5. Duration of the Release

The release was immediately stopped at 3:30 a.m. on September 8, 1991, by stopping the transfer of caustic and water to the overflowing tank C-37. Based upon normal charging rate, caustic usage and the amount discovered on the ground, it is estimated the overflow began no more than 30 minutes prior to its discovery.

6. Media into which the Release Occurred

The release was confined to the ground inside the diked yard containing Tank C-37. The spilled material mixed with rainwater already in the tank yard to cover an area of approximately 2,700 square feet. No material leaked off Shell property.

7. Notifications Made

Immediate steps were initiated to determine the volume of material in the tank yard. Immediately upon a determination that there was an exceedance of the reportable quantity for sodium hydroxide, action was taken to notify the proper Agencies. We notified the National Response Center at 9:01 a.m., the Illinois ESDA at 9:13 a.m., and made a courtesy call to the Madison County ESDA (LERC) at 9:32 a.m. The Collinsville office of the Illinois EPA was notified via fax at 10:30 a.m.

8. Probable Cause of the Release

Tank C-37 overflowed while being filled. Neither the local Varec level gauge nor the board-mounted level instrument indicated high levels.

9. Actions taken to Respond to and Contain the Release

The flow of caustic and water to the tank was stopped immediately by shutting down the blending pumps and blocking their discharges. A water hose was used to wash the spilled caustic from the side of the tank and instrumentation in the area. The spilled liquid was picked up using a vacuum truck and properly disposed by the following afternoon. The tank yard will be flushed to remove any remaining residual caustic.

10. Measures Taken to Prevent a Recurrence

A work ticket has been entered to investigate and repair the failed level instruments. A departmental procedure will be written for checking tank level gauging instrumentation whenever a tank is to be filled.

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

There are no known or anticipated exposure health risks associated with this release. There was no public exposure from this on-property release. Sodium hydroxide has a negligible vapor pressure.

12. Name and Telephone Number of Contact Person

For more information, call Michael Chihak at (618) 255-2260.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1,540 individuals.

Sincerely,

J. N. Brewster

J. N. Brewster
Manager Environmental Conservation
Wood River Manufacturing Complex

bc: Head Office
A. F. Schmit
M. A. Roth

WRMC
E. G. Johnson/W. L. Phelps/R. D. Gillette/M. A. Chihak
J. L. Newlin/S. C. Franke/A. K. Peccola
EC File 2056/Certified Letters Nos. 172, 173, 174

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

January 20, 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Oran Robinson
Illinois Emergency Management Agency
110 East Adams Street
Springfield, IL 62706

Mr. Lanny Darr, Coordinator
Madison County Emergency Services and Disaster Agency
201 Hillsboro Street
Edwardsville, IL 62025

Mr. Charles W. Brutlag
Emergency Response Unit
P. O. Box 19276
Springfield, IL 62794-9276

Gentlemen:

SUBJECT: ON-SITE CERCLA REPORTABLE QUANTITY RELEASE NOTIFICATION; IESDA INCIDENT - 913701

This letter is a follow-up to our telephone reports on a release of benzene on December 20, 1991. The information normally requested by IESDA is included.

1. Chemical Name or Substance Involved in the Release

   Benzene.

2. CERCLA Extremely Hazardous Substances Released

   None.

3. Estimate of Quantity of CERCLA Hazardous Substance Released

   Approximately 20 pounds of benzene was released.

4. Probable Cause of the Release

   Probable cause appears to be a flange gasket leak at MOV 106, on Tower Number 1, at the Hartford barge loading dock. Containment was provided at the flange. However, benzene ran under the insulation

away from the flange, soaked through the insulation, and eventually began dripping to the ground about 20 feet away from the flange.

5. Date and Time of the Release

The benzene release was discovered at 10:14 a.m. on December 20, 1991.

6. Duration of the Release

The leak was stopped by 11:30 a.m.

7. Media into which the Release Occurred

The benzene was released to the ground.

8. Notifications Made

Once we confirmed that a reportable quantity was released, we notified the National Response Center at 1:02 p.m., the Illinois ESDA at 1:07 p.m., Madison County ESDA (LERC) at 1:31 p.m., and Illinois EPA at 1:26 p.m. All of the notifications occurred on December 20, 1991.

9. Actions taken to Respond to and Contain the Release

A containment drum was put in place to contain the drippage, and the line was blinded to stop the leak. Since ambient temperatures were below the freezing point for benzene, the material froze in a puddle on the ground and no migration occurred beyond this point.

Contaminated soil and rock was removed from the area and drummed for disposal as a hazardous waste by incineration. A vacuum truck was used to remove an estimated 12 gallons of the material from the containment drum, and return it to the refinery for reprocessing.

10. Measures Taken to Prevent a Recurrence

An investigation team is reviewing the incident, and will make recommendations for prevention of recurrence.

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

There are no known or anticipated exposure health risks associated with this release. This conclusion is based on air monitoring conducted in the area of the release, which showed less than detectable benzene concentrations at our property line.

12. Name and Telephone Number of Contact Person

For more information, call J. D. Rankin at (618) 254-7371.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1540 individuals.

Sincerely,

J. N. Brewster

J. N. Brewster
Manager Environmental Conservation
Wood River Manufacturing Complex

bc: Head Office
A. F. Schmit
M. A. Roth

WRMC
R. D. Gillette
H. C. Olsen
M. J. Delaney
D. L. Zipprich
D. P. Beyer
EC File 2056/Certified Letter Nos. 399, 400, 401

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

April 13, 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Oran Robinson
Illinois Emergency Management Agency
110 East Adams Street
Springfield, IL 62706

Mr. Lanny Darr, Coordinator
Madison County Emergency Services and Disaster Agency
201 Hillsboro Street
Edwardsville, IL 62025

Mr. Charles W. Brutlag
Emergency Response Unit
Office of Chemical Safety
Illinois Environmental Protection Agency
P. O. Box 19276
Springfield, IL 62794-9276

Gentlemen:

SUBJECT: ON-SITE CERCLA REPORTABLE QUANTITY RELEASE NOTIFICATION; IESDA INCIDENT - 920814

This letter is a follow-up to our telephone reports on a release of chlorine on March 28, 1992. The information normally requested by IEMA is included.

1. Chemical Name or Substance Involved in the Release

   Chlorine

2. SARA Extremely Hazardous Substances Released?

   Yes

3. Estimate of Quantity of SARA Extremely Hazardous Substance Released

   Approximately 500 pounds of chlorine were released from the reactor regeneration facilities at Aromatics West.

4. Probable Cause of the Release

   Probable cause is failure of a 2-inch line connecting a pressure relief header to regeneration heater H-5 at Catalytic Reformer 1. The system is designed to vent chlorine to the heater in the event the chlorination system is overpressured. It is believed chlorine entered the line during the chloriding cycle of a reactor, and was released to the air when a 1/4" x 1" hole developed in the line at the inlet to the heater.

5. Date and Time of the Release

   The chlorine release occurred at approximately 3:45 p.m. on March 28, 1992. Positive identification of the location of the release was made at approximately 7:45 p.m.

6. Duration of the Release

   The duration of the leak is estimated to be 10 minutes.

7. Media into which the Release Occurred

   The chlorine was released to the air.

8. Notifications Made

   We notified the National Response Center at 7:55 p.m., the Illinois EMA at 8:10 p.m., Madison County EMA (LERC) at 8:01 p.m., and Illinois EPA at 8:50 p.m. All of the notifications occurred on March 28, 1992.

   The leak was originally reported as greater than 10 lbs chlorine. As a result of an investigation of the incident, it was concluded the actual quantity was approximately 500 lbs. IEPA - Region VI was notified of the updated release estimate on March 31, 1992.

9. Actions taken to Respond to and Contain the Release

   Considerable investigation of chlorine odors within the plant area was conducted to determine the source of the chlorine. Once the release location was determined, all chloriding activities were stopped.

10. Measures Taken to Prevent a Recurrence

    An investigation team was chartered to review the incident and make procedural and hardware recommendations to prevent recurrence. The teams final report is expected later in April.

E9210401.JDR

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

There are no known or anticipated exposure health risks to the public associated with this release. This conclusion is based on air dispersion modeling conducted, and the fact that no odor complaints were received from the public.

12. Name and Telephone Number of Contact Person

For more information, call J. D. Rankin at (618) 254-7371.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1,540 individuals.

Sincerely,

RD Gillette

for J. N. Brewster
Manager Environmental Conservation
Wood River Manufacturing Complex

E9210401.JDR

bc: Head Office
A. F. Schmit - OSP-1442
M. A. Roth - OSP-4870

WRMC
R. D. Gillette
S. C. Franke
J. D. Deerhake
EC File 2056/Certified Letters Nos. 498, 499, 500

E9210401.JDR

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

November 2, 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Oran Robinson
Illinois Emergency Management Agency
110 East Adams Street
Springfield, IL 62706

Mr. Lanny Darr, Coordinator
Madison County Emergency Management Agency
201 Hillsboro Street
Edwardsville, IL 62025

Mr. Charles W. Brutlag
Emergency Response Unit
Office of Chemical Safety
Illinois Environmental Protection Agency
P. O. Box 19276
Springfield, IL 62794-9276

Mr. Tom Powell
Emergency Response Unit
Office of Chemical Safety
Illinois Environmental Protection Agency
2009 Mall Street
Collinsville, IL 62234

Gentlemen:

SUBJECT: OCTOBER 18, 1992 PRV RELEASE; IEMA INCIDENT NO. 922938

This letter is a follow-up to our telephone reports on a release of hydrogen sulfide and methyl mercaptan which occurred on October 18, 1992.

1. Chemical Name or Substance Involved in the Release

   The materials released were primarily light hydrocarbons including ethane, propane, butanes, and methyl mercaptan. Hydrogen sulfide was also released.

2. SARA Extremely Hazardous Substances Released?

   Hydrogen sulfide and methyl mercaptan are extremely hazardous substances.

JDR\L9230703.WCB

3. Estimate of Quantity of SARA Extremely Hazardous Substance Released

   Approximately 1200 pounds of hydrogen sulfide and 30 pounds of methyl mercaptan were released from the depropanizer column at Distilling Unit No. 2. Both are present in crude oil and many intermediate products. Neither are stored as such in the refinery.

4. Probable Cause of the Release

   Probable cause is pluggage of the column pressure transmitter impulse line. This pluggage isolated the transmitter from the column, and prevented the transmitter from maintaining normal column pressure. The pluggage also prevented the control room board pressure readout from indicating the abnormal operating condition. As a result, the column overpressured and the pressure relief valve lifted.

5. Date and Time of the Release

   The release occurred at approximately 11:30 p.m. on October 18, 1992.

6. Duration of the Release

   The duration of the leak is estimated to be 10 minutes.

7. Media into which the Release Occurred

   The hydrogen sulfide and methyl mercaptan were released to the air.

8. Notifications Made

   We notified the National Response Center at 1:26 a.m., the Illinois EMA at 1:36 a.m., Madison County EMA (LERC) at 1:41 a.m., and Illinois EPA at 1:50 a.m. All of the notifications occurred on October 19, 1992.

9. Actions taken to Respond to and Contain the Release

   On-shift operators responded to excess noise in the area and confirmed the relief valve had lifted. A hand valve was operated to divert the column overhead vent material to the flare. A valve lining up steam to the PRV was also opened in an effort to disperse vapors from the PRV. Once column pressure returned to normal, the pressure controller was placed in manual operation until the control system could be evaluated and repaired.

JDR\L9230703.WCB

10. Measures Taken to Prevent a Recurrence

An investigation team was chartered to review the incident and make recommendations to prevent recurrence. The team's final report is expected to be issued in mid-November.

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

Due to the very low odor threshold for hydrogen sulfide, we received odor complaints from one household in South Roxana. No onsite odor complaints were received.

There are no known or anticipated exposure health risks to the public associated with this release. This conclusion is based on air dispersion modeling which predicted off-property concentrations below OSHA short-term exposure limit values.

12. Name and Telephone Number of Contact Person

For more information, call J. D. Rankin at (618) 255-2737.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1500 individuals.

Sincerely,

J. N. Brewster

J. N. Brewster
Manager Environmental Conservation
Wood River Manufacturing Complex

bc: Head Office
A. F. Schmit - OSP-1442
M. A. Roth - OSP-4870

WRMC
J. J. Fornero
T. S. Miner
V. K. Huntsman
EC File 2056/Certified Letters Nos. 694, 695, 696, 697

JDR\L9230703.WCB

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

January 26, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Illinois Emergency Management Agency
110 East Adams Street
Springfield, IL 62706

Mr. Lanny Darr, Coordinator
Madison County Emergency Management Agency
201 Hillsboro Street
Edwardsville, IL 62025

Emergency Response Unit
Office of Chemical Safety
Illinois Environmental Protection Agency
P. O. Box 19276
Springfield, IL 62794-9276

Gentlemen:

SUBJECT: SHELL WOOD RIVER MANUFACTURING COMPLEX;
IESDA INCIDENT - REPORT 730173

This letter is a follow-up to our telephone reports on a release of sulfuric acid occurring on January 18, 1993.

1. Chemical Name or Substance Involved in the Release

98% Sulfuric acid

2. SARA Extremely Hazardous Substances Released

Yes

3. Estimate of Quantity of Substance Released

Approximately 1,100 lbs of sulfuric acid were released. Based on our calculations of release rate and time the incident began, we estimate the reportable quantity of 1,000 lbs was exceeded at approximately 8:21 a.m. on January 18, 1993.

JDR\L9302601.WCB

4. Date and Time of the Release

The release was discovered at 7:15 a.m. on January 18, 1993.

5. Duration of the Release

The release lasted until 8:30 a.m. on January 18, 1993.

6. Media into which the Release Occurred

The acid was released to the tank yard (rock) surrounding tank CH-262. None of the material left Shell property.

7. Notifications Made

We notified the National Response Center at 10:09 a.m., Illinois EMA at 10:16 a.m., Madison County EMA at 10:22 a.m., and Illinois EPA at 10:31 a.m. All notifications were made on January 18, 1993.

8. Probable Cause of the Release

Probable cause was corrosion of a bayonet heater inside the tank, which allowed acid to enter the heater. The acid then flowed through the tank wall via a 1" steam line, corroded an elbow in the steam line, and leaked to the tank yard.

9. Actions Taken to Respond to and Contain the Release

Pipefitters outfitted in acid king suits were dispatched to the tank to plug the steam line in order to stop the leak. The acid was contained in the tank yard, and in the drainage collection sump located at the tank. Acid collected from the spill was disposed to the process sewer where it was neutralized with caustic. Soda ash was used to neutralize the remaining material in the tank yard. All neutralized material will be offsited for disposal as a special waste.

10. Measures Taken/Planned to Prevent Recurrence

The bayonet heater has been removed from service, and other methods of heating the tank will be investigated.

JDR\L9302601.WCB

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

There are no known or anticipated exposure health risks associated with this release.

12. Name and Telephone Number of Contact Person

For more information, call Jay Rankin at (618) 255-2737.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1,500 individuals.

Sincerely,

J. N. Brewster

J. N. Brewster, Manager
Environmental Conservation
Wood River Manufacturing Complex

JDR\L9302601.WCB

bc: Head Office
R. J. Trautner - OSP-4006A
K. L. Peacock - OSP-4880

WRMC
B. C. Natalicchio
EC File 2056.06/Certified Letters Nos. 774, 775, 776

JDR\L9302601.WCB

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

March 2, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Oran Robinson
Illinois Emergency Management Agency
110 East Adams Street
Springfield, IL 62706

Mr. Lanny Darr, Coordinator
Madison County Emergency Management Agency
201 Hillsboro Street
Edwardsville, IL 62025

Mr. Charles Brutlag
Emergency Response Unit
Office of Chemical Safety
Illinois Environmental Protection Agency
P. O. Box 19276
Springfield, IL 62794-9276

Mr. Tom Powell
Emergency Response Unit
Office of Chemical Safety
Illinois Environmental Protection Agency
2009 Mall Street
Collinsville, IL 62234

Gentlemen:

SUBJECT: SHELL WOOD RIVER MANUFACTURING COMPLEX; IESDA INCIDENT - REPORT 930467

This letter is a follow-up to our telephone reports on a release of hydrogen sulfide and ammonia occurring on February 23, 1993.

1. Chemical Name or Substance Involved in the Release

Hydrogen sulfide, ammonia, and water vapor were released.

2. SARA Extremely Hazardous Substances Released

Hydrogen sulfide and ammonia are extremely hazardous substances.

JDR\L9306102.WCB

3. Estimate of Quantity of Substance Released

Approximately 280 lbs of hydrogen sulfide and 110 lbs of ammonia were released. Both are present in crude oil and in refinery sour waters. Ammonia is stored in quantities of less than 10,000 pounds on-site. Hydrogen sulfide is not stored as such in the refinery.

4. Date and Time of Release

The release occurred at approximately 3:00 p.m. on February 23, 1993.

5. Duration of the Release

The release lasted until 3:20 p.m. on February 23, 1993.

6. Media into which the Release Occurred

The hydrogen sulfide and ammonia were released to the air.

7. Probable Cause of the Release

Probable cause was overpressure of the sulfur plant sour water steam stripper and subsequent release of the stripper contents from the vessel pressure relief valve. The stripper tops normally flow to the sulfur plant claus trains. The stripper overpressured when this tops stream was blocked in as a result of an unscheduled shutdown of the sulfur plant C-train.

8. Actions Taken to Respond to and Contain the Release

Steps were first taken to secure the unit. This included blocking in the feed and steam to the stripper. The remaining material in the stripper was then vented to an operating claus train at the sulfur plant. After pressure was reduced in the stripper, the relief valve was manually blocked in. We began calculations of the release quantity immediately thereafter. As soon as it was determined that a reportable quantity had been released, we began making notifications as shown below.

9. Notifications Made

We notified the National Response Center at 6:10 p.m., local police at 6:10 p.m., Madison County EMA at 6:15 p.m., Illinois EMA at 6:25 p.m., and Illinois EPA at 6:57 p.m. All notifications were made on February 23, 1993.

JDR\L9306102.WCB

10. Measures Taken/Planned to Prevent Recurrence

An investigation team has been chartered to review the incident and make recommendations to prevent recurrence.

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

There are no known or anticipated exposure health risks associated with this release. This conclusion is based on dispersion modeling which showed ground level concentrations below short-term exposure limits. No odor complaints were received as a result of this incident.

12. Name and Telephone Number of Contact Person

For more information, contact Jay Rankin at (618) 255-2737.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1400 individuals.

Sincerely,

E. G. Johnson
Manufacturing Complex Manager
Wood River Manufacturing Complex

JDR\L9306102.WCB

bc: Head Office
R. J. Armstrong - OSP-1438
K. L. Peacock - OSP-4880

WRMC
E. G. Johnson (chrono)
J. N. Brewster
T. J. Roff
EC File 2056.06/Certified Letters Nos. 807, 808, 809, 810

JDR\L9306102.WCB

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

May 28, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Oran Robinson
Illinois Emergency Management Agency
110 East Adams Street
Springfield, IL 62706

Mr. Lanny Darr
Madison County Emergency Management Agency
201 Hillsboro Street
Edwardsville, IL 62025

Mr. Tom Powell
Office of Chemical Safety
Emergency Response Unit
Illinois Environmental Protection Agency
Region VI
2009 Mall Street
Collinsville, IL 62234

Mr. Jeff Benbenek
Division of Air Pollution Control
Illinois Environmental Protection Agency
Region VI
2009 Mall Street
Collinsville, IL 62234

Gentlemen:

SUBJECT: SHELL OIL COMPANY - WOOD RIVER MANUFACTURING COMPLEX
IEMA RELEASE NOTIFICATION REPORT 931284

This letter is a follow-up to our telephone reports of a release of lube oil base stock and hydrogen sulfide occurring on May 16, 1993.

1. Chemical Name or Substance Involved in the Release

   100 HVI lubricating oil base stock, and hydrogen and hydrogen sulfide gases.

2. CERCLA or Extremely Hazardous Substances Released

   Hydrogen sulfide is an Extremely Hazardous Substance. Neither hydrogen nor the lube oil is a CERCLA or an Extremely Hazardous Substance.

JDR\L9314803.WCB

3. Estimate of Quantity of Substance Released and Stored On-site

Approximately 250 lbs of hydrogen, 200 lbs of hydrogen sulfide, and 11,000 lbs of oil were released. Storage volume for the oil is approximately 19.5 million lbs. Neither hydrogen nor hydrogen sulfide are stored in the refinery.

4. Date and Time of the Release

The release occurred at 12:30 p.m. on May 16, 1993.

5. Duration of the Release

Estimated duration of the release was five minutes. Oil droplets were released for the first three minutes of this five-minute period.

6. On-site and Off-site Areas Affected by this Release.

The materials were released to the air. A northerly wind carried the release beyond our property line and into South Roxana. Residents in an area one-two blocks wide by about nine blocks long in the village reported oil droplets on houses, vegetation, streets, and personal property. In addition, some oil misting of Shell property occurred between the point of release and our south fence line.

7. Notifications Made

We originally notified local police of the oil release at about 1:00 p.m., Illinois EMA at 1:55 p.m., and Madison County EMA at 2:24 p.m. At 4:15 p.m., we confirmed the release involved a reportable quantity of hydrogen sulfide. We then contacted the National Response Center at 4:17 p.m., local police at 4:20 p.m., Illinois EMA at 4:23 p.m., Madison County EMA at 5:00 p.m., and Illinois EPA at 5:05 p.m. with this updated information. All reports were made on May 16, 1993.

8. Probable Cause of the Release

The release occurred during emergency depressuring of the Lubricants Hydrotreating Unit as a result of a fire at the unit. This unit removes organic sulfur and nitrogen compounds from lubricant basestock oils by passing the oil through a catalyst bed in the presence of hydrogen. The unit operates at 1200 psi. Pressure and emergency relief valves vent through an atmospheric vent located approximately 90 feet above grade. During the depressuring, oil in the unit was entrained into the hydrogen/hydrogen sulfide gas and released in the form of small droplets.

9. Actions Taken to Respond to and Contain the Release

We activated our incident command system for immediate response to the incident. Fire monitors were used to extinguish the fire at the unit. At 2:03 p.m. we alerted 425 households to the release using the Shell Community Alert Network telephone system. Shortly thereafter, Shell employees went door to door in the affected areas of South Roxana to update residents on the incident and offer assistance. Village streets were sanded, and street sweepers used to remove the sand and oil.

Starting on Monday, May 17, a cleaning contractor was mobilized to begin washdown of houses and private property in the affected areas. The contractor also cleaned village property including sidewalks, buildings, street signs, and a small section of one street. Experts were consulted for guidance in the proper treatment of trees and turf grasses. A tree service is evaluating trees for damage and will provide us with information on potential long-term effects of the oil. Impacted grasses have been mowed and bagged, followed by detergent washing to emulsify any remaining oil. Some whiterock from parking areas was removed from Shell properties both inside and outside our fence line. All oily, contaminated wastes are being shipped under manifest and disposed of at Laidlaw's Barton landfill under our oily contaminated solids disposal permit.

IEPA conducted several inspections following the incident and was briefed on the above work.

10. Measures Taken/Planned to Prevent Recurrence

Data has been gathered and a team has been chartered to determine the root cause of the incident.

11. Resultant Known or Anticipated Exposure Health Risks and Community Impact

We have received a total of seven health claims involving symptoms such as irritated eyes and coughing from individuals in South Roxana at the time of the release. Shell's medical director has been in contact with the personal physicians of those claimnant's that sought medical care. Air dispersion modeling of off-property impact predicted concentrations less than the OSHA 15 minute exposure limit for H_2S.

12. Name and Telephone Number of Contact Person

For more information, call Jay Rankin at (618) 255-2737.

13. Requested Facility Information

The SIC code for our facility is 2911 (Petroleum Refining). We currently employ approximately 1,400 individuals.

Sincerely,

J. N. Brewster, Manager
Environmental Conservation
Wood River Manufacturing Complex

bc: Head Office
K. L. Peacock - OSP-4880
J. R. Armstrong - OSP-1438

WRMC
G. R. Peters
R. D. Gillette
A. K. Peccola/L. L. Barringer
Lube Incident File
EC File 2056.06/Certified Letters Nos. 887, 888, 889, 890

JDR\L9314803.WCB

APPENDIX C

STORAGE TANK EMISSION CALCULATIONS

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name:

ctivity and Material Information:
Material: TSTREAM 44
SR HVY NAPHTHA
Amount: 334783.0000000000 Max Hourly: 38.1000000000 Units: BBL
Start Date: 01/01/92 End Date: 12/31/92 Application Equipment: BRTH Operation: Shift Code:
Material Density: 6.320000 LB/GAL BTU/SCF: 0.00000 Liquid Molecular Wt.: 117.54000 Vapor Molecular Wt.: 99.20000

.ttributes and Intermediate Calculations:

Code	Value	Units	CAS Number	Chemical Name
HR USE	719658.6600000000	GAL		
USAGE	719658.6600000000	GAL		
ADJ FAC	1.0000000000			
BR LOSS	101.0445069700		100-41-4	ETHYLBENZENE
BR LOSS	3.6118224900		106-42-3	P-XYLENE
BR LOSS	111.5410142600		108-38-3	M-XYLENE
BR LOSS	172.1343061200		108-88-3	TOLUENE
BR LOSS	406.3610809500		110-54-3	HEXANE
BR LOSS	0.0000000000		110-82-7	CYCLOHEXANE
BR LOSS	0.0000000000		1634-04-4	METHYL TERT-BUTYL ETHER
BR LOSS	0.0000000000		540-84-1	TRIMETHYL PENTANE,2,2,4-
BR LOSS	115.5679608400		71-43-2	BENZENE
BR LOSS	1.5453987365		7783-06-4	HYDROGEN SULFIDE
BR LOSS	0.0000000000		91-20-3	NAPHTHALENE
BR LOSS	32.6246996980		95-47-6	O-XYLENE
BR LOSS	10.7361310440		95-63-6	1,2,4-TRIMETHYL BENZENE

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name: :

BR LOSS	8.8025763124	98-82-8	CUMENE
CRUDE F	1.0000000000		
FORM G	1.9615230280	100-41-4	ETHYLBENZENE
FORM G	0.0701143803	106-42-3	P-XYLENE
FORM G	2.1652861160	108-38-3	M-XYLENE
FORM G	3.3415513173	108-88-3	TOLUENE
FORM G	7.8884705551	110-54-3	HEXANE
FORM G	0.0000000000	110-82-7	CYCLOHEXANE
FORM G	0.0000000000	1634-04-4	METHYL TERT-BUTYL ETHER
FORM G	0.0000000000	540-84-1	TRIMETHYL PENTANE,2,2,4-
FORM G	2.2434590785	71-43-2	BENZENE
FORM G	0.0300000000	7783-06-4	HYDROGEN SULFIDE
FORM G	0.0000000000	91-20-3	NAPHTHALENE
FORM G	0.6333258646	95-47-6	O-XYLENE
FORM G	0.2084147759	95-63-6	1,2,4-TRIMETHYL BENZENE
FORM G	0.1708797109	98-82-8	CUMENE
PROD FA	1.0000000000		
VAP FAC	1.0000000000		
WK LOSS	258.7579287300	100-41-4	ETHYLBENZENE
WK LOSS	9.2492678176	106-42-3	P-XYLENE
WK LOSS	285.6377123600	108-38-3	M-XYLENE
WK LOSS	440.8069062900	108-88-3	TOLUENE
WK LOSS	1040.6221454000	110-54-3	HEXANE
WK LOSS	0.0000000000	110-82-7	CYCLOHEXANE
WK LOSS	0.0000000000	1634-04-4	METHYL TERT-BUTYL ETHER
WK LOSS	0.0000000000	540-84-1	TRIMETHYL PENTANE,2,2,4-
WK LOSS	295.9500429200	71-43-2	BENZENE

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name: :

WK LOSS	3.9575053420	7783-06-4	HYDROGEN SULFIDE
WK LOSS	0.0000000000	91-20-3	NAPHTHALENE
WK LOSS	83.5463497470	95-47-6	O-XYLENE
WK LOSS	27.4934196320	95-63-6	1,2,4-TRIMETHYL BENZENE
WK LOSS	22.5419122960	98-82-8	CUMENE
TKTEMP	70.00	DEG F	
COLOR	1.33	NA	
DTEMP	20.00	DEG F	
TKCAP	17134.73	BBL	
TKDIA	50.00	FT	
TKTYP	V		
VAPSPC	24.50	FT	

verrides:

CAS No. and Chemical Name	Activity 1st Value	Activity 2nd Value	Activity 3rd Value	Max Hourly Activity 1st Value	Max Hourly Activity 2nd Value	Max Hourly Activity 3rd Value	Activity Units 1st Unit	Activity Units 2nd Unit	Activity Units 3rd Unit

rrors Found:
CHEMICAL 110-82-7 HAS ZERO SPECIATION.
CHEMICAL 1634-04-4 HAS ZERO SPECIATION.
CHEMICAL 540-84-1 HAS ZERO SPECIATION.
CHEMICAL 91-20-3 HAS ZERO SPECIATION.

Wednesday, October 27, 1993, at 19:14:26 WRMC-92/CMH

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

ation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
ocess Unit: Source Desc.: BPU/RU:
M X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name: :

missions:

CAS No. and Chemical Name		Control Devices Eff. Pct.	Prim.	2nd.	Emissions Factors Emis. Factor	Emis. Basis	Activ Units	Emis. Units	Emissions Emis. Total	Max Hourly	Mass Balance Info New MSDS	New Station	Dest Code	Dest. Name
100-41-4	ETHYLBENZENE	0.0000			0.000000000000000			LB	101.044507	0.01150325				
106-42-3	P-XYLENE	0.0000			0.000000000000000			LB	3.611822	0.0004111820				
108-38-3	M-XYLENE	0.0000			0.000000000000000			LB	111.541014	0.01269820				
108-88-3	TOLUENE	0.0000			0.000000000000000			LB	172.134306	0.01959635				
110-54-3	HEXANE	0.0000			0.000000000000000			LB	406.361081	0.04626151				
110-82-7	CYCLOHEXANE	0.0000			0.000000000000000			LB	0	0				
1634-04-4	METHYL TERT-BUTYL ET	0.0000			0.000000000000000			LB	0	0				
540-84-1	TRIMETHYL PENTANE,2,	0.0000			0.000000000000000			LB	0	0				
71-43-2	BENZENE	0.0000			0.000000000000000			LB	115.567961	0.01315664				
7783-06-4	HYDROGEN SULFIDE	0.0000			0.000000000000000			LB	1.545399	0.0001759334				
91-20-3	NAPHTHALENE	0.0000			0.000000000000000			LB	0	0				
95-47-6	O-XYLENE	0.0000			0.000000000000000			LB	32.624700	0.00371411				
95-63-6	1,2,4-TRIMETHYL BENZ	0.0000			0.000000000000000			LB	10.736131	0.00122224				
98-82-8	CUMENE	0.0000			0.000000000000000			LB	8.802576	0.00100211				

n Wednesday, October 27, 1993, at 19:14:27 WRMC-92/CMH

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name: :

ctivity and Material Information:
Material: TSTREAM 44
SR HVY NAPHTHA
Amount: 334783.0000000000 Max Hourly: 38.1000000000 Units: BBL
Start Date: 01/01/92 End Date: 12/31/92 Application Equipment: WORK Operation: Shift Code:
Material Density: 6.320000 LB/GAL BTU/SCF: 0.00000 Liquid Molecular Wt.: 117.54000 Vapor Molecular Wt.: 99.20000

ttributes and Intermediate Calculations:

Code	Value	Units	CAS Number	Chemical Name
HR USE	1600.7383880000	GAL		
USAGE	14060886.0000000000	GAL		
ADJ FAC	1.0000000000			
BR LOSS	101.0445069700		100-41-4	ETHYLBENZENE
BR LOSS	3.6118224900		106-42-3	P-XYLENE
BR LOSS	111.5410142600		108-38-3	M-XYLENE
BR LOSS	172.1343061200		108-88-3	TOLUENE
BR LOSS	406.3610809500		110-54-3	HEXANE
BR LOSS	0.0000000000		110-82-7	CYCLOHEXANE
BR LOSS	0.0000000000		1634-04-4	METHYL TERT-BUTYL ETHER
BR LOSS	0.0000000000		540-84-1	TRIMETHYL PENTANE,2,2,4-
BR LOSS	115.5679608400		71-43-2	BENZENE
BR LOSS	1.5453987365		7783-06-4	HYDROGEN SULFIDE
BR LOSS	0.0000000000		91-20-3	NAPHTHALENE
BR LOSS	32.6246996980		95-47-6	O-XYLENE
BR LOSS	10.7361310440		95-63-6	1,2,4-TRIMETHYL BENZENE

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name:

BR LOSS	8.8025763124	98-82-8	CUMENE
CRUDE F	1.0000000000		
FORM G	1.9615230280	100-41-4	ETHYLBENZENE
FORM G	0.0701143803	106-42-3	P-XYLENE
FORM G	2.1652861160	108-38-3	M-XYLENE
FORM G	3.3415513173	108-88-3	TOLUENE
FORM G	7.8884705551	110-54-3	HEXANE
FORM G	0.0000000000	110-82-7	CYCLOHEXANE
FORM G	0.0000000000	1634-04-4	METHYL TERT-BUTYL ETHER
FORM G	0.0000000000	540-84-1	TRIMETHYL PENTANE,2,2,4-
FORM G	2.2434590785	71-43-2	BENZENE
FORM G	0.0300000000	7783-06-4	HYDROGEN SULFIDE
FORM G	0.0000000000	91-20-3	NAPHTHALENE
FORM G	0.6333258646	95-47-6	O-XYLENE
FORM G	0.2084147759	95-63-6	1,2,4-TRIMETHYL BENZENE
FORM G	0.1708797109	98-82-8	CUMENE
PROD FA	1.0000000000		
VAP FAC	1.0000000000		
WK LOSS	258.7579287300	100-41-4	ETHYLBENZENE
WK LOSS	9.2492678176	106-42-3	P-XYLENE
WK LOSS	285.6377123600	108-38-3	M-XYLENE
WK LOSS	440.8069062900	108-88-3	TOLUENE
WK LOSS	1040.6221454000	110-54-3	HEXANE
WK LOSS	0.0000000000	110-82-7	CYCLOHEXANE
WK LOSS	0.0000000000	1634-04-4	METHYL TERT-BUTYL ETHER
WK LOSS	0.0000000000	540-84-1	TRIMETHYL PENTANE,2,2,4-
WK LOSS	295.9500429200	71-43-2	BENZENE

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name:

WK LOSS	3.9575053420		7783-06-4	HYDROGEN SULFIDE
WK LOSS	0.0000000000		91-20-3	NAPHTHALENE
WK LOSS	83.5463497470		95-47-6	O-XYLENE
WK LOSS	27.4934196320		95-63-6	1,2,4-TRIMETHYL BENZENE
WK LOSS	22.5419122960		98-82-8	CUMENE
TKTEMP	70.00	DEG F		
COLOR	1.33	NA		
DTEMP	20.00	DEG F		
TKCAP	17134.73	BBL		
TKDIA	50.00	FT		
TKTYP	V			
VAPSPC	24.50	FT		

verrides:

CAS No. and Chemical Name	Activity 1st Value	Activity 2nd Value	Activity 3rd Value	Max Hourly Activity 1st Value	Max Hourly Activity 2nd Value	Max Hourly Activity 3rd Value	Activity Units 1st Unit	Activity Units 2nd Unit	Activity Units 3rd Unit

rrors Found:
CHEMICAL 110-82-7 HAS ZERO SPECIATION.
CHEMICAL 1634-04-4 HAS ZERO SPECIATION.
CHEMICAL 540-84-1 HAS ZERO SPECIATION.
CHEMICAL 91-20-3 HAS ZERO SPECIATION.

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-F012 Station Type: FIXTNK Air Emissions Equation: FIXTNK
rocess Unit: Source Desc.: BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-13
ermit No.: 72110626 Permit Name:

missions:

CAS No.	and Chemical Name	Control Devices Eff. Pct.	Prim.	2nd.	Emis. Factor	Emissions Factors Emis. Basis	Activ Units	Emis. Units	Emissions Emis. Total	Max Hourly	New MSDS	Mass Balance Info New Station	Dest Code	Dest. Name
100-41-4	ETHYLBENZENE	0.0000			0.000000000000000			LB	258.757929	0.02945787				
106-42-3	P-XYLENE	0.0000			0.000000000000000			LB	9.249268	0.00105297				
108-38-3	M-XYLENE	0.0000			0.000000000000000			LB	285.637712	0.03251795				
108-88-3	TOLUENE	0.0000			0.000000000000000			LB	440.806906	0.05018294				
110-54-3	HEXANE	0.0000			0.000000000000000			LB	1041	0.11846791				
110-82-7	CYCLOHEXANE	0.0000			0.000000000000000			LB	0	0				
1634-04-4	METHYL TERT-BUTYL ET	0.0000			0.000000000000000			LB	0	0				
540-84-1	TRIMETHYL PENTANE,2,	0.0000			0.000000000000000			LB	0	0				
71-43-2	BENZENE	0.0000			0.000000000000000			LB	295.950043	0.03369194				
7783-06-4	HYDROGEN SULFIDE	0.0000			0.000000000000000			LB	3.957505	0.0004505357				
91-20-3	NAPHTHALENE	0.0000			0.000000000000000			LB	0	0				
95-47-6	O-XYLENE	0.0000			0.000000000000000			LB	83.546350	0.00951120				
95-63-6	1,2,4-TRIMETHYL BENZ	0.0000			0.000000000000000			LB	27.493420	0.00312994				
98-82-8	CUMENE	0.0000			0.000000000000000			LB	22.541912	0.00256625				

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

mission quation	Description
IXTNK	Total losses are Breathing Loss + Working Loss. Breathing Loss = .0226 * Vapor_Mol * ((Vapor_pr / (760 - vapor_pr)) ^ .68) * (diam ^ 1.73) * (height ^ .51) * (dlta_temp ^ .5) * tank_colr * adj_fac * prod_fac * vap_fac * vap_pct * CE() * OPFCTR() Working Loss = .0000004642 * Vapor_Mol * Vapor_pr * Turn_fac * Crude_Fac * Outq * Vap_fac * Level * Vap_pct * CE() Tank_Colr is the attribute color. ADJ_FAC is based on the tank diameter. VAP_FAC is based on the attribute VAPRC. PROD_FAC and CRUDE_FAC are based on the material type. Vapor_PR is based on the attribute VAPPRES or the material vapor pressure. Vapor_Mol is based on the attribute VAPMOL or the material vapor molecular weight. CE() is 1 - control efficiency/100. OPFCTR is based on the attributes OPFCTR or OP%. If OP% is supplied, the value is divided by 100. The result is then factored by the total working hours divided by total hours per year. TOT_HRS is the total working hours between the start and end dates. Hourly losses are based on annual losses (without the operating factor) divided by total working hours per year.

Sources/Stations Site: WRMC Yr: 92 Printed 11/03/93 09:04
Created: 05/05/92 By PJM Last Upt: 05/05/92 By JML Review: 08/14/92 Valid

----------Key Fields----------
*Station Number TK-F012
---

*Station Type: FIXTNK
*Site: WRMC
Building:
Process Unit:
Source Desc.:
BPU/RU:
UTM X:
UTM Y:
WRMC Permit: WRR-13
Permit No.: 72110626
Permit Name:
:

Alt. Equp. No. 1:
Alt. Equip. No. 2:
*No. of Devices: 1
*Exhaust Type(s): Hood/Vent Y Area N
Abated? N
Area Number:

Specific Name: NAPHTHA ASPHALT DILUENT (1-12/91)
Generic Name:
Confidential?: N

*Audit By: WR
Date Prepared: 05/05/92

Treatment/Recyling Stations: SARA Treatment/Recycling Code:

Hrs/Day	Days/Week	Weeks/Yr
24.00	7	52

Monthly Percentages

Jan.	8.33	Mar.	8.33	May	8.33	Jul.	8.33	Sep.	8.33	Nov.	8.33
Feb.	8.33	Apr.	8.33	Jun.	8.33	Aug.	8.33	Oct.	8.33	Dec.	8.33

Number of Operating Days

Jan.	0	Mar.	0	May	0	Jul.	0	Sep.	0	Nov.	0
Feb.	0	Apr.	0	Jun.	0	Aug.	0	Oct.	0	Dec.	0

HON Information:
HON Exempt: N
Emissions Avg Group:
Products:

HON Group (1,2):

Contacts:

Name	Mail Stop	Phone

Comments:

FIXED ROOF TANK

DMR Comments:

Station Configuration:

Code	Value	Unit	Required?	Description
COLOR	1.33	NA	Y	OUTER SURFACE COLOR
DTEMP	20.00	DEG F	N	TEMPERATURE CHANGE
TKCAP	17134.73	BBL	Y	STORAGE TANK CAPACITY
[illegible]	[illegible]	FT	Y	TANK DIAMETER

Materials/Waste Database Site: WRMC Yr: 92 Printed 06/28/93 16:09
Created: 04/13/92 By JML Last Upt: 09/16/92 By RRP Review: Valid

----------Key Fields----------
*Material: TSTREAM 44 Date of Material: 04/13/92

Vendor:
Name: SR HVY NAPHTHA
Alias Matl Numbers:
Material Type: TANK STORAGE
Mil Spec:
Trade Secret: N

Computer Generated
N

Hazards:
Fire:
Reactivity:
Sudden Rel. of Pressure:
Acute Health:
Chronic Health:

State/Local Code:

Custom Fields:
Custom field 1:
Custom field 2:
Custom field 3:
Custom field 4:
Custom field 5:
Custom field 6:
Custom field 7:
pH:
MSDS Number:

VOC (g/L): 0.00 % VOC: 0.00
BTU/SCF: 0.0 *Phasestate: L (S/L/G)

Flash Point: Method: (OC=Open Cup, CC=Closed Cup)

Reference:	GLC	Units
*Density:	6.32000	* LB/GAL
Comp. Solv. Dens.:	0.00000	
Vapor Pressure:	0.394000	PSIA
Vapor Molecular Wt:	99.20	
Liq. Molec. Wt.:	117.54	
Note:		
% Solids:	0.0000	by (M/V)

*Speciation by Mass/Volume: M

Constituents

CAS No.	SARA Rpt.	Percent	Vapor Mass%	% Description	Em. Basis	Chemical Name
100-41-4		3.9800000000000	0.0000000000000			ETHYLBENZENE
106-42-3		0.1500000000000	0.0000000000000			P-XYLENE
108-38-3		4.9000000000000	0.0000000000000			M-XYLENE
108-88-3		2.2200000000000	0.0000000000000			TOLUENE
110-54-3		0.9900000000000	0.0000000000000			HEXANE
110-82-7		0.0000000000000	0.0000000000000			CYCLOHEXANE
1634-04-4		0.0000000000000	0.0000000000000			METHYL TERT-BUTYL ETHER
540-84-1		0.0000000000000	0.0000000000000			TRIMETHYL PENTANE,2,2,4-
71-43-2		0.4400000000000	0.0000000000000			BENZENE
7783-06-4		0.0300000000000	0.0300000000000			HYDROGEN SULFIDE
91-20-3		0.0000000000000	0.0000000000000			NAPHTHALENE
95-47-6		1.8000000000000	0.0000000000000			O-XYLENE
95-63-6		1.9600000000000	0.0000000000000			1,2,4-TRIMETHYL BENZENE
98-82-8		0.6800000000000	0.0000000000000			CUMENE

Product Information:

Activity Data Site: WRMC Yr: 92 Printed 10/28/93 09:41
Created: 05/05/92 By PJM Last Upt: 10/27/93 By CMH Review: Valid

----------Key Fields----------

From Station:
*This Station: TK-F012
*Material/CAS: TSTREAM 44
Operation:
Application Equip.:
*From 01/01/92 *To 12/31/92
Shift Code: Computer Generated? N

To enter Usage, enter fields a - d, OR e.

a) Beginning Quantity: 0.0000000 e) Quantity Used: 334783.0000000
b) Supply Quantity: 0.0000000
c) Disposed Quantity: 0.0000000
d) Ending Quantity: 0.0000000 Units: BBL

Maximum Hourly Usage: 38.1000000

HON Exempt: N

Is this projected activity? N

Monthly Usage Percentages

Jan.	0.00	Mar.	0.00	May.	0.00	Jul.	0.00	Sep.	0.00	Nov.	0.00
Feb.	0.00	Apr.	0.00	Jun.	0.00	Aug.	0.00	Oct.	0.00	Dec.	0.00

Number of Operating Days Per Month

Jan.	0	Mar.	0	May.	0	Jul.	0	Sep.	0	Nov.	0
Feb.	0	Apr.	0	Jun.	0	Aug.	0	Oct.	0	Dec.	0

Hrs/Day	Days/Wk	Wks/Yr
0.00	0	0

Default Attributes:

Code	Value	Units	Required?	Description
TKTEMP	70.00	DEG F	F	STORAGE TEMPERATURE

Specific Attributes:

Code	Value	Units	Required?	Description

Emission Factors Site: WRMC Yr: 92 Printed 10/28/93 18:59
Created: 03/27/92 By Last Upt: 05/04/92 By JML Review: 03/27/92 Valid

----------Key Fields----------

*Station Type FIXTNK
Material ID
CAS

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*C/W/A	Emission Factor	Activity Unit	Emiss Unit	Basis	Expression
A	1.000000000000000	LB	LB	06	

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

Station: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
Process Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
UTM X: UTM Y: WRMC Permit: WRR-28
Permit No.: 73010832 Permit Name: DISPATCHING :

Activity and Material Information:
Material: TSTREAM 20
GASOLINE RU2000 not used.
Amount: 15493.0440000000 Max Hourly: ~~1.7640000000~~ Units: MBBL Shift Code:
Start Date: 01/01/92 End Date: 12/31/92 Application Equipment: STAND Operation:
Material Density: 6.210000 LB/GAL BTU/SCF: 0.00000 Liquid Molecular Wt.: 85.24000 Vapor Molecular Wt.: 74.24000

Attributes and Intermediate Calculations:

Code	Value	Units	CAS Number	Chemical Name
HR USE	0.0000000000	GAL		
USAGE	0.0000000000	GAL		
CLING	0.0015000000			
FLSSL	1.3441385121		100-41-4	ETHYLBENZENE
FLSSL	12.6366443750		108-88-3	TOLUENE
FLSSL	13.0920094010		110-54-3	HEXANE
FLSSL	0.0000000000		110-82-7	CYCLOHEXANE
FLSSL	5.0881184393		1330-20-7	XYLENE (MIXED ISOMERS)
FLSSL	6.7101199622		1634-04-4	METHYL TERT-BUTYL ETHER
FLSSL	5.1615145055		540-84-1	TRIMETHYL PENTANE,2,2,4-
FLSSL	7.8101786579		71-43-2	BENZENE
FLSSL	0.0100039150		91-20-3	NAPHTHALENE
FLSSL	0.0312647693		95-63-6	1,2,4-TRIMETHYL BENZENE
FLSSL	0.0028269858		98-82-8	CUMENE
FLWL	34.5320022200		100-41-4	ETHYLBENZENE
FLWL	104.9257636000		108-88-3	TOLUENE

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

Station: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
Process Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
UTM X: UTM Y: WRMC Permit: WRR-28
Permit No.: 73010832 Permit Name: DISPATCHING :

FLWL	20.2723981400		110-54-3	HEXANE
FLWL	0.0000000000		110-82-7	CYCLOHEXANE
FLWL	137.6498653700		1330-20-7	XYLENE (MIXED ISOMERS)
FLWL	6.1445425180		1634-04-4	METHYL TERT-BUTYL ETHER
FLWL	24.2279000690		540-84-1	TRIMETHYL PENTANE,2,2,4-
FLWL	18.9573540750		71-43-2	BENZENE
FLWL	29.4584214670		91-20-3	NAPHTHALENE
FLWL	3.7802304581		95-63-6	1,2,4-TRIMETHYL BENZENE
FLWL	0.1430545605		98-82-8	CUMENE
FORM G	0.0748335394		100-41-4	ETHYLBENZENE
FORM G	0.7035322747		108-88-3	TOLUENE
FORM G	0.7288842576		110-54-3	HEXANE
FORM G	0.0000000000		110-82-7	CYCLOHEXANE
FORM G	0.2832757996		1330-20-7	XYLENE (MIXED ISOMERS)
FORM G	0.3735790785		1634-04-4	METHYL TERT-BUTYL ETHER
FORM G	0.2873620506		540-84-1	TRIMETHYL PENTANE,2,2,4-
FORM G	0.4348237233		71-43-2	BENZENE
FORM G	0.0005569578		91-20-3	NAPHTHALENE
FORM G	0.0017406341		95-63-6	1,2,4-TRIMETHYL BENZENE
FORM G	0.0001573895		98-82-8	CUMENE
FORM M	2.7911497585		100-41-4	ETHYLBENZENE
FORM M	8.4809307568		108-88-3	TOLUENE
FORM M	1.6385756844		110-54-3	HEXANE
FORM M	0.0000000000		110-82-7	CYCLOHEXANE
FORM M	11.1259516910		1330-20-7	XYLENE (MIXED ISOMERS)
FORM M	0.4966505636		1634-04-4	METHYL TERT-BUTYL ETHER
FORM M	1.9582906602		540-84-1	TRIMETHYL PENTANE,2,2,4-

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
'rocess Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
ITM X: UTM Y: WRMC Permit: WRR-28
'ermit No.: 73010832 Permit Name: DISPATCHING

FORM M	1.5322834138	71-43-2	BENZENE
FORM M	2.3810628019	91-20-3	NAPHTHALENE
FORM M	0.3055481481	95-63-6	1,2,4-TRIMETHYL BENZENE
FORM M	0.0115628019	98-82-8	CUMENE
LOSS FA	101.7000000000		
LRF	0.7822441010	100-41-4	ETHYLBENZENE
LRF	7.3541085452	108-88-3	TOLUENE
LRF	7.6191159102	110-54-3	HEXANE
LRF	0.0000000000	110-82-7	CYCLOHEXANE
LRF	2.9611164312	1330-20-7	XYLENE (MIXED ISOMERS)
LRF	3.9050676026	1634-04-4	METHYL TERT-BUTYL ETHER
LRF	3.0038305111	540-84-1	TRIMETHYL PENTANE,2,2,4-
LRF	4.5452653335	71-43-2	BENZENE
LRF	0.0058219473	91-20-3	NAPHTHALENE
LRF	0.0181950603	95-63-6	1,2,4-TRIMETHYL BENZENE
LRF	0.0016452121	98-82-8	CUMENE
PR FACT	1.0000000000		
VAP FAC	0.1384481299		
CLINGFC	.0015	NA	
EXTFF	101.7	NA	
SEALTYP	1C		
TKDIA	110	FT	
WINDAVG	10	MPH	

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

Station: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
'rocess Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
JTM X: UTM Y: WRMC Permit: WRR-28
'ermit No.: 73010832 Permit Name: DISPATCHING

)verrides:

CAS No. and Chemical Name	Activity 1st Value	Activity 2nd Value	Activity 3rd Value	Max Hourly Activity 1st Value	Max Hourly Activity 2nd Value	Max Hourly Activity 3rd Value	Activity Units 1st Unit	Activity Units 2nd Unit	Activity Units 3rd Unit

:rrors Found:
CHEMICAL 110-82-7 HAS ZERO SPECIATION.

Emissions:

CAS No. and Chemical Name		Control Devices Eff. Pct.	Prim.	2nd.	Emis. Factor	Emissions Factors Emis. Basis	Activ Units	Emis. Units	Emissions Emis. Total	Max Hourly	Mass Balance Info New MSDS	New Station	Dest Code	Dest. Name
100-41-4	ETHYLBENZENE	0.0000			0.900000 06	LB	LB		2.126383	0.0002420745				
108-88-3	TOLUENE	0.0000			0.900000 06	LB	LB		19.990753	0.00227581				
110-54-3	HEXANE	0.0000			0.900000 06	LB	LB		20.711125	0.00235782				
110-82-7	CYCLOHEXANE	0.0000			0.900000 06	LB	LB		0	0				
1330-20-7	XYLENE (MIXED ISOMER	0.0000			0.900000 06	LB	LB		8.049235	0.0009163519				
1634-04-4	METHYL TERT-BUTYL ET	0.0000			0.900000 06	LB	LB		10.615188	0.00120847				
540-84-1	TRIMETHYL PENTANE,2,	0.0000			0.900000 06	LB	LB		8.165345	0.0009295702				
71-43-2	BENZENE	0.0000			0.900000 06	LB	LB		12.355444	0.00140659				
91-20-3	NAPHTHALENE	0.0000			0.900000 06	LB	LB		0.01582586	0.0000018017				
95-63-6	1,2,4-TRIMETHYL BENZ	0.0000			0.900000 06	LB	LB		0.04945983	0.0000056307				
98-82-8	CUMENE	0.0000			0.900000 06	LB	LB		0.00447220	0.0000005091				

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
rocess Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-28
ermit No.: 73010832 Permit Name: DISPATCHING

ctivity and Material Information:
Material: TSTREAM 20
GASOLINE RU2000
Amount: 15493.0440000000 Max Hourly: 1.7640000000 Units: MBBL
Start Date: 01/01/92 End Date: 12/31/92 Application Equipment: WITHD Operation: Shift Code:
Material Density: 6.210000 LB/GAL BTU/SCF: 0.00000 Liquid Molecular Wt.: 85.24000 Vapor Molecular Wt.: 74.24000

ttributes and Intermediate Calculations:

Code	Value	Units	CAS Number	Chemical Name
HR USE	74.0787622950	MGAL		
USAGE	650707.8480000000	MGAL		
CLING	0.0015000000			
FLSSL	1.3441385121		100-41-4	ETHYLBENZENE
FLSSL	12.6366443750		108-88-3	TOLUENE
FLSSL	13.0920094010		110-54-3	HEXANE
FLSSL	0.0000000000		110-82-7	CYCLOHEXANE
FLSSL	5.0881184393		1330-20-7	XYLENE (MIXED ISOMERS)
FLSSL	6.7101199622		1634-04-4	METHYL TERT-BUTYL ETHER
FLSSL	5.1615145055		540-84-1	TRIMETHYL PENTANE,2,2,4-
FLSSL	7.8101786579		71-43-2	BENZENE
FLSSL	0.0100039150		91-20-3	NAPHTHALENE
FLSSL	0.0312647693		95-63-6	1,2,4-TRIMETHYL BENZENE
FLSSL	0.0028269858		98-82-8	CUMENE
FLWL	34.5320022200		100-41-4	ETHYLBENZENE
FLWL	104.9257636000		108-88-3	TOLUENE

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
rocess Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-28
ermit No.: 73010832 Permit Name: DISPATCHING

FLWL	20.2723981400	110-54-3	HEXANE
FLWL	0.0000000000	110-82-7	CYCLOHEXANE
FLWL	137.6498653700	1330-20-7	XYLENE (MIXED ISOMERS)
FLWL	6.1445425180	1634-04-4	METHYL TERT-BUTYL ETHER
FLWL	24.2279000690	540-84-1	TRIMETHYL PENTANE,2,2,4-
FLWL	18.9573540750	71-43-2	BENZENE
FLWL	29.4584214670	91-20-3	NAPHTHALENE
FLWL	3.7802304581	95-63-6	1,2,4-TRIMETHYL BENZENE
FLWL	0.1430545605	98-82-8	CUMENE
FORM G	0.0748335394	100-41-4	ETHYLBENZENE
FORM G	0.7035322747	108-88-3	TOLUENE
FORM G	0.7288842576	110-54-3	HEXANE
FORM G	0.0000000000	110-82-7	CYCLOHEXANE
FORM G	0.2832757996	1330-20-7	XYLENE (MIXED ISOMERS)
FORM G	0.3735790785	1634-04-4	METHYL TERT-BUTYL ETHER
FORM G	0.2873620506	540-84-1	TRIMETHYL PENTANE,2,2,4-
FORM G	0.4348237233	71-43-2	BENZENE
FORM G	0.0005569578	91-20-3	NAPHTHALENE
FORM G	0.0017406341	95-63-6	1,2,4-TRIMETHYL BENZENE
FORM G	0.0001573895	98-82-8	CUMENE
FORM M	2.7911497585	100-41-4	ETHYLBENZENE
FORM M	8.4809307568	108-88-3	TOLUENE
FORM M	1.6385756844	110-54-3	HEXANE
FORM M	0.0000000000	110-82-7	CYCLOHEXANE
FORM M	11.1259516910	1330-20-7	XYLENE (MIXED ISOMERS)
FORM M	0.4966505636	1634-04-4	METHYL TERT-BUTYL ETHER
FORM M	1.9582906602	540-84-1	TRIMETHYL PENTANE,2,2,4-

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
rocess Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-28
ermit No.: 73010832 Permit Name: DISPATCHING :

FORM M	1.5322834138	71-43-2	BENZENE
FORM M	2.3810628019	91-20-3	NAPHTHALENE
FORM M	0.3055481481	95-63-6	1,2,4-TRIMETHYL BENZENE
FORM M	0.0115628019	98-82-8	CUMENE
LOSS FA	101.7000000000		
LRF	0.7822441010	100-41-4	ETHYLBENZENE
LRF	7.3541085452	108-88-3	TOLUENE
LRF	7.6191159102	110-54-3	HEXANE
LRF	0.0000000000	110-82-7	CYCLOHEXANE
LRF	2.9611164312	1330-20-7	XYLENE (MIXED ISOMERS)
LRF	3.9050676026	1634-04-4	METHYL TERT-BUTYL ETHER
LRF	3.0038305111	540-84-1	TRIMETHYL PENTANE,2,2,4-
LRF	4.5452653335	71-43-2	BENZENE
LRF	0.0058219473	91-20-3	NAPHTHALENE
LRF	0.0181950603	95-63-6	1,2,4-TRIMETHYL BENZENE
LRF	0.0016452121	98-82-8	CUMENE
PR FACT	1.0000000000		
VAP FAC	0.1384481299		
CLINGFC	.0015	NA	
EXTFF	101.7	NA	
SEALTYP	1C		
TKDIA	110	FT	
WINDAVG	10	MPH	

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-A028 Station Type: EXTFLT Air Emissions Equation: EXTFLT
rocess Unit: Source Desc.: UNLEAD REG GRD GAS BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-28
ermit No.: 73010832 Permit Name: DISPATCHING :

verrides:

CAS No. and Chemical Name	Activity 1st Value	Activity 2nd Value	Activity 3rd Value	Max Hourly Activity 1st Value	Max Hourly Activity 2nd Value	Max Hourly Activity 3rd Value	Activity Units 1st Unit	Activity Units 2nd Unit	Activity Units 3rd Unit

rrors Found:
CHEMICAL 110-82-7 HAS ZERO SPECIATION.

missions:

CAS No. and Chemical Name		Control Devices Eff. Pct.	Prim.	2nd.	Emissions Factors Emis. Factor	Emis. Basis	Activ Units	Emis. Units	Emissions Emis. Total	Max Hourly	Mass Balance Info New MSDS	New Station	Dest Code	Dest Name
100-41-4	ETHYLBENZENE	0.0000			0.900000 06	LB	LB		34.532002	0.00393124				
108-88-3	TOLUENE	0.0000			0.900000 06	LB	LB		104.925764	0.01194510				
110-54-3	HEXANE	0.0000			0.900000 06	LB	LB		20.272398	0.00230788				
110-82-7	CYCLOHEXANE	0.0000			0.900000 06	LB	LB		0	0				
1330-20-7	XYLENE (MIXED ISOMER	0.0000			0.900000 06	LB	LB		137.649865	0.01567052				
1634-04-4	METHYL TERT-BUTYL ET	0.0000			0.900000 06	LB	LB		6.144543	0.0006995153				
540-84-1	TRIMETHYL PENTANE,2,	0.0000			0.900000 06	LB	LB		24.227900	0.00275819				
71-43-2	BENZENE	0.0000			0.900000 06	LB	LB		18.957354	0.00215817				
91-20-3	NAPHTHALENE	0.0000			0.900000 06	LB	LB		29.458421	0.00335365				
95-63-6	1,2,4-TRIMETHYL BENZ	0.0000			0.900000 06	LB	LB		3.780230	0.0004303541				
98-82-8	CUMENE	0.0000			0.900000 06	LB	LB		0.14305456	0.0000162858				

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

mission quation	Description
XTFLT	If the application equipment is WITHD, then emissions are PR_FLWL. If the application equipment is STAND, then emissions are calculated as (PR_FLSSL + PR_LRF) * OPFCTR(). PR_LRF = LOSS_FAC * PR_VAPF * VAPOR_MOL * PR_FACT * VAP_PCT PR_FLWL = (0.943 * OUTQ/42 * CLING * DENSITY_PR) / TANK_DIAM * CH_FORM PR_FLSSL = SEAL_FAC * (WIND_AVG ^ WIND_EXP) * PR_VAPF * TANK_DIAM * VAPOR_MOL * PR_FACT * VAP_PCT PR_FACT is based on material type. CLING is based on material type and the RUST attribute. DENSITY_PR is material density. TANK_DIAM is tank diameter. SEAL_FAC and WIND_EXP are found in the emissions factor table. WIND_AVG is average wind speed. The default is 6.8 MPH. PR_VAPF is based on Vapor Pressure, which can be found as an attribute or in the materials database. VAPOR_MOL is vapor molecular weight. LOSS_FAC is based on Roof Type, Wind Average Speed, and Tank Diameter. VAP_PCT is the vapor mass percent of the chemical in the material. CH_FORM is the mass percent of the chemical in the material. Hourly emissions are calculated based on the annual loss (without the operating factor) divided by total hours.

Activity Data Site: WRMC Yr: 92 Printed 10/28/93 09:40
Created: 04/17/92 By LJM Last Upt: 10/27/93 By CMH Review: Valid

Key Fields

From Station:
*This Station: TK-A02R
*Material/CAS: ISTREAM 20
Operation:
Application Equip.:
*From 01/01/92 *To 12/31/92
Shift Code:

Computer Generated? N

To enter Usage, enter fields a - d, OR e.

a) Beginning Quantity: 0.0000000
b) Supply Quantity: 0.0000000
c) Disposed Quantity: 0.0000000
d) Ending Quantity: 0.0000000
e) Quantity Used: 15493.0440000
Units: MBBL

Maximum Hourly Usage: 1.7640000

HON Exempt: N

Is this projected activity? N

Monthly Usage Percentages

Jan.	0.00	Mar.	0.00	May.	0.00	Jul.	0.00	Sep.	0.00	Nov.	0.00
Feb.	0.00	Apr.	0.00	Jun.	0.00	Aug.	0.00	Oct.	0.00	Dec.	0.00

Number of Operating Days Per Month

Jan.	0	Mar.	0	May.	0	Jul.	0	Sep.	0	Nov.	0
Feb.	0	Apr.	0	Jun.	0	Aug.	0	Oct.	0	Dec.	0

Hrs/Day	Days/Wk	Wks/Yr
0.00	0	0

Default Attributes:

Code	Value	Units	Required?	Description

Specific Attributes:

Code	Value	Units	Required?	Description

Materials/Waste Database Site: WRMC Yr: 92 Printed 06/28/93 16:03
Created: 04/14/92 By LJM Last Upt: 04/06/93 By CMH Review: Valid

----------Key Fields----------
*Material: TSTREAM 20 Date of Material: 04/14/92

Computer Generated
N

Vendor:
Name: GASOLINE RU2000
Alias Matl Numbers:
Material Type: TANK STORAGE
Mil Spec:
Trade Secret: N

Hazards:
Fire:
Reactivity:
Sudden Rel. of Pressure:
Acute Health:
Chronic Health:

Custom Fields:
Custom field 1:
Custom field 2:
Custom field 3:
Custom field 4:
Custom field 5:
Custom field 6:
Custom field 7:
pH:
MSDS Number:

State/Local Code:

VOC (g/L): 0.00 % VOC: 0.00
BTU/SCF: 0.0 *Phasestate: L (S/L/G)

Flash Point: Method: (OC=Open Cup, CC=Closed Cup)

Reference:	GLC	Units
*Density:	6.21000	* LB/GAL
Comp. Solv. Dens.:	0.00000	
Vapor Pressure:	6.280000	PSIA
Vapor Molecular Wt:	74.24	
Liq. Molec. Wt.:	85.24	

Note:
% Solids: 0.0000 by (M/V)

*Speciation by Mass/Volume: V

Constituents

CAS No.	SARA Rpt.	Percent	Vapor Mass%	% Description	Em. Basis	Chemical Name
100-41-4		2.4000000000000	0.0000000000000			ETHYLBENZENE
108-88-3		7.3000000000000	0.0000000000000			TOLUENE
110-54-3		1.8500000000000	0.0000000000000			HEXANE
110-82-7		0.0000000000000	0.0000000000000			CYCLOHEXANE
1330-20-7		9.6000000000000	0.0000000000000			XYLENE (MIXED ISOMERS)
1634-04-4		0.5000000000000	0.0000000000000			METHYL TERT-BUTