM
SPECIFIC GRAVITY (AIR = 1):
1.38 @ 70 F (21.1 C) & 1 ATM

VAPOR PRESSURE
N/A
PERCENT VOLATILE BY VOLUME (0/0)
N/A (GAS)
DENSITY
0.1034 LB/CU FT @ 70 F (21.1 C) @ 1 ATM
EVAPORATION RATE
N/A (GAS)
SOLUBILITY IN WATER
5.6SCC/100CC H2O @32 F (0 C)
MATERIAL AT NORMAL CONDITION
GAS
EXPANSION RATIO (LIQUID TO GAS)
N/A (GAS)
APPEARANCE AND ODOR
COLORLESS, ODORLESS, TASTELESS GAS

IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT
N/A
FLASH POINT
(METHOD USED)
FLAMMABILITY LIMITS IN AIR (0/0 BY VOL)
LOWER
N/A
UPPER
N/A
EXTINGUISHING MEDIA
MATERIAL IS NONFLAMMABLE. ARGON NEITHER BURNS NOR SUPPORTS COMBUSTION.
USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES
NONE. ARGON WILL ACT AS A SIMPLE ASPHYXIANT IF IT DISPLACES OXYGEN. IF POSSIBLE, REMOVE ARGON CYLINDERS FROM FIRE AREA OR COOL WITH WATER TO AVOID EXCESSIVE PRESSURE BUILDUP. SELF-CONTAINED BREATHING APPARATUS MAY BE REQUIRED FOR RESCUE WORKERS.

UNUSUAL FIRE AND EXPLOSION HAZARD
PRESSURE CAN BUILD UP DUE TO HEAT AND CYLINDER MAY EXPLODE IF PRESSURE RELIEF DEVICES SHOULD FAIL TO RELIEVE PRESSURE.

AUTOIGNITION TEMPERATURE:
N/A
ELECTRICAL CLASSIFICATION:
NONHAZARDOUS

V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
NONE ESTABLISHED
UNUSUAL CHRONIC TOXICITY
SEE OVEREXPOSURE SECTION
CARCINOGENICITY
NOT LISTED BY IARC, NTP, OSHA
ROUTES OF OVEREXPOSURE
INHALATION
EFFECTS OF OVEREXPOSURE
ARGON IS NONTOXIC, BUT MAY CAUSE SUFFOCATION BY DISPLACING THE OXYGEN IN THE AIR. EXPOSURE TO OXYGEN-DEFICIENT ATMOSPHERES MAY CAUSE DIZZINESS, NAUSEA, VOMITING, DIMINISHED MENTAL ALERTNESS, LOSS OF CONSCIOUSNESS, AND DEATH. IT SHOULD BE RECOGNIZED THAT COLLAPSE AND ASPHYXIATION MAY OCCUR WITHOUT EXPERIENCING ANY OF THE ABOVE SYMPTOMS.

TOXICOLOGICAL PROPERTIES:
ARGON IS A SIMPLE ASPHYXIANT.

EMERGENCY AND FIRST AID PROCEDURES
PERSONS SUFFERING FROM LACK OF OXYGEN SHOULD BE MOVED INTO FRESH AIR. IF VICTIM IS NOT BREATHING, ADMINISTER ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. OBTAIN PROMPT MEDICAL ATTENTION.

SELF-CONTAINED BREATHING APPARATUS MAY BE REQUIRED FOR RESCUE WORKERS.

VI - REACTIVITY DATA
STABILITY
STABLE
CONDITIONS TO AVOID
NONE. ARGON IS A STABLE GAS, CHARACTERIZED BY ITS EXTREME LACK OF CHEMICAL ACTIVITY.

INCOMPATABILITY (MATERIALS TO AVOID)
NONE.
HAZARDOUS DECOMPOSITION PRODUCTS
NONE.
HAZARDOUS POLYMERIZATION
WILL NOT OCCUR
CONDITIONS TO AVOID
NONE.

VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
EVACUATE ALL UNNECESSARY PERSONNEL FROM AFFECTED AREA. SHUT OFF SOURCE OF ARGON IF POSSIBLE. VENTILATE ENCLOSED AREAS OR REMOVE CYLINDERS TO AN OUTDOOR LOCATION TO PREVENT FORMATION OF OXYGEN-DEFICIENT ATMOSPHERES. IF LEAKING FORM CONTAINER OR VALVE, CONTACT THE CLOSEST BIG THREE INDUSTRIES

LOCATION, OR YOUR SUPPLIER.

WASTE DISPOSAL METHOD
DO NOT ATTEMPT TO DISPOSE OF RESIDUAL OR UNUSED QUANTITIES. RETURN TO YOUR SUPPLIER FOR DISPOSAL. FOR EMERGENCY DISPOSAL, SECURE CYLINDER AND VENT SLOWLY TO THE ATMOSPHERE IN A WELL-VENTILATED AREA OR OUTDOORS.

VIII - SPECIAL PROTECTIVE INFORMATION
RESPIRATORY PROTECTION (SPECIFY TYPE)
USE SELF-CONTAINED BREATHING APPARATUS OR POSITIVE PRESSURE AIR LINE WITH MASK IN OXYGEN-DEFICIENT ATMOSPHERES. RESPIRATORS WILL NOT FUNCTION.

VENTILATION
SEE NOTES
PROTECTIVE GLOVES
N/A
EYE PROTECTION
SAFETY GLASSES ARE RECOMMENDED WHEN HANDLING HIGH PRESSURE CYLINDERS.

OTHER PROTECTIVE EQUIPMENT
SAFETY SHOES WHEN HANDLING CYLINDERS.

SECTION NOTES
ADEQUATE TO AVOID LOWERING OXYGEN CONTENT TO BELOW 19.5% (OXYGEN-DEFICIENT ATMOSPHERE).

LOCAL EXHAUST:
YES
MECHANICAL:
YES

IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
STORE AND USE WITH ADEQUATE VENTILATION. ARGON IS HEAVIER THAN AIR AND LEAKING GAS COULD ACCUMULATE IN LOW AREAS OR CONFINED SPACES CAUSING SUFFOCATION WITHOUT WARNING. CYLINDERS SHOULD BE STORED UPRIGHT WITH VALVE PROTECTION CAP IN PLACE AND FIRMLY SECURED TO PREVENT FALLING OR BEING KNOCKED OVER. PROTECT CYLINDERS FROM PHYSICAL DAMAGE; DO NOT DRAG, ROLL, SLIDE OR DROP. USE A SUITABLE HAND TRUCK FOR CYLINDER MOVEMENT. DO NOT ALLOW THE TEMPERATURE WHERE CYLINDERS ARE STORED TO EXCEED 125 F (52 C).

D.O.T. LABELING
NONFLAMMABLE GAS - GREEN LABEL
VALVE CONNECTION
580
OTHER PRECAUTIONS

NEVER STRIKE A WELDING ARC ON ANY COMPRESSED GAS CYLINDER. REFILLING CYLINDERS WITHOUT THE CONSENT OF THE CYLINDER OWNER IS A VIOLATION OF FEDERAL LAW (49 CFR).

DOT PLACARD:
NONFLAMMABLE GAS
DOT PROPER SHIPPING NAME:
ARGON; OR ARGON, COMPRESSED
MISCELLANEOUS INFORMATION:
FURTHER INFORMATION ABOUT ARGON CAN BE FOUND IN THE FOLLOWING PAMPHLETS
PUBLISHED BY:
THE COMPRESSED GAS ASSOCIATION (CGA)
1235 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202
(703) 979-4341

G-11.1:
"COMMODITY SPECIFICATION FOR ARGON"
P-1:
"SAFE HANDLING OF COMPRESSED GASES IN CONTAINERS"
P-9:
"THE INERT GASES ARGON, NITROGEN, AND HELIUM"
P-14:
"ACCIDENT PREVENTION IN OXYGEN-RICH AND OXYGEN-DEFICIENT ATMOSPHERES"
SB-2:
"OXYGEN-DEFICIENT ATMOSPHERES"
NFPA RATINGS:
HEALTH: 0
FLAMMABILITY: 0
REACTIVITY: 0

HMIS RATINGS:
HEALTH: 0
FLAMMABILITY: 0
REACTIVITY: 0

CERCLA RATINGS:
HEALTH: 0
FIRE: 0
REACTIVITY: 0

PERSISTANCE: 3
LISTED IN TSCA INVENTORY:
YES

IDENTIFICATION
Chemical Name / Synonym / Trade Name:
GAS METAL ARC WELDING (GMAW) SOLID WIRE
Manufacturer Name:
HOBART BROTHERS COMPANY
CAS Number:
7439-89-6
7439-96-5
7440-21-3
7440-50-8
7439-98-7
1309-38-2
7439-96-5
7631-86-9
7440-50-8
7439-98-7
Manufacturer/Supplier Name: HOBART BROTHERS COMPANY
Address: 600 W. MAIN STREET, TROY, OHIO 45373
Trade Name: HB-25, 28, 33, 36, S-3, S-6 HB-18 25P
Product Type: GAS METAL ARC WELDING (GMAW) SOLID WIRE
Telephone No.: 1-513-339-6000
Emergency No.: 1-513-339-6000
Classification: AWS A5.18 Mild Steel AWS A5.28 Low Alloy AWS A5.25
EH13K-EW Electroslag

HAZARDOUS MATERIALS
IMPORTANT: This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are covered by Section 5.
The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

		Exposure Limit (mg/m(3)	
Ingredient	CAS No.	OSHA PEL	ACGIH TLV
IRON	7439-89-6	5	Not Reported
MANGANESE	7439-96-5	5 CL*	1 CL* (Fume)
SILICON	7440-21-3	Nothing Found	10, 20 STEL**
COPPER	7440-50-8	1 (Dust)	2 STEL**
***MOLYBDENUM	7439-98-7	15 (Mo)	10 (Mo), 20 STEL**

*CL: Ceiling Limit
**STEL: Short Term Exposure Limit
***Present in HB-18:

PHYSICAL/CHEMICAL CHARACTERISTICS
Not Applicable

FIRE AND EXPLOSION HAZARD DATA

Non Flammable: Welding arc and sparks can ignite combustibles. See Z49.1 referenced in Section 7.

REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatization, reaction, or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

It is understood, however, that the elements and or oxides to be mentioned are virtually always present as complex oxides and not as metals. (Characterization of Arc Welding Fume: American Welding Society). The elements or oxides listed below correspond to the ACGIH categories located in (TLV Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment).

Reasonably expected constituents of the fume would include: complex oxides of iron, manganese, silicon, copper and molybdenum.

		Exposure Limit (mg/m(3)	
Substance	CAS No.	OSHA PEL	ACGIH TLV
IRON OXIDE	1309-38-2	5	10 (as Fe(2)O(3))
MANGANESE	7439-96-5	5 CL* 1 CL* (Fume)	
SILICON OXIDE	7631-86-9	5	3
COPPER	7440-50-8	0.1 (Fume)	0.2 (Fume)
***MOLYBDENUM	7439-98-7	15 (Mo)	10 (Mo), 20 STEL**

*CL: Ceiling Limit
***STEL: Short Term Exposure Limit
***Present in HB-18:

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn of in the worker's breathing zone. (See ANSI/AWS F1.1, available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling). At a minimum, materials listed in this section should be analyzed.

HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOC (Not Otherwise Classified) is 5 mg/m(3). ACGIH-1985 or latest date) preface states "The TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations." See Section 5 for specific fume constituents which may modify this TLV.
Effects of Overexposure: Electric arc welding may create one or more of the following health hazards:
FUMES AND GASES: can be dangerous to your health.
SHORT - TERM (ACUTE) OVEREXPOSURE: to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat or eyes.
LONG-TERM (CHRONIC) OVEREXPOSURE: may lead to siderosis (iron deposits in lungs) and is believed by some investigators to affect pulmonary functions.
ARC RAYS: can injure eyes and burn skin.
ELECTRIC SHOCK: can kill.
See Section 7.
Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.
Carcinogenicity: These products do not contain ingredients that are defined as carcinogenic per 29CFR 1910.1200 - Hazard Communication Standard.

PRECAUTIONS FOR SAFE HANDLING & USE/APPLIC. CONTROL MEAS.
Read and understand the manufacturer's instructions and the precautionary label on the product. (See American National Standard Z49.1. Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402. For more detail on many of the following:)
VENTILATION: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.
RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.
EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others.
PROTECTIVE CLOTHING: Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.
PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

SPECIAL PRECAUTIONS:

IMPORTANT: Maintain exposure below the PEL/TLV. Use industrial hygiene monitoring to ensure that your use of this material does not create exposure which exceed PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information.

ANSI Z49.1 The American Welding Society, P.O. Box 351040, Miami, FL 33135 - OSHA (29CFR1910) U.S. Dept. of Labor, Washington, D.C. 20210.

Hobart Brothers believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Hobart Brothers cannot make any express or implied warranty as to this information.

General Information
Chemical Name / Synonym / Trade Name:
Welding Wire
AP55
Manufacturer Name:
MidStates Wire Div. of Keycon Industries
CAS Number:

Form Approved OMB No.: 44-R1387
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)
MANUFACTURER'S NAME: MidStates Wire Div. of Keycon Industries
ADDRESS (Number, Street, City, State, and ZIP Code): 510 South Oak Street, Crawfordsville, Indiana 47933
CHEMICAL NAME AND SYNONYMS: Welding Wire
CHEMICAL FAMILY: Metals
EMERGENCY TELEPHONE NO.: 317/362-2200
TRADE NAME AND SYNONYMS: AP55
FORMULA:

HAZARDOUS INGREDIENTS
PAINTS, PRESERVATIVES, & SOLVENTS:
PIGMENTS:
CATALYST:
VEHICLE:
SOLVENTS:
ADDITIVES:
OTHERS:
ALLOYS AND METALLIC COATINGS(*)
BASE METAL: Iron 96%
ALLOYS: Molybdenum .5%
METALLIC COATINGS: Copper(*) <.5%
FILLER METAL PLUS COATING OR CORE FLUX:
OTHERS:
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES:
(*) Iron Oxide Fumes: 10 mg/m(3)
(*) Copper Fumes: .1 mg/m(3)
(*) Copper Dust and Mists: 1 mg/m(3)
NOTE: TVL values are for 8hr time weighted average

PHYSICAL DATA
BOILING POINT (F.): NA
VAPOR PRESSURE (mm Hg.): NA
VAPOR DENSITY (AIR=1): NA
SOLUBILITY IN WATER: NA
SPECIFIC GRAVITY (H(2)O=1): NA
PERCENT, VOLATILE BY VOLUME (%): NA
EVAPORATION RATE (=1): NA

APPEARANCE AND ODOR:

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used): NA
EXTINGUISHING MEDIA: NA
SPECIAL FIRE FIGHTING PROCEDURES: NA
UNUSUAL FIRE AND EXPLOSION HAZARDS: NA
FLAMMABLE LIMITS: NA
Lel:
Uel:

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE:
EFFECTS OF OVEREXPOSURE: Inhalation of fumes can cause metal fume fever characterized by chills, fever, sweating, and leucoytosis, coming on several hours after exposure.
EMERGENCY AND FIRST AID PROCEDURES: Remove from area to fresh air, contact physician. Recovery is usually completed in 24-48 hours, and there are no significant after effects.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID:
INCOMPATABILITY (Materials to avoid): None
HAZARDOUS DECOMPOSITION PRODUCTS: None
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: NA
WASTE DISPOSAL METHOD: NA

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): If needed, use NIOSH/MESA approved for gases, fumes, and dusts.
VENTILATION: For Welding
LOCAL EXHAUST: Yes, where TLV is exceeded
SPECIAL:
MECHANICAL (General): Recommended
OTHER:
PROTECTIVE GLOVES:
EYE PROTECTION: Yes, with adequate tint for welding OTHER PROTECTIVE EQUIPMENT:

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: NA
OTHER PRECAUTIONS: See American National Standard Z 49.1 Safety in Welding & Cutting and OSHA Safety & Health Standards 20 CFR 1910.

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UP-1565

HOBART
WELDING PRODUCTS

MSDS NO: 118-CE
REVISED: FEBRUARY 1994
CH-5448

MATERIAL SAFETY DATA SHEET

For U.S. Manufactured Welding Consumables and Related Products. May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. Standard must be consulted for specific requirements.

SECTION I - IDENTIFICATION

Manufacturer/Supplier Name: HOBART BROTHERS COMPANY | Telephone No: (513) 332-4000
Address: 600 WEST MAIN STREET, TROY, OH, 45373 | Emergency No: (513) 332-4000
Trade Name For: "GROUP A": 60AP, 335A, 335C, 12, 12A (447A) 447C, (14A) 14, 118, 1139, 7014-1, & PRIMAPIXE | Classification: AWS A5.1
Trade Name For: "GROUP B": 18, 418 (718) 718MC, 18AC, 418SR, 716, 718C & 718MC-1 | Classification: AWS A5.1
Trade Name For: "GROUP C": 70AP, 80AP, 90AP, HOBALLOY 8018C1, C2, C3, 8018B1, B2L, 9018B3, B3L, 7018A1, 10018D1 9018M, 10018M, 11018M, 12018M, 10018M1 | Classification: AS.5 Low Alloy
Product Type For: "GROUP A" SHIELDED METAL ARC WELDING (SMAW) CARBON STEEL
Product Type For: "GROUP B" SHIELDED METAL ARC WELDING (SMAW) LOW HYDROGEN CARBON STEEL
Product Type For: "GROUP C" SHIELDED METAL ARC WELDING (SMAW) LOW HYDROGEN, LOW ALLOY STEEL

SECTION 2 - HAZARDOUS MATERIALS

This section covers the hazardous materials from which this product is manufactured, and those by-products which are reasonably expected to be produced during normal use of this product. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

HAZARDOUS COMPONENTS	% WEIGHT Group A	Group B	Group C	CAS NO.	EXPOSURE LIMIT (mg/m³) OSHA PEL	ACGIH TLV
IRON +	70-90	60-80	60-90	7439-89-6	5 R*	10
					10 (Oxide Fume)	5 (Oxide Fume)
#MANGANESE	1-5	1-5	1-5	7439-96-5	5 CL** (Dust)	5 (Dust) ♦A
					1, 3 STEL*** (Fume)	1, 3 STEL*** (Fume)
#ALUMINUM OXIDE +	<5	—	—	1344-28-1	5 R*	10 (as Al)
CALCIUM CARBONATE	—	3-10	5-10	1317-65-3	5 R*	10
					5 (as CaO)	3 (as CaO)
CELLULOSE	<5	<2	—	9004-34-6	5 R*	10
MICA	<5	—	—	12001-26-2	3 R*	3 R*
SILICA + +	<5	<5	<5	14808-60-7	0.1 R*	0.1 R*
(Amorphous Silica Fume)				69012-64-2	Not Established	3 R*
SILICON	—	<3	<5	7440-21-3	5 R*	10
TITANIUM DIOXIDE	<10	<10	<5	13463-67-7	5 R*	10
FLUORSPAR	—	1-12	5-15	7789-75-5	2.5 (as F)	2.5 (as F)
#CHROMIUM (1)	—	—	<5	7440-47-3	1 (Metal)	0.5 (Metal) ♦B
					0.5 (Cr II & Cr III Compounds)	0.5 (Cr II & Cr III Compounds)
					0.1 CL** (Cr VI Compounds)	0.05, [A1] (Cr VI Compounds)
#NICKEL (2)	—	—	<5	7440-02-0	1 (Metal & Insoluble Compounds)	1 (Metal & Insoluble Compounds) ♦C
					0.1 (Soluble Compounds)	0.1 (Soluble Compounds)
MOLYBDENUM	—	—	<1	7439-98-7	5 R*	5 (Soluble Compounds)
MAGNESIUM CARBONATE	<3	<5	—	546-93-0	5 R*	10
SILICATE BINDERS	<10	<10	<10	——	Not Established	Not Established

(1) Not present in 7018A1; 8018C1, C2, C3; 9018M; 10018D2; and 10018M. (2) Not present in 7018A1; 8018B2, B2L; 9018B3, B3L; and 10018D1.
♦ - Respirable Fraction. ** - Ceiling Limit. *** - Short Term Exposure Limit. [A1] - Confirmed Human Carcinogen.
+ - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA, or "Particulates Not Otherwise Classified" by ACGIH.
+ + - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (noncrystalline) form. # - Reportable material under Section 313 of SARA.
♦A - 1993-1994 ACGIH listed under Notice of Intended Changes. Limits of 0.2 mg/m³ are proposed and should be considered as trial limits.
♦B - 1993-1994 ACGIH listed under Notice of Intended Changes. A4 - "Not Classifiable as a Human Carcinogen" for Chromium metal and Cr III compounds. Limits of 0.01 mg/m³ for insoluble Cr VI compounds are proposed and should be considered as trial limits.
♦C - 1993-1994 ACGIH listed under Notice of Intended Changes as: A1 - "Confirmed Human Carcinogen". Limits of 0.05 mg/m³ are proposed and should be considered as trial limits.

The exposure limit for welding fume has been established at 5mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex compounds within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fumes constituents present and their respective exposure limits.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Not Applicable

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, nonexplosive and essentially nonhazardous until welded. Welding arcs and sparks can ignite combustibles and flammable products. See American National Standard Z49.1 referenced in Section 7.

SECTION 5 - REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Most fume ingredients are present as complex oxides and compounds and not as pure metals.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Reasonably expected constituents of the fume would include: Primarily iron oxides and fluorides. Secondarily complex oxides of calcium, manganese, aluminum, chromium and nickel compounds, silicon, molybdenum, magnesium, and titanium.

Monitor for the materials identified in Section 2. Fumes from the use of this product may contain fluorides, manganese, calcium oxide, chromium and nickel compounds, silica and silica fume whose exposure limits are lower than the 5 mg/m³ PEL/TLV for general welding fume.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. (See ANSI/AWS F1.1, available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling.)

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SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Electric arc welding may create one or more of the following health hazards:

ARC RAYS can injure eyes and burn skin.
ELECTRIC SHOCK can kill. See Section 7.
FUMES AND GASES can be dangerous to your health.
PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.
IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.
MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure.
ALUMINUM OXIDE - Irritation of the respiratory system.
CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.
MICA - Dust may cause irritation of the respiratory system, skin and eyes.
SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.
TITANIUM DIOXIDE - Irritation of respiratory system.
FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.
CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthmatic symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium compounds. Allergic reactions may occur in some people.
NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.
MOLYBDENUM - Irritation of the eyes, nose and throat.
MAGNESIUM, MAGNESIUM OXIDE - Overexposure to the oxide may cause metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."
IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetic (Fe_3O_4) are not regarded as fibrogenic materials.
MANGANESE - Central nervous system effects referred to as "Manganism." Symptoms include muscular weakness, tremors similar to Parkinson Disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should receive gas medical examination for early detection of manganism.
ALUMINUM OXIDE - Pulmonary fibrosis and emphysema.
CALCIUM OXIDE - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia.
MICA - Prolonged overexposure may cause scarring of the lungs and pneumoconiosis characterized by cough, shortness of breath, weakness and weight loss.
SILICA (AMORPHOUS) - Research indicates that silica in present in welding fumes in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.
TITANIUM DIOXIDE - Pulmonary irritation and slight fibrosis.
FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.
CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.
NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.
MOLYBDENUM - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia.
MAGNESIUM, MAGNESIUM OXIDE - No adverse long term health effects have been reported in the literature.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY

Nickel, chromium (with the exception of metallic chromium and chromium (III)) must be considered as carcinogens under OSHA (29CFR 1910.1200).
Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65: This product contains chemicals which are known to the State of California to cause cancer. Nickel, certain nickel compounds and hexavalent chromium (Cr VI) are listed under Proposition 65. Hexavalent chromium (Cr VI) may be generated during welding.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1: Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, DC 20402 for more detail on any of the following.

VENTILATION: Use enough ventilation, local exhaust at the arc or both to keep the fumes and gases below PEL/TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below PEL/TLV.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others.

PROTECTIVE CLOTHING: Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection as well as nonsynthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

SPECIAL PRECAUTIONS: IMPORTANT: Maintain exposure below the PEL/TLV. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information. ANSI Z49.1 The American Welding Society, P.O. Box 351040, Miami, FL 33135 - OSHA(29CFR1910) U.S. Department of Labor, Washington, DC 20402

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UP-1567

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
L-TEC WELDING & CUTTING SYSTEMS
DATE:
July, 1989
(Essentially Similar to U. S. Department of Labor Suggested Form For Hazard Communication Standard Compliance)

L-TEC requests the users of these products to study this Material Safety Data Sheet (MSDS) and become aware of the product hazards and safety information. To promote the safe use of these products a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for these products and (3) request such customers to notify their employees and customers, for these products, of the same product hazards and safety information.

The opinions expressed in this MSDS are those of qualified experts within L-TEC. We believe that the information contained herein is current as of the date of this MSDS. Since the use of this information and these opinions and the conditions of use of these products are not within the control of L-TEC, it is the user's obligation to determine the conditions of safe use of these products.

I. PRODUCT IDENTIFICATION
Product Type - Stainless Steel Welding Electrodes
Manufacturer - L-TEC Welding & Cutting Systems
Address - 3325 Middle Road, Ashtabula, Ohio 44004
Telephone No. - 1-216-992-1265
Emergency No. - 1-216-992-5186

COMPOSITION OF STAINLESS STEEL WIRES AND RODS

Product Trade Name	C	Mn	Si	Mo	Cr	Ni	Cb & Ta	Fe
308	.05	1.8	.4	---	21	10	---	Bal.
308L	.02	1.8	.4	---	21	10	---	Bal.
308LSi	.02	1.8	.8	---	21	10	---	Bal.
309	.06	1.8	.4	---	24	13	---	Bal.
309L	.02	1.8	.4	---	24	13	---	Bal.
310	.10	1.8	.4	---	27	21	---	Bal.
312	.05	1.8	.4	---	30	9	---	Bal.
316	.05	1.8	.4	2.4	19	12	---	Bal.
316L	.02	1.8	.4	2.4	19	12	---	Bal.
316LSi	.02	1.8	.8	2.4	19	12	---	Bal.
347	.06	1.8	.4	---	20	10	.8	Bal.

Product

Trade Name	AWS Classification
308	A5.9, ER308
308L	A5.9, ER308L
308LSi	A5.9, ER308LSi
309	A5.9, ER309
309L	A5.9, ER309L
310	A5.9, ER310
312	A5.9, ER312
316	A5.9, ER316
316L	A5.9, ER316L
316LSi	A5.9, ER316LSi
347	A5.9, ER347

II. HAZARDOUS INGREDIENTS

Important! This section covers the materials from which this product is manufactured. The fumes and gases produced during normal use of these products are covered in Section V. The term HAZARDOUS should be interpreted as a term required and defined by Laws, Statutes or Regulations, and does not necessarily imply the existence of any hazard when the products are used as directed by L-TEC.

Material (CAS No.)	SARA	ACGIH TLV (1988-89) TWA (mg/m(3))
Carbon (7440-44-0)		3.5 (C. Black)
Chromium (7440-47-3)	(*)	0.5 (Metal)
		0.05 (CrVI)
Columbium (7440-03-1)		10 (Nuisance Particulate)
Iron (7439-89-6)		5 (Oxide Fume)
Manganese (7439-96-5)	(*)	1 (Fume)
Molybdenum (7439-98-7)		5 (Soluble)
Nickel (7440-02-0)	(*)	0.1 (Soluble)
Silicon (7440-21-3)		10
Tantalum (7440-25-7)		5

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HEALTH

Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation.

Effects of overexposure:
Acute:

Excessive inhalation of all metallic fumes and dusts may result in irritation of eyes, nose, and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese, copper, & selenium may result in metal fume fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours.

Chronic:
Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:
Iron (Iron-oxide) - Pulmonary effects, siderosis.

Manganese - Bronchitis, pneumonitis, lack of coordination.

Chromium - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer.

Nickel - SAME AS CHROMIUM.

Selenium - nasal and bronchial irritation, gastro-intestinal disturbances, garlic odor of breath.

Copper - Pulmonary effects.

Vanadium - No reported cases of exposure to vanadium.

Cobalt - Inhalation of cobalt dust may cause an asthma-like disease with cough and dyspnea.

Molybdenum - Pain in joints, hands and feet.

Occupational Exposure Limits
See Section 1.

FIRE AND EXPLOSION
Flash Point
NA Deg. F
Auto Ignition Temperature
NA Deg. F
Flammable Limits in Air
Lower
NA %
Upper
NA %
Extinguishing Media
NA
Fire and Explosion Hazards
None

Extinguishing Media Not to be Used
NA

REACTIVITY
Stability
¢X| Stable
¢ | Unstable
Incompatibility (Materials to Avoid)
Reacts with strong acids to form hydrogen gas.

Conditions to Avoid
Keep Area Well Ventilated
Non-ventilated areas when cutting, welding, burning, or brazing; avoid generation of airborne dusts and fumes.

Hazardous Decomposition Products
Metallic oxides.

VI. ENVIRONMENTAL
Spill or leak procedures
NA

Special Precautions:
Use good Housekeeping practices to prevent accumulation of dust and to keep airborne dust to a minimum.

Waste Disposal Method
Dust, etc.--follow federal, state, and local regulations regarding disposal.

VII. ADDITIONAL INFORMATION
Disclaimer
The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

GENERAL INFORMATION
FILENAME: UP-05179.msd
FILLER METALS AND WELDING RODS
* Recognized as a possible carcinogen by the I.A.R.C.
Signed
Mike Wyatt
Date
9-17-93

SECTION I
Manufacturer
Track-Weld, Inc.
Address
P O Box 2721, 823 Estelle St.
Paducah, KY 42002
Emergency Telephone No.
502-442-7702
Trade Name
Railbuild 540W
AS Classification
None
Diameter
1/16" 3/32" 7/64"

SECTION II - Hazardous Ingredients

COVERING OR FLUX	C.A.S. NO.	Wt. %	TLV Units Mg/M3
Calcuim Carbonate	1317-65-3	5.0	15
Manganese	7439-65-3	3.0	5
*Chromium	7440-47-3	2.0	.5
Silicon	7440-21-3	1.5	10
Calcuim Flourido	7782-41-4	1.5	2.5
Steel Strip	1309-37-1	70	10

* Recognized as a possible carcinogen by the I.A.R.C.

SECTION III - Physical Data
Not Applicable

SECTION IV - Fire and Explosion Hazard Data
Not Applicable

SECTION V - Health Hazard Data
Effects of Over Exposure:
LONG TERM EXPOSURE MAY RESULT IN A REVERSIBLE NERVOUS DISORDER
Emergency and First Aid Procedures:
SEEK MEDICAL ATTENTION

SECTION VI - Reactivity Data
Stability:
Unstable: [ ]
Stable: [ ]
Conditions to Avoid:
NONE
Incompatability (Materials to Avoid):
NONE
Hazardous Decompositions Products:
PRIMARILY IRON OXIDE WITH FLOURIDES AND COMPLEX OXIDES CONTAINING
MANGANESE AND SILICON

SECTION VII - Spill or Leak Procedures
Not Applicable

SECTION VIII - Special Protection Information
Respiratory Protection
WELD FUME RESPIRATORY OR AIRLINE RESPIRATORY FOR CONFINED SPACE OR WHERE
EXPOSURES ARE ABOVE TLV.
Ventilation:
Local Exhaust: YES, IN CONFINED SPACES
Mechanical (General): YES, WHERE EXPOSURES EXCEED TLV
Eye Protection:
COLORED ADSORPTIVE LENS NO. 9 to 12
Protective Gloves:
WELDER'S PROTECTIVE GLOVES
Other Protective Equipment:
PROTECTIVE CLOTHING - LEATHER APRON

SECTION IX - SPECIAL PRECAUTIONS (see note)
Other Precautions:
ARC AND SPARKS COULD BE THE SOURCE OF IGNITION OF COMBUSTIBLE PRODUCTS.

Note: Reference is directed, without endorsement or recommendation, to

the ANSI Standard Safety in Welding and Cutting Z49.1-1973 (American Welding Society publication Z49.1-1973)

GENERAL INFORMATION
FILENAME: UP-05178.msd
FILLER METALS AND WELDING RODS
Note: Reference is directed, without endorsement or recommendation, to the ANSI Standard Safety in Welding and Cutting Z49.1-1973 (American Welding Society publication Z49.1-1973)
Signed
Mike Wyatt
Date
5-24-93

SECTION I
Manufacturer
Track-Weld, Inc.
Address
P O Box 2721, 823 Estelle Street
Paducah, KY 42001
Emergency Telephone No.
502-442-7702
Trade Name
Frogbuild 570W
AS Classification
NONE
Diameters
1/16"
3/32"
5/64"
7/64"

SECTION II - Hazardous Ingredients

COVERING OR FLUX	C.A.S. NO.	Wt. %	TLV Units Mg/M3	OTHER
Calcium Carbonate	1317-65-3	5.0	15	Steel Strip
Silicon	7440-21-3	1.5	10	
Calcium Flouride	7782-41-4	1.5	2.5	
Titanium Dioxide	13463-67-7	.5	15	
*Chromium	7440-47-3	6	1	
*Nickel	7440-02-0	5	1	
Manganese	7439-65-3	19	1	

COVERING OR FLUX	C.A.S No.	Wt. %	TLV Units Mg/M3
Calcium Carbonate	1309-37-1	64	10
Silicon			

Calcium Flourida
Titanium Dioxide
*Chromium
*Nickel
Manganese

*Recognized as possible carcinogen by the I.A.R.C.

SECTION III - Physical Data
Not Applicable

SECTION IV - Fire and Explosion Hazard Data
Not Applicable

SECTION V - Health and Hazard Data
Effects of Over Exposure:
Long term exposure may result in a reversible nervous disorder.
Emergency and First Aid Procedures:
SEE MEDICAL ATTENTION

SECTION VI - Reactivity Data
Stability:
Unstable [ ]
Stable [X]
Conditions to Avoid:
NONE
Incompatability (Materials to Avoid):
NONE
Hazardous Decomposition Products:
Primarily iron oxide with flourides and complex oxides containing manganese and silicon.

SECTION VII - Spill or Leak Procedures
Not Applicable

SECTION VIII - Special Protection Information
Respiratory Protection
Weld fume respirator or airline respirator for confined space or where exposures are above TLV

Ventilation:
Local Exhaust: Yes, in confined spaces.
Mechanical (General): Yes, where exposures exceed TLV.
Eye Protection:
Colored adsorptive lens No. 9 to 12.
Protective Gloves:
Welders protective gloves
Other Protective Equipment:
Protective clothing - leather apron.

SECTION IX - SPECIAL PRECAUTIONS (see note)
Other Precautions:
Arc and sparks could be the source of ignition of combustible products.

GENERAL INFORMATION
Filename: UP-05119.msd
THERMADYNE
STOODY
MSDS No.
17

SECTION I - PRODUCT IDENTIFICATION
Product Type:
Coated Buildup manganese and low alloy electrodes for shielded metal arc welding
Product Name:
Stoody Build-Up LH, Dynamang LH, Self-Hardening, 1027, 1105, 2110, RC-2660, Multipass 22, Multipass 4, Railend 932, Multipass 5, H06, Metalloymvn, Airco Nicromang, Dynamang, Green CTD Nicromang, Foundry Co-Mang plain, Foundry Co-Mang, Mang rod, Nicromang, STA Mang, Hascrome
Specification:
No AWS Specification
Manufacturer:
Stoody Company
Address:
P.O. Box 9997, Bowling Green, KY 42102-4997
Telephone No.:
(502) 781-9777
Date Prepared:
April 16, 1992

SECTION II - HAZARDOUS INGREDIENTS
IMPORTANT! This section covers the material from which these products are manufactured. The fumes and gases produced when welding with normal use of these products are covered in Section V.

Hazardous Components	CAS No.	OSHA PEL mg/m3	ACGIH TLV mg/m3	Carcinogenicity	Wt. %
Manganese*	7439-96-5	5 CLG	5 CLG	0	0-20
Silicon	7440-21-3	5	10	0	0-10
Chromium*	7440-47-3	1	.5	Positive	1-10
Nickel*	7440-02-0	1	1	Positive	0-1
Molybdenum	7439-98-7	10	10	0	0-1
Iron	7439-89-6	10	5	0	45-90
Titanium Dioxide	13463-67-7	15	10 (20 STEL)	0	0-10
Fluoride	7789-75-5	2.5	2.5 as F	0	0-5
Calcium Carbonate	1317-65-3	None	10	0	0-10
Graphite	7782-42-5	None	15 mppcf	0	0-3

* Subject to reporting SARA Section 313 of EPCRA and 40 CFR372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS
Not Applicable

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
(Nonflammable) Welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.
NFPA NUMERICAL CODES:
Health Hazard 0
Fire Hazard 1
Reactivity Hazard 0

SECTION V - REACTIVITY DATA
Hazardous Decomposition Products
Exposure limit:
Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of these products would include: Primarily florides and complex osides or iron, manganese and silicon: secondarily complex oxides of chromium, nickel, moloybdenum and titanium, calcium, sodium and potassium.

The present OSHA PEL for hexavalent chromium (CR[+6]) is 0.05 mg/m3 which will result in a significant reduction from the 5 mg/m3 general welding fume (NOC) level. The limit of 0.05 mg/m3 for hexavalent chromium in these electrodes comes from the limit shown in OSHA Table Z-2, which is for 0.1 mg of CrO3 + which calculates to 0.05 mg of Cr[+6]/m3. It applies to soluble chromates of the types found in covered stainless electrode fumes and other chromium containing welding materials.

The OSHA PEL for nickel metal and soluble compounds is 1 mg/m3. The ACGIH TLV for nickel metal is 1 mg/m3 and TLV for soluble compounds is 0.1 mg/m3. These limitations will also result in a significant reduction from the 5 mg/m3 general welding fume (NOC) level.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes" available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

SECTION VI - HEALTH HAZARD DATA

Electric arc welding or oxy fuel welding may create one or more of the following health hazards:
FUMES AND GASES - can be dangerous to your health. COMMON ENTRY IS BY INHALATION.

SHORT TERM (ACUTE) - overexposure to welding fumes may result in discomfort such as: dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

Chromates present in the fume can cause irritation of the respiratory system, damage to lungs and asthmalike symptoms.

Nickel compounds in the fume can cause a metallic taste, nausea, tightness in the chest, fever and allergic reactions.

Fluorides can cause pulmonary edema bronchitis.

LONG TERM (CHRONIC) - overexposure to welding fumes can lead to siderosis (iron deposits in the lung) and affect pulmonary function.

Long term overexposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should get quarterly medical examinations for early detection of manganism.

Studies have shown that production workers exposed to hexavalent chromium compounds have an increased incidence of lung cancers. Chromates may cause an ulceration and perforation of the nasal septum. Liver damage and allergic skin rash have been reported. Chromium VI compounds are required by OSHA to be considered carcinogenic.

Long term overexposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. Nickel and its compounds are required to be considered as carcinogenic by OSHA.

Repeated overexposure to fluoride fumes may cause serious bone erosion and excessive calcification of the bones and ligaments of the ribs, pelvis and spinal column. Fluorides may also cause skin rash.

Shielding gases such as argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.

THRESHOLD LIMIT VALUE - The ACGIH 1985-86 recommended limit for welding fumes not otherwise classified (NOC) is 5mg/m3. TLV - TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV - TWA.

ARC RAYS can injure eyes and burn skin.

HEAT RAYS (infrared radiation from flame or hot metal) can injure eyes.

ELECTRICAL SHOCK can kill.

NOISE can damage hearing.

CARCINOGENICITY Chromium and nickel and their compounds are on the IARC and NTP lists as posing a carcinogenic risk to humans.

EMERGENCY AND FIRST AID PROCEDURES - Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING & USE
PRECAUTIONS FOR SAFE HANDLING & USE /APPLICABLE CONTROL MEASURES

Read an understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, Safety in Welding and cutting published by the American Welding society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910). US Government Printing Office, Washington, D.C. 20402 for more detail on many of the following.
VENTILATION

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION

Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

EYE PROTECTION

Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary to shield others.

PROTECTIVE CLOTHING

Wear head, hand and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1 at a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS

Not applicable.

WASTE DISPOSAL METHOD

Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

The information here is supplied in good faith, but no warranties are expressed or implied.

For further information contact:

Director, Technology
Stoody Company
P.O. Box 9997
Bowling Green, KY 42102-4997
(502) 781-9777

SECTION VIII - DEFINITIONS

CAS No. Chemical Abstracts Service Number
OSHA U.S. Department of Labor, Occupational Safety and Health Administration
PEL Permissable Exposure Level (1983)
ACGIH American Conference of Governmental Industrial Hygienists
TLV Threshold Limit Value (1987-88)
TWA Time Weighted Average
STEL Short Term Exposure Limit
CLG Ceiling Limit
NOC Not Otherwise Classified
IARC International Agency for Research on Cancer
NTP National Toxicology Program

GENERAL INFORMATION
Chemical Name / Synonym / Trade Name:
Stoody 19, 21, 31, 33, 35, 2134, Coated Tube Stoodite, Stoodite XHC,
Stoody 19, 21, 31, 33, 35, 2134,(090190)
Manufacturer Name:
STOODY COMPANY
Chemical Family Name:
Coated high alloy electrodes for shielded metal arc welding
CAS Number:
DOT Classification:
NA Number:
UN Number:
MATERIAL SAFETY DATA SHEET
STOODY COMPANY
puts muscle in metals.
WARNING
THIS PRODUCT MAY CONTAIN DETECTABLE AMOUNTS OF CHEMICALS KNOWN TO THE STATE OF CALIFORNIA (AND OTHER APPLICABLE STATES) TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM. REFER TO THE MATERIAL SAFETY DATA SHEET FOR FURTHER INFORMATION.

The information herein is supplied in good faith, but no warranties are expressed or implied.
For further information contact
DIRECTOR OF Human Resources, Stoody Company 16425 Gale,
Industry, CA 19749

SECTION I - PRODUCT IDENTIFICATION
Product Type:
Coated high alloy electrodes for shielded metal arc welding
Product Name:
Stoody 19,21,31,33,35,2134, Coated Tube Stoodite, Stoodite XHC, S-7159
Specification:
No AWS specification
Manufacturer:
Stoody Company
Address:
16425 Gale Ave., Industry, CA 91749
Telephone No:
(818) 968-0717
Date Prepared:
August 1, 1990

SECTION II - HAZARDOUS INGREDIENTS
IMPORTANT!
This section covers the materials from which these products are

manufactured. The fumes and gases produced when welding with normal use of these products are covered in Section V.
(*) SUBJECT TO REPORTING REQUIREMENTS OF SARA Section 313 of EPCRA and 40 CFR 372.

Hazardous Components	CAS No.	OSHA PEL mg/m3	ACGIH TLV mg/m3	Carcinogenicity	Wt. %
(*)Manganese	7439-96-5	5 CLG	5 CLG	0	0-5
Silicon	7440-21-3	5	10	0	0-5
(*)Chromium	7440-47-3	1	.5	Positive	10-30
(*)Nickel	7440-02-0	1	1	Positive	0-1
Molybdenum	7439-98-7	10	10	0	0-3
Iron	7439-89-6	10	5	0	45-80
Titanium Dioxide	13463-67-7	15	10	0	0-5
			20 STEL		
Fluoride	7789-75-5	2.5	2.5 as F	0	0-1
Calcium Carbonate	1317-65-3	None	10	0	0-4
Graphite	7782-42-5	None	15 mppcf	0	0-3

CLG: Ceiling Limit; STEL: Short Term Exposure Limit

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS
Not Applicable.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
(Nonflammable) Welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1, for fire prevention during the use of welding and allied procedures.
NFPA NUMERICAL CODES:
HEALTH HAZARD - 0
FIRE HAZARD - 1
REACTIVITY HAZARD - 0

SECTION V - REACTIVITY DATA
Hazardous Decomposition Products
Exposure limit:
Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of

contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of these products would include: primarily fluorides and complex oxides of iron and silicon; secondarily complex oxides of chromium, manganese, nickel, molybdenum, titanium, calcium, sodium and potassium.

The present OSHA PEL for hexavalent chromium (CR+6) is 0.05 mg/m3 which will result in a significant reduction from the 5 mg/m3 general welding fume (NOC) level. The limit of 0.05 mg/m3 for hexavalent chromium in these electrodes comes from the limit shown in OSHA Table Z-2, which is for 0.1 mg of CrO3+ which calculates to 0.05 mg of Cr+6/m3. It applies to soluble chromates of the types found in covered stainless electrode fumes and other chromium containing welding materials.

The OSHA PEL for nickel metal and soluble compounds is 1 mg/m3. The ACGIH TLV for nickel metal is 1 mg/m3 and the TLV for soluble compounds is 0.1 mg/m3. These limitations will also result in a significant reduction from the 5 mg/m3 general welding fume (NOC) level.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWSF1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes" available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

SECTION VI - HEALTH HAZARD DATA

Electric arc welding or oxy fuel welding may create one or more of the following health hazards:

FUMES AND GASES - can be dangerous to your health. COMMON ENTRY IS BY INHALATION.

SHORT TERM (ACUTE) - over exposure to welding fumes may result in discomfort such as: dizziness, nausea, or dryness or irritation of nose,

throat, or eyes.

Chromates present in the fume can cause irritation of the respiratory system, damage to lungs and asthma-like symptoms.

Nickel compounds in the fume can cause a metallic taste, nausea, tightness in the chest, fever and allergic reactions.

Fluorides can cause pulmonary edema bronchitis.

LONG TERM (CHRONIC) - over exposure to welding fumes can lead to siderosis (iron deposits in the lung) and affect pulmonary function.

Long term over exposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should get quarterly medical examinations for early detection of manganism.

Studies have shown that production workers exposed to hexavalent chromium compounds have an increased incidence of lung cancers. Chromates may cause an ulceration and perforation of the nasal septum. Liver damage and allergic skin rash have been reported. Chromium VI compounds are required by OSHA to be considered carcinogenic.

Long term over exposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. Nickel and its compounds are required to be considered as carcinogenic by OSHA.

Repeated over exposure to fluoride fumes may cause serious bone erosion and excessive calcification of the bones and ligaments of the ribs, pelvis and spinal column. Fluorides may also cause skin rash.

Shielding gases such as; argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.

THRESHOLD LIMIT VALUE - The ACGIH 1985-86 recommended limit for welding fumes not otherwise classified (NOC) is 5 mg/m3. TLV-TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV-TWA.

ARC RAYS can injure eyes and burn skin.

HEAT RAYS (infrared radiation from flame or hot metal) can injure eyes.

ELECTRICAL SHOCK can kill.

NOISE can damage hearing.

CARCINOGENICITY Chromium and nickel and their compounds and on the IARC (International Agency for Research on Cancer) list and the NTP (National Toxicology Program) list as posing a carcinogenic risk to humans.

EMERGENCY AND FIRST AID PROCEDURES - Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

SECTION VII - PREC. FOR SAFE HANDLING & USE/APPLIC. CNTRL. MEASURES

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), US Government Printing Office, Washington, D.C. 20402 for more detail on many of the following.

VENTILATION - Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION - Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

EYE PROTECTION - Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others.

PROTECTIVE CLOTHING - Wear head, hand and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS

Not Applicable.

WASTE DISPOSAL METHOD - Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

HOBART
WELDING PRODUCTS
MATERIAL SAFETY DATA SHEET

MSDS NO: BARE WIRE
REVISED: SEPTEMBER 1992
CH-4314

For U.S. Manufactured Welding Consumables and Related products
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. Standard must be consulted for specific requirements.

SECTION 1 - IDENTIFICATION

Manufacturer/Supplier Name:	HOBART BROTHERS COMPANY	Telephone No: (513) 332-4000
Address:	600 WEST MAIN STREET, TROY, OH 45373	Emergency No: (513) 332-4000
Trade Name:	HOBART 1C, 6C, 11C, 21C	
Product Type for:	HARDSURFACING ELECTRODES	

SECTION 2 - HAZARDOUS MATERIALS

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are covered by Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

INGREDIENT	CAS NO.	EXPOSURE LIMIT (mg/m3) OSHA PEL	ACGIH TLV
IRON+	7439-89-6	5 R*	10
#CHROMIUM	7440-47-3	1	0.5
#NICKEL	7440-02-0	1	1****
MOLYBDENUM	7439-98-7	5 R*	10
TUNGSTEN	7440-33-7	1,3 STEL***	1,3 STEL***
*COBALT	7440-48-4	0.05 (Dust)	0.05 (Dust)
MANGANESE	7439-96-5	5 CL** (Dust)	5 (Dust)
SILICON	7440-21-3	5 R*	10

Respirable Fraction. ** - Ceiling Limit. *** - Short Term Exposure Limit. # - Reportable material under Section 313 of SARA.
+ - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA, or "Particulates Not Otherwise Classified" by ACGIH.
**** - 1991-1992 ACGIH listed under Notice of Intended Changes as A1 - Confirmed Human Carcinogen. Limits of 0.05 mg/m³ are proposed and should be considered as trial limits.

% WEIGHT:	HOBART 1C	HOBART 6C	HOBART 11C	HOBART 21C
IRON	2.3	2.4	2.3	1.7
#CHROMIUM	3.5	27.2	30.8	27.2
#NICKEL	2.3	2.7	2.4	2.5
MOLYBDENUM	0.3	0.1	0.3	5.4
TUNGSTEN	12.1	4.6	8.5	—
*COBALT	76.3	60.5	52.9	61.9
*MANGANESE	—	—	—	0.4
SILICON	1.3	1.3	1.3	0.7

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Not Applicable

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, nonexplosive and essentially nonhazardous until welded. Welding arcs and fumes can ignite combustibles and flammable products. See American National Standard Z49.1 referenced in Section 7.

SECTION 5 - REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

It is understood, however, that the elements and/or oxides to be mentioned are virtually always present as complex oxides and not as metals. [Characterization of Arc Welding Fume: American Welding Society.] The elements or oxides listed below correspond to the ACGIH categories located in TLV [Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment].

Reasonably expected constituents of the fume would include: Primarily cobalt compounds. Secondarily complex oxides of manganese, chromium, silicon, nickel and cobalt compounds, and chromium (VI) compounds, molybdenum, tungsten compounds and iron oxides.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

The recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. [See ANSI/AWS F1.1, available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling.] As a minimum, materials listed in this section should be analyzed.

INGREDIENT	CAS NO.	OSHA PEL	ACGIH TLV
IRON OXIDE	1309-37-1	10 (as Fe)	5 (as Fe)
CHROMIUM OXIDE (as Cr(II),Cr(III))	—	0.5 (as Cr)	0.5 (as Cr)
CHROMIUM (INSOLUBLE, as Cr(VI))	—	0.1 CL** (as Cr)	0.05, (A1) (as Cr)
NICKEL COMPOUNDS (INSOLUBLE)	—	1 (as Ni)	1 (as Ni)****
NICKEL COMPOUNDS (SOLUBLE)	—	0.1 (as Ni)	0.1 (as Ni)
MOLYBDENUM	7439-98-7	5 R	10
TUNGSTEN	7440-33-7	1,3 STEL***	1,3 STEL***
COBALT	7440-48-4	0.05 (Fume)	0.05 (Fume)
MANGANESE	7439-96-5	1,3 STEL***	1,3 STEL***
SILICA (AMORPHOUS)	60676-86-0	0.1 R	0.1 R

** - Ceiling Limit. *** - Short Term Exposure Limit. [A1] - Confirmed Human Carcinogen.
**** - 1991-1992 ACGIH listed under Notice of Intended Changes as A1 - Confirmed Human Carcinogen. Limits of 0.05 mg/m³ are proposed and should be considered as trial limits.

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SECTION 6 - HEALTH HAZARD DATA

Permissible Exposure Limit and Threshold Limit Value:

The exposure limit for welding fume has been established at 5mg/m³ with OSHA's PEL and ACGIH's TLV. See Section 5 for specific fume constituents which may modify the PEL and TLV.

Effects of Overexposure

Electric arc welding may create one or more of the following health hazards:

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can kill. See Section 7.

FUMES AND GASES can be dangerous to your health.

PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.

IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.

CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.

NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.

MOLYBDENUM - Irritation of the eyes, nose and throat.

TUNGSTEN - Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma which is reversible fr overexposure. Symptoms are tightening chest and productive cough.

COBALT - Pulmonary irritation, cough, dermatitis, weight loss.

MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure.

SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."

IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe_3O_4) are not regarded as fibrogenic materials.

CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have show chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) as compounds.

NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

MOLYBDENUM - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia.

TUNGSTEN - Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion.

COBALT - Repeated overexposure to cobalt compounds can produce reduced pulmonary function, diffuse nodular fibrosis of lungs and respiratory hypersensitivity.

MANGANESE - Central nervous system effects referred to as "Manganism." Symptoms include muscular weakness, tremors similar to Park Disease. Behavioral changes and changes in handwriting may also appear. Employees overexposed to manganese compounds should receive qu medical examinations for early detection of manganism.

SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY

Nickel, Chromium (with the exception of metallic chromium and chromium (III)) must be considered as carcinogens under OSHA (29CFR 1910.1200).

Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65: This product contains chemicals which are known to the State of California to cause cancer. Nickel, certain nickel compounds and hexavalent chromium (Cr VI) are listed under Proposition 65. Hexavalent chromium may be generated during welding.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1; Safety in Weldin and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Govern Printing Office, Washington, DC 20402 for more detail on any of the following.

VENTILATION: Use enough ventilation, local exhaust at the arc or both, to keep the fumes and gases below PEL/TLV in the worker's breathing zo the general area. Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below PEL/TLV.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others.

PROTECTIVE CLOTHING: Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark nonsynthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

SPECIAL PRECAUTIONS: IMPORTANT: Maintain exposure below the PEL/TLV. Use industrial hygiene monitoring to ensure that your use o material does not create exposures which exceed PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important addi information.

ANSI Z49.1 The American Welding Society, P.O. Box 351040, Miami, FL 33135 - OSHA (29CFR1910) U.S. Department of Labor, Washington, DC 20210.

HOBART BROTHERS COMPANY believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, HOBART BROTHERS COMPANY cannot make any express or implied warranty as to this information.

UP-1590

McKAY
WELDING PRODUCTS

MATERIAL SAFETY DATA SHEET

MSDS NO: MK-HARDALLOY
REVISED: JANUARY 1994
RL-3147

For U.S. Manufactured Welding Consumables and Related Products
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. Standard must be consulted for specific requirements.

SECTION 1 - IDENTIFICATION

Manufacturer/Supplier Name:	McKAY WELDING PRODUCTS	Telephone No: (513) 332-4000
Address:	101 TRADE SQUARE EAST, TROY, OH 45373	Emergency No: (513) 332-4000
Product Name:	HARDALLOY IRON BASED SURFACING COVERED ELECTRODES	Classification: None
Product Type for:	COVERED ARC WELDING ELECTRODES	

SECTION 2 - HAZARDOUS MATERIALS

This section covers the hazardous materials from which this product is manufactured, and those by-products which are reasonably expected to be produced during normal use of this product. The fumes and gases produced during welding with normal use of this product are also addressed in Section 5. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

HAZARDOUS COMPONENTS	% WEIGHT	CAS NO.	EXPOSURE LIMIT (mg/m³) OSHA PEL	ACGIH TLV
IRON+	45-80	7439-89-6	5 R*	10
			10 (Oxide Fume)	5 (Oxide Fume)
CALCIUM CARBONATE	0-10	1317-65-3	5 R*	10
			5 (as CaO)	2 (as CaO)
FLUORSPAR	0-10	7789-75-5	2.5 (as F)	2.5 (as F)
TITANIUM DIOXIDE	0-10	13463-67-7	5 R*	10
MOLYBDENUM	0-4	7439-98-7	5 R*	5 (Soluble Compounds)
#CHROMIUM	1-30	7440-47-3	1 (Metal)	0.5 (Metal) ◆B
			0.5 (Cr II & Cr III Compounds)	0.5 (Cr II & Cr III Compounds)
			0.1 CL** (Cr VI Compounds)	0.05, (A1) (Cr VI Compounds)
SILICA++	1-5	14808-60-7	0.1 R*	0.1 R*
(Amorphous Silica Fume)		69012-64-2	Not Established	2 R*
TUNGSTEN	0-1	7440-33-7	1, 3 STEL***	1, 3 STEL***
MANGANESE	0.5-15	7439-96-5	5 CL** (Dust)	5 (Dust) ◆A
			1, 3 STEL*** (Fume)	1, 3 STEL*** (Fume)
SILICON	<1	7440-21-3	5 R*	10
TITANIUM+	0-5	7440-32-6	5 R*	10
#ALUMINUM	0-2	7429-90-5	5 R* (Dust)	10 (Dust)
			5 (Fume)	5 (Fume)
MAGNESIUM CARBONATE	0-5	546-93-0	5 R*	10
#NICKEL	0-1	7440-02-0	1 (Metal & Insoluble Compounds)	1 (Metal & Insoluble Compounds) ◆C
			0.1 (Soluble Compounds)	0.1 (Soluble Compounds)
ALUMINUM+	0-4	7440-03-1	5 R*	10
SILICATE BINDERS	<5	——	Not Established	Not Established

(respirable Fraction. ** - Ceiling Limit. *** - Short Term Exposure Limit. (A1) - Confirmed Human Carcinogen.
- - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA, or "Particulates Not Otherwise Classified" by ACGIH.
++ - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (noncrystalline) form.
# - Reportable material under Section 313 of SARA. ## - Reportable material under Section 313 of SARA as dust or fume.
◆A - 1993-1994 ACGIH listed under Notice of Intended Changes. Limits of 0.2 mg/m³ are proposed and should be considered as trial limits.
◆B - 1993-1994 ACGIH listed under Notice of Intended Changes. A4 - "Not Classifiable as a Human Carcinogen" for Chromium metal and Cr III compounds. Limits of 0.01 mg/m³ for insoluble Cr VI compounds are proposed and should be considered as trial limits.
◆C - 1993-1994 ACGIH listed under Notice of Intended Changes for A1 - "Confirmed Human Carcinogen". Limits of 0.05 mg/m³ are proposed and should be considered as trial limits.

The exposure limit for welding fume has been established at 5mg/m³ with OSHA's PEL and ACGIH's TLV. The individual complex components within the fume may have lower exposure limits than the general welding fume PEL/TLV. An Industrial Hygienist, the OSHA Permissible Exposure Limits For Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and respective exposure limits.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Not Applicable

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Welding consumables applicable to this sheet as shipped are nonexplosive, nonflammable, nonexplosive and essentially nonhazardous until welded. Welding arcs and sparks can ignite combustibles and flammable products. See American National Standard Z49.1 referenced in Section 7.

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Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Most fume ingredients are present as complex oxides and compounds and not as pure metals.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. De[illegible]composition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 2, plus those fr[illegible] base metal and coating, etc., as noted above.

Reasonably expected contaminants of the fume would include: Primarily iron oxides. Secondarily complex oxides of calcium, fluorides, titanium, molybdenum, chromium and nickel compounds, silicon, tungsten, manganese, aluminum, magnesium, and columbium.

Monitor for *hexavalent chromium (Cr VI)*. Fumes from the use of these products contain significant amounts of *chromium compounds*. The Exposure Limit of *0.05 mg/m³ for Cr VI* WILL BE EXCEEDED before reaching the 5 mg/m³ PEL/TLV for general welding fume.

Monitor for *manganese*. Fumes from the use of some products contain significant amounts of *manganese compounds*. The Exposure Limit of *1.0 mg/m³ for manganese fume* WILL BE EXCEEDED before reaching the 5 mg/m³ PEL/TLV for general welding fume.

Also monitor for other materials identified in Section 2. Fumes from the use of these products may also contain nickel, fluorides, calcium oxides, silica fume, and tungsten. All of the above noted chemicals have exposure limits lower than the 5 mg/m³ PEL/TLV for general welding fume. Fumes from some products contain significant amounts of *chromium II and III compounds* whose exposure limits *may be exceeded* before reaching the exposure limit for general welding fume. Read the product specific warning labels on the product [illegible]ainers.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. (See ANSI/AWS F1.1, available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling.)

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Electric arc welding may create one or more of the following health hazards:

ARC RAYS can injure eyes and burn skin.
ELECTRIC SHOCK can kill. See Section 7.
FUMES AND GASES can be dangerous to your health.
PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

SHORT-TERM (ACUTE) OVEREXPOSURE EFFECTS:

WELDING FUMES - May result in discomfort such as dizziness, nausea or dryness or irritation of nose, throat or eyes.
IRON, IRON OXIDE - None are known. Treat as nuisance dust or fume.
CALCIUM OXIDE - Dust or fumes may cause irritation of the respiratory system, skin and eyes.
FLUORIDES - Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.
TITANIUM DIOXIDE - Irritation of respiratory system.
MOLYBDENUM - Irritation of the eyes, nose and throat.
CHROMIUM - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.
SILICA (AMORPHOUS) - Dust and fumes may cause irritation of the respiratory system, skin and eyes.
TUNGSTEN - Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma which is reversible following overexposure. Symptoms are tightening chest and productive cough.
MANGANESE - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure.
ALUMINUM OXIDE - Irritation of the respiratory system.
MAGNESIUM, MAGNESIUM OXIDE - Overexposure to the oxide may cause metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure.
NICKEL, NICKEL COMPOUNDS - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction.
COLUMBIUM - Dust or fumes may cause irritation of the respiratory system, skin and eyes.

LONG-TERM (CHRONIC) OVEREXPOSURE EFFECTS:

WELDING FUMES - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis."
IRON, IRON OXIDE FUMES - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe_3O_4) are not regarded as fibrogenic materials.
CALCIUM OXIDE - Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia.
FLUORIDES - Serious bone erosion (Osteoporosis) and mottling of teeth.
TITANIUM DIOXIDE - Pulmonary irritation and slight fibrosis.
MOLYBDENUM - Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia.
CHROMIUM - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.
SILICA (AMORPHOUS) - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Noncrystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.
TUNGSTEN - Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion.
MANGANESE - Central nervous system effects referred to as "Manganism." Symptoms include muscular weakness, tremors similar to Parkinson's Disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should receive quarterly medical examinations for early detection of manganism.
ALUMINUM OXIDE - Pulmonary fibrosis and emphysema.
MAGNESIUM, MAGNESIUM OXIDE - No adverse long term health effects have been reported in the literature.
NICKEL, NICKEL COMPOUNDS - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.
COLUMBIUM - No adverse long term health effects have been reported in the literature.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions).

EMERGENCY AND FIRST AID PROCEDURES

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
Eyes & Skin: If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY

Chromium VI, nickel and its compounds must be considered carcinogens according to OSHA (29 CFR 1910.1200).
Welding fumes must be considered as possible carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65: These products contain chemicals which are known to the State of California to cause cancer. Nickel, certain nickel compounds and hexavalent chromium (Cr VI) are listed under Proposition 65. Hexavalent chromium may be generated during welding.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1: Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, DC 20402 for more detail on any of the following.

VENTILATION: *Use enough ventilation, local exhaust at the arc or both to keep the fumes and gases below PEL/TLV's in the worker's breathing zone and the general area.* Train the welder to keep his head out of the fumes.

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below PEL/TLV.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others.

PROTECTIVE CLOTHING: Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection as well as dark nonsynthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

SPECIAL PRECAUTIONS: **IMPORTANT:** Maintain exposure below the PEL/TLV. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information: ANSI Z49.1 The American Welding Society, P.O. Box 351040, Miami, FL 33135 - OSHA(29CFR1910) U.S. Department of Labor, Washington, DC 20210.

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General Information
Chemical Name / Synonym / Trade Name:
Bare composite rods for oxyfuel welding.
Amsco Tube Chromeface, Tungchrome Tube Rods
Manufacturer Name:
AMSCO WELDING PRODUCTS
CAS Number:
7439-96-5
7440-21-3
7440-47-3
7440-33-7
7439-89-6
AMSCO WELDING PRODUCTS
MSDS NO: 506
DATE PREPARED: Nov. 13, 1985

PRODUCT IDENTIFICATION
Product Type: Bare composite rods for oxyfuel welding.
Product Name: Amsco Tube Chromeface, Tungchrome Tube Rods
Specification: No AWS specification
Manufacturer: Amsco Welding Products/Division of Stoody Company
Address: P.O. Box 508, Wauseon, Ohio 43567 Telephone No. 419/337-6015

HAZARDOUS INGREDIENTS
Important!: This section covers the materials from which these products are manufactured. The fumes and gases produced when welding with normal use of these products are covered in Section V.

Hazardous Compounds	CAS. NO.	OSHA PEL mg/m(3)	ACGIH TLV mg/m(3)	CARCINOGENICITY	WT.%
Manganese	7439-96-5	5 CLG	5 CLG	0	0.2-1.5
Silicon	7440-21-3	None	5	0	0.2-1.5
Chromium	7440-47-3	1	0.5	Positive	20-35
Tungsten	7440-33-7	None	5	0	0-15
Iron	7439-89-6	5	5	0	55-65

CLG: Ceiling Limit

PHYSICAL/CHEMICAL CHARACTERISTICS
Not applicable

FIRE AND EXPLOSION HAZARD DATA
(Nonflammable): Welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1, for fire prevention during the use of welding and allied procedures.

REACTIVITY DATA

Hazardous Decomposition Products:
Exposure Limit: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminates in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).
When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.
Reasonably expected fume constituents of these products would include: primarily complex oxides of iron and silicon; secondarily complex oxides of chromium, manganese and tungsten.
The present OSHA PEL for hexavalent chromium (CR (+6)) is 0.05 mg/m(3) which will result in a significant reduction from the 5 mg/m(3) general welding fume (NOC) level. The limit of 0.05 mg/m(3) for hexavalent chromium in these electrodes comes from the limit shown in OSHA Table Z-2, which is for 0.1 mg of CrO(3)+ which calculates to 0.05 mg of Cr(+6)/m(3). It applies to soluble chromates of the types found in covered stainless electrode fumes and other chromium containing welding materials.
Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.
One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample from inside the welder's helmet if worn or in the worker's breathing zone. See AWS F1.1 and AWS F1.2-1985, available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

HEALTH HAZARD DATA
Electric arc welding or oxy fuel welding may create one or more of the following health hazards:
FUMES AND GASES -: can be dangerous to your health. COMMON ENTRY IS BY INHALATION.
SHORT TERM (ACUTE)-: over exposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.
Chromates present in the fume can cause irritation of the respiratory system, damage to lungs and asthma-like symptoms.
LONG TERM (CHRONIC) -: over exposure to welding fumes can lead to

siderosis (iron deposits in the lung) and affect pulmonary function.
Long term over exposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should get quarterly medical examinations for early of manganism.
Studies have shown that production workers exposed to hexavalent chromium compounds have an increased incidence of lung cancers. Chromates may cause an ulceration and perforation of the nasal septum. Liver damage and allergic skin rash have been reported. Chromium VI compounds are required by OSHA to be considered carcinogenic.
Shielding gases such as: argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.
Threshold Limit Value: The ACGIH 1985-86 recommended limit for welding fume not otherwise classified (NOC) is 5 mg/m(3). TLV - TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV - TWA.
Arc Rays: can injure eyes and burn skin.
Heat Rays: (infrared radiation from flame or hot metal) can injure eyes.
Electrical Shock: can kill.
Noise: can damage hearing.
Carcinogenicity: Chromium and its compounds are on the IARC (International Agency for Research on Cancer) list and the NTP (National Toxicology Program) list as posing a carcinogenic risk to humans.
Emergency and First Aid Procedures: Call for medical aid. Employ first *aid techniques recommended by the American Red Cross.*

PRECAUTIONS FOR SAFE HANDLING & USE/APPLIC. CONTROL MEAS.
Read and understand the *manufacturer's instructions and the precautionary* label on the product. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U. S. Government Printing Office, Washington, D.C. 20402 for more details on any of the following.
Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV'S in the worker's breathing zone and the general area. Train the welder to keep his head out of the fume.
Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.
Eye Protection: Wear helmet or use face shield with filter lens. As a rule of thumb start with a shade that is too dark to see the weld zone. Then go the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary to shield others.
Protective Clothing: Wear head, hand and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection,

as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Procedure for Cleanup of Spills or Leaks: Not applicable

Waste Disposal Method: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations.

The information herein is supplied in good faith, but no warranties are expressed or implied.

For further information contact Mr. R. L. Chavanne

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UP-1599

General Information
Chemical Name / Synonym / Trade Name:
Brazing Flux for Oxyfuel Welding Cast Iron and Steel
Ferro Flux
Manufacturer Name:
L-TEC Welding & Cutting Systems
CAS Number:
1303-96-4
497-19-8
144-55-8
1309-37-1
Form No.: 7901
Date: October, 1985

PRODUCT IDENTIFICATION
PRODUCT TYPE: Brazing Flux for Oxyfuel Welding Cast Iron and Steel
PRODUCT NAME: Ferro Flux
CLASSIFICATION: None
MANUFACTURER/SUPPLIER: L-TEC Welding & Cutting Systems
ADDRESS: P.O. Box 710, Ashtabula, Ohio 44004
TELEPHONE NO.: (216) 992-1265

HAZARDOUS INGREDIENTS*
IMPORTANT: This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product covered in Section V.

Material(CAS No.)	Weight%	Exposure Limit 1984/85 TLV-TWA (OSHA PEL)
	Less Than	
Borax Glass, Anhydrous (1303-96-4)	35	1 mg/m(3)
Sodium Carbonate (497-19-8)	60	5 mg/m(3) (NOC)
Sodium Bicarbonate (144-55-8)	10	5 mg/m(3) (NOC)
Iron Oxide (1309-37-1)	5	5 mg/m(3) Fe(2)O(3) as Fe (10 mg/m(3))

*The term "hazardous" should be interpreted as a term required and defined in the OSHA Hazard Communications Standard (29CFR 1910.1200) and does not necessarily imply the existence of any hazard.

PHYSICAL/CHEMICAL CHARACTERISTICS
Appearance: Red powder with no characteristic odor.

FIRE & EXPLOSION HAZARD DATA
Non-flammable. Welding arc and sparks can ignite combustible and flammable products. See ANSIZ49.1 "Safety in Welding and Cutting"

(referenced in Section VII) for fire prevention and protection information.

L-TEC requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

REACTIVITY DATA

Hazardous Decomposition Products:

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the flux is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include:

Oxides of Sodium, Boron, Iron and of the brazing rod being used.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes" available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: The ACGIH 1984-85 recommended limit for welding fume, not otherwise classified (NOC) is 5 mg/m(3). TLV-TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV-TWA.

EFFECTS OF OVEREXPOSURE: Electric arc welding or oxy-fuel gas processes may create one or more of the following hazards:

FUMES & GASES can be dangerous to your health. Primary route of entry is

by Inhalation.
Short term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of the nose, throat, or eyes.
Long term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and affect pulmonary function.
ARC RAYS can injure eyes and burn skin. HEAT RAYS (infrared radiation from flame or hot metal) can injure eyes.
ELECTRIC SHOCK can kill.
NOISE can damage hearing.
CARCINOGENIC ASSESSMENT: N/A
EMERGENCY FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. IF BREATHING IS DIFFICULT, give oxygen. Call a physician. IN CASE OF ELECTRICAL SHOCK disconnect and turn off power. IF NOT BREATHING, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin external heart massage. Immediately call a physician. IN CASE OF ARC BURN call a physician.

PRECAUTIONS FOR SAFE HANDLING AND USE
Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, Safety in Welding and Cutting, published by the American Welding Society, P.O. Box 351040, Miami, FL 33135; OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402; and L-TEC's publications 52-529 and 2035 for more details on many of the following:
VENTILATION: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select as per OSHA 29 CFR 1910.134.
EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade that is too dark to see the weld zone and then go to the next lighter shade (See ANSIZ49.1). Provide protective screens and flash goggles, if necessary, to shield others.
PROTECTION CLOTHING: Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.
WASTE DISPOSAL: Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations.

General Information
L-TEC
WELDING & CUTTING SYSTEMS
Form No.: 7903-B
Date: April, 1988
(Essentially Similar to U.S. Department of Labor Suggested Form For Hazard Communication Standard Compliance)
L-TEC requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish
Date: July, 1986
(3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

SECTION I. PRODUCT IDENTIFICATION
PRODUCT TYPE: Brazing Flux for Oxyfuel Welding Chromium Containing Alloys
PRODUCT NAME: Cromaloy Flux
CLASSIFICATION: None
MANUFACTURER/SUPPLIER: L-TEC Welding & Cutting Systems
ADDRESS: P.O. Box 710, Ashtabula, Ohio 44004
TELEPHONE NO.: (216) 992-1265

SECTION II. HAZARDOUS INGREDIENTS(*)
IMPORTANT! This section covers the materials from which this product is manufactured. The fumes and gases produced during normal use of this product are covered in Section V.

Material (CAS No.)	Weight % Less Than	Exposure Limit 1984/85 TLV-TWA	(OSHA PEL)(+)
Borax Glass, Anhydrous (1303-96-4)	20	1 mg/m3	
Calcium Fluoride (7789-75-5)	35	2.5 mg/m3 as F	
China Clay (1332-58-7)	15	none established	
Mineral Silicates Use Quartz Formula (14808-60-7)	50	.3 mg/m3 total dust	

(*) The term "hazardous" should be interpreted as a term required and defined in the OSHA Hazard Communication Standard (29CFR 1910.1200) and does not necessarily imply the existence of any hazard.
(+) OSHA PEL Value Limits are the same as the TLV unless otherwise listed.

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS
Appearance: Off-White powder with no characteristic odor

SECTION IV. FIRE & EXPLOSION HAZARD DATA
Non-flammable. Welding arc and sparks can ignite combustible and flammable products. See ANSIZ49.1 "Safety in Welding & Cutting" (referenced in Section VII) for fire prevention and protection information.

SECTION V. REACTIVITY DATA
Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).
When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.
Reasonably expected fume constituents of this product would include: Oxides of Sodium, Boron, Silicon, Aluminum and of the brazing rod being used and Calcium Fluoride.
Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by radiation from the arc.
One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes" available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

SECTION VI. HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: The ACGIH 1984-85 recommended limit for welding fume, not otherwise classified (NOC) is 5 mg/m3. See REACTIVITY DATA for specific fume constituents which may modify this TLV-TWA.
EFFECTS OF OVEREXPOSURE: Electric arc welding or oxy-fuel gas processes may create one or more of the following hazards:
. FUMES & GASES can be dangerous to your health. Primary route of entry is by inhalation.
Pre-existing medical conditions - individuals with impaired respiratory function may have symptoms worsened by exposure to welding fumes.
Short term (acute) overexposure to welding fumes may result in the following signs and symptoms: discomfort such as dizziness, nausea, or

dryness or irritation of the nose, throat or eyes.
Long term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and affect pulmonary function.

. ARC RAYS can injure eyes and burn skin. HEAT RAYS (infrared radiation from flame or hot metal) can injure eyes.
. ELECTRIC SHOCK can kill.
. NOISE can damage hearing.
. CARCINOGENIC ASSESSMENT: N/A
. EMERGENCY FIRST AID PROCEDURES: Call for medical aid. employ first aid techniques recommended by the American Red Cross. IF BREATHING IS DIFFICULT, give oxygen. Call a physician. IN CASE OF ELECTRICAL SHOCK disconnect and turn off power. IF NOT BREATHING, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin external heart massage. Immediately call a physician. IN CASE OF ARC BURN call a physician.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, Safety in Welding and Cutting, published by the American Welding Society, P.O. Box 351040, Miami, FL 33135; OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402; and L-TEC's publications 52-529 and 2035 for more details on many of the following:

. VENTILATION: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select as per OSHA 29 CFR 1910.134.
. EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade that is too dark to see the weld zone and then go to the next lighter shade (See ANSIZ49.1). Provide protective screens and flash goggles, if necessary, to shield others.
. PROTECTION CLOTHING: Wear hand, head, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSIZ49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.
. WASTE DISPOSAL: Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations.

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UP-1606

General Information
Chemical Name / Synonym / Trade Name:
Welding Charge 133# Q.P.
Manufacturer Name:
L'Aluminothermique
CAS Number:
7439-96-5
7429-90-5
Du-Well Steel Products Co.
Manufacturer's Name: L'Aluminothermique
Address (Number, Street, City, State, and ZIP Code): 172, Rue H. Durre
Raimes 59, France
Emergency Telephone Number:
Chemical Name and Synonyms:
Trade Name and Synonyms: Boutet Thermite Charge
Chemical Family:
Formula:

Hazardous Ingredients
Pains, Preservatives, and Solvents:
Pigments:
Catalyst:
Vehicle:
Solvents:
Additives: Manganese 7439-96-5 C 5 TLV (Units)
Others:
Alloys and Metallic Coatings:
Base Metal: Aluminum 7429-90-5 19.5 % 10 TLV (Units)
Alloys:
Metallic Coatings:
Filter Metal Plus Coating or Core Flux:
Others: Steel 14.58 % Unknown TLV (Units)
Iron(*): (Trace Manganese) 5.12 % Unknown TLV (Units)
Iron Oxide: 1309-37-1 60.8 % 8 2 TLV (Units)
Hazardous Mixtures of Other Liquids, Solids or Gases:
(See Attached Exhibits "C" and "E")

Physical Data
Boiling Point (F): Not Applicable
Vapor Pressure (mm Hg.): Unknown
Vapor Density (AIR=1):
Solubility in Water: Slight (See Attached Report Exhibit "A")
Appearance and Odor: Grey Powder and Granules
Specific Gravity (H(2)O=1): Unknown
Percent Volatile by Volume (%): Not Applicable
Evaporation Rate=1): Not Applicable

Fire and Explosion Hazard Data

Flash Point (Method Used): Unknown greater than 325 C (See Exhibit "A")
Flammable Limits:
Lel:
Uel:
Extinguishing Media: Cannot be extinguished
Special Fire Fighting Procedures: (See Attached Exhibit "B")
Unusual Fire and Explosion Hazards:
Threshold Limit Value: Unknown
Effects of Overexposure: Unknown
Emergency First Aid Procedures: Unknown

Reactivity Data
Stability: Stable
Conditions to Avoid: High Heat (See Exhibit "A")
Incompatability (Materials to Avoid): Flammables
Hazardous Decomposition Products: Nitric Oxide, Nitrogen Dioxide, Carbon Monoxide, Dust (Iron, Manganese and Aluminum)*
Hazardous Polymerization: Will Not Occur

Spill or Leak Procedures
Steps to be Taken in Case Material is Released or Spilled: Unknown
Waste Disposal Method: Unknown

Special Protection Information
Respiratory Protection (Specify Type):
Ventilation: Use Outside
Local Exhaust:
Mechanical (General):
Protective Gloves: Yes
Special:
Other:
Eye Protection: Yes
Other Protective Equipment: (See Manual Exhibit "D") (Pocket Guide Du-Wel Steel Products Co. No. 682)

Special Precautions
Precautions to be Taken in Handling and Storing: Do not transport or store with ignitors or other fammables (See Exhibit "D")
Other Precautions: (See Exhibit "D") (Pocket Guide No. 682)
* See report Exhibit "C"

ASSOCIATION OF
AMERICAN RAILROADS
RATIONS AND MAINTENANCE DEPARTMENT · BUREAU OF EXPLOSIVES
TAN CENTER · BUILDING 817 · EDISON, NEW JERSEY 08817 · 201/225-1618

A

CHEMICAL LABORATORY REPORT

R. M. GRAZIANO
Director and Chief Inspector

W. S. CHANG
Chief Chemist

File Number 16-2700
Laboratory Number 65442
Laboratory Date April 13, 1977

Welding Charge 133# Q. P.

Du-Well Products Company

Sample of material identified as Welding Charge 133# Q. P. was received from Du-Well Products Co. of Chicago, Illinois.

The material was a mixture of grey powder and grey granule said to have the composition of 60.80% Iron Oxide, 19.50% Aluminum, 7.05% Steel F Category (with slight carbon content), 7.53% Steel (with 0.6% carbon) and 5.12% Iron (with Mn).

Portion of the sample was maintained at 75°C for 48 hours, it did not change in appearance or lose weight.

The material could not be ignited with match, Bunsen burner or porpane torch.

Portion of the sample in a paper cylinder was initiated with a Number 8 electric blasting cap. It ignited and burned.

Small amount of the sample was tested in the Brass Block Apparatus. No reaction was observed up to 325°C.

The material dissolved slightly in water without any heat or gas evolution.

A portion of the sample was placed on a bed of kerosene-soaked sawdust and ignited. The material did not burn.

Friction test was conducted using the Bureau of Explosives Strip Friction Tester under a pressure of 500 psi. No spark or ignition was produced.

Material represented by this sample is considered unnecessary to be classified as Flammable Solid under the DOT regulations.

W. S. Chang
Chief Chemist

DU-WEL STEEL PRODUCTS CO.
360 Scott Street • Elk Grove Village, IL 60007 • Telephone (312) 439-3630-1

PRESIDENT
S. B. YEAGER
SECRETARY

L'ALUMINOTHERMIQUE
(French Method of Welding)
Perfected by Camille Boutet

June 23, 1980

Mr. R. O. Keller
Fire Marshal
The Long Island Rail Road
Jamaica Station
Jamaica, New York 11435

Dear Mr. Keller:

Regarding the material safety data sheet which we recently received from you, it appears that most of the information which is asked for is not really applicable to the Boutet thermite charges. The ingredients are not considered hazardous materials and the charge, as described in a report previously forwarded to you, is classified as non-flammable.

As far as extinguishing media, special fire fighting procedures and explosion hazards go, there is no known way to extinguish the reaction once it has started. Since the reaction requires no outside oxygen to continue and produces such large quantities of heat and molten steel at approximately 5000° F, once it has started, under no circumstances should any water be used on the reaction as this will cause immediate explosions from the large rapid volume changes caused by the water vaporizing to steam instantly.

With regard to storing and handling, the best recommendation is simply that the material be kept dry and away from fire or flame.

For your further shipments, if you would prefer that the cans of ignitors be shipped separately from the drums of charges, this can be done at your request and the ignitors will be provided separately in cans of 100.

If we can be of further assistance, please do not hesitate to contact us.

Very truly yours,

Ivo Zoso

cc: P. Fayez

UP-1610

EXHIBIT "C"

C

Laboratory
M. LeFebvre

Atmospheric Control

In the case of rail welding by Aluminothermie

Visit made by Mr. LeFebvre, Engineer

on May 19, 1982

1. - Object and conditions of tests

The object of tests was as follows:

- Analysis of fumes released during aluminothermic welding.
- Control of atmospheric conditions during aluminothermic welding operations on rails.

Welding was conducted at bench, in the workshop, without ventilation and with closed doors during aluminothermic reaction phases.

During control time, welding was done with 132QP charge and SP molds.

2. - Description of tests

2.1 Gas analyzes

We used a DRAGER gas detector and reactive tubes.

The method consists in circulating a specific volume of air through a tube filled with an adsorbing product impregnated with a specific reagent to the substance that one is trying to detect; if that substance is present, the indicating color changes, the length of the colored-zone being function of concentration (the tube is directly graduated for concentrations).

The tubes used were as follows:

- For gases sampled directly from the fumes

."Nitrous vapors 20/a" standard measuring range 20 to 500 ppm of $NO + NO_2$

."Carbon anhydride 1%"-standard measuring range 1 to 20% CO_2

."Carbon monoxide 10/b" standard measuring range 10 to 300 and 100 to 3000 ppm CO

- For air at breathing level

."Nitrous vapors 0.5/a" standard measuring range 0.5 to 10 ppm $NO + NO_2$

."Nitrate dioxide 0.5/C" standard measuring range 0.5 to 10 ppm NO_2

."Carbon Anhydride 0.01%/a" standard measuring range 0.01 to 3% CO_2

."Carbon monoxide 10/b" standard measuring range 100 to 3000 ppm CO

For carbon monoxide, we have also taken some samples in tight containers in order to test the results later in our labs with a device as per standard NF X 43.012 (absorption infrared radiation method)

2.2 Dust Samples

This method consists in filtering some specific air volumes in order to separate and to collect the dusts contained. Filters with trapped dust are then subjected to the action of "regal" water (= nitric acid + hydrochloric acid) for measuring of iron, aluminum and manganese via atomic absorption.

The following sampling equipments were used:

- For dusts sampled directly from fumes and at 1.5m away from the crucible

  A set including a volumetric meter, a pump, a filter, holder and filters made of nitrate of cellulose (50 mm diameter, pore-dimension: 0.45 micron)

- For dusts at operator's breathing level

  A portable, self-contained apparatus for taking continuous samples within the breathing range of an operator (on a cellulosie membrane of 25 mm diameter).

3. Results of Measuring Tests

3.1 Fume Analyzis

The results of sampling conducted directly within the fumes released during the 25 to 30 seconds of duration of an aluminothermic reation phase, are as follows:

- Gas Analyzes

Nitrogen oxides $NO + NO_2$	ppm	35
Carbon monoixde CO	ppm	3000
Carbon dioxide CO_2	%	4

- Dusts

. Iron content mg/m^3 337
or 466 mg/m^3 evaluated in Fe_3O_4

. Manganese content mg/m^3 101
or 159 mg/m^3 evaluated in MnO_2

. Aluminum content mg/m^3 39
or 74 mg/m^3 evaluated in Al_2O_3

. Global dust content: 537 mg/m^3

It appears therefore that dusts can be considered as containing solely iron, manganese and aluminum (metals and oxides).

3.2 Air Analyzis at breathing level

For sampling of dusts 1.5 m away from the crucible, the filter-holder, slightly tipped down, had been affixed on a trivet (tripod), at average breathing level of a man standing up (1.5 m from the ground). This sampling was executed only during aluminothermic reaction phases.

Gas sampling at same location was also executed during an aluminothermic reaction phase.

On the other hand, dust sampling with the self-contained, portable apparatus, had been executed on a continuous basis (over the duration of 5 rail welding by operator, i.e., 2 hours)

We have besides, taken some gas samples 1 m from the crucible and 1 m from the ground during an aluminothermic reaction phase.

The results obtained were the following:

	Gas Analyzis				Dusts		
	$NO+NO_2$ ppm	NO_2 ppm	CO ppm	CO_2 %	Fe mg/m^3	Mn mg/m^3	Al
1.5 m from crucible and 1.5 m from ground	0.3	nil	4	0.04	1.29	0.21	0.54
breathing level of operator					1.05	0.11	0.24
1 m from crucible and 1 m from ground	nil	nil	3	0.04			

Note: 1 ppm - 1 cm^3/m^3 and 1% = 10000 ppm
nil means: below detection, threshold (estimated to be 0.1 ppm for NO_2 and $NO+NO_2$)

4. Remarks

As a point of comparison, we have listing below the concentration - limit value adopted in the U.S. for air in working areas (note NO 1368-306-82 of INRS).

Nitrate dioxide NO_2	ppm	3
Nitric Oxide NO	ppm	25
Carbon monoxide CO	ppm	50
Carbonic Acid CO_2	%	0.5
Fumes of iron oxide, in Fe	mg/m^3	5
Fumes of manganese, in Mn	mg/m^3	1
Aluminum (welding fumes)	mg/m^3	5

C

Those values are, of course, much higher when sampling is conducted directly withing the fumes themselves. On the other hand, they are not reached in case of sampling from ambient air (neither individually nor globally, since $\left\{ \frac{\text{concentrateur}}{\text{limit value}} < 1 \right)$

Results best comparable to limit values are those from continous sampling executed at breathing level of operator (since limit values are set as average ponderate values for a work duration of 7 or 8 hours/day and 40 hours/week.

Please note also that working conditions that were selected by us for control (inside work, no ventilation, so that could be obtained homogenous results, measuring points in relation to wind direction having no effect) are surely less favorable than normal outside working conditions, the operator is in a position then to position himself favorably in relation to wind.

Lille, France
June 7, 1982
M. LeFebvre
Chief Engineer

Du-Wel Steel Products Boutet Process Quick Preheat Welding Procedures

A Pocket Guide

No. 682

DU-WEL STEEL PRODUCTS CO.
380 Scott Street • Elk Grove Village, IL 60007-1290
Telephone (312) 439-3630-1

UP-1616

D

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DOUBLE WELDING PROCEDURES FOR QUICK PREHEAT WELDS

I. Preparation of Rail

A. Assure the correct gap of $^{3}/_{4}$" - 1" for all rail sections.

B. If the gap between rail ends is too small, ends may be cut to give the proper gap. This *cut preferably should be made with a saw*, but it is permissible to use a cutting torch. If a torch is used, a cutting guide is necessary to insure a uniform gap. All slag must be removed from the face of a torch-made cut. If the gap is too wide, it can be pulled to the required size using a hydraulic rail puller of the simplex or permaquip type or their equivalent. When a puller is used, it should not be released until the weld has cooled to at least 700° F, or for 20 minutes in the winter or 25 minutes in the summer, after the weld has been poured. Always release the puller gradually.

C. Secure rail set. When desired rail gap has been established, clamp rail to secure position so that sudden temperature changes or sudden jolts will not disturb the gap opening.

D. Line up rail using wedges so that the rail is straight with a $^{1}/_{16}$" crown and an 18" straight edge ($^{1}/_{32}$" under each end).

E. Clean rail for a distance of 4" from end with torch and wire brush until area is free of grease, rust and other foreign material.

F. Ties should be spaced to allow 4½" to 5" minimum from the end of the rail. This will permit easy application and packing of the base plate.

II. Preparation of Molds and Clamping Hardware

A. Steel base plates and jackets must be clean to allow base brick and side molds to fit freely.

B. Base plates should be in good condition so that they align properly at a right angle to the base of the rail.

C. Ears at the bottom of the jackets should be straight to allow proper centering of the side molds with the base brick and plate.

D. Threads of the clamping screws on the base plates and the mold clamps should be clean and lightly oiled to allow easy application of proper clamping pressure.

E. Check the base bricks for cracks. Cracked or broken base bricks should be discarded.

obstruction of the riser holes at the base and the head of the rail. Remove sand fins in the riser holes and make sure that nothing is blocking the risers themselves.

G. Place the side molds in the proper jacket out mold in the jacket with the pouring fi that the pin inside the jacket fits in the rec in the back of the mold at the bottom.

H. Make sure the side molds fit the rail properly *with no large gaps at the web or between the* two mold halves above the head of the rail. Molds may be rubbed gently against the rail to allow for any lips on the head of worn rail. Molds must not be rubbed in the web area or the area above the head of the rail.

III. Applying the Molds

A. Apply refractory paste to the edge of the base brick only along the small gap between the brick and the metal base plate. Paste should be applied only as thickly as it would normally come out of the tube.

B. Clamp the base plate to the rail making sure the rail ends are exactly centered in the recess in the base brick. Tighten screws only enough to hold bottom mold firmly against the base the rail. Check the alignment of the rails remove any excess paste which could be carried into the weld.

C. Fit the side molds one at a time so they are centered about the gap at top and bottom and so that the ears on the jackets fit around the locating ears on the base plate. Pouring spout and mold clamp handle should go to the gauge side of the rail on straight track or on the side of a curve.

D. Place mold clamp around the molds and jackets and tighten only enough to hold molds firmly against the web and ball of the rail. Make sure clamp is centered on the molds and is level across the head of the rail. Molds should make firm contact with the rail.

CAUTION: OVERTIGHTENING OF BASE PLATE MOLD CLAMP SCREWS MAY CAUSE CRACKING OF THE MOLDS AND SUBSEQUENT LEAKING OF MOLTEN STEEL WHICH CAN CAUSE SERIOUS PERSONAL INJURY.

IV. Packing the Molds

A. Cover the molds so no packing sand or other foreign matter may be accidentally dropp

B. Tightly pack any large gaps on the top or side of the ball of the rail with tape, paper, cardboard or rags to prevent the packing sand from being pushed into the weld area.

C. Use premixed packing sand available from Du-Wel or prepare a mixture of 2 to 4 parts sand to one part bentonite with only sufficient water so that when squeezed, it will form a good solid ball the consistency of glazing putty. When properly mixed there should be neither excess water nor crumbling of the material.

D. Molds should be packed so that all seams and joint cracks are covered with a minimum thickness of packing sand. It is most important that in packing all voids are filled. Finished molds should not sit idle more than 10 minutes before preheating is started. Therefore, it is most important that mold packing be arranged so that immediately upon completion of the packing, the preheating cycle can begin.

Cover the base and head of rail adjacent to the mold with sand to protect from splatter of molten metal that may damage the rail.

E. Place slag basin, with one inch of DRY sand in the bottom, on the mold clamp under the pouring spout.

CAUTION: CARELESS PACKING MAY CAUSE LEAKAGE OF MOLTEN STEEL FROM THE MOLDS.

FOR SAFETY REASONS ONLY: Molten steel and hot slag can cause serious explosions upon coming into contact with SNOW, ICE, STANDING WATER and FROZEN BALLAST or SOIL. A small container full of dry sand should be placed on the ballast, directly underneath the weld being made so that any leakage — whatever its cause — would fall in the dry sand.

V. Preparing the Crucible

A. Assemble collar and extension to crucible.

B. Seal extension to crucible with refractory paste.

C. Heat crucible with a gasoline preheating unit or an approved torch until steam stops escaping from the square holes of the metal crucible shell and until the outside of the shell is hot to the touch.

D. Never make a weld pour in a wet crucible for the following reasons:

- Moisture will be carried into the weld making a porous defective weld.
- [illegible] pressure, created instantaneously by the reaction of the hot steel and moisture, causes rupturing of the bond of the refractory material to the crucible.
- There is a danger of hot steel splashing forcefully out of the crucible causing serious personal injury (severe burns, etc.).

IMPORTANT

E. EVERY DAY BEFORE MAKING THE FIRST WELD EVERY CRUCIBLE BEING USED MUST BE PREHEATED AS INDICATED IN PARAGRAPH C UNDER PREPARATION AND CLEANING OF THE CRUCIBLE.

F. Crucible should also be reheated during the day if elapsed time between welds is four hours or so. This, of course, varies with weather conditions but it is especially true when working in wet or cold weather.

G. Crucible should be cleaned completely of slag after 15-20 welds depending upon the size of charges used.

CLEANING THE CRUCIBLE

H. Remove the extension.

I. Do not remove the collar.

J. Using a hammer, break up the slag which has accumulated inside the extension.

K. Using the cleaning rod and a hammer, break the slag inside the crucible following a straight line from top to bottom. Do this carefully so as not to damage the refractory material of the crucible. This makes it easier to remove the rest of the slag inside the crucible. As much as it is possible DO NOT REMOVE the thin layer of slag 2 to 3 inches from the very bottom of the crucible (this part of the crucible, found just above the thimble opening, takes the most abuse). The slag acts as a protective layer during future reactions.

L. Fix crucible support clamp tightly to the rail straight up and down about 3" from the edge of the mold clamp. NOTE: KEEP CLAMPING THREADS CLEAN AND OILED TO INSURE SECURE CLAMPING AND TO PREVENT TIPPING OR SPILLING OF THE CRUCIBLE.

M. Old tapping thimble must be removed with cleaning rod before placing stand on rail. The thimble seat must be free of any obstruction.

N. Place crucible support on rail clamp making sure the crucible sits straight approximately 1" above the top of the molds when swung around.

O. Swing the crucible over the molds and align the opening in the bottom of the crucible over the center of the opening of the molds.

P. Swing crucible back, away from the molds.

VI. Charging the Crucible

A. Crucible may be charged before or while preheating is in progress.

B. Self-tapping thimble must be placed in the seat in the bottom of the crucible with the small diameter down.

C. Gently push down the thimble in place to ensure sealing.

D. Hold a 22" length of ¾" water pipe centered over and on the tapping thimble to protect the center of the thimble from the powder used to insulate the steel thimble seat in the crucible.

E. Open the charge and remove the small bag of insulating powder found inside.

F. Pour the insulating powder evenly around the outside of the pipe covering the thimble. DO NOT MOVE PIPE.

G. Pour the bag of oxide charge carefully over the top opening of the pipe to ensure that the charge reaches the center of the thimble top to prevent any inward movement of the insulating material when the pipe is gently removed after filling. Total contents of the bag of oxide must be emptied into the crucible and a mound must be formed by hand in a cone shape.

H. Gently place crucible cover in place.

VII. Preheating the Rail Ends

A. Preheating should be done using a Boutet gasoline preheating unit, Du-Wel's special oxy-acetylene or oxy-propane torch tip and stand, or a hand held oxy-acetylene or oxy-propane torch if the special tip is unavailable.

B. Preheating time should be 5-8 minutes depending on the section being welded, the weather conditions, the method of preheating, and condition of the preheating equipment. Time should be supplemented by visual inspection and may be adjusted (slightly) accordingly.

C. When u[illegible] preheating unit the following procedures should be followed:

1. Setting the preheater.
   a. Large French Unit.
      1) Engine should run 2200-2300 rp.
      2) Working valve should be completely open.
      3) Second valve should be adjusted so gauge reads between .35 and .4.
   b. Large American Unit.
      1) Engine should run 2300-2400 rpm for 1 weld — 2700-2900 rpm for 2 welds.
      2) Working valve should be completely open.
      3) Second valve should be adjuste gauge reads between 3 and 4 p
   c. Light French Unit.
      Engine should run 3100 rpm.
   d. Light American Unit.
      Engine should run 2800-2900 rpm.
2. Maximum hose length is 15 feet.
3. Alignment of burner should be straight down and centered, level with the mold opening.
4. Lighting the burner.
   Burner should be lit in molds.
5. Adjusting the flame.
   a. Flame should extend 3 to 4 inche of the small riser hole and be faid, sharply defined.
      1) Too little or too lean a flame indicates insufficient air or gasoline.
      2) Ragged looking flame or flame only in outer riser holes indicates too rich a flame due to too much gasolir
   b. Flame should be fairly transparen slightly hazy with slight blue color
      1) Too much haze and/or greenish co[illegible] indicates too rich a flame.
      2) Very transparent and dark blue color indicates too lean a flame.
   c. Flame should sound even with a good, hissing roar. Uneven fluttering indicates improper alignment of th burner and/or too rich a flame.
6. Timing.
   a. Preheating time: 5-8 minutes.
   b. Time starts after a good flame is established.
7. Observations.
   a. Rail ends and molds should heat evenly. Uneven heating may cause internal cracking from uneven cooling.
   b. Rail ends should take on an even, dull red glow; web may glow brightly.

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a. Gasoline should be turned on after motor is started and compressor is running.
b. Gasoline should be shut off before disengaging compressor or shutting down motor.
c. Oil drops in French compressor should be 8-12 per minute.

D. When using the Du-Wel tip and stand these procedures should be followed:
1. The flame should be adjusted with the acetylene valve all the way open and enough oxygen to give a slightly carburizing flame (approximately 1½" acetylene "feather" beyond the flame tip). The propane flame should be adjusted to neutral flame. While preheating is continuing the flame should be checked to see that this adjustment does not change.
2. The following pressures are recommended for proper heating:

Oxy-Propane	6 to 9 PSI Propane 60-95 PSI Oxygen.
Airco & Victor of ¼" or ⅜" acetylene hose	12 PSI Acetylene 60 PSI Oxygen
Oxweld Torch using 50 feet of ⅜" acetylene hose	8 to 8 PSI Acetylene 60 PSI Oxygen

Acetylene pressure should be raised approximately 1 PSI per each additional 50 feet of hose length. We do not recommend the use of hoses longer than 100 feet for proper operation. These settings may vary slightly for each individual set of equipment and should be used as reasonably accurate guidelines.
3. Torch should be centered and straight.
4. Torch height should be set 1½" to 1¾" from head of rail for all sizes of rail.
5. Observations.
a. Wear goggles or dark safety glasses.
b. There should be no melting.
c. Rail ends and molds should heat evenly. Unequal heat causes improper fusion and internal cracks due to uneven cooling.
d. Web should glow a bright red/orange with no signs of "sweating" or melting.
e. Ball and base should just glow a dull red and have no apparent "black" areas.

should be cut back. Time should not be decreased.
g. If rail is not hot enough torch may be turned up or time may be increased 1 to 1½ minutes. In no case should time exceed 7-8 minutes.

E. When using a hand held torch the following procedures should be used:
1. The torch tip must be large enough to provide sufficient preheating. Recommended tip sizes are:
a. Oxweld — 70-150 — preference for 100-125.
b. Airco — #10-12 — preference for #12.
c. Victor — #10.
2. The torch should be set with a neutral or slightly carburizing flame.
3. Torch should be held at all times, not propped.
4. Heating time — 5 minutes total.
5. The torch should be held straight down and centered in molds. End of flame should be positioned just below head of rail ⅛ inch for 4 minutes.
6. The torch should be held straight down and centered moving slowly back and forth across head of rail and raised approximately 1 to 1½ inches for 1 minute.
7. Small tips (70, 80, #9, #10) may require longer total heating times (especially on big rail) of 6-7 minutes.
8. Visual inspection should be the same as with Du-Wel torch tip and stand.

F. The diverting plug should be dried and warmed over one of the large riser holes during preheating. NOTE: WHEN MAKING A WELD IN A CURVE WITH NOTICEABLE SUPERELEVATION IT IS IMPORTANT THAT *THE TOP OF THE PLUG BE FILED SO THAT* WHEN PLACED IN THE MOLDS IT WILL BE LEVEL. THIS WILL ALLOW THE METAL TO FLOW EVENLY INTO BOTH SIDES OF THE MOLD.

VIII. Igniting and Pouring
A. *Quickly, after preheating has stopped,* the diverting plug should be dropped squarely into the top of the molds.
B. Push plug firmly in place. Do not tap the plug as this may cause bits of mold sand to fall into the mold.
C. Align crucible over center of mold.
D. Wearing gloves, remove the crucible cover and hold it.

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E. Protect your eyes by wearing welding goggles. Molten steel is approximately 5000°F.

F. Light the match by touching it inside one of the small riser holes.

G. Push the match slowly into the charge and replace the cover gently.

H. After the reaction has quieted down, position crucible so that the metal, when tapped, pours on the center of the plug. Pouring off center may cause the plug to tip or lift allowing slag to mix with the weld.

I. Swing crucible out of the way when pouring is completed.

J. Covering the slag basin and top of the molds with dry sand will cut down the heat and brightness making it safer and faster to complete the work.

K. NOTE: WELDS MADE DURING RAIN FALL OR HEAVY SNOW will only be good if work area is carefully covered so that RAIN DOES NOT FALL ON MOLDS, CRUCIBLE AND WELDING MATERIALS. Rain falling on rail causes a large temperature drop and will cause pulling-apart of weld if rail is not securely held by rail puller. A very small movement will cause weld failure. Any temperature change can cause failure in weld if rail is not securely held by rail puller. Welds may be made successfully at any temperature which normally occurs PROVIDED THE PROPER PROCEDURES ARE FOLLOWED AS OUTLINED ABOVE.

IX. Unmolding

A. Remove crucible and stand first.
   1. Do not hammer to loosen rail clamp.
   2. Use steady pressure, shock may cause tearing of weld.

B. Move slag basin no sooner than 3 minutes after pouring.
   1. Wear gloves and safety glasses.
   2. Make sure area where slag basin is set is level, dry and free of water, snow and ice.

C. Remove mold clamp 3 minutes after pouring.

D. Remove mold jackets 4-5 minutes after pouring, watching molds for leaks.

E. Break top of mold off 4½-5 minutes after pouring.

F. Hot cut or shear top and risers. Use sledge hammer only to strike chisel.

CAUTION: SAFETY GLASSES MUST BE [illegible] BY WELDERS AND HELPERS FO[illegible] PROTECTION FROM FRAGMEN[illegible] OF HOT METAL AND MOLDS.

CHISELS MUST BE COOLED IN WATER PERIODICALLY WHEN CUTTING HOT METAL. SHARPEN CHISEL WHEN REQUIRED BY HAND FILING. HIGH SPEED GRINDER WILL CAUSE EXCESSIVE HEAT AND BRITTLE CHIPPING OF METAL.

G. Remove base plate.

H. Wedges may be removed 10 minute[illegible] [illegible]er pouring. Moving the rail before this time ma[illegible] cause hot tearing or bending of the weld.

I. Slag basin should be dumped only after completely solidified, and in a place where i[illegible] will not cause grass fires and where no one will step on it. Make sure area where slag basin is set is level, dry and free of water, snow and ice.

X. Finishing

A. While weld is still hot, or at least [illegible] finish grind weld to conform to size [illegible] shape of adjacent rail.

B. At completion of finished grinding, ties mus[illegible] be respaced so that ties are away from edges of weld. Tie plates should never be placed directly under weld.

XI. Recommendations

Molds and base bricks should be h[illegible] with care at all times to prevent breakage a[illegible] well as to be protected from moisture.

Thermite oxide charges must be stored in dry places at all times. No attempt should be made to use a thermite oxide charge that is or has been wet or is suspected containing moisture.

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E

EXHIBIT "E"

The following toxic substances are given off when the charge is burning (See Exhibit "C"):

SUBSTANCE	CAS NUMBER	O/O	TLV
Nitric Oxide	10102-43-9	Unknown	30
Nitrogen Dioxide	10102-44-0	Unknown	6
Carbon Monoxide	630-08-0	0.04	55
Dust:			
Iron	1309-37-1	Unknown	5
Manganese	7439-96-5	Unknown	C 5
Aluminum	7429-90-5	Unknown	5

UPRR
MSDS Data: Chemical: BOUTET REFRACTORY PASTE

ON-LINE MSDS
UP-04079

General Information
BOUTET REFRACTORY PASTE
SPECIFIC Risks: Caustic substances, slightly irritant

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1 - IDENTIFICATION
1-1 Commercial name: CALCIUM CHLORIDE CASO
1-2 Supplier - manufacturer: SOLVAY & CO
department: SPECIALIZED PRODUCTS
retailer: (see the firm stamp above)
1-3 Using types (for more details, refer to the technical instructions):
chemical flux in winter viability
additive for concreting
refrigerating brine
streets processing
desiccation substance and antifreeze

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2 - COMPOSITION
Substance (or) Preparation
components raising a danger: none
Impurities (raising a danger): none

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3 - PHYSICAL PROPERTIES
3-1 Physical condition - at 20 Deg. C: Solid X
Pasty
Liquid
Gaseous
at 20 Deg. C
Colour: White
Odor: none
3-2 Melting temperature: 772 Deg. C
Initial distillation temperature: 1600 Deg.
Transformation temperature: ... Deg. C
3-3 pH... - on delivery ... - after the advised using dilution 9 to 10
3-4 Solubility in water: at 20 Deg. C at Deg. C in solvents
3-4 Solubility in dilutable (g/l): 750 g/l
Solubility unmixable:
3-5 Vapor pressure: at 20 Deg. C Pascal: at Deg. C Pascal
3-6 Density: at 20 Deg. C at Deg. C
Vapour: kg/m3 kg/m3
Solid: g/cm3 g/cm3
3-7 Other details: molecular = III
actual specific weight: 2.1 kg/cm3
specific weight per liter: discharged

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4 - STORING AND PROCESSING
4-1 Special cares to be taken during the storing and processing

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Hygroscopic substance then to be stored in a dry place
4-2 Wrapping material to be avoided: none
4-3 Dangerous transformation products: none
4-4 Dangerous reaction with: none
Preventive:
4-5 Individual preventive and protective measures: mask
gloves X
goggles X
other: rubber shoes (rubber or plastic ones)
4-6 Special protective measures: none
4-7 Measures to be taken in case of leakage or incidental discharge:
4-7.1 Neutralisation or destruction process of the substance:
4-7.1 Destruction process of soiled wrappings:
4-8 Other advise: abundantly rinsing steel material after having used it.

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5 - INFLAMMATION AND EXPLOSION
5-1 Closed cup ignition point: Deg. C according to standard:
5-2 Self-inflammation temperature: Deg. C according to standard:
5-3 Particular fire or explosion dangers: none
5-4 Quenching methods:
advised ones:
inappropriate ones:
5-5 Particular protective measures for fire fighting: none
5-6 Other advise:

---

6 - TOXICOLOGIC INFORMATION
Inhalation: only the massive inhalation of fine dust may bring about a slight irritation and sneezings
Ingestion: unpleasant taste - nausea and vomitings - gastro-intestinal irritation
Skin contact: only strong solution left in prolonged contact with the healthy skin may bring about some irritation, blotch, and small ulcerations
Projection in the eyes: mechanical irritation, eyes watering conjonctivitis blotch.

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7 - MEASURES OF FIRST ASSISTANCE
Inhalation: make the fellow blow his nose and advising him against sniffing
Ingestion: make the fellow vomit, and afterwards giving him milk and water
Skin contact: washing the skin, carefully rinsing and delicately drying it
Projection in the eyes: irrigating the touched eyes with running water afterwards, checking whether there are no longer solid particles.

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8 - SPECIAL CARES REGARDING THE PRODUCT DISPOSALS
none

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9 - PARTICULAR INSTRUCTIONS
none

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List) Premixed
STEMMING PASTE LUTING PASTE Packing Sand

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

DISTRIBUTOR: RAILTECH BOUTET, INC.
25 INTERSTATE DRIVE BOX 69 NAPOLEON, OHIO 43545

Section I

Manufacturer's Name
RAILTECH INTERNATIONAL

Address (Number, Street, City, State, and ZIP Code)
Zone Industrielle du Bas Pré
59590 RAISMES, FRANCE

Emergency Telephone Number (419) 592-5050

Telephone Number for Information 27.22.26.26. FRANCE

Date Prepared 03.03.94

Signature of Preparer (optional) T. ELSEN

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
COMPOSITION : PURE SILICA SAND			45 10 50	
FIRE CLAY 35.50 WT % AL 2O3 50.65 WT % SI O2			32 10 38	
BENTONITE			1 10 2	
WATER			20 10 25	
PROPANEDIOL			1 10 2	
IRON OXIDE			0,01	

Section III — Physical/Chemical Characteristics

Boiling Point NOT APPLICABLE		Specific Gravity (H_2O = 1) 1.5	
Pressure (mm Hg) NOT APPLICABLE		Melting Point UNKNOWN	
Vapor Density (AIR = 1) NOT APPLICABLE		Evaporation Rate (Butyl Acetate = 1) UNKNOWN	

Solubility in Water
SLIGHTLY

Appearance and Odor
BROWN PASE, CHOCOLATE LIKE ODOR

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) NOT DETERMINED	Flammable Limits NOT APPLICABLE	LEL	UEL

Extinguishing Media
NOT FLAMMABLE PRODUCT

Special Fire Fighting Procedures
NONE

Unusual Fire and Explosion Hazards NONE

(Reproduce locally)

OSHA 174, Sept. 1985

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Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		NONE
	Stable	X	

Incompatibility (Materials to Avoid) UNKNOWN

Hazardous Decomposition or Byproducts NOT DETERMINED

Hazardous Polymerization			Conditions to Avoid
	May Occur		NONE
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry.	Inhalation?	Skin?	Ingestion?
	X	X	N/A

Health Hazards (Acute and Chronic) INHALATION OF DUST MAY CAUSE SHORTNESS OF BREATH
MAY AGGRAVATE EXISTING SKIN CONDITIONS
DUST CAN ABRADE AND IRRITATE EYES

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
UNKNOWN	N/A	N/A	N/A

Signs and Symptoms of Exposure SEE BELOW

Medical Conditions Generally Aggravated by Exposure THIS PRODUCT CONTAINS CRYSTALLINE SILICA
CRYSTALLINE SILICA IS KNOWN TO CAUSE SILICOSIS

Emergency and First Aid Procedures SKIN AND EYES : FLUSH THOROUGHLY WITH PLENTY OF WATER CALL A PHYSICIAN
INHALATION : REMOVE TO FRESH AIR CALL A PHYSISCIAN

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled COLLECT AND DISPOSE

Waste Disposal Method DISPOSE WITH LOCAL RULES

Precautions to Be Taken in Handling and Storing AVOID BREATHING DUST
WASH THOROUGHLY AFTER HANDLING

Other Precautions AS WITH ANY NUISANCE DUST, LONG TERM EXPOSURE TO DUST CONCENTRATIONS MAY CAUSE DELAYED LUNG INJURY

Section VIII — Control Measures

Respiratory Protection (Specify Type) IF DUST LEVELS EXCEED RECOMMANDED LEVELS, USE NIOSH APPROVED RESPIRATORY FOR SILICA DUST

Ventilation			
	Local Exhaust	Special	Stock in a ventilated area
	Mechanical (General)	Other	

Protective Gloves	Eye Protection
WEAR GLOVES IN USE	SAFETY GLASSES IN USE

Other Protective Clothing or Equipment NOT REQUIRED

Work/Hygienic Practices Avoid to touch your mouth or your eyes with dirty hands further to contact with the lutting paste

• USGPO 1984-451-529/45775

UP-1628

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UP-1629

General Information
MATERIAL SAFETY DATA SHEET
(Essentially Similar to U.S. Department of Labor Suggested Form For Hazard Communication Standard Compliance)
FORM NO. 7936-C
DATE: July, 1989

L-TEC requests the users of these products to study this Material Safety Data Sheet (MSDS) and become aware of the product hazards and safety information. To promote the safe use of these products a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for these products and (3) request such customers to notify their employees and customers, for these products, of the same product hazards and safety information.

The opinions expressed in this MSDS are those of qualified experts within L-TEC. We believe that the information contained herein is current as of the date of this MSDS. Since the use of this information and these opinions and the conditions of use of these products are not within the control of L-TEC, it is the user's obligation to determine the conditions of safe use of these products.

I. PRODUCT IDENTIFICATION
Product Type
Air Carbon Arc Gouging Electrodes (L-TEC & ARC-KUT Brand Names)
Manufacturer
L-TEC Welding & Cutting Systems
Address
3325 Middle Road, Ashtabula, Ohio 44004
Telephone No.
1-216-992-1265
Emergency No.
1-216-992-5186

II. HAZARDOUS INGREDIENTS
Important! This section covers the materials from which product is manufactured. The fumes and gases produced during normal use of these products are covered in Section V. The term HAZARDOUS should be interpreted as a term required and defined by Laws, Statutes or Regulations, and does not necessarily imply the existence of any hazard when the products are used as directed by L-TEC.

	Material (CAS No.)	SARA	Weight %
Bare Rods	Graphite (7782-42-5)+ Carbon (7440-44-0)		100

Copper Coated Rods	Copper (7440-50-8)	(*)	<30
	Graphite (7782-42-5)+		
	Carbon (7440-44-0)		<85

	ACGIH TLV (1988-89) TWA (mg/m(3))	OSHA - PEL (1989) TWA (mg/m(3))
Bare Rods	2.5 (Respirable)	2.5 (Respirable)
	3.5 (C. Black)	3.5 (C.Black)
Copper Coated Rods	0.2 (Fume)	0.1 (Fume)
	2.5 (Respirable)	2.5 (Respirable)
	3.5 (C. Black)	3.5 (C. Black)

NOTE:
In the ingredients table, an asterisk (*) after the CAS number indicates a toxic chemical subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (SARA) and 40 CFR Part 372.

In the above table "C" indicates "Ceiling Limits".

III. PHYSICAL DATA
As shipped, these products are nonflammable, nonexplosive, nonreactive, and nonhazardous.

Physical State:
GAS ( )
LIQUID ( )
SOLID (X)
Odor and Appearance:
Bare and copper coated carbon and graphite rods, odorless

IV. FIRE & EXPLOSION HAZARD
Flammable/Explosive:
No (X)
YES ( )
Under what conditions?
Only the packaging for this product will burn

Extinguishing Media:
This product will not burn. Air Carbon arc gouging blows molten metal from the work area and can be a severe fire hazard. Remove all combustibles and flammable materials within 35 feet of the arc (or use non-flammable, opaque shielding). Use the extinguishing media recommended for the burning materials and fire situation. See ANSI Z49.1 "Safety in Welding and Cutting" and "Safe Practices" Code: SP, published by the American Welding Society, PO Box 351040, Miami, FL 33135, and NFPA 51B "Cutting and Welding Processes", published by the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269 for additional fire

prevention and protection information.

V. REACTIVITY DATA

Stability:
Stable (X)
Unstable ( )
Polymerization will not occur

Incompatible products:
None currently known

Hazardous decomposition products:
Fumes and gases from carbon arc gouging cannot be classified simply. The composition and quantity of both are dependent upon the material being worked, procedures and consumables used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the material being worked (such as paint, plating or galvanizing), the number of gouging operations and the volume of the work area, the quality and amount of ventilation, the position of the workers head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning or painting activities). When the materials are consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the ingredients, plus those from the material being worked and the coatings etc. noted above.

Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section II, as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides (refer to "Characterization of Arc Welding Fume" available from the American Welding Society). The only way to determine the true identity of the decomposition products is by sampling and analysis. The composition and quantity of the fumes and gases to which a worker may be overexposed can be determined from a sample obtained from inside the welders helmet, if worn, or in the workers breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", available from the American Welding Society.

VI. PHYSICAL AND HEALTH HAZARD DATA

Electric arc working may create one or more of the following health or physical hazards. Fumes and gases can be dangerous to your health. Electric shock can kill you. Arc rays can injure eyes and burn skin. Noise can damage hearing. An additional detailed description of the Health and Physical hazards and their consequences may be found in L-TEC's free publications F52-529 "Precautions and Safe Practices for Electric Welding and Cutting" and F2035 "Precautions and Safe Practices for Gas

Welding, Cutting and Heating". You may obtain copies from your local supplier, or by writing to the address in Section I.

Route of overexposure:
The primary route of entry of the decomposition products is by inhalation. Skin contact, eye contact, and ingestion are possible. Absorption by skin contact is unlikely. When these products are used as recommended by L-TEC, and ventilation maintains exposure to the decomposition products below the limits recommended in this section, overexposure is unlikely.

Effects of acute (short term) overexposure to the gases, fumes and dusts may include irritation of the eyes, lungs, nose and throat. Some toxic gases associated with gouging may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. Copper fumes may cause metal fume fever, symptoms of which are metallic taste, dryness or irritation of the throat, nausea, fever, body ache and chills.

Effects of chronic (long term) overexposure to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest x-rays. The severity of the change is proportional to the length of the exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work factors such as smoking, etc.

Pre-existing Medical Conditions Aggravated by Overexposure:
Individuals with allergies or impaired respiratory function may have symptoms worsened by exposure to welding fumes. However such reaction cannot be predicted due to the variation in composition and quantity of the decomposition products.

Exposure limits for the ingredients are listed in Section II. TLV-TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and excessive concentrations. When these products are used as recommended by L-TEC, and the preventive measures taught in this MSDS are followed, overexposure to hazardous substances will not occur.

Emergency First Aid Measures:
In case of emergency call for medical aid. Employ first aid technique recommended by the Red Cross. IF BREATHING IS DIFFICULT give oxygen and call for a physician. FOR ELECTRIC SHOCK disconnect and turn off the power. If not breathing begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse begin Cardio Pulmonary Resuscitation (CPR). Immediately call a physician. FOR ARC BURN apply cold, clean compresses and call a physician.

Carcinogenic Assessment (NTP Annual Report, IARC Monograph, Other):
None currently listed.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Spill or Leak Procedures - Waste Disposal:
Prevent waste from contaminating the surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations.

Personal Protection:
Be sure to read and understand the manufacturer's instructions, recommended practices and all precautionary labels before use of these products. Keep your head out of the fumes. Do not breathe the fumes and gases caused by the arc. Use enough ventilation to reduce exposure to the acceptable levels listed in Section II. Air samples can be used to find out what respiratory protection is needed. Do not touch live electric parts. It is recommended that noise levels be monitored. If sound levels exceed TLV's for noise (85 dB for 8 hr. TWA, see 29 CFR 1910), use engineering controls to reduce sound levels. If reasonable practical controls fail, use personal protective equipment. Wear correct eye and body protection, safety glasses and eye shields for radiation and flying particles, and gloves, hats, aprons, safety shoes etc. for protection from sparks, spatter, and radiation. See ANSI Z49.1 for additional guidelines. Use a respirable fume respirator or air supplied respirator when welding or cutting in a confined space or where exhaust or ventilation does not keep exposure below the limits recommended in Section II.

Training in proper safe work practices is the most effective protective measure against the hazards of welding and cutting. The users of these products should follow OSHA 29CFR1910.1200 training guidelines. The free L-TEC "Precautions and Safe Practices" offered in Section VI can assist you in your training program.

Ventilation - Specific Engineering Controls:
The air jet in air carbon arc gouging tends to dilute the fumes and gases in the arc zone; however, the general work area may become unsafe if the fumes and gases are allowed to accumulate. Use enough ventilation to keep the fumes and gases below recommended exposure limits. Train workers to keep their heads out of the fumes. Avoid arc work in the presence of chlorinated hydrocarbon vapors. Phosgene may be produced by action of the radiant energy of the arc. Avoid arc working of parts coated with phosphate residues (anti-rust, cleaning preparations). Phosphine may be produced.

General Information
MATERIAL SAFETY DATA SHEET
May be used to comply with OSHA's Hazard Communication Standard, 777 CFR 1910.1200. Standard must be consulted for specific requirements.
U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072
IDENTITY (As Used on Label and List)
CADWELD ELECTRICAL WELDING MATERIAL
Note
Blank spaces are not permitted. If any term is not applicable, or no information is available, the space must be marked to indicate that

STORAGE & SAFETY CONSIDERATIONS

CALDWELD EXOTHERMIC MATERIALS

A) STORAGE CONDITIONS
Storage of CADWELD Exothermic Materials should be in a clean, dry, NO SMOKING area and should be restricted to access by authorized personnel only.

Storage conditions should be such that the CADWELD Exothermic Materials are not subjected to rough handling or physical damage, nor excessive or prolonged vibration. All boxes or containers of material should be stored in accordance with the container (carton) or label marking "This Side Up".

These materials must be stored under shelter to protect that boxes from the elements and raised to protect them from dampness or surface water.

NOTE: THE CADWELD Exothermic Material or packing materials which have been exposed accidentally or deliberately to moisture should not be used.

A personal safety hazard exists when moisture or gas producing contaminants come into contact with the products or an exothermic reaction. See the safety information on the instruction sheet packaged with molds.

The storage or shelf life of any CADWELD Exothermic Material can be considered as "indefinite" as long as these conditions of storage are followed.

Before using the CADWELL Exothermic Process, personnel should:
1. Be trained by an ERICO representative.

2. Read and understand the instruction sheet packaged with the mold, and observe all general and safety instructions.
B) FIRE CONTAINMENT

NOTE: CADWELD copper and iron base welding/joining materials are exothermic mixtures which, when reacted, produce not molten materials with temperatures in excess of 2000 Deg. C (4000 Deg. F) and a localized release of smoke.

The materials are not explosive; ignition temperatures are in excess of 450 Deg. C (850 Deg. F) for starting material, and 950 Deg. C (1750 Deg. F) for copper or iron base materials. These materials are not shock sensitive, nor subject to spontaneous ignition.

Should the packing materials, (i.e., corrugated board containers, pressed cardboard boxes, polyethylene tubes, caps and/or packets (bags) containing CADWELD Exothermic Materials) be accidentally ignited, the immediate and direct application of large quantities of water will effectively retard the spread of the fire and control it.

As the burning of the packaging materials could be lead to ignition of the exothermic material, direct application of water in a heavy stream of continuous showers is recommended. Water application should be at a reasonable distance. Use of hand water buckets or hand storage pumps is not recommended.

Ignition of large quantities of exothermic material may result in extremely large volumes of dense, dusty smoke and personnel should be aware that this can occur and be familiar with emergency exit paths before attempting to control the fire.

Section 1
Manufacturer's Name
ERICO PRODUCTS INC.
Address (Number, Street, City, State, and ZIP Code)
34600 SOLON ROAD
SOLON, OHIO 44139
Emergency Telephone Number
216-248-0100
Telephone Number for Information
216-248-0100
Date Prepared
10/28/86
REVISED:
3/8/90
Signature of Prepared (optional)

Section II -- Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical identity, Common Names(s))	OSHA PEL	ACGIH TLV

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COPPER OXIDE	CAS #1317-39-1	1.0 DUST 0.1 FUME	1.0 DUST 0.1 FUME	
ALUMINUM/COPPER	CAS #12608-74-1	-- AS	10 FUME AS	
CALCIUM FLUORIDE	CAS #14542-23-5	2.5 FLUORIDE AS	2.5 FLUORIDE AS	
CALCIUM/SILICON	CAS #37236-74-1	Ca 5 CAO Si 5 AS TIN	2 CAO 10 AS TIN	
TIN	CAS #7440-31-5	2 OXIDE 0.1 FUME AS V205	2 OXIDE 0.2 FUME AS V205	
ALUMINUM/VANADIUM	CAS #39458-13-4	V 0.05 RESPIRABLE DUST FUME	0.1 FUME	
COPPER	CAS #7440-50-8	1.0 DUST 0.1 FUME	1.0 DUST 0.1 FUME	

Hazardous Components (Specific Chemical identity, Common Names(s))		Other Limits Recommended	% (optional)
COPPER OXIDE	CAS #1317-39-1	THIS PRODUCT CONTAINS INGREDIENTS SUBJECT TO REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF SARA AND 40 CFR 372.	
ALUMINUM/COPPER	CAS #12608-74-1		
CALCIUM FLUORIDE	CAS #14542-23-5		
CALCIUM/SILICON	CAS #37236-74-1		
TIN	CAS #7440-31-5		
ALUMINUM/VANADIUM	CAS #39458-13-4		
COPPER	CAS #7440-50-8		

ALL VALUES REFER TO TIME-WEIGHTED AVERAGE CONCENTRATIONS, AND UNITS ARE mg/M3.

Section III -- Physical/Chemical Characteristics
Boiling Point
N/A
Specific Gravity (H2O = 1)
5.5
Vapor Pressure (mm Hg)
N/A
Melting Point
2000 Deg. F
Vapor Density (AIR = 1)
N/A
Evaporation Rate (Butyl Acetate = 1)

N/A
Solubility in Water
INSOLUBLE
Appearance and Odor
GRAY-BLACK, GRANULAR PARTICLES, ODORLESS

Section IV -- Fire and Explosion Hazard Data
Flash Point (Method Used)
SELF-IGNITES ABOVE 1750 DEG. F (INDIRECT HEATING)
Flammable Limits
LEL N/A
UEL N/A
Extinguishing Media
DRY SAND OR FLOODING WITH LARGE AMOUNTS OF WATER
Special Fire Fighting Procedures
SEE ATTACHED WN/4 - 1/86
Unusual Fire and Explosion Hazards
SELF-PROPAGATING. HIGH TEMPERATURE REACTION WILL OCCUR IF HEATED ABOVE IGNITION (FLASH POINT) TEMPERATURE, GENERATING MOLTEN METAL, SLAG, AND DENSE, DUSTY SMOKE. VOLATILE, COMBUSTION DECOMPOSITION PRODUCTS PRODUCED FROM PLASTIC PACKAGING.

Section V -- Reactivity Data
Stability
Unstable [ ]
Stable [X]
Conditions to avoid
TEMPERATURES ABOVE IGNITION
Incompatibility (Materials to Avoid)
POSSIBILITY OF VIOLENT REACTION IF MOISTURE PRESENT IN MOLDS OR BASE MATERIALS BEING WELDED AT TIME OF USE. TYPICAL OF PROBLEMS ASSOCIATED WITH MOLTEN METALS.
Hazardous Decomposition or Byproducts
NONE
Hazardous Polymerization
May Occur [ ]
May Not Occur [X]
Conditions to Avoid

Section VI -- Health Hazard Data
Routes(s) of Entry
PRIMARY ROUTE OF ENTRY - INHALATION
Inhalation?
Skin?
Ingestion?

Health Hazards (Acute and Chronic)
BURNS FROM CONTACT WITH REACTION OR REACTION PRODUCTS, OR FROM HOT EQUIPMENT, DUST AND FUMES ARE IRRITANT TO EYES AND UPPER RESPIRATORY TRACT. INHALATION OF HIGH CONCENTRATIONS OF FRESHLY FORMED OXIDE FUMES AND DUSTS IN THE RESPIRABLE PARTICLE SIZE RANGE CAN CAUSE INFLUENZA-LIR ILLNESS TERMED METAL FUME FEVER. COPPER OXIDE DUST MAY BE REPEATED OR PROLONGED INHALATION OCCASIONALLY CAUSE ULCERATION AND PERFORATION OF THE NASAL SEPTUM. LONG TERM EXPOSURE TO COPPER CONTAINING DUSTS MAY CAUSE ALLERGIC DERMATITIS. REPEATED EXPOSURE TO EXCESSIVE CONCENTRATIONS OF FLUORIDES OVER A PERIOD OF YEARS CAN CAUSE FLUOROSIS.
Carcinogenicity:
NTP? NO
IARC Monographs? NO
OSHA Regulated? NO
Signs and Symptoms of Exposure
(SEE HEALTH HAZARDS)
Medical Conditions Generally Aggravated by Exposure
Emergency and First Aid Procedures
STANDARD TREATMENT FOR BURNS IN EVENT OF CONTACT WITH MOLTEN METAL, SLAG, OR HOT EQUIPMENT. FOR INHALATION OF DUST, FUME, REMOVE FROM EXPOSURE, PROVIDE FRESH AIR, FLUSH EYES WITH WATER, CONSULT PHYSICIAN.

Section VII -- Precautions for Safe Handling and Use
Steps to be Taken in Case Material is Released or Spilled
ALL UNUSED, SPILLED MATERIALS MAY BE SWEPT UP FOR DISPOSAL, IN ACCORDANCE WITH METHODS OUTLINED BELOW, AND FEDERAL, STATE, AND LOCAL REGULATIONS.
Waste Disposal Method
1) BURIAL IN GROUND, AFTER SUBMERGING IN MIXTURE OF SAND AND WATER (CONTACT FACTORY) 2) DISPOSAL BY REACTION OF CONTROLLED QUANTITIES UNDER CONTROLLED CONDITIONS (CONTACT FACTORY)
Precautions to Be Taken in Handling and Storing
MATERIAL SHOULD BE KEPT DRY AND STORED IN "NO SMOKING OR OPEN FLAME" AREA, RESTRICTION TO AUTHORIZED PERSONNEL IS RECOMMENDED, (SEE ATTACHED WH/4-1/86)
Other Precautions
FOR ADDITIONAL INFORMATION, SEE AMERICAN NATIONAL STANDARD, SAFETY IN WELDING AND CUTTING, Z49, 1, AND INSTRUCTIONS PROVIDED WITH HOLDS.

Sections VIII -- Control Measures
Respiratory Precision (Specify Type)
NORMAL USE PRECLUDES USE OF SPECIAL PROTECTION AS MATERIAL IS GENERALLY, USED OUT OF DOORS, IN SMALL QUANTITIES, AND IS OF SHORT DURATION
Ventilation
Local Exhaust MAY BE NECESSARY IF USED IN CONFINED SPACE.
Mechanical (General)
Special USE OF NIOSH APPROVED RESPIRATOR FOR DUSTS AND METAL FUMES IN LIEU OF LOCAL EXHAUST.

Other
Protective Gloves
RECOMMENDED FOR HANDLING NOT EQUIPMENT
Eye Protection
SAFETY GLASSES RECOMMENDED AND CAUTION TO USER TO AVOID DIRECT EYE CONTACT WITH "FLASH" OF LIGHT FROM REACTION.
Other Protective Clothing or Equipment
Work/Hygienic Practices

Vehicle

UP-1642

GENERAL CONSIDERATIONS FOR MOTOR VEHICLES AND FLUIDS

Eliminating skin contact with potential irritants and sensitizers is the key to preventing occupational skin disease. Personal cleanliness should be emphasized for the prevention and control of occupational dermatitis. Frequent and prolonged skin contact should be avoided. Inhalation of these products during normal use should not present a problem.

Use approved protective eye wear when eye contact may occur.

Use of gasoline and diesel fuel is prohibited for all cleaning operations.

Clean up spills quickly and appropriately to avoid creating a slipping hazard. Refer to the safety and health information contained on the MSDS and product label for the specific motor vehicle oils or fluids being used at your location before each use.

MOTOR VEHICLE OIL AND FLUIDS

1. Gasoline
2. Diesel No. 1
3. Diesel Fuel Supplement/Stabilizer
4. Ether
5. Motor Oil 10 W
6. Motor Oil 20 W
7. Motor Oil 20-20
8. Motor Oil 30 W
9. Motor Oil 10 W 30
10. Motor Oil 10 W 40
11. 2-Cycle Engine Oil
12. 1682 Diesel Engine Oil
13. Automatic Transmission Fluid
14. Carburetor Cleaner
15. Antifreeze
16. HD-46 Hydraulic Oil
17. Spray De-Icer
18. Brake Fluid DOT 3

General Information
Chemical Name / Synonym / Trade Name:
EXXON UNLEADED GASOLINE 87
Motor Gasoline
Manufacturer Name:
EXXON COMPANY, U.S.A.
CAS Number:
EXXON COMPANY, U.S.A. P.O. BOX 2180 HOUSTON, TX 77252-2180

IDENTIFICATION AND EMERGENCY INFORMATION
PRODUCT NAME: EXXON UNLEADED GASOLINE 87
CHEMICAL NAME: Motor Gasoline
PRODUCT APPEARANCE AND ODOR: Clear colored liquid (typically yellow) Gasoline hydrocarbon odor
EMERGENCY TELEPHONE NUMBER: (713) 656-3424
PRODUCT CODE: 027000 - 00289
CAS NUMBER: Complex Mixture CAS Number not applicable

COMPONENTS AND HAZARD INFORMATION

COMPONENTS	CAS NO. OF COMPONENTS	APPROXIMATE CONCENTRATION

Product is a variable complex mixture of components, principally hydrocarbons, blended to performance, rather than chemical, specifications.
See Section E for health and Hazard Information.
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):
Health: 1
Flammability: 4
Reactivity: 0
BASIS: Recommended by Exxon
EXPOSURE LIMIT FOR TOTAL PRODUCT: 100 ppm (300 mg/m3) for an 8-hour workday
BASIS: Recommended by Exxon. The American Conference of Governmental Industrial Hygienists (ACGIH) lists Threshold Limit Value (TLV) of 300 ppm (900 mg/m3) for an 8-hour workday; 500 ppm STEL

PRIMARY ROUTES OF ENTRY & EMERGENCY & FIRST AID PROCEDURES
EYE CONTACT: If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.
SKIN: In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water.
INHALATION: If overcome by vapor, remove from exposure and call a physician immediately. If breathing is irregular or has stopped, start resuscitation, administer oxygen, if available.
INGESTION: If ingested, DO NOT induce vomiting; call a physician immediately.

FIRE AND EXPLOSION HAZARD INFORMATION
UNUSUAL FIRE AND EXPLOSION HAZARD: EXTREMELY FLAMMABLE VAPORS CAN TRAVEL AND EXPLODE
FLASH POINT (MINIMUM):
EXTREMELY FLAMMABLE: Per DOT 49 CFR 173.115 Approximately -38 C (-36 F)
AUTOIGNITION TEMPERATURE: Approximately 456 C (853 F) National Fire Protection Association's Guide on Hazardous Materials
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:
Health: 1
Flammability: 3
Reactivity: 0
BASIS: Recommended by the National Fire Protection Association
HANDLING PRECAUTIONS: Keep product away from heat, sparks, pilot lights, static electricity, and open flame.
FLAMMABLE OR EXPLOSIVE LIMITS (APPROXIMATE PERCENT BY VOLUME IN AIR):
Estimated values:
Lower Flammable Limit: 1.4%
Upper Flammable Limit: 7.6%
EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES: Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type of product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.
The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):
Use dry chemical, foam or carbon dioxide. Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has ignited, use water spray to disperse the vapors and to protect men attempting to stop a leak. Water spray may be used to flush spills away from exposures. Minimize breathing gases, vapor, fumes or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.
NOTE: The inclusion of the phrase "water may be ineffective" is to indicate that although water can be used to cool and protect exposed material, water may not extinguish the fire unless used under favorable conditions by experienced fire fighters trained in fighting all types of flammable liquid fires.
DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS: Fumes, smoke, carbon monoxide, aldehydes and other decomposition products, in the case of incomplete combustion.
"EMPTY" CONTAINER WARNING: "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should

be disposed of in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

HEALTH AND HAZARD INFORMATION

VARIABILITY AMONG INDIVIDUALS: Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): High vapor concentrations (greater than approximately 1000 ppm) are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic, may cause unconsciousness, and may have other central nervous system effects including death.

Prolonged or repeated liquid contact with the skin will dry and defat the skin, leading to possible irritation and dermatitis.

NATURE OF HAZARD AND TOXICITY INFORMATION: Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.

Product contacting the eyes may cause eye irritation.

This product may contain up to a maximum of 4.9 weight percent benzene, CAS No. 71-43-2, as a natural constituent of various gasoline blend components. Benzene can cause anemia and other blood diseases, including leukemia (cancer of the blood-forming system), after prolonged or repeated exposures at high concentrations (e.g., 50-500 ppm). It has also caused fetal defects in tests on laboratory animals. Exxon's recommended OEL for benzene is 5 ppm for an 8-hour period, or 250 ppm-minutes over a 5- to 30-minutes period.

Contains light hydrocarbon components. Lifetime studies by the American Petroleum Institute have shown that kidney damage and kidney cancer can occur in male rats after prolonged inhalation exposures at elevated concentrations of total gasoline. Kidneys of mice and female rats were unaffected. The implication of these data for humans has not been determined, particularly since most human exposures are to light components, not to total gasoline. Certain components, such as normal hexane, may also affect the nervous system at high concentrations (e.g., 1000-1500 ppm). Typically, n-hexane represents 1 to 3% of gasoline. May contain a combined concentration of toluene, CAS No. 108-88-3, and xylene, CAS No. 1330-20-7, ranging from approximately 5 to 50%.

Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

This product is judged to have an acute oral LD50 (rat) greater than 5 g/kg of body weight, and an acute dermal LD50 (rabbit) greater than 3.16 g/kg of body weight.

PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE:

Benzene: Individuals with liver disease may be more susceptible to toxic effects.
Hexane: Individuals with neurological disease should avoid exposure.
Petroleum Solvents/Petroleum Hydrocarbons: Skin contact may aggravate an existing dermatitis.

PHYSICAL DATA
The following data are approximate or typical values and should not be used for precise design purposes.
BOILING RANGE: Approximately 21 C (70 F) IBP to 227 C (440 F) FBP
SPECIFIC GRAVITY (15.6 C/15.6 C): Approximately 0.74
VAPOR PRESSURE: Varies seasonally from approximately 5 to 15 psi Reid Vapor Pressure
VAPOR DENSITY (AIR = 1): Approximately 5
MOLECULAR WEIGHT: Complex mixture, components vary from approximately 45 to 185
pH: Essentially neutral
POUR, CONGEALING OR MELTING POINT: Less than -38 C (-36 F) Pour Point by ASTM D 97
VISCOSITY: Approximately 0.5 cSt @ 25 C
PERCENT VOLATILE BY VOLUME: 100
EVAPORATION RATE @ 1 ATM. AND 25 C (77 F) (n-BUTYL ACETATE = 1): Approximately 10-11
SOLUBILITY IN WATER @ 1 ATM. AND 25 C (77 F): Negligible; less than 0.1%

REACTIVITY
This product is stable and will not react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

ENVIRONMENTAL INFORMATION
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shut off and eliminate all ignition sources. Keep people away. Recover free product. Add sand, earth or other suitable absorbent to spill area. Minimize breathing vapors. Minimize skin contact. Ventilate confined spaces. Open all windows and doors. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Assure conformity with applicable governmental regulations. Continue to observe precautions for volatile, flammable vapors from absorbed material.
REPORTABLE QUANTITY (RQ), EPA REGULATION 40 CFR 302: The RQ for benzene is 1,000 pounds. This product contains approximately 4.9% benzene.
THRESHOLD PLANNING QUANTITY (TPQ), EPA REGULATION 40 CFR 355: The TPQ for pseudocumene is 10,000 pounds and the RQ is 1 pound. This product contains approximately 3.5% pseudocumene.
The TPQ for mesitylene is 10,000 pounds and the RQ is 1 pound. This product contains approximately 1.0% mesitylene.

TOXIC CHEMICAL RELEASE REPORTING, EPA REGULATION 40 CFR 372: This product contains approximately 4.9% benzene.
EPA HAZARD CLASSIFICATION CODE:
Acute Hazard:
Chronic Hazard:
Fire Hazard:

PROTECTION AND PRECAUTIONS

VENTILATION: Use only with ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. Use explosion-proof equipment. No smoking or open lights.

RESPIRATORY PROTECTION: Use supplied-air respiratory protection in confined or enclosed spaces, if needed.

PROTECTIVE GLOVES: Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.

EYE PROTECTION: Use splash goggles or face shield when eye contact may occur.

OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

WORK PRACTICES / ENGINEERING CONTROLS: Keep containers and storage containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants. Adequate ventilation required sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. Tanks that have been in leaded gasoline service may have lead-containing residue. Special precautions needed in cleaning. See American Petroleum Institute publications 2013, 2015 and 2015A. Use explosion-proof equipment. No smoking or open lights.

To minimize fire or explosion risk from static charge accumulation and discharge, effectively ground product transfer system in accordance with the National Fire Protection Association standard for petroleum products.

For use as a motor fuel only. Do not use as a cleaning solvent, or thinner, or for other non-motor fuel uses. Do not siphon by mouth. Minute amounts of liquid gasoline aspirated into the lungs may cause potentially fatal chemical pneumonitis.

PERSONAL HYGIENE: Minimize breathing vapor or mist. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean and dry before reuse. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION: For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous Materials Incidents, DOT P 5800.3.

DOT IDENTIFICATION NUMBER: UN 1203

The information and recommendations contained herein are, to the best of Exxon's knowledge and belief, accurate and reliable as of the date issued. Exxon does not warrant or guarantee their accuracy or reliability, and Exxon shall not be liable for any loss or damage arising out of the use thereof.

The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use.

The Environmental Information included under Section H hereof as well as the Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Exxon Company, U.S.A. in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Exxon's interpretation of the available data.

FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT: DIRECTOR OF INDUSTRIAL HYGIENE EXXON COMPANY, U.S.A. P. O. BOX 2180 ROOM 3157 HOUSTON, TX 77252-2180 (713) 656-2443

FOR OTHER PRODUCT INFORMATION CONTACT: MANAGER, MARKETING TECHNICAL SERVICES EXXON COMPANY, U.S.A. P. O. BOX 2180 ROOM 2355 HOUSTON, TX 77252-2180 (713) 656-5949

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UP-1652

General Information
Chemical Name / Synonym / Trade Name:
EXXON DIESEL
Kerosene
Manufacturer Name:
EXXON COMPANY, U.S.A.
CAS Number:
8008-20-6
8008-20-6
EXXON COMPANY, U.S.A. P.O. BOX 2180 HOUSTON, TX 77252-2180

IDENTIFICATION AND EMERGENCY INFORMATION
PRODUCT NAME: EXXON DIESEL 1
CHEMICAL NAME: Kerosene
PRODUCT APPEARANCE AND ODOR: Clear water-white liquid Mild kerosene odor
EMERGENCY TELEPHONE NUMBER: (713) 656-3424
PRODUCT CODE: 071000 - 00700
CAS NUMBER: 8008-20-6

COMPONENTS AND HAZARD INFORMATION

COMPONENTS	CAS NO. OF COMPONENTS	APPROXIMATE CONCENTRATION
Kerosene, ASTM Grade 2-K	8008-20-6	100%

This product is not suitable for use in flueless space heaters. Exxon USA does not recommend any of its fuels or solvents for use in any type of flueless space heater application. Test results published to date are insufficient to overcome concerns regarding the health effects of normal combustion products from flueless units.
See Section E for Health and Hazard Information:
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):
Health: 1
Flammability: 2
Reactivity: 0
BASIS: Recommended by Exxon
EXPOSURE LIMIT FOR TOTAL PRODUCT: 100 ppm (735 mg/m3) for an 8-hour workday
BASIS: Recommended by Exxon

PRIMARY ROUTES OF ENTRY & EMERGENCY & FIRST AID PROCEDURES
EYE CONTACT: If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.
SKIN: In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water.
INHALATION: If overcome by vapor, remove from exposure and call a *physician immediately. If breathing is irregular or has stopped, start* resuscitation, administer oxygen, if available.

INGESTION: If ingested, DO NOT induce vomiting; call a physician immediately.

FIRE AND EXPLOSION HAZARD INFORMATION
FLASH POINT (MINIMUM):
COMBUSTIBLE: Per DOT 49 CFR 173.115 38 C (100 F) ASTM D 56, Tag Closed Cup
NOTE: Minimum may be higher where required by applicable laws or regulations.
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA): HAZARD IDENTIFICATION
Health: 0
Flammability: 2
Reactivity: 0
BASIS: Recommended by the National Fire Protection Association
HANDLING PRECAUTIONS: Keep product away from heat, sparks, pilot lights, static electricity, and open flame.
AUTOIGNITION TEMPERATURE: Approximately 210 C (410 F)
FLAMMABLE OR EXPLOSIVE LIMITS (APPROXIMATE PERCENT BY VOLUME IN AIR):
Estimated values: Lower Flammable Limit 0.9%
Upper Flammable Limit 7%
EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES: Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type of product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.
The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):
Use water spray, dry chemical, foam or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for men attempting to stop a leak. Water spray may be used to flush spills away from exposures. Minimize breathing gases, vapor, fumes or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.
DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS: Fumes, smoke, carbon monoxide, aldehydes and other decomposition products, in the case of incomplete combustion.
"EMPTY" CONTAINER WARNING: "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or

other contemplated operations.

HEALTH AND HAZARD INFORMATION

VARIABILITY AMONG INDIVIDUALS: Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Prolonged or repeated liquid contact with the skin will dry and defat the skin, leading to possible irritation and dermatitis. High vapor concentrations (greater than approximately 1000 ppm) are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic, may cause unconsciousness, and may have other central nervous system effects including death.

NATURE OF HAZARD AND TOXICITY INFORMATION: Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.

Product contacting the eyes may cause eye irritation.

Lifetime skin painting studies conducted by the American Petroleum Institute, Exxon and others have shown that similar products boiling between 175-370 C (350-700 F) usually produce skin tumors and/or skin cancer in laboratory mice. The degree of carcinogenic response was weak to moderate with a relatively long latent period. The implications of these results for humans have not been determined.

Limited studies on oils that are very active carcinogens have shown that washing the animals' skin with soap and water between applications greatly reduces tumor formation. These studies demonstrate the effectiveness of cleansing the skin after contact.

Potential risks to humans can be minimized by observing good work practices and personal hygiene procedures generally recommended for petroleum products. See Section I for recommended protection and precautions.

Laboratory animal studies have shown that prolonged and repeated inhalation exposure to light hydrocarbon vapors in the same naphtha boiling range as this product can produce adverse kidney effects in male rats. However, these effects were not observed in similar studies with female rats and male and female mice and in limited studies with other animal species. Additionally, in a number of human studies, there was no clinical evidence of such effects at normal occupational levels. It is therefore highly unlikely that the kidney effects observed in male rats have significant implications for humans exposed at or below the recommended vapor limits in the workplace.

Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

This product is judged to have an acute oral LD50 (rat) greater than 5 g/kg of body weight, and an acute dermal LD50 (rabbit) greater than 3.16 g/kg of body weight.

PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE:
Petroleum Solvents/Petroleum Hydrocarbons - Skin contact may aggravate an existing dermatitis.

PHYSICAL DATA
The following data are approximate or typical values and should not be used for precise design purposes.
BOILING RANGE: 160-290 C (320-550 F)
SPECIFIC GRAVITY (15.6 C/15.6 C): 0.82
MOLECULAR WEIGHT: Approximately 180
pH: Essentially neutral
POUR, CONGEALING OR MELTING POINT: -34 C (-30 F) Pour Point by ASTM D 97
VAPOR PRESSURE: Less than 5 mm Hg @ 20 C
VAPOR DENSITY (AIR = 1): 4.7
PERCENT VOLATILE BY VOLUME: 100
EVAPORATION RATE @ 1 ATM. AND 25 C (77 F) (n-BUTYL ACETATE = 1): 0.04
SOLUBILITY IN WATER @ 1 ATM. AND 25 C (77 F): Negligible; less than 0.1%
VISCOSITY: 1.7 cSt @ 40 C

REACTIVITY
This product is stable and will not react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

ENVIRONMENTAL INFORMATION
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shut off and eliminate all ignition sources. Keep people away. Recover free product. Add sand, earth or other suitable absorbent to spill area. Minimize breathing vapors. Minimize skin contact. Ventilate confined spaces. Open all windows and doors. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Assure conformity with applicable governmental regulations. Continue to observe precautions for volatile, combustible vapors from absorbed material.
REPORTABLE QUANTITY (RQ), EPA REGULATION 40 CFR 302: Not applicable
THRESHOLD PLANNING QUANTITY (TPQ), EPA REGULATION 40 CFR 355: Not applicable
TOXIC CHEMICAL RELEASE REPORTING, EPA REGULATION 40 CFR 372: Not applicable
EPA HAZARD CLASSIFICATION CODE: Acute Hazard
EPA HAZARD CLASSIFICATION CODE: Chronic Hazard
EPA HAZARD CLASSIFICATION CODE: Fire Hazard

PROTECTION AND PRECAUTIONS
VENTILATION: Use only with ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of

vapor in air. Use explosion-proof equipment. No smoking or open lights.
RESPIRATORY PROTECTION: Use supplied-air respiratory protection in confined or enclosed spaces, if needed.
PROTECTIVE GLOVES: Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.
EYE PROTECTION: Use splash goggles or face shield when eye contact may occur.
OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.
WORK PRACTICES / ENGINEERING CONTROLS: Keep containers and storage containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants.
PERSONAL HYGIENE: Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

TRANSPORTATION INFORMATION
TRANSPORTATION INCIDENT INFORMATION: For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous Materials Incidents, DOT P 5800.3.
DOT IDENTIFICATION NUMBER: UN 1223
The information and recommendations contained herein are, to the best of Exxon's knowledge and belief, accurate and reliable as of the date issued. Exxon does not warrant or guarantee their accuracy or reliability, and Exxon shall not be liable for any loss or damage arising out of the use thereof.
The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use.
The Environmental Information included under Section H hereof as well as the Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Exxon Company, U.S.A. in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Exxon's interpretation of the available data.
FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT: Director of Industrial Hygiene Exxon Company, USA P. O. Box 2180 Room 3157 Houston, Tx 77252-2180
FOR OTHER PRODUCT INFORMATION CONTACT: Manager, Marketing Technical Services Exxon Company, USA P.O. Box 2180 Room 2355 Houston, Tx 77252-2180

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UP-1658

General Information
Chemical Name / Synonym / Trade Name:
Diesel Fuel Supplement
Power Service
Manufacturer Name:
POWER SERVICE PRODUCTS, INC.
CAS Number:

Required under USDL Safety and Health Regulations POWER SERVICE PRODUCTS, INC. 1410 NORTH BOWIE DRIVE WEATHERFORD, TEXAS 76086 817-599-9486 AUG 31, 1987
CHEMICAL NAME: Diesel Fuel Supplement
CHEMICAL FAMILY: Petroleum Hydrocarbon
TRADE NAME: Power Service
FORMULA: Mixture of Petroleum Hydrocarbons
DOT Shipping name: Diesel Fuel Supplement
DOT Hazard Classification: CONSUMER COMMODITY ORM-D
UN Number: 1993 (APPLYS TO 2 1/2 GALLONS AND 55 GALLONS)
IMCO Class: 3

HAZARDOUS INGREDIENTS

INGREDIENT	% (BY WT)	TLV	NOTE
SOLVENTS	99	100 ppm	
PIGMENTS	<1	N/A	
ADDITIVES	<1	N/A	

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES: Complex mixture of Petroleum Hydrocarbons- specific chemical ratio is being withheld as a Trade Secret. Specific chemical ratio will be made available to health professionals in accordance with 29 CFR 11910.1200

PHYSICAL DATA
BOILING POINT (DEG. F.): 303 deg. f.
VAPOR PRESSURE (mmHg.): 30 @25 deg. c.
VAPOR DENSITY (AIR=1): 5.1
SOLUBILITY IN WATER: 10%
SPECIFIC GRAVITY (H(2)O=1): .82 @ 20/20 deg. c.
PERCENT. VOLATILE BY VOLUME (%): 100
EVAPORATION RATE: .8
APPEARANCE AND ODOR: Reddish colored liquid. Moderate Aromatic Hydrocarbon Odor

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (METHOD USED): 74 deg. F (TCC)
FLAMMABLE LIMITS:
Lel: 1.4%
UEL: 10%
EXTINGUISHING MEDIA: Foam, dry chemical, CO(2), water spray or fog

SPECIAL FIRE FIGHTING PROCEDURES: Use air-supplied rescue equipment for enclosed areas. Cool exposed containers with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Do not store or mix with strong oxidants or Combustible liquid.
"DO NOT USE TORCH CUTTING EQUIPMENT OR ANY OTHER FLAME ON ANY EMPTY CONTAINERS"

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: See Section II. Recommended exposure limit is 100 ppm for 8-hour workday.
OSHA Threshold Limit Value: 100 ppm (694 mg/m3) 8-hour workday
ACGIH Threshold Limit Value: 100 ppm (694 mg/m3) 8-hour workday
Carcinogen-NTP Program: N/A
Carcinogen-IARC Program: N/A
EFFECTS OF OVEREXPOSURE: Avoid breathing vapor. Inhalation of high vapor concentrations may have results ranging from dizziness and headaches to unconsciousness. Prolonged or repeated liquid contact will dry and defat the skin leading to irritation and dermatitis.
EMERGENCY AND FIRST AID PROCEDURES: If overcome by vapor, remove from exposure immediately; call a physician. If breathing is irregular or stopped, start resuscitation, administer oxygen. If swallowed, do not induce vomiting; call a physician. Remove contaminated clothing and wash skin with soap and water. Flush eyes with water until irritation subsides.
Primary Route (s) of entry: Ingestion and inhalation.
VARIABLITY AMONG INDIVIDUALS: Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.
EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Inhalation of high vapor concentrations (attainable at elevcated temperature) may have results ranging from mild depression to respiratory irritation. Prolonged or repeated liquid contact with the skin will dry and defat the skin, leading to possible irritation and dermatitis.
NATURE OF HAZARD AND TOXICITY INFORMATION: Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experiences and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant".
Livetime skin painting studies conducted by the American Petroleum Institute, and others have shown that similar products boiling between 175-370 deg C (350-700 deg F) usually produce skin tumors and/or skin cancer in laboratory mice. The degree of carcinogenic response was weak to moderate with a relatively long latent period. The implications of these results for humans have not been determined.
Limited studies on oils that are very active carcinogens have shown that washing the animals skin with soap and water between applications greatly reduces tumor formation. These studies demonstrate the effectiveness of cleansing the skin after contact.
Potential risk to humans can be minimized by observing good work practices

and personal hygiene procedures generally recommended for petroleum products.
Reports of animal studies using both sexes of several species have shown that kidney damage can occur in male rats after prolonged and repeated inhalation exposures to light hydrocarbon vapors of the general type present in this product. While the damage is of a low order os severity in animals, the implication of these results for humans have not yet been determined.
Product has a low order of acute oral toxicity, but minute amounts aspirated into the lungs during ingestion may cause sever pulmonary injury or death.

REACTIVITY DATA
STABILITY: Stable
INCOMPATABILITY (Materials to avoid): None
HAZARDOUS DECOMPOSITION PRODUCTS: Will not occur
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID:
Prolong or repeated breathing of vapors
Contact with eyes
Prolong or repeated contact with skin

ENVIRONMENTAL PROTECTION PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all ignition sources. Keep people away. Recover free liquid. Add absorbent to spill area. Avoid breathing vapors. Ventilate enclosed spaces. Open all windows and doors. Keep petroleum products out of public sewers, streams, and waterways.
WASTE DISPOSAL METHOD: Dispose of waste by supervised incineration or in a chemical disposal area in compliance with local regulations.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): Hydrocarbon vapor canister or supplied-air hose mask if needed.
VENTILATION
LOCAL EXHAUST: Face velocity > 60fpm
MECHANICAL (General): Explosion-proof ventilation equipment
SPECIAL: Use only with adequate(*) ventilation.
OTHER: No smoking or open lights. Adequate means equialent to outdoors ventilation
PROTECTIVE GLOVES: Normally not needed. Use chemical resistant gloves if necessary.
EYE PROTECTION: Normally not needed.
OTHER PROTECTIVE EQUIPMENT: Hydrocarbon-insoluble apron if needed.

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep containers closed.

Keep away from heat, sparks and open flame. CONTAINERS ARE STRICTLY "SINGLE TRIP CONTAINERS" THEY ARE NOT TO BE USED FOR ANY REASON AFTER EMPTYED.

OTHER PRECAUTIONS: Avoid breathing vapors. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; wash before re-use. Wash skin with soap and water after contact.

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UP-1663

General Information
Chemical Name / Synonym / Trade Name:
ETHER, ANHYDROUS
DIETHYL ETHER;
ETHYL ETHER;
1.1'-OXYBISETHANE
Manufacturer Name:
J. T. BAKER CHEMICAL CO.
CAS Number:
60-29-7
J. T. BAKER CHEMICAL CO. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865
24-HOUR EMERGENCY TELEPHONE: (201) 859-2151
CHEMTREC #: (800) 424-9300
NATIONAL RESPONSE CENTER: # (800) 424-8802
PRODUCT NAME: ETHER, ANHYDROUS
FORMULA: (C2H5)2O
FORMULA WT: 74.12
CAS NO.: 60-29-7
NIOSH/RTECS NO.: KI5775000
COMMON SYNONYMS: DIETHYL ETHER; ETHYL ETHER; 1,1'-OXYBISETHANE
PRODUCT CODES: 9242,9245,9244,9197,9248,9247,9259,9237

PRECAUTIONARY LABELLING
BAKER SAF-T-DATA(TM) SYSTEM:
HEALTH: 2
FLAMMABILITY: 4 (FLAMMABLE)
REACTIVITY: 1
CONTACT: 1
LABORATORY PROTECTIVE EQUIPMENT:
SAFETY GLASSES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
PRECAUTIONARY LABEL STATEMENTS
DANGER:
EXTREMELY FLAMMABLE: HIGHLY VOLATILE
TENDS TO FORM EXPLOSIVE PEROXIDES: ESPECIALLY WHEN ANHYDROUS
HARMFUL IF INHALED: CAUSES IRRITATION
KEEP AWAY FROM HEAT, SPARKS, FLAME. AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. IN CASE OF FIRE, USE WATER SPRAY, ALCOHOL FOAM, DRY CHEMICAL, OR CARBON DIOXIDE. FLUSH SPILL AREA WITH WATER SPRAY.

HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
ETHER, ANHYDROUS	90-100	60-29-7
ETHYL ALCOHOL	0-2.5	64-17-5

PHYSICAL DATA
BOILING POINT: 35 C (95F)

MELTING POINT: -116 C (-177 F)
SPECIFIC GRAVITY: 0.71 (H20=1)
VAPOR PRESSURE (MM HG): 442
VAPOR DENSITY (AIR=1): 2.6
EVAPORATION RATE: 37.5 (BUTYL ACETATE=1)
SOLUBILITY(H20): MODERATE (1 TO 10 %)
APPEARANCE & ODOR: COLORLESS LIQUID WITH CHARACTERISTIC SWEET ODOR.
% VOLATILES BY VOLUME: 100

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: -45 C (-49 F) NFPA 704M RATING: 2-4-1
FLAMMABLE LIMITS:
UPPER: 48%
LOWER: 1.9 %
FIRE EXTINGUISHING MEDIA: USE ALCOHOL FOAM, DRY CHEMICAL OR CARBON DIOXIDE. (WATER MAY BE INEFFECTIVE.)
SPECIAL FIRE-FIGHTING PROCEDURES: FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.
UNUSUAL FIRE & EXPLOSION HAZARDS: VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK. CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG OXIDIZERS MAY CAUSE FIRE. MAY FORM EXPLOSIVE PEROXIDES, ESPECIALLY WHEN HEATED.

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE (TLV/TWA): 1200 MG/M3 (400 PPM)
SHORT-TERM EXPOSURE LIMIT (STEL): 1500 MG/M3 (500 PPM)
TOXICITY: LD50 (ORAL-RAT) (MG/KG): 1700
LC50 (INHAL-RABBIT) (PPM): 1060
LD50 (SKIN-RABBIT) (MG/KG): 360
EFFECTS OF OVEREXPOSURE: INHALATION OF VAPORS MAY CAUSE NAUSEA, VOMITING, LIGHTHEADEDNESS OR HEADACHE. VAPORS MAY BE IRRITATING TO SKIN, EYES, NOSE AND THROAT.
EMERGENCY AND FIRST AID PROCEDURES: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. FLUSH SKIN WITH WATER.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID: FLAME, HEAT, SOURCES OF IGNITION, LIGHT, AIR
INCOMPATIBLES: STRONG BASES, STRONG OXIDIZING AGENTS, ALUMINUM, COMBUSTIBLE MATERIALS
DECOMPOSITION PRODUCTS: EXPLOSIVE PEROXIDES

SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE: WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP LEA IF YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER. J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS PRODUCT.
DISPOSAL PROCEDURE: DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.
EPA HAZARDOUS WASTE NUMBER: U117 (TOXIC WASTE)

PROTECTIVE EQUIPMENT
VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS.
RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS UP TO 1000 PPM, A CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. ABOVE THIS LEVEL, A SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.
EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

STORAGE AND HANDLING PRECAUTIONS
SAF-T-DATA(TM) STORAGE COLOR CODE: RED
SPECIAL PRECAUTIONS: BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID. KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA.
USE CAUTION WHEN OPENING CAP. IMPORTANT: DO NOT USE AFTER EXPIRATION DATE.

TRANSPORTATION DATA AND ADDITIONAL INFORMATION
DOMESTIC (D.O.T.):
PROPER SHIPPING NAME: ETHYL ETHER
HAZARD CLASS: FLAMMABLE LIQUID
UN/NA: UN1155
LABELS: FLAMMABLE LIQUID
INTERNATIONAL (I.M.O.):
PROPER SHIPPING NAME: DIETHYL ETHER
HAZARD CLASS: 3.1
UN/NA: UN1155
LABELS: FLAMMABLE LIQUID
(TM) AND (R) DESIGNATE TRADEMARKS.: N/A = NOT APPLICABLE OR NOT AVAILABLE
THE INFORMATION PUBLISHED IN THIS MATERIAL SAFETY DATA SHEET HAS BEEN COMPILED FROM OUR EXPERIENCE AND DATA PRESENTED IN VARIOUS TECHNICAL PUBLICATIONS. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SUITABILITY OF THIS INFORMATION FOR THE ADOPTION OF NECESSARY SAFETY PRECAUTIONS. WE RESERVE THE RIGHT TO REVISE MATERIAL SAFETY DATA SHEETS PERIODICALLY AS NEW INFORMATION BECOMES AVAILABLE.

5

UP-1667

General Information
Chemical Name / Synonym / Trade Name:
UNOCAL CUSTOM MOTOR OIL 10W
UNION CUSTOM MOTOR OIL 10W
CRANKCASE OIL
Manufacturer Name:
UNION OIL COMPANY OF CALIFORNIA
CAS Number:

Product Name: UNOCAL CUSTOM MOTOR OIL 10W
#4,
PRODUCT CODE NO: 03330XX11
ISSUE DATE: 6/5/85
MANUFACTURER: UNOCAL REFINING & MARKETING DIVISION UNION OIL COMPANY OF CALIFORNIA 1201 W. 5TH STREET LOS ANGELES, CALIFORNIA 90017
CONTACT FOR FURTHER INFORMATION: MSDS COORDINATOR (213) 977-7589
Transportation Emergencies: Call CHEMTREC (800) 424-9300 Cont. U.S. (202) 483-7616 (Collect) from Alaska & Hawaii
Health Emergencies: CALL LOS ANGELES POISON INFORMATION CENTER (24 hrs.) (213) 664-2121

PRODUCT IDENTIFICATION
PRODUCT NAME: UNOCAL CUSTOM MOTOR OIL 10W
SYNONYMS: UNION CUSTOM MOTOR OIL 10W
GENERIC NAME: CRANKCASE OIL
CHEMICAL FAMILY: PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME: NOT APPLICABLE
ID NUMBER: NONE

INGREDIENTS

	TLV UNITS	AGENCY	TYPE
OIL MIST, IF GENERATED	5.00 MG/M3	OSHA	FULL TERM TWA

THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

EMERGENCY AND FIRST AID PROCEDURES
EMERGENCY: Have physician call LOS ANGELES POISON INFORMATION CENTER (24 hrs.) (213) 664-2121
EYE CONTACT: FOR DIRECT CONTACT, FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.
SKIN CONTACT: DO NOT USE GASOLINES, THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.
INHALATION (BREATHING): IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS,

SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OR OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.
INGESTION (SWALLOWING): IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

POTENTIAL ADVERSE HEALTH EFFECTS
EYE CONTACT: THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.
SKIN CONTACT: THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.
INHALATION (BREATHING): EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FUMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.
INGESTION (SWALLOWING): ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.
COMMENTS:
USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SPECIAL PROTECTION INFORMATION
VENTILATION: IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.
RESPIRATORY PROTECTION: IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)
PROTECTIVE GLOVES: THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.
EYE PROTECTION: APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.
OTHER PROTECTIVE EQUIPMENT: IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIALS ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

REACTIVITY DATA
STABILITY: STABLE
INCOMPATIBILITY (MATERIALS TO AVOID): AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSITION PRODUCTS: THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF SULFUR AND NITROGEN.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SPILL OR LEAK PROCEDURES
HIGHWAY OR RAILWAY SPILLS:
Call CHEMTREC: (800) 424-9300 Cont. U.S.
(Collect): (202) 483-7616 from Alaska & Hawaii
PRECAUTIONS IN CASE OF RELEASE OR SPILL: COLLECT LEAKING LIQUID IN SEALABLE CONTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF *ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS* ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).
WASTE DISPOSAL METHOD: DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

STORAGE AND SPECIAL PRECAUTIONS
HANDLING AND STORAGE PRECAUTIONS: STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

FIRE AND EXPLOSION HAZARD DATA
NFPA HAZARD CLASS:
HEALTH HAZARD: 0
FLAMMABILITY: 1
REACTIVITY: 0
OTHER:
HAZARD RANKING:
0: LEAST
1: SLIGHT
2: MODERATE
3: HIGH
4: EXTREME
DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED
FLASH POINT: 428, COC F 220 C
EXTINGUISHING MEDIA: EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.
FIRE & EXPLOSION HAZARDS: THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.
FIRE FIGHTING PROCEDURES: WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

PHYSICAL DATA
APPROX. BOILING RANGE: ABOVE 600 F (316) C
% SOLUBILITY IN WATER: NEGLIGIBLE
ODOR: CHARACTERISTIC
VAPOR DENSITY: HEAVIER THAN AIR
SPECIFIC GRAVITY: 0.90
EVAPORATION RATE: SLOWER THAN ETHER
APPEARANCE: CLEAR, BROWN LIQUID
% VOLATILE: NEGLIGIBLE

PRECAUTIONARY LABEL
CAUTION! USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

DOCUMENTARY INFORMATION
ISSUE DATE: 6/5/85
PREV. DATE: 7/25/84
PRODUCT CODE NO.: 03330XX11
DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES: The information in this document is believed to be correct as of the date issued.
HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.
This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

GENERAL INFORMATION
Material Safety Data Sheet
Emergency Phone Number (800) 457-2022
CHEVRON DELO 400 Plus Motor Oil SAE 20
CPS238164
UNION PACIFIC RAILROAD
1416 DODGE STREET
OMAHA, NE 68179
Print Date:
January 23, 1990

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

This is a new MSDS.

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 40504, Richmond, CA 94804.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number:
0
Revision Date:
11/18/89
MSDS Number:
004023
NDA - No Data Available
NA - Not Applicable

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1. PRODUCT IDENTIFICATION
CHEVRON DELO 400 Plus Motor Oil SAE 20
- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

CHEVRON PRODUCT NUMBER(S):
CPS238186
PRODUCT INFORMATION:
(800) 582-3835

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2. FIRST AID

EYE CONTACT:
No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:
No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:
Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:
If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

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3. IMMEDIATE HEALTH EFFECTS

EYE CONTACT:
This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:
This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:
The systemic toxicity of this substance has not been determined. However it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:
The systemic toxicity of this substance has not been determined. However,

it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

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4. PROTECTIVE EQUIPMENT

EYE PROTECTION:
No special eye protection is usually necessary.

SKIN PROTECTION:
No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:
No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:
Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

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5. FIRE PROTECTION

FLASH POINT:
(COC) 428F (220C) Min.

AUTOIGNITION:
NDA

FLAMMABILITY:
NA

EXTINGUISHING MEDIA:
CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS:
Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS:
Health 0; Flammability 1; Reactivity 0; Other NDA;
(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:
For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

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6. STORAGE, HANDLING, AND REACTIVITY
HAZARDOUS DECOMPOSITION PRODUCTS:
NDA.
STABILITY:
Stable.
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.

INCOMPATIBILITY:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:
CAUTION!
Do not use pressure to empty drum or explosion may result. DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

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7. PHYSICAL PROPERTIES
SOLUBILITY:
Soluble in hydrocarbon solvents; insoluble in water.
APPEARANCE:
Dark brown liquid.
BOILING POINT:
NA
MELTING POINT:
NA
EVAPORATION:
NA
SPECIFIC GRAVITY:
0.88 @ 15.6/15.6C
VAPOR PRESSURE:
NA
PERCENT VOLATILE (VOLUME %):
NA
VAPOR DENSITY (AIR=1):
NA
VISCOSITY:
10.6 cST @ 100C (Min.)

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8. SPILL RESPONSE AND DISPOSAL
CHEMTREC EMERGENCY PHONE NUMBER:
(800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:
This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:
Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

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9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION
COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This substance is subject to the provisions of the Pennsylvania Worker and Community Right-to-Know Act. Specific chemical identities are trade secret under the provisions of 35 Pennsylvania Statute Section 7311.

Based upon information reviewed to date, this product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5mg/m3, the OSHA PEL is 5mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS#	COMPONENT/REGULATORY LIMITS
100.0%	CHEVRON DELO 400 Plus Motor Oil SAE 20
CONTAINING	
> 80.0%	LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 20.0%	ADDITIVES INCLUDING THE FOLLOWING
< 2.0% CAS85687	BUTYL BENZYL PHTHALATE A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. CERCLA 302.4 RQ=100 POUNDS
< 1.5% CAS68649423	ZINC ALKYL DITHIOPHOSPHATE A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value
STEL - Short-term Exposure Limit
RQ - Reportable Quantity
CC - Chevron Chemical Company
PEL - Permissible Exposure Limit
TPQ - Threshold Planning Quantity
CPS - CUSA Product Code
CAS - Chemical Abstract Service Number

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10. REGULATORY INFORMATION
DOT SHIPPING NAME:
NDA
DOT HAZARD CLASS:
NDA
DOT IDENTIFICATION NUMBER:
NDA

SARA 311 CATEGORIES:
1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

ZINC ALKYL DITHIOPHOSPHATE
01,
BUTYL BENZYL PHTHALATE
01,10,24,26,28,

REGULATORY LISTS:
01=SARA 313
02=MASS RTK
03=NTP Carcinogen

04=CA Prop. 65
05=NI 406
06=IARC Group 1
07=IARC Group 2A
08=IARC Group 2B
09=SARA 302/304
10=PA RTK
11=NJ RTK
12=CERCLA 302.4
13=MN RTK
14=ACGIH TLV
15=ACGIH STEL
16=ACGIH Calculated TLV
17=OSHA PEL
18=OSHA STEL
19=Chevron TLV
20=EPA Carcinogen
21=TSCA SECT 4
22=TSCA SECT 5 SNUR
23=TSCA SECT 6 RULE
24=TSCA SECT 12 EXPORT
25=TSCA SECT 8A CAIR
26=TSCA SECT 8D REPORT
27=TSCA SECT 8E
28=Canadian WHMIS

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11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:
NDA. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:
NDA. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:
NDA. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:
NDA. The hazard evaluation was based on data from similar materials.

INGESTION:
NDA. The hazard evaluation was based on data from similar materials.

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12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:
This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do

not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains butyl benzyl phthalate. In a cancer bioassay conducted by the National Toxicology Program (NTP), mice and rats were given butyl benzyl phthalate in their diets. All groups of male rats were terminated at six months due to excessive mortality. Female rats showed an increase in cancer but both sexes of mice did not. This study has been declared invalid and is being repeated by NTP.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils require a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

7

UP-1681

General Information
Chemical Name / Synonym / Trade Name:
01820 HAVOLINE MOTOR OIL SAE 20-20W
Manufacturer Name:
Texaco Inc.
CAS Number:
68649423
61789864
64742650
Trade Name and Synonyms: 01820 HAVOLINE MOTOR OIL SAE 20-20W
Manufacturer's Name: Texaco Inc.
Address: P.O. Box 509 Beacon, NY 12508
Chemical Name and/or Family or Description: Havoline Motor Oils
THIS PRODUCT IS CLASSIFIED AS: NOT HAZARDOUS
Emergency Telephone No.: (914) 831-3400 ext. 204
WARNING STATEMENT: WARNING! AVOID SKIN CONTACT WITH USED MOTOR OILS

OCCUPATIONAL CONTROL PROCEDURES
Protective Equipment (Type):
Eyes: Chemical type goggles or face shield optional.
Skin: Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation: None required if exposures are within permissible concentrations; see below.
Ventilation: Adequate to meet component permissible concentrations.
Permissible Concentrations:
Air: None established for product; refer to page 4 for component permissible concentrations.

EMERGENCY AND FIRST AID PROCEDURES
First Aid:
Eyes: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin: Wash exposed areas with soap and water.
Ingestion: None considered necessary.
Inhalation: None considered necessary.
Other Instructions: None.

PHYSIOLOFICAL EFFECTS
Effects of Exposure:
Acute:
Eyes: Believed to be minimally irritating.
Skin: Believed to be minimally irritating.
Respiratory System: Believed to be minimally irritating if not in excess of permissible concentrations; see page 1.

Chronic: See Additional Comments, page 6.
Other: -
Sensitization Properties:
Skin: Unknown
Respiratory: Unknown
Median Lethal Dose (LD(50) LC(50)) (Species):
Oral: Similar product > 10 g/kg (rat); practically non-toxic
Inhalation: N.D.
Dermal: Similar product > 8 g/kg (rabbit); practically non-toxic
Other: N.D.
Irritation Index, Estimation of Irritation (Species):
Skin: Similar product 0.42/8.0 (rabbit); no appreciable effect
Eyes: Similar product 5.33/110 (rabbit); no appreciable effect
Symptoms of Exposure: See above.

FIRE PROTECTION INFORMATION
Ignition Temp. F.: N.D.
Flash Point F. (Method): 455 F (COC)
Flammable Limits (%):
Lower: N.D.
Upper: N.D.
Products Evolved When Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, and aldehydes and ketones may be formed. calcium, nitrogen, copper, sulfur, zinc, and phosphorus.
Recommended Fire Extinguishing Agents And Special Procedures: According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive Hazards: None.

ENVIRONMENTAL PROTECTION
Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification.)
Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300) Contain spill if possible. Wipe up or absorb on suitable material and shovel up.
Remarks:
Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

PRECAUTIONS
WARNING! AVOID SKIN CONTACT WITH USED MOTOR OILS

Used gasoline motor oils have caused skin cancer in laboratory animals when repeatedly applied and left in place between applications. In case of skin contact, promptly wash thoroughly with soap and water. Oil-soiled clothing should be cleaned before reuse.
Requirements for Transportation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.
DOT Proper Shipping Name: N.A.
DOT Hazard Class (if applicable): N.A.

CHEMICAL AND PHYSICAL PROPERTIES
Boiling Point (F): N.D.
Specific Gravity: 0.8852 (H(2)O=1)
Appearance and Odor: Bright and clear liquid, mild additive odor.
pH of undiluted product: N.A.
Percent Volatile by Volume: N.D.
Viscosity: 55 cSt @40 C
Vapor Pressure: N.D. (mmHg)
Vapor Density: N.D. (Air=1)
Solubility: N.D.
Evaporation: N.D. ( )=1
Other: -
Hazardous Polymerizations: Do not occur
The Material Reacts Violently With: (if others is checked below, see additional comments on page 6 for further details) Strong Oxidizers

COMPOSITION

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
*dialkyldithiophosphoric acid, zinc salt	68649423	None Established	1.00 - 3.99
*Calcium sulfonate	61789864	None Established	1.00 - 3.99
Solvent-dewaxed heavy paraffinic petroleum distillates	64742650	5mg/m3 ACGIH (HIST) 5mg/m3 OSHA (HIST) 10mg/m3 STEL (HIST)	80.00 - 94.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

PRODUCT SHIPPING LABEL
01820 HAVOLINE MOTOR OIL SAE 20-20W
WARNING: AVOID SKIN CONTACT WITH USED MOTOR OILS
Used gasoline motor oils have caused skin cancer in laboratory animals when repeatedly applied and left in place between applications. In case of skin contact, promptly wash thoroughly with soap and water. Oil-soiled clothing should be cleaned before reuse.

Chemical/Common Name	CAS No.	Range in %
*dialkyldithiophosphoric acid, zinc salt	68649423	1.00 - 3.99

*Calcium sulfonate	61789864	1.00 - 3.99
Solvent-dewaxed heavy paraffinic petroleum distillates	64742650	80.00 - 94.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

HMIS:
Health: 0
Flammability: 1
Reactivity: 0
Special: -

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204)
Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650
For Additional Information Concerning: Fuels/Lubricants/Antifreezes call (914) 831-3400 (EXT.204)
Chemicals: call (512) 459-6543
Transportation Spills: call CHEMTREC (800) 424-9300

ADDITIONAL COMMENTS

TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1987) 0.12% zinc, 0.012% copper

New and used motor oils have been tested for potential carcinogenicity in laboratory mice. Only used gasoline motor oils were shown to cause skin cancer when repeatedly applied to mice without any effort to remove the material between applications. Strict compliance to the Occupational Control Procedures outlined in this data sheet is believed to be adequate protection from such hazards. Used diesel engine oils have NOT been shown to produce a significant incidence of skin cancer in laboratory animals when tested under similar conditions.

To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.

By: R. T. Richards
Date: 01-08-88
Title: Mgr. Env. Conservation & Toxicology
Revised, Supersedes: 04-16-87

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UP-1686

General Information
Chemical Name / Synonym / Trade Name:
EXXON PLUS MOTOR OIL 30
Petroleum Lubricating Oil
Manufacturer Name:
EXXON COMPANY, U.S.A.
CAS Number:
64742-54-7
64742-65-0
64742-57-0
EXXON COMPANY, U.S.A. P.O. BOX 2180 HOUSTON, TX 77252-2180

IDENTIFICATION AND EMERGENCY INFORMATION
PRODUCT NAME: EXXON PLUS MOTOR OIL 30
CHEMICAL NAME: Petroleum Lubricating Oil
PRODUCT APPEARANCE AND ODOR: Clear, dark amber liquid Strong petroleum odor
EMERGENCY TELEPHONE NUMBER: (713) 656-3424
PRODUCT CODE: 212012 - 0212
CAS NUMBER: Complex Mixture CAS Number not applicable

COMPONENTS AND HAZARD INFORMATION

COMPONENTS	CAS NO. OF COMPONENTS	APPROXIMATE CONCENTRATION
Petroleum Lubricating Oil Base Stocks	64742-54-7 or 64742-65-0 and 64742-57-0	Greater than 90%
Proprietary additives	Mixture	Less than 10%

See Section E for Health and Hazard Information
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):
Health: 1
Flammability: 1
Reactivity: 0
BASIS: Recommended by Exxon
EXPOSURE LIMIT FOR TOTAL PRODUCT: 5 mg/m3 for oil mist in air
BASIS: OSHA Regulation 29 CFR 1910.1000

PRIMARY ROUTES OF ENTRY & EMERGENCY & FIRST AID PROCEDURES
EYE CONTACT: If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.
SKIN: In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water.
INHALATION: Vapor pressure is very low. Vapor inhalation under ambient

conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxygen, if available. If overexposed to oil mist, remove from further exposure until excessive oil mist condition subsides.
INGESTION: If ingested, DO NOT induce vomiting; call a physician immediately.

FIRE AND EXPLOSION HAZARD INFORMATION
FLASH POINT (MINIMUM): 220 C (428 F) ASTM D 92, Cleveland Open Cup
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA): HAZARD IDENTIFICATION
Health: 1
Flammability: 1
Reactivity: 0
BASIS: Recommended by Exxon
HANDLING PRECAUTIONS: Use product with caution around heat, sparks, pilot lights, static electricity, and open flame.
FLAMMABLE OR EXPLOSIVE LIMITS (APPROXIMATE PERCENT BY VOLUME IN AIR):
Estimated values:
Lower Flammable Limit: 0.9%
Upper Flammable Limit: 7%
EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES: Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type of product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialtists.
The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):
Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures. Minimize breathing gases, vapor, fumes or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.
DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.
"EMPTY" CONTAINER WARNING: "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or

other contemplated operations.

HEALTH AND HAZARD INFORMATION
VARIABILITY AMONG INDIVIDUALS: Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.
EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Prolonged or repeated skin contact may cause skin irritation.
NATURE OF HAZARD AND TOXICITY INFORMATION: In accordance with the current OSHA Hazard Communication Standard criteria, this product does not require a cancer hazard warning. This is because the product is formulated from base stocks which are severely hydrotreated, severely solvent extracted, and/or processed by mild hydrotreatment and extraction. Alternatively, it may consist of components not otherwise affected by IARC criteria, such as vacuum distillates or synthetically derived materials, and as such is not characterized by current IARC classification criteria.
Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis. However, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.
Continuous contact with used motor oil has caused skin cancer in animal tests.
Product contacting the eyes may cause eye irritation.
Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.
This product is judged to have an acute oral LD50 (rat) greater than 5 g/kg of body weight, and an acute dermal LD50 (rabbit) greater than 3.16 g/kg of body weight.
PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: None Recognized

PHYSICAL DATA
The following data are approximate or typical values and should not be used for precise design purposes.
BOILING RANGE: IBP Approximately 291 C (555 F)
SPECIFIC GRAVITY (15.6 C/15.6 C): 0.90
MOLECULAR WEIGHT: Not determined
pH: Essentially neutral
POUR, CONGEALING OR MELTING POINT: -18 C (0 F) Pour Point by ASTM D 97
VISCOSITY: 11.8 cst @ 100 C
VAPOR PRESSURE: Less than 0.01 mm Hg @ 20 C
VAPOR DENSITY (AIR = 1): Greater than 5
PERCENT VOLATILE BY VOLUME: Negligible from open container in 4 hours @ 38 C (100 F)
EVAPORATION RATE @ 1 ATM. AND 25 C (77 F) (n-BUTYL ACETATE = 1): Less than 0.01
SOLUBILITY IN WATER @ 1 ATM. AND 25 C (77 F): Negligible; less than 0.1%

REACTIVITY
This product is stable and will not react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

ENVIRONMENTAL INFORMATION
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Recover free product. Add sand, earth, or other suitable absorbent to spill area. Minimize skin contact. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas.
Assure conformity with applicable governmental regulations.
REPORTABLE QUANTITY (RQ), EPA REGULATION 40 CFR 302: Not applicable
THRESHOLD PLANNING QUANTITY (TPQ), EPA REGULATION 40 CFR 355: Not applicable
TOXIC CHEMICAL RELEASE REPORTING, EPA REGULATION 40 CFR 372: Not applicable
EPA HAZARD CLASSIFICATION CODE: Not Applicable

PROTECTION AND PRECAUTIONS
VENTILATION: Use local exhaust to capture vapor, mists or fumes, if necessary. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. Use explosion-proof equipment. No smoking or open lights.
RESPIRATORY PROTECTION: Use supplied-air respiratory protection in confined or enclosed spaces, if needed.
PROTECTIVE GLOVES: Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.
EYE PROTECTION: Use splash goggles or face shield when eye contact may occur.
OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.
WORK PRACTICES / ENGINEERING CONTROLS: Keep containers and storage containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants.
PERSONAL HYGIENE: Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

TRANSPORTATION INFORMATION
TRANSPORTATION INCIDENT INFORMATION: For further information relative to

spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous Materials Incidents, DOT P 5800.3.

DOT IDENTIFICATION NUMBER: Not applicable

The information and recommendations contained herein are, to the best of Exxon's knowledge and belief, accurate and reliable as of the date issued. Exxon does not warrant or guarantee their accuracy or reliability, and Exxon shall not be liable for any loss or damage arising out of the use thereof.

The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use.

The Environmental Information included under Section H hereof as well as the Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Exxon Company, U.S.A. in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Exxon's interpretation of the available data.

FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT: DIRECTOR OF INDUSTRIAL HYGIENE EXXON COMPANY, U.S.A. P.O. BOX 2180 ROOM 3157 HOUSTON, TX 77252-2180 (713) 656-2443

FOR OTHER PRODUCT INFORMATION CONTACT: MANAGER, MARKETING TECHNICAL SERVICES EXXON COMPANY, U.S.A. P. O. BOX 2180 ROOM 2355 HOUSTON, TX 77252-2180 (713) 656-5949

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UP-1692

General Information
Chemical Name / Synonym / Trade Name:
EXXON UNIFLO 10W-30
Petroleum Lubricating Oil
Manufacturer Name:
EXXON COMPANY, U.S.A.
CAS Number:
64742-54-7
64742-65-0
DATE ISSUED: 09/14/87
SUPERSEDES DATE: 07/01/86 EXXON COMPANY, U.S.A. P. O. BOX 2180 HOUSTON, TX 77252-2180

IDENTIFICATION AND EMERGENCY INFORMATION
PRODUCT NAME: EXXON UNIFLO 10W-30
CHEMICAL NAME: Petroleum Lubricating Oil
PRODUCT APPEARANCE AND ODOR: Clear liquid, amber color Mild, bland petroleum odor
EMERGENCY TELEPHONE NUMBER: (713) 656-3424
PRODUCT CODE: 211907 - 01907
CAS NUMBER: Complex Mixture CAS Number not applicable

COMPONENTS AND HAZARD INFORMATION

COMPONENTS	CAS NO. OF COMPONENTS	APPROXIMATE CONCENTRATION
Lubricating Oil Base Stock	64742-54-7 or 64742-65-0	Greater than 82%
Proprietary additives	Mixture	Greater than 15%

See Section E for Health and Hazard Information
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):
Health: 1
Flammability: 1
Reactivity: 0
BASIS: Recommended by Exxon
EXPOSURE LIMIT FOR TOTAL PRODUCT: 5 mg/m3 for oil mist in air
BASIS: OSHA Regulation 29 CFR 1910.1000

PRIMARY ROUTES OF ENTRY & EMERGENCY & FIRST AID PROCEDURES
EYE CONTACT: If splashed into eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.
SKIN: In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water.
INHALATION: Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer

oxygen, if available. If overexposed to oil mist, remove from further exposure until excessive oil mist condition subsides.
INGESTION: If ingested, DO NOT induce vomiting; call a physician immediately.

FIRE AND EXPLOSION HAZARD INFORMATION
FLASH POINT (MINIMUM): 200 C (392 F) ASTM D 92, Cleveland Open Cup
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) HAZARD IDENTIFICATION:
Health: 1
Flammability: 1
Reactivity: 0
BASIS: Recommended by Exxon
HANDLING PRECAUTIONS: Use product with caution around heat, sparks, pilot lights, static electricity, and open flame.
AUTOIGNITION TEMPERATURE: Greater than 260 C (500 F)
FLAMMABLE OR EXPLOSIVE LIMITS (APPROXIMATE PERCENT BY VOLUME IN AIR):
Estimated values:
Lower Flammable Limit: 0.9%
Upper Flammable Limit: 7%
EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES: Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type of product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialtists.
The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):
Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures. Minimize breathing gases, vapor, fumes or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.
DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.
"EMPTY" CONTAINER WARNING: "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

HEALTH AND HAZARD INFORMATION
VARIABILITY AMONG INDIVIDUALS: Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.
EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Prolonged or repeated skin contact may cause skin irritation.
NATURE OF HAZARD AND TOXICITY INFORMATION: In accordance with the current OSHA Hazard Communication Standard criteria, this product does not require a cancer hazard warning. This is because the product is formulated from base stocks which are severely hydrotreated, severely solvent extracted, and/or processed by mild hydrotreatment and extraction. Alternatively, it may consist of components not otherwise affected by IARC criteria, such as vacuum distillates or synthetically derived materials, and as such is not characterized by current IARC classification criteria.
Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis. However, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.
Continuous contact with used motor oil has caused skin cancer in animal tests.
Product contacting the eyes may cause eye irritation.
Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.
This product is judged to have an acute oral LD50 (rat) greater than 5 g/kg of body weight, and an acute dermal LD50 (rabbit) greater than 3.16 g/kg of body weight.
PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: None Recognized

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PHYSICAL DATA
The following data are approximate or typical values and should not be used for precise design purposes.
BOILING RANGE: IBP Approximately 271 C (520 F)
SPECIFIC GRAVITY (15.6 C/15.6 C): 0.88
MOLECULAR WEIGHT: Not determined
pH: Essentially neutral
POUR, CONGEALING OR MELTING POINT: -30 C (-22 F) Pour Point by ASTM D 97
VISCOSITY: 10.3 cSt @ 100 C
VAPOR PRESSURE: Less than 0.01 mm Hg @ 20 C
VAPOR DENSITY (AIR = 1): Greater than 5
PERCENT VOLATILE BY VOLUME: Negligible from open container in 4 hours @ 38 C (100 F)
EVAPORATION RATE @ 1 ATM. AND 25 C (77 F) (n-BUTYL ACETATE = 1): Less than 0.01
SOLUBILITY IN WATER @ 1 ATM. AND 25 C (77 F): Negligible; less than 0.1%

REACTIVITY

This product is stable and will not react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Recover free product. Add sand, earth, or other suitable absorbent to spill area. Minimize skin contact. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Assure conformity with applicable governmental regulations.

REPORTABLE QUANTITY (RQ), EPA REGULATION 40 CFR 302: Not applicable

THRESHOLD PLANNING QUANTITY (TPQ), EPA REGULATION 40 CFR 355: Not applicable

TOXIC CHEMICAL RELEASE REPORTING, EPA REGULATION 40 CFR 372: Not applicable

EPA HAZARD CLASSIFICATION CODE: Not Applicable

PROTECTION AND PRECAUTIONS

VENTILATION: Use local exhaust to capture vapor, mists or fumes, if necessary. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. Use explosion-proof equipment. No smoking or open lights.

RESPIRATORY PROTECTION: Use supplied-air respiratory protection in confined or enclosed spaces, if needed.

PROTECTIVE GLOVES: Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.

EYE PROTECTION: Use splash goggles or face shield when eye contact may occur.

OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

WORK PRACTICES / ENGINEERING CONTROLS: Keep containers and storage containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants.

PERSONAL HYGIENE: Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION: For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous

Materials Incidents, DOT P 5800.3.
DOT IDENTIFICATION NUMBER: Not applicable
The information and recommendations contained herein are, to the best of Exxon's knowledge and belief, accurate and reliable as of the date issued. Exxon does not warrant or guarantee their accuracy or reliability, and Exxon shall not be liable for any loss or damage arising out of the use thereof.
The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use.
The Environmental Information included under Section H hereof as well as the Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Exxon Company, U.S.A. in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these rating systems, together with Exxon's interpretation of the available data.
FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT: DIRECTOR OF INDUSTRIAL HYGIENE EXXON COMPANY, U.S.A. P. O. BOX 2180 ROOM 3157 HOUSTON, TX 77252-2180 (713) 656-2443
FOR OTHER PRODUCT INFORMATION CONTACT: MANAGER, MARKETING TECHNICAL SERVICES EXXON COMPANY, U.S.A. P. O. BOX 2180 ROOM 2355 HOUSTON, TX 77252-2180 (713) 656-5949

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UP-1698

General Information
Chemical Name / Synonym / Trade Name:
Dual Season Motor Oil 10W40
Manufacturer Name:
Farmland Industries, Inc.
CAS Number:

MANUFACTURER'S NAME: Farmland Industries, Inc.
EMERGENCY TELEPHONE NO.: (816) 459-6000
ADDRESS (Number, Street, City, State, and ZIP Code): 3315 North Oak Trafficway, Kansas City, MO 64116
CHEMICAL NAME AND SYNONYMS:
TRADE NAME AND SYNONYMS: Dual Season Motor Oil 10W40
CHEMICAL FAMILY:
FORMULA:

HAZARDOUS INGREDIENTS
PAINTS, PRESERVATIVES, & SOLVENTS:
PIGMENTS:
CATALYST:
VEHICLE:
SOLVENTS:
ADDITIVES:
OTHERS:
ALLOYS AND METALLIC COATINGS:
BASE METAL:
ALLOYS:
METALLIC COATINGS:
FILLER METAL PLUS COATING OR CORE FLUX:
OTHERS:
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES:

PHYSICAL DATA
BOILING POINT (F.):
VAPOR PRESSURE (mm Hg.):
VAPOR DENSITY (AIR=1):
SOLUBILITY IN WATER: NIL
SPECIFIC GRAVITY (H(2)O=1): 0.8816
PERCENT, VOLATILE BY VOLUME (%): 0.0
EVAPORATION RATE (=1): 0.00
APPEARANCE AND ODOR: dark green oil

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used): 380 F (COC)
FLAMMABLE LIMITS:
Lel:
Uel:

EXTINGUISHING MEDIA: CO, dry chemical, foam
SPECIAL FIRE FIGHTING PROCEDURES:
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: non-toxic
EFFECTS OF OVEREXPOSURE:
EMERGENCY AND FIRST AID PROCEDURES:

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID:
INCOMPATABILITY (Materials to avoid):
HAZARDOUS DECOMPOSITION PRODUCTS:
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Use dry absorbent for pick up
WASTE DISPOSAL METHOD: Incinerate or bury according to local required procedures.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): N/A
VENTILATION:
LOCAL EXHAUST:
MECHANICAL (General):
SPECIAL:
OTHER:
PROTECTIVE GLOVES:
EYE PROTECTION:
OTHER PROTECTIVE EQUIPMENT:

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Normal safety procedures for handling heavy liquids
OTHER PRECAUTIONS:

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UP-1701

General Information
Chemical Name / Synonym / Trade Name:
Stihl 2-Cycle Engine Oil
Two cyle engine oil
Manufacturer Name:
WESTLAND OIL COMPANY
CAS Number:

Trade Name and Synonyms: Stihl 2-Cycle Engine Oil
Manufacturer's Name: WESTLAND OIL COMPANY
Emergency Telephone NO.: (318) 688-1300
Address: P.O. Box 8098, Shreveport, Louisiana 71148
Chemical Name and/or Family or Description: Two cyle engine oil
THIS PRODUCT IS CLASSIFIED AS: HAZARDOUS BY DEFINITION NO. (S) 1 ON ATTACHED EXPLANATION SHEET 4
warning statement:
DANGER: Harmful or Fatal if Swallowed. Combustible.

Occupational Control Procedures
Protective equipment (Type):
Eyes: Chemical type goggles or face shield optional
Skin: Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation: None required if exposures are within permissible concentrations; see below.
Ventilation Required: Normal
Permissible Concentrations: TLV for distillate portions = 100ppm (Mineral Spirits)
Air: 5 mg/cubic meter of air for mineral oil mist averaged over an 8 hour daily exposure.

Emergency & First Aid Procedures
First Aid:
Eyes: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin: Wash exposed areas with soap and water.
Ingestion: Do not induce vomiting. Aspiration may cause chemical pneumonia.
Inhalation: Should symptoms noted under physiological effects occur, remove to fresh air. If not breathing, apply artificial respiration.
Other instructions: None.
N.D.: Not Determined
<: Less Than
N.A.: Not Applicable
>: Greater Than

Physiological Effects
Effects of Exposure:
Acute:
Eyes: N.D. Believed to be minimally irritating.
Skin: N.D. Believed to be minimally irritating.
Respiratory System: Drowsiness and unconsciousness possible upon exposure to high concentrations in poorly ventilated confined spaces.
Chronic: N.D.
Other:
Sensitization Properties:
Skin: Unknown
Respiratory: Unknown
Median Lethal Dose (LD(50)LC(50)) (Species):
Oral: N.D. Practically non-toxic
Inhalation: N.D.
Dermal: N.D.; practically non-toxic
Other: N.D. slightly irritating
Irritation Index. Estimation of Irritation (Species):
Skin: N.D.;
Eyes: N.D.; no appreciable effect.
Symptoms of Exposure: N.D.; none expected except possible minimal irritation

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Fire Protection Information
Ignition Temp. F.: N.D.
Flash Point F. (Method): 175+ (PMCC)
Flammable Limits %:
Lower: N.D.
Upper: N.D.
Products Evolved When Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, aldehydes and ketones, combustion products of nitrogen and sulfur.
Recommended Fire Extinguishing Agents And Special Procedures: According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive Hazards: None

Environmental Protection
Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc., may render the resulting material hazardous. (See Remarks for Waste Classification).
Procedures in Case of Breakage or Leakage: Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

Remarks:
Waste Classification: Product (as presently constituted) has the RCRA characteristic of ignitability and if discarded in its purchased form would have the hazardous waste number D001

Precautionary Label
DANGER: Harmful or fatal if swallowed. Combustible. Keep away from heat and flame. Use only in well-ventialted locations. Avoid prolonged breathing of mist or vapor. Avoid prolonged or repeated contact with skin. CONTAINS PETROLEUM DISTILLATES KEEP OUT OF REACH OF CHILDREN
Requirements for Transporatation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.
D.O.T. Proper Shipping Name: Petroleum Oil
D.O.T. Hazard Class (If applicable): N.A.

Chemical & Physical Properties
Boiling Point (F): N.D.
Specific Gravity: 0.8810 (H(2)O=1)
Appearance and Odor: Dark Emerald Green
PH of undiluted product: N.A.
Percent Volatile by Volume: N.D.
Viscosity: 74.43 cSt @ 40 C
Hazardous Polymerizations: Do not occur.
Vapor Pressure: N.D. (mmHg)
Vapor Density: N.D. (Air=1)
Solubility: N.D.
Evaporation: N.D. ( )=1
Other:
The Material Reacts Violently With: (If Others is checked below, see Additional Comments on Page 4 for further details).: Strong Oxidizers
N.D.: Not Determined
<: Less Than
N.A.: Not Applicable
>: Greater Than

Composition

	%
Components Presenting a Significant Hazard	
Petroleum distillate which is similar to Stoddard Solvent and is a mixture of straight and branched chain paraffins, naphthenes, (cyclparaffins) and alkyl aromatic hydrocarbons. The principal components are aliphatic hydrocarbons ranging from C-5 to C-16 with less than 20% by volume aromatic hydrocarbons. The boiling point range is 300-400 F.	5 - 10
Other Components	
Mineral Oil	80 - 90
* Additive Package	1 - 5
* Additive manufacturers consider their additive package to be	

proprietary information.

Additional Comments
No critical material present.
To determine applicability or effect of any law or regulation with respect to this product, user should consult his legal advisor or the appropriate agency. Specialty Oil does not undertake to furnish advice on such matters.
By: L. Hicks
Date: 9/10/85
Title: Quality Control Supervisor
New: Revised Supersedes

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UP-1706

Severely refined hydrotreated heavy naphthenic petroleum distillates	64742525	80.00 - 94.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

HMIS:
Health: 0
Flammability: 1
Reactivity: 0
Special:
CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.
HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204)
Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650
For Additional Information Concerning:
Fuels/Lubricants/Antifreezes: call (914) 831-3400 (EXT. 204)
Chemicals: call (512) 459-6543
Transportation Spills: call CHEMTREC (800) 424-9300

ADDITIONAL COMMENTS
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1986) 10 ppm zinc
To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.
By: R. T. Richards
Date: 06-24-87
Title: Mgr. Env. Conservation & Toxicology
Revised, Supersedes: 06-04-87
N.D. - Not Determined
< - Less Than
N.A. - Not Applicable
> - Greater Than

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UP-1708

MATERIAL IDENTIFICATION
Chemical Name / Synonym / Trade Name:
Dexron II Fluid
Automatic Transmission Fluid
Manufacturer Name:
Conoco Inc.
CAS Number:

Name: Dexron II Fluid
Conoco Product Code: 6681
Synonyms: Automatic Transmission Fluid
Chemical Family: Petroleum Hydrocarbon
Manufacturer: Conoco Inc.
Address: P.O. Box 1267, Ponca City, OK 74603
CAS Registry No.: Mixture
Transportation Emergency No.: (800) 424-9300 (Chemtrec)
Product Information No.: (405) 767-6000

HAZARDOUS INGREDIENTS
Hazard Determination:
Health Effect Properties: None.
Physical Effect Properties:
Product/Mixture: None.
HAZARD DATA: Not applicable.

PHYSICAL DATA
Appearance and Odor: Clear red liquid; Mild petroleum hydrocarbon odor.
Boiling Point (F): 650-950
Vapor Pressure (mmHg): Nil
Vapor Density (Air=1): Not Applicable
Solubility in Water: Insoluble
Specific Gravity (H(2)O=1): 0.87
% Volatile (by volume): Nil
Evaporation Rate (Ether=1): Nil

REACTIVITY DATA
Stable:
Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.
Conditions To Avoid: Strong oxidizing materials, heat, flame.
Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION HAZARD DATA
Flash Point (Method used): 325 F (PMCC)
Autoignition Temperature: 650 F
Handle and store in accordance with NFPA procedure for Class III B

Combustible Liquid.
Extinguishing Media: Use water spray, dry chemical, foam, or carbon dioxide.
Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.
Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.
National Fire Protection Agency (NFPA) CLASSIFICATION:
HAZARD RATING:
Health: 0
Fire: 1
Reactivity: 0
Least: 0
Slight: 1
Moderate: 2
High: 3
Extreme: 4

TRANSPORTATION AND STORAGE
DOT HAZARD CLASS: Not Applicable
Precautions To Be Taken In Handling And Storing: Product is Class III B Combustible Liquid per NFPA Code No. 30-1984. Store and handle accordingly.
Shipping Paper Description: Not D.O.T. Regulated.
Placard: Not D.O.T. Regulated.
D.O.T. Label: Not Regulated.
OSHA Label: Not Regulated.

HEALTH HAZARD INFORMATION
PEL: Not Established
Ceiling Value: Not Established
TLV: Not Established
AEL: Not Established
Primary Route(s) of Exposure/Entry: Skin.
Signs and Symptoms of Exposure/Medical Conditions Aggravated By Exposure: No adverse health effects has been identified specifically for this product. Health effect information from animal and human studies has been included on related materials, even though health experts may disagree as to the significance of this data.
Mouse skin painting studies have shown that highly solvent-refined petroleum distillates having a boiling point below 700 F, and which are similar to ingredients in this product, have not caused skin tumors.
The product may cause irritation to eyes, lungs, or skin after prolonged or repeated exposure.
Listed as Carcinogen or Potential Carcinogen by:
NTP: No

IARC: No
OSHA: No

EMERGENCY AND FIRST AID PROCEDURES

Eyes: Immediately wash with fresh water for at least 15 minutes and get medical attention.

Skin: Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation persists, consult a physician.

Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

If exposed to hot oil, immediately cool with cold water. Do not attempt to remove oil but continue to cool exposed areas with cold packs and seek medical assistance immediately.

Inhalation: If overexposure occurs, remove individual to fresh air. If breathing stops, administer artificial respiration.

Ingestion: If this material is swallowed, do not induce vomiting. If vomiting begins, lower victim's head in an effort to prevent vomitus from entering lungs. Immediately consult a physician. Do not attempt to give liquid to an unconscious person.

Note to Physicians: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

SPILL, LEAK AND DISPOSAL PROCEDURES

RCRA HAZARDOUS WASTE: No

In Case Of Spill Or Leak: Contain spill immediately in smallest area possible. Recover as much of the product itself as possible by such methods as vacuuming, followed by soaking up residual fluids by use of absorbent materials. Remove contaminated items including soils and place in proper container for disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Dispose of nonrecyclable material by such methods as controlled incineration, complying with federal, state and local regulations.

PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: None required.

Eye Protection: None required.

Other Protective Equipment: None required.

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UP-1712

General Information
Chemical Name / Synonym / Trade Name:
MAC'S CARBURETOR CLEANER
Manufacturer Name:
Ashland Petroleum Company
CAS Number:

Ashland Petroleum Company DIVISION OF ASHLAND OIL, INC. P.O. BOX 391
ASHLAND, KENTUCKY 41101 (606) 329-3333
24-HOUR EMERGENCY TELEPHONE: (606) 324-1133
PRODUCT NAME: MAC'S CARBURETOR CLEANER JOHN DURICK GENUINE PARTS COMPANY
2999 CIRCLE 75 PARKWAY ATLANTA, GA 30339 08 86 051 4151843-778
DATA SHEET NO: 0172402-001
LATEST REVISION DATE: 06/84-84170
PRODUCT:
INVOICE: REQST
INVOICE DATE: 05/14/86
TO:

PRODUCT IDENTIFICATION
GENERAL OR GENERIC ID: SOLVENT BLEND
DOT HAZARD CLASSIFICATION: CORROSIVE (173.240) AND COMBUSTIBLE (173.115)

COMPONENTS

INGREDIENT	% (BY WT)	PEL	TLV	NOTE
SODIUM CHROMATE TETRAHYDRATE	<1	0.05	0.05 MG/M(3)	(1)
CAS #: 10034-82-9				
METHYLENE CHLORIDE	30-60	500	100 PPM	
CAS #: 75-09-2				
AROMATIC PETROLEUM DISTILLATES	10-30	100	PPM	(2)
CAS #: 64741-98-6				
ORTHO CRESOL	1-5	5	5 PPM - SKIN	
CAS #: 95-48-7				
PHENOL	1-5	5	5 PPM - SKIN	(3)
CAS #: 108-95-2				

(1): THE PEL AS CRO3, TLV AS CR. NIOSH RECOMMENDS A LIMIT OF 0.025 MG/CUM (AS CR)
- 8 HOUR TIME WEIGHTED AVERAGE.
(2): TLV NOT ESTABLISHED FOR THIS MATERIAL.
(3): SKIN ABSORPTION MAY POTENTIALLY CONTRIBUTE TO THE OVERALL EXPOSURE TO THIS
MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT
THE TLV IS NOT INVALIDATED.
#THE SPECIFIC CHEMICAL IDENTITY HAS BEEN WITHHELD AS A TRADE SECRET.

PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	FOR COMPONENT <	104.00 DEG F (40.00 DEG C)
VAPOR PRESSURE	FOR COMPONENT (>60%)	@ 760.00 MMHG 340.00 MMHG @ 68.00 DEG F (20.00 DEG C)
SPECIFIC VAPOR DENSITY		HEAVIER THAN AIR
SPECIFIC GRAVITY		1.100 - 1.110 @ 70.00 DEG F (21.11 DEG C)
PERCENT VOLATILES		>95%
EVAPORATION RATE		SLOWER THAN ETHER

FIRE AND EXPLOSION INFORMATION
FLASH POINT: 100-200 DEG F (38-94 DEG C)
EXPLOSIVE LIMIT: UNAVAILABLE
EXTINGUISHING MEDIA: ALCOHOL FOAM OR WATER FOG
HAZARDOUS DECOMPOSITION PRODUCTS:
MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, HYDROGEN CHLORIDE, PHOSGENE, VARIOUS HYDROCARBONS, ETC.
FIREFIGHTING PROCEDURES: WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.
WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.
SPECIAL FIRE & EXPLOSION HAZARDS: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

HEALTH HAZARD DATA
EFFECTS OF ACUTE OVEREXPOSURE: FOR COMPONENT
EYES: CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
BREATHING: EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE, POSSIBLE UNCONSCIOUSNESS, AND EVEN ASPHYXIATION.
SWALLOWING: CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.
SKIN: CAN CAUSE IRRITATION. BURNS CAN RESULT FROM PROLONGED CONTACT.
FIRST AID:
IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.
IF IN EYES: IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, LIFTING UPPER AND LOWER LIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.
IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING

CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.
IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.
EFFECTS OF CHRONIC OVEREXPOSURE: FOR COMPONENT
OVEREXPOSURE TO METHYLENE CHLORIDE CAN RAISE THE LEVEL OF CARBON MONOXIDE IN THE BLOOD CAUSING CARDIOVASCULAR STRESS. RESULTS OF LABORATORY ANIMAL TESTS SHOW THAT METHYLENE CHLORIDE PRODUCED: BENIGN TUMORS IN RATS EXPOSED TO 500 PPM; CANCER IN RATS AND MICE EXPOSED TO 1500 PPM AND HIGHER, BUT NOT IN HAMSTERS. LIMITED EPIDEMIOLOGY STUDIES FAILED TO SHOW A TUMORIGENIC RESPONSE IN PLANT WORKERS. CONSEQUENTLY, METHYLENE CHLORIDE IS NOT BELIEVED TO POSE A MEASUREABLE CANCER RISK TO MAN WHEN HANDLED AS RECOMMENDED. LABORATORY ANIMAL STUDIES TO EVALUATE POTENTIAL BIRTH DEFECTS AND EFFECTS ON REPRODUCTION SHOW: A LOW DEGREE OF MATERNAL AND EMBRYOTOXICITY AT 4500 PPM, NO TERATOLOGICAL EFFECTS AND NO EFFECTS ON REPRODUCTION AT CONCENTRATIONS OF 4500 AND 1225 PPM.
OVEREXPOSURE TO THIS MATERIAL (OR ITS COMPONENTS) HAS BEEN SUGGESTED AS A CAUSE OF THE FOLLOWING EFFECTS IN HUMANS:, LIVER ABNORMALITIES, KIDNEY DAMAGE, EYE DAMAGE

REACTIVITY DATA
HAZARDOUS POLYMERIZATION: CANNOT OCCUR-- AVOID CONTACT WITH STRONG MINERAL ACIDS AND STRONG ORGANIC ACIDS.
STABILITY: STABLE
INCOMPATIBILITY:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
SMALL SPILL: ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.
LARGE SPILL: PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.
LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

PROTECTIVE EQUIPMENT TO BE USED
RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.
VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).
PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NITRILE RUBBER,

NEOPRENE
EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED, HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)
OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SPECIAL PRECAUTIONS OR OTHER COMMENTS
CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.
THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

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UP-1717

General Information
Chemical Name / Synonym / Trade Name:
02055 STARTEX ANTI-FREEZE COOLANT
Antifreeze
Manufacturer Name:
Texaco Inc.
CAS Number:
107211
1303964
NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 7 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.
Trade Name and Synonyms: 02055 STARTEX ANTI-FREEZE COOLANT
Manufacturer's Name: Texaco Inc.
Address: P.O. Box 509 Beacon, NY 12508
Chemical Name and/or Family or Description: Antifreeze
Emergency Telephone No.: (914) 831-3400 ext. 204
THIS PRODUCT IS CLASSIFIED AS: HAZARDOUS BY DEFINITION NO.(S) 2,5,7,12
WARNING STATEMENT:
WARNING!: HARMFUL OR FATAL IF SWALLOWED KEEP OUT OF REACH OF CHILDREN MAY CAUSE IRRITATION TO EYES

OCCUPATIONAL CONTROL PROCEDURES
Protective Equipment (Type):
Eyes: Chemical type goggles or face shield optional.
Skin: Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation: Supplied air positive-pressure full-facepiece respirators in emergencies, cleaning spills, entry into tanks, confined spaces.
Ventilation: Adequate to meet component permissible concentrations.
Permissible Concentrations:
Air: None established for product; see p. 4 for component permissible concentrations; for ethylene glycol:50ppm ceiling (ACGIH 1986-87)

EMERGENCY AND FIRST AID PROCEDURES
First Aid:
Eyes: Flush with water for fifteen minutes.
Skin: Wash exposed areas with soap and water.
Ingestion: Give large quantities of water, then induce vomiting immediately. Get immediate medical attention. Do not make an unconscious person vomit. Never give anything by mouth to an unconscious person.
Inhalation: Remove to fresh air; if not breathing apply artificial respiration. Get medical attention. Keep affected person warm and at rest.
Other Instructions: None.

PHYSIOLOGICAL EFFECTS

Code No.: 02055
Effects of Exposure:
Acute:
Eyes: Believed to cause slight eye irritation.
Skin: Believed to be slightly irritating upon prolonged contact.
Respiratory System: Drowsiness, narcosis, and unconsciousness possible upon exposure to high concentrations in poorly ventilated confined spaces.
Chronic: Liver and kidney damage in 2 year rat feeding study using 1-2% ehtylene glycol. Oral administration of very high doses of ethylene glycol produced birth defects in laboratory animals.
Other: See Additional Comments pg. 6
Sensitization Properties:
Skin: Unknown
Respiratory: Unknown
Median Lethal Dose (LD(50) LC(50)(Species):
Oral: Believed to be 4.7-8.5 g/kg (rat); moderately toxic
Inhalation: N.D.
Dermal: Believed to be 1-3 g/kg (rabbit); slightly toxic
Other: N. D.
Irritation Index, Estimation of Irritation (Species):
Skin: Believed to be 0.5-1.0/8.0 (rabbit); slightly irritating
Eyes: Believed to be 15-25/110 (rabbit); slightly irritating
Symptoms of Exposure: See above and Additional Comments pg. 6.

FIRE PROTECTION INFORMATION
Ignition Temp. F.: N.D.
Flammable Limits (%):
Lower: 3.2
Flash Point F. (Method): 240 F (COC)
Upper: N.D.
Products Evolved When Subjected to Heat or Combustion: Carbon monoxide and carbon dioxide may be formed on burning in limited air supply.
Recommended Fire Extinguishing Agents And Special Procedures: According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive Hazards: None.

ENVIRONMENTAL PROTECTION
Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification.)
Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300) Avoid contact with eyes. Contain spill if

possible. Wipe up or absorb on suitable material and shovel up.
Remarks:
Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

PRECAUTIONS
WARNING!: HARMFUL OR FATAL IF SWALLOWED KEEP OUT OF REACH OF CHILDREN MAY CAUSE IRRITATION TO EYES
Do not drink antifreeze or solution. Avoid contact with eyes. Wash thoroughly after handling. Do not store in open or unlabeled containers. ETHYLENE GLYCOL BASE. Ethylene glycol has produced birth defects in rodents.
Requirements for Transporation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.
DOT Proper Shipping Name: N.A.
DOT Hazard Class (if applicable): N.A.

CHEMICAL AND PHYSICAL PROPERTIES
Boiling Point (F): 388
Specific Gravity: 1.13 (H(2)O=1)
Appearance and Odor: Fluorescent green liquid; mild odor
pH of undiluted product: 10.8
Percent Volatile by Volume: nil.
Viscosity: 20 cP @ 20 C
Vapor Pressure: <0.1 (mmHg)
Vapor Density: 2.14 (Air=1)
Solubility: Sol.
Evaporation: <1 ( )=1
Other:
Hazardous Polymerizations: Do not occur
The Material Reacts Violently With: (If others is checked below, see additional comments on page 6 for further details) Strong Oxidizers

COMPOSITION

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
*1, 2-ethanediol	107211	50 ppm Ceiling-ACGIH NO OSHA PEL	95.00 - 99.99
*Borax	1303964	1 mg/m3 TWA ACGIH NO OSHA PEL	1.00 - 3.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

PRODUCT SHIPPING LABEL
02055 STARTEX ANTI-FREEZE COOLANT
WARNING!: HARMFUL OR FATAL IF SWALLOWED KEEP OUT OF REACH OF CHILDREN MAY

CAUSE IRRITATION TO EYES
Do not drink antifreeze or solution. Avoid contact with eyes. Wash thoroughly after handling. Do not store in open or unlabeled containers. ETHYLENE GLYCOL BASE. Ethylene glycol has produced birth defects in rodents.
If swallowed, INDUCE vomiting immediately. Call a doctor. In case of contact flush eyes with plenty of water for at least fifteen minutes. NEVER give anything by mouth to an unconscious person.

Chemical/Common Name	CAS No.	Range in %
*1, 2-ethanediol	107211	95.00 - 99.99
*Borax	1303964	1.00 - 3.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.
HMIS:
Health: 1
Flammability: 1
Reactivity: 0
Special:
CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.
HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204) Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650
For Additional Information Concerning:
Fuels/Lubricants/Antifreezes:
call: (914) 831-3400 (EXT. 204)
Chemicals:
call: (512) 459-6543
Transportation Spills:
call CHEMTREC: (800) 424-9300

ADDITIONAL COMMENTS
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1986) No critical materials present.
Lethal dose (human) 1.0-1.5 g/kg. Symptoms of ingestion: Behavioral changes, Drowsiness, Vomiting, Diarrhea, Thirst, Convulsions, Cyanosis, Rapid Heart Rate, Pulmonary edema and renal failure. Acute or chronic oral consumption for products containing ethylene glycol can produce adverse health effects in humans. Such products should NOT be used in potable water systems or other systems where contamination of potable water supplies is possible. This product, when introduced into water systems will be degraded biologically in both surface waters and waste treatment plants, and would therefore present no aquatic toxicity.
To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.

UPRR ON-LINE MSDS
MSDS Data: Chemical: 02055 STARTEX ANTI-FREEZE COOLANT UP-03147

By: R. T. Richards
Date: 12-17-86
Title: Mgr. Env. Conservation & Toxicology
New: Revised, Supersedes 06-09-86

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UP-1723

General Information
Chemical Name / Synonym / Trade Name:
00766 HYDRAULIC SAFETY FLUID 46
Hydraulic Fluid
Manufacturer Name:
Texaco Inc.
CAS Number:
107211
7732185
9003138
Trade Name and Synonyms: 00766 HYDRAULIC SAFETY FLUID 46
Manufacturer's Name: Texaco Inc.
Address: P.O. Box 509 Beacon, NY 12508
Chemical Name and/or Family or Description: Hydraulic Fluid
THIS PRODUCT IS CLASSIFIED AS: HAZARDOUS BY DEFINITION NO.(S) 6
Emergency Telephone No.: (914) 831-3400 ext. 204
WARNING STATEMENT:
WARNING!: HARMFUL OR FATAL IF SWALLOWED DO NOT ADD NITRITES MAY CAUSE ALLERGIC SKIN REACTION

OCCUPATIONAL CONTROL PROCEDURES
Protective Equipment (Type):
Eyes: Chemical type goggles or face shield optional.
Skin: Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation: Supplied air respiratory protection for cleaning large spills or upon entry into tanks, vessels, or other confined spaces.
Ventilation: Adequate to meet permissible concentrations.
Permissible Concentrations:
Air: None established for product; refer to page 4 for component permissible concentrations. Contains Ethylene Glycol.

EMERGENCY AND FIRST AID PROCEDURES
First Aid:
Eyes: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin: Wash exposed areas with soap and water.
Ingestion: If conscious, give two glasses of water and induce vomiting by touching fingers to the back of the throat. CALL A DOCTOR IMMEDIATELY. Never give anything by mouth to an unconscious person.
Inhalation: Should symptoms noted under physiological effects occur, remove to fresh air. If not breathing, apply artificial respiration.
Other Instructions: NOTE TO DOCTOR: Intravenous administration of ethanol is antidotal for ethylene glycol toxicity. Prompt treatment may reduce kidney damage, supplemented if necessary with hemodialysis. See A.C., pg. 6.

PHYSIOLOGICAL EFFECTS:
Effects of Exposure:
Acute:
Eyes: Believed to be minimally irritating.
Skin: Believed to be minimally irritating.
Respiratory System: Not applicable
Chronic: There is no evidence in humans but ethylene glycol, a principle component of this product, has caused birth defects in laboratory animals when inhaled or ingested in large amounts during pregnancy.
Other: See Additional Comments, page 6.
Sensitization Properties:
Skin: Unknown
Respiratory: unknown
Median Lethal Dose (LD(50) LC(50)(Species):
Oral: Lethal (human) dose believed to be approx 12oz based on EG content
Inhalation: N.D.
Dermal: Believed to be >6 g/kg (rat); practically non-toxic
Other: N. D.
Irritation Index, Estimation of Irritation (Species):
Skin: Believed to be <0.5/8.0 (rabbit); no appreciable effect
Eyes: Believed to be 0-15/110 (rabbit); no appreciable effect
Symptoms of Exposure: See above.

FIRE PROTECTION INFORMATION
Ignition Temp. F.: N.D.
Flash Point F. (Method): > 200 F
Flammable Limits (%):
Lower: N.D.
Upper: N.D.
Products Evolved When Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, and aldehydes and ketones may be formed.
Recommended Fire Extinguishing Agents And Special Procedures: According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive Hazards: None

ENVIRONMENTAL PROTECTION
Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification.)
Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300) Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

Remarks:
Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

PRECAUTIONS
WARNING!: HARMFUL OR FATAL IF SWALLOWED DO NOT ADD NITRITES MAY CAUSE ALLERGIC SKIN REACTION
Ethylene glycol has caused birth defects in rodents. Do not take internally. Avoid breathing vapor or mist. Use only in well-ventilated locations. Keep container closed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. CONTAINS ETHYLENE GLYCOL
Requirements for Transportation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.
DOT Proper Shipping Name: N.A.
DOT Hazard Class (if applicable): N.A.

CHEMICAL AND PHYSICAL PROPERTIES
Boiling Point (F): N.D.
Specific Gravity: 1.0833 (H(2)O=1)
Appearance and Odor: Dark pink liquid
pH of undiluted product: N.D.
Percent Volatile by Volume: N.D.
Viscosity: 42.98 cSt @40 C
Hazardous Polymerizations: Do not occur
The Material Reacts Violently With: (If others is checked below, see additional comments on page 6 for futher details) Strong Oxidizers
Vapor Pressure: N.D. (mmHg)
Vapor Density: N.D. (Air=1)
Solubility: N.D.
Evaporation: N.D.
Other:

COMPOSITION

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
*1,2-ethanediol	107211	50 ppm Ceiling-ACGIH NO OSHA PEL	35.00 - 49.99
Water deionized	7732185	None Established	20.00 - 34.99
Polyalkylene glycol	9003138		20.00 - 34.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

PRODUCT SHIPPING LABEL
00766 HYDRAULIC SAFETY FLUID 46:
WARNING!: HARMFUL OR FATAL IF SWALLOWED DO NOT ADD NITRITES MAY CAUSE ALLERGIC SKIN REACTION

Ethylene glycol has caused birth defects in rodents. Do not take internally. Avoid breathing vapor or mist. Use only in well-ventilated locations. Keep container closed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. CONTAINS ETHYLENE GLYCOL
If swallowed, INDUCE vomiting immediately. Call a doctor. In case of contact, immediately wash skin with soap and plenty of water. Destroy contaminated shoes. NEVER give anything by mouth to an unconscious person. FOR INDUSTRIAL USE ONLY.
NOTE TO DOCTOR: Intravenous administration of ethanol is antidotal for ethylene glycol toxicity. Prompt treatment may reduce kidney damage, supplemented if necessary with hemodialysis. Contact a Poison Center for further treatment information.

Chemical/Common Name	CAS No.	Range in %
*1,2-ethanediol	107211	35.00 - 49.99
Water deionized	7732185	20.00 - 34.99
Polyalkylene glycol	9003138	20.00 - 34.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.
HMIS:
Health: 2
Flammability: 1
Reactivity: 0
Special:
CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.
HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204) Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650
For Additional Information Concerning:
Fuels/Lubricants/Antifreezes: call (914) 831-3400 (EXT.204)
Chemicals: call (512) 459-6543
Transportation Spills: call CHEMTREC (800) 424-9300

ADDITIONAL COMMENTS
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1986) No critical materials present.
DO NOT ADD NITRITES. This product contains amines which can combine with nitrites to form nitrosamines. Many nitrosamines have been found to cause cancer in laboratory animals and are therefore a potential human cancer hazard.
This product may contain residual amounts of ethylene oxide (EO) which can accumulate in the container headspace and be released into the ambient environment. This process would tend to increase when the product is agitated, as during tank car loading and unloading, and blending operations. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) for EO is 1 ppm for an eight-hour time weighted average exposure. The standard regulates occupational exposure

to EO from all sources, including products containing residual EO. It is the responsibility of the employer to comply with the OSHA Ethylene Oxide Standard (29CFR 1910.1047).

PHYSIOLOGICAL EFFECTS (continued): Ingestion or inhalation of large amounts of this product, due to its ethylene glycol content, can cause drowsiness, loss of coordination, kidney failure or in extreme cases, unconsciousness. This product contains a chemical at a concentration of less than 1% that is a known human skin sensitizer. Therefore contact with this product may cause allergic skin reaction.

ECOLOGICAL EFFECTS DATA: Relatively nontoxic to Daphnia magna and Pimphelas promelas with median lethal concentrations (48 hour LC 50) of greater than 4000 mg/l.

CHRONIC PHYSIOLOGICAL EFFECTS: Lifetime mouse skin painting studies have been conducted with similar products. In these studies, treated mice showed a significant increase in the number of internal tumors. although these products contained no nitrites or nitrosamines, it is possible that these unexpected results occurred because an amine in the products, when ingested and/or absorbed through the skin during the skin painting study by the mice, was converted to a carcinogenic nitrosamine. Therefore, the tests may not demonstrate a risk attributable to exposure through repeated skin contact.

PERMISSIBLE CONCENTRATIONS: TLV-Ceiling (C) is the maximum concentration that should not be exceeded during any part of the working day.

EMERGENCY AND FIRST AID PROCEDURES: Contact a Poison Center for further treatment information.

To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.

By: R. T. Richards
Date: 08-03-87
Title: Mgr. Env. Conservation & Toxicology
Revised, Supersedes: 11-27-85

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UP-1729

PERCENT VOLATILE BY VOLUME (%)
88
PERCENT SOLID BY WEIGHT (%)
0%
VAPOR DENSITY (AIR=1)
1.2
EVAPORATION RATE (___ = 1)
N.A.
SOLUBILITY IN WATER
soluble
pH=
N.A.
APPEARANCE AND ODOR
Clear spray
MATERIAL IS:
LIQUID

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT
53.6 Deg. F
¢ | Deg. C
method used
FLAMMABLE LIMITS
LEL
UEL
EXTINGUISHING MEDIA
CO2, Water Fog, Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES
Cans may explode.
UNUSUAL FIRE AND EXPLOSION HAZARDS
Temperatures above 130 Deg. F may cause cans to burst.

SECTION V - HEALTH HAZARD DATA
EFFECTS OF OVEREXPOSURE - Conditions to avoid
Remove patient to fresh air. Poisonous
THRESHOLD LIMIT VALUE
PERMISSIBLE EXPOSURE LIMIT
N.A.
OTHER LIMIT
PRIMARY ROUTES OF ENTRY
Inhalation
¢X|
Skin Contact
¢ |
Other (specify)
EMERGENCY AND FIRST AID PROCEDURES
If swallowed, methanol must be removed promptly from the stomach by the

induction of vomiting or gastric lavage. Call physician immediately.

SECTION VI - REACTIVITY DATA
STABILITY
UNSTABLE
¢X|
STABLE
¢ |
CONDITIONS TO AVOID
spark, flames, heat
INCOMPATIBILITY (materials to avoid)
Formaldehyde, formic acid
HAZARDOUS DECOMPOSITION PRODUCTS:
HAZARDOUS POLYMERIZATION
MAY OCCUR
¢ |
WILL NOT OCCUR
¢X|
CONDITIONS TO AVOID
Sparks, flame, heat

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Pick up with appropriate absorbents
WASTE DISPOSAL METHOD
Wrap empty cans. Use appropriate disposal service. Do not incinerate.
CERCLA (Superfund) REPORTABLE QUANTITY (in lbs)
RCRA HAZARDOUS WASTE NO. (40 CFR 261.33)
VOLATILE ORGANIC COMPOUND (VOC)(as packaged, minus water)
Methanol
¢ | Theoretical ___ lb/gal
¢ | Analytical ___ lb/gal

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (specify type)
VENTILATION
LOCAL EXHAUST (specify rate)
local exhaust
MECHANICAL (general) (specify rate)
N.A.
SPECIAL
OTHER
PROTECTIVE GLOVES (specify type)
N.A.
EYE PROTECTION (specify type)

UPRR
MSDS Data: Chemical: Spray De-icer

ON-LINE MSDS
UP-04560

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
BOWMAN DISTRIBUTION

SECTION I
PRODUCT NAME
Spray De-icer
SUPPLIER
BOWMAN DISTRIBUTION, BARNES GROUP INC.
ADDRESS
850 East 72nd Street, Cleveland, OH 44103
BOWMAN PART NO.
21412
EMERGENCY TELEPHONE NO.
(216) 391-7200
DATE
7/11/86
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101)
Methanol
ADDITIONAL HAZARD CLASSES (as applicable)
CHEMICAL FAMILY
Blended Aerosol
FORMULA

SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	Listed as Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
67-56-1	45		Methanol	
107-21-1	12		Ethylene Glycol	

SECTION III - PHYSICAL DATA
BOILING POINT
150 Deg. F
___ Deg. C
SPECIFIC GRAVITY (H2O=1)
N.A.
VAPOR PRESSURE
@ 90 Deg. F
¢ | Deg. C
¢ | mm Hg
¢X | psi

UP-1732

N.A.

OTHER PROTECTIVE EQUIPMENT

N.A.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep from heat. Store below 120 Deg. F. Cans under pressure may burst if heated above 120 Deg. F.

OTHER PRECAUTIONS

Follow cautions or product label.

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UP-1734

General Information
Chemical Name / Synonym / Trade Name:
DOT 3 BRAKE FLUID
DYNALIFE(R) SUPER BRAKE FLUID
DOT 3 Motor Vehicle Super Heavy Body Brake Fluid
Polyalkylene Oxide Ethers
Manufacturer Name:
PHILLIPS 66 COMPANY
CAS Number:

Date: September, 1985
Product Name: PHILLIPS 66 COMPANY A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY Bartlesville, Oklahoma 74004
Emergency Phone Nos.: 918-661-3865 (during business) 918-661-8118 (after hours)

PRODUCT IDENTIFICATION
Synonyms: DOT 3 Motor Vehicle Super Heavy Body Brake Fluid
Chemical Name: Polyalkylene Oxide Ethers
Chemical Family: Glycol
Chemical Formula: Mixture
CAS Reg. No: Mixture
Product No: NE
Product and/or Components Entered on EPA's TSCA Inventory: Yes

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HAZARDOUS COMPONENTS

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Polyalkylene Oxide Ethers	Various	¢99	NE	NE
Unidentified	NE	1	NE	NE

This product does not meet the definition of a hazardous material given in 29 CFR Part 1910.1200 (OSHA). Information on this form is furnished as a customer service.
NA: NOT APPLICABLE
NE: NOT ESTABLISHED

PERSONAL PROTECTION INFORMATION
Ventilation: Use adequate ventilation.
Respiratory Protection: Not generally required.
Eye Protection: Use safety glasses with side shields.
Skin Protection: No special garments required. Avoid unnecessary skin contamination with material.
NOTE: Personal protection information shown above is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

HANDLING AND STORAGE PRECAUTIONS
Avoid inhalation and skin and eye contact. Wear protective equipment and/or garments described above if exposure conditions warrant. Wash hands after handling. Launder contaminated clothing before reuse.
Store in cool, well-ventilated area away from ignition sources. Provide a means of controlling leaks and spills. Keep containers closed.

REACTIVITY DATA
Stability: Stable
Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents.
Hazardous Polymerization: Will Not Occur
Hazardous Decomposition Products: Carbon oxides and various hydrocarbons formed when burned.

HEALTH HAZARD DATA
RECOMMENDED EXPOSURE LIMITS: None established.
ACUTE EFFECTS OF OVEREXPOSURE:
EYE: May cause slight eye irritation.
SKIN: None expected.
INHALATION: No known applicable information.
INGESTION: No known applicable information.
SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE: No known applicable information.
OTHER HEALTH EFFECTS: No known applicable information.
HEALTH HAZARD CATEGORIES:
Known Carcinogen:
Suspect Carcinogen:
Mutagen:
Teratogen:
Allergic Sensitizer:
Highly Toxic:
Toxic:
Corrosive:
Irritant:
Target Organ Toxin:
Specify: No known applicable information.
FIRST AID AND EMERGENCY PROCEDURES:
EYE: Flush eyes with running water for at least 15 minutes.
SKIN: Wash with soap and water.
INHALATION: NA
INGESTION: Promptly induce vomiting and seek medical assistance.

PHYSICAL DATA
Appearance: Colorless to Amber liquid
Odor: Mild
Boiling Point: >475 F (>246 C)
Vapor Pressure: NE

Vapor Density (Air = 1): NE
Solubility in Water: Appreciable
Specific Gravity (H(2)O = 1): 1.025
Percent Volatile by Volume: Negligible
Evaporation Rate (=1): Negligible
Viscosity: NE

FIRE and EXPLOSION DATA
Flash Point (Method Used): 295 F (146 C) (COC, ASTM D 92)
Flammable Limits (% By Volume in Air):
LEL: NE
UEL: NE
Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO(2).
Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Shut off source, if possible. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/or garments described on Page 2 if conditions warrant. Water fog or spray may be used to cool exposed containers and equipment.
Fire and Explosion Hazards: Carbon oxides and various hydrocarbons formed when burned.

SPILL, LEAK and DISPOSAL PROCEDURES
Precautions Required if Material is Released or Spilled: Evacuate area of all unnecessary personnel. In case of spill or leak resulting in unknown concentration, use NIOSH/MSHA approved supplied respirator. In case of spill or leak which results in conditions immediately dangerous to life or health (IDLH) use NIOSH/MSHA approved self-contained breathing apparatus (SCBA) equipment. When entry into or exit from concentrations of unknown exposure, use NIOSH/MSHA approved self-contained breathing apparatus (SCBA). Shut off source, if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material (sand, clay, sawdust, etc.). Transfer to disposal drums.
Waste Disposal (Insure Conformity with all Applicable Disposal Regulations): Incinerate or place in permitted waste management facility.

DOT TRANSPORTATION
Shipping Name: NA
Hazard Class: NA
ID Number: NA
Marking: NA
Label: NA
Placard: NA
Hazardous Substance/RQ: NA
Shipping Description: NA
Packaging References: NA
RCRA CLASSIFICATION (FOR UNADULTERATED PRODUCT AS A WASTE): NA
PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED

EQUIPMENT: Wear protective equipment and/or garments described on Page 2 if exposure conditions warrant. Use NIOSH/MSHA approved respiratory protection, such as air-supplied mask, in confined spaces or other poorly ventilated areas. See Page 2 for protective clothing requirements. Contact immediate supervisor for specific instructions before work is initiated.

HAZARD CLASSIFICATION

THIS PRODUCT MEETS THE FOLLOWING HAZARD DEFINITION(S) AS DEFINED BY OCCUPATIONAL SAFETY AND HEALTH REGULATIONS (29 CFR PART 1910. 1200): Not Hazardous

ADDITIONAL COMMENTS

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Lubricants

UP-1739

GENERAL CONSIDERATIONS FOR LUBRICANTS

While using lubricants, a person may slip and fall because of accumulated grease and oil on the floor, injure his hands on sharp or rough edges on the vehicle, inhale sprayed or atomized oils used for spring lubrication, or suffer hand and head injuries from high pressure grease guns.

Floors should be kept free of grease and oil to prevent slips and falls. Spills should immediately be cleaned up.

Remind workers to keep their hands away from sharp or rough edges and to obtain immediate first aid for all cuts and scratches. Warn workers against putting their hands in front of the grease gun nozzle when the handle is pulled. There is potential for quantities of grease to be forced under the skin of workers by high pressure grease guns. Wear UPRR approved personal protective equipment (ie, gloves) if contact is likely.

Tops of grease cylinders should be securely fastened into place; otherwise, covers may blow off and seriously injure anyone who is nearby.

Refer to the safety and health information contained on the MSDS and product label for the specific lubricating products being used at your location before each use.

LUBRICANTS

1. Multi-Purpose Grease

2. Gear Lubricant

   A. Freight Car Lubricants

      1. Grease (Graphite Based)
      2. Grease (Molytex)
      3. AAR Brake Cylinder Lube
      4. Low - Temp Leak Locator

   B. Lubricants - Engineering Services

      1. Rail Lubricator Grease
      2. Switch Plate Lubricant
      3. Chain/Cable Lubricant

UPRR ON-LINE MSDS
MSDS Data: Chemical: Blue Gard 500+ Grease UP-00943

General Information
Chemical Name / Synonym / Trade Name:
Blue Gard 500+ Grease
Grease, Multipurpose
Soap-Thickened Oil--Lubricant
Manufacturer Name:
FARMLAND INDUSTRIES, INC.
CAS Number:
64742-65-0
FARMLAND INDUSTRIES, INC. TBA/LUBRICANTS DIVISION P.O. BOX 7305 KANSAS CITY, MO. 64116
24 HOUR EMERGENCY TELEPHONE:
FARMLAND: 816-459-6962
CHEMTREC: 1-800-424-9300
PRODUCT NAME: Blue Gard 500+ Grease

PRODUCT IDENTIFICATION
COMMON NAME: Grease, Multipurpose
CHEMICAL NAME: Soap-Thickened Oil--Lubricant
CHEMICAL FORMULA: Mixture
CAS #: Base Oil 64742-65-0
CHEMICAL FAMILY: Hydrocarbon

HAZARDOUS COMPONENTS

INGREDIENTS	PERCENTAGES	PEL (OSHA)	TLV (ACGIH)	OTHER
Oil, Solvent Neutral	85%	NA	5 mg/m(3) oil mist	2 mg/m(3)
Soap Thickener (Lithium Corp.)	Proprietary	NA		2 mg/m(3)
Performance Additive and Dye (insol. MO Compound) (Organomolybdenum compound) (R.T. Vanderbilt)	Proprietary	NA		15 mg/m(3)

Hazard Index:
Health: 1
Flammability: 1
Reactivity: 0

PHYSICAL DATA

BOILING POINT: >500 F
PERCENT VOLATILES: NA
EVAPORATION RATE (ETHER = 1.0): Much less than 1.0
APPEARANCE AND ODOR: Semisolid gel; mild petroleum odor; blue color; smooth texture
SPECIFIC GRAVITY (H(2)O = 1.0): .88-.92
VAPOR DENSITY (AIR = 1.0): NA
VAPOR PRESSURE: <1 mmHg @ 68 F (oil)
SOLUBLE IN WATER: NO

FIRE AND EXPLOSION DATA
FLASH POINT: Above 300 F
EXTINGUISHING MEDIA: Dry chemical, CO(2), foam.
FLAMMABLE LIMITS IN AIR % BY VOLUME:
LOWER: NA
UPPER: NA
SPECIAL FIRE FIGHTING PROCEDURES: Avoid breathing vapors; use self-contained breathing apparatus in confined areas; cool exposed containers with water spray.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

HEALTH HAZARD DATA
EFFECTS OF OVER EXPOSURE:
ACUTE: Not expected to be acutely toxic by ingestion or inhalation.
CHRONIC: None expected.
BODY PARTS: Dermatitis potential.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
IS MATERIAL A CARCINOGEN OR POTENTIAL CARCINOGEN: NO Oral LD(50) (rats) was 7.35 g/kg in additive component; Dermal LD(50) (rabbits) >5.0 g/kg.
EMERGENCY AND FIRST AID PROCEDURES:
Eyes: Flush with water 15 minutes; see physician.
Skin: Wash with soap and water; if high pressure, get medical attention.

REACTIVITY
STABLE: YES
CONDITIONS TO AVOID:
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, oxides of nitrogen, phosphorus, and sulfur. Hydrogen sulfide.
HAZARDOUS POLYMERIZATION: NO
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED: Soak up with absorbent; shovel residue; floor will be slippery; treat with earth or clean floor with mild solvent and dry. Advise authorities if spill enters sewers or watercourses. Not regulated as hazardous waste per CERCLA/RCRA, July 3,

1985.

WASTE DISPOSAL PROCEDURES: Dispose at approved landfill in accordance with federal, state, and local regulations, or incinerate properly.

PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY EQUIPMENT: NIOSH-approved respirators.

EYE PROTECTION: Eye goggles or faceshield.

PROTECTIVE CLOTHING: Impervious gloves recommended.

VENTILATION REQUIREMENTS: General ventilation usually adequate; mechanical ventilation recommended if vapors or high temperatures are encountered.

OTHER (Safety Showers, Eyewash Stations, etc.):

SPECIAL PRECAUTIONS AND COMMENTS

HANDLING AND STORING: Keep containers closed when not in use; do not handle or store near heat, flame or high pressure. Do not weld, heat or drill empty containers.

OTHER: Additive in this material is in compliance with Toxic Substance Control Act. (15 USC 2601-2629)

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE, BUT FARMLAND DOES NOT WARRANT, EXPRESS OR IMPLIED, THE FITNESS OF CONTENTS HEREOF FOR EITHER GENERAL OR PARTICULAR PURPOSES. IN NO EVENT SHALL FARMLAND BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES NOR SHALL ANYONE HAVE A RIGHT OR REMEDY BASED ON OR RELATED TO POSSESSION AND/OR USE OF THIS DATA SHEET.

N

UP-1746

General Information
Chemical Name / Synonym / Trade Name:
CHEVRON Universal Gear Lubricant SAE 85W-140
Manufacturer Name:
Chevron
CAS Number:
64742-57-0
64742-01-4
64742-54-7
64742-62-7
64742-41-2
64742-65-0
Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804-0054 Emergency Phone Number (415) 233-3737 CHEVRON Universal Gear Lubricant SAE 85W-140

TYPICAL COMPOSITION
Highly refined base oils (CAS 64742-57-0, 64742-01-4, 64742-54-7, 64742-62-7, 64742-41-2, 64742-65-0) >90% Additives including inhibitors and extreme pressure agent <10%

EXPOSURE STANDARD
No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Based on information reviewed to date, we recommend an exposure standard of 5 mg/m(3). This is the Federal OSHA exposure standard and the ACGIH (1984-85) TLV for mineral oil mists.

PHYSIOLOGICAL & HEALTH EFFECTS
Eyes: Expected to cause no more than minor eye irritation.
Skin: Expected to cause no more than minor skin irritation following prolonged or frequently repeated contact.
Inhalation: Not expected to be acutely toxic by inhalation. Breathing mineral oil mist at concentrations in air that exceed the recommended exposure standard can cause respiratory irritation or discomfort. See Additional Health Data.
Ingestion: Not expected to have acute systemic toxicity by ingestion.

EMERGENCY & FIRST AID PROCEDURES
Eyes: Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.
Skin: Wash skin thoroughly with soap and water. Launder contaminated clothing.
Inhalation: If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.
Ingestion: If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If

medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

SPECIAL PROTECTIVE INFORMATION
Eye Protection: No special eye protection is necessary.
Skin Protection: No special skin protection is necessary.
Respiratory Protection: No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standard, the use of an approved respirator is recommended.
Ventilation: Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

FIRE PROTECTION
Flash Point: (COC) 410 F (210 C) Min.
Autoignition Temp.: NDA
Flammability Limits: n/a
Extinguishing Media: CO(2), Dry Chemical, Foam, Water Fog
Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire MSDS.

SPECIAL PRECAUTIONS
DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.
CAUTION!: Do not use pressure to empty drum or explosion may result.
Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills.
Precautions if Material is Released or Spilled: Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.
Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

REACTIVITY DATA
Stability (Thermal, Light, etc.): Stable.
Incompatibility (Materials to Avoid): May react with strong oxidizing materials.
Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus;

Incomplete combustion can produce carbon monoxide.
Hazardous Polymerization: Will not occur.

PHYSICAL PROPERTIES
Solubility: Insoluble in water. Miscible with hydrocarbon solvents.
Appearance (Color, Odor, etc.): Dark green liquid.
Boiling Point: n/a
Melting Point: n/a
Specific Gravity: NDA
Vapor Pressure: n/a
Vapor Density: (Air=1): n/a
Percent Volatile (Volume %): n/a
Evaporation: n/a
Pour Point: -12 C (Max.)
Viscosity: 24.2 cSt @ 100 C (Min.)
n/a: Not Applicable
NDA: No Data Available

ADDITIONAL HEALTH DATA
Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following, depending on concentration and length of exposure: nasal discharge, nosebleed, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.
This product is not expected to be acutely toxic by any route of exposure.
This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

2.A.1

UP-1750

Upper N/AP
Fire and Explosion Hazards: SLIGHTLY COMBUSTIBLE! OSHA/NFPA CLASS-IIIB COMBUSTIBLE LIQUID. WHEN HEATED ABOVE ITS FLASH POINT. THIS MATERIAL WILL RELEASE FLAMMABLE VAPORS WHICH CAN BURN IN THE OPEN OR BE EXPLOSIVE IN CONFINED SPACES IF EXPOSED TO AN IGNITION SOURCE. MISTS OR SPRAYS MAY BE FLAMMABLE AT TEMPERATURES BELOW THE NORMAL FLASH POINT. KEEP AWAY FROM EXTREME HEAT AND OPEN FLAME.
Extinguishing Media: DRY CHEMICAL AND CARBON DIOXIDE. FOAM AND WATER FOG ARE EFFECTIVE BUT MAY CAUSE FROTHING.
Special Firefighting Procedures: FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. THIS MAY INCLUDE SELF-CONTAINED BREATHING APPARATUS TO PROTECT AGAINST THE HAZARDOUS EFFECTS OF COMBUSTION PRODUCTS AND OXYGEN DEFICIENCIES. COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER. IMPROPER USE OF WATER AND EXTINGUISHING MEDIA CONTAINING WATER MAY CAUSE FROTHING WHICH CAN SPREAD THE FIRE OVER A LARGER AREA.

IV. Health Hazards
Summary of Acute Hazards: SKIN CONTACT MAY PRODUCE MODERATE IRRITATION.
ROUTE OF EXPOSURE: Inhalation
SIGNS AND SYMPTOMS: NO SIGNIFICANT ADVERSE HEALTH EFFECTS ARE EXPECTED TO OCCUR UPON SHORT-TERM EXPOSURE.
ROUTE OF EXPOSURE: Eye Contact
SIGNS AND SYMPTOMS: EYE CONTACT WITH THIS MATERIAL MAY RESULT IN MILD EYE IRRITATION.
Primary Route(s): X
ROUTE OF EXPOSURE: Skin Absorption
SIGNS AND SYMPTOMS: NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH EFFECTS ARE EXPECTED TO OCCUR.
ROUTE OF EXPOSURE: Skin Irritation
SIGNS AND SYMPTOMS: THIS MATERIAL MAY PRODUCE MODERATE SKIN IRRITATION UPON SHORT-TERM EXPOSURE. MORE SERIOUS SKIN DISORDERS MAY RESULT FROM PROLONGED OR REPEATED SKIN CONTACT. (SEE "SUMMARY OF CHRONIC HAZARDS" BOX BELOW.)
Primary Route(s): X
ROUTE OF EXPOSURE: Ingestion
SIGNS AND SYMPTOMS: SWALLOWING THIS MATERIAL MAY CAUSE GASTROINTESTINAL DISTURBANCES SUCH AS NAUSEA, VOMITING, AND DIARRHEA. SEE SECTION XI. - "GENERAL COMMENTS" FOR ADDITIONAL INFORMATION.
Primary Route(s):
ROUTE OF EXPOSURE: Summary of Chronic Hazards and Special Health Effects
SIGNS AND SYMPTOMS: PROLONGED AND/OR REPEATED CONTACT WITH THIS MATERIAL MAY PRODUCE SKIN IRRITATION AND INFLAMMATION. FOR CHRONIC EFFECTS DATA CONCERNING A COMPONENT OF THIS PRODUCT. SEE SECTION XI. - "GENERAL COMMENTS".
PERSONNEL WITH PRE-EXISTING SKIN DISORDERS SHOULD AVOID CONTACT WITH THIS PRODUCT.

V. Protective Equipment and Other Control Measures

Respiratory: NOT APPLICABLE
Eye: SAFETY GLASSES SHOULD BE ADEQUATE PROTECTION UNDER NORMAL CONDITIONS OF USE. IF POTENTIAL EXPOSURE TO HIGH-PRESSURE MATERIAL EXISTS. THEN A FACE SHIELD AND/OR CHEMICAL GOGGLES ARE ALSO RECOMMENDED. (SEE SECTION XI.)
Skin: AVOID PROLONGED AND/OR REPEATED SKIN CONTACT, OR WEAR IMPERVIOUS PROTECTIVE CLOTHING. HANDS OR OTHER POTENTIAL SKIN CONTACT AREAS SHOULD BE WASHED WITH SOAP AND WATER WHEN LEAVING WORK. (SEE "OTHER HYGIENIC & WORK PRACTICES".)
Engineering Controls: NONE IS NEEDED UNDER ANTICIPATED CONDITIONS OF USE.
Other Hygienic and Work Practices: WASH HANDS WITH PLENTY OF SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, OR USE OF TOILET FACILITIES. DO NOT USE GASOLINE, SOLVENTS, KEROSENE, OR HARSH ABRASIVE SKIN CLEANERS FOR WASHING EXPOSED SKIN AREAS. TAKE A SHOWER AFTER WORK IF GENERAL CONTACT OCCURS. REMOVE OIL-SOAKED CLOTHING AND LAUNDER BEFORE REUSE. LAUNDER OR DISCARD CONTAMINATED LEATHER GLOVES AND SHOES.

SECTION VI. Occupational Exposure Limits
Substance: NOT APPLICABLE - SEE SECTION XI.
Source:
Date:
Type:
Value/Units:
Time:

SECTION VII. Emergency and First Aid
Inhalation: NOT APPLICABLE.
Eye Contact: FLUSH EYES WITH CLEAN, LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE EYELIDS. IF PAIN OR REDNESS PERSISTS AFTER FLUSHING, OBTAIN MEDICAL ATTENTION.
Skin Contact: REMOVE BY WIPING; THEN WASH SKIN THOROUGHLY WITH PLENTY OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND THOROUGHLY CLEAN BEFORE REUSE. DISCARD CONTAMINATED LEATHER GLOVES AND SHOES.
Ingestion: INGESTION IS UNLIKELY. HOWEVER, IF MORE THAN A HALF-CUP FULL OF THIS MATERIAL IS SWALLOWED, GIVE QUANTITIES OF WATER, INDUCE VOMITING, AND PROMPTLY OBTAIN MEDICAL ATTENTION.
Emergency Medical Treatment Procedures: HIGH-PRESSURE INJECTIONS IN UNDERLYING TISSUE: IMMEDIATE TREATMENT SHOULD INCLUDE EXTENSIVE INCISION, DEBRIDEMENT, AND SALINE IRRIGATION. INADEQUATE TREATMENT MAY RESULT IN TISSUE ISCHEMIA AND GANGRENE. EARLY SYMPTOMS MAY BE MINIMAL. (SEE SECTION XI.)

SECTION VIII - Spill and Disposal
Precautions if Material is Spilled or Released: CONTAIN SPILL AND KEEP IT OUT OF ALL WATER BODIES, IF POSSIBLE. SAFELY STOP FLOW OF SPILL. HOT PRODUCT WILL SOLIDIFY UPON COOLING. ONCE SOLIDIFIED, IT CAN BE SHOVELED INTO PROPER CONTAINERS SUITABLE FOR REUSE OR DISPOSAL. IN URBAN AREA, CLEANUP AS SOON AS POSSIBLE; IN NATURAL ENVIRONMENTS, CLEANUP ON ADVICE

FROM ECOLOGISTS TO MINIMIZE PHYSICAL HABITAT DAMAGE. EQUIP CLEANUP CREWS WITH PROPER PROTECTIVE EQUIPMENT. COMPLY WITH ALL APPLICABLE LAWS. SPILLS MAY NEED TO BE REPORTED TO THE NATIONAL RESPONSE CENTER (800/424-8802). THE SPILLED MATERIAL AND ANY WATER OR SOIL WHICH IT HAS CONTACTED MAY BE HAZARDOUS TO ANIMAL/AQUATIC LIFE.

Waste Disposal Methods: MAXIMIZE PRODUCT RECOVERY FOR REUSE OR RECYCLING. CONDITIONS OF USE MAY CAUSE THIS MATERIAL TO BECOME A "HAZARDOUS WASTE" AS DEFINED BY STATE OR FEDERAL LAWS. USE APPROVED TREATMENT, TRANSPORTERS, AND DISPOSAL SITES IN COMPLIANCE WITH ALL LAWS. SPILL MATERIAL IS BIODEGRADABLE IF GRADUALLY EXPOSED TO MICRO-ORGANISMS. POTENTIAL TREATMENT AND DISPOSAL METHODS SHOULD CONSIDER THAT THE PRODUCT CONTAINS CHLORINATED PARAFFINS WHICH ARE KNOWN TO BIOACCUMULATE AND BE SLOW TO BIODEGRADE.

SECTION IX - Components
(This may not be a complete list of components)

Component Name	CAS No.	Carcinogen##	
SEVERELY HYDROTREATED HEAVY NAPHTHENIC DISTILLATE (PETRO.)	64742-52-5*	N/AP	AP
SOLVENT-DEWAXED RESIDUAL OIL (PETROLEUM)	64742-62-7*	N/AP	AP
LITHIUM SALT SOAPS OF PLANT AND ANIMAL-DERIVED FATTY OILS		N/AP	AP
MOLYBDENUM DISULFIDE	1317-33-5	N/AP	AP
EXTREME PRESSURE (EP) ADDITIVE(S)		N/AP	AP
SOLVENT-DEWAXED HEAVY PARAFFINIC DISTILLATE (PETROLEUM)	64742-65-0*	N/AP	AP
ADDITIVE MIXTURE: RUST, OXIDATION, AND CORROSION INHIBITORS		N/AP	AP
CHLORINATED PARAFFIN HYDROCARBONS	63449-39-8*	IN/AP	AP

Component Name	Composition amount (Wt.) (See Qualification on Page 4)
SEVERELY HYDROTREATED HEAVY NAPHTHENIC DISTILLATE (PETRO.)	45 PERCENT
SOLVENT-DEWAXED RESIDUAL OIL (PETROLEUM)	35 PERCENT
LITHIUM SALT SOAPS OF PLANT AND ANIMAL DERIVED FATTY OILS	10 PERCENT
MOLYBDENUM DISULFIDE	3 PERCENT
EXTREME PRESSURE (EP) ADDITIVE(S)	3 PERCENT
SOLVENT-DEWAXED HEAVY PARAFFINIC DISTILLATE (PETROLEUM)	2 PERCENT
ADDITIVE MIXTURE: RUST, OXIDATION, AND CORROSION INHIBITORS	1 PERCENT
CHLORINATED PARAFFIN HYDROCARBONS	0.1 TO 1.0 PERCENT

SECTION X - Physical and Chemical Data
Boiling Point: GT 600 Deg. F.
Freezing Point: N/AP
Specific Gravity (H(2)O = 1 AT 39.2 Deg. F.): AP 0.92
Hazardous Polymerization: NOT EXPECTED TO OCCUR

Viscosity Units, Temp. (Method): AP 1000
SUS AT 100 Deg. F. (D2161)
Vapor Pressure: (MM HG AT 70 Deg. F) LT 0.1
Vapor Sp. Gr. (Air = 1.0 at 60 Deg. - 90 Deg. F): GT 10
Solubility in Water: NEGLIGIBLE
Other Chemical Reactivity: N/P
Dry Point: N/AP
Volatile Characteristics: NEGLIGIBLE
pH: N/AP
Stability: STABLE
Other Physical and Chemical Properties: VISCOSITY SHOWN ABOVE IS FOR THE OIL COMPONENT ONLY. WORKED PENETRATION = AP 280. DROPPING POINT TEMPERATURE = AP 570 Deg. F.
Appearance and Odor: SLATE-COLORED, SMOOTH-TEXTURED, SEMI-SOLID; LUBE OIL ODOR.
Conditions to Avoid: EXTREME HEAT AND OPEN FLAME.
Materials to Avoid: STRONG ACIDS, ALKALIES, AND OXIDIZERS SUCH AS LIQUID CHLORINE AND OXYGEN.
Hazardous Decomposition Products: BURNING OR EXCESSIVE HEATING MAY PRODUCE CARBON MONOXIDE AND OTHER HARMFUL GASES/VAPORS INCLUDING OXIDES AND/OR OTHER COMPOUNDS OF LITHIUM. ZINC, SULFUR, PHOSPHORUS, NITROGEN, CHLORINE, MOLYBDENUM AND BARIUM.

SECTION XI - Additional Precautions
Handling, Storage and Decontamination Procedures:
HIGH-PRESSURE SKIN INJECTION INJURIES HYDROCARBONS WHICH ARE HANDLED IN HIGH-PRESSURE GREASE GUNS OR HYDRAULIC LINES MAY BE ACCIDENTALLY INJECTED INTO THE EYES, SKIN, AND/OR UNDERLYING TISSUE. HYDROCARBONS INJECTED INTO UNDERLYING TISSUES ARE NOT READILY REMOVED BY BODY FLUIDS AND CAN CAUSE PAIN, RAPID SWELLING, CHEMICAL IRRITATION AND INFECTION. WORKERS MUST BE TRAINED IN THE DANGER OF THIS TYPE OF INJURY AND SHOULD SEEK SPECIAL MEDICAL ATTENTION IF INJECTED ACCIDENTALLY.
ORGANIC ZINC COMPOUND(S), MEASURED AS ZINC = LT 0.2 WT % (MICHIGAN WATER RESOURCES COMMISSION CRITICAL MATERIALS REGISTER - 1984.)
NO SPECIFIC EXPOSURE STANDARDS/CONTROL LIMITS HAVE BEEN ESTABLISHED FOR THIS MATERIAL.
General Comments: LONG-TERM BIOASSAY RESULTS INDICATE THAT SOME CHLORINATED PARAFFINS IN COMBINATION WITH CORN OIL PRODUCE TUMORS IN LABORATORY ANIMALS FOLLOWING HIGH-DOSE FORCED FEEDING. ANOTHER STUDY INDICATES THAT WHEN CHLORINATED PARAFFINS ARE FORCE FED TO PREGNANT LABORATORY ANIMALS, IT CAUSES FETAL TOXICITY AND/OR DEATH OF OFF-SPRING DURING WEANING. THE IMPLICATION OF THESE DATA FOR HUMAN HEALTH EFFECTS HAS NOT BEEN DETERMINED.
IARC, ONE OF OSHA'S AUTHORITIES FOR ESTABLISHING CARCINOGENIC POTENTIAL, HAS SPECIFICALLY EVALUATED NAPHTHENIC OILS. IARC FOUND THAT MILDLY HYDROTREATED (HYDROFINISHED) OILS ARE CARCINOGENIC TO LABORATORY ANIMALS. IARC HAS NOT FOUND SEVERELY HYDROTREATED OILS TO BE CARCINOGENIC. THIS PRODUCT IS CLASSIFIED AS SEVERELY (NOT MILDLY) HYDROTREATED UNDER BOTH IARC AND OSHA DEFINITIONS. ANIMAL TESTING AND OTHER ANALYSES WILL CONTINUE AS PART OF OUR ON-GOING HEALTH HAZARD ASSESSMENT PROGRAM.

SOME OF THE INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE MIXTURE ITSELF.

NOTE Qualifications: EQ = Equal
LT = Less Than
GT = Greater Than
AP = Approximately
UK = Unknown
TR = Trace
N/P = No Applicable Information Found
N/AP = Not Applicable
N/DA = No Data Available

Disclaimer of Liability:

The information in this MSDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge.

FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

2.A.2

UP-1756

General Information
Chemical Name / Synonym / Trade Name:
AMOCO MOLYLITH GREASE
Manufacturer Name:
Amoco Oil Company
CAS Number:
1317-33-5
AMOCO MOLYLITH GREASE
MANUFACTURER: Amoco Oil Company 200 East Randolph Drive Chicago, Illinois 60601
EMERGENCY HEALTH INFORMATION: (800) 447-8735
EMERGENCY SPILL INFORMATION: (800) 424-9300
OTHER PRODUCT SAFETY INFORMATION: (312) 856-3907
IMPORTANT COMPONENTS: Solvent refined paraffinic petroleum oil. CAS #64742-54-7. Molybdenum disulfide. CAS #1317-33-5. Lithium soap thickener.
WARNING STATEMENT: None.
APPEARANCE AND ODOR: Black smooth to short fiber grease.

HEALTH HAZARD INFORMATION
EYE:
EFFECT: No significant irritation expected.
FIRST AID: Flush eyes with plenty of water.
PROTECTION: None required; however, use of safety glasses is good industrial practice.
SKIN:
EFFECT: None expected for single short-term exposures.
FIRST AID: None required.
PROTECTION: None required.
INHALATION:
EFFECT: Not applicable.
FIRST AID: None required.
PROTECTION: None required for normal conditions of use.
INGESTION:
EFFECT: Expected to be relatively non-toxic.
FIRST AID: If a large amount is swallowed, induce vomiting. Get medical attention.

FIRE AND EXPLOSION INFORMATION
FLASHPOINT: Not applicable.
EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, halogenated agents, foam, steam) and water fog.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

REACTIVITY INFORMATION
DANGEROUS REACTIONS: None identified.
STABILITY: Stable.

CHEMICAL AND PHYSICAL PROPERTIES
SOLUBILITY IN WATER: Negligible, below 0.1%
DROPPING POINT: 380 F.
WORKED & UNWORKED PENETRATION: 265-295 @ 77 F.

STORAGE AND ENVIRONMENTAL PROTECTION
STORAGE REQUIREMENTS: No special requirements.
SPILLS AND LEAKS: Contain and remove by mechanical means.
WASTE DISPOSAL: Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances.

TOXICOLOGICAL INFORMATION
EYE: A similar product produced a maximum primary eye irritation score of 4.7/110; 1 hour (rabbits).
SKIN: A similar product produced a primary dermal irritation score of 0.42/8.8 (rabbits) and an acute dermal LD50 greater than 5 g/kg (rabbit).
INGESTION: Acute oral LD50 for a similar product greater than 10 g/kg (rat).

REGULATORY INFORMATION
OSHA HAZARD COMMUNICATION STANDARD: Not hazardous per 29 CFR 1910.1200(d).
DOT PROPER SHIPPING NAME (BULK, LAND): Not regulated.

ISSUE INFORMATION
BY: Stephen A. Elbert Mgr., Product Safety & Toxicology
ISSUED: April 09, 1985
SUPERSEDES: February 10, 1984
This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either express or implied.

2.A.3

UP-1759

General Information
Date Issued: 12/05/90
Supercedes: 06/21/89
TEXACO
NOTE: Read and understand Material Safety Data Sheet before handling or disposing of product
N.D. - Not Determined
N.A. - Not Applicable
N.T. - Not Tested
< - Less Than
> - Greater Than
PRODUCT CODE: 01934
PRODUCT NAME: AAR BRAKE CYLINDER LUBRICANT

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-05-90
New
X Revised
Supersedes: 06-21-89
Date Printed: 02-25-91
Inquiries regarding MSDS should be directed to:
Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY:
Product Code and Name: 01934 AAR BRAKE CYLINDER LUBRICANT
Chemical Name and/or Family or Description: Greases
Manufacturer's Name and Address: Texaco Lubricants Co. Div of TRHI
P.O. Box 52332 Houston, TX 77052
Telephone Numbers:
TRANSPORTATION EMERGENCY Company: (914) 831-3400
CHEMTREC: (800) 424-9300
HEALTH EMERGENCY Company: (914) 831-3400

GENERAL MSDS ASSISTANCE: (914) 838-7204
TECHNICAL INFORMATION Fuels: (914) 838-7336;
Lubricants/Antifreezes: (914) 838-7509
Chemicals: (512) 459-6543

2. COMPOSITION/INFORMATION ON INGREDIENTS

Product and/or Component(s) Carcinogenic According to:
OSHA:
IARC:
NTP:
OTHER:
NONE: X

Composition:

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
Solvent-dewaxed heavy paraffinic petroleum distillates	64742650	5mg/m3 OSHA (MIST) 5mg/m3 ACGIH (MIST) 10mg/m3 STEL (MIST)	80.00 - 94.99
Calcium 12-hydroxystearate	3159624	None Established	4.00 - 10.99

Product is non-hazardous according to OSHA (1910.1200).

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW:
Appearance and Odor: Amber semi-solid with mineral oil odor
WARNING STATEMENT: NONE CONSIDERED NECESSARY
HMIS:
Health: 0
Reactivity: 0
Flammability: 1
Special:
NFPA:
Health: 0
Reactivity: 0
Flammability: 1
Special:
POTENTIAL HEALTH EFFECTS:
Primary Route of Exposure:
EYE: X
SKIN: X
INHALATION: X
INGESTION:
Effects of Overexposure:
Acute:
Eyes: May cause minimal irritation, experienced as temporary discomfort.
Skin: No adverse effects expected from absorption of material through the skin. Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.

Inhalation: Product not volatile at ambient temperatures. No adverse effects expected from vapor generated at ambient temperatures.
Ingestion: No adverse effects expected. If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.
Sensitization Properties: Unknown.
Chronic: No adverse effects anticipated.
Medical Conditions Aggravated by Exposure: Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).
Other Remarks: Material from high pressure equipment, pinhole leaks, or high pressure line failure can penetrate the skin and, if not properly treated, can cause severe injury, including disfigurement, loss of function, or even require amputation of the affected area. To prevent such serious injury, immediate medical attention should be sought even if the injection injury appears to be minor.

4. FIRST AID MEASURES

Eyes: Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.
Skin: Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.
Ingestion: If more than several mouthfuls have been swallowed, give two glasses of water (16 oz.). Get medical attention.
Inhalation: If irritation or drowsiness occurs, remove to fresh air.
Other Instructions: NOTE TO PHYSICIAN: High pressure injection of material into skin, if not properly treated, can cause severe injury. Most damage occurs during first few hours. Failure to debride the wound of all residual material can result in disfigurement, loss of function, or even require amputation of the affected area. The extent of the injury cannot be determined by examining the wound. X-ray may reveal the presence of gas in tendon sheaths or soft tissue.
Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temp. Degrees F.: N.D.
Flash Point Degrees F. (Method): N.D. (grease)
Flammable Limits (%):
Lower: N.D.
Upper: N.D.
Recommended Fire Extinguishing Agents And Special Procedures: According to NFPA Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop and leak.

Unusual or Explosive Hazards: None

6. ACCIDENTAL RELEASE MEASURES
(Transportation Spills Call:
CHEMTREC (800) 424-9300)
Procedures in Case of Accidental Release, Breakage or Leakage: Contain spill if possible, contain with absorbent materials such as clay or soil, and shovel up. Avoid skin and eye contact.

7. HANDLING AND STORAGE
Precautions to be Taken in Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Protective Equipment (Type):
Eye/Face Protection: Chemical-type goggles or face shield recommended to prevent eye contact.
Skin Protection: Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned at least once a week.
Respiratory Protection: Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated, use respirator approved by MSHA or NIOSH as appropriate. Supplied air respiratory protection should be used for cleaning large spills or upon entry into tanks, vessels, or other confined spaces. See below for applicable permissible concentrations.
Ventilation: Adequate to meet occupational exposure limits. (See below)
Exposure Limit for Total Product: None established for this product; refer to Section 2 for component permissible concentration.

9. PHYSICAL AND CHEMICAL PROPERTIES
Appearance and Odor: Amber semi-solid with mineral oil odor
Boiling Point (Degrees F.): N.D.
Percent VOC: 100
Specific Gravity: 0.948 (H_2O=1)
Vapor Density: N.A. Air=1
pH of undiluted product: N.A.
Solubility in Water: Neglig
Vapor Pressure: N.A. mmhg
Viscosity: N.D.
Other:

10. STABILITY AND REACTIVITY
This Material Reacts Violently With: (If others is checked below, see comments for details):

Air:
Water:
Heat:
Strong Oxidizers: Y
Others:
None of These:
Comments: None
Products Evolved When Subjected to Heat or Combustion: Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones, and combustion products or compounds of calcium
Hazardous Polymerizations:
OCCUR:
DO NOT OCCUR: X

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11. TOXICOLOGICAL INFORMATION
TOXICOLOGICAL INFORMATION (ANIMAL TOXICITY DATA):
Median Lethal Dose (LD50 LC50) (Species):
Oral: believed to be > 5 g/kg (rat); practically non-toxic
Inhalation: N.D.
Dermal: believed to be > 3 g/kg (rabbit); practically non-toxic
Irritation Index, Estimation of Irritation (Species):
Skin: believed to be < 0.5/8.0 (rabbit); no appreciable effect
Eyes: believed to be < 15/110 (rabbit); no appreciable effect
Sensitization: N.D.
Other: None

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12. DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHODS: This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form. Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.
REMARKS: None

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13. TRANSPORT INFORMATION
TRANSPORTATION:
DOT: PROPER SHIPPING NAME: N.D.
IMDG: PROPER SHIPPING NAME: N.D.
IATA: PROPER SHIPPING NAME: N.D.
TDG: PROPER SHIPPING NAME: N.D.

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14. REGULATORY INFORMATION
A. SARA TITLE III
Title III Section 302/304 Extremely Hazardous Substance:

Component	CAS No.	Percent	RQ (lbs)	TPQ(lbs)

NONE

CERCLA Section 102(a) Hazardous Substance:

Component	CAS No.	Percent	RQ (lbs)
NONE			

Title III Section 311 Hazard Categorization:
Acute:
Chronic:
Fire:
Pressure:
Reactive:
Not Applicable: X

Title III Section 313 Toxic Chemicals:

Component	CAS No.	Percent
NONE		

B. WHMIS CLASSIFICATION: NA
C. MICHIGAN CRITICAL MATERIALS: No critical materials present.

15. OTHER INFORMATION (+++)
None
Heading: 16. PRODUCT LABEL
READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT: 01934 AAR BRAKE CYLINDER LUBRICANT
WARNING STATEMENT: NONE CONSIDERED NECESSARY
PRECAUTIONARY MEASURES: WORKERS SHOULD WASH EXPOSED SKIN SEVERAL TIMES DAILY WITH SOAP AND WATER
FIRST AID:
INGESTION: If more than several mouthfuls have been swallowed, give two glasses of water (16 oz.). Get medical attention.
INHALATION: If irritation or drowsiness occurs, remove to fresh air.
EYE CONTACT: Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.
SKIN CONTACT: Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.
NOTE TO DOCTOR: NOTE TO PHYSICIAN: High pressure injection of material into skin, if not properly treated, can cause severe injury. Most damage occurs during first few hours. Failure to debride the would of all residual material can result in disfigurement, loss of function, or even require amputation of the affected area. The extent of the injury cannot be determined by examining the wound. X-ray may reveal the presence of gas in tendon sheaths or soft tissue.
FIRE: In case of fire, use foam, dry chemical, or CO_2. Use water spray to keep containers cool.

Chemical/Common Name	CAS No.	Range in %
Solvent-dewaxed heavy paraffinic petroleum distillates	64742650	80.00 - 94.99
Calcium 12-hydroxystearate	3159624	4.00 - 10.99

Product is non-hazardous according to OSHA (1910.1200). Not classified as a hazardous material by DOT definition.
HMIS:
Health: 0

Reactivity: 0
Flammability: 1
Special:
National Fire Protection Association:
Health: 0
Reactivity: 0
Flammability: 1
Special:
CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.
Manufacturer's Name: Texaco Lubricants Co. Div of TRHI
P.O. Box 52332 Houston, TX 77052
TRANSPORTATION EMERGENCY Company: (914) 831-3400
CHEMTREC: (800) 424-9300
HEALTH EMERGENCY Company: (914) 831-3400

2.A.4

UP-1767

General Information
Chemical Name / Synonym / Trade Name:
RectorSeek(R) Low-Temp Leak Locator
Manufacturer Name:
The RectorSeal Corporation
CAS Number:
107211)
Form Approved
OMB No.: 1218-0072
IDENTITY (AS Used on Label and List): RectorSeek(R) Low-Temp Leak Locator
Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
Manufacturer's Name: The RectorSeal Corporation
Address (Number, Street, City, State, and ZIP Code): 2830 Produce Row Houston, TX 77023
Emergency Telephone Number: (713) 928-6423
Telephone Number for Information: (713) 928-6423
Date Prepared: 03/87
Signature of Preparer (optional): N/A

Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%(optional)
Ethylene Glycol (CAS 107211)	N/A	Air: 50 ppm	N/A	51%

Physical/Chemical Characteristics
Boiling Point: 388 F
Vapor Pressure (mm Hg.) 20 C: 0.12
Vapor Density (AIR = 1): Nil
Solubility in Water: 100%
Specific Gravity (H(2)O = 1): 1.06
Melting Point: N/A
Evaporation Rate (Water = 1): 1
Appearance and Odor: Red clear liquid - odorless

Fire and Explosion Hazard Data
Flash Point (Method Used): 232 F PMCC
Flammable Limits:
LEL: 3.2
UEL: Not Determined
Extinguishing Media: Water fog, alcohol foam, CO(2), dry chemical
Special Fire Fighting Procedures: Do not spray pool fires directly. A solid stream into burning liquid may cause frothing.

Unusual Fire and Explosion Hazards: Burning may produce carbon monoxide and/or carbon dioxide.

Reactivity Data
Stability: Stable
Conditions to Avoid: None
Incompatibility (Materials to Avoid): Strong oxidizing agents
Hazardous Decomposition or Byproducts: Burning may produce carbon monoxide/dioxide
Hazardous Polymerization: Will Not Occur
Conditions to Avoid: None

Health Hazard Data
Route(s) of Entry:
Inhalation:
Skin: N/A
Ingestion: X
Health Hazards (Acute and Chronic): When ingested may cause kidney damage. Inhalation may result in pulmonary edema.
Carcinogenicity:
NTP: No
IARC Monographs: No
OSHA Regulated: No
Signs and Symptoms of Exposure: Drunkeness, central nervous system depression, narcosis
Medical Conditions Generally Aggravated by Exposure: None perceived
Emergency and First Aid Procedures: Eyes and skin - flush with water for 15 minutes. Inhalation - remove to fresh air, and call physician. Ingestion-give large amounts of water, induce vomiting and call physician.

Precautions for Safe Handling and Use
Steps to Be Taken in Case Material is Released or Spilled: Wipe up spills to prevent hazardous footing.
Waste Disposal Method: Controlled incineration or bury in approved landfill. Consult federal, state and local regulations.
Precautions to Be Taken in Handling and Storing: Avoid ingestion, eye contact, and prolong breathing of mists or vapors.
Other Precautions: None

Control Measures
Respiratory Protection (Specify Type): NIOSH approved facemask with organic vapor cartridge if TLV exceeded.
Ventilation:
Local Exhaust: Required if misting occurs
Mechanical (General): Generally adequate
Special: None
Other: None

Protective Gloves: Rubber or PVC coated
Eye Protection: Monogoggles or face shield
Other Protective Clothing or Equipment: Eye bath and safety shower
Work/Hygienic Practices: N/A

2.B.1

UP-1771

General Information
Chemical Name / Synonym / Trade Name:
02314 904 GREASE
Greases
Manufacturer Name:
Texaco Inc.
CAS Number:
7782425
64742525
64755017
NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 7 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.
Trade Name and Synonyms: 02314 904 GREASE
Manufacturer's Name: Texaco Inc.
Address: P.O. Box 509 Beacon, NY 12508
Chemical Name and/or Family or Description: Greases
Emergency Telephone No.: (914) 831-3400 ext. 204
THIS PRODUCT IS CLASSIFIED AS: NOT HAZARDOUS
WARNING STATEMENT: NONE CONSIDERED NECESSARY

OCCUPATIONAL CONTROL PROCEDURES
Protective Equipment (Type):
Eyes: Chemical type goggles or face shield optional.
Skin: Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation: None required when handling at minimum feasible temperatures.
Ventilation: Normal
Permissible Concentrations:
Air: None established for greases.

EMERGENCY AND FIRST AID PROCEDURES
First Aid:
Eyes: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin: None considered necessary.
Ingestion: None considered necessary.
Inhalation: None considered necessary.
Other Instructions: None.

PHYSIOLOGICAL EFFECTS
Effects of Exposure:
Acute:
Eyes: Believed to be minimally irritating.
Skin: Believed to be minimally irritating.
Respiratory System: Believed to be minimally irritating.

Chronic: N.D.
Other:
Sensitization Properties:
Skin: Unknown
Respiratory: Unknown
Median Lethal Dose (LD(50) LC(50)(Species):
Oral: Believed to be >5 g/kg (rat); practically non-toxic
Inhalation: N.D.
Dermal: Believed to be >3 g/kg (rabbit); practically non-toxic
Other: N. D.
Irritation Index, Estimation of Irritation (Species):
Skin: Believed to be <0.5/8.0 (rabbit); no appreciable effect
Eyes: Believed to be <15/110 (rabbit); no appreciable effect
Symptoms of Exposure: None expected other than possible minimal irritation

FIRE PROTECTION INFORMATION
Ignition Temp. F.: N.D.
Flammable Limits (%):
Lower: N.D.
Flash Point F. (Method): N.D. (grease)
Upper: N.D.
Products Evolved When Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, aldehydes and ketones, combustion products of nitrogen and sulfur.
Recommended Fire Extinguishing Agents And Special Procedures: According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive Hazards: None.

ENVIRONMENTAL PROTECTION
Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification.)
Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300) Contain spill if possible. Wipe up or absorb on suitable material and shovel up.
Remarks:
Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

PRECAUTIONS
NONE CONSIDERED NECESSARY

Requirements for Transportation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.
DOT Proper Shipping Name: N.A.
DOT Hazard Class (if applicable): N.A.

CHEMICAL AND PHYSICAL PROPERTIES
Boiling Point (F): N.D.
Specific Gravity: N.D. (H(2)O=1)
Appearance and Odor: N.D.
pH of undiluted product: N.A.
Percent Volatile by Volume: N.D.
Viscosity: cSt @ 40 C = 76.2
Vapor Pressure: N.D. (mmHg)
Vapor Density: N.D. (Air=1)
Solubility: N.D.
Evaporation: N.D. ( )=1
Other:
Hazardous Polymerizations: Do not occur
The Material Reacts Violently With: (If others is checked below, see additional comments on page 6 for futher details) None of These

COMPOSITION

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
*graphite	7782425	2.5 mg/m3 TWA ACGIH (Respirable Dust)	11.00 - 19.99
Severely refined hydrotreated heavy naphthenic petroleum distillate	64742525	5mg/m3 ACGIH (HIST) 5mg/m3 OSHA (HIST) 10mg/m3 STEL (HIST)	65.00 - 79.99
Calcium tallowate	64755017	NONE ESTABLISHED	4.00 - 10.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

PRODUCT SHIPPING LABEL
02314 904 GREASE
NONE CONSIDERED NECESSARY

Chemical/Common Name	CAS No.	Range in %
*graphite	7782425	11.00 - 19.99
Severely refined hydrotreated heavy naphthenic petroleum distillate	64742525	65.00 - 79.99
Calcium tallowate	64755017	4.00 - 10.99

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.
HMIS:
Health: 0
Flammability: 1

Reactivity: 0
Special:
CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.
HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204) Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650
For Additional Information Concerning:
Fuels/Lubricants/Antifreezes: call (914) 831-3400 (EXT.204)
Chemicals: call (512) 459-6543
Transportation Spills: call CHEMTREC (800) 424-9300

ADDITIONAL COMMENTS
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1986) No critical materials present.
To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.
By: R. T. Richards
Date: 12-03-85
Title: Mgr. Env. Conservation & Toxicology
Revised, Supersedes: 10-15-85

2.B.2

UP-1776

UPRR ON-LINE MSDS
MSDS Data: Chemical: RR60 GRAPHITE SWITCHPLATE LUBRICANT UP-00717

General Information
Chemical Name / Synonym / Trade Name:
RR60 GRAPHITE SWITCHPLATE LUBRICANT
Manufacturer Name:
DIXON TICONDEROGA COMPANY
CAS Number:
1330-20-7
7782-42-5
DIXON TICONDEROGA COMPANY 756 Beachland Boulevard P.O. Box 3504 Vero Beach Florida 32964
DATA FOR HAZARDS INFORMATION LABEL:
Hazard Code:
4: Extreme
3: High
2: Moderate
1: Slight
0: Insignificant
Flammability: 3
Health: 2
Reactivity: 0
Special:
EMERGENCY TELEPHONE NO: 201 + 244-7110
PRODUCT CLASS: LUBRICANT
TRADE NAME: RR60 GRAPHITE SWITCHPLATE LUBRICANT

HAZARDOUS INGREDIENTS

INGREDIENT	C.A.S. NO.	PERCENT	TLV PPM	TLV mg/m(3)	LEL	VAPOR PRESSURE
XYLENE	1330-20-7	56	100		1%	21 ATT 100 F
GRAPHITE	7782-42-5	25		2.5	N.A.	N.A.

PHYSICAL DATA
BOILING RANGE: 280-285 F
VAPOR DENSITY: HEAVIER
EVAPORATION RATE: SLOWER, THAN ETHER
PERCENT VOLATILE BY VOLUME: 78
WEIGHT PER GALLON: APP 8.5 lbs.

FIRE AND EXPLOSION HAZARD DATA
CATEGORY: FLAMMABLE LIQUID
FLASH POINT: 80 T.C.C.
LEL: 1%
EXTINGUISHING MEDIA: USE WATER FOG, FOAM, DRY CHEMICAL OR CO(2). DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SURFACE OF WATER.
UNUSUAL FIRE AND EXPLOSION HAZARDS: COOL CONTAINERS WITH WATER SPRAY. USE

SUPPLIED AIR BREATHING APPARATUS IN CONFINED SPACES.
SPECIAL FIRE FIGHTING PROCEDURES: FLAMMABLE VAPORS CAN FORM EXPLOSIVE MIXTURES WITH ARE. USE ONLY IN WELL VENTILLATED AREAS. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAMES.

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: 100 ppM FOR AN 8 HOUR WORK DAY.
EFFECTS OF OVEREXPOSURE: INHALATION OF VAPORS MAY BE IRRITATION TO NOSE, THROAT AND RESPIRATORY TRACT. HIGH VAPOR CONCENTRATIONS MAY CAUSE CNS DEPRESSION AND CAN CAUSE EYE IRRITATION.
SKIN CONTACT: CAN BE DEFATTING AND LEAD TO IRRITATION AND DERMATITIS
INGESTION: MODERATELY TOXIC. CAN CAUSE CNS DEPRESSION.
EMERGENCY AND FIRST AID PROCEDURES:
EYE CONTACT: FLUSH WITH CLEAN WATER
SKIN CONTACT: WASH WITH SOAP AND WATER
INHALATION: REMOVE TO FRESH AIR
INGESTION: DO NOT INDUCE VOMITING-CALL PHYSICIAN IMMEDIATELY.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID:
INCOMPATABILITY (Materials to avoid):
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE AND UNIDENTIFIED ORGANIC COMPOUND
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION, VENTILLATE AREA, WIPE UP. CHECK SPILL AREA THOROUGHLY AS GRAPHITE CAN CAUSE A SLIPPERY SURFACE.
WASTE DISPOSAL METHOD: IF PRODUCT BECOMES A WASTE IT MUST BE TREATED AS A HAZARDOUS WASTE BECAUSE IT IS FLAMMABLE. CHECK RCRA REGULATIONS.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION: VENTILLATE WORK AREA TO BELOW TLV OF USE A HYDROCARBON VAPOR CANNISTER.
VENTILATION: EXPLOSION PROOF
PROTECTIVE GLOVES: SOLVENT RESISTANT
EYE PROTECTION: SPLASH PROTECTING
OTHER PROTECTIVE EQUIPMENT: NOT NORMALLY REQUIRED

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAMES. USE ONLY IN WELL VENTILLATED AREAS. KEEP CONTAINERS CLOSED WHEN NOT USING.

OTHER PRECAUTIONS: AVOID REPEATED OR PROLONGED CONTACT WITH SKIN OR PROLONGED BREATHING OF VAPORS.

2.B.3

UP-1780

UPRR ON-LINE MSDS
MSDS Data: Chemical: #1029 Chain Hoist Grease UP-03988

General Information
APPLIES TO CM LUBRICANTS
CODES: 28616, 28617 AND 28605
(GREASE CODE 788304)
AMERICAN LUBRICANTS
Not Restricted
Prepared by Thomas G. Musilli
V. President - Tech. Director
Date 3/86
Address: 619 Bailey Ave. Buffalo, NY 14206
Phone: (716) 827
The above information is accurate to the best of our knowledge, since standard, and government regulations are subject ???

PRODUCT IDENTIFICATION
Product Name: Chain Hoist Grease
Code No.: 60140
ADDRESS: 619 Bailey Ave: Buffalo, NY 14206
Chemical Name: Lubricating Grease
Emergency Phone Number(s)
Business: (716) 827-8300
Other:
Synonyms: Graphite Grease
Chemical Family: Hydrocarbon

INGREDIENTS

MATERIALS OR COMPONENTS	%W	CAS NUMBER	CARCINOGEN OSHA OR IARC
Li 12 Hydroxyoctade canoate Sebacate	8.0	68815-49-6	No
Mineral Oil	80.0	64742-65-0	No
Graphite	10.0	7782-42-5	No
Sulfurized Isobutylene	2.0	68511-50-2	No

PHYSICAL PROPERTIES
Boiling Point/Range: degree C 700 degree F
Melting Point: degree C 500 degree F
Freezing Point: degree C 0 degree F
Molecular Weight (Calculated): NA
Specific Gravity (H2O=1): 0.92@ / 16 degree C
Vapor Pressure (mm Hg): NA degree C degree F
Vapor Density (Air=1): NA
Solubility in H2O: Nil
% Volatile by Volume: 0
Evaporation Rate: NA
¢ | Ether = 1
¢ | Water = 1
¢ | Butylaceta

Appearance and Odor: Gray-Black Grease - Bland
Other:

FIRE EXPLOSION DATA
Flash Point: degree C 470 degree F
Test Method: D-92
Flammable Limits:
Lower: NA %
Upper: %
Autoignition Temperature/Fire Point: degree C 500 degree F
EXTINGUISHING MEDIA:
¢ | Water-spray
¢X | Water-fog
¢ | Water stream
¢X | CO2
¢X | Dry chemical
¢ | Alcohol foam
¢X | Foam
¢X | Earth or sand
SPECIAL FIRE FIGHTING PROCEDURES:
¢ | Do not enter building
¢ | Allow fire to burn
¢X | Water may cause frothing
¢ | Do not use water
UNUSUAL FIRE AND EXPLOSION HAZARDS:
¢ | Dust explosion hazard
¢ | Sensitive to shock
¢ | Contamination
¢ | Temperature
¢ | Other (specify): None

REACTIVITY DATA
STABILITY:
¢X | Stable
¢ | Unstable
CONDITIONS CONTRIBUTING TO INSTABILITY:
¢ | Thermal decomposition
¢ | Photo degradation
¢ | Polymerization
¢ | Contamination
INCOMPATIBILITY - Avoid contact with
¢ | Strong acids
¢ | Strong alkalis
¢X | Strong oxidizers
¢ | Other (specify):
HAZARDOUS DECOMPOSITION PRODUCTS - THERMAL AND OTHER (list)
CO & CO2 if incomplete combustion
CONDITIONS TO AVOID:
¢ | Heat

¢X| Open flames
¢ | Sparks
¢ | Ignition sources
¢ | Other (specify):

SPILL OR LEAK
STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
¢ | Flush with water
¢ | Absorb with sand or inert material
¢ | Neutralize
¢X| Sweep or scoop up and remove
¢ | Keep upwind. Evacuate enclosed spaces.
¢ | Prevent ??? or spill
¢ | Dispose of immediately
¢ | Other (specify):
WASTE DISPOSAL METHOD - Consult federal, state, or-local authorities for proper disposal procedures.
Incinerate
CONDITIONS TO AVOID: None Known
PRIMARY ROUTES OF ENTRY:
¢ | INHALATION
¢X| SKIN CONTACT
¢ | OTHER (Specify)

TOXICITY
This product has been used for years with no known ill effects. It contains no known carcinogens or mutagens as defined by OSHA or IARC.

HEALTH HAZARD INFORMATION
Effects of Exposure
PERMISSIBLE EXPOSURE LIMIT (Specify if TLV/TWA of Ceiling ¢c|)
ACGIH 19 NA
OSHA 19
OTHER:
IRRITATION:
¢X| Skin
¢X| Eye
¢ | Sever
¢ | Sever
¢ | Moderate
¢ | Moderate
¢X| Mild (transient)
¢X| Mild (transient)
CORROSIVITY:
¢ | Skin
¢ | Eye
¢ | 4 hrs. (DOT)
¢ | May cause blindness

¢	24 hrs. (CPSC)
¢X	Not Corrosive

SENSITIZATION:

¢	Skin
¢	Respiratory
¢X	None

INHALATION EFFECTS:

¢	Narcotic effect
¢	Cyanosis
¢	Asphyxiant

LUNG EFFECTS (Specify): NA

OTHER (Specify):

¢	Repeated contact-skin defatter
¢	Other (Specify): NA

Emergency First Aid

INGESTION:

¢X	Induce vomiting
¢	DO NOT induce vomiting
¢	Give plenty of water
¢X	Get medical attention
¢	Other (specify):

DERMAL:

¢X	Flush with soap and water
¢	Get medical attention
¢X	Contaminated clothing - remove & launder
¢	Contaminated shoes - destroy
¢	Other (specify):

EYE CONTACT:

¢X	Flush with plenty of water for at least 15 minutes
¢X	Get medical attention
¢	Other (specify):

INHALATION:

¢	Removed to Fresh air
¢	If not breathing give artificial respiration
¢	Give oxygen
¢	Get medical attention
¢	Other (specify): NA

SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS -- Always maintain exposure below permissible exposure limits

¢	Consult an industrial hygienist or environmental health specialist
¢	Local exhaust
¢X	Use with adequate ventilation
¢	Check for air contaminan and oxygen deficiency

EYE:

¢	Safety glasses
¢X	Face shield
¢	Goggles

HAND (GLOVE TYPE):

¢ | Polyvinyl chloride
¢X | Neoprene
¢ | Butyl rubber
¢ | Natural rubber
¢ | Polyvinyl alcohol
¢X | Poly-ethylene
¢ | Other (specify):

RESPIRATORY TYPE - Use only NIOSH/MESA approved equipment:
¢ | Self-contained
¢ | Supplied air
¢ | Can or cartridge gas or vapor
¢ | Filter - dust, fume, mist
¢ | Other (specify): NA

OTHER PROTECTIVE EQUIPMENT:
¢ | Rubber boots
¢ | Apron
¢ | Other (specify): None

SPECIAL PRECAUTIONS
PRECAUTIONARY NOTES:
¢X | Wash thoroughly after handling
¢ | Do not store near combustibles
¢X | Do not get in eyes, or on clothing
¢ | Keep from contact with clothing and other combustible materials
¢ | Do not breathe dust, vapor, mist, gas
¢ | Empty container may contain hazardous residues
¢ | Keep container closed
¢ | Use explosion proof equipment
¢X | Keep away from sparks, and open flames
¢ | Store in tight closed conta
¢ | Other (specify):

Other handling and storage conditions: None

UP-1786

GENERAL CONSIDERATIONS FOR PENETRATING OILS AND LIGHT LUBRICANTS

The safety and health concerns of petroleum based penetrating oils resemble those of lubricating oils.

Frequent and prolonged skin contact should be avoided. When these products are handled under normal operations, contact dermatitis can be prevented by good personal hygiene. This consists of minimized contact, prompt removal of substance from skin with soap and water, and wearing of UPRR approved personal protective equipment.

Employees should be warned of the danger of inhaling sprayed or atomized penetrating oils. Care should be taken to avoid excessive inhalation of smoke and fumes produced by ignition or heat sources.

Refer to the safety and health information contained on the MSDS and product label for the specific penetrating oils being used at your location before each use.

PENETRATING OILS AND LIGHT LUBRICANTS

1. Thread Cutting Oils
2. Liquid Wrench
3. Non-Fluid Oil
4. Silicone Spray
5. WD-40

1

UP-1789

General Information
CHESTERTON
A. W. CHESTERTON COMPANY
Middlesex Industrial Park, Stoneham, MA 02180
Emergency Telephone No.: 617-438-7000 (Day)
617-438-7013 (Night)
Date of Prep.: June 1, 1985
MSDS No.: 114A-1
Product Name: Nr. 390 Cutting Oil (Aerosol)
NFPA HAZARD RATING:
4: Extreme
3: High
2: Moderate
1: Slight
0: Insignificant
*: Chronic Health Hazard
Flammability: 1
Reactivity: 1
Health: 1
Special:
General Use and Precautionary Information: This is a petroleum base product with a flash point above 170 C (340 F.) The principal hazard with this product, as with any other petroleum of this type, is the smoke and fumes produced if it is used for heavy cutting operations. Care should be taken to avoid excessive inhalation of these by-products.

Section II - HAZARDOUS INGREDIENTS

Ingredients/Synonyms	CAS No.	%	TLV		Vapor Pressure
Isobutane	75-28-5	1-5	1000 ppm	--	--
Propane	74-98-6	1-5	1000 ppm	1800mg/m(3)	--

Section III - PHYSICAL DATA
Initial Boiling Point: above 200 Deg. C. (392 Deg. F.)
Percent Volatile (by volume): 15
Vapor Density (Air = 1): >1
Evaporation Rate (Ether = 1): <1
Weight per Gallon: 7.6 lbs. (0,9 kg/l)

Section IV - FIRE AND EXPLOSION DATA
Flash Point: above 170 Deg. C. (340 Deg. F.) Open Cup, Product Only
LEL:
DOT Classification: Compressed Gas, n.o.s., Flammable Gas
Extinguishing Media: Foam, dry chemical, carbon dioxide or water spray.
Unusual Fire and Explosion Hazards: Thermal decomposition can produce chlorides, SOx and other toxic fumes. Pressurized containers when heated are an explosive hazard.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus. Cool exposed containers with water.
Product Name: Cutting Oil (Aerosol)
Date: June 1, 1985

Section V - REACTIVITY DATA
Stability: Stable
Hazardous Decomposition Products: Chlorides, SOx and other toxic fumes
Hazardous Polymerization: Will Occur
X Will Not Occur
Conditions to Avoid: Open flames and red hot surfaces.
Materials to Avoid: Strong oxidizers like liquid chlorine and concentrated oxygen.

Section VI - HEALTH HAZARD DATA
Threshold Limit Value: N/A
Primary Route of Exposure Under Normal Use: Skin Contact
Acute Effects from Overexposure: None
Chronic Effects from Overexposure: Repeated or prolonged skin contact may cause mild irritation.
Emergency and First Aid Procedures:
Inhalation: N/A
Eye/Skin Contact: Wash skin with soap and water. Flush eyes with water for at least 15 minutes after contact. Consult physician.
Ingestion: N/A

Section VII - SPILL OR RELEASE PROCEDURES
Steps to be Taken in Case Material is Spilled or Released: Contain spill to a small area. Pick up with absorbent material and transfer to a suitable container for disposal. Keep out of sewers, streams and waterways.
Waste Disposal Method: Incinerate absorbed material. Do not incinerate sealed containers. Bury containers in an approved area. Check local, State and Federal regulations.

Section VIII - SPECIAL PROTECTION INFORMATION
Respiratory Protection: Not normally needed
Ventilation: Room ventilation is usually adequate.
Protective Gloves: Not normally needed
Eye Protection: Safety glasses
Other: None

Section IX - SPECIAL PRECAUTIONS
Precautions in Handling and Storing: Do not store in direct sunlight or above 49 Deg. C. (120 Deg. F.)
Other Precautions: None

The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purpose.

2

UP-1793

General Information
FILENAME: UP-02389.msd
Radiator Specialty Company
1400 W INDEPENDENCE BLVD.
CHARLOTTE, N.C. 28208
704-377-6555
EMERGENCY TELEPHONE NUMBER
704-377-6555
This information is presented to comply with the OSHA Hazard Communication Standard.
While Radiator Specialty Company believes this data is accurate as of the revision date, we make no warranty with respect to the data and we expressly disclaim all liability reliance thereon. The data is offered solely for your information, investigation, and verification.

SECTION I GENERAL INFORMATION
PRODUCT NAME
LIQUID WRENCH NO. 1 PENETRANT (AEROSOL)
PART NUMBERS
L1 -06, -12
CHEMICAL DESCRIPTION
Petrolium Solvents, Surfactants
FORMULA*

SECTION II HAZARDOUS COMPONENTS

CAS NUMBER	COMPONENT	%	TLV
8002-05-9	Aliphatic Petroleum Naphtha	>90	300ppm
124-38-9	Carbon Dioxide Propellant		5000ppm

* Components not identified are non-hazardous according to 29 CFR 1910.1200

SECTION III PHYSICAL DATA
BOILING POINT
> 300 Deg. F
SPECIFIC GRAVITY (H2O=1)
NA
pH
neutral
FLASH POINT
> 140 Deg. F
VOLATILE BY WT.
> 75 %

EVAPORATION RATE
NA
SOLUBILITY IN WATER
Insoluble
SOLUBILITY IN SOLVENTS
Petroleum Solvents
APPEARANCE AND ODOR
Dark liquid with kerosene odor.

SECTION IV FIRE AND EXPLOSION DATA
EXTINGUISHING MEDIA
Water Fog [ ]
Foam [X]
CO2 [X]
Dry Chemical [X]
Other [ ]
SPECIAL FIRE FIGHTING PROCEDURES
Wear self-contained, positive pressure breathing apparatus and protective clothing.
Use Water Spray to Cool aerosol containers.
UNUSUAL FIRE AND EXPLOSION HAZARDS
Contents under pressure. At elevated temperatures, containers may burst, even violently.

SECTION V REACTIVITY INFORMATION
(Based on data for individual components)
STABLE
[X]
UNSTABLE
[ ]
HAZARDOUS POLYMERIZATION?
YES [ ]
NO [X]
CORROSIVE?
NO
MATERIALS TO AVOID
Strong oxidizing agents.
CONDITIONS TO AVOID
High temperatures.
HAZARDOUS DECOMPOSITION PRODUCTS
Fire: Normal products of combustion; carbon dioxide, carbon monoxide, smoke AND SULFUR TRIOXIDE

SECTION VI HEALTH HAZARD INFORMATION
RECOMMENDED TLV OF PRODUCT

300 PPM
LI (Spray) EYE
Irritant.
SKIN
Excessive contact can cause skin dryness or dermatitis.
INHALATION
Excessive inhalation can cause respiratory irritation, headache, nausea, dizziness, and lung irritation.
INGESTION
Can cause gastric disturbance, nausea, and lead to lung irritation.
OTHER
NA

SECTION VII EMERGENCY AND FIRST AID PROCEDURES
(Based on data for individual components)

EYE CONTACT
Flush eye with water for 15 minutes.
If adverse symptoms persist, consult physician immediately.
SKIN CONTACT
Wash with soap and water. Remove contaminated clothing promptly and wash before re-use.
INHALATION
Move to fresh air. If adverse symptoms persists, consult physician immediately.
INGESTION
DO NOT INDUCE VOMITING. Consult physician immediately.

SECTION VIII SPECIAL PROTECTION INFORMATION

	CONSUMER USE	BULK HANDLING (PROLONGED EXPOSURE)
RESPIRATORY PROTECTION	NA	If TLV is exceeded, wear NIOSH approved respirator.
VENTILATION	Use with adequate ventilation.	General Ventilation.
EYE PROTECTION	NA	Wear fully protective goggles or face shield.
PROTECTIVE CLOTHING	NA	Wear rubber gloves and rubber apron.

SECTION IX SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES	NA	Observing health hazards described above, remove ignition sources, ventilate area. Confine spill

and transfer to waste container.

WASTE DISPOSAL METHODS
Dispose of in accordance with all applicable government laws and regulations.

SECTION X SPECIAL PRECAUTIONS
WEARING CONTACT LENSES IS INADVISABLE.
STORAGE AND HANDLING PRECAUTIONS
Store at temperatures under 120 Deg. F. away from sparks and flames.
OTHER PRECAUTIONS
Do not puncture or incinerate aerosol containers.
KEEP AWAY FROM CHILDREN.
HAZARD INFORMATION LABEL DATA
HAZARD CODE
4=Extreme
3=High
2=Moderate
1=Slight
0=Negligible
FLAMMABILITY
1
HEALTH
2
REACTIVITY
0
SPECIAL
pressure pr

3

UP-1798

General Information
Chemical Name / Synonym / Trade Name:
AQS NON FLUID OIL
Manufacturer Name:
U.S. PACKAGING CORP.
CAS Number:

MANUFACTURER'S NAME: U.S. PACKAGING CORP.
ADDRESS (Number, Street, City, State, and ZIP Code): 440 DENNISTON COURT, WHEELING, ILLINOIS 60090
CHEMICAL NAME AND SYNONYMS:
CHEMICAL FAMILY:
EMERGENCY TELEPHONE NO.: 312/459-5030
TRADE NAME AND SYNONYMS: AQS NON FLUID OIL
FORMULA:

HAZARDOUS INGREDIENTS
PAINTS, PRESERVATIVES, & SOLVENTS:
PIGMENTS: NA
CATALYST: NA
VEHICLE: NA
SOLVENTS: NA
ADDITIVES: NA
OTHERS: NA
ALLOYS AND METALLIC COATINGS:
BASE METAL: NA
ALLOYS: NA
METALLIC COATINGS: NA
FILLER METAL PLUS COATING OR CORE FLUX: NA
OTHERS: NA
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES:
1,1,1 TRICHLOROETHANE: 65% 350 ppm TLV (Units)
PROPANE-ISOBUTANE: 25% 1000 ppm TLV (Units)

PHYSICAL DATA
BOILING POINT (F.): N.D.
VAPOR PRESSURE (mm Hg.): N.D.
VAPOR DENSITY (AIR=1): N.D.
SOLUBILITY IN WATER: NEGLIGIBLE
APPEARANCE AND ODOR: YELLOW LIQUID
SPECIFIC GRAVITY (H(2)O=1): 1.23
PERCENT, VOLATILE BY VOLUME (%): 81%
EVAPORATION RATE (=1): N.D.

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method Used): 400 (CONC.)
EXTINGUISHING MEDIA: WATER FOG

SPECIAL FIRE FIGHTING PROCEDURES: PRESSURE DEMAND SELF-CONTAINED RESPIRATORY EQUIPMENT. WATER MAY BE USED TO COOL CONTAINERS PREVENTING PRESSURE BUILD-UP AND EXPLOSION.
UNUSUAL FIRE AND EXPLOSION HAZARDS: CANS WILL RUPTURE FROM INTERNAL PRESSURE AT ABOUT 190 F. WHEN HEATED TO DECOMPOSITION. TOXIC FUMES FORMED. 39
FLAMMABLE LIMITS: ND
Lel:
Uel:

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: SEE SECTION II
EFFECTS OF OVEREXPOSURE: ANESTHETIC EFFECTS MAY OCCUR IN RANGE OF 500 to 1000 ppm. MAY CAUSE MUCOUS MEMBRANE IRRITATION. DEFATTING ACTION ON SKIN POSSIBLE.
EMERGENCY AND FIRST AID PROCEDURES:
SKIN CONTACT: WIPE OFF AND WASH WITH SOAP & WATER.
EYE CONTACT: FLUSH WITH COPIOUS AMOUNT OF WATER AND SEE A DOCTOR.
INHALATION: REMOVE FROM EXPOSURE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION WHEN NECESSARY. CALL A PHYSICIAN.
INGESTION: ADMINISTER VOLUMES OF WATER OR MILK AND SEEK MEDICAL AID.

REACTIVITY DATA
STABILITY: STABLE
INCOMPATABILITY (Materials to avoid): WATER - SLOW HYDROLYSIS PRODUCES CORROSIVE ACID
CONDITIONS TO AVOID: DO NOT STORE ABOVE 120 F.
HAZARDOUS DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE, PHOSGENE
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: ELIMINATE IGNITION SOURCES. AVOID DERMAL AND EYE CONTACT. AVOID INHALATION OF FUMES, MIST OR VAPOR. VENTILATE AREA, RECOVER FREE PRODUCT, MOP OR SCRAPE U.
WASTE DISPOSAL METHOD: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, & FEDERAL REGULATIONS.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type):
VENTILATION:
LOCAL EXHAUST: YES
MECHANICAL (General):
SPECIAL:
OTHER:
PROTECTIVE GLOVES:

OTHER PROTECTIVE EQUIPMENT:
EYE PROTECTION: SAFETY GLASS RECOMMENDED

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 F.
OTHER PRECAUTIONS: DO NOT PUNCTURE OR INCINERATE

4

UP-1802

UPRR
HSDS Data: Chemical: Organic mixture (WD-40) ON-LINE HSDS
UP-03339

General Information
UP-03339
WD-40(R)
SIGNATURE: R. Miles
TITLE: Technical Director
REVISION DATE: March 1990
SUPERSEDES: January 1989
NA = Not applicable
NDA = No data available
< = Less than
> = More than
We believe the statements, technical information and recommendations contained herein are reliable. However, the data is provided without warranty, expressed or implied, it is the users responsibility both to determine safe conditions for use of this product and assume loss, damage expense, ??? consequential, arising from its use. Before using product, read label.

I. PRODUCT IDENTIFICATION
Manufacturer: WD-40 Company
Address:
1061 Cudahy Place (92110)
P.O. Box 80607
San Diego, California
92138-9021
Telephone:
Emergency Only: 1(800) 424-9300 (CHEMTREC)
Information: (619) 275-1400
Chemical Name: Organic Mixture
Trade Name: WD-40 Aerosol

II. HAZARDOUS INGREDIENTS

Chemical Name	CAS Number	%	Exposure Limit ACGIH/OSHA
Aliphatic Petroleum Distillates	8052-41-3	50	100 ppm (PEL)
A-70 Hydrocarbon Propellant	68476-85-7	25	1000 ppm (PEL)
Petroleum Base Oil	64742-65-0	> 15	5 mg/M3 (TWA)
Non-hazardous Ingredients		< 10	

III. PHYSICAL DATA
Boiling Point: NA
Evaporation Rate: Not determined
Vapor Density (air = 1): Greater than 1
Vapor Pressure: 55+/-5 PSI @ 70 Deg. F
Solubility in Water: Insoluble
Appearance: Light amber
Specific Gravity (H2O = 1): .710 @ 70 Deg. F

Odor: Characteristic odor
Percent Volatile (volume): 80%

IV. FIRE AND EXPLOSION
Flash Point: NA to aerosol cans
Flammable Limits: (propellant portion) [Lel] 1.8% [Uel] 9.5%
Extinguishing Media: CO2, Dry Chemical, Foam
Special Fire Fighting Procedures: None
Unusual Fire and Explosion Hazards: Considered "extremely flammable" under Consumer Product Safety Commission regulations.

V. HEALTH HAZARD / ROUTE(S) OF ENTRY
Threshold Limit Value: Aliphatic Petroleum Distillates (Stoddard solvent) lowest TLV (ACGIH 100 ppm.)
Symptoms of Overexposure:
Inhalation (Breathing): May cause anesthesia, headache, dizziness, nausea and upper respiratory irritation.
Skin Contact: May cause drying of skin and or irritation.
Eye Contact: May cause irritation, tearing and redness.
Ingestion (Swallowed): May cause irritation, nausea, vomiting and diarrhea.
First Aid Emergency Procedures:
Ingestion (Swallowed): Do not induce vomiting, seek medical attention.
Eye Contact: Immediately flush eyes with large amounts of water for 15 minutes.
Skin Contact: Wash with soap and water.
Inhalation (Breathing): Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.
DANGER:
Aspiration Hazard: If swallowed can enter lungs and may cause chemical pneumonitis. Do not induce vomiting. Call Physician immediately.
Suspected Cancer Agent: The components in this mixture have been found to be noncarcinogenic by NTP, IARC and OSHA.
Yes:
No: X

VI. REACTIVITY DATA
Stability:
Stable: X
Unstable:
Conditions to avoid: NA
Incompatability: Strong oxidizing materials
Hazardous decomposition products: Thermal decomposition may yield carbon monoxide and/or carbon dioxide.
Hazardous polymerization:
May occur:
Will not occur: X

VII. SPILL OR LEAK PROCEDURES
Spill Response Procedures: Spill unlikely from aerosol cans. Leaking cans should be placed in plastic bag or open pail until pressure has dissipated.
Waste Disposal Method: Empty aerosol cans should not be punctured or incinerated; bury in land fill. Liquid should be incinerated or buried land fill. Dispose of in accordance with local, state and federal regulations.

VIII. SPECIAL HANDLING INFORMATION
Ventilation: Sufficient to keep solvent vapor less than TLV.
Respiratory Protection: Advised when concentrations exceed TLV.
Protective Gloves: Advised to prevent possible skin irritation.
Eye Protection: Approved eye protection to safeguard against potential eye contact, irritation or injury.
Other Protective Equipment: None required.

IX. SPECIAL PRECAUTIONS
Keep from sources of ignition, do not take internally. Avoid excessive inhalation of spray particles. Do not puncture, incinerate or store container above 120 Deg. F. Keep from children.

X. TRANSPORTATION DATA
Domestic Surface:
Description: Consumer Commodity
Hazard Class: ORM-D
ID No.: NONE
Label Required: Consumer Commodity (ORM-D)
Domestic Air:
Description: Consumer Commodity (Flammable Gas-Aerosol products)
Hazard Class: ORM-D
ID No: NONE
Label Required: Consumer Commodity (ORM-D-AIR)

Locomotive
Fuel/Maint

UP-1806

GENERAL CONSIDERATIONS FOR LOCOMOTIVE FUELS AND MAINTENANCE PRODUCTS

Frequent and prolonged skin contact should be avoided. When these products are handled under normal operations, contact dermatitis can be prevented by good personal hygiene. This consists of minimized contact, prompt removal of substance from skin with soap and water. Use UPRR approved chemical resistant gloves if the possibility for extended skin contact exists.

Protective eye wear should be worn while handling all of these products. Additional personal protection equipment such as chemical resistant face shields should be worn if pouring alkaline or acid liquids such as sulfuric acid or CITA-TRETE.

Employees should be warned of the inhalation hazards associated with diesel vapors and acid fumes. Use these products in a well ventilated area.

Avoid ingestion of all products in this group. Refer to the specific MSDS for medical attention.

Refer to the safety and health information contained on the MSDS and product label for the specific fuels and maintenance products being used at your location before each use.

LOCOMOTIVE FUELS AND MAINTENANCE PRODUCTS

1. Diesel Fuel #2
2. Engine Oil
3. Locomotive Journal Oil
4. COG Grease
5. Air Compressor Oil
6. Governor Oil
7. Water Treatment
8. Toilet Chemical

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
FINA OIL & CHEMICAL COMPANY
PRODUCT:
DIESEL/FURNACE OIL (#2 OIL)
DATE OF ISSUE:
04-14-89
SUPERCEDES:
08-26-88
MSDS NUMBER:
P33
PRODUCT CODE:
000445
N.E.=NOT ESTABLISHED
N.AP.=NOT APPLICABLE
N.AV.=NOT AVAILABLE
T.C.=LISTED TOXIC CHEMICAL UNDER SEC. 313 OF TITLE III OF SARA 1986

LEGAL DISCLAIMER:
WHILE THE INFORMATION HEREIN IS BELIEVED TO BE RELIABLE, NO GUARANTEE IS MADE AS TO ITS ACCURACY OR COMPLETENESS. THE CONDITIONS OF USE, HANDLING, STORAGE, AND DISPOSAL, AND THE SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL. CONSEQUENTLY, ALL RISKS INVOLVING THE USE OF THE PRODUCT ARE ASSUMED BY THE USER. WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

SECTION I - IDENTIFICATION
MANUFACTURERS NAME
FINA OIL AND CHEMICAL CO.
ADDRESS
P.O. BOX 2159, DALLAS, TX 75221
EMERGENCY TELEPHONE NUMBER
(409) 962-4421
CHEMTREC TELEPHONE NUMBER
(800) 424-9300
TRADE NAME
#2 DIESEL, #2 FUEL OIL
CAS REGISTRY NUMBER
68476-34-6
CHEMICAL FAMILY
HYDROCARBON MIXTURE
OTHER
N.AP.
CHEMICAL NAME
N.AP.
CHEMICAL FORMULA
N.AP.

DOT IDENTIFICATION NUMBER
NA1993

SECTION II - HAZARDOUS INGREDIENTS
MATERIAL OR COMPONENT
N.AP.
VOL%
TLV

SECTION III - PHYSICAL DATA
BOILING POINT (DEG F)
320 - 670
SPECIFIC GRAVITY (WATER=1)
0.87
VAPOR PRESSURE (MMHG)
1.6 (@ 68 DEG F)
PERCENT VOLATILE (VOL%)
100 %
VAPOR DENSITY (AIR=1)
8.0
EVAPORATION RATE
600 X SLOWER THAN ETHYLETHER
SOLUBILITY IN WATER
NEGLIGIBLE
APPEARANCE AND ODOR
STRAW COLORED, KEROSENE-LIKE ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (METHOD USED)
130 DEG F (PMCC)
FLAMMABLE LIMITS
LOWER
N.AV.
UPPER
N.AV.
FIRE EXTINGUISHING MEDIA
DRY CHEMICAL, CO2, FOAM, HALON, WATER (FOG PATTERN)

SPECIAL FIRE FIGHTING PROCEDURES
AVOID INHALATION OF VAPORS. WEAR SELF-CONTAINED BREATHING APPARATUS WHEN FIRE FIGHTING IN CONFINED AREAS.

UNUSUAL FIRE, EXPLOSION HAZARDS
COMBUSTIBLE LIQUID. DO NOT USE NEAR OPEN FLAME, ELECTRIC SPARK, OR ON HOT SURFACES.

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE
N.E.
ACUTE EFFECTS OF OVEREXPOSURE
INHALATION
DIZZINESS, DROWSINESS, HEADACHE AND NAUSEA, WEAKNESS AND FATIGUE.
POSSIBLE ASPHYXIATION AND UNCONSCIOUSNESS.

SKIN CONTACT & ABSORPTION
IRRITATION

EYE CONTACT
IRRITATION

INGESTION
BURNING OF EYES, NOSE, AND THROAT. POSSIBLE PNEUMONIA (IF VOMITED).

EMERGENCY FIRST AID PROCEDURES
INHALATION
MOVE PERSON TO FRESH AIR. IF A LARGE AMOUNT HAS BEEN INHALED, KEEP VICTIM WARM AND GET MEDICAL ATTENTION. IF VICTIM HAS STOPPED BREATHING, GIVE ARTIFICIAL RESPIRATION.

SKIN CONTACT & ABSORPTION
REMOVE SOAKED CLOTHING. WASH WITH SOAP AND WATER.

EYE CONTACT
WASH EYES WITH LARGE AMOUNTS OF WATER. IF REDNESS PERSISTS, GET MEDICAL ATTENTION.

INGESTION
DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION IMMEDIATELY.

CHRONIC EFFECTS OF OVEREXPOSURE
SIGNS AND SYMPTOMS OF CHRONIC EXPOSURE ARE SIMILAR TO THOSE OF ACUTE EXPOSURE.

SKIN:
DERMATITIS

SECTION VI - REACTIVITY DATA
STABILITY
STABLE
CONDITIONS TO AVOID
N.AP.
INCOMPATIBILITY (MATERIALS TO AVOID)

STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS
CARBON MONOXIDE, CARBON DIOXIDE
HAZARDOUS POLYMERIZATION
WILL NOT OCCUR
CONDITIONS TO AVOID
N.AP.

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
CONTAIN SPILL AND SAFELY STOP THE FLOW. EVACUATE ALL NON-ESSENTIAL PERSONNEL. ELIMINATE IGNITION SOURCES AND VENTILATE AREA. SPILLS CAN BE ABSORBED WITH MATERIALS SUCH AS SAND.

WASTE DISPOSAL METHOD
RECOVER FREE LIQUID. TRANSFER TO AN APPROVED DISPOSAL AREA IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION EQUIPMENT
RESPIRATORY PROTECTION
USE OF NIOSH-APPROVED RESPIRATORS RECOMMENDED AT HIGH CONCENTRATIONS.

PROTECTIVE CLOTHING
CHEMICAL RESISTANT GLOVES RECOMMENDED IF CONTACT IS LIKELY.

EYE PROTECTION
SPLASH-PROOF GOGGLES OR SAFETY GLASSES.

VENTILATION
AVOID BREATHING MIST AND VAPORS. USE ONLY WITH ADEQUATE VENTILATION. VENTILATE AS NEEDED.

OTHER PROTECTIVE EQUIPMENT
N.AP.

SECTION IX - HANDLING AND STORAGE PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
COMBUSTIBLE LIQUID. KEEP AWAY FROM FIRE, SPARKS, AND FLAME. KEEP CONTAINERS CLOSED.

OTHER PRECAUTIONS
N.AP.

2

UP-1814

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
GASCON GL-7650 ENGINE OIL
MSDS No.
LPC 142
Rev. Date
08/03/89
LYONDELL PETROCHEMICAL COMPANY
1200 LAWNDALE AVENUE
P.O. BOX 2451
HOUSTON, TEXAS 77252-2451

IMPORTANT:
Read this MSDS before handling and disposing of this product and pass this information on to employees, customers, and users of this product

Note
Qualifications:
EQ = Equal
LT = Less Than
GT = Greater Than
AP = Approximately
UK = Unknown
TR = Trace
N/P = No Applicable Information Found
N/AP = Not Applicable
N/DA = No Data Available

Disclaimer of Liability
The information in this MSDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

I. General
Trade Name
GASCON GL-7650 ENGINE OIL

Other Names

"GENERATION V" RAILROAD ENGINE OIL

Telephone Numbers
EMERGENCY
800/424-9300 CHEMTREC
800/245-4532 HOT LINE
CUSTOMER SERVICE
800/525-4692 MSDS/INFO

Chemical Family
PETROLEUM HYDROCARBONS AND ADDITIVES

DOT Hazardous Materials Proper Shipping Name
NOT A D.O.T. "HAZARDOUS MATERIAL"

Generic Name
RAILWAY DIESEL ENGINE OIL

DOT Hazard Class
NOT REGULATED

CAS No.
SEE SECTION IX

Company ID No.
1060010600

UN/NA ID No.
NOT REGULATED

II. Summary of Hazards
WARNING
MAY CAUSE MILD SKIN IRRITATION AND INFLAMMATION FOLLOWING EXTENDED CONTACT!
AVOID PROLONGED AND/OR REPEATED SKIN CONTACT.
WASH THOROUGHLY AFTER HANDLING.

CONTAINS CHLORINATED PARAFFINS!
DO NOT TAKE INTERNALLY. A RECENT NATIONAL TOXICOLOGY PROGRAM (NTP) STUDY INDICATES THAT SOME CHLORINATED PARAFFIN HYDROCARBONS HAVE CAUSED TUMORS IN LABORATORY ANIMALS WHEN FORCE FED FOR EXTENDED PERIODS.
(SEE SECTION XI. - "GENERAL COMMENTS".)

III. Fire and Explosion
Flash Point (Method)
AP 420 Deg. F (D-92)
SEE "FIRE & EXPLOSION HAZARDS"

AND SHOES.

VI. Occupational Exposure Limits

Substance	Source	Date	Type	Value/Units	Time
OIL MIST, MINERAL (SEE SECTION XI.)	OSHA	1989	PEL	5 MG/M3	8 HRS
	ACGIH	1989	TLV	5 MG/M3	8 HRS
			STEL	10 MG/M3	15 MIN

VII. Emergency and First Aid

Inhalation

VAPORIZATION IS NOT EXPECTED AT AMBIENT TEMPERATURES AND THIS MATERIAL IS NOT EXPECTED TO BE AN INHALATION PROBLEM UNDER ANTICIPATED CONDITIONS OF USE. IN CASE OF OVEREXPOSURE, MOVE PERSON TO FRESH AIR.

Eye Contact

FLUSH EYES WITH CLEAN, LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE EYELIDS. IF PAIN OR REDNESS PERSISTS AFTER FLUSHING, OBTAIN MEDICAL ATTENTION.

Skin Contact

REMOVE BY WIPING; THEN WASH SKIN THOROUGHLY WITH PLENTY OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND THOROUGHLY CLEAN BEFORE REUSE. DISCARD CONTAMINATED LEATHER GLOVES AND SHOES.

Ingestion

RINSE MOUTH WITH WATER. DRINK 1-2 GLASSES OF WATER OR MILK. DO NOT INDUCE VOMITING UNLESS DIRECTED BY MEDICAL PERSONNEL. OBTAIN MEDICAL ATTENTION.

Emergency Medical Treatment Procedures

SEE ABOVE PROCEDURES.

VIII. Spill and Disposal

Precautions if Material is Spilled or Released

CONTAIN SPILL AND PREVENT IT FROM ENTERING ALL WATER BODIES, IF POSSIBLE. SAFELY STOP FLOW OF SPILL. EVACUATE NON-ESSENTIAL PERSONNEL FROM IMMEDIATE SPILL AREA DUE TO SLIPPING HAZARDS. IN URBAN AREA, CLEANUP AS SOON AS POSSIBLE; IN NATURAL ENVIRONMENTS, CLEANUP ON ADVICE FROM ECOLOGISTS. THIS MATERIAL WILL FLOAT ON WATER. ABSORBENT MATERIALS AND PADS CAN BE USED. COMPLY WITH ALL APPLICABLE LAWS. SPILLS MAY NEED TO BE REPORTED TO THE NATIONAL RESPONSE CENTER (800/424-8802). THE SPILLED MATERIAL AND ANY SOIL OR WATER WHICH IT HAS CONTACTED MAY BE HAZARDOUS TO ANIMAL/AQUATIC LIFE.

Waste Disposal Methods

MAXIMIZE PRODUCT RECOVERY FOR REUSE OR RECYCLING. CONDITIONS OF USE MAY CAUSE THIS MATERIAL TO BECOME A "HAZARDOUS WASTE" AS DEFINED BY STATE OR FEDERAL LAWS. USE APPROVED TREATMENT, TRANSPORTERS, AND DISPOSAL SITES IN COMPLIANCE WITH ALL LAWS. SPILL MATERIAL IS BIODEGRADABLE IF GRADUALLY EXPOSED TO MICRO-ORGANISMS. POTENTIAL TREATMENT AND DISPOSAL METHODS SHOULD CONSIDER THAT THE PRODUCT CONTAINS CHLORINATED PARAFFINS WHICH ARE KNOWN TO BIOACCUMULATE AND BE SLOW TO BIODEGRADE.

IX. Components
(This may not be a complete list of components)

Component Name	CAS No.	Carcinogen(##)	
SOLVENT-DEWAXED HEAVY PARAFFINIC DISTILLATE (PETROLEUM)	64742-65-0(*)	N/AP	AP
SEVERELY HYDROTREATED HEAVY NAPHTHENIC DISTILLATE (PETRO.)	64742-52-5(*)	N/AP	AP
SEVERELY HYDROTREATED HEAVY PARAFFINIC DISTILLATE (PETRO.)	64742-54-7(*)	N/AP	AP
MULTIPURPOSE ADDITIVE CONTAINING SULFUR, CALCIUM & NITROGEN		N/AP	LT
CHLORINATED PARAFFIN HYDROCARBONS	63449-39-8(*)	1, , ,	AP

Component Name	Composition amount (Wt.)
SOLVENT-DEWAXED HEAVY PARAFFINIC DISTILLATE (PETROLEUM)	50 TO 60 PERCENT
SEVERELY HYDROTREATED HEAVY NAPHTHENIC DISTILLATE (PETRO.)	25 TO 35 PERCENT
SEVERELY HYDROTREATED HEAVY PARAFFINIC DISTILLATE (PETRO.)	5 TO 15 PERCENT
MULTIPURPOSE ADDITIVE CONTAINING SULFUR, CALCIUM & NITROGEN	5 PERCENT
CHLORINATED PARAFFIN HYDROCARBONS	0.1 TO 1.0 PERCENT

Compositions given are typical values, not specifications.
(##)Listed By:
1 = NTP
2 = IARC
3 = OSHA
4 = Other

X. Physical and Chemical Data
Boiling Point
GT 600 Deg. F
Viscosity Units, Temp. (Method)
AP 920 TO 980 SUS AT 100 Deg. F (D2161)
Dry Point

Autoignition Temperature (Method)
AP 750 Deg. F (EST.)
BASED ON DISTILLATE COMPONENTS

Flammable Limits (% Vol. in Air)
Lower N/AP
Upper N/AP

Fire and Explosion Hazards
SLIGHTLY COMBUSTIBLE! OSHA/NFPA CLASS-IIIB COMBUSTIBLE LIQUID. WHEN HEATED ABOVE ITS FLASH POINT, THIS MATERIAL WILL RELEASE FLAMMABLE VAPORS WHICH CAN BURN IN THE OPEN OR BE EXPLOSIVE IN CONFINED SPACES IF EXPOSED TO AN IGNITION SOURCE. MISTS OR SPRAYS MAY BE FLAMMABLE AT TEMPERATURES BELOW THE NORMAL FLASH POINT. KEEP AWAY FROM EXTREME HEAT AND OPEN FLAME.

Extinguishing Media
DRY CHEMICAL, HALON, AND CARBON DIOXIDE. FOAM AND WATER FOG ARE EFFECTIVE BUT MAY CAUSE FROTHING.

Special Firefighting Procedures
FOR FIRES INVOLVING THIS MATERIAL. DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. THIS MAY INCLUDE SELF-CONTAINED BREATHING APPARATUS TO PROTECT AGAINST THE HAZARDOUS EFFECTS OF COMBUSTION PRODUCTS AND OXYGEN DEFICIENCIES. IF FIREFIGHTERS CANNOT WORK UPWIND TO THE FIRE. RESPIRATORY PROTECTIVE EQUIPMENT MUST BE WORN. COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER. BURNING LIQUID WILL FLOAT ON WATER. NOTIFY APPROPRIATE AUTHORITIES IF LIQUID ENTERS SEWER/WATERWAYS.

IV. Health Hazards
Summary of Acute Hazards
NOT EXPECTED TO PRESENT A SIGNIFICANT HEALTH HAZARD UPON SHORT-TERM EXPOSURE.

ROUTE OF EXPOSURE	SIGNS AND SYMPTOMS	Primary Route(s)
Inhalation	NOT EXPECTED TO PRESENT A HAZARD UPON SHORT-TERM EXPOSURE.	¢ |
Eye Contact	TESTS ON SIMILAR MATERIALS SUGGEST THAT THIS PRODUCT IS NON-IRRITATING UPON SHORT-TERM EXPOSURE; HOWEVER, THE CHLORINATED PARAFFINS COMPONENT IS A MILD EYE IRRITANT.	¢ |
Skin Absorption	NO SIGNIFICANT ADVERSE HEALTH EFFECTS ARE EXPECTED TO OCCUR UPON SHORT-TERM EXPOSURE;	

	HOWEVER, SEE SECTION XI. FOR ADDITIONAL INFORMATION	¢ |
Skin Irritation	TESTS ON SIMILAR MATERIALS SUGGEST THAT MILD SKIN IRRITATION MAY RESULT FROM SHORT-TERM DIRECT CONTACT.	¢X|
Ingestion	NO SIGNIFICANT ADVERSE HEALTH EFFECTS ARE EXPECTED TO OCCUR UPON SHORT-TERM EXPOSURE; HOWEVER, SEE SECTION XI. - "GENERAL COMMENTS FOR ADDITIONAL INFORMATION.	¢ |

Summary of Chronic Hazards and Special Health Effects
PROLONGED AND/OR REPEATED CONTACT WITH THIS MATERIAL MAY PRODUCE SKIN IRRITATION AND INFLAMMATION. FOR CHRONIC EFFECTS DATA CONCERNING SEVERAL COMPONENTS OF THIS PRODUCT, SEE SECTION XI.

PERSONNEL WITH PRE-EXISTING SKIN DISORDERS SHOULD AVOID CONTACT WITH THIS PRODUCT.

V. Protective Equipment and Other Control Measures

Respiratory
NONE IS NEEDED UNDER ANTICIPATED USE CONDITIONS WITH ADEQUATE VENTILATION. IF EXPOSURE EXCEEDS THE OCCUPATIONAL EXPOSURE LIMITS, FOLLOW OSHA STANDARDS OR EQUIVALENT AND WEAR PROPER NIOSH/MSHA-APPROVED RESPIRATORY EQUIPMENT.

Eye
SAFETY GLASSES SHOULD BE ADEQUATE PROTECTION UNDER MOST CONDITIONS OF USE. IN THE LIKELIHOOD OF SPLASHING OR SPRAYING OF HOT MATERIAL (GT 125 Deg. F.), WEAR GOGGLES AND/OR FACE SHIELD. HAVE SUITABLE EYE WASH WATER AVAILABLE.

Skin
AVOID PROLONGED AND/OR REPEATED SKIN CONTACT. IF CONDITIONS OR FREQUENCY OF USE MAKE CONTACT LIKELY, WEAR CLEAN AND IMPERVIOUS PROTECTIVE CLOTHING SUCH AS GLOVES, BOOTS, COVERALLS, AND FACIAL PROTECTION.

Engineering Controls
USE ADEQUATE VENTILATION TO KEEP OIL MISTS OF THIS MATERIAL BELOW THE APPLICABLE GUIDELINE(S)/STANDARD(S). (SEE SECTION VI. - OCCUPATIONAL EXPOSURE LIMITS.)

Other Hygienic and Work Practices
WASH HANDS WITH PLENTY OF SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, OR USE OF TOILET FACILITIES. DO NOT USE GASOLINE, SOLVENTS, KEROSENE, OR HARSH ABRASIVE SKIN CLEANERS FOR WASHING EXPOSED SKIN AREAS. TAKE A SHOWER AFTER WORK IF GENERAL CONTACT OCCURS. REMOVE OIL-SOAKED CLOTHING AND LAUNDER BEFORE REUSE. LAUNDER OR DISCARD CONTAMINATED LEATHER GLOVES

N/AP
Freezing Point
LT 10 Deg. F
Vapor Pressure
(MM HG AT 70 Deg. F) LT 0.1
Volatile Characteristics
NEGLIGIBLE
Specific Gravity (H2O = 1 at 39.2 Deg. F)
AP 0.92
Vapor Sp. Gr. (Air = 1.0 at 60 Deg. - 90 Deg. F)
GT 10
Solubility in Water
NEGLIGIBLE
pH
N/AP
Hazardous Polymerization
NOT EXPECTED TO OCCUR
Other Chemical Reactivity
N/P
Stability
STABLE

Other Physical and Chemical Properties
TOTAL BASE NUMBER = AP 17 (ASTM D-2896); VISCOSITY INDEX = AP 80 (ASTM D-2270); POUR POINT TEMPERATURE = LT 10 Deg. F. (ASTM D-97).

Appearance and Odor
DARK-COLORED LIQUID; LUBE OIL ODOR.

Conditions to Avoid
EXTREME HEAT AND OPEN FLAME.

Materials to Avoid
STRONG ACIDS, ALKALIES, AND OXIDIZERS SUCH AS LIQUID CHLORINE AND OXYGEN.

Hazardous Decomposition Products
BURNING OR EXCESSIVE HEATING MAY PRODUCE CARBON MONOXIDE AND OTHER HARMFUL GASES/VAPORS INCLUDING OXIDES AND/OR OTHER COMPOUNDS OF CALCIUM, SULFUR, NITROGEN, AND CHLORINE.

XI. Additional Precautions
Handling, Storage and Decontamination Procedures
TO AVOID PRODUCT DEGRADATION, WATER CONTAMINATION SHOULD BE AVOIDED AND MINIMUM FEASIBLE HANDLING TEMPERATURES SHOULD BE MAINTAINED. PERIODS OF EXPOSURE TO HIGH TEMPERATURES (GT 200 Deg. F.) SHOULD BE MINIMIZED. PRODUCT DEGRADATION MIGHT INCREASE HEALTH HAZARD RISKS.

SINCE SPECIFIC EXPOSURE STANDARDS/CONTROL LIMITS HAVE NOT BEEN ESTABLISHED FOR THIS MATERIAL, THE EXPOSURE LIMITS SHOWN IN SECTION VI. ARE SUGGESTED

AS MINIMUM, CONTROL GUIDELINES.

FOLLOWING DAILY SKIN APPLICATIONS WITH HIGH DOSES OF A CALCIUM PHENATE SIMILAR TO THAT CONTAINED IN THIS PRODUCT, YOUNG MALE RABBIT'S TESTICLES FAILED TO MATURE NORMALLY. THESE SAME TESTS RUN ON RATS DID NOT PRODUCE ADVERSE TESTICULAR EFFECTS. BASED ON THESE DATA, WE BELIEVE THERE IS NO RISK OF HUMAN MALE REPRODUCTIVE IMPAIRMENT FROM CALCIUM PHENATE EXPOSURES.

General Comments
LONG-TERM BIOASSAY RESULTS INDICATE THAT SOME CHLORINATED PARAFFINS IN COMBINATION WITH CORN OIL PRODUCE TUMORS IN LABORATORY ANIMALS FOLLOWING HIGH-DOSE FORCED FEEDING. ANOTHER STUDY INDICATES THAT WHEN CHLORINATED PARAFFINS ARE FORCE FED TO PREGNANT LABORATORY ANIMALS, IT CAUSES THE DEATH OF OFF-SPRING DURING WEANING. THE IMPLICATION OF THESE DATA FOR HUMAN HEALTH EFFECTS HAS NOT BEEN DETERMINED.

IARC, ONE OF OSHA'S AUTHORITIES FOR ESTABLISHING CARCINOGENIC POTENTIAL, HAS SPECIFICALLY EVALUATED NAPHTHENIC OILS. IARC FOUND THAT MILDLY HYDROTREATED (HYDROFINISHED) OILS ARE CARCINOGENIC TO LABORATORY ANIMALS. IARC HAS NOT FOUND SEVERELY HYDROTREATED OILS TO BE CARCINOGENIC. THIS PRODUCT IS CLASSIFIED AS SEVERELY (NOT MILDLY) HYDROTREATED UNDER BOTH IARC AND OSHA DEFINITIONS. ANIMAL TESTING AND OTHER ANALYSES WILL CONTINUE AS PART OF OUR ON-GOING HEALTH HAZARD ASSESSMENT PROGRAM.

SOME OF THE INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE MIXTURE ITSELF.

XII. Regulatory Information
SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA), TITLE III
SECTION 311/312 HAZARD CATEGORIES
DELAYED (CHRONIC) HEALTH HAZARD

SECTION 313
NO CHEMICALS IN THIS PRODUCT EXCEED THE DE MINIMUS REPORTING LEVEL ESTABLISHED BY SARA TITLE III, SECTION 313 AND 40 CFR 372.

TOXIC SUBSTANCES CONTROL ACT (TSCA)
ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA)
NO CHEMICALS IN THIS PRODUCT ARE SUBJECT TO THE REPORTING REQUIREMENTS OF CERCLA

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 65
BASED ON INFORMATION CURRENTLY AVAILABLE, THIS PRODUCT IS NOT KNOWN TO CONTAIN ANY CHEMICALS CURRENTLY LISTED AS CARCINOGENS OR REPRODUCTIVE TOXINS UNDER CALIFORNIA PROPOSITION 65 AT LEVELS WHICH WOULD BE SUBJECT TO

THE PROPOSITION. IF YOU REFORMULATE OR FURTHER PROCESS THIS PRODUCT, YOU SHOULD FURTHER EVALUATE THIS PRODUCT BASED UPON SUCH REFORMULATION OR PROCESSING, AS WELL AS UPON ITS FINAL COMPOSITION AND USE.

XIII. Supplement

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UP-1824

General Information
MATERIAL SAFETY DATA SHEET
Date Issued:
10/15/92
Supersedes:
10/14/91
TEXACO
NOTE:
Read and understand Material Safety Data Sheet before handling or disposing of product

N.D. - Not Determined
< - Less Than
N.A. - Not Applicable
> - Greater Than
N.T. - Not Tested

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
MATERIAL IDENTITY
Product Code and Name:
00674 JOURNALTEX HD 57
Chemical Name and/or Family or Description:
Railway Journal Oils
Manufacturer's Name and Address:
Texaco Lubricants Company
a Division of Texaco Refining and Marketing Inc.
P.O. Box 4427, Houston, TX 77210-4427
Telephone Numbers:
TRANSPORTATION EMERGENCY Company: (914) 831-3400
HEALTH EMERGENCY Company: (914) 831-3400
GENERAL MSDS ASSISTANCE (914) 838-7204
TECHNICAL INFORMATION Fuels: (914) 838-7336; Lubricants/Antifreezes: (914) 838-7509
Chemicals: (512) 459-6543
CHEMTREC: (800) 424-9300

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2. COMPOSITION/INFORMATION ON INGREDIENTS
THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CHRONIC HAZARDS (CARCINOGENIC, TERATOGENIC, MUTAGENIC, NEUROTOXIC AND SENSITIZERS) ARE LISTED WHEN PRESENT AT 0.01% OR GREATER; ACUTE HAZARDS ARE LISTED WHEN PRESENT AT 1.0% OR GREATER AND NON-HAZARDOUS COMPONENTS ARE LISTED WHEN PRESENT AT 3.0% OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE.

Product and/or Component(s) Carcinogenic According to:
OSHA IARC NTP OTHER NONE

[ ] [ ] [ ] [ ] [X]

Composition:

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
Solvent-dewaxed heavy paraffinic petroleum distillates	64742650	5mg/m3 OSHA (MIST) 5mg/m3 ACGIH (MIST) 10mg/m3 STEL (MIST)	65.00 - 79.99
Hydrotreated C25 bright stock-based lubricating oil	72623837	5mg/m3 OSHA (MIST) 5mg/m3 ACGIH (MIST) 10mg/m3 STEL (MIST)	20.00 - 34.99

Product is hazardous according to OSHA (1910.1200).

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance and Odor:
Dark amber, clear oil

WARNING STATEMENT
WARNING! MAY CAUSE EYE AND SKIN IRRITATION

HMIS
Health: 2
Flammability: 1
Reactivity: 0
Special: -

NFPA
Health: 2
Flammability: 1
Reactivity: 0
Special: -

POTENTIAL HEALTH EFFECTS

Primary Route of Exposure:

EYE	SKIN	INHALATION	INGESTION
[X]	[X]	[X]	[ ]

Effects of Overexposure

Acute

Eyes:
May cause irritation, experienced as mild discomfort and seen as light excess redness of the eye.

Skin:
Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with material, may cause more severe irritation and discomfort, seen as local redness and swelling.

No adverse effects expected from absorption of material through the skin.

Inhalation:
Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as

from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

Ingestion:
No adverse effects expected. If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:
This product contains a material that is a potential skin sensitizer. Prolonged and repeated contact with this product may cause an allergic skin reaction in sensitive, exposed persons.

Chronic:
Repeated inhalation may cause lung damage.

Medical Conditions Aggravated by Exposure:
Skin contact may aggravate an existing dermatitis (skin condition).

Overexposure to vapor, dust or mist may aggravate existing respiratory conditions, such as asthma, bronchitis, and inflammatory or fibrotic respiratory disease.

Other Remarks:
None

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4. FIRST AID MEASURES

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

Skin:
Wash skin with plenty of soap and water until all traces of material are removed. Remove and clean contaminated clothing (See Other Instructions). Destroy non-resistant footwear. Get medical attention if skin irritation persists or contact has been prolonged.

Ingestion:
If more than several mouthfuls have been swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may administer oxygen. Get immediate medical attention.

Other Instructions:
Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

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5. FIRE-FIGHTING MEASURES

Ignition Temp. Degrees F.:
N.D.

Flammable Limits (%)
Lower: N.D.
Upper: N.D.
Flash Point Degrees F. (Method):
385 F (COC)
Recommended Fire Extinguishing Agents And Special Procedures:
According to NFPA Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive Hazards:
None

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6. ACCIDENTAL RELEASE MEASURES
(Transportation Spills Call: CHEMTREC (800) 424-9300)
Procedures in Case of Accidental Release, Breakage or Leakage:
Ventilate area. Avoid breathing vapor. Use self-contained breathing apparatus or supplied air for large spills or confined areas. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

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7. HANDLING AND STORAGE
Precautions to be Taken in Handling and Storage:
Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Protective Equipment (Type)
Eye/Face Protection:
Chemical-type goggles or face shield recommended to prevent eye contact.
Skin Protection:
Protective clothing such as uniforms, coveralls or lab coats should be worn. Launder or dry-clean when soiled. Gloves and boots resistant to chemicals and petroleum distillates required.
Respiratory Protection:
Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated, use respirator approved by MSHA or NIOSH as appropriate. Supplied air respiratory protection should be used for cleaning large spills or upon entry into tanks, vessels, or other confined spaces. See below for applicable permissible concentrations.
Ventilation:
Adequate to meet component occupational exposure limits (see Section 2).

Exposure Limit for Total Product:
None established for this product; refer to Section 2 for component permissible concentration.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor:
Dark amber, clear oil
Boiling Point (Degrees F.):
N.D.
Specific Gravity:
0.877 (H2O=1)
pH of undiluted product:
N.A.
Vapor Pressure:
N.D. mmhg
Viscosity:
58.6 cSt @ 40 C
Percent VOC:
N.D.
Vapor Density:
N.D. Air=1
Solubility in Water:
N.D.
Other:
N.D.

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10. STABILITY AND REACTIVITY

This Material Reacts violently With: (If others is checked below, see comments for details)

Air	Water	Heat	Strong Oxidizers	Others	None of These
[ ]	[ ]	[ ]	[X]	[ ]	[ ]

Comments:
None
Products Evolved When Subjected to Heat or Combustion:
Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.
Hazardous Polymerizations:

OCCUR	DO NOT OCCUR
[ ]	[X]

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11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION (ANIMAL TOXICITY DATA)
Median Lethal Dose (LD50 LC50) (Species)
Oral:
believed to be > 5 g/kg (rat); practically non-toxic

Inhalation:
N.D.
Dermal:
believed to be > 3 g/kg (rabbit); practically non-toxic
Irritation Index, Estimation of Irritation (Species)
Skin:
believed to be >0.5-3/8.0 (rabbit); slightly irritating
Eyes:
believed to be >15-25/110 (rabbit); slightly irritating
Sensitization:
N.D.
Other:
None

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12. DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHODS
This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form. Under RCRA, it is the responsibility of the use of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.
REMARKS
None

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13. TRANSPORT INFORMATION
TRANSPORTATION
DOT: PROPER SHIPPING NAME:
N.D.
IMDG: PROPER SHIPPING NAME:
N.D.
IATA: PROPER SHIPPING NAME:
N.D.
TDG: PROPER SHIPPING NAME:
N.D.

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14. REGULATORY INFORMATION
A. SARA TITLE III
Title III Section 302/304 Extremely Hazardous Substance:

Component	CAS No.	Percent	RQ (lbs)	TPQ (lbs)
NONE				

CERCLA Section 102(a) Hazardous Substance

Component	CAS No.	Percent	RQ (lbs)
Toluene	108883	54 ppm	1000

Title III Section 311 Hazard Categorization

Acute	Chronic	Fire	Pressure	Reactive	Not Applicable
[X]	[X]	[X]	[ ]	[ ]	[ ]

Title III Section 313 Toxic Chemicals

Component	CAS No.	Percent
NONE		

B. WHMIS CLASSIFICATION
NA

C. MICHIGAN CRITICAL MATERIALS
No Michigan Critical materials present.

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15. OTHER INFORMATION (+++)
WARNING! This product contains a detectable amount of toluene, which is known to the State of California to cause reproductive toxicity.

This product may be subject to export notification under TSCA section 12(b); contains oleylamine.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date:
10-15-92
Date Printed:
01-20-93
[ ] New
[X] Revised, Supersedes: 10-14-92
Inquiries regarding MSDS should be directed to:

Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508

Heading: 16. PRODUCT LABEL
READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT
00674 JOURNALTEX HD 57

WARNING STATEMENT
WARNING! MAY CAUSE EYE AND SKIN IRRITATION

PRECAUTIONARY MEASURES
AVOID CONTACT WITH EYES, SKIN, AND CLOTHING
AVOID PROLONGED BREATHING OF MIST OR VAPOR
WASH THOROUGHLY AFTER HANDLING

FIRST AID

INGESTION:
If more than several mouthfuls have been swallowed, give two glasses of water (16 oz.). Get medical attention.

INHALATION:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may administer oxygen. Get immediate medical attention.

EYE CONTACT:
Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

SKIN CONTACT:
Wash skin with plenty of soap and water until all traces of material are removed. Remove and clean contaminated clothing (See Other Instructions). Destroy non-resistant footwear. Get medical attention if skin irritation persists or contact has been prolonged.

FIRE
In case of fire, use foam, dry chemical, or CO_2. Use water spray to keep containers cool.

Chemical/Common Name	CAS No.	Range in %
Solvent-dewaxed heavy paraffinic petroleum distillates	64742650	65.00 - 79.99
Hydrotreated C25 bright stock-based lubricating oil	72623837	20.00 - 34.99

Product is hazardous according to OSHA (1910.1200).
Not classified as a hazardous material by DOT definition.

HMIS
Health: 2
Flammability: 1
Reactivity: 0

Special: -
National Fire Protection Association
Health: 2
Flammability: 1
Reactivity: 0
Special: -
CAUTION:
Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.
Manufacturer's Name:
Texaco Lubricants Company
a Division of Texaco Refining and Marketing Inc.
P.O. Box 4427, Houston, TX 77210-4427
TRANSPORTATION EMERGENCY Company:
(914) 831-3400
CHEMTREC: (800) 424-9300
HEALTH EMERGENCY Company:
(914) 831-3400

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UP-1834

GENERAL INFORMATION
Chemical Name / Synonym / Trade Name:
Cogrease LX Lubricant
Cogrease LX Lubricant (011992)
9651-59 Petroleum Grease
Manufacturer Name:
CONOCO
Chemical Family Name:
Petroleum Hydrocarbons
CAS Number:
DOT Classification:
NA Number:
UN Number:
MATERIAL SAFETY DATA SHEET
CONOCO
Conoco Inc.
GREC0071
Revised
19-Jan-92
Printed
27-Mar-92
Cogrease LX Lubricant

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. *However, some ingredients may have been purchased or obtained from* third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Responsibility for MSDS:
MSDS Administrator
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-239-5550

MATERIAL IDENTIFICATION
Manufacturer/Distributor
Conoco Inc.
P.O. Box 2197
Houston, TX 77252
Phone Numbers
General Information 1-(713)293-5550

Transport Emergency 1-(800)424-9300
Medical Emergency 1-(800)441-3637

Chemical Family
Petroleum Hydrocarbons

Trade Names and Synonyms
9651-59
Petroleum Grease

CAS Number
Mixture

NFPA Ratings
Health: 0
Flammability: 1
Reactivity: 0

NPCA-HMIS Ratings
Health: 1
Flammability: 1
Reactivity: 0
Personal Protection rating to be supplied by user depending on use conditions.

OSHA HAZARD DETERMINATION
Components of this material are not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Boiling Point
750 to 1300 Deg. F

Vapor Pressure
Nil

Vapor Density
>1 (Air=1.0)

% Volatiles
Nil

Evaporation Rate
Nil

Water Solubility
Insoluble

Odor
Mild petro. hydrocarbon

Form
Solid

Color
Black

Specific Gravity
0.97 (Water = 1)

HAZARDOUS REACTIVITY
Instability
Stable.
Incompatibility
Incompatible with strong oxidizing material. Avoid heat and flame.
Decomposition
Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.
Polymerization
Polymerization will not occur.

FIRE AND EXPLOSION DATA
Flash Point
470 Deg. F
Method
PMCC
Autoignition
750 Deg. F
Fire and Explosion Hazards
Class IIIB Combustible Liquid (NFPA).
If material is heat to melt point, NFPA combustibility classes apply.
Extinguishing Media
Water Spray. Foam. Dry Chemical. CO2.
Special Fire Fighting Instructions
Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.
Unusual Fire and Explosion Hazards:
Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.
HEALTH HAZARD INFORMATION
Primary Routes of Exposure/Entry:
Skin.
Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:
The product does not pose a significant health hazard, but a with many petroleum products, poor hygienic practices or inadequate engineering design that allow prolonged or repeated exposure may cause minor skin irritation.
Carcinogenicity
None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.
Exposure Limits
Cogrease LX Lubricant
TLV (ACGIH)
None Established
PEL (OSHA)

None Established
Safety Precautions
Wash thoroughly after handling. Wash clothing after use.

FIRST AID
Inhalation
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin Contact
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If irritation develops, consult a physician.
Eye Contact
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Ingestion:
If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.
HIGH PRESSURE INJECTION INJURIES:
Accidential release of product during high pressure usage may cause penetration of the skin and cause a seemingly harmless wound that can lead to serious consequences. Have the wound treated by a physician.
Notes to Physician
Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400ml water and mix thoroughly. Administer 5mL/kg, or 350mL for an average adult.

High velocity injection under the skin can result in serious injury. When released by high pressure equipment, this material can easily penetrate the skin and leave a bloodless puncture wound. Material injected into a finger can eventually effect the palm of the hand. Immediate attention by a surgical specialist is recommended.

PROTECTION INFORMATION
Generally Applicable Control Measures and Precautions
Ventilation:
Normal shop ventilation.
Personal Protective Equipment
Respiratory Protection:
None required except under unusual circumstances such as described in the Fire and Explosion Section.
Protective Gloves:
None required.
Eye/Face Protection:
None required.
Other Protective Equipment:

Complete protective clothing if material is being handled hot.
Other Precautions:
Avoid prolonged skin contact by practicing good personal hygiene and laundering contaminated clothing.

SPILL, LEAK AND DISPOSAL INFORMATION
Spill, Leak, or Release
NOTE:
Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Recover undamaged and minimally contaminated material for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up.
Waste Disposal
Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.
SHIPPING INFORMATION
DOT Proper Shipping Name
Not regulated.
IATA/IMO Proper Shipping Name
Not restricted.

STORAGE CONDITIONS
Store in accordance with National Fire Protection Assn regulations.

TITLE III HAZARD CLASSIFICATIONS
Acute
No
Chronic
No
Fire
No
Reactivity
No
Pressure
No

REGULATORY INFORMATION
OSHA HAZARD DETERMINATION
The material is not known to be hazardous as defined by OSHA's Hazard Determination Section, 29 CFR 1910.1200.
EPA DETERMINATIONS

CLEAN AIR ACT, 40 CFR 50, SECTIONS 112, 114
This material is not known to contain either a Hazardous Air Pollutant or a Volatile Organic Chemical.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, & LIABILITY ACT (CERCLA/SUPERFUND), 40 CFR 302
Not applicable; this material is covered by the CERCLA petroleum exclusion. Releases are not reportable.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III (SARA) - SECTIONS 302, 304, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)
The material is not known to contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)
The material is not known to contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is not subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA) (40 CFR 710)
The material is a mixture as defined by TSCA. The chemical ingredients in this material are in the Section 8(b) Chemical Substance Inventory (40 CFR 710) and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies of the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D
The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If it is a hazardous waste, regulations 49 CFR 262-266 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, Section 311

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient	Reportable Quantity
Petroleum Hydrocarbons	Film or sheen upon or discoloration of the water surface or adjoining shoreline

FOREIGN REGULATIONS

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)
The material is not a WHMIS Controlled Product.

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")
The material is not known to contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT
To the best of our knowledge the material is not sold or produced in

Pennsylvania. Please notify Conoco at the telephone number noted below if the material results in Pennsylvania commerce.

ADDITIONAL INFORMATION AND REFERENCES

Product Use:

Petroleum Grease

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UP-1842

UPRR ON-LINE MSDS
MSDS Data: Chemical: ANDEROL(**) 497 SYNTHETIC COMPRESSOR O UP-02134

General Information
Chemical Name / Synonym / Trade Name:
ANDEROL(**) 497 SYNTHETIC COMPRESSOR OIL
ORGANIC ACID ESTERS WITH ADDITIVES
Manufacturer Name:
NUDDEX INC
CAS Number:

TURNER PLACE, P.O. BOX 365, PISCATAWAY, N.J. 08854
MANUFACTURER: NUDDEX INC., A HULS CO.
NAME AND TITLE: J.P. VOELKER, MANAGER PRODUCT SAFETY
RUN DATE: 03/20/87
EFFECTIVE DATE: 05/27/86
EMERGENCY TELEPHONE NO.: (201) 763-7173

IDENTIFICATION OF PRODUCT
TRADE NAME & SYNONYMS: ANDEROL(**) 497 SYNTHETIC COMPRESSOR OIL
CHEMICAL NAME & SYNONYMS: ORGANIC ACID ESTERS WITH ADDITIVES
MOLECULAR FORMULA: NOT APPLICABLE
(**) REGISTERED US. TRADEMARK OF NUDDEX INC.
MSDS/PRODUCT NUMBER: 0810497
CHEMICAL FAMILY: ESTERS
MOLECULAR WEIGHT: N/A

HAZARDOUS COMPONENTS OF MIXTURES
COMPONENTS: NONE

PHYSICAL DATA
APPEARANCE AND ODOR: LIGHT AMBER LIQUID, SLIGHT MILD ODOR.
BOILING POINT: >660F
VAPOR PRESSURE: <0.02 MM HG @ 300F
VAPOR DENSITY: NOT VOLATILE
SOLUBILITY IN WATER: NEGLIGIBLE
MELTING POINT: NOT APPLICABLE
SPECIFIC GRAVITY: LESS THAN 1
PERCENT VOLATILE: NOT VOLATILE
EVAPORATION RATE: NOT VOLATILE

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: >450F CDC
FIRE EXTINGUISHING MEDIA: WATER SPRAY, FOAM, CARBON DIOXIDE OR DRY CHEMICAL.
SPECIAL FIRE FIGHTING: BURNING WILL PRODUCE TOXIC FUMES. WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL TURN-OUT GEAR TO
PROCEDURE: FIGHT FIRE. AVOID SPREADING LIQUID AND FIRE BY WATER FLOODING.
UNUSUAL FIRE AND EXPLOSION HAZARDS: EXPOSURE TO HEAT BUILDS UP PRESSURE IN

CLOSED CONTAINERS. COOL WITH WATER SPRAY.

HEALTH HAZARD DATA
ACGIH TLV (OSHA PEL): MIXTURE--SEE SECTION 2.
EFFECTS OF OVER EXPOSURE: LOW ORAL AND DERMAL TOXICITY. MISTS OR FUMES FROM EXCESSIVE HEATING MAY CAUSE IRRITATION, NAUSEA, VOMITING.
EMERGENCY 1ST AID PROCEDURE: CONTACT - WASH SKIN WITH SOAP AND WATER; FLUSH EYES WITH WATER FOR 15 MINUTES. CALL A PHYSICIAN IF IRRITATION DEVELOPS. INHALATION - REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION OR OXYGEN IF NECESSARY. INGESTION - INDUCE VOMITING IF VICTIM IS CONSCIOUS. CALL A PHYSICIAN. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
THIS INFORMATION IS FURNISHED WITHOUT WARRANTY, REPRESENTATION, INDUCEMENT OR LICENSE OF ANY KIND, EXCEPT THAT IT IS ACCURATE TO THE BEST OF NUDDEX INC.'S KNOWLEDGE OR OBTAINED FROM SOURCES BELIEVED BY NUDDEX INC. TO BE ACCURATE, AND NUDDEX INC. DOES NOT ASSUME ANY LEGAL RESPONSIBILITY FOR USE OR RELIANCE UPON SAME. CUSTOMERS ARE ENCOURAGED TO CONDUCT THEIR OWN TESTS. BEFORE USING ANY PRODUCT READ ITS LABEL.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID: N/A
INCOMPATIBILITY: STRONG OXIDANTS.
HAZARDOUS DECOMPOSITION: BURNING WILL PRODUCE TOXIC FUMES.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: N/A

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: COVER WITH AN INERT, ABSORBENT MATERIAL AND REMOVE TO DISPOSAL CONTAINER. OBEY ALL RELEVANT FEDERAL, STATE AND LOCAL LAWS.
WASTE DISPOSAL METHOD: OBEY RELEVANT LOCAL, STATE AND FEDERAL LAWS. DO NOT CONTAMINATE ANY LAKES, STREAMS, PONDS OR UNDERGROUND WATER SUPPLY.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION: IF OVERHEATED, USE APPROPRIATE NIOSH-APPROVED RESPIRATORY PROTECTIVE EQUIPMENT.
VENTILATION:
LOCAL EXHAUST: RECOMMENDED
MECHANICAL: RECOMMENDED
PROTECTION GLOVES: IMPERMEABLE GLOVES TO MINIMIZE SKIN CONTACT.
EYE PROTECTION: CHEMICAL SPLASH GOGGLES OR FACE SHIELD.
SPECIAL: N/A
OTHER: N/A
OTHER PROTECTIVE EQUIPMENT: EYE WASH FOUNTAIN, SAFETY SHOWER. WASH CONTAMINATED CLOTHING BEFORE REUSE.

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
CAUTION: DO NOT USE OIL ABOVE MAXIMUM RECOMMENDED OPERATING TEMPERATURE OF 450F (232C). MAY SOFTEN SOME PLASTIC AND PAINT SURFACES. WIPE UP SPILLS IMMEDIATELY.
HMIS RATINGS: HEALTH-1, FLAMMABILITY-1,
REACTIVITY-0 (HEALTH RATING APPLIES ONLY TO ACUTE EFFECTS AS DEFINED BY THE NATIONAL PAINT AND COATINGS ASSOCIATION).
ST LOUIS COMPRESSOR SERV 3863 LACLEDE AVENUE ST LOUIS MO 63108
ATTENTION: PLANT MANAGER
574470051
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Item 310-1476

GUARDSMAN PRODUCTS, INC.
MATERIAL SAFETY DATA SHEET

SECTION 1-PRODUCT IDENTIFICATION

Product: Zinc Free Governor Oil DS Code: CPG502
Manufacturer: Guardsman Products, Inc. Telephone: (616)924-3950
Address: 411 N. Darling, Fremont, MI 49412 SF Code: 8911

SECTION 2-PRODUCT COMPONENTS

Component Name	OSHA PEL	ACGIH TLV	WT. %	CAS Number
1) Distillates (petroleum), solvent refined heavy paraffinic	5 mg/m³	5 mg/m³	70-85	64741-88-4
2) Distillates (petroleum), solvent dewaxed heavy paraffinic	5 mg/m³	5 mg/m³	1-10	64742-65-0
3) Proprietary additive package (non-hazardous)	5 mg/m³ [1]	5 mg/m³ [1]	Balance	---

SECTION 3-PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point .....: ND Specific Gravity : .89 typical
Vapor Pressure (mmHg) ..: ND Water Soluble ...: No
Vapor Density (Air=1) ..: >1 Water Reactive ..: Nil
Volume Percent Volitile : ND pH .....: NA
Appearance and Odor ....: Dark liquid, motor oil odor.

SECTION 4-FIRE AND EXPLOSION INFORMATION

Flash Point (Method) ...: 450°F (COC) Autoignition Temp.: ND
Flammable Limits ....LEL: ND UEL: ND
Extinguishing Media ....: Foam, dry chemical, CO_2.
Special Firefighting Procedures .....: Use SCBA. Water is not suitable as an extinguishing media, but may be useful for cooling nearby containers.
Unusual Fire and Explosion Hazards ..: Pressure may develop in closed containers if overheated.

SECTION 5-REACTIVITY DATA

Stable: Yes Conditions to Avoid ..: Heat, sparks, open flame.
Incompatibility: Strong oxidizers like chlorine or concentrated O_2.
Hazardous Decomposition Products ...: Various oxides of carbon, zinc, and other unidentified organic compounds.
Hazardous Polymerization: No Conditions to Avoid: None known.

SECTION 6-HEALTH HAZARDS

Primary Routes of Entry: Oral No Inhalation No Skin Absorption No
Carcinogenic Listing ..: NTP No IARC No OSHA No ACGIH No
HMIS Rating .....: Health 1 Flammability 0 Reactivity 0
Signs/Symptoms of Exposure: May cause minor eye and skin irritation.
Emergency First Aid Procedures
Eye Contact .....: Flush with running water for 15 minutes, holding lid open to expose surface, contact physician.

M\M-8911

SECTION 6-HEALTH HAZARDS, CONT.

Skin Contact .....: Remove contaminated clothing and shoes. Wash with mild soap and water, apply skin cream for irritation.

Inhalation .....: If overcome by vapor, remove to fresh air at once. Apply artificial respiration if necessary, contact physician immediately.

Ingestion .....: Do not induce vomiting, contact physician immediately.

Chronic Hazards .....: Health studies have shown that many chemicals pose human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

SECTION 7-SPECIAL PRECAUTIONS/SPILL AND LEAK PROCEDURES

Precautions for Storage and Handling .: Keep containers closed when not in use. Do not use or store near open flame or strong oxidizers.
Other Precautions .....: Avoid breathing vapors or mists; prolonged or repeated skin contact.
Spill or Leak Procedures: Remove ignition sources. Dike and take up with adsorbent material. Ensure adequate ventilation.
Waste Disposal Methods .: Comply with all applicable regulations.

SECTION 8-SPECIAL PROTECTION AND PRECAUTIONS

Respiratory Protection .: None required in normal use, but an effective, NIOSH/MSHA approved respirator should be used at any time when vapor concentrations exceed established standards.
Ventilation Type Required .: Maintain level below listed standards.
Local Exhaust: Yes Rate: >60 fpm Mech. (general): No*
Other .....: None generally required.
Gloves .....: Chemical resistant.
Eye Protection ..: Face shield or safety glasses recommended.
Other Clothing or Equipment: None required in normal use.
Work/Hygienic Practices ...: Basic good housekeeping.

SECTION 9-SHIPPING/LABELING INFORMATION

DOT ID Number .....: None
DOT Hazard Class .....: Nonhazardous by DOT regulations
DOT Shipping Name .....: NA
Precautionary Label .....: None required
Packing Group .....: NA
IMO/IATA ID Number .....: NA
IMO/IATA Hazard Class ..: Nonhazardous by IMO & IATA regulations
IMO/IATA Shipping Name .: NA
IMO/IATA Precautionary Label .: None required for IMO or IATA
IMO/IATA Packing Group .: NA
IMO Page Number .....: NA
Marine Pollutant .....: No

In Case of Transportation Emergency, Call Chemtrec:
1-800-424-9300

[1] Standard for oil mist in air
Recommended

Abbreviations

NA .....: Not Applicable
N AV ....: Not Available
ND .....: Not Determined
NTP .....: National Toxicology Program
IARC ....: International Agency for Research on Cancer
OSHA ....: Occupational Safety and Health Administration
ACGIH ...: American Conference of Governmental Hygienists
IBP .....: Initial Boiling Point
TCC .....: Tagg Closed Cup
COC .....: Cleveland Open Cup
mppcf ...: Million Parts per Cubic Foot
ppm .....: Parts per Million
mg/m³ ...: Milligrams per Cubic Meter
CAS .....: Chemical Abstract Service
SCBA ....: Self Contained Breathing Apparatus
fpm .....: Feet per Minute, Face Velocity

The information presented here has been assembled by Guardsman Products Inc., based on our own study and on the work of others, and is believed to be correct. However, no warranty, expressed or implied, is given as to the accuracy, completeness, or adequacy of the information is made by Guardsman Products, Inc.

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Prepared By ..: Andrew B. Whitlock
Date ..: 02-11-94
Revision ..: B-2

Guardsman Products, Inc.
Fremont, MI U.S.A.

M\M-8011

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UP-1850

General Information
U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration
Form Approved
OMB No. 44-R1387
Form OSHA-20
Rev. May 72
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)
MANUFACTURER'S NAME: Citation Chemical Corporation
EMERGENCY TELEPHONE NO.: (414) 271-9609
ADDRESS (Number, Street, City, State, and ZIP Code): 2039 N. Prospect Avenue, Milwaukee, Wisconsin 53202
CHEMICAL NAME AND SYNONYMS: CITA-TRETE Borate Nitrite Treatment
TRADE NAME AND SYNONYMS: CITA-TRETE
CHEMICAL FAMILY: Aqueous Alakline Liquid

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)
PIGMENTS		
CATALYST		
VEHICLE		
SOLVENTS		
ADDITIVES		
OTHERS		
ALLOYS AND METALLIC COATINGS	**%**	**TLV (Units)**
BASE METAL		
ALLOYS		
METALLIC COATINGS		
FILLER METAL PLUS COATING OR CORE FLUX		
OTHERS		
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	**%**	**TLV (Units)**

SECTION III - PHYSICAL DATA
BOILING POINT (DEGREE F.): 206 DEGREES F
SPECIFIC GRAVITY (H2O=1): 1.172
VAPOR PRESSURE (mm Hg.):
PERCENT, VOLATILE BY VOLUME (%): 78
VAPOR DENSITY (AIR=1):
EVAPORATION RATE (_____=1):
SOLUBILITY IN WATER: 100%
pH: 12.0
APPEARANCE AND ODOR: Yellow Liquid - Mild Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): NONE
FLAMMABLE LIMITS:
Lel:
Uel:
EXTINGUISHING MEDIA:
SPECIAL FIRE FIGHTING PROCEDURES:
UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: NONE
EFFECTS OF OVEREXPOSURE: NONE
EMERGENCY AND FIRST AID PROCEDURES: Flush with Water, Treat as Alakline Liquid, pH 12.9 in concentrated form.

SECTION VI - REACTIVITY DATA
STABILITY:
UNSTABLE:
STABLE: X
CONDITIONS TO AVOID:
INCOMPATABILITY (Materials to avoid): NONE
HAZARDOUS DECOMPOSITION PRODUCTS: NONE
HAZARDOUS POLYMERIZATION:
MAY OCCUR:
WILL NOT OCCUR: X
CONDITIONS TO AVOID:

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Flush with Water
WASTE DISPOSAL METHOD: Dispose as Alkaline Liquid.

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): Ventilate
VENTILATION:
LOCAL EXHAUST: XX
SPECIAL:
MECHANICAL (General):
OTHER:
PROTECTIVE GLOVES: YES
EYE PROTECTION: YES
OTHER PROTECTIVE EQUIPMENT: Avoid Skin or Clothing Contact.

SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Handle as Alakline Liquid
OTHER PRECAUTIONS:

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UP-1853

UPRR
MSDS Data: Chemical: QUANTANARY AMINE

ON-LINE MSDS
UP-04540

GENERAL INFORMATION
FILENAME: UP-04540.msd
Occupational Safety and Health Administration
DATE:
1989
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I
MANUFACTURER'S NAME
CITATION CHEMICAL CORPORATION
EMERGENCY TELEPHONE NO.
(414) 538-1616
ADDRESS (Number, Street, City, State, ZIP Code)
6910 DORN ROAD - HARTLAND, WISCONSIN 53029
CHEMICAL NAME AND SYNONYMS
Quantanary Amine
TRADE NAME AND SYNONYMS
SANI-TRETE UP Toilet chemical
CHEMICAL FAMILY
Catitonic Surfactant
FORMULA
Proprietary

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)
PIGMENTS		
CATALYST		
VEHICLE		
SOLVENTS		
ADDITIVE		
OTHERS		

ALLOYS AND METALLIC COATINGS	%	TLV (Units)
BASE METAL		
ALLOYS		
METALLIC COATINGS		
FILLER METAL		
PLUS COATING OR CORE FLUX		
OTHERS		

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Quantanary Amines less than	30	

UP-1854

SECTION III - PHYSICAL DATA
BOILING POINT (Deg. F)
Approx 212 Deg. F
SPECIFIC GRAVITY (H2O=1)
.980
VAPOR PRESSURE (mm Hg.)
PERCENT, VOLATILE BY VOLUME (%)
VAPOR DENSITY (AIR=1)
-
EVAPORATION RATE (_____ =1)
SOLUBILITY IN WATER
100%
APPEARANCE AND ODOR
Dark Blue - Bubble Gum Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used)
None
FLAMMABLE LIMITS
Lel
Uel
EXTINGUISHING MEDIA
Water
SPECIAL FIRE FIGHTING PROCEDURES
None
UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE
EFFECTS OF OVEREXPOSURE
Harmful if swallowed
EMERGENCY AND FIRST AID PROCEDURES
Immediately flush eyes or skin with plenty of water for 15 minutes. If swallowed; promptly drink a large quantity of Milk.

SECTION VI - REACTIVITY DATA
STABILITY
UNSTABLE [ ]
STABLE [XX]
CONDITIONS TO AVOID
INCOMPATABILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS
HAZARDOUS POLYMERIZATION
MAY OCCUR [ ]
WILL NOT OCCUR [XX]
CONDITIONS TO AVOID

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Rinse with abundant water.
WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type)
VENTILATION
LOCAL EXHAUST YES
SPECIAL
MECHANICAL (General)
OTHER
PROTECTIVE GLOVES
Rubber
EYE PROTECTION
Goggles and Face Shield
OTHER PROTECTIVE EQUIPMENT
Protective Clothing

SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in cool, dry place.
OTHER PRECAUTIONS
Keep from freezing.
DO NOT SWALLOW
KEEP AWAY FROM CHILDREN

UP-1857

GENERAL CONSIDERATIONS FOR CLEANERS

Frequent and prolonged skin contact should be avoided. When these products are handled under normal operations, contact dermatitis can be prevented by good personal hygiene. This consists of minimized contact, prompt removal of substance from skin with soap and water. Use UPRR approved chemical resistant gloves if the possibility for extended skin contact exists.

Protective eye wear should be worn while using aerosol or liquid cleaners to prevent irritation of the eyes.

Employees should be warned of the danger of inhaling sprayed or atomized cleaners. Inhalation may cause respiratory irritation, dizziness, or headaches. Use cleaning products in a well ventilated area.

Ingestion of cleaners may cause nausea and vomiting. Refer to the specific MSDS for medical attention.

Refer to the safety and health information contained on the MSDS and product label for the specific cleaner being used at your location before each use.

CLEANERS

1. Hand Cleaner
2. Eyeglass Cleaner
3. Glass Cleaner
4. Fanfare
5. Steam Cleaner Soap

General Information
Chemical Name / Synonym / Trade Name:
Clean N' Easy
hand cleaner
Manufacturer Name:
Multigraphics
CAS Number:
7732-18-5
8002-05-9(*)
8006-54-0(*)
88-04-0
The following information covers a chemical product marketed by AM International. Recommendations for use, handling protection, etc, are advisory only and are based upon specific use on AM machine products or equivalent equipment. These data are provided with the understanding that they will be used only to assist the user in complying with OSHA regulations.
MSDS No.:
EFF. DATE: 8/16/85
EMERGENCY TELEPHONE No.: day, (312) 870-5121 night, (312) 398-1900
MARKETED BY: Multigraphics
ADDRESS: 1800 W. Central Rd., Mt. Prospect, IL 60056
TRADE NAME: Clean N' Easy
CHEMICAL FAMILY: N/A
REORDER No.: 83-6-104059 83-3-104060
USED AS/ON: hand cleaner

INGREDIENTS

water	50-70%	CAS No. 7732-18-5
petroleum distillate	50-70%	CAS No. 8002-05-9(*)
pumice	10-20%	- -
lanolin	5-10%	CAS No. 8006-54-0(*)
emulsifiers	1-3%	- -
PCMX (germicidal antiseptic)	<1%	CAS No. 88-04-0

Packaged in 1 pt. and 1 gal. plastic containers.

PHYSICAL DATA
BOILING POINT (F): 212
VAPOR PRESSURE (mm Hg): N/A
VAPOR DENSITY (air=1): 1+
SOLUBILITY IN WATER: emulsifies
APPEARANCE/ODOR: viscous, gritty blue liquid
SPECIFIC GRAVITY: 0.90
PERCENT VOLATILE: 80%
EVAPORATION RATE: slower then water
SPECIFIC VOL./GAL.: N/A
PARTICLE SIZE: N/A

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: none
EXTINGUISHING MEDIA: N/A
SPECIAL FIRE FIGHTING PROCEDURES: none
UNUSUAL FIRE & EXPLOSION HAZARDS: none
TAG: closed cup
FLAMMABLE LIMITS: N/A
LEL:
UEL:
PRODUCT NAME: Clean N' Easy

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: N/A
EFFECTS OF OVEREXPOSURE: None - when followed by ordinary soap and water wash, cleaner causes no irritation.
EMERGENCY & FIRST AID PROCEDURES:
Eye contact: flush with copious amounts of water.
Ingestion: DO NOT induce vomiting, get medical aid immediately.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID: N/A
INCOMPATABILITY: none
HAZARDOUS DECOMPOSITION PRODUCTS: none
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Clean up with water, using paper or cloth towels.
WASTE DISPOSAL METHOD: Refer to local regulations relative to liquid waste disposal. Do not pour down common drain.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION: not required
VENTILATION:
LOCAL EXHAUST: N/A
PROTECTIVE GLOVES: N/A
OTHER PROTECTIVE EQUIPMENT: N/A
EYE PROTECTION: none

SPECIAL PRECAUTIONS
TO BE TAKEN IN HANDLING & STORAGE: Avoid freezing. Store between 40F and 140F.
OTHER PRECAUTIONS: Read and follow precautions on container label. Do not re-use container.

UPRR
MSDS Data: Chemical: Clean N' Easy

ON-LINE MSDS
UP-01655

SHIPPING INFORMATION
DOT CLASSIF.: not regulated
LABEL TYPE REQ.: none
HAZ. CLASS: N/A
DOT PACKAGE REQ'D: none
ISSUED BY: F.M. Kissinger
TITLE: Staff Chemist
DATE: 8/16/85

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UP-1864

General Information
Chemical Name / Synonym / Trade Name:
Optics Cleaner
optics and glass platen cleaner
Manufacturer Name:
Multigraphics
CAS Number:
7732-18-5
577-11-7
The following information covers a chemical product marketed by AM International. Recommendations for use, handling, protection, etc, are advisory only and are based upon specific use on AM machine products or equivalent equipment. These data are provided with the understanding that they will be used only to assist the user in complying with OSHA regulations.
MSDS No.:
EFF. DATE: 2/12/86
REV.: 2
MARKETED BY: Multigraphics
ADDRESS: 1800 W. Central Rd., Mt. Prospect, IL 60056
TRADE NAME: Optics Cleaner
REORDER No.: 32-46-53
EMERGENCY TELEPHONE No.: day, (312) 870-5121 night, (312) 398-1900
CHEMICAL FAMILY: N/A
USED AS/ON: optics and glass platen cleaner

INGREDIENTS

water	95-99%	CAS No. 7732-18-5
Aerosol OT	0.01%	CAS No. 577-11-7

NOTE: DO NOT use for cleaning contact lens.
Package in 16 oz. plastic bottles.

PHYSICAL DATA
BOILING POINT (F): 212
VAPOR PRESSURE (mm Hg): N/A
VAPOR DENSITY (air=1): N/A
SOLUBILITY IN WATER: 100%
APPEARANCE/ODOR: clear solution
SPECIFIC GRAVITY: 0.977
PERCENT VOLATILE: 99.9%
EVAPORATION RATE: like water
SPECIFIC VOL./GAL.: N/A
pH: 5.0

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: none
EXTINGUISHING MEDIA: N/A

SPECIAL FIRE FIGHTING PROCEDURES: none
UNUSUAL FIRE & EXPLOSION HAZARDS: none
FLAMMABLE LIMITS: N/A
LEL:
UEL:
PRODUCT NAME: Optics Cleaner

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: N/A
EFFECTS OF OVEREXPOSURE: possible nausea, eye irritation.
EMERGENCY & FIRST AID PROCEDURES:
Skin and Eye contact: flush with water (copious amounts for eyes).
Ingestion: induce vomiting if it does not occur spontaneously. Get medical aid.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID: N/A
INCOMPATABILITY: none
HAZARDOUS DECOMPOSITION PRODUCTS: none
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Clean up as any water solution.
WASTE DISPOSAL METHOD: Dispose of in accordance with local, state and federal regulations.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION: not required
VENTILATION: Air exchange rate of approximately 5-6 room volume changes per hour, as is normal for good health in humans.
PROTECTIVE GLOVES: not required
OTHER PROTECTIVE EQUIPMENT: not required
EYE PROTECTION: not required

SPECIAL PRECAUTIONS
TO BE TAKEN IN HANDLING & STORAGE: Avoid freezing. Store between 40F and 140F.
OTHER PRECAUTIONS: Read & follow precautions on container label. Do not re-use container.

SHIPPING INFORMATION
DOT CLASSIF.: not regulated
LABEL TYPE REQ.: none

UPRR ON-LINE MSDS
MSDS Data: Chemical: Optics Cleaner UP-01706

HAZ. CLASS: N/A
DOT PACKAGE REQ'D: none
ISSUED BY: F.M. Kissinger
TITLE: Staff Chemist
DATE: 2/12/86

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UP-1868

UPRR ON-LINE MSDS
MSDS Data: Chemical: Glass Cleaner UP-01687

General Information
Chemical Name / Synonym / Trade Name:
Glass Cleaner
glass cleaning spray
Manufacturer Name:
Multigraphics
CAS Number:
64-17-5
111-76-2
7732-18-5
106-97-8,
74-98-6
EFF. DATE: 2/11/86
REV. 2:
EMERGENCY TELEPHONE No.: (312) 628-0998
MARKETED BY: Multigraphics
ADDRESS: 1800 W. Central Rd., Mt. Prospect, IL 60056
TRADE NAME: Glass Cleaner
CHEMICAL FAMILY: N/A
REORDER No.: 83-1-104567
USED AS/ON: glass cleaning spray

INGREDIENTS

ethanol(*)	20-30%	CAS No. 64-17-5
2-butoxy ethanol(*)	5-10%	CAS No. 111-76-2
detergent/emulsifier	30-40%	- -
water	35-45%	CAS No. 7732-18-5
butane & propane(*) (propellent)	3-5%	CAS No. 106-97-8, 74-98-6

(*) Theade chemicals are listed as hazardous in 29CFR-Par. 1901.1000, Table Z-1.
Packaged in 15 oz. aerosol spray cans.

PHYSICAL DATA
BOILING POINT (F): N/A
VAPOR PRESSURE (psig): 140
VAPOR DENSITY (air=1): >1
SOLUBILITY IN WATER: 90%
APPEARANCE/ODOR: semi-stable foam, floral odor
SPECIFIC GRAVITY: N/A
PERCENT VOLATILE: 100%
EVAPORATION RATE (BuAc=1): slower
SPECIFIC VOL./GAL.: N/A
PARTICLE SIZE: N/A

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: <104F

FHSA: open cup
FLAMMABLE LIMITS: unknown
EXTINGUISHING MEDIA: water fog, dry chem.
LEL:
UEL:
SPECIAL FIRE FIGHTING PROCEDURES: Keep containers cool. Use equipment or shielding as required to protect personnel against bursting, rupturing or venting containers.
UNUSUAL FIRE & EXPLOSION HAZARDS: At elevated temperatures (130F) containers may vent, rupture or burst. Also see section VI.

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GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
INDUSTRIAL SOAP CO.
2930 MARKET ST. LOUIS MO
63103
24 HOUR EMERGENCY #
1-800-424-9300 (CHEMTREC)
INFORMATION #
314-241-6363 8:00-5 CST
DISCLAIMER
THE FOREGOING INFORMATION HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE ACCURATE, BUT IS NOT WARRANTED TO BE. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF THE NEED THAT THE DATA IS CORRECT. APPLICABLE AND SUITABLE TO THEIR CIRCUMSTANCES. STANDARDS CHANGE WITHOUT NOTICE, IT IS THE RESPONSIBILITY OF THE RECIPIENT TO ASSURE THAT THEIR PERSONNEL AND CUSTOMERS HAVE BEEN PROVIDED WITH THIS INFORMATION AND DATA. THE DATA ON THIS MSDS IS NOT INTENDED TO BE USED AS SPECIFICATIONS, ONLY AS A GUIDELINE TO INFORM THE PUBLIC AS TO THE SAFE USE OF THIS PRODUCT. THE USER SHOULD REFER TO OSHA, STATE, AND LOCAL SAFETY LAWS BEFORE USE.
DATE:
4/17/91

SECTION 1 PRODUCT IDENTIFICATION
PRODUCT NAME:
FANFARE ISC
PRODUCT CLASS:
AEROSOL WINDOW CLEANER
DATE PREPARED:
4/17/91
ITEM #:
49 STATE
Item #
2206104
HMIS RATING
HEALTH 2
FLAMMABILITY 4
REACTIVITY 1
P.P. EQUIPMENT H

SECTION 2 HAZARDOUS INGREDIENTS

INGREDIENT	CAS#	ACGIH	OSHA	OTHER	% OPTIONAL
ETHYLENE GLYCOL MONOBUTYL ETHER	111-76-2		25 PPM		<10
ISOPROPANOL	67-63-0		400 PPM		<10
AMMONIA	7664-41-7		50 PPM		< 1

TRIETHANOLAMINE	102-71-6	N/E(*)	< 1
PROPANE/ISOBUTANE	68476-86-8	900 PPM	<10

(*) N/E - NOT ESTABLISHED.

THIS PRODUCT CONTAINS AMMONIA WHICH IS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA 111.

SECTION 3 PHYSICAL DATA
BOILING POINT:
176 F CONC. -43 PROP.
VAPOR PRESSURE:
58 PSIG @ 70 F
VAPOR DENSITY:
HEAVIER THAN AIR
SPECIFIC GRAVITY:
.92
VISCOSITY:
THIN LIQUID
ODOR:
AMMONMIA/ALCOHOL
PERCENT VOLATILE:
98%
VOC (GRAM/LITRE):
198
EVAPORATION RATE:
SLOWER THAN B-ACETATE
SOLUBILITY IN WATER:
COMPLETE
APPEARANCE:
SLIGHTLY MILKY

SECTION 4 FIRE AND EXPLOSION DATA
FLASH POINT:
-156 F PROPELLANT
EXPLOSIVE LIMITS
LOWER: 1.8%
UPPER: 9.5%
EXTINGUISHING MEDIA:
CO_2, DRY CHEMICAL, HALON
HAZARDOUS DECOMPOSITION BYPRODUCTS:
OXIDES OF NITROGEN AND CARBON
FIRE FIGHTING PROCEDURES:
WATER FOG MAY BE USED TO HELP COOL THE CANS TO PREVENT OVERPRESSURIZATION. EXPLODING CANS MAY TRAVEL GREAT DISTANCES SPEWING FLAMMABLE MATERIAL. VAPORS ARE HEAVIER THAN AIR AND WILL TRAVEL ALONG THE GROUND TO SOURCES OF IGNITION. USE CAUTION WHEN VENTILATING THE AREA WHERE AEROSOLS ARE

STORED. VENTILATE LOW LYING AREAS BEFORE ENTERING. WEAR THE NECESSARY PROTECTIVE GEAR WHEN FIGHTING FIRES INVOLVING AEROSOLS.

SECTION 5 REACTIVITY DATA
STABILITY:
NORMALLY STABLE
INCOMPATIBILITY:
HEAT, SOURCES OF IGNITION, DIRECT SUNLIGHT
HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR

SECTION 6 HEALTH HAZARD DATA
PERMISSIBLE EXPOSURE LEVEL (TLV):
25 PPM (GLYCOL ETHER EB)
ACUTE EFFECTS
EYES:
CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION, SLIGHT CHANCE FOR TRANSIENT CORNEAL DAMAGE.
SKIN:
PROLONGED OR REPEATED CONTACT CAN RESULT IN IRRITATION, DERMITITUS.
BREATHING:
BREATHING OF THE MIST OR VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, HEADACHE, FATIGUE, NAUSEA. EXCESSIVE OVER EXPOSURE CAN CAUSE UNCONSCIOUSNESS AND DEATH.
INGESTION:
NOT LIKELY WITH THE NATURE OF AEROSOLS. IF INGESTION OF LARGE AMOUNTS OCCURS IT CAN CAUSE GASTROINTESTINAL IRRITATION AND VOMITING.
CHRONIC (LONG TERM)
TARGET ORGAN/SYSTEMATIC EFFECTS:
OVEREXPOSURE TO THE RAW MATERIALS USED IN THIS PRODUCT HAVE BEEN FOUND TO CAUSE THE FOLLOWING EFFECTS IN LAB ANIMALS: LIVER ABNORMALITIES, KIDNEY DAMAGE, BLOOD ABNORMALITIES.
FIRST AID
EYES:
IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER. SEEK MEDICAL ATTENTION AS PERMENENT DAMAGE CAN OCCUR IF ACCIDENT REMAINS UNTREATED.
SKIN:
WASH WITH SOAP AND WATER. LAUNDER CLOTHING BEFORE REUSE. SEEK MEDICAL ATTENTION IF IRRITATION DEVELOPS AND PERSISTS.
BREATHING:
KEEP VICTIM QUIET. REMOVE PERSON TO FRESH AIR. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION AND SEEK MEDICAL ASSISTANCE.
INGESTION:
DO NOT INDUCE VOMITING. CALL A PHYSICIAN OR POISON CONTROL CENTER FOR TREATMENT GUIDELINES.

SECTION 7 PRECAUTIONS FOR STORAGE AND DISPOSAL
SMALL SPILLS:
ALWAYS WEAR THE NECESSARY PROTECTIVE GEAR WHEN HANDLING ANY SPILL. ABSORB WITH INERT MATERIAL AND DISPOSE IN TRASH.
LARGE SPILLS:
DIKE AREA TO PREVENT RUNOFF FROM ENTERING GROUND WATER SYSTEMS. VENTILATE AREA TO REDUCE THE FLAMMABILITY HAZARDS. TRANSFER SPILL TO CONTAINERS DESIGNED FOR HOLDING HAZARDOUS WASTE. CONTACT APPROPRIATE LOCAL, STATE, AND FEDERAL AGENCIES AS PER SARA III AND EPA GUIDELINES.
STORAGE PRECAUTIONS:
STORE BETWEEN 40 AND 120 F. AVOID HEAT SOURCES AS THESE MAY CAUSE THE CANS TO EXPLODE. DO NOT USE DEFORMED OR DAMAGED CANS. KEEP OUT OF THE REACH OF CHILDREN. CONSULT THE LOCAL FIRE MARSHALL AND INSURANCE REPRESENTATIVES FOR YOUR LOCAL STORAGE REQUIREMENTS PER NFPA 30B.

SECTION 8 TRANSPORTATION AND REGULATORY INFORMATION
PROPER SHIPPING NAME:
CONSUMER COMMODITY ORM-D
DOT PLACARD/LABEL:
CONSUMER COMMODITY ORM-D
PROPELLANT:
PROPANE/ISOBUTANE.
CONTAINER SIZE:
19 OZ.
CASE SIZE:
12
CONTAINER WT.:
1.5 LBS.
CASE WT.:
18 LBS.
SARA III REPORTABLE QUANTITY:
1000 LBS.
NFPA 30B CLASSIFICATION:
LEVEL 1

SECTION 9 HANDLING PRECAUTIONS
VENTILATION:
GENERAL AIRFLOW SHOULD BE ACCEPTABLE DURING NORMAL USE. IF USING IN CONFINED AREAS USE ADDITIONAL VENTILATION IF TLV IS EXCEEDED.
RESPIRATORY PROTECTION:
NONE NEEDED DURING NORMAL USE.
SKIN PROTECTION:
USE CHEMICAL RESISTANT GLOVES IF THE POSSIBILITY FOR EXTENDED CONTACT EXISTS DURING USE.
EYE PROTECTION:
WEAR CHEMICAL GLASSES

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UP-1876

General Information
Chemical Name / Synonym / Trade Name:
UP-21
Manufacturer Name:
Lix Corporation of Missouri
CAS Number:

MANUFACTURER'S NAME: Lix Corporation of Missouri
ADDRESS (Number, Street, City, State and ZIP Code): 2808 East 85th Street, Kansas City, Missouri 64132
CHEMICAL NAME AND SYNONYMS:
CHEMICAL FAMILY: Cleaner-Water based alkaline
EMERGENCY TELEPHONE NO.: 816-333-4464
TRADE NAME AND SYNONYMS: UP-21
FORMULA:

HAZARDOUS INGREDIENTS
PAINTS, PRESERVATIVES, & SOLVENTS:
PIGMENTS:
CATALYST:
VEHICLE:
SOLVENTS:
ADDITIVES:
OTHERS:
ALLOYS AND METALLIC COATINGS:
BASE METAL:
ALLOYS:
METALLIC COATINGS:
FILLER METAL PLUS COATING OR CORE FLUX:
OTHERS:
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES:
No hazardous material present

PHYSICAL DATA
BOILING POINT (F.): 214 F.
VAPOR PRESSURE (mm Hg.):
VAPOR DENSITY (AIR=1):
SOLUBILITY IN WATER: Complete
APPEARANCE AND ODOR: Water white liquid - Odor of mild soap solution.
SPECIFIC GRAVITY (H(2)O=1): 1.06
PERCENT, VOLATILE BY VOLUME (%): 94.4
EVAPORATION RATE (----- = 1):

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used): None
EXTINGUISHING MEDIA: Will not burn
FLAMMABLE LIMITS:

Lel:
Uel:
SPECIAL FIRE FIGHTING PROCEDURES:
UNUSUAL FIRE AND EXPLOSION HAZARDS:

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: Not applicable
EFFECTS OF OVEREXPOSURE: Prolonged contact will defat or burn skin. Contact with eyes will cause severe irritation and possible tissue destruction.
EMERGENCY AND FIRST AID PROCEDURES: Wash skin thoroughly and neutralize with diluted vinegar. Flush eyes with water for 15 minutes. If inflammation persists call physician. For ingestion give large quantities of water, do not induce vomiting. If vomiting occurs give fluids again. Call physician immediately.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID:
INCOMPATIBILITY (Materials to avoid): Acid solutions
HAZARDOUS DECOMPOSITION PRODUCTS:
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Recover free liquid. Add absorbent to spill area.
WASTE DISPOSAL METHOD: Dispose absorbed material at an approved site. Flush residue into sewer with adequate water.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): Use approved respirator
VENTILATION:
LOCAL EXHAUST:
MECHANICAL (General):
SPECIAL:
OTHER:
PROTECTIVE GLOVES: Rubber or plastic gloves should be worn
EYE PROTECTION: Goggles or face shield
OTHER PROTECTIVE EQUIPMENT: Protective clothing, plastic or rubber, when using continuously.

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep container closed. Keep from freezing. If material has been frozen solid, thaw and agitate before using.

General Information
U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration
Form Approved
OMB No. 44-R1387
DATE: 4/11/86
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)
MANUFACTURERS'S NAME: CITATION CHEMICAL CORPORATION
EMERGENCY TELEPHONE NO.: 414 271-9609
ADDRESS (Number, Street, and Zip Code): 3369 N. Bartlett Avenue - Milwaukee, WI. 53211
CHEMICAL NAME AND SYNONYMS: General Purpose
TRADE NAME AND SYNONYMS: GP-21-LR
CHEMICAL FAMILY: Alkaline
FORMULA: Refer to CS-21 Spec.
Form OSHA-20
Rev. May 72
GPO 934-190

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)
PIGMENTS		
CATALYST		
VEHICLE		
SOLVENTS		
ADDITIVES		
OTHERS		

ALLOYS AND METALLIC COATINGS	%	TLV (Units)
BASE METAL		
ALLOYS		
METALLIC COATINGS		
FILLER METAL PLUS COATING OR CORE FLUX		
OTHERS		

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
NONE		

SECTION III - PHYSICAL DATA
BOILING POINT (degree F.): 212 degree F
SPECIFIC GRAVITY (H2O=1): @25 degree C: 1.071
VAPOR PRESSURE (mm Hg.): Not applicable
PERCENT, VOLATILE BY VOLUME (%): Not applicable
VAPOR DENSITY (AIR=1): Not applicable
EVAPORATION RATE (_____=1): Not applicable
SOLUBILITY IN WATER: 100%

SOLUBILITY AND ODOR: Clear - colorless - Detergent odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used): None
FLAMMABLE LIMITS:
Lel:
Uel:
EXTINGUISHING MEDIA: NONE
SPECIAL FIRE FIGHTING PROCEDURES: NONE
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

SECTION IV - HEALTH HAZARD DATA
THRESHOLD VALUE: Unknown
EFFECTS OF OVEREXPOSURE:
EMERGENCY AND FIRST PROCEDURES: Irrigate eyes with abundant amount of water. See physician if swallowed.

SECTION VI - REACTIVITY DATA
STABILITY:
UNSTABLE:
STABLE: XX
CONDITIONS TO AVOID:
INCOMPATIBILITY (Materials to avoid): NONE
HAZARDOUS POLYMERIZATION:
MAY OCCUR:
WILL NOT OCCUR: XX
CONDITIONS TO AVOID:

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Flush with water
WASTE DISPOSAL METHOD: Flush with water

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): None
VENTILATION:
LOCAL EXHAUST:
MECHANICAL (General):
SPECIAL:
OTHER:
PROTECTIVE GLOVES: NO
EYE PROTECTION: Yes
OTHER PROTECTIVE EQUIPMENT: NO

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in Cool, Dry place

OTHER PRECAUTIONS: NONE

Insect Repellants

UP-1882

GENERAL CONSIDERATIONS FOR INSECT REPELLENTS AND SPRAYS

INSECTICIDES

Frequent and prolonged skin contact should be avoided. When these products are handled under normal operations, contact dermatitis can be prevented by good personal hygiene. This consists of minimized contact, prompt removal of substance from skin with soap and water. Use UPPR approved chemical resistant gloves if the possibility for extended dermal contact exists.

Wear safety glasses while using these products. Spray away from face to avoid possibility of eye irritation.

Wash hands immediately after using to avoid oral contact with products.

Use in a well ventilated area, these products may cause a slight respiratory irritation if inhaled.

Do not use or store products near open flames they are extremely flammable.

Refer to the safety and health information contained on the MSDS and product label for the specific insecticides being used at your location before each use.

INSECT/TICK REPELLENTS

Application of these products should be in accordance with labelling instructions.

Wear safety glasses while using these products. Spray away from face to avoid possibility of eye irritation.

Wash hands immediately after using to avoid oral contact with products.

Use in a well ventilated area, these products may cause a slight respiratory irritation if inhaled.

Do not use or store products near open flames they are extremely flammable.

Refer to the safety and health information contained on the MSDS and product label for the specific insect repellents and sprays being used at your location before each use.

INSECT REPELLENTS AND SPRAYS

1. Wasp/Hornet Spray
2. Okay Insect Spray
3. Bug-Off Tick Spray
4. Off Insect Spray

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
PRODUCT NAME:
HOLUB LECTROSOL WASP & HORNET KILLER
PRODUCT CODE:
15-700

SECTION I - MANUFACTURER INFORMATION
DISTRIBUTOR:
AMERICAN ELECTRIC
MANUFACTURER:
SPEER PRODUCTS
ADDRESS:
4242 B.F. GOODRICH BLVD.
EMERGENCY TELEPHONE:
CHEMTREC 800-424-9300
PREPARED BY:
J.D. COMMERFORD, Ph.D.
DATE PREPARED:
FEBRUARY 28, 1992
PROPER SHIPPING NAME (49CFR 172.101):
CONSUMER COMMODITY
D.O.T. HAZARD CLASS (49CRF 172.101):
ORM-D
E.P.A. REGISTRATION NUMBER:
11715-83-55359
GENERIC DESCRIPTION:
AEROSOL INSECTICIDE SPRAY

SECTION II - HAZARDOUS INGREDIENTS(*)

MATERIAL	CAS #	%	TWA	STEL
RESMETHRIN	10453-86-8	<1.0	NOT EST.	NOT EST.
PETROLEUM DISTILLATE	64742-47-8	<97.0	300PPM	300PPM
CARBON DIOXIDE	124-38-9	3.0	5000PPM	30000PPM

(*) HAZARDOUS WITHIN THE MEANING OF '29 CFR 1910.1200'

SECTION III - EFFECTS OF OVEREXPOSURE
EYES:
MAY CAUSE TEMPORARY DISCOMFORT.
SKIN:
MAY CAUSE MILD SKIN IRRITATION.
ACUTE INHALATION:

SLIGHT IRRITATION TO RESPIRATORY PASSAGES.
ORAL:
AMOUNTS TRANSFERRED TO THE MOUTH BY FINGERS, ETC., DURING NORMAL OPERATIONS SHOULD NOT CAUSE INJURY.
SYSTEMIC & OTHER EFFECTS:
NONE KNOWN.
COMMENT:
UNNECESSARY EXPOSURE TO THIS PRODUCT, OR ANY CHEMICAL, SHOULD BE AVOIDED.

SECTION IV - EMERGENCY AND FIRST AID PROCEDURES
EYES:
WASH REPEATEDLY WITH COLD WATER.
SKIN:
WASH WITH SOAP AND WATER.
INHALATION:
REMOVE TO FRESH AIR.
ORAL:
DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH. IF APPRECIABLE QUANTITIES ARE SWALLOWED, CONSULT A PHYSICIAN.

SECTION V - FIRE AND EXPLOSION DATA
FLASH POINT:
NA
AUTOIGNITION:
NA
FLAMMABILITY LIMITS IN AIR, % BY VOL:
UPPER: NOT EST.
LOWER: NOT EST.
UNUSUAL FIRE OR EXPLOSION HAZARDS:
AT TEMPERATURES ABOVE 130 Deg. F, CONTAINERS MAY RUPTURE.
SPECIAL FIRE FIGHTING PROCEDURES:
SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING SHOULD BE WORN WHEN FIGHTING FIRES INVOLVING CHEMICALS. USE PROTECTIVE SHIELDING TO AVOID EXPLODING CONTAINER.

SECTION VI - PHYSICAL DATA
BOILING POINT (F):
NA
VAPOR PRESSURE (PSIG @ 70F):
85
SOLUBILITY IN WATER:
INSOLUBLE
APPEARANCE & ODOR:
WATER CLEAR LIQUID; KEROSENE-LIKE ODOR.
SPECIFIC GRAVITY OF CONCENTRATE:

0.8
PERCENT VOLATILE BY VOLUME:
100%
EVAPORATION RATE (BUTYL ACETATE=1):
0.04

SECTION VII - REACTIVITY DATA
STABILITY:
STABLE
INCOMPATIBILITY (MATERIAL TO AVOID):
NONE KNOWN.
HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.
HAZARDOUS DECOMPOSITION PRODUCTS:
PRODUCTS OF COMBUSTION ARE PRINCIPALLY CARBON DIOXIDE, CARBON MONOXIDE AND WATER.
CONDITIONS TO AVOID:
DO NOT STORE ABOVE 130 Deg. F. DO NOT STORE NEAR OPEN FLAME.

SECTION VIII - SPILL, LEAK AND DISPOSAL PROCEDURES
SPILL RESPONSE:
REMOVE IGNITION SOURCES. USE ABSORBENT MATERIAL TO COLLECT & CONTAIN FOR SALVAGE OR DISPOSAL. VENTILATE AREA.

THIS PRODUCT CONTAINS NO CERCLA LISTED CHEMICALS.
PROTECTIVE EQUIPMENT:
EYES: USE PROPER PROTECTION - SAFETY GLASSES AS A MINIMUM.

SKIN: WASH HANDS AFTER HANDLING MATERIAL.(*)

INHALATION: NO RESPIRATORY PROTECTION REQUIRED WHEN USED ACCORDING TO LABEL DIRECTIONS.

WASTE DISPOSAL METHOD:
EMPTY CONTAINERS MAY BE DISCARDED IN TRASH. FULL OR LEAKING CONTAINERS SHOULD BE TAKEN TO A LOCAL DISPOSAL COMPANY FOR BIOLOGICAL TREATMENT OR INCINERATION. AMERICAN ELECTRIC SUGGESTS THAT ALL LOCAL, STATE, AND FEDERAL REGULATIONS CONCERNING HEALTH AND POLLUTION BE REVIEWED TO DETERMINE APPROVED DISPOSAL PROCEDURES.

(*) GOOD PRACTICE REQUIRES THAT GROSS AMOUNTS OF ANY CHEMICAL BE REMOVED FROM THE SKIN AS SOON AS PRACTICAL, ESPECIALLY BEFORE EATING OR SMOKING.

SECTION IX - ROUTING HANDLING PRECAUTIONS
PROTECTIVE EQUIPMENT:

NONE REQUIRED
SKIN:
AVOID SKIN CONTACT. WASH HANDS AFTER USING PRODUCT.(*)
INHALATION:
NO RESPIRATORY PROTECTION NEEDED WHEN USED ACCORDING TO DIRECTIONS.
VENTILATION:
USE ONLY IN A WELL-VENTILATED AREA.
COMMENTS:
USE ONLY AT NORMAL ROOM TEMPERATURES. DO NOT SPRAY TOWARD FACE. AVOID SKIN CONTACT. DO NOT PUNCTURE OR INCINERATE.

(*) GOOD PRACTICE REQUIRES THAT GROSS AMOUNTS OF ANY CHEMICAL BE REMOVED FROM THE SKIN AS SOON AS PRACTICAL, ESPECIALLY BEFORE EATING OR SMOKING.

SECTION X - SPECIAL PRECAUTIONS
HANDLING & STORAGE:
DO NOT STORE ABOVE 130 Deg. F. DO NOT STORE NEAR OPEN FLAMES.
OTHER PRECAUTIONS:
READ AND FOLLOW DIRECTIONS ON PRODUCT LABEL.
REGULATORY REQUIREMENTS:
THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA "HAZARD CATEGORIES" PROMULGATED UNDER SECTION 311 AND 312 OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES:

AN IMMEDIATE HEALTH HAZARD SUDDEN RELEASE OF PRESSURE

SARA 313 INFORMATION:
THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
NONE		

THESE DATA ARE OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY EITHER EXPRESS OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. ALL MATERIALS MAY PRESENT UNKNOWN HEALTH HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

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UP-1890

PRODUCT IDENTIFICATION
Chemical Name / Synonym / Trade Name:
Okay Insect Spray
Spray Nox II Insect Killer
Insecticide Spray #760429
Manufacturer Name:
Claire Manufacturing Co.
CAS Number:
64741-65-7
51-03-6
121-29-9
68476-85-7
COMPANY NAME: Claire Manufacturing Co.
ADDRESS: 500 Vista Ave., Addison, IL 60101
PRODUCT TRADE NAME OR BRAND NAME: Spray Nox II Insect Killer
Regular Telephone Number: (312) 543-7600
Emergency Telephone Number:
OTHER PRODUCT DESCRIPTION OR IDENTIFICATION: Insecticide Spray #760429

HAZARDOUS INGREDIENTS

INGREDIENT CHEMICAL NAME	CAS #	Approx Wt.	TLV
Petroleum Distillate	64741-65-7	10.0	OSHA TWA= 500 PPM
*Piperonyl Butoxide, Technical	51-03-6	1.2	
Pyrethrins	121-29-9	0.3	5mg/M(3) ACGIH TWA=
Hydrocarbon Propellant	68476-85-7	35.0	1000 PPM

*Consists of 24% (butylcarbityl) (6 propylpiperonyl) ether and 6% related compounds.

PHYSICAL DATA
Boiling Point: NA
Vapor Pressure (psig): 130 @ 130 F
Vapor Density (AIR = 1): Greater
Solubility in Water: Greater than 10 %
Appearance and Odor: Misty spray; Wintergreen - Insecticide odor.
Specific Gravity: 0.78
Percent Volatiles by Volume (%): 90
Evaporation Rate (n-Butyl Acetate = 1): Slower

FIRE AND EXPLOSION HAZARD DATA
Flash Point (minimum): Conc. = 178 F TC
Method: Propellant = 156 calculated
Flammable Limits in Air Volume % Propellant
LEL: 1.9-2.1
UEL: 8.5-9.5

Extinguishing Media: CO(2); Dry Chemical
SPECIAL FIREFIGHTING PROCEDURES: Keep containers cool. Use equipment or shielding as required to protect personnel against bursting, rupturing, or venting containers.
UNUSUAL FIRE AND EXPLOSION HAZARDS: At elevated temperatures (over 54 C=130 F) containers may vent, rupture, or burst.

HEALTH HAZARD DATA
Threshold Limit Value (TLV): See Section II
EFFECTS OF OVEREXPOSURE: Nervous system disorders. Drowsiness in a short time when overexposed to propellant in concentrations of 1%. Possible diarrhea.
EMERGENCY AND FIRST AID PROCEDURES: If unconscious, remove victim to fresh air and call a physician. In case of eye contact, flush immediately with large amounts of water. Wash from skin with soap & water. DO NOT INDUCE VOMITING. See a physician.

REACTIVITY DATA
Chemical Stability: Stable
Conditions to avoid: Open flames and hot surfaces.
Incompatability (Materials to avoid): Strong alkaline or acid solutions.
HAZARDOUS DECOMPOSITION PRODUCTS: None known.
Hazardous Polymerization: Will not occur.

LEAK AND DISPOSAL PROCEDURES
STEPS TO BE TAKEN IF CONTAINERS ARE LEAKING, OR LARGE AMOUNTS ARE RELEASED: Soak up with absorbent material.
WASTE DISPOSAL METHOD: Do not puncture or incinerate containers. Give empty, leading or full containers to a disposal service equipped to safety handle and dispose of pressurized containers.

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): None under normal use. Avoid breathing vapors.
VENTILATION:
LOCAL EXHAUST (Hoods, Fans, etc.): Should be on.
MECHANICAL (General Area Ventilation):
PROTECTIVE GLOVES: Rubber
EYE PROTECTION: Goggles
OTHER PROTECTIVE EQUIPMENT:

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not store where temperatures could exceed 54 C (130 F).
OTHER PRECAUTIONS: Avoid contamination of feed & foodstuffs.
SPECIAL PRECAUTIONARY STATEMENTS: Please read and follow the directions on

the product label; they are your best guide to using this product in the most effective way, and give the necessary safety precautions to protect your health.

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UP-1894

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
MATERIAL IDENTIFICATION
NAME:
Bug-Off Double Strength Insect Repellent
EMERGENCY TELEPHONE:
314-241-6363
DATE PREPARED:
January 24, 1992

These data are offered in good faith as typical values and not as a product specification. No warranty, either express or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable.

SECTION 1: GENERAL INFORMATION
SOLD BY:
Industrial Soap Company
ADDRESS:
2930 Market Street
St. Louis, Missouri 63103
PROPER SHIPPING NAME (49CFR 172.101):
CONSUMER COMMODITY
D.O.T. HAZARD CLASS (49CFR 172.101):
ORM-D
E.P.A. REGISTRATION NUMBER:
11715-85
GENERIC DESCRIPTION:
AEROSOL INSECT REPELLENT

SECTION 2: HAZARDOUS INGREDIENTS

Material	CAS#	%	TWA	STEL
N,N-DIETHYL TOLUAMIDE	[134-62-3]	<27.5%	not est.	not est.
Other isomers		< 1.5%	not est.	not est.
DI-N-PROPYL ISOCINCHOMERONATE	[136-45-8]	< 2.0%	not est.	not est.
N-OCTYL BICYCLOHEPTENE DICARBOXIMIDE	[113-38-4]	< 7.7%	not est.	not est.
ISOPROPYL ALCOHOL	[67-63-0]	<32.0%	400ppm	500 ppm
PROPELENT A-46				
(85% ISOBUTANE	[75-28-5]	<26.0%	not est.	not est.
15% PROPANE	[74-98-6])	< 5.0%	1000ppm OSHA PEL	

SECTION 3: EFFECTS OF OVEREXPOSURE
EYES:
Will cause temporary discomfort.
SKIN:
May cause skin irritation in rare cases.
INHALATION:
Slight irritation to respiratory passages.
ORAL:
Amounts transferred to the mouth by fingers, etc., during normal operations should not cause injury.
SYSTEMIC & OTHER EFFECTS:
Possible drowsiness, nausea or dizziness.
CHEMICALS LISTED AS CARCINOGENS OR POTENTIAL CARCINOGENS:
NONE
N,N-DIETHYL TOLUAMIDE HAZARD DATA
Oral rat LD50:
1950mg/kg
Skin rat LD50:
3180mg/kg
Inhalation rat LD50:
5950 mg/m3
COMMENT:
Unnecessary exposure to this product, or any chemical, should be avoided.
For external use only; do not ingest.

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES
EYES:
Wash repeatedly with cold water. If irritation persists, consult a physician.
SKIN:
Wash with soap and water.
INHALATION:
Remove to fresh air.
ORAL:
Do not induce vomiting; consult physician.

SECTION 5: FIRE AND EXPLOSION DATA
FLASH POINT:
55 degrees F., ASTM D-56 (Tag Closed Cup)
AUTOIGNITION:
NA
FLAMMABILITY LIMITS IN AIR, % by vol.:
UPPER: not est.
LOWER: not est.
EXTINGUISHING MEDIA:
Dry chemical or carbon dioxide. For large fires, use alcohol-type foam

extinguishers.
UNUSUAL FIRE OR EXPLOSION HAZARDS:
NONE KNOWN
SPECIAL FIRE FIGHTING PROCEDURES:
Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving chemicals. Use protective shielding to avoid exploding containers.

SECTION 6: PHYSICAL DATA
BOILING POINT (F):
NA
VAPOR PRESSURE (PSIG @ 70F):
45
SOLUBILITY IN WATER:
INSOLUBLE
APPEARANCE & ODOR:
Clear concentrate with odor of floral perfume.
SPECIFIC GRAVITY OF CONCENTRATE:
0.91%
PERCENT VOLATILE BY VOLUME:
99+%
EVAPORATION RATE:
not est.

SECTION 7: REACTIVITY DATA
STABILITY:
STABLE
INCOMPATIBILITY (MATERIAL TO AVOID):
May soften or damage some synthetics such as Rayon. May damage leather.
HAZARDOUS POLYMERIZATION:
Will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS:
Products of combustion are principally carbon dioxide, carbon monoxide and water.
CONDITIONS TO AVOID:
Do not store above 130F. Do not store near open flame.

SECTION 8: SPILL, LEAK AND DISPOSAL PROCEDURES
SPILL RESPONSE:
Remove ignition sources. Use absorbant material to collect and contain for salvage or disposal.
This product contains no CERCLA listed chemicals.
PROTECTIVE EQUIPMENT:
EYES:
Use proper protection --safety glasses as a minimum.

SKIN:
Wash hands after handling material.(*)
INHALATION:
No respiratory protection required.
WASTE DISPOSAL METHOD:
Empty containers may be discarded in trash. Full or leaking containers should be taken to a local disposal company equipped to handle pressurized containers.

(*) Good practice requires that gross amounts of any chemical be removed from the skin as soon as practical, especially before eating or smoking.

SECTION 9: ROUTINE HANDLING PRECAUTIONS
PROTECTIVE EQUIPMENT:
NONE REQUIRED
SKIN:
Do not expose treated skin to fire, sparks or flame until liquid has evaporated.
INHALATION:
No respiratory protection needed when used according to directions.
VENTILATION:
Use only in a well-ventilated area.
COMMENTS:
Use only at normal room temperatures. Do not spray towards face. Do not puncture or incinerate.

SECTION 10: SPECIAL PRECRUTIONS
HANDLING & STORAGE:
Do not store above 130 degrees F. Do not store near open flames.
OTHER PRECAUTIONS:
Read and follow directions on product label.
REGULATORY REQUIREMENTS:
This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Section 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:
A fire hazard
Sudden release of pressure
SARA 313 INFORMATION:
This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
NONE		

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
S.C. Johnson Wax
1525 Howe Street
Racine, Wisconsin 53403-5011
Phone:
(414) 631-2777
Emergency Phone:
(414) 631-2000
4 - Very High
3 - High
2 - Moderate
1 - Slight
0 - Insignificant
HAZARD RATINGS

HMIS	NFPA
1	Health
4	Flammability
0	Reactivity

NA-Not Applicable, NE-Not Established, NSR-No Special Requirement, ND-Not Determined for this product

The information herein is given in good faith. No warranty, expressed or implied, is made. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations. The information contained in this form is confidential and is submitted solely for your organization's internal use.

SECTION I - PRODUCT IDENTIFICATION
Product Name:
OFF! AEROSOL
Product Code:
11810-024-025
Chemical or Common Name:
NA
Date Issued:
09/01/88
Supercedes:
10/30/87
Prepared by:
Terry A. Meyers
Chemical Info. Adm.

SECTION II-INGREDIENT INFORMATION

Ingredient	Weight %	Exposure Limit
N,N-Diethyl-Meta-Toluamide (CAS		

#134-62-3)	14.25	NOT ESTABLISHED
Ethyl Alcohol (CAS #64-17-5)	70-80	1000 PPM ACGIH\OSHA TWA
Propane\Isobutane\N-Butane (CAS #74-98-6, 75-28-5, 106-97-8)	10-20	1000 PPM OSHA PEL NOT ESTABLISHED 800 PPM ACGIH\OSHA TWA

SECTION III-PHYSICAL DATA
APPEARANCE/ODOR:
Dispensed as a spray mist with perfume odor
SPECIFIC GRAVITY (H2O = 1):
0.78
VAPOR PRESSURE (mm Hg):
ND
PERCENT VOLATILE BY VOLUME (%):
NA
SOLUBILITY IN WATER:
Appreciable
VAPOR DENSITY (AIR=1):
ND
FREEZING POINT (Deg. F):
NA
BOILING POINT (Deg. F):
ND
pH:
NA
EVAPORTION RATE (BUTYL ACETATE=1):
NA

SECTION IV-FIRE AND EXPLOSION INFORMATION
FLASH POINT (Deg. F) (METHOD USED):
under 20 (TCC) (Propellant)
FLAMMABLE LIMITS:
ND
EXTINGUISHING MEDIA:
Foam, CO2, Dry Chemical, Water Fog
SPECIAL FIREFIGHTING PROCEDURES:
Normal fire fighting procedures may be used. Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Fire fighters should wear self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
No special hazards known

SECTION V-HEALTH HAZARD DATA
PRIMARY ROUTE OF ENTRY:

Eye contact
SIGNS AND SYMPTOMS:
Direct contact of Product with eyes can cause irritation. Product may cause distress and illness if taken internally.
FIRST AID PROCEDURES:
Flush eyes with water for 15 minutes. If irritation persists, seek medical aid. If product is swallowed, seek medical aid at once.

SECTION VI-REACTIVITY DATA
STABILITY:
Stable
STABILITY-CONDITIONS TO AVOID:
None known
INCOMPATIBILITY:
None known
HAZARDOUS DECOMPOSITION PRODUCTS:
When exposed to fire, produces normal products of combustion.
HAZARDOUS POLYMERIZATION:
Will not occur.
HAZARDOUS POLYMERIZATION-CONDITIONS TO AVOID:
None known

SECTION VII-SPILL OR LEAK PROCEDURES
STEPS TO BE TAKNE IN CASE HATERIAL IS RELEASED OR SPILLED:
Eliminate all ignition sources. Rinse affected area thoroughly with water.
WASTE DISPOSAL INFORMATION:
Dispose of aerosol can by wrapping and placing in trash. Do not puncture or burn container. Dispose of spilled residues and multiple units in accordance with all Federal\State regulations and Local ordinances.

SECTION VIII-SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION:
No special requirements under normal use conditions.
VENTILATION:
General room ventilation adequate.
PROTECTIVE GLOVES:
No special requirements under normal use conditions.
EYE PROTECTION:
No special requirements under normal use conditions.
OTHER PROTECTIVE MEASURES:
Use good personal hygiene practices.

SECTION IX-SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING:
CAUTION: Keep out of reach of children. Harmful if swallowed. Avoid contact with eyes and lips. Do not allow children to rub eyes if hands have been treated. In case of contact with eyes, flush with plenty of water. Do not apply to excessively sunburned or damaged skin. Flammable: Contents under pressure. See Section X.
OTHER HANDLING AND STORAGE CONDITIONS:
Keep out of reach of children.

SECTION X-ADDITIONAL INFORMATION
ADDITIONAL INFORMATION:
Do not use near heat, sparks, or open flame. Do not puncture or incinerate containers. Exposure to temperatures above 120 F may cause bursting. Keep treated surfaces away from fire of flame until dry. EPA Registration No. 4822-10. Factory Mutual Level 2 aerosol.

SECTION XI-TRANSPORTATION INFORMATION
DOT CLASS:
DOT#:
SHIPPING NAME:
DOT NOTES:

SECTION XII-REGULATORY INFORMATION
There are no ingredients subject to the reporting requirements under California's Proposition 65.

Paints/Solvents

UP-1904

GENERAL CONSIDERATIONS FOR PAINTS AND SOLVENTS

Frequent and prolonged skin contact should be avoided. When these products are handled under normal operations, contact dermatitis can be prevented by good personal hygiene. This consists of minimized contact, prompt removal of substance from skin with soap and water. Use UPPR approved chemical resistant gloves if the possibility for extended skin contact exists.

Employees should avoid breathing vapors or mists during paint operations. Symptoms associated with paint solvents include headache, dizziness, nausea, vomiting, unconsciousness, and even asphyxiation. Use paint products in a well ventilated area.

Avoid contact with eyes. Use protective eye wear and face shields if splashing or misting is likely during use.

Keep containers tightly closed. Isolate paint products from heat, electrical equipment, sparks, and open flames. They are extremely flammable.

Refer to the safety and health information contained on the MSDS and product label for the specific paints and solvents being used at your location before each use.

PAINTS AND SOLVENTS

1. Spray Paint (Interior/Exterior)
2. Aluminum Paint
3. Yellow Paint
4. Paint Stick
5. Ball Point Markers
6. Paint Reducer/Mineral Spirits
7. Paint Stripper

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UP-1907

General Information
Chemical Name / Synonym / Trade Name:
SPARVAR INTERIOR/EXTERIOR SPRAY PAINT
Manufacturer Name:
Consumer Products Division, Division of Borden, Inc.
CAS Number:
67-64-1
18.74-98-6
110-54-3
111-15-9
8032-32-4
BORDEN Consumer Products Division, Division of Borden, Inc. 180 EAST BROAD STREET, COLUMBUS, OHIO 43215
Emergency Telephone: (614) 457-5200
(OPERATION ALERT)
NAME: SPARVAR INTERIOR/EXTERIOR SPRAY PAINT
TYPE: "AEROSOL" SPRAY PAINT
APPLICATION: ITEMS NO. S-100 THRU S-181 WITH EXCEPTIONS-S-100 GLOSSY WHITE; S-102 ANTIQUE WHITE; S-110 GLOSSY BLACK; S-112 SHADOW GRAY; S-113 DOVE GRAY; S-114 UNIVERSAL BLACK ENGINE COLOR SPRAY PAINT; S-130 CHERRY RED (AMERICAN BEAUTY RED); S-132 FORD RED ENGINE COLOR SPRAY PAINT; S-140 HUNTER GREEN; S-141 PASTEL AQUA; S-143 MOSS GREEN; S-150 PASTEL YELLOW; S-151 BRIGHT YELLOW; S-152 CHROME YELLOW; S-153 SCHOOL BUS YELLOW; S-160 REGAL BLUE; S-161 BABY BLUE; S-162 CHEVROLET BLUE ENGINE COLOR SPRAY PAINT; S-163 FORD BLUE ENGINE COLOR SPRAY PAINT; S-164 METALLIC BLUE; S-168 FORD DARK ENGINE COLOR SPRAY PAINT; S-170 SUNSET ORANGE; S-171 CHEVROLET ORANGE ENGINE COLOR SPRAY PAINT; S-180 LEATHER BROWN; S-181 BEIGE
SIGNAL WORD-DANGER!: THIS MATERIAL IS A "HEALTH HAZARD" AND/OR A "PHYSICAL HAZARD" AS DETERMINED WHEN REVIEWED ACCORDING TO THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION 29 CFR PART 1910.1200 "HAZARD COMMUNICATION" STANDARD.
CHEMICAL HAZARD RATING:
HEALTH=:2(MODERATE)
FIRE: = 4(EXTREME)
REACTIVITY: =0(LEAST)
29CFR1910.1200 HAZARDOUS INGREDIENTS/REPORTED HEALTH EFFECTS:
CAS REGISTRY NO.: 67-64-1
MATERIAL DESCRIPTION: ACETONE
% BY WT.: 20
CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. SIGNS AND SYMPTOMS MAY INCLUDE HEADACHE, DIZZINESS, NAUSEA, VOMITING, UNCONSCIOUSNESS AND EVEN ASPHYXIATION.
ACGIH EXPOSURE LIMIT: 750 PPM, 8-HR TWA
OSHA 29CFR1910 EXPOSURE LIMIT: 1000 PPM, 8-HR TWA
NIOSH DOCUMENT NUMBER: 78-173
CAS REGISTRY NO.: 18.74-98-6
MATERIAL DESCRIPTION: PROPANE
THIS MATERIAL IS A SIMPLE ASPHYXIANT. SIGNS AND SYMPTOMS OF OVEREXPOSURE INCLUDE CYANOSIS, RESPIRATORY DISTRESS, HEADACHE, DIZZINESS, DROWSINESS,

UNCONSCIOUSNESS AND ASPHYXIATION.
CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION.
ACGIH EXPOSURE LIMIT: SEE ACGIH TLVS, APPENDIX E
OSHA 29CFR1910 EXPOSURE LIMIT: 1000 PPM, 8-HR TWA
CAS REGISTRY NO.: 110-54-3
MATERIAL DESCRIPTION: HEXANE
% BY WT.: 17.-23.
CHRONIC EXPOSURES HAVE CAUSED PERIPHERAL NEUROPATHY.
CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. SIGNS AND SYMPTOMS MAY INCLUDE HEADACHE, DIZZINESS, NAUSEA, VOMITING, AND DROWSINESS.
ACGIH EXPOSURE LIMIT: 50 PPM, 8-HR TWA
OSHA 29CFR1910 EXPOSURE LIMIT: 500 PPM, 8-HR TWA
NIOSH DOCUMENT NUMBER: 77-151
CAS REGISTRY NO.: 111-15-9
MATERIAL DESCRIPTION: ETHYLENE GLYCOL ETHYL ETHER ACETATE
% BY WT.: 5.
POSSIBLE REPRODUCTIVE HAZARD. OVEREXPOSURE MAY CAUSE FEMALE REPRODUCTIVE DISORDERS BASED ON TEST WITH LABORATORY ANIMALS
OVEREXPOSURE MAY CAUSE LIVER DAMAGE.
OVEREXPOSURE MAY CAUSE KIDNEY DAMAGE.
OVEREXPOSURE MAY CAUSE BONE MARROW DAMAGE AND BLOOD DISORDERS.
CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. SIGNS AND SYMPTOMS MAY INCLUDE HEADACHE, DIZZINESS, NAUSEA, VOMITING, AND DROWSINESS.
ACGIH EXPOSURE LIMIT: SKIN - 5 PPM, 8-HR TWA
OSHA 29CFR1910 EXPOSURE LIMIT: SKIN - 100 PPM, 8-HR TWA
CAS REGISTRY NO.: 8032-32-4
MATERIAL DESCRIPTION: V.M.&P. NAPHTHA
% BY WT.: 18-23.
CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. SIGNS AND SYMPTOMS MAY INCLUDE HEADACHE, DIZZINESS, NAUSEA, VOMITING, UNCONSCIOUSNESS AND EVEN ASPHYXIATION.
ACGIH EXPOSURE LIMIT: 300 PPM, 8-HR TWA
NIOSH DOCUMENT NUMBER: 77-192

PHYSICAL DATA
VAPOR PRESSURE: SEE CAN PRESSURE
VAPOR DENSITY HEAVIER THAN AIR
SOLUBILITY IN WATER: - SLIGHT
SPECIFIC GRAVITY LIGHTER THAN WATER EVAPORATE FASTER THAN BUTYL ACETATE
BOILING POINT; APPEARANCE; ODOR: -N.A.
PERCENT VOLATILE BY WEIGHT: 78 TO 89
PERCENT NON-VOLATILE BY WEIGHT: 11 TO 21
PRESSURE IN CONTAINER, PSIG @ 70 F. APPROX. 60

ACUTE HEALTH HAZARD DATA
SKIN ABSORPTION: MAY BE HARMFUL IF ABSORBED THROUGH SKIN.
INGESTION: MAY BE HARMFUL IF SWALLOWED.
INHALATION: MAY BE HARMFUL IF INHALED. LIQUID OR VAPOR CAN CAUSE IRRITATION OF NOSE, THROAT AND LUNGS.

SKIN: CAUSES IRRITATION.
EYES: CAUSES IRRITATION.

HANDLING PRECAUTIONS
SKIN ABSORPTION: AVOID CONTACT WITH EYES, SKIN OR CLOTHING.
INHALATION: AVOID BREATHING VAPOR OR MIST. USE WITH ADEQUATE VENTILATION.
SKIN: AVOID CONTACT WITH SKIN.
EYES: AVOID CONTACT WITH EYES.
WASH THOROUGHLY AFTER HANDLING.

EMERGENCY AND FIRST AID PROCEDURES
INTERNAL: IF SWALLOWED, DO NOT INDUCE VOMITING. CALL A PHYSICIAN IMMEDIATELY.
SKIN ABSORPTION: IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING AND SHOES BEFORE REUSE.
INHALATION: REMOVE TO FRESH AIR.
SKIN CONTACT: FLUSH SKIN WITH WATER. IF IRRITATION PERSISTS, CALL A PHYSICIAN.
EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN.

FIRE AND EXPLOSION HAZARD DATA
EXTREMELY FLAMMABLE.
CONTENTS UNDER PRESSURE; EXPOSURE TO HIGH TEMPERATURE MAY CAUSE BURSTING. AVOID RADIATORS, STOVES, DIRECT SUNLIGHT, OR OTHER HEAT SOURCE.
DO NOT PUNCTURE OR INCINERATE CONTAINER.
DO NOT SPRAY NEAR OPEN FLAME.

REACTIVITY DATA
NORMALLY STABLE AS DEFINED IN NFPA 704-12(4-3.1).
MAJOR DECOMPOSITION PRODUCTS: CO, CO(2)

SPECIAL PROTECTION INFORMATION
APPROVED RESPIRATORY PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL.
USE GOGGLES OR FACE SHIELD IF SPLASHING IS LIKELY.
WEAR IMPERVIOUS GLOVES AS REQUIRED TO PREVENT SKIN CONTACT.
WEARING SAFETY GLASSES, SAFETY SHOES, HARD HATS AND SUITABLE CLOTHING IS STANDARD PRACTICE IN MANY INDUSTRIAL OPERATIONS.

SPILL OR LEAK PROCEDURES
ELIMINATE ALL IGNITION SOURCES.
SOAK UP WITH ABSORBENT MATERIAL AND REMOVE TO A CHEMICAL DISPOSAL AREA.
PREVENT ENTRY INTO NATURAL BODIES OF WATER.

WASTE DISPOSAL METHOD
DISPOSE OF ACCORDING TO LOCAL, STATE, AND FEDERAL REQUIREMENTS.
EMPTY CONTAINER: MAY CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEARBY. INCINERATION WILL CAUSE CONTAINER TO BURST VIOLENTLY.

STORAGE PRECAUTIONS
DO NOT STORE AT TEMPERATURES OVER 120 F.

DOT CLASSIFICATION
ORM-D CONSUMER COMMODITY
DISCLAIMER: SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY BORDEN, except that the product shall conform to contracted specifications, and that the product does not infringe any valid United States patent. The information provided herein was believed by Borden to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

N

UP-1912

UPRR
MSDS Data: Chemical: #26 Aluminum Paint

ON-LINE MSDS
UP-01069

General Information
Chemical Name / Synonym / Trade Name:
#26 Aluminum Paint
Manufacturer Name:
Frost Paint & Oil Corporation
CAS Number:
64742-88-7
1330-30-7
64742-89-8
MANUFACTURER'S NAME: Frost Paint & Oil Corporation
STREET ADDRESS: 1209 N. E. Tyler St.
CITY, STATE, AND ZIP CODE: Minneapolis, MN. 55413
EMERGENCY TELEPHONE NO.: 612-789-8871
PRODUCT CLASS: Aluminum Coating
MANUFACTURERS CODE IDENTIFICATION: LX-313S
TRADE NAME: #26 Aluminum Paint

HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV PPM	TLV mg/m(3)	LEL	VAPOR PRESSURE
Mineral Spirits CAS-64742-88-7	25%	200		1	1.0
Xylol CAS-1330-30-7	2%	100		1	7.0
VM&P Naphtha CAS-64742-89-8	21%	350		1.2	13.0

PHYSICAL DATA
BOILING RANGE: 245 - 390 F
EVAPORATION RATE: SLOWER, THAN ETHER
VAPOR DENSITY: HEAVIER,
PERCENT VOLATILE BY VOLUME: 60%
WEIGHT PER GALLON: 8.0

FIRE AND EXPLOSION HAZARD DATA
DOT CATEGORY: Flammable - Flash below 80 F
FLASH POINT: 52 Tog CC
UEL: 7.0
EXTINGUISHING MEDIA: Use NFPA Class B extinguishers (carbon dioxide, dry chemical and foam) to extinguish fires -- NFPA Class II.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Closed containers may explode when exposed to extreme heat. Do not apply to hot surfaces.
SPECIAL FIRE FIGHTING PROCEDURES: Use fog only. "Straight water" will

float solvents. Consult local Fire Marshall.

HEALTH HAZARD DATA
Threshold Limit Value - 100 PPM
Effects of Overexposure: No immediate harmful effects. Excessive inhalation causes headaches and dizziness.
Eye Contact: Flush with plenty of water for 10 to 15 minutes. Call physician.
Emergency and First Aid Procedures:
Ingestion: Do not induce vomiting. Call physician
Inhalation: Remove to fresh air.
Skin Contact: Wash with mild solvent, then soap & water. Apply skin cream.

REACTIVITY DATA
Stability: Stable
Conditions to avoid:
Incompatibility: (Material to avoid)
Hazardous Polymerization: Will not occur
Conditions to avoid:

SPILL OR LEAK PROCEDURES
Steps to be taken in case material is released or spilled: Remove all sources of ignition. Scoop up into trash drum or remove with inert absorbent, wash area with appropriate solvent. Observe all fire precautions.
Waste disposal method: Dispose of in accordance with Federal, State and Local regulations. Incinerate material in approved facility. Do not incinerate in closed container.

SPECIAL PROTECTION INFORMATION
Respiratory Protection: OSHA - NIOSH approved organic-vapor particulate-matter respirator.
Ventilation: Local exhaust. Keep vapor concentrations below TLV and LEL.
Protective Gloves: Neoprene, where contact is continuous or frequent.
Eye Protection: Goggles
Other protective equipment:
Respirators: Any OSHA - NIOSH approved half mask with organic vapor & particulate cartridges.

SPECIAL PRECAUTIONS
Precautions to be taken in handling and storing: Avoid prolonged contact with skin or breathing of spray. Keep away from open flames and sparks.
Other precautions: Do not take internally. Use adequate ventilation. Use approved grounding.

3

UP-1915

General Information
MATERIAL SAFETY DATA SHEET
COATINGS AND RESINS GROUP

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS. ABBREVIATIONS AND OTHER DESIGNATIONS USED ON THIS MATERIAL SAFETY DATA SHEETS INCLUDE THE FOLLOWING:

U/I = UNKNOWN INFORMATION; N/A = NOT APPLICABLE; NOT ESTAB. = NOT ESTABLISHED; CERT. LTR. = CHEMICAL O.K. ON TSCA INVENTORY; CAS NO. NOT AVAILABLE

SECTION I - PRODUCT INFORMATION
MANUFACTURER'S NAME:
PPG INDUSTRIES, INC.
PRODUCT CODE/IDENTITY:
11-4 (061289M)
CUSTOMER PART#/NAME:
PRODUCT TRADE NAME:
YELLOW TRAFFIC AND ZONE MARKING PAINT
CHEMICAL FAMILY:
ALKYD

SHIPPING INFORMATION
US-DOT: SHIPPING NAME/HAZARD CLASS:
PAINT, FLAMMABLE LIQUID
UN NUMBER:
UN1263
PPG SAFETY AND HEALTH INDEX IN-PLANT HAZARD RATINGS
HEALTH= 4(*)
FLAMMABILITY= 3
REACTIVITY= 0
0=MINIMAL
1=SLIGHT
2=MODERATE
3=SERIOUS
4=SEVERE
*=CONTAINS INGREDIENT(S) WHICH MAY CAUSE CHRONIC (LONG-TERM) HEALTH EFFECTS
EMERGENCY MEDICAL/SPILL INFO:
(304) 843-1300
TECHNICAL INFO: AUTO REFINISH:
(800) 245-2590, IN OHIO (216) 671-0050
PITTSBURGH PAINTS:

(800) 441-9695
PRODUCT SAFETY INFO:
260 KAPPA DRIVE
PITTSBURGH, PA 15238
(412) 492-5555
DATE OF MSDS PREPARATION:
5/31/90

SECTION II - INGREDIENTS AND REGULATORY INFORMATION

INGREDIENTS	CASH NUMBER	% WEIGHT	...SARA TITLE III & CERCLA CLASSIFICATIONS.... HS (102)	EHS (302)	TC+ (313)	RQ (LBS)	TPQ (LBS)
MAGNESIUM SILICATE	14807-96-6	10-15	N	N	N	N/A	N/A
LEAD CHROMATE: PIG YELLOW 34	7758-97-6	5-10	N	N	Y	N/A	N/A
CALCIUM CARBONATE	1317-65-3	40-45	N	N	N	N/A	N/A
LIGHT ALIPHATIC SOLVENT NAPHTHA	64742-89-8	20-25	N	N	N	N/A	N/A
TOLUENE	108-88-3	2-5	Y	N	Y	1000	N/A
FILM FORMERS, RESINS, AND ADDITIVES	NOT ESTAB.	15-20	N	N	N	N/A	N/A

INGREDIENTS	SARA 311/312 AC	CH	FL	PR	RE
MAGNESIUM SILICATE	Y	N	N	N	N
LEAD CHROMATE: PIG YELLOW 34	Y	N	N	N	N
CALCIUM CARBONATE	Y	N	N	N	N
LIGHT ALIPHATIC SOLVENT NAPHTHA	Y	N	Y	N	N
TOLUENE	Y	N	Y	N	N
FILM FORMERS, RESINS, AND ADDITIVES	N	N	N	N	N

THE FOLLOWING HAZARDOUS MATERIALS ARE COMPONENTS OF ONE OR MORE OF THE ABOVE INGREDIENTS

LEAD (%NV)	7439-92-1	5-10	Y	N	Y	1	N/A
CHROMIUM COMPOUNDS (INSOLUBLE, % NV)	18540-29-9	1- 2	Y	N	Y	N/A	N/A

LEAD (%NV)	Y	Y	N	N	N
CHROMIUM COMPOUNDS (INSOLUBLE, % NV)	Y	Y	N	N	N

THE FOLLOWING INGREDIENTS ARE REPORTABLE AS SARA SECTION 313 CHEMICAL CATEGORIES

LEAD COMPOUNDS	NOT ESTAB.	5-10
CHROMIUM COMPOUNDS	NOT ESTAB.	5-10

OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS

INGREDIENTS	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-STEL

LEAD CHROMATE: PIG YELLOW 34	0.05 mg/m(3)	NOT ESTAB	NOT ESTAB	NOT ESTAB
CALCIUM CARBONATE	10 mg/m(3)	NOT ESTAB	15 mg/m(3)	NOT ESTAB
TOLUENE	100 ppm	150 ppm	200 ppm	300 ppm
LEAD (%NV)	0.15 mg/m(3)	NOT ESTAB	0.05 mg/m(3)	NOT ESTAB
CHROMIUM COMPOUNDS (INSOLUBLE, % NV)	0.05 mg/m(3)	NOT ESTAB	0.05 mg/m(3)	NOT ESTAB

INGREDIENTS	PPG-IPEL IPEL-TWA	IPEL-STEL
LEAD CHROMATE: PIG YELLOW 34	0.05 mg/m(3)	NOT STAB
CALCIUM CARBONATE	10 mg/m(3)	NOT STAB
TOLUENE	100 ppm	150 ppm
LEAD (%NV)	0.05 mg/m(3)	NOT ESTAB
CHROMIUM COMPOUNDS (INSOLUBLE, % NV)	0.05 mg/m(3)	NOT ESTAB

SARA 311/312 CATEGORIES FOR THIS PRODUCT
ACUTE=Y
CHRONIC=Y
FLAM=Y
PRESS=N
REAC=N
PRODUCT STATUS RELATIVE TO THE US EPA TOXIC SUBSTANCES CONTROL ACT
ALL CHEMICAL SUBSTANCES IN THIS PRODUCT COMPLY WITH ALL APPLICABLE RULES OR ORDERS UNDER THE ENVIRONMENTAL PROTECTION AGENCY'S TOXIC SUBSTANCES CONTROL ACT.

FOOTNOTES FOR SECTION II
CARCINOGENIC ACCORDING TO CRITERIA ESTABLISHED BY:
(*)=NTP (**)=IARC @=OSHA #=OTHER ORAL= LD50 ORAL (RAT), (g/kg) DERM= LD50 DERMAL (RABBIT), (g/kg) INHL= LC50 INHALATION (RAT), (Mg/L) + INGREDIENTS IN THE TC COLUMN ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III. SEE 40 CFR PART 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS
¢FORMULA VALUES, NOT SALES SPECIFICATIONS
BOILING RANGE:
93 - 153 DEG. C
SOLUBILITY IN WATER:
0.0%
VAPOR PRESSURE:
20.2 mmHg
WT/GAL (LBS):
12.22 (U.S.)
VAPOR DENSITY:
HEAVIER THAN AIR
pH:
U/I

% VOL/VOLUME:
45.90
% SOLID BY WEIGHT:
76.70
EVAP RATE(BuOAc=100):
32
SPECIFIC GRAVITY:
1.47
ODOR/APPEARANCE:
VISCOUS LIQUID WITH AN ODOR CHARACTERISTIC OF THE SOLVENTS LISTED IN SECTION II.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
US-DOT CATEGORY:
FLAMMABLE
FLASHPOINT:
40 DEG. F PMCC
FLAMMABLE LIMITS:
LEL 1.3 UEL U/I
EXTINGUISHING MEDIA:
USE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL, OR UNIVERSAL AQUEOUS FILM FORMING FOAM) DESIGNED TO EXTINGUISH NFPA CLASS IB FLAMMABLE LIQUID FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY ON HOT SURFACES. TOXIC GASES MAY FORM WHEN PRODUCT IS CONTACTED BY FLAME OR HOT SURFACES.

SPECIAL FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE INEFFECTIVE. WATER SPRAY MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOR NOZZLES ARE PREFERABLE. FIRE-FIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS.

SECTION V - REACTIVITY DATA
STABILITY:
STABLE
HAZARDOUS POLYMERIZATION:
NOT EXPECTED TO OCCUR

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):
AVOID CONTACT WITH STRONG ALKALIES, STRONG MINERAL ACIDS, OR STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS:

MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS WHEN HEATED. WELDING, BRAZING, OR FLAME-CUTTING ON SURFACES COATED WITH THIS PRODUCT MAY PRODUCE FUMES INCLUDING:
Carbon Monoxide, Lead Oxide, Oxides of Chromium

SECTION VI - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
PROVIDE MAXIMUM VENTILATION. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN AND EYE PROTECTION SHOULD BE PERMITTED IN THE AREA. REMOVE ALL SOURCES OF IGNITION. TAKE UP SPILLED MATERIAL WITH SAWDUST, VERMICULITE, OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR DISPOSAL.

WASTE DISPOSAL METHOD:
WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS SHOULD BE RECYCLED OR DISPOSED OF THROUGH AN APPROVED WASTE MANAGEMENT FACILITY.

SECTION VII - HEALTH HAZARD DATA
EFFECTS OF OVEREXPOSURE FROM:
INGESTION:
HARMFUL OR FATAL IF SWALLOWED.

DRIED FILM OF THIS PAINT MAY BE HARMFUL IF CHEWED OR SWALLOWED.

EYE CONTACT:
CAUSES EYE IRRITATION.

SKIN CONTACT:
MAY CAUSE MODERATE SKIN IRRITATION.

PROLONGED OR REPEATED CONTACT MAY CAUSE AN ALLERGIC SKIN REACTION.

INHALATION:
VAPOR AND SPRAY MIST MAY BE HARMFUL IF INHALED.

VAPOR IRRITATES EYES, NOSE, AND THROAT.

SANDING AND GRINDING DUSTS MAY BE HARMFUL IF INHALED.

REPEATED EXPOSURE TO HIGH VAPOR CONCENTRATIONS MAY CAUSE IRRITATION OF THE RESPIRATORY SYSTEM AND PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE.

INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS CAN BE HARMFUL OR FATAL.

CHRONIC OVEREXPOSURE:
AVOID LONG TERM AND REPEATED CONTACT.

OVEREXPOSURE TO LEAD ADVERSELY AFFECTS BLOOD AND BLOOD FORMING TISSUES, KIDNEYS, LIVER AND THE CENTRAL NERVOUS SYSTEM, REPRODUCTIVE ORGANS AND CAUSES DEVELOPMENTAL EFFECTS.

THIS PRODUCT CONTAINS AN INSOLUBLE FORM OF A CHROMIUM (6+) COMPOUND. NTP AND IARC ASSOCIATE THESE MATERIALS WITH AN INCREASED RISK OF CANCER. RECENT STUDIES SUGGEST THAT INSOLUBLE CHROMIUM (6+) COMPOUNDS ARE PROBABLY NOT CARCINOGENIC IN HUMANS.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:
CONTAINS LEAD. LEAD POISONING IS CHARACTERIZED BY A METALLIC TASTE IN THE MOUTH, LOSS OF APPETITE, INDIGESTION, NAUSEA, VOMITING, CONSTIPATION, ABDOMINAL CRAMPS, DISTURBANCE OF REST AND SLEEP, AND WEAKNESS.

EYE WATERING, HEADACHES, NAUSEA, DIZZINESS, AND LOSS OF COORDINATION ARE INDICATIONS THAT SOLVENT LEVELS ARE TOO HIGH.

REDNESS, ITCHING, BURNING SENSATION AND VISUAL DISTURBANCES MAY INDICATE EXCESSIVE EYE CONTACT.

DRYNESS, ITCHING, CRACKING, BURNING, REDNESS, AND SWELLING ARE CONDITIONS ASSOCIATED WITH EXCESSIVE SKIN CONTACT.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
NOT APPLICABLE

SECTION VIII - FIRST AID PROCEDURES
INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING.

EYE CONTACT:
IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SKIN CONTACT:
IN CASE OF SKIN CONTACT, REMOVE PROMPTLY BY WIPING, FOLLOWED BY WATERLESS HAND CLEANER AND SOAP AND WATER.

INHALATION:
IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION AND OTHER SUPPORTIVE MEASURES AS REQUIRED.

OTHER:
IF ANY OF THE FOLLOWING OCCUR DURING OR FOLLOWING USE OF THIS PRODUCT, CONTACT A POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN IMMEDIATELY; HAVE MATERIAL SAFETY DATA SHEET INFORMATION AVAILABLE. (*)INGESTION

(*)EXCESSIVE EXPOSURE TO A CORROSIVE MATERIAL.

(*) PERSISTENT SKIN/EYE IRRITATION OR BREATHING DIFFICULTIES.

SECTION IX - PROTECTION INFORMATION
PERSONAL PROTECTIVE EQUIPMENT FOR:
EYE PROTECTION:
WEAR CHEMICAL-TYPE SPLASH GOGGLES OR FULL FACE SHIELD.

SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING, INCLUDING IMPERMEABLE APRON AND GLOVES CONSTRUCTED OF: NITRILE RUBBER, NEOPRENE RUBBER OR POLYVINYL ALCOHOL

RESPIRATORY PROTECTION:
OVEREXPOSURE TO VAPORS MAY BE PREVENTED BY ENSURING VENTILATION CONTROLS, VAPOR EXHAUST OR FRESH AIR ENTRY. NIOSH/MSHA-APPROVED (TC-23C-) PAINT SPRAY OR AIR SUPPLIED (TC-19C-) RESPIRATORS MAY ALSO REDUCE EXPOSURE. READ RESPIRATOR MANUFACTURER'S INSTRUCTIONS AND LITERATURE CAREFULLY TO DETERMINE THE TYPE OF AIRBORNE CONTAMINANTS AGAINST WHICH THE RESPIRATOR IS EFFECTIVE AND HOW IT IS TO BE PROPERLY FITTED.

OTHER EQUIPMENT:
CLEAN OR DISCARD CONTAMINATED CLOTHING AND SHOES.

VENTILATION REQUIREMENTS:
PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP THE CONCENTRATION OF INGREDIENTS LISTED IN SECTION II BELOW THE LOWEST SUGGESTED EXPOSURE LIMITS, THE LEL IN SECTION IV BELOW THE STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

SECTION X - SPECIAL PRECAUTIONS
HANDLING AND STORAGE PRECAUTIONS:
DO NOT STORE ABOVE 120 DEGREES F. STORE LARGE QUANTITIES IN BUILDING DESIGNED AND PROTECTED FOR STORAGE OF NFPA CLASS IB FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS:
IF THIS MATERIAL IS PART OF A MULTIPLE COMPONENT COATING SYSTEM, READ THE MATERIAL SAFETY DATA SHEET(S) FOR THE OTHER COMPONENT OR COMPONENTS BEFORE BLENDING AS THE RESULTING MIXTURE MAY HAVE THE HAZARDS OF ALL OF ITS PARTS.

CONTAINERS SHOULD BE GROUNDED WHEN POURING. AVOID FREE FALL OF LIQUIDS IN EXCESS OF A FEW INCHES.

DO NOT APPLY ON TOYS OR OTHER CHILDREN'S ARTICLES, FURNITURE OR INTERIOR SURFACES OF ANY DWELLING OR FACILITY WHICH MAY BE OCCUPIED OR USED BY

CHILDREN. DO NOT APPLY ON THOSE EXTERIOR SURFACES OF DWELLING UNITS, SUCH AS WINDOWSILLS, PORCHES, STAIRS OR RAILINGS, TO WHICH CHILDREN MAY BE COMMONLY EXPOSED. WASH THOROUGHLY BEFORE EATING OR SMOKING.

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UP-1924

UPRR
MSDS Data: Chemical: ~~Aluminum oxide grinding wheels, cut off~~ Paint Stick

ON-LINE MSDS
UP-04484

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)
MSDS No. 5401

SECTION I
MANUFACTURER'S NAME
MARKAL COMPANY
EMERGENCY TELEPHONE NO.
312 826-1700
ADDRESS (Number, Street, City, State, and ZIP Code)
250 N. Washtenaw Ave., Chicago, Illinois 60612
CHEMICAL NAME AND SYNONYMS
TRADE NAME AND SYNONYMS
MARKAL PAINTSTIK "B" and "B 3/8"
COLORS:
White, Black, Yellow, Red, Blue, Green, Orange, Purple, Pink, Brown, Gray and Aluminum

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SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)
PIGMENTS		
CATALYST		
VEHICLE		
SOLVENTS		
ADDITIVES		
OTHERS		
NO HAZARDOUS INGREDIENTS		

ALLOYS AND METALLIC COATINGS	%	TLV (Units)
BASE METAL		
ALLOYS		
METALLIC COATINGS		
FILLER METAL PLUS COATINGS OR CORE FLUX		
OTHERS		
NO HAZARDOUS INGREDIENTS		

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
NON-TOXIC		

UP-1925

SECTION III - PHYSICAL DATA
BOILING POINT (DEG. F)
Approximately 600 Deg. F.
VAPOR PRESSURE (mm Hg.)
None at room temperature
VAPOR DENSITY (AIR = 1)
SOLUBILITY IN WATER
Insoluble
SPECIFIC GRAVITY (H2O=1)
PERCENT, VOLATILE BY VOLUME (%)
None
EVAPORATION RATE (_____=1)
Does not evaporate at room temperature
APPEARANCE AND ODOR
Solid marker - no oder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method used)
Approximately 550 Deg. F.
FLAMMABLE LIMITS
Lel
Uel
EXTINGUISHING MEDIA
Water, CO2, Foam, Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES
UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE
MARKAL PAINTSTIK "B" and "B 3/8" was tested by an independent testing laboratory and found to be non-toxic.

EFFECTS OF OVEREXPOSURE
non-irritating to the skin and the eyes when tested in accordance with the Federal Hazardous Substances Act.

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI - REACTIVITY DATA
STABILITY
UNSTABLE ¢]
STABLE ¢X]
CONDITIONS TO AVOID

Paint Stick

UPRR
MSDS Data: Chemical: ~~Aluminum oxide grinding wheels, cut-off~~

ON-LINE MSDS
UP-04484

INCOMPATIBILITY (Materials to avoid)
HAZARDOUS DECOMPOSITION PRODUCTS
HAZARDOUS POLYMERIZATION
MAY OCCUR ¢
WILL NOT OCCUR ¢X
CONDITIONS TO AVOID

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Sweep up and dispose of in metal or cardboard container

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type)
None necessary
VENTILATION
LOCAL EXHAUST
MECHANICAL (General)
SPECIAL
OTHER
PROTECTIVE GLOVES
EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT
None necessary

SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS
None necessary

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UP-1928

MSDS: A040

SECTION-1 ********** IDENTIFICATION **********

IDENTITY: BALL PAINT MARKER - ALL COLORS

MANUFACTURER
LA-CO INDUSTRIES, INC/MARKAL COMPANY
250 N. WASHTENAW AVE.
CHICAGO, IL. 60612

EMERGENCY TELEPHONE NO. 312-826-1700
INFORMATION TELEPHONE NO. 312-826-1700
DATE PREPARED JUNE 3, 1993
SUPERSEDES ISSUE DATE 03/29/93

LABELING

HMIS: 2 2 0 NFPA: 2 3 0 WHMIS(CANADA): D-2B, B-3
EPA HAZARDS: ACUTE, FLAMMABLE, CHRONIC. D.O.T.: N.A.
BILL OF LADING: U.P.S.:

SECTION-2 ****** HAZARDOUS INGREDIENTS ******

INGREDIENT	C.A.S.#	OSHA PEL	ACGIH TLV	SUPERFUND RQ	%
PROPYLENE GLYCOL MONOETHYL ETHER (NFPA 030)	102-98-2	100 ppm	100ppm	NONE	65

SECTION-3 PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING POINT: 275 deg. F. SPECIFIC GRAVITY (H_2O=1):
VAPOR PRESSURE(mmHg): 40 mm at 60 deg. C. ODOR: PAINT-LIKE
VAPOR DENSITY(AIR=1): > 1 MELTING POINT: N.A.
SOLUBILITY IN WATER: SOLVENT IS SOLUBLE. EVAP. RATE (butyl acetate=1): 1.2
APPEARANCE: PAINT PACKAGED IN A PLASTIC BOTTLE WITH A METAL TIP.

SECTION-4 *** FIRE AND EXPLOSION DATA ***

FLASH POINT (method used): 118 deg. F. toc
FLAMMABLE LIMITS - LEL: N.D. UEL: N.D.
EXTINGUISHING MEDIA: CARBON DIOXIDE, DRY CHEMICAL.
SPECIAL FIRE FIGHTING PROCEDURES: USE WATER TO COOL CONTAINERS IF EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERRED. WEAR GOGGLES AND SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: DANGEROUS WHEN EXPOSED TO EXTREME HEAT OR FLAME. CLOSED CONTAINERS CAN RUPTURE WHEN EXPOSED TO EXTREME HEAT. VAPOR ACCUMULATION CAN FLASH OR EXPLODE IF IGNITED.

SECTION-5 ********** REACTIVITY DATA **********

STABILITY: STABLE
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.
INCOMPATABILITY (MATERIALS TO AVOID): OXIDIZING AGENTS.
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE AND OTHER TOXIC FUMES.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.
CONDITIONS TO AVOID: N.A.

VVVVVVV CONTINUED ON BACK PAGE VVVVVVVVV

SECTION-6 ********* H E A L T H H A Z A R D D A T A **********

ROUTES OF ENTRY: INHALATION? YES SKIN? YES INGESTION? YES

HEALTH HAZARDS:

EYES: (ACUTE) MODERATE IRRITATION. (CHRONIC) REVERSIBLE CORNEAL INJURY.

SKIN: (ACUTE) SLIGHT IRRITATION. (CHRONIC) SKIN ABSORPTION CAN OCCUR, TOXICITY IS LOW.

INGESTION: (ACUTE) LOW SINGLE DOSE TOXICITY. POSSIBLE NAUSEA. (CHRONIC) BLOOD EFFECTS AND INJURY TO LIVER AND KIDNEYS WITH REPEATED INGESTION.

INHALATION: (ACUTE) SLIGHT IRRITATION. (CHRONIC) ANESTHETIC OR NARCOTIC EFFECT MAY OCCUR.

CARCINOGENICITY: NTP? NO IARC? NO OSHA? NO

SIGNS AND SYMPTOMS OF EXPOSURE: IRRITATION TO EYES AND MUCOUS MEMBRANES, LETHARGY, DIARRHEA, GASTROINTESTINAL DISCOMFORT.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NOT KNOWN.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: REMOVE TO FRESH AIR, ADMINISTER OXYGEN IF NEEDED. APPLY ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED.

SKIN: WIPE OFF WITH TOWEL. WASH WITH SOAP AND WATER. SEE PHYSICIAN.

EYES: WASH IMMEDIATELY WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES.

SECTION-7 *** H A N D L I N G A N D U S E P R E C A U T I O N S ****

RELEASE AND SPILL PROCEDURES: REMOVE ALL SOURCES OF IGNITION. VENTILATE AREA REMOVE WITH INERT ABSORBENT AND NON-SPARKING TOOLS. PLACE IN METAL WASTE CONTAINER.

WASTE DISPOSAL METHOD: DISPOSE OF IN ACCORDANCE WITH LOCAL REGULATIONS.

HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, OPEN FLAMES.

OTHER PRECAUTIONS: STORE IN COOL DRY PLACE. AVOID CONTACT WITH SKIN AND EYES. AVOID PROLONGED BREATHING OF VAPORS. USE WITH ADEQUATE VENTILATION.

SECTION-8 ********** C O N T R O L M E A S U R E S **********

RESPIRATORY PROTECTION: NONE.

VENTILATION / LOCAL EXHAUST: SUFFICIENT TO PREVENT VAPORS. SPECIAL: NONE.
\ MECHANICAL(GENERAL): NONE OTHER: N.A.

PROTECTIVE GLOVES: CHEMICAL RESISTANT

EYE PROTECTION: SAFETY GOGGLES

OTHER PROTECTIVE EQUIPMENT: N.A.

WORK/HYGIENIC PRACTICES: WASH AFTER USE. USE WITH ADEQUATE VENTILATION.

N.A. - NOT APPLICABLE N.D. - NOT DETERMINED

The information contained herein is based on data available to us and is accurate and reliable to the best of our knowledge and belief. However, LA-CO Industries, Inc./Harkal Co. makes no representations as to its completeness or accuracy. Information is supplied upon condition that persons receiving such information will make their own determination as its suitability for their purposes prior to use. In no event will LA-Industries,Inc./Harkal Co. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information contained herein.

General Information
Chemical Name / Synonym / Trade Name:
Paint Reducer, Mineral Spirits
Manufacturer Name:
SHERWIN-WILLIAMS COMPANY
CAS Number:
64742-47-8
MANUFACTURER'S NAME: THE SHERWIN-WILLIAMS COMPANY 101 Prospect Avenue N.W.
Cleveland, Ohio 44115
DATE OF PREPARATION: 30-Dec-86
EMERGENCY TELEPHONE NO.: (216) 566-2917
INFORMATION TELEPHONE NO.: (216) 566-2902

PRODUCT IDENTIFICATION
PRODUCT NUMBER: R1 K 4
PRODUCT NAME: Paint Reducer, Mineral Spirits
PRODUCT CLASS: Reducer
(*): Trade Mark

HAZARDOUS INGREDIENTS

CAS NO.	INGREDIENTS	% by WEIGHT	ACGIH-TLV	OSHA-PEL	UNITS	V.P.
64742-47-8	Mineral Spirits	100	100	500	PPM	2.0

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen

PHYSICAL DATA
EVAPORATION RATE: Slower than Ether
BOILING RANGE (F): 300 - 395
% VOLATILE VOLUME: 100.0
VAPOR DENSITY: Heavier than Air
WT/GAL: 6.35

FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION: Combustible, Flash above 99 and below 200 F
FLASH POINT: 105 F TCC
LEL: 1.0
EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam
UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
SPECIAL FIRE FIGHTING PROCEDURES: Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible

autoignition or explosion when exposed to extreme heat.

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: See Section II
EFFECTS OF OVEREXPOSURE:
ACUTE: Overexposure causes eye, skin and respiratory irritation. May cause nervous system depression accompanied by headache, dizziness, nausea, confusion and staggering gait. Extreme overexposure may result in unconsciousness and possibly death.
CHRONIC: Prolonged overexposure to ingredients in Section II may cause adverse effects to the liver, and urinary systems.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.
EMERGENCY AND FIRST AID PROCEDURES:
If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN: Wash affected area thoroughly with soap and water.
Remove contaminated clothing and launder before re-use.
If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED: Never give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give several glasses of water. Seek medical attention.

REACTIVITY DATA
STABILITY: Stable
HAZARDOUS DECOMPOSITION PRODUCTS:
By fire: Carbon Dioxide, Carbon Monoxide
HAZARDOUS POLYMERIZATION: Will Not Occur

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Ventilate and remove with inert absorbent.
WASTE DISPOSAL METHOD: Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.
Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

PROTECTION INFORMATION
PRECAUTIONS TO BE TAKEN IN USE: Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.
VENTILATION: Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.
Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.
Heading: PROTECTION INFORMATION
PRECAUTIONS TO BE TAKEN IN USE: Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.
VENTILATION: Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.
RESPIRATORY PROTECTION: If personal exposure cannot be controlled below applicable limits by ventilation, wear respiratory device approved by NIOSH/MSHA for protection against materials in Section II.
PROTECTIVE GLOVES: Wear gloves which are recommended by glove supplier for protection against materials in Section II.
EYE PROTECTION: Wear safety spectacles with unperforated sideshields.
Heading: PRECAUTIONS
DOL STORAGE CATEGORY: 1B
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Contents are FLAMMABLE. Keep away from heat, sparks, and open flame.
During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.
Consult NFPA Code. Use approved Bonding and Grounding procedures.
Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.
OTHER PRECAUTIONS: Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.
HMIS:
HEALTH: 2
FLAMMABILITY: 3
REACTIVITY: 0
The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION:
RED LABEL: Flammable, Flash below 100 F
EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam
UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot *surfaces requires special precautions. During emergency conditions* overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
SPECIAL FIRE FIGHTING PROCEDURES: Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: See Section II
EFFECTS OF OVEREXPOSURE:
ACUTE: *Overexposure causes eye, skin and respiratory irritation.* May cause nervous system depression accompanied by headache, dizziness, nausea, confusion and staggering gait. Extreme overexposure may result in unconsciousness and possibly death.
CHRONIC: Prolonged overexposure to ingredients in Section II may cause adverse effects to the liver, and urinary systems.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.
EMERGENCY AND FIRST AID PROCEDURES:
If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED: Never give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give several glasses of water. Seek medical attention.

REACTIVITY DATA (+++)
STABILITY: Stable
HAZARDOUS DECOMPOSITION PRODUCTS:
By fire: Carbon Dioxide, Carbon Monoxide
HAZARDOUS POLYMERIZATION: Will Not Occur
Heading: SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Ventilate and remove with inert absorbent.
WASTE DISPOSAL METHOD: Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.
RESPIRATORY PROTECTION: If personal exposure cannot be controlled below applicable limits by ventilation, wear respiratory device approved by NIOSH/MSHA for protection against materials in Section II.
PROTECTIVE GLOVES: Wear gloves which are recommended by glove supplier for protection against materials in Section II.
EYE PROTECTION: Wear safety spectacles with unperforated sideshields.

PRECAUTIONS
DOL STORAGE CATEGORY: 2
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Contents are COMBUSTIBLE. Keep away from heat and open flame.
Consult NFPA Code. Use approved Bonding and Grounding procedures.
Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.
OTHER PRECAUTIONS: Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.
HMIS:
HEALTH: 2
FLAMMABILITY: 2
REACTIVITY: 0
MANUFACTURER'S NAME: THE SHERWIN-WILLIAMS COMPANY 101 Prospect Avenue N.W. Cleveland, Ohio 44115
DATE OF PREPARATION: 30-Dec-86
EMERGENCY TELEPHONE NO.: (216) 566-2917
INFORMATION TELEPHONE NO.: (216) 566-2902

PRODUCT IDENTIFICATION
PRODUCT NUMBER: R1 K 3
PRODUCT NAME: Paint Reducer, VM & P Naphtha
PRODUCT CLASS: Reducer
(*): Trade Mark

HAZARDOUS INGREDIENTS

CAS No.	INGREDIENT	% by WEIGHT	ACGIH-TLV	OSHA-PEL	UNITS	V.P.
64742-48-9	V. M. & P. Naphtha.	100	300		PPM	12.0

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

PHYSICAL DATA
EVAPORATION RATE: Slower than Ether
VAPOR DENSITY: Heavier than Air
BOILING RANGE (F): 240 - 325
% VOLATILE VOLUME: 100.0
WT/GAL: 6.20

UP-1937

General Information
MANUFACTURER'S NAME: DIEDRICH CHEMICALS - RESTORATION TECHNOLOGIES, INC.
EMERGENCY TELEPHONE NO.: 414-764-0058
ADDRESS (Number, Street, City, State, Zip Code): 300 A E. OAK ST. OAK CREEK, WI 53154
CHEMICAL NAME AND SYNONYMS: HOT PAINT STRIPPER
CHEMICAL FAMILY: LIQUID ALKALI SOLUTION
TRADE NAME AND SYNONYMS: 606/606X PAINT REMOVER
FORMULA: POTASSIUM HYDROXIDE AUGMENTED

SECTION II * HAZARDOUS INGREDIENTS
COMPONENT: LIQUID KOH (45%) CAS # 1310-58-3 less than
COMPONENT: ETHOXY TRIGLYCOL: less than
COMPONENTS: CONTAINS NO VIRGIN OR TRACE METALS IN PRODUCT
%: 71
%: 3
TLV (Units): 2mg/m(3)
TLV (Units): N/A

SECTION III * PHYSICAL DATA
BOILING POINT (Deg. F): 240
VAPOR PRESSURE (mm Hg): 20-25
VAPOR DENSITY (AIR=1): 1
SPECIFIC GRAVITY (H(2)O=1): 1.33
VOLATILE BY VOLUME (%): 51.16
EVAPORATION RATE: 0.925
APPEARANCE AND ODOR: Very viscous, brownish semi-paste gel
Solubility in water is complete

SECTION IV * FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Deg. F): None
EXTINGUISHING MEDIA: N/A
SPECIAL FIRE FIGHTING PROCEDURES: N/A
UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A
FLAMMABLE LIMITS:
LEL: N/A
UEL: N/A

SECTION V * HEALTH HAZARD DATA
EYE CONTACT: Causes severe burns; small quantities can result in permanent damage and/or loss of vision.
SKIN CONTACT: Corrosive action causes burns and frequent deep ulceration with subsequent scarring. Prolonged contact destroys tissue. Mist from solutions can cause irritant dermatitis.
INGESTION: Ingestion can cause very serious damage to mouth, esophagus, stomach, and other tissues with which contact is made and may be fatal.

INHALATION: Inhalation of mists can cause damage to upper respiratory tract and lung tissue depending on extent of exposure. Effects can range from mild irritation of mucous membranes, severe pneumonitis, and destruction of lung tissues.
FIRST AID AND EMERGENCY PROCEDURES:
EXTERNAL: Flush with water for at least 15 minutes. A slippery feeling on skin indicates caustic may still be present and can cause a rash or burn. Stinging on skin can be treated with 10% amonium cloride solution of diluted vinegar. Contaminated clothing must be laundered before reuse and shoes should be discarded.
EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing. Call physician immediately.
INGESTION: If conscious, drink large quantities of water or acidic beverages (tomato, orange juice, carbonated soft drinks). Do not induce vomiting. If vomiting occurs, administer additional water. Take immediately to a hospital or physician.
INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call or take to a physician immediately.

SECTION VI * REACTIVITY DATA
STABILITY: UNSTABLE
STABLE XX
CONDITIONS TO AVOID: MATERIALS LISTED BELOW
INCOMPATABILITY (Materials to avoid): Mixing with acids, ammonium containing solutions and any active metal such as zinc, aluminum magnesium, copper, brass or bronze.
HAZARDOUS DECOMPOSITION PRODUCTS: May produce explosive hydrogen
HAZARDOUS POLYMERIZATION: MAY OCCUR
WILL NOT OCCUR XX
CONDITIONS TO AVOID: N/A

SECTION VII * SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED: Dike area to contain spill. Sweep up spillage and return to container. Flush area immediately with water until slipperiness is gone. Soak up water with sweeping compound or absorbent material and place in sealable container.
WASTE DISPOSAL METHOD: Neutralize alkalinity and separate floatable greases and oils for incineration or disposal at appropriate disposal site. Discharge neutralized water layer in accordance with Federal, State and Local regulations. Dispose of in a suitable chemical waste disposal site.

SECTION VIII * SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): Use NIOSH/Msha approved dust/mist filter respirator for routine work purposes when exposure to mists exceed the permissible exposure limits. The respirator use limitations made by NIOSH/MSHA or the manufacturer must be observed.

VENTILATION:
Local Exhaust: Sufficient to minimize exposure to mists below permissible exposure limit.
PROTECTIVE GLOVES: Rubber or PVC
EYE PROTECTION: close fitting chemicals safety goggles with face shield
OTHER PROTECTIVE EQUIPMENT: Complete body coverage with rubber or PVC chemical resistant suit, gloves and boots.

SECTION IX * SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Freezes at about 32 Deg. F - Avoid open containers - do not store in hot areas. Add cautiously to cool water, with agitation. Heat evolved. Treat empty containers as if they were full.
OTHER PRECAUTIONS: Do not sotre in or pipe through any of the materials listed in Section VI, use only mild steel or approved plastic.

Creosote

UP-1941

GENERAL CONSIDERATIONS FOR WOOD TREATED WITH CREOSOTE

Exposure to wood treated with creosote such as railroad ties may present certain hazards. Creosote penetrates deeply into and remains in pressure treated wood for a long time. Therefore, the following precautions should be taken when handling creosote treated wood.

What is Creosote?

Creosote is a complex mixture of many chemicals. Approximately 300 chemicals have been identified in creosote, and there may be 10,000 additional chemicals present in the mixture.

The most common route of exposure to creosote is likely to be through skin. Although it is not known how rapidly creosote can penetrate the skin, contact with skin may result in severe irritation. Creosote also makes the skin more sensitive to the effects of the sun.

Frequent and prolonged skin contact with creosote treated wood should be avoided. When handled under normal operations, contact can be prevented by good personal hygiene. This consists of minimized contact and prompt removal of the creosote from skin *with soap and water before eating, drinking,* using tobacco products or restrooms. Wear long-sleeve shirts and long pants. Use UPRR approved chemical resistant gloves if the possibility of skin contact exists.

Protective eye wear should be worn while using creosote treated wood to prevent irritation of the eyes.

Avoid inhaling vapors. Acute overexposure to vapor may cause respiratory tract irritation. Respiratory protection is not required under normal use conditions.

Ingestion of creosote may be fatal if swallowed. Refer to the specific MSDS for medical attention.

Refer to the safety, health, and environmental information contained on the MSDS for creosote before handling wood treated with creosote.

General Information
Chemical Name / Synonym / Trade Name:
Creosote
Manufacturer Name:
KOPPERS COMPANY, INC.
CAS Number:
8001-58-9
REVISION DATE: 04/86
SPECIFICATION SHEET NUMBER: TP-1203-10
COMMODITY NUMBER: 17501001
CODE NUMBER: IND00003JL8605
REPLACES SHEET: IND00003MR8603 K O P P E R S KOPPERS COMPANY, INC. 436 SEVENTH AVENUE PITTSBURGH, PA. 15219
MEDICAL EMERGENCIES: 1 800-553-5631
IN PENNSYLVANIA: 1 800-323-6571
CHEMTREC ASSISTANCE: 1 800-424-9300
CUSTOMER SERVICE: 1 800-556-7737

PRODUCT IDENTIFICATION
PRODUCT NAME: Creosote
SYNONYM: none
CHEMICAL FAMILY: coal tar distillate
FORMULA: complex mixture of hydrocarbons
CAS NUMBER: 8001-58-9
DOT PROPER SHIPPING NAME: none
DOT HAZARD CLASS: None
UN/NA NUMBER: none

HEALTH/SAFETY ALERT
WARNING: MAY BE FATAL IF SWALLOWED HARMFUL GTO THE SKIN OR IF INHALED CAUSES EYE AND SKIN IRRITATION AVOID PROLONGED AND/OR REPEATED CONTACT OBSERVE GOOD HYGIENE AND SAFETY PRACTICES WHEN HANDLING THIS PRODUCT DO NOT USE THIS PRODUCT UNTIL MSDS HAS BEEN READ AND UNDERSTOOD

HEALTH HAZARD INFORMATION
EYE: Direct contact or vapor contact may cause moderate irritation.
SKIN: Contact with skin can result in severe irritation which when accentuated by sunlight may result in phototoxic burns. This material or similar materials when administered throughout the major portion of their lifetime has caused cancer in laboratory animals.
INHALATION: Acute overexposure to vapor may result in respiratory tract irritation. Repeated and/or prolonged contact to high concentrations of vapor may result in respiratory difficulties, central nervous system (CNS) effects characterized by headache, drowsiness, dizziness, weakness, incoordination, collapse.
INGESTION: Ingestion of material may cause gastrointestinal disturbances including irritation, nausea, vomiting, abdominal pain and in extreme

cases cardiovascular involvement.
OTHER: See Section XII (Comments) for additional information on health effects.

EMERGENCY AND FIRST AID PROCEDURES
EYE CONTACT: Immediately flush with large amounts of water for 15 minutes. Seek medical aid.
SKIN CONTACT: Remove contaminated clothing. Wipe material from skin. Wash thoroughly with soap and water or waterless hand cleaner. If irritation persists, seek medical aid.
INHALATION: Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as indicated. Seek medical aid.
INGESTION: Do not induce vomiting. Give 1 to 2 glasses of milk. Seek medical aid. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
NOTE TO PHYSICIAN: Due to the possibility of sensitization of the myocardium following extreme acute overexposures, cardiorespiratory support should be available.

FIRE AND EXPLOSION HAZARD INFORMATION
FLASH POINT & METHOD: 93 C (200 F) CC
FLAMMABLE LIMITS (% BY VOLUME/AIR):
AUTOIGNITION TEMP: ND
LOWER: ND
UPPER: ND
EXTINGUISHING MEDIA: Use dry chemical, carbon dioxide, foam or water spray. Water or foam may cause frothing, if molten.
FIRE-FIGHTING PROCEDURES: Wear complete fire service protective equipment, including full-face MSHA/NIOSH approved self-contained breathing apparatus. Use water to cool fire-exposed container/structure/protect personnel. Toxic vapors may be given off in a fire.
FIRE AND EXPLOSION HAZARDS: When heated (fire conditions), vapor/decomposition products may be released forming flammable/explosive mixtures in air. Closed containers may explode when exposed to extreme heat (fire).

SPILL, LEAK AND DISPOSAL INFORMATION
SPILL OR LEAK PROCEDURES: Stop leak if no risk involved. Stay upwind.
Solidified spills: Shovel into dry containers and cover. Flush area with water.
Small wet spills: Take up with sand or other noncombustible absorbent material. Flush area with water. Dike large spills for later disposal. Contain runoff from fire control and dilution water.
WASTE DISPOSAL: This product is a US EPA defined toxic waste. Dispose of as a toxic waste in accordance with local, state and federal regulations. Place in tightly sealed labeled containers. This product released into the environment must be reported to the National Response Center (1

800-424-8802). The reportable quantity (RQ) for this product is 1 pound.

RECOMMENDED EXPOSURE LIMIT/HAZARDOUS INGREDIENTS
EXPOSURE LIMIT (PRODUCT): None established.
(*)For coal tar pitch volatiles, OSHA-PEL is 0.2 mg/m3 averaged over an 8 hour work shift, benzene soluble fraction. The ACGIH-TLV is 0.2 mg/m3.

HAZARDOUS INGREDIENTS:	CAS NUMBER:	PERCENT:	EXPOSURE LIMIT: (PPM) MG/M3):
Creosote:	8001-58-9		

PERSONAL PROTECTION INFORMATION
EYE PROTECTION: Industrial safety glasses, minimum. As necessary to comply with 29 CFR 1910.133 and work area conditions: use side shields, goggles or face shield. Chemical goggles; face shield (if splashing is possible).
SKIN PROTECTION: As required, industrial resistant flexible-type gloves. Depending on working conditions, i.e., contact potential, wear impervious protective garments such as head/neck cover, aprons, jackets, pants, coveralls, boots, etc. See Section XII - Comments for additional information on skin protection recommendations.
RESPIRATORY PROTECTION: Not required under normal use conditions. If ventilation does not maintain inhalation exposures below TLV (PEL), Use MSHA/NIOSH approved units as per current 29 CFR1910.134 and manufacturers' "Instructions" and "Warnings". combination filter/organic vapor cartridges or canisters may be used.
VENTILATION: Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits and areas below flammable vapor concentrations. Local exhaust is necessary for use in enclosed or confined spaces. See OSHA Requirement/NIOSH Pub. 80-106 "Working in a Confined Space".

PERSONAL HANDLING INSTRUCTIONS
HANDLING: Avoid prolonged or repeated breathing of vapors, mists or fumes. Avoid prolonged or repeated contact with skin or eyes. Observe good personal hygiene practices and recommended procedures. Application of certain protective creams (sun screens for coal tar products) before working/several times during work may be beneficial.
STORAGE: Keep in a closed, labeled container within a cool (well shaded), dry-ventilated area. Protect from physical damage. Keep containers closed when material is not in use. Maintain good housekeeping.
OTHER: Not for use or storage in or around the home. DO NOT TAKE INTERNALLY. Do not use until manufacturer's precautions have been read/understood. Wash exposed areas promptly and thoroughly after skin contact and before eating, drinking, using tobacco products or rest rooms.

REACTIVITY DATA
CONDITIONS CONTRIBUTING TO INSTABILITY: Overheating
INCOMPATABILITY: none known
HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS: none
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: none

PHYSICAL DATA
BOILING POINT: 180 C (355 F)
MELTING POINT: NA
VAPOR PRESSURE: 1 mm @ 30 C
VAPOR DENSITY (AIR=1): 1
SOLUBILITY (WATER): slight
APPEARANCE/ODOR: Brown to black liquid with creosote or tarry odor
SPECIFIC GRAVITY: 1.050 (min.)
% VOLATILE BY VOL: NA
EVAPORATION RATE (ETHER=1): slow
VISCOSITY: ND
PH: ND

COMMENTS
Persons with pre-existing disease in, or a history of ailments involving the skin may be at a greater risk of developing adverse health effects when exposed to this material.
The IARC monographs (Vol. 35) states that there is sufficient evidence for the carcinogenicity of creosote in experimental animals. The NTP 3rd Annual Report on Carcinogens states that creosote oils are carcinogenic in experimental animals. Creosote does not appear in the OSHA Subpart Z table.
The application of a commercially available sun-blocking lotion is recommended to greatly reduce the phototoxicity of coal tar associated sun burning. The lotion should be applied prior to the application of the barrier cream and should have a sun protection factor (SPF) greater than 15. Application of barrier creams, i.e., Ply 9 Gel, Fend A-2 Cream, Kerodex 51 to prevent coal tar containing products from contacting skin before working/several times during work may be beneficial.
No known ingredients which occur at greater than 0.1%, other than those listed above, are listed as a carcinogen in the IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, the NTP Annual Report on Carcinogens or OSHA 29 CFR 1910.1001-1047 subpart Z Toxic and Hazardous Substances (Specifically Regulated Substances).
Do not wear contact lens without proper eye protection when using this product.
NOTICE: While the information and recommendations set forth herein are believed to be accurate as of the date hereof, Koppers Company makes no warranty with respect thereto and disclaims all liability from reliance thereon.

Misc.

UP-1947

GENERAL CONSIDERATIONS FOR MISCELLANEOUS PRODUCTS

The products in this group are associated with the various activities present in the work environment. Each of the products has specific requirements for safety and health.

Refer to the safety and health information contained on the MSDS and product label for the specific products being used at your location before each use.

MISCELLANEOUS PRODUCTS

1. Fire Extinguisher, Dry Chemical
2. Fusee
3. Torpedoes
4. Kerosene
5. Tie Saver
6. Propane
7. Corrosion Inhibitor
8. Rail Saw Blades
9. Grinding Wheels
10. Ballast - Slag
11. Ballast - Granite
12. Air Line Antifreeze
13. Battery Acid (Electrolyte)
14. Granular Weed Killer
15. Cement
16. Epoxy
17. Paraffin Oil

UP-1950

General Information
Chemical Name / Synonym / Trade Name:
PLUS-FIFTY B
Dry Chemical Extinguishing Agent
Manufacturer Name:
Ansul Fire Protection
CAS Number:
1318-94-1
144-55-8
557-04-8
00147-14-8
PLUS-FIFTY B Quick Identifier (In Plant Common Name)
MANUFACTURER'S NAME: Ansul Fire Protection Wormald U.S., Inc
Prepared By: Safety and Health Department
Emergency Telephone No. (715) 735-7411
Date Prepared: November 15, 1985

IDENTITY
Common Name: (Used on label Plus-Fifty B
(Trade Name and Synonyms): Dry Chemical Extinguishing Agent
Chemical Name: N/A This is a mixture
Formula: N/A
CAS No.: N/A
Chemical Family: Mixture

INGREDIENTS
Part A - HAZARDOUS INGREDIENTS:

Principal Hazardous Component(s) (chemical and common name(s))	%	CAS No.	ACGIH TLV
Talc (mineral dust)	Less Than 5	1318-94-1	20Mppcf(*)

*Million particles per cubic foot

Part B - OTHER INGREDIENTS:

Other Component(s) (chemical and common name(s)	%	CAS No.	Acute Toxicity Data
Sodium Bicarbonate	Greater Than 95	144-55-8	Oral LD(50) rat 4220 mg/kg
Magnesium Stearate	Less Than 1	557-04-8	Not established
Blue Pigment (Hostaperm Blue)	Less Than 0.5	00147-14-8	Not established

PHYSICAL AND CHEMICAL CHARACTERISTICS
(Fire and Explosion Data)
Boiling Point: N/A
Percent Volatile by Volume (%): N/A

Evaporation Rate (= 1): N/A
Appearance and Odor: Blue colored powder, no characteristic odor.
Specific Gravity (H(2)O=1): N/A
Vapor Density (Air = 1): N/A
Vapor Pressure (mm Hg): N/A
Solubility in water: Slight
Reactivity in Water: Unreactive
Flash Point: None
Special Fire Fighting Procedures: N/A THIS IS AN EXTINGUISHING AGENT.
Unusual Fire and Explosion Hazards: None
Flammable Limits in Air % by Volume: N/A
Extinguisher Media: N/A
Auto-Ignition Temperature: N/A

PHYSICAL HAZARDS
Stability: Stable
Incompatibility (Materials to Avoid): Strong acids, Na K alloy and NH(4)H(2)PO(4)
Hazardous Decomposition Products: CO(2)
Hazardous Polymerization: Will Not Occur
Conditions to Avoid: N/A
Conditions to Avoid: N/A

HEALTH HAZARDS
THRESHOLD LIMIT VALUE: OSHA nuisance dust limit of 15mg/m(3) or ACGIH Nuisance dust value of 10 mg/m(3) for the eight hour time-weighted average.
Routes of Entry:
Eye Contact: Mildly irritating for a short period of time.
Skin Contact: May be mildly irritating.
Inhalation: Treat as a mineral dust. Irritant to the respiratory tract.
Ingestion: Not an expected route of entry.
Signs and Symptoms
Acute Overexposure: Transient cough, shortness of breath.
Chronic Overexposure: Talcosis, pulmonary fibrosis.
Medical Conditions Generally Aggravated by Exposure: Reactive airway.
Chemical Listed as Carcinogen or Potential:
National Toxicology Program: No
I.A.R.C. Monographs: No
OSHA: No

EMERGENCY AND FIRST AID PROCEDURES
Eye Contact: Flush with large amounts of water; if irritation persists, seek Medical attention.
Skin Contact: Wash with soap and water; if irritation persists, seek Medical attention.
Inhalation: Remove victim to fresh air. Seek Medical attention if discomfort continues.

Ingestion: If patient is conscious, give large amounts of water and induce vomiting. Seek Medical help.

SPECIAL PROTECTION INFORMATION
Respiratory Protection
(Specify Type): Dust mask where dustiness is prevalent, or TLV exceeded. Mechanical filter respirator if exposure is prolonged.
Ventilation:
Protective Gloves: N/A
Other Protective Clothing or Equipment: If irritation occurs, long sleeves and impervious gloves should be worn.
Local Exhaust:
Eye Protection: Recommended as a mechanical barrier for prolonged exposure.
Mechanical (General): Recommended.

SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES
Precautions To Be Taken In Handling and Storage: Should be stored in original container or Ansul fire extinguisher.
Other Precautions: Do not mix agents.
Steps to be Taken in Case Material is Released or Spilled: Sweep up.
Waste Disposal Methods: Dispose of in compliance with all local, state, and Federal regulations.

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UP-1954

SECTION I - IDENTIFICATION
CHEMICAL NAME & SYNONYMS: FUSEE
CHEMICAL FAMILY: Not applicable
FORMULA: Mixture
TRADE NAME: FUSEE
DESCRIPTION: Elongated paper tube containing a yellow powder with fuel oil odor
CAS NO.: Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in a cool, well-ventilated place away from all sources of ignition. If tube is broken, do not get contents in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust. Upon contact with skin or eyes, wash off with water. Exercise caution when using this product since molten flecks may be emitted. Do not use product near any flammable or combustible materials.
PROTECTIVE EQUIPMENT:
Eyes: Follow directions on package.
Gloves: Do not point an ignited flare toward face or body.
Other:
VENTILATION REQUIREMENTS: This product should be used only outdoors. If used indoors, local mechanical exhaust ventilation is recommended to minimize exposure.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Strontium nitrate	None established	2750 mg/kg (rat)	No data	Irritant to skin, eyes and mucous membranes
Potassium perchlorate	None established	No data	No data	Irritant to skin, eyes and mucous membranes
Sulfur	None established	No data	No data	May cause eye and mucous membrane irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT METHOD: Contents 350 F
OSHA CLASSIFICATION: Flammable solid
FLAMMABLE EXPLOSIVE LIMITS:
LOWER: ND
UPPER: ND
EXTINGUISHING MEDIA: Water, sand
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES: Use NIOSH/MSHA approved self-contained breathing apparatus where this material is involved in a

fire.

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: None established for mixture.
SYMPTOMS OF OVER EXPOSURE: Tube contents are corrosive to the eyes and irritating to respiratory tract.
EMERGENCY FIRST-AID PROCEDURES:
SKIN: Flush with water for 15 minutes, call a physician.
EYES: Flush with water for 15 minutes, call a physician.
INGESTION: If contents are ingested: Drink large quantities of water. Induce vomiting by sticking finger down throat. Call a physician.
INHALATION: Remove victim to fresh air. Call a physician.

SECTION VI - TOXICOLOGY (Product)
ACUTE ORAL LD 50: Approx 3 g/kg (rat)
ACUTE DERMAL LD 50: >2 g/kg (rabbit)
ACUTE INHALATION LC 50: Not established
CARCINOGENICITY: Not known to be carcinogenic
MUTAGENICITY: Not known to be mutagenic
EYE IRRITATION: Corrosive
PRIMARY SKIN IRRITATION: Not an irritant
PRINCIPAL ROUTES OF ABSORPTION: Inhalation, dermal
EFFECTS OF ACUTE EXPOSURE: Tube contents are corrosive to the eyes and irritating to respiratory tract. Inhalation of combustion products will irritate eyes, mucous membranes, lungs.
EFFECTS OF CHRONIC EXPOSURE: None expected from proper use.

SECTION VII - SPILL AND LEAKAGE PROCEDURES
(Control Procedures)
ACTION FOR MATERIAL RELEASE OR SPILL: In large quantity, remove all sources of ignition. Wear NIOSH/MSHA approved dust respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Clean up in a manner to minimize contamination with organic material. Do not return material to original container. Place in a fresh container and isolate. Do not seal the container.
In the event of a large spill use the emergency telephone number shown on the front of this sheet.
TRANSPORTATION EMERGENCY, CONTACT CHEMTREC: 800-424-9300
WASTE DISPOSAL METHOD: 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.

SECTION VIII - SHIPPING DATA
D.O.T. CLASS: Fusee (Railway or Highway) Flammable Solid, NA 1325

SECTION IX - REACTIVITY DATA
X UNSTABLE
STABLE
AT Deg. C Deg. F
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR X
MAY OCCUR
CONDITIONS TO AVOID: High heat, ignition sources of any kind
INCOMPATIBILITY (Materials to Avoid): Strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Sulfur dioxide, nitrogen oxides, carbon monoxide

SECTION X - PHYSICAL DATA
MELTING POINT: No data
BOILING POINT: No data
SPECIFIC GRAVITY (H(2)O = 1): No data
VAPOR PRESSURE: No data
SOLUBILITY IN WATER: No data
pH: No data
VOLATILES: No data
EVAPORATION RATE: No data
VAPOR DENSITY (Air = 1): No data
INFORMATION FURNISHED BY: Environmental Hygiene and Toxicology Department (203) 789-5436
DATE: February 10, 1986
Department of Environmental Hygiene and Toxicology (203) 789-5436

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UP-1958

UPRR
MSDS Data: Chemical: Railroad Safety Signal (Torpedo)

ON-LINE MSDS
UP-02149

General Information
Olin CORPORATION
120 Long Ridge Road, Stamford, Connecticut 06904
OCEAN(R) Network
EMERGENCY PHONE: 1-800-OLIN-911

SECTION I - IDENTIFICATION
CHEMICAL NAME & SYNONYMS:
CHEMICAL FAMILY: Not applicable
DESCRIPTION: Sand colored solid
FORMULA: Mixture
TRADE NAME: TORPEDO
CAS NO: Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in a cool, well-ventilated place away from all sources of ignition. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes. Upon contact with skin or eyes wash off with water.
PROTECTIVE EQUIPMENT:
Eyes: None required unless container is broken, then goggles
Gloves: None required
Other: None required
VENTILATION REQUIREMENTS: None beyond normal good room ventilation

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SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50
Silica	30 mg/m(3) % S10(2) + 2		
Sec. butyl acetate	200 ppm		
Isopropyl acetate	250 ppm	3.00 gm/kg (rat)	
Potassium chorate		429 mg/kg rat	

BASIC MATERIAL	SIGNIFICANT EFFECTS
Silica	Lung involvement
Sec. butyl acetate	Narcosis, eye irritation
Isopropyl acetate	Eye irritation, narcosis
Potassium chorate	Cyanosis

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT METHOD: Not applicable
OSHA CLASSIFICATION: Flammable solid
FLAMMABLE EXPLOSIVE LIMITS:
LOWER: ND
UPPER: ND

EXTINGUISHING MEDIA: Sand, water deluge
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES: breathing apparatus where this material is involved in a fire.
Use NIOSH/MSHA: approved self-contained

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE: None established.
SYMPTOMS OF OVER EXPOSURE: Contents cause skin, eye and mucous membrane irritation, narcosis.
EMERGENCY FIRST-AID PROCEDURES:
SKIN: If exposed to contents flush thoroughly with water.
EYES: If exposed to contents flush with water for 15 minutes, call a physician.
INGESTION: If exposed to contents drink water, induce vomiting by sticking finger down throat, call a physician.
INHALATION: If exposed to contents remove victim to fresh air, call a physician.

SECTION VI - TOXICOLOGY (Product)
ACUTE ORAL LD 50: No available data
ACUTE DERMAL LD 50: No available data
ACUTE INHALATION LC 50: No available data
CARCINOGENICITY: Not known to be carcinogenic
MUTAGENICITY: Not known to be mutagenic
EYE IRRITATION: Irritant
PRIMARY SKIN IRRITATION: Irritant
PRINCIPAL ROUTES OF ABSORPTION: Inhalation of container contents
EFFECTS OF ACUTE EXPOSURE: Contents cause skin, eye and mucous membrane irritation, narcosis, dermatitis
EFFECTS OF CHRONIC EXPOSURE: Dust - pulmonary damage, dermatitis

SECTION VII - SPILL AND LEAKAGE PROCEDURES
(Control Procedures)
ACTION FOR MATERIAL RELEASE OR SPILL: Remove all sources of ignition. Wear NIOSH/MSHA approved dust respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container. Minimize contamination with organic material. Do not return material to original container. Isolate and do not seal. Use non-sparking utensils. Wash all contaminated clothing before reuse. In the event of a large spill use the emergency telephone number shown on the front of this sheet.
TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300
WASTE DISPOSAL METHOD: 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.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS: Railway Torpedo, Class B explosive

SECTION IX - REACTIVITY DATA
STABLE: UNSTABLE
Greater than 212 Deg F:
CONDITIONS TO AVOID: High heat > 212 Deg. F
INCOMPATIBILITY(Materials to Avoid): Acids
HAZARDOUS DECOMPOSITION PRODUCTS: Sulfur oxides, chlorine oxides, nitrogen oxides
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION X - PHYSICAL DATA
MELTING POINT: No data
BOILING POINT: No data
SPECIFIC GRAVITY: (H(2) =1) No data
VAPOR PRESSURE: No data
SOLUBILITY IN WATER: No data
pH: No data
VOLATILES: No data
EVAPORATION RATE: No data
VAPOR DENSITY (Air = 1): No data
INFORMATION FURNISHED BY: C.C. Noonan (203) 789-5436
DATE: November 20, 1985
Department of Environmental Hygiene and Toxicology (203) 789-5436

General Information
Chemical Name / Synonym / Trade Name:
KEROSENE
Manufacturer Name:
EXXON COMPANY, U.S.A.
CAS Number:
8008-20-6
8008-20-6
EXXON COMPANY, U.S.A. P.O. BOX 2180 HOUSTON, TX 77252-2180

IDENTIFICATION AND EMERGENCY INFORMATION
PRODUCT NAME: KEROSENE
CHEMICAL NAME: Kerosene
PRODUCT APPEARANCE AND ODOR: Clear water-white liquid Mild kerosene odor
EMERGENCY TELEPHONE NUMBER: (713) 656-3424
PRODUCT CODE: 055000 - 00700
CAS NUMBER: 8008-20-6

COMPONENTS AND HAZARD INFORMATION

COMPONENTS	CAS NO. OF COMPONENTS	APPROXIMATE CONCENTRATION
Kerosene, ASTM Grade 2-K	8008-20-6	100%

This product is not suitable for use in flueless space heaters. Exxon USA does not recommend any of its fuels or solvents for use in any type of flueless space heater application. Test results published to date are insufficient to overcome concerns regarding the health effects of normal combustion products from flueless units.
See Section E for Health and Hazard Information
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):
Health: 1
Flammability: 2
Reactivity: 0
BASIS: Recommended by Exxon
EXPOSURE LIMIT FOR TOTAL PRODUCT: 100 ppm (735 mg/m(3) for an 8-hour workday
BASIS: Recommended by Exxon

PRIMARY ROUTES OF ENTRY & EMERGENCY & FIRST AID PROCEDURES
EYE CONTACT: If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.
SKIN CONTACT: In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water.
INHALATION: If overcome by vapor, remove from exposure and call a physician immediately. If breathing is irregular or has stopped, start resuscitation, administer oxygen, if available.
INGESTION: If ingested, DO NOT induce vomiting; call a physician

immediately.

FIRE AND EXPLOSION HAZARD INFORMATION
FLASH POINT (MINIMUM):
COMBUSTIBLE: Per DOT 49 CFR 173.115 38 C (100 F) ASTM D 56, Tag Closed Cup
NOTE: Minimum may be higher where required by applicable laws or regulations.
AUTOIGNITION TEMPERATURE: Approximately 210 C (410 F)
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA): HAZARD IDENTIFICATION
Health: 0
Flammability: 2
Reactivity: 0
BASIS: Recommended by the National Fire Protection Association
HANDLING PRECAUTIONS: Keep product away from heat, sparks, pilot lights, static electricity, and open flame.
FLAMMABLE OR EXPLOSIVE LIMITS (APPROXIMATE PERCENT BY VOLUME IN AIR):
Estimated values:
Lower Flammable Limit: 0.9%
Upper Flammable Limit: 7%
EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES: Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type of product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.
The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):
Use water spray, dry chemical, foam or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for men attempting to stop a leak. Water spray may be used to flush spills away from exposures. Minimize breathing gases, vapor, fumes or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.
DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS: Fumes, smoke, carbon monoxide, aldehydes and other decomposition products, in the case of incomplete combustion.
"EMPTY" CONTAINER WARNING: "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other

contemplated operations.

HEALTH AND HAZARD INFORMATION

VARIABILITY AMONG INDIVIDUALS: Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Prolonged or repeated liquid contact with the skin will dry and defat the skin, leading to possible irritation and dermatitis. High vapor concentrations (greater than approximately 1000 ppm) are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic, may cause unconsciousness, and may have other central nervous system effects including death.

NATURE OF HAZARD AND TOXICITY INFORMATION: Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.

Product contacting the eyes may cause eye irritation.

Lifetime skin painting studies conducted by the American Petroleum Institute, Exxon and others have shown that similar products boiling between 175-370 C (350-700 F) usually produce skin tumors and/or skin cancer in laboratory mice. The degree of carcinogenic response was weak to moderate with a relatively long latent period. The implications of these results for humans have not been determined.

Limited studies on oils that are very active carcinogens have shown that washing the animals' skin with soap and water between applications greatly reduces tumor formation. These studies demonstrate the effectiveness of cleansing the skin after contact.

Potential risks to humans can be minimized by observing good work practices and personal hygiene procedures generally recommended for petroleum products. See Section I for recommended protection and precautions.

Laboratory animal studies have shown that prolonged and repeated inhalation exposure to light hydrocarbon vapors in the same naphtha boiling range as this product can produce adverse kidney effects in male rats. However, these effects were not observed in similar studies with female rats and male and female mice and in limited studies with other animal species. Additionally, in a number of human studies, there was no clinical evidence of such effects at normal occupational levels. It is therefore highly unlikely that the kidney effects observed in male rats have significant implications for humans exposed at or below the recommended vapor limits in the workplace.

Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

This product is judged to have an acute oral LD50 (rat) greater than 5 g/kg of body weight, and an acute dermal LD50 (rabbit) greater than 3.16 g/kg of body weight.

PHYSICAL DATA
The following data are approximate or typical values and should not be used for precise design purposes.
BOILING RANGE: 160-290 C (320-550 F)
SPECIFIC GRAVITY (15.6 C/15.6 C): 0.82
MOLECULAR WEIGHT: Approximately 180
pH: Essentially neutral
POUR, CONGEALING OR MELTING POINT: -34 C (-30 F) Pour Point by ASTM D 97
VISCOSITY: 1.7 cSt @ 40 C
VAPOR PRESSURE: Less than 5 mm Hg @ 20 C
VAPOR DENSITY (AIR = 1): 4.7
PERCENT VOLATILE BY VOLUME: 100
EVAPORATION RATE @ 1 ATM. AND 25 C (77 F) (n-BUTYL ACETATE = 1): 0.04
SOLUBILITY IN WATER @ 1 ATM. AND 25 C (77 F): Negligible; less than 0.1%

REACTIVITY
This product is stable and will not react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shut off and eliminate all ignition sources. Keep people away. Recover free product. Add sand, earth or other suitable absorbent to spill area. Minimize breathing vapors. Minimize skin contact. Ventilate confined spaces. Open all windows and doors. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Assure conformity with applicable governmental regulations. Continue to observe precautions for volatile, combustible vapors from absorbed material.

PROTECTION AND PRECAUTIONS
VENTILATION: Use only with ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. Use explosion-proof equipment. No smoking or open lights.
RESPIRATORY PROTECTION: Use supplied-air respiratory protection in confined or enclosed spaces, if needed.
PROTECTIVE GLOVES: Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.
EYE PROTECTION: Use splash goggles or face shield when eye contact may occur.
OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.
WORK PRACTICES / ENGINEERING CONTROLS: Keep containers and storage containers closed when not in use. Do not store near heat, sparks, flame

or strong oxidants.

PERSONAL HYGIENE: Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION: For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous Materials Incidents, DOT P 5800.3.

DOT IDENTIFICATION NUMBER: UN 1223

The information and recommendations contained herein are, to the best of Exxon's knowledge and belief, accurate and reliable as of the date issued. Exxon does not warrant or guarantee their accuracy or reliability, and Exxon shall not be liable for any loss or damage arising out of the use thereof.

The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use.

The Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) ratings have been included by Exxon Company, U.S.A. in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria supplied by the developers of these ratings systems, together with Exxon's interpretation of the available data.

FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT: Director of Industrial Hygiene Exxon Company, USA P.O. Box 2180 Room 2737 Houston, Tx 77252-2180

FOR OTHER PRODUCT INFORMATION CONTACT: Manager, Marketing Technical Services Exxon Company, USA P.O. Box 2180 Room 2355 Houston, Tx 77252-2180

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UPRR ON-LINE MSDS
MSDS Data: Chemical: Tie-Savr UP-02399

General Information
Chemical Name / Synonym / Trade Name:
Tie-Savr
Asphalt, Bitumen
Manufacturer Name:
Racine Railroad Products Co.
CAS Number:
8052-42-4
14808-60-7
P.O. Box 4029 1524 Frederick Street Racine, Wisconsin 53404 (APPROVED BY U. S. DEPARTMENT OF LABOR AS "ESSENTIALLY SIMILAR" TO FORM OSHA-20)
VENDOR'S NAME: Racine Railroad Products Co.
PURCHASE ORDER NO.:
COMMODITY: Tie-Savr
REQUISITION NO.:
MANUFACTURER'S NAME: Racine Railroad Products, Inc.
ADDRESS (Number, Street, City, State, and ZIP Code): 1524 Frederick Street, P.O. Box 4029, Racine, WI 53404
EMERGENCY TELEPHONE NO: 414-637-9681
CHEMICAL NAME AND SYNONYMS: Asphalt, Bitumen
TRADE NAME AND SYNONYMS: Tie-Savr
CHEMICAL FAMILY: Aliphatic Hydrocarbons
DOT IDENTIFICATION NO. (49 CFR 172.101):
DOT HAZARDOUS MATERIALS DESCRIPTION AND PROPER SHIPPING NAME (49 CFR 172.101)
DOT HAZARD CLASS (49 CFR 172.101)

CHEMICAL COMPOSITION

INGREDIENTS	C.A.S. NUMBER
Hydron Carbons	8052-42-4
Silicon Sand	14808-60-7

PHYSICAL DATA
BOILING POINT (F.): 700 min.
VAPOR PRESSURE (mmHg.): 1 max.
VAPOR DENSITY (AIR=1): 0.01 max
SOLUBILITY IN WATER: 0.1% max.
APPEARANCE AND ODOR: Black None
SPECIFIC GRAVITY (H(2)O=1): 1.0
PERCENT VOLATILE BY VOLUME (%): 0.1% max.
EVAPORATION RATE (Toluah =1): 0.01 max.

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (Method Used): 600 + F
EXTINGUISHING MEDIA: Dry, Carbon Dioxide
SPECIAL FIRE FIGHTING PROCEDURES: None
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

FLAMMABLE LIMITS:
Lel:
Uel:

HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE (ACGHI): "Inert" or nuisance dust
EFFECTS OF OVEREXPOSURE: May cause unpleasant deposits in the eyes, ears and nasal passages
PERMISSIBLE EXPOSURE LIMIT (OSHA): 5mg/m3 Niosh 1977
EMERGENCY AND FIRST AID PROCEDURES: If breathed, use standard dust treatment. If burned, remove with mineral oil, not solvent injurious to the skin. See your physician.

REACTIVITY DATA
STABILITY: STABLE
CONDITIONS TO AVOID: Oxidizing media
INCOMPATABILITY (Materials to avoid): Oxidizing materials
HAZARDOUS DECOMPOSITION PRODUCTS: None
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep up material
WASTE DISPOSAL METHOD: Use usual procedure solid materials

SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type): Dust mask approved by U.S. Bureau Mines
VENTILATION:
LOCAL EXHAUST: Recommended
MECHANICAL (General): Recommended
SPECIAL:
OTHER:
PROTECTIVE GLOVES: Standard for dust
EYE PROTECTION: Dust Protection
OTHER PROTECTIVE EQUIPMENT:

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid breaking cartons
PRECAUTIONARY LABELING:
OTHER PRECAUTIONS: Avoid excessive stacking
VENDOR IS TO SIGN BELOW: Ray Zukowski
TITLE: V. P. Sales
DATE: 11-2-87

General Information
Chemical Name / Synonym / Trade Name:
Propane
Liquified compressed gas
Manufacturer Name:
Amoco Oil Company
CAS Number:
74-98-6
Trade Name and Synonyms: Propane
Manufacturer's Name: Amoco Oil Company
Address: 200 East Randolph Drive, Chicago, Illinois 60601
Product Identification: Liquified compressed gas
CAS Number: 74-98-6
EPA Number:
Formula: CH(3)CH(2)CH(3)
Emergency Phone Number: (312) 856-5371
Warning Statement: Danger! Extremely flammable Vapor can be harmful or fatal if high concentrations are inhaled. Contact with liquid causes frostbite.
DOT Classification: Liquified Petroleum Gas, Flammable Gas, UN 1075

Important Components
Propane
Permissible Exposure Concentration: OSHA PEL 1,000 ppm; ACGIH - classed as a simple asphyxiant.

Health Effects of Exposure
Eye: None expected as a gas, Contact with liquid causes frostbite.
Skin: None expected as a gas. Contact with liquid causes frostbite.
Inhalation: Inhalation of high concentrations produces dizziness, drowsiness, incoordination, difficult breathing, loss of consciousness and possibly suffocation.
Ingestion: Not applicable.

Emergency And First Aid Procedures
Eye Contact: Liquid - immediately flush with plenty of water for at least 15 minutes. Then get immediate medical attention.
Skin Contact: Liquid - immediately flush with plenty of tepid water (105-115 F; 41-46 C). DO NOT USE HOT WATER. Get prompt medical attention.
Inhalation: If adverse effect occur, remove to uncontaminated area; give artificial respiration if not breathing. Give oxygen if breathing is difficult. Get immediate medical attention.
Ingestion: Not applicable.

Personal Protection Information

Eye: Chemical goggles to prevent contact with liquid.
Skin: As needed to prevent contact with liquid - wear gloves, impervious clothing and face shield.
Respiratory: If ventilation is inadequate, use self-contained breathing apparatus approved by NIOSH-MSHA
Ventilation (Type Required): Local exhaust ventilation in enclosed areas.

Fire Protection Information
Flash Point (Method): -156 F (CC)
Autoignition Temperature: 842 F
Flammable Limits (by Volume in Air):
Upper: 9.5%
Lower: 2.1%
Extinguishing Media: Stop flow of gas if possible; if not, allow to burn. Use water spray to cool fire-exposed containers & protect workers effecting shut-off. Do not direct water into liquid spill. Dry chemical can be used. Use water spray to disperse gas or vapors.
Unusual Fire and Explosion Hazards: Extremely flammable. Containers may explode. Vapor is heavier than air and may travel a long distance to a source of ignition and flash back.

Physical Properties And Reactivity Data
Boiling Point (F): -43.8
Melting Point (F): approx. -306
Specific Gravity (Water=1): 0.51 @ 60 F
Viscosity: Not applicable
Appearance and Odor: Colorless gas; odorant may be added
Hazardous Polymerization: Does NOT Occur
Products Formed When Subjected to High Temperature or Combustion:
Combustion: carbon, carbon monoxide, carbon dioxide, various hydrocarbons and hydrocarbon derivatives.
Materials to Avoid: Strong oxidizers

Storage and Environmental Protection
Storage Requirements: Outside storage is recommended. Store away from combustible material.
Procedures In Case of Breakage or Leakage: Eliminate sources of ignition; stop flow of gas; use water spray to disperse vapors and to protect workers effecting shut-off,
Waste Disposal: Vent vapor at a safe location. Insure dissipation of gas below the lower explosive limit. Consult applicable ordinances for compliance.
Biodegradability:
Yes:
No:
Unknown:
Bioaccumulation:
Yes:

concentration of the material which will produce death in 50 per cent of test animals. For inhalation, the exposure time is indicated.
Irritation Index: An empirical score for eye and skin irritation when tested by the methods described in Section 1500 40 of the Federal Hazardous Substances Act.
Sensitizer: A substance which will ??? living tissue, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance

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Emergency and First Aid Procedures
Gives first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

Personal Protection Information
Eye, Skin, Respiratory: The type of protective equipment that is necessary for the safe handling and use of the product.
Ventilation: Refers to the type recommended: i.e., local exhaust, mechanical, etc.

Fire Hazard Information
Flash Point (State Method Used): The temperature in degrees F at which a liquid will give off enough flammable vapor to ignite in the presence of a source of ignition.
Autoignition Temperature: The minimum temperature required for a substance to initiate self combustion in the absence of a spark or flame.
Flammable Limits: The range of gas or vapor concentration (per cent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper the upper flammable limit given in per cent.
Extinguishing Media: Specifies the fire fighting agent(s) that should be used to extinguish fires.
Unusual Fire and Explosion Hazards: Refers to special procedures required if unusual fire hazards are involved.

Physical Properties and Reactivity Data
Vapor Pressure: The pressure of saturated vapor above the liquid expressed in mm Hg at 20 C.
Viscosity: A measure of the resistive flow of liquid due to gravity or for viscous liquids a measure of the resistance to turning or twisting. State *method, units and temperature.*
Vapor Density: The relative density or weight of a vapor or gas (with no air present) compared with an equal volume of air at ambient temperature.
pH: The degree of acidity or basicity of the material it specific concentration
Specific Gravity: The ratio of the weight of the material to the weight of an equal volume of water.
Solubility in Water: The solubility of a material by weight in water at

No:
Unknown:

Marketing And Use Regulated By (Specific Regulations)
FDA:
USDA:
Other (Specify):

Comments
Hazard warnings: DANGER! EXTREMELY FLAMMABLE VAPOR CAN BE HARMFUL OR FATAL IF HIGH CONCENTRATIONS ARE INHALED. CONTACT WITH LIQUID CAUSES FROSTBITE.
FOR INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Give oxygen if breathing is difficult. Get immediate medical attention.
FOR EYES: Contact with liquid - immediately flush with plenty of water for at least 15 minutes. Then get immediate medical attention.
FOR SKIN: Contact with liquid - immediately flush with plenty of tepid water (105-115 F; 41-46 C). DO NOT USE HOT WATER. Get prompt medical attention.
N/A -: Data not available
Information Supplied By: Stephen A. Elbert
Signature:
Title: Director Product Safety (USA)
Date: July 12, 1984
Trade Name & Synonyms: The name under which the product is marketed and the common commercial name of the product.
Product Identification: The chemical or generic name of single elements and compounds or for compounded products and mixtures, the general type of product, e.g., calcium complex grease, motor oil, polymer, sulfonate, surfactant, etc.
CAS Number: The Chemical Abstracts Registry number, if applicable.
EPA Number: The code number assigned by the Environmental Protection Agency, if applicable.
Formula: The chemical formula for single elements or compounds.
DOT Classification: The appropriate classification as determined by the regulations of the Office of Hazardous Materials, Department of Transportation.
Important Components: The major component as well as any minor one(s) having potential for harm which are considered when evaluating the product.
Permissible Exposure Concentration: Indicates Threshold Limit Value (TLV), any limit established by a governmental regulatory agency, or an estimate if none have been established.

Health Effects of Exposure
Possible health hazards as derived from human observation, animal studies or from the results of studies with similar products.
Medial Lethal Dose or Concentration (LD50, LC50): That dose or

room temperature. The terms negligible, less than 0.1 per cent; slight, 0.1 to 1 per cent; moderate 1 to 10 per cent; appreciable, 10 per cent or greater.

Appearance and Odor: The general characterization of the material, i.e., powder, colorless liquid, aromatic odor, etc.

Hazardous Polymerization: Refers to that reaction which takes place at a rate which releases large amounts of energy. Indicates whether or not it may occur and under what storage conditions.

Materials to Avoid: Indicates those material or conditions causing the product to react violently, releasing large amounts of energy.

Storage and Environmental Protection

Procedure in Case of Breakage or Leakage: Indicates precautions necessary in such events. Includes clean-up procedures and hazards that may be created, i.e., fire, explosions, etc.

Biodegradeability/Bioaccumulation: Indicates whether or not the product will biodegrade or bioaccumulate.

The information contained herein is based on data available to us and is believed to be correct. Since this information may have been obtained in part from independent laboratories or other sources not under our direct supervision, no representation is made that the information is accurate, reliable, complete or representative and Buyer may rely thereon only at Buyer's risk. We have made no effort to censor nor to conceal deleterious aspects of this product. Further, since we cannot anticipate or control the many different conditions under which this information or our products may be used, we make no guarantee that the health and safety precautions we have suggested will be adequate for all individuals and/or situations involving its handling and use. Likewise we make no guarantee or warranty of any kind that the use or disposal of this product is in compliance with all federal, state or local laws. It is the obligation of each user of the product mentioned herein to determine and comply with the requirements of all applicable statutes.

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UP-1977

General Information
Chemical Name / Synonym / Trade Name:
769 LUBRICANT(R)
769 LUBRICANT(R) (012492)
Penetrating Lubricant
Manufacturer Name:
JET-LUBE INC.
Chemical Family Name:
CAS Number:
DOT Classification:
NA Number:
UN Number:
MATERIAL SAFETY DATA SHEET
JET-LUBE INC.
4849 HOMESTEAD ROAD
P.O. BOX 21258
HOUSTON, TEXAS 77226
713/674-7617
TELEX
775393
HMIS/NFPA
Health: 1
Fire: 2
Reactivity: 0
P.P.I.: B
MSDS NO:
27500
< = LESS THAN
NR = NOT REQUIRED
> = GREATER THAN
UN = UNKNOWN
M = MAXIMUM
CL = CEILING
NA = NOT APPLICABLE
PK = PEAK
P.P.I. = Personal Protection Index
Signature:
Donald A. Oldiges
Prepared By:
D. A. Oldiges, Technical Director
Date Issued:
January 24, 1992
Disclaimer
The information contained herein is accurate and reliable as of the date issued to the best of Jet-Lube's knowledge. Jet-Lube doesn't warrant or guarantee its accuracy or reliability and shall not be liable for any loss or damage arising out of the use thereof. It is the user's responsibility to satisfy itself that the information offered for its consideration is suitable for its particular use.

UPRR
MSDS Data: Chemical: CORROSION INHIBITOR

ON-LINE MSDS
UP-01305

SECTION I: IDENTIFICATION AND EMERGENCY INFORMATION
JET-LUBE(R) Product:
769 LUBRICANT(R)
Chemical Name:
Penetrating Lubricant
Emergency Phone:
713-674-7617
Formula:
Proprietary

SECTION II: HAZARDOUS INGREDIENTS

Hazardous Components	CAS No.	Wt%	OSHA PEL	ACGIH TLV	Other Limits of Exposure
Petroleum Solvent	64742-47-8	65 Min	TWA 400 ppm	UN	UN
Petroleum Oil	64742-54-7 or 64742-65-0	25 Max	TWA 5mg/m3	UN	UN
Proprietary Additives		10 Max			

ALL COMPONENETS ARE LISTED IN THE TSCA INVENTORY.
THIS PRODUCT IS NOT HAZARDOUS BY D.O.T. GUIDELINES.

SECTION III: PHYSICAL & CHEMICAL DATA
Specific Gravity (H2O=1):
0.82
Boiling Point:
300F(149C)
Melting Point:
NA
Vapor Pressure (mm Hg):
<.05
Vapor Density (Air=1):
<5.0
Evaporation Rate (n-Butyl Acetate=1):
>0.1
Volume % Volatile:
10
Solubility in Water:
None
Reactivity With Water:
None
Appearance and Odor:
Amber colored liquid, petroleum odor

SECTION IV: FIRE & EXPLOSION HAZARD DATA
Flash Point (Method):
>175 Deg. F (79 Deg. C)
Flammable Limits:
LEL= 0.6%
UEL= <7.0%
Auto-Ignition Temperature:
>444 Deg. F (229 Deg. C)
Extinguishing Media:
Use foam, dry chemical, water spray (fog), carbon dioxide, or vaporizing liquid-type extinguishing agents.
Special Fire Fighting Procedures:
Use supplied-air breathing equipment for enclosed or confined spaces.
Unusual Fire and Explosion Hazards:
None

SECTION V: REACTIVITY DATA
Stability:
Stable (x)
Unstable ( )
Conditions to Avoid:
Strong oxidizing materials
Incompatible Materials:
Strong oxidizing materials
Hazardous Decomposition Products:
Carbon monoxide
Hazardous Polymerization:
(x) Will Not Occur
( ) May Occur

SECTION VI: HEALTH HAZARD DATA
Symptoms of Exposure:
Redness and irritation of skin.
Effects of Overexposure:
Repeated skin contact for persons hypersensitive to petroleum products can cause redness and irritation of skin.
Medical Conditions Potentially Aggravated by Exposure:
UN
Is Material Listed as Carcinogen or Potential Carcinogen?
No
National Toxicology Program:
No
IARC Monographs:
No

OSHA:
No
Emergency and First Aid Procedures (by route of entry)
Inhalation:
Call physician.
Ingestion:
If ingested, call physician.
Eyes:
Wash with copious quantities of water.
Skin:
Wash with soap and water.

SECTION VII: SPILL OR LEAK PROCEDURES
Steps to be Taken in Case Material is Released or Spilled:
Wipe up excess with rags, pick-up residue with diatomaceous earth to avoid walking hazard.
Waste Disposal Method:
Consult federal, state, and local regulations for petroleum products.

SECTION VIII: SPECIAL PROTECTION INFORMATION
Respiratory Protection (Type):
NR
Ventilation:
Local Exhaust:
NR
Special:
NR
Mechanical:
NR
Other:
NR
Protective Gloves:
NR
Eye Protection:
NR
Other:
NR
Other Protective Equipment:
Persons with hypersensitive skin should use gloves.
Special Hygienic Practice:
Wash hands before eating.

SECTION IX: SPECIAL PRECAUTIONS
Precautions to be Taken in Handling and Storing:
Normal precautions as with combustible liquid.

Other Precautions:
NR

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UP-1983

GENERAL INFORMATION
MATERIAL SAFETY DATA SHEET
NO: ALOX-I
DATE: 11/27/85

SECTION I NAME AND PRODUCT
MANUFACTURER:
KASCO Abrasives
580 Race St.
Coldwater, MI 49036
Emergency Telephone
1-800-367-7291
PRODUCT:
Aluminum oxide grinding wheels, cut-off wheels, and cups. Sold under the "KASCO" tradename.

SECTION II COMPOSITION
COMPOSITION RANGE:

Aluminum oxide grains	60-80%
Liquid phenolic resins (V8121)	0-6%
Powdered phenolic resins (V1930)	0-20%
Powdered phenolic resins (V1364)	0-20%
Powdered phenolic resins (V3034)	0-20%
Powdered phenolic resins (V1984)	0-20%
Calcium sulphate filler (CS1320)	2-15%

CB24 grinding wheel oil - 33cc per 1000 grams powdered resin
Reinforcement - Resin coated fiberglass fabric
Metal inserts and adaptors - Various

SECTION III PHYSICAL AND CHEMICAL DATA
The finished product is a nonreactive solid with a specific gravity ranging between 2 to 4. It has a slight solubility in water. Fire hazard is minimal.

SECTION IV STORAGE, HANDLING, AND USE PROCEDURES
NORMAL STORAGE AND HANDLING:
See ANSI B7.1

NORMAL USE:
Use with adequate ventilation
Wear full eye protection
Hearing protection recommended - See OSHA 29CFR1910.215

The use of gloves is recommended
The use of a dust mask is recommended under extended usage.

SPECIAL PRECAUTIONS:
Normal use the product will generate dust particles of grain, fiberglass, and the material being ground or cut. Decomposed resin fumes may also be generated. Use with proper protective equipment and ventilation.

Grinding and cut-off wheel products should be operated within the listed maximum RPM on each product.

All tool guards should be properly in place and functioning.

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UP-1986

DPRR ON-LINE MSDS
MSDS Data: Chemical: RESINOID BONDED GRINDING WHEELS UP-04213

General Information
Flammability Rating: 0
Health Rating: 1
Reactivity Rating: 0
HAZARD RATING: Please rate consistent with NFPA Code

SECTION I NAME AND PRODUCT
MANUFACTURER'S NAME: NORTON COMPANY
ADDRESS (STREET, CITY, STATE AND ZIP CODE): 1 NEW BOND STREET, WORCESTER, MA 01615-0008
TRADE NAME, COMMON NAME OR SPECIFICATION: RESINOID BONDED GRINDING WHEELS
CHEMICAL FAMILY OR PRODUCT TYPE: ANY GRADE
CONTACT: THOMAS Z. RICHARDS
EMERGENCY TELEPHONE NO.: 508-795-2690
APPROVED BY: 777
DATE: 1/23/89

SECTION II COMPOSITION PER 29CFR 1910.1200(G) (4)

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS #
Alpha-Alumina***	90	Alundum, Seeded Gel	Y	1344-28-1
Silicon Carbide	90	Crystolon	Y	409-21-2
Zirconia Alumina	90	NZ,ZF,ZS	Y	**NAIF

CHEMICAL NAME	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCINOGEN (Y/N)
Alpha-Alumina***	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Silicon Carbide	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Zirconia Alumina	5mg/m(3) (as Zirconium)	5mg/m(3) (as Zirconium)	N

The grinding wheel may be comprised of 1 or more of the above abrasives.
The chemicals listed below may be a part of the bond system.

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS #
Fluorides (as F)	3	***N/A	Y	***N/A
Calcium Oxide	3	Lime	Y	1305-78-8
Glass, Fibrous or Dust	10	Fiberglass	Y	**NAIF
Silicon Dioxide	<1	Crystalline Silica	Y	14808-60-7

CHEMICAL NAME	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCINOGEN (Y/N)
Fluorides (as F)	2.5mg/m(3)	2.5mg/m(3)	N
Calcium Oxide	5mg/m(3)	2mg/m(3)	N
Glass, Fibrous or Dust	**NAIF	10mg/m(3)	N
Silicon Dioxide	15mg/m(3)	0.1mg/m(3)	Y

*Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication

Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations.

SECTION III PHYSICAL AND CHEMICAL DATA
BOILING POINT: **NAIF
VAPOR PRESSURE: **NAIF
EVAPORATION RATE: **NAIF
SOLUBILITY IN OTHER SOLVENT: **NAIF
MELTING POINT: **NAIF
PERCENT VOLATILE BY VOL: **NAIF
SOLUBILITY IN WATER: SLIGHT
SPECIFIC GRAVITY: 2-4
VAPOR DENSITY: **NAIF
SOLUBILITY IN ALCOHOL: **NAIF
APPEARANCE AND ODOR
SOLID PRODUCT: MAY GIVE OFF ODOR IN USE.

SECTION IV SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NONE
OTHER PRECAUTIONS: **NAIF

SECTION V CORROSIVITY AND REACTIVITY DATA
STABILITY: STABLE
POLYMERIZATION: WILL NOT OCCUR
INCOMPATIBILITY (MATERIALS TO AVOID): **NAIF
DECOMPOSITION PRODUCTS: In use, dust and decomposing organic fumes are are generated. In most cases, the material removed from the workplace will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.
CONDITIONS TO BE AVOIDED: **NAIF
**NAIF: NO APPLICABLE INFORMATION FOUND
**N/A: NOT APPLICABLE
****SUBJECT TO EPA SECTION 313 REPORTING UNDER SARA 40CFR PART 372.
A PETITION HAS BEEN SUBMITTED TO THE EPA TO DELIST IT.

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA
PRIMARY ROUTE(S) OF ENTRY:
INHALATION (During Grinding)
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE
ACUTE: COUGHING, SHORTNESS OF BREATH.
CHRONIC: MAY AFFECT BREATHING CAPACITY.
FIRST AID AND MEDICAL INFORMATION: REMOVE TO FRESH AIR.
ARTIFICIAL RESPIRATION AS NEEDED.
OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S) OF ENTRY:
INGESTION (During Grinding)
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE

NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.
FIRST AID AND MEDICAL INFORMATION: OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S) OF ENTRY:
SKIN (During Grinding)
CONTACT & ABSORPTION
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.
FIRST AID AND MEDICAL INFORMATION: WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S) OF ENTRY:
EYE (During Grinding)
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: DUSTS MAY IRRITATE EYES.
FIRST AID AND MEDICAL INFORMATION: WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AND MEDICAL ASSISTANCE, IF NEEDED.
PRIMARY ROUTE(S) OF ENTRY:
OTHER POTENTIAL HEALTH RISKS (During Grinding)
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CONDITIONS.
FIRST AID AND MEDICAL INFORMATION: OBTAIN MEDICAL ASSISTANCE.
THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.

SECTION VII STORAGE, HANDLING AND USE PROCEDURES
NORMAL STORAGE AND HANDLING: SEE ANSI STANDARD B7.1.
NORMAL USE: HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CONTAMINANTS)
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS: NORMAL CLEANUP PROCEDURES.
WASTE DISPOSAL METHOD: STANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS.
PRODUCTS WITH LISTED FLOURIDES MAY HAVE SLIGHTLY SOLUBLE FLOURIDE SWARF.

SECTION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (SPECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.
VENTILATION:
LOCAL: RECOMMENDED
MECHANICAL (GENERAL): RECOMMENDED
OTHER: **NAIF
PROTECTIVE GLOVES: AS DESIRED BY USER
EYE PROTECTION: RECOMMENDED SEE OSHA 29CFR 1910.133
OTHER EQUIPMENT: AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95 (HEARING PROTECTION)
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL. SEE SECTION VII & VIII

SECTION IX FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: **NAIF
EXTINGUISHING MEDIA: USE WATER
SPECIAL FIRE FIGHTING PROCEDURES: NONE
EXPLOSION POTENTIAL: **NAIF
METHOD USED: ***N/A
FLAMMABLE LIMITS:
LEL: N/A
UEL: ***N/A
FOR COMPANY USE

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

UPRR ON-LINE MSDS
MSDS Data: Chemical: VITRIFIED BONDED - ABRASIVE PRODUCTS UP-D2125

General Information
Flammability Rating: 0
Health Rating: 0
Reactivity Rating: 0
HAZARD RATING:
Please rate consistent with NFPA Code:

SECTION I NAME AND PRODUCT
MANUFACTURER'S NAME: NORTON COMPANY
ADDRESS (STREET, CITY, STATE AND ZIP CODE): 1 NEW BOND STREET, WORCESTER, MA 01615-0008
TRADE NAME, COMMON NAME OR SPECIFICATION: VITRIFIED BONDED - ABRASIVE PRODUCTS
CHEMICAL FAMILY OR PRODUCT TYPE: ANY GRADE
CONTACT: THOMAS Z. RICHARDS
EMERGENCY TELEPHONE NO.: 508-795-2690
APPROVED BY: D.O. SHELDON
DATE: 12-16-88

SECTION II COMPOSITION PER 29CFR 1910-1200 (G) (4)

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS #
Alpha-Alumina****	96	Alundum, Seeded Gel	Y	1344-28-1
OR				
Silicon Carbide	96	Crystolon	Y	409-21-2
Sulfur Treatment	41	No. 22 Treat	Y	7704-34-9

CHEMICAL NAME	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCIN OGEN (Y/N)
Alpha-Alumina****	15mg/m(3) (Tota Dust)	t0mg/m(3) (Total Dust)	N
OR			
Silicon Carbide	15mg/m(3) (Total Dust)	t0mg/m(3) (Total Dust)	N
Sulfur Treatment	**NAIP	**NAIP	N

Note: Wheel Treatment ranges from 21 to 41% concentration based on wheel weight.
*Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations.

SECTION III PHYSICAL AND CHEMICAL DATA
BOILING POINT: **NAIP
VAPOR PRESSURE: **NAIP
EVAPORATION RATE: **NAIP
SOLUBILITY IN OTHER SOLVENT: **NAIP
MELTING POINT: **NAIP

PERCENT VOLATILE BY VOL: **NAIF
SOLUBILITY IN WATER: Slight
SPECIFIC GRAVITY: 2-4
VAPOR DENSITY: **NAIF
SOLUBILITY IN ALCOHOL: **NAIF
APPEARANCE AND ODOR SOLID PRODUCT: MAY GIVE OFF ODOR IN USE.

SECTION IV SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NONE
OTHER PRECAUTIONS: **NAIF

SECTION V CORROSIVITY AND REACTIVITY DATA
STABILITY: STABLE
POLYMERIZATION: WILL NOT OCCUR
INCOMPATABILITY (MATERIALS TO AVOID): Avoid acids of all types with a PH <=4.0
DECOMPOSITION PRODUCTS: In use, dusts are generated. In most cases, the airborne material removed from the workpiece will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.
CONDITIONS TO BE AVOIDED: **NAIF
**NAIF: NO APPLICABLE INFORMATION FOUND
***N/A: NOT APPLICABLE
***SUBJECT TO EPA SECTION 313 REPORTING UNDER SARA 40CFR PART 372.
A PETITION HAS BEEN SUBMITED TO THE EPA TO DELIST IT.

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA
PRIMARY ROUTE(S) OF ENTRY: INHALATION (During Grinding)
ACUTE AND CHRONIC HEALTH EFECTS AND EXPOSURES OF OVEREXPOSURE:
ACUTE: COUGHING, SHORTNESS OF BREATH.
CHRONIC: MAY AFFECT BREATHING CAPACITY.
FIRST AID AND MEDICAL INFORMATION: REMOVE TO FRESH AIR. ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S)S OF ENTRY: INGESTION (During Grinding)
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.
FIRST AID AND MEDICAL INFORMATION: OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S) OF ENTRY: SKIN (During Grinding CONTACT & ABSORPTION
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.
FIRST AID AND MEDICAL INFORMATION: WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S) OF ENTRY: EYE (During Grinding)
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: DUSTS MAY IRRITATE EYES.
FIRST AID AND MEDICAL INFORMATION: WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AID AND MEDICAL ASSISTANCE, IF NEEDED.
PRIMARY ROUTE(S) OF ENTRY: OTHER POTENTIAL HEALTH RISKS (During Grinding)

ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE: GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CONDITIONS.
FIRST AID AND MEDICAL INFORMATION: OBTAIN MEDICAL ASSISTANCE. THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.

SECTION VII STORAGE, HANDLING AND USE PROCEDURES
NORMAL STORAGE AND HANDLING: SEE ANSI STANDARD B7.1.
NORMAL USE: HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CONTAMINANTS)
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS: NORMAL CLEANUP PROCEDURES.
WASTE DISPOSAL METHOD: STANDARD LANDFIL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS.

SECTION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (SPECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.
VENTILATION:
LOCAL: RECOMMENDED
MECHANICAL (GENERAL): RECOMMENDED
OTHER: **NAIF
PROTECTIVE GLOVES: AS DESIRED BY USER
EYE PROTECTION: RECOMMENDED SEE OSHA 29CFR 1910.133
OTHER EQUIPMENT: AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95 (HEARING PROTECTION)
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL.
SEE SECTION VII & VIII

SECTION IX FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: **NAIF
EXTINGUISHING MEDIA: USE WATER
SPECIAL FIRE FIGHTING PROCEDURES: NONE
EXPLOSION POTENTIAL: **NAIF
METHOD USED: ***N/A
FLAMMABLE LIMITS:
LEL: N/A
UEL: ***N/A
FOR COMPANY USE:
The information and recommendations set forth herein are taken from sources believed to be accurate as to the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

UPRR ON-LINE MSDS
MSDS Data: Chemical: DIAMOND OR CUBIC BORON NITRIDE GRINDIN UP-04109

SECTION I NAME AND PRODUCT
MANUFACTURER'S NAME: NORTON COMPANY
ADDRESS (STREET, CITY, STATE AND ZIP CODE): 1 NEW BOND STREET, WORCESTER, MA 01615-0008
TRADE NAME, COMMON NAME OR SPECIFICATION: DIAMOND OR CUBIC BORON NITRIDE GRINDING WHEELS
CHEMICAL FAMILY OR PRODUCT TYPE: ANY GRADE
CONTACT: THOMAS Z. RICHARDS
EMERGENCY TELEPHONE NO.: 508-795-2690
APPROVED BY:
DATE: 1/23/89

SECTION II COMPOSITION PER 29 CFR 1910.1200 (G) (4)

CHEMICAL NAME	MAX %	COMMON NAME
Silver ****	85	Silver
Cobalt ****	60	Cobalt
Copper ****	85	Copper
Tin	25	Tin
Graphite	5	Graphite
Silicon Carbide **	73	Crystolon
Alpha-Alumina ****	81	Alundum
Nickel ****	82	Nickel
Phosphorus ****	1	Phosphorus
Manganese	3	Manganese
Molybdenum	1	Molybdenum
Silicon Powder	5	Silicon Powder
Silicon Dioxide	<1	Crystalline Silica

CHEMICAL NAME	REG* (Y/N)	CAS #
Silver ****	Y	7440-22-4
Cobalt ****	Y	7440-48-4
Copper ****	Y	7440-50-8
Tin	Y	7440-31-5
Graphite	Y	7782-42-5
Silicon Carbide **	Y	409-21-2
Alpha-Alumina ****	Y	1344-28-1
Nickel ****	Y	7440-02-0
Phosphrous ****	Y	7723-14-0
Manganese	Y	7439-96-5
Molybdenum	Y	7439-98-7
Silicon Powder	Y	7440-21-3
Silicon Dioxide	Y	14808-60-7

CHEMICAL NAME	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCIN COGEN (Y/N)

UP-1994

Silver ****	.01mg/m(3)	.1mg/m(3)	N
Cobalt ****	.1mg/m(3)	.1mg/m(3)	N
Copper ****	1mg/m(3)	1mg/m(3)	N
Tin	2mg/m(3)	2mg/m(3)	N
Graphite	15MPPCP	5mg/m(3) (Respirable Dust)	N
Silicon Carbide **	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Alpha-Alumina ***			N
Nickel ****	1mg/m(3)	1mg/m(3)	Y(R)
Phosphorus ****	0.1mg/m(3)	0.1mg/m(3)	N
Manganese	5mg/m(3)	5mg/m(3)	N
Molybdenum	15mg/m(3)	10mg/m(3)	N
Silicon Powder	**NAIF	10mg/m(3)	N
Silicon Dioxide	15mg/m(3)	0.1mg/m(3)	Y

Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations. (R)Listed by NTP as a Carcinogen. Other studies are not in agreement with IRAC that nickel is a probable human carcinogen.

SECTION III PHYSICAL AND CHEMICAL DATA
BOILING POINT: **NAIF
VAPOR PRESSURE: **NAIF
EVAPORATION RATE: **NAIF
MELTING POINT: >220 DEG. C
PERCENT VOLATILE BY VOL: **NAIF
SOLUBILITY IN WATER: Slight
SPECIFIC GRAVITY: 2-4
VAPOR DENSITY: **NAIF
SOLUBILITY IN ALCOHOL: **NAIF
SOLUBILITY IN OTHER SOLVENT: **NAIF
APPEARANCE AND ODOR:
SOLID PRODUCT: MAY GIVE OFF ODOR IN USE.

SECTION IV SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NONE.
OTHER PRECAUTIONS: **NAIF

SECTION V CORROSIVITY AND REACTIVITY DATA
STABILITY: X STABLE
UNSTABLE
POLYMERIZATION: X WILL NOT OCCUR
MAY OCCUR
INCOMPATABILITY (MATERIALS TO AVOID): **NAIF
DECOMPOSITION PRODUCTS: In use, dust and decomposing organic fumes are generated. In most cases, the material removed from the workpiece will be signifigrater than the grinding wheel components. Coolants may produce other decomposition products.
CONDITIONS TO BE AVOIDED: **NAIF

**NAIF: NO APPLICABLE INFORMATION FOUND
***N/A: NOT APPLICABLE
**** SUBJECT TO EPA SECTION 313 REPORTING 400CFR PART 372

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA

PRIMARY ROUTE(S) OF ENTRY	ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE
INHALATION (During Grinding)	ACUTE: COUGHING, SHORTNESS OF BREATH. CHRONIC: MAY AFFECT BREATHING CAPACITY.
INGESTION (During Grinding)	NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.
SKIN (During Grinding) CONTACT & ABSORPTION	SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.
EYE (During Grinding)	DUSTS MAY IRRITATE EYES.
OTHER POTENTIAL HEALTH RISKS (During Grinding)	GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY EFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CONDITIONS.
PRIMARY ROUTE(S) OF ENTRY	FIRST AID AND MEDICAL INFORMATION
INHALATION (During Grinding)	REMOVE TO FRESH AIR. ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ASSISTANCE.
INGESTION (During Grinding)	OBTAIN MEDICAL ASSISTANCE.
SKIN (During Grinding) CONTACT & ABSORPTION	WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
EYE (During Grinding)	WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AID AND MEDICAL ASSISTANCE IF NEEDED.
OTHER POTENTIAL HEALTH RISKS (During Grinding)	OBTAIN MEDICAL ASSISTANCE. THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.

SECTION VII STORAGE, HANDLING AND USE PROCEDURES
NORMAL STORAGE AND HANDLING: SEE ANSI STANDARD B7.1.
NORMAL USE: HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CONTAMINANTS)
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS: NORMAL CLEANUP PROCEDURES.
WASTE DISPOSAL METHOD: STANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS.

SECTION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (SPECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.
VENTILATION:
LOCAL: RECOMMENDED
MECHANICAL (GENERAL): RECOMMENDED

OTHER: **NAIP
PROTECTIVE GLOVES: AS DESIRED BY USER
EYE PROTECTION: RECOMMENDED SEE OSHA 29CFR 1910.133
OTHER EQUIPMENT: AS NEEDED HEARING PROTECTION SEE OSHA CFR 1910.95
(HEARING PROTECTION)
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED
EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL.
SEE SECTION VII & VIII

SECTION IX FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: NAIP
EXTINGUISHING MEDIA: USE WATER
SPECIAL FIRE FIGHTING PROCEDURES: NONE
EXPLOSION POTENTIAL: **NAIP
METHOD USED: ***N/A
FLAMMABLE LIMITS:
LEL: N/A
UEL: ***N/A
FOR COMPANY USE: The information and recommendations set forty herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

UPRR ON-LINE MSDS
MSDS Data: Chemical: RUBBER & SHELLAC BONDED GRINDING WHEEL UP-04214

General Information
Flammability Rating: 0
Health Rating: 1
Reactivity Rating: 0
HAZARD RATING:
Please rate consistent with NFPA Code

SECTION I NAME AND PRODUCT
MANUFACTURER'S NAME: NORTON COMPANY
ADDRESS (STREET, CITY, STATE AND ZIP CODE): 1 NEW BOND STREET, WORCHESTER, MA 01615-0008
TRADE NAME, COMMON NAME OR SPECIFICATION: RUBBER & SHELLAC BONDED GRINDING WHEELS
CHEMICAL FAMILY OR PRODUCT TYPE: ANY GRADE
CONTACT: THOMAS Z. RICHARDS
EMERGENCY TELEPHONE NO.: 508-795-2690
APPROVED BY: ???
DATE: 1/23/89

SECTION II COMPOSITION PER 29CFR 1910.1200 (G) (4)

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)
Amorphous Silica	2	Silica Gel	Y
Sulfur	8	Sulfur	Y
Fluorides (as F)	2	***N/A	Y
Carbon Black	11	***N/A	Y
Dibutyl Phthalate****	1	***N/A	Y
Thiram	1	Methyl Tuads	Y

CHEMICAL NAME	CAS #	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCINOGEN (Y/N)
Amorphous Silica	6323167-4	20 mppcf	10mg/m(3)	N
Sulfur	7704-34-9	**NAIF	**NAIF	N
Fluorides (as F)	***N/A	2.5mg/m(3)	2.5mg/m(3)	N
Carbon Black	1333-86-4	3.5mg/m(3)	3.5mg/m(3)	N
Dibutyl Phthalate***	84-74-2	5mg/m(3)	5mg/m(3)	N
Thiram	137-26-8	5mg/m(3)	5mg/m(3)	N

The chemicals listed above may be a part of the bond system. The grinding wheel may be comprised of one or more of the following abrasives.

CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)
Alpha Alumina****	90	Alundum	Y
Silicon Carbide	90	Crystolon	Y
Zirconia Alumina	90	NZ, ZS, ZF	Y
Silicon Dioxide	<1	Crystalline Silica	Y

OSHA CARCIN

UP-1998

UPRR
MSDS Data: Chemical: RUBBER & SHELLAC BONDED GRINDING WHEEL ON-LINE MSDS UP-04214

CHEMICAL NAME	CAS	PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	OGEN (Y/N)
Alpha Alumina****	1344-28-1	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Silicon Carbide	409-21-1	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Zirconia Alumina	**NAIF	5mg/m(3) (as Zirconium)	5mg/m(3) (as Zirconium)	N
Silicon Dioxide	14808-60-7	15mg/m(3)	0.1mg/m(3)	Y

*Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations.

SECTION III PHYSICAL AND CHEMICAL DATA
BOILING POINT: **NAIF
VAPOR PRESSURE: **NAIF
EVAPORATION RATE: **NAIF
SOLUBILITY IN OTHER SOLVENT: **NAIF
MELTING POINT: **NAIF
PERCENT VOLATILE BY VOL: **NAIF
SOLUBILITY IN WATER: Slight
SPECIFIC GRAVITY: 2-4
VAPOR DENSITY: **NAIF
SOLUBILITY IN ALCOHOL: **NAIF
APPEARANCE AND ODOR:
SOLID PRODUCT: MAY GIVE OFF ODOR IN USE.

SECTION IV SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NONE.
OTHER PRECAUTIONS: **NAIF

SECTION V CORROSIVITY AND REACTIVITY DATA
STABILITY: STABLE
INCOMPATIBILITY (MATERIALS TO AVOID): **NAIF
POLYMERIZATION: WILL NOT OCCUR
DECOMPOSITION PRODUCTS: In use, dust and decomposing resin system fumes are generated. In most cases, the material removed from the workplace will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.
CONDITIONS TO BE AVOIDED: **NAIF
**NAIF: NO APPLICABLE INFORMATION FOUND
***N/A: NOT APPLICABLE
****SUBJECT TO EPA SECTION 313 REPORTING 40CFR PART 372

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA
PRIMARY ROUTE(S) OF ENTRY:
INHALATION (During Grinding):

ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE:
ACUTE: COUGHING, SHORTNESS OF BREATH.
CHRONIC: MAY AFFECT BREATHING CAPACITY.
FIRST AID AND MEDICAL INFORMATION:
REMOVE TO FRESH AIR.
ARTIFICIAL RESPIRATION AS NEEDED.
OBTAIN MEDICAL ASSISTANCE.
INGESTION (During Grinding):
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE:
NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.
FIRST AID AND MEDICAL INFORMATION:
OBTAIN MEDICAL ASSISTANCE.
SKIN (During Grinding):
CONTACT & ABSORPTION:
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE:
SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.
FIRST AID AND MEDICAL INFORMATION:
WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
PRIMARY ROUTE(S) OF ENTRY:
EYE (During Grinding):
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE:
DUSTS MAY IRRITATE EYES.
FIRST AID AND MEDICAL INFORMATION:
WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AID AND MEDICAL ASSISTANCE, IF NEEDED.
PRIMARY ROUTE(S) OF ENTRY:
OTHER POTENTIAL HEALTH RISKS (During Grinding):
ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE:
GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CONDITIONS.
FIRST AID AND MEDICAL INFORMATION:
OBTAIN MEDICAL ASSISTANCE. THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.

SECTION VII STORAGE, HANDLING AND USE PROCEDURES
NORMAL STORAGE AND HANDLING: SEE ANSI STANDARD B7.1
NORMAL USE: HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CONTAMINANTS)
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS: NORMAL CLEANUP PROCEDURES.
WASTE DISPOSAL METHOD: STANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS. PRODUCTS WITH LISTED FLOURIDES MAY HAVE SLIGHTLY SOLUBLE FLOURIDE SWARF.

SECTION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (SPECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.
VENTILATION:
LOCAL: RECOMMENDED
MECHANICAL (GENERAL): RECOMMENDED

OTHER: **NAIF
PROTECTIVE GLOVES: AS DESIRED BY USER
EYE PROTECTION: RECOMMENDED SEE OSHA 29CFR 1910.133
OTHER EQUIPMENT: AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95
(HEARING PROTECTION)
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED
EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL.
SEE SECTION VII & VIII

SECTION IX FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: **NAIF
METHOD USED: **N/A
FLAMMABLE LIMITS:
LEL: N/A
UEL: ***N/A
EXTINGUISHING MEDIA: USE WATER
SPECIAL FIRE FIGHTING PROCEDURES: NONE
EXPLOSION POTENTIAL: **NAIF
FOR COMPANY USE
The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

UPRR ON-LINE MSDS
MSDS Data: Chemical: ORGANIC BONDED GRINDING WHEELS UP-02126

General Information
Chemical Name / Synonym / Trade Name:
ORGANIC BONDED GRINDING WHEELS
Manufacturer Name:
NORTON COMPANY
CAS Number:
1344-28-1
409-21-2
1305-78-8
12068-85-8
8001-58-9
7727-43-7
7704-34-9
7440-31-5
Health Rating: 1
Flammability Rating: 0
Reactivity Rating: 0
HAZARD RATING: Please rate consistent with NFPA Code

NAME AND PRODUCT
MANUFACTURER'S NAME: NORTON COMPANY
ADDRESS (STREET, CITY, STATE AND ZIP CODE): 1 NEW BOND STREET, WORCESTER, MA 01606-2698
TRADE NAME, COMMON NAME OR SPECIFICATION: ORGANIC BONDED GRINDING WHEELS
CHEMICAL FAMILY OR PRODUCT TYPE: ANY GRADE
CONTACT: THOMAS Z. RICHARDS
EMERGENCY TELEPHONE NO.: 617-795-2690
APPROVED BY: 777
DATE: 6/18/86

COMPOSITION PER 29CFR 1910.1200 (G) (4)

CHEMICAL NAME	MAX %	COMMON NAME	REG(*) (Y/N)	CAS #
Alpha-Alumina	90	Aluminum	Y	1344-28-1
Silicon Carbide	90	Crystolon	y	409-21-2
Zirconia Oxide	90	Zirconia	Y	(**)NAIF

The grinding wheel may be comprised of 1 or more of the above abrasives.
The chemicals listed below may be a part of the bond system.

Fluorides (as F)	3	(***)N/A	Y	(***)N/A
Calcium Oxide	3	Lime	Y	1305-78-8
Iron Disulphide	16	Pyrites	N	12068-85-8
Creosote Oil	<1	Carbosote	Y	8001-58-9
Barium Sulfate	11	Barytes	Y	7727-43-7
Glass, Fibrous or Dust	10	Fiberglass	Y	(**)NAIF
Sulfur	8	Sulfur	Y	7704-34-9
Tin	9	Tin	Y	7440-31-5

CHEMICAL NAME	OSHA PERMISSIVE	ACGIH	CARCINOGEN

UP-2002

	EXPOSURE LIMIT	TLV	(Y/N)
Alpha-Alumina	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Silicon Carbide	15mg/m(3) (Total Dust)	10mg/m(3) (Total Dust)	N
Zirconia Oxide	5mg/m(3)	5mg/m(3)	
Fluorides (as F)	2.5mg/m(3)	2.5mg/,(3)	N
Calcium Oxide	5mg/m(3)	2mg/m(3)	N
Iron Disulphide	(**)NAIF	(**)NAIF	N
Creosote Oil	.2mg/m(3)	.2mg/m(3)	Y(R)
Barium Sulfate	.5mg/m(3)	.5mg/m(3)	N
Glass, Fibrous or Dust	(**)NAIF	10mg/m(3)	N
Sulfur	(**)NAIF	(**)NAIF	N
Tin	2mg/m(3)	2mg/m(3)	N

*Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations. (T) Listed by NTP as a Carcinogen.

PHYSICAL AND CHEMICAL DATA
BOILING POINT: (**)NAIF
VAPOR PRESSURE: (**)NAIF
EVAPORATION RATE: (**)NAIF
SOLUBILITY IN OTHER SOLVENT: (**)NAIF
MELTING POINT: (**)NAIF
PERCENT VOLATILE BY VOL: (**)NAIF
SOLUBILITY IN WATER: Slight
SPECIFIC GRAVITY: 24
VAPOR DENSITY: (**)NAIF
SOLUBILITY IN ALCOHOL: (**)NAIF
APPEARANCE AND ODOR SOLID PRODUCT: MAY GIVE OFF ODOR IN USE.

SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NONE.
OTHER PRECAUTIONS: This grinding wheel specification may contain a small amount (1% or less) of a creosote oil. Only trace amounts of this substance from the grinding wheel will be in the total materials released during grinding. The supplier of the raw creosote states that "prolonged and repeated skin exposure may result in skin cancer."

CORROSIVITY AND REACTIVITY DATA
STABILITY: STABLE
POLYMERIZATION: WILL NOT OCCUR
INCOMPATABILITY (MATERIALS TO AVOID): (**)NAIF
DECOMPOSITION PRODUCTS: In use, dust and decomposing organic fumes are generated. In most cases, the material removed from the workpiece will be significantly greater than the grinding wheel components. Coolants may produce other decomposition products.
CONDITIONS TO BE AVOIDED: (**)NAIF

(**)NAIF: NO APPLICABLE INFORMATION FOUND
(***)N/A: NOT APPLICABLE

HEALTH, FIRST AID AND MEDICAL DATA

PRIMARY ROUTE(S) OF ENTRY	ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE	FIRST AID AND MEDICAL INFORMATION
INHALATION (DURING GRINDING)	ACUTE: COUGHING, SHORTNESS OF SHORTNESS OF BREATH. CHRONIC: MAY AFFECT BREATHING CAPACITY	REMOVE TO FRESH AIR. ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ASSISTANCE.
INGESTION (DURING GRINDING)	NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.	OBTAIN MEDICAL ASSISTANCE.
SKIN CONTACT & ABSORPTION (DURING GRINDING)	SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.	WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
EYE (DURING GRINDING)	DUSTS MAY IRRITATE YES.	WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AID AND MEDICAL ASSISTANCE, IF NEEDED.
OTHER POTENTIAL HEALTH RISKS (DURING GRINDING)	GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY EFFECT HEARING.	OBTAIN MEDICAL ASSISTANCE.

STORAGE, HANDLING AND USE PROCEDURES
NORMAL STORAGES AND HANDLING: SEE ANSI STANDARD B7.1.
NORMAL USE: HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR1910.94 (VENTILATION) AND 29CFR1910.1000 (AIR CONTAMINATES)
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS: NORMAL CLEANUP PROCEDURES.
WASTE DISPOSAL METHOD: STANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS. PRODUCTS WITH LISTED FLOURIDES MAY HAVE SLIGHTLY SOLUBLE FLUORIDE SWARF.

PERSONAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (SPECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR1910.134.
VENTILATION:
LOCAL RECOMMENDED:
MECHANICAL (GENERAL): RECOMMENDED
OTHER: (**)NAIF
PROTECTIVE GLOVES: AS DESIRED BY USER
EYE PROTECTION: RECOMMENDED SEE OSHA 29CFR1910.133
OTHER EQUIPMENT: AS NEEDED HEARING PROTECTION SEE OSHA 29CFR1910.215 (HEARING PROTECTION)
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN INCONTACT WITH THIS MATERIAL.
SEE SECTIONS VII & VIII

FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: (**)NAIF
EXTINGUISHED MEDIA: USE WATER
SPECIAL FIRE FIGHTING PROCEDURES: NONE
EXPLOSION POTENTIAL: (**)NAIF
(METHOD USED: (***)N/A
FLAMMABLE LIMITS LEL N/A UEL: (***)N/A
FOR COMPANY USE
The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof, how ever, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommend

2094757

EXHIBIT – 6

UP-2006

RESPONSE TO QUESTION 3 g.

Date	City	State	Substance Released	Quantity Released
19970123	PHOENIX	AZ	Isopropanol	1 Gallon
19970126	PHOENIX	AZ	Petroleum Distillates, NOS	1 Gallon
19970508	PHOENIX	AZ	Carbon Dioxide	19,000 Gallons
19971005	PHOENIX	AZ	Denatured Alcohol	10 Gallons
19971019	PHOENIX	AZ	Denatured Alcohol	Vapor
19980504	PHOENIX	AZ	Sodium Hydroxide Solution	2 Gallons
19981001	PHOENIX	AZ	Other Regulated Substances, Solid, NOS	1 Gallon
19981211	PHOENIX	AZ	Petroleum Distillates, NOS	1 Gallon
19981222	PHOENIX	AZ	Denatured Alcohol	1 Gallon
19990104	PHOENIX	AZ	Combustible Liquid, NOS	1 Pint
19990126	PHOENIX	AZ	Denatured Alcohol	1 Gallon
19990207	PHOENIX	AZ	Denatured Alcohol	1 Pint
19990723	PHOENIX	AZ	Sulfuric Acid	2 Gallons
19991031	PHOENIX	AZ	Denatured Alcohol	1 Gallon
19991108	PHOENIX	AZ	Denatured Alcohol, Residue	2 Gallons
19991207	PHOENIX	AZ	Denatured Alcohol	2 Gallons
19991214	PHOENIX	AZ	Gasoline	1 Gallon
19991228	PHOENIX	AZ	Denatured Alcohol	1 Pint
19991229	PHOENIX	AZ	Denatured Alcohol	1 Pint
20000209	PHOENIX	AZ	Denatured Alcohol	200 Gallons
20000519	PHOENIX	AZ	Sulfuric Acid	10 Gallons
20000727	PHOENIX	AZ	Trichloroisocyanuric Acid, Dry	50 Lbs.
20001119	PHOENIX	AZ	Denatured Alcohol	5 Gallons
20001122	PHOENIX	AZ	Denatured Alcohol	1 Gallon
20001125	PHOENIX	AZ	Denatured Alcohol	4 Gallons
20001230	PHOENIX	AZ	Denatured Alcohol	5 Gallons
20010107	PHOENIX	AZ	Denatured Alcohol	10 Gallons
20010219	PHOENIX	AZ	Denatured Alcohol	2 Gallons
20010831	PHOENIX	AZ	Waste Flammable Liquids, NOS	3 Gallons
20011009	PHOENIX	AZ	Flammable Liquids, NOS	1 Gallon
20011228	Phoenix	AZ	Alcohols, NOS	1 Gallon
20020209	Phoenix	AZ	Alcohols, NOS, Residue	10 Gallons
20020210	Phoenix	AZ	Alcohols, NOS	30 Gallons
20020603	Phoenix	AZ	Ammonia, Anhydrous	Vapor
20021113	Phoenix	AZ	Alcohols, NOS	1 Gallon
20021120	Phoenix	AZ	Gasoline	Vapor
20021202	Phoenix	AZ	Alcohols, NOS	Vapor
20030130	Phoenix	AZ	Alcohols, NOS	1 Pint
20030218	Phoenix	AZ	Alcohols, NOS, Residue	1 Gallon
20030320	Phoenix	AZ	Alcohols, NOS	5 Gallons

UP-2007

RESPONSE TO QUESTION 3 g.

DATE	City	State	Substance Released	Quantity Released
19990804	Phoenix	Az	Diesel Fuel	25 Gallons
19990916	PHOENIX	Az	Diesel Fuel	250 Gallons
19991027	PHOENIX	Az	Raw Sugar Cane	1 Gallons
20001022	Phoenix	Az	Diesel Fuel	3,000 Gallons
20001116	Phoenix	Az	Diesel Fuel	25 Gallons
20010520	PHOENIX	AZ	Argon	Vapor
20010803	PHOENIX	AZ	Argon	Vapor
20010829	PHOENIX	Az	Fatty Acid	25 Gallons
20010910	PHOENIX	AZ	Fatty Acid Esters	25 Gallons
20011114	PHOENIX	AZ	Ferric Chloride	5 Gallons
20020201	Phoenix	AZ	Diesel Fuel	1,000 Gallons
20020215	Phoenix	AZ	Diesel Fuel	20 Gallons
20020303	Phoenix	AZ	Diesel Fuel	50 Gallons
20020513	Phoenix	AZ	Nitrogen Fertilizer Solution	1 Gallons
20020518	Phoenix	AZ	Ammonium Polyphosphate Solution	30 Gallons
20020719	Phoenix	AZ	Mineral Oil	1 Pint
20020802	PHOENIX	AZ	Petroleum products	100 Gallons
20030331	Phoenix	AZ	Petroleum products	400 Gallons
20030430	Phoenix	AZ	Hydraulic Fluid	100 Gallons
20030729	Phoenix	AZ	Battery Acid	3 Gallons
20030811	Phoenix	AZ	Lube Oil	30 Gallons
20030907	Phoenix	AZ	Diesel Fuel	100 Gallons

UP-2008

EXHIBIT – 7

UNION PACIFIC RAILROAD COMPANY
MOTOROLA 52ND STREET SITE
PHOENIX, ARIZONA

PRIVILEGE LOG

Document No.	Date	Author	Recipients	Document Description	Privilege
MS 00192	09/13/00	Union Pacific Railroad	Union Pacific Railroad	Union Pacific Railroad Lease Property Management Program Meeting Minutes	Attorney-Client/ Work Product
MS 00196	08/24/00	Patti Kenealy	Joel R. Strafelda, Thomas E. Whitaker cc: David P. Young, Chuck W. Salors	E-mail regarding Motorola 52nd Street Superfund Site - Phoenix, 104(e) Request	Attorney-Client/ Work Product
	08/28/00	Joel R. Strafelda	Lanny A. Schmid, Brock A. Nelson, Mark S. Schulte, Dale L. Spier cc: Patti Kenealy	E-mail regarding Motorola 52nd Street Superfund Site - Phoenix, 104(e) Request	
MS 00206-MS 00207	08/01/00	Union Pacific Railroad	Union Pacific Railroad	Union Pacific Railroad Joint Legal/Real Estate/Environmental Management Meeting Agenda with handwritten notes	Attorney-Client/ Work Product
MS 00209	06/13/00	Union Pacific Railroad	Union Pacific Railroad	Tract information page - property name: Chemonics, 734 E. Southern Pacific, Phoenix, AZ with handwritten notes	Attorney-Client/ Work Product
MS 00214	03/01/00	Union Pacific Railroad	Union Pacific Railroad	Tract information page - property name: Chemonics, 734 E. Southern Pacific, Phoenix, AZ with handwritten notes	Attorney-Client/ Work Product

MS 00219- MS 00220	01/13/00	Mark S. Schulte	Jim K. Priefert cc: Mary Ann Kilgore	E-mail regarding Erly Industries/Chemonics Industries – Phoenix, AZ	Attorney-Client/ Work Product
	01/13/00	Jim K. Priefert	Mark S. Schulte cc: Mary Ann Kilgore	E-mail regarding Erly Industries/Chemonics Industries – Phoenix, AZ	
	12/16/99	Mark Schulte	Jim Priefert cc: Mary Ann Kilgore	Memorandum regarding Erly Industries/Chemonics Industries – Phoenix, AZ	
MS 00290	09/20/99	Mary Ann Kilgore	Jim K. Priefert cc: Mark S. Schulte	Erly Industries lease and bankruptcy with handwritten notes	Attorney-Client/ Work Product
MS 00459	10/18/91	M.C. Tennison	Michael Stetson	E-mail regarding Chemonics lease/environmental of lease and right of way at Phoenix, pending ADEQ investigation	Attorney-Client/ Work Product
MS 00491	11/22/91	C.L. Taylor	M.C. Tennison cc: M.R. Stetson L.L. Hill C.P. Irons J.C. Moe	Interoffice Memorandum regarding Chemonics, Phoenix	Attorney-Client/ Work Product
MS 00525	11/22/91	C.L. Taylor	M.C. Tennison cc: M.R. Stetson L.L. Hill C.P. Irons J.C. Moe	Interoffice Memorandum regarding Chemonics, Phoenix with handwritten notes	Attorney-Client/ Work Product

UP-2011

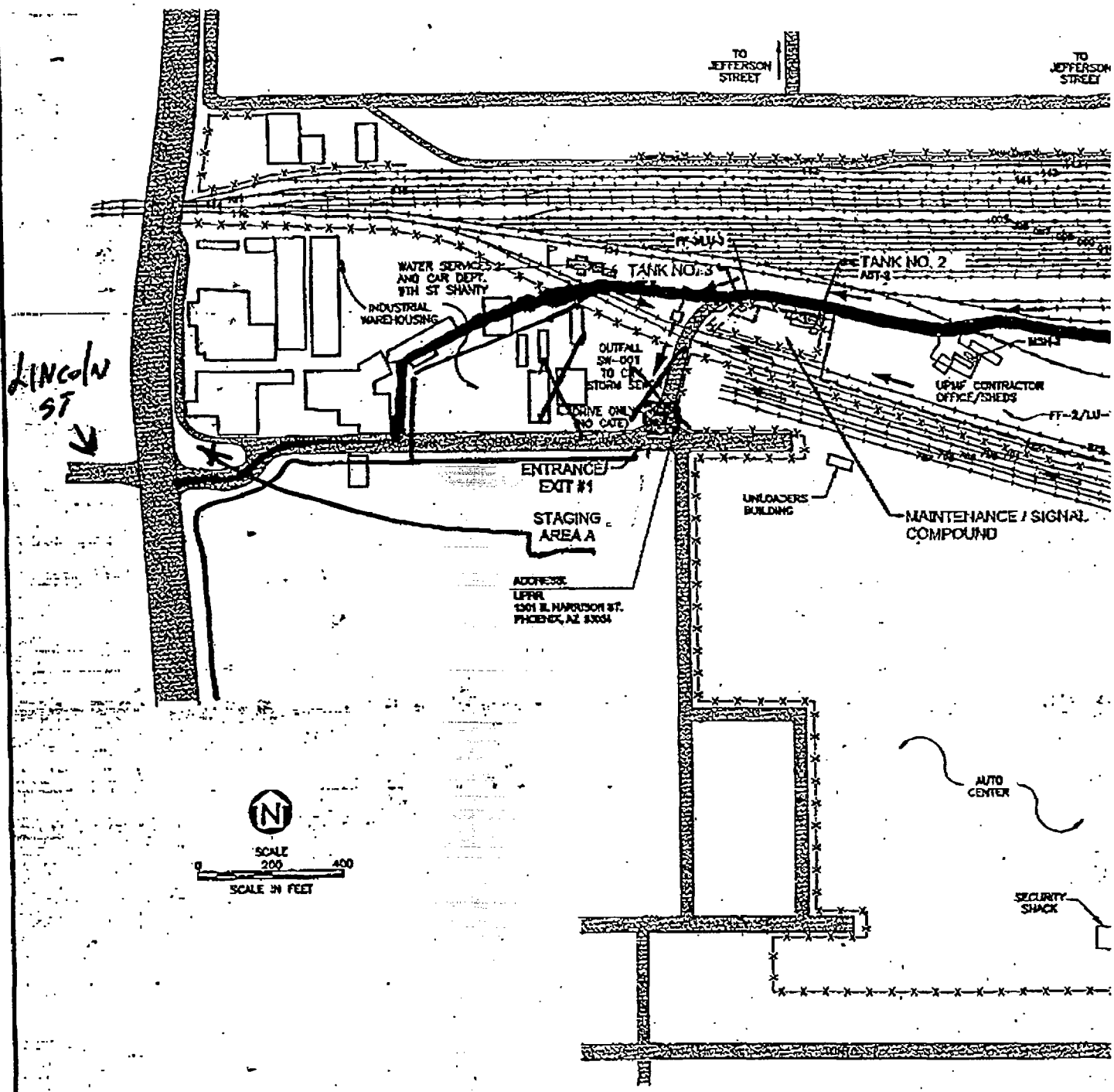
MS 00545- MS 00549	09/27/91	M.C. Tennison	M. Christin Tennison cc: R.L. Stacy H.D. Caldwell C. Taylor C.P. Irons L.L. Hill	E-mail regarding Chemonics lease at Phoenix, environmental contamination caused by lessee	Attorney-Client/ Work Product
MS 00609- MS 00612	11/28/89	Jay S. Kramer	Michael W. Casey J. G. Sullivan	Letter regarding Southern Pacific Transportation Company re Carl C. Jacobson, Jr. et al.; Closing Documents	Attorney-Client/ Work Product
MS 04125	08/31/92	Christy L. Christmas	Vicki Garner	Memorandum regarding Project Number Assignment Sheet, Project No. 13-2408, SPTCo Phoenix Yard, Phoenix, Arizona	Attorney-Client/ Work Product
MS 04224	08/24/92	Christy L. Christmas	David W. Long cc: J. Spisak W. Garey	Memorandum regarding ADEQ Request for Voluntary Implementation of Work Plan, SPTCo Phoenix Yard, Phoenix, Arizona	Attorney-Client/ Work Product
MS 04303	02/28/92	Christy L. Christmas	John Spisak	Memorandum regarding Site Inspection of the SPTCo Phoenix Yard by the Arizona Department of Environmental Quality (ADEQ). IC Project No. 12-2301	Attorney-Client/ Work Product
MS 04355- MS 04366	02/28/92	Industrial Compliance	W.J. Holman cc: D.W. Long J.F. Spisak N.J. Finwall	Letter regarding Request for Authority, ADEQ Site Inspection of SPTCo Phoenix Yard, 1301 East Harrison Avenue, Phoenix, Arizona, IC Project No. 12-2301	Attorney-Client/ Work Product

UP-2012

MS 04430	08/24/92	Christy L. Christmas	David W. Long cc: J. Spisak W. Garey	Memorandum regarding ADEQ Request for Voluntary Implementation of Work Plan, SPTCo Phoenix Yard, Phoenix, Arizona	Attorney-Client/ Work Product
MS 04473	08/24/92	Christy L. Christmas	David W. Long cc: J. Spisak W. Garey	Memorandum regarding ADEQ Request for Voluntary Implementation of Work Plan, SPTCo Phoenix Yard, Phoenix, Arizona	Attorney-Client/ Work Product
MS 04538	10/03/90	D.W. Long	W.E. Wright	Letter regarding Arizona DEQ Preliminary Assessment – Phoenix Yard	Attorney-Client/ Work Product
MS 04546- MS 04549	11/19/90	W.E. Wright	K.A. Moore	Letter regarding Request for Authority, Response to Arizona Department of Environmental Quality (ADEQ) Notice of Violations, Phoenix Railyard	Attorney-Client/ Work Product

UP-2013

EXHIBIT - 8



UP-2015

GENERAL LEGEND:

- RAILROAD TRACK ℄
- MAINLINE RAILROAD
- ROAD
- CHAINLINK FENCE
- UPRR BUILDING
- INTERMODAL OPERATIONS RUN BY IN-TERMINAL SERVICES

SWPPP LEGEND:

- DIRECTION OF FLOW
- MUNICIPAL STORM SEWER PIPE
- REGULATED AREAS
- DRAIN INLET
- FF-1 LOCOMOTIVE FUELING RACK
- FF-2 VEHICLE AND EQUIPMENT FUELING (UPMF)
- FF-3 VEHICLE AND EQUIPMENT FUELING (UPRR-MOW) (TRUCK DELIVERY)
- MSH-1 LOCOMOTIVE PARTS DRUM STORAGE
- MSH-2 EQUIPMENT PARTS DRUM STORAGE
- AST-1 DIESEL (20,000 GAL CONVAULT)
- AST-2 USED OIL (500 GAL DOUBLE WALLED)
- AST-3 DIESEL (1,000 GAL CONVAULT)
- VM-1 VEHICLE MAINTENANCE AREA
- SW-0 STORM WATER OUTFALL
- LU-1 LOADING/UNLOADING AREA FOR DIESEL FUEL
- LU-2 LOADING/UNLOADING AREA FOR DIESEL FUEL
- LU-3 LOADING/UNLOADING AREA FOR DIESEL FUEL
- LU-4 LOADING/UNLOADING AREA FOR TRAILERS

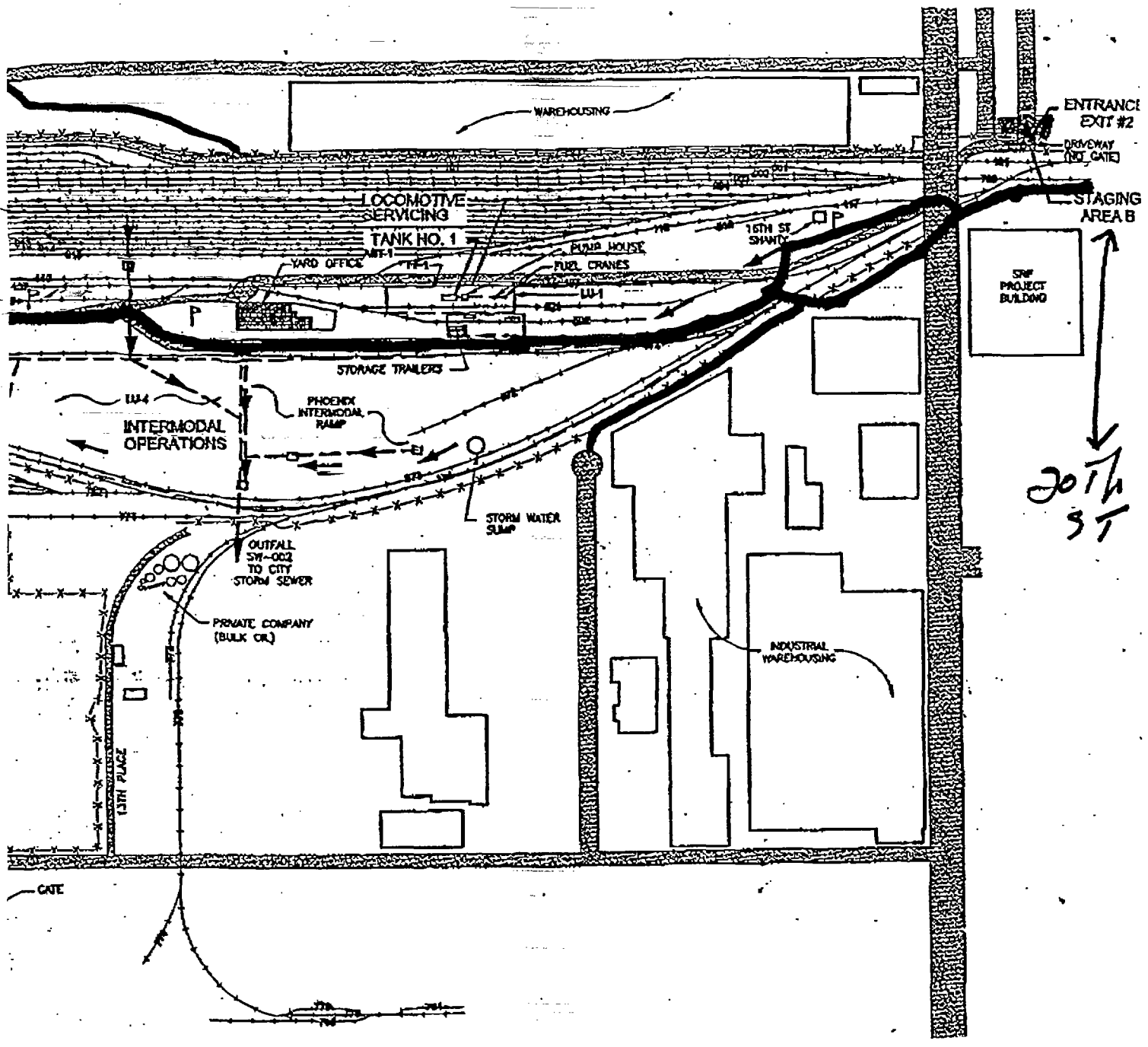
SPCC

TANK N

TANK N

TANK N

412321.2-19-99



EYE REL

UP-2016

- DIESEL FUEL
- 20,000 GALLONS
- DOUBLE WALL
- LATITUDE 33°26'36.1"
- LONGITUDE 112°03'06.2"

- USED OIL
- 500 GALLONS
- DOUBLE WALL
- LATITUDE 33°26'35.8"
- LONGITUDE 112°03'31.6"

- DIESEL FUEL
- 1,000 GALLONS
- DOUBLE WALL
- LATITUDE 33°26'36.5"
- LONGITUDE 112°03'34.1"

DIRECTION OF FLOW

EMERGENCY ACCESS & EVACUATION LEGEND:

P WINDSOCK (FOUR)

EVACUATION POINT FOR UPRR PERSONNEL

FIRETRUCK/AMBULANCE ACCESS

SITE PLAN

☐ [redacted]

☐ [redacted]

11/1/05

☑ EMERGENCY ACCESS/EVACUATION

UPRR RAILYARD – PHOENIX

Figure 2

DCM DAMES & MOORE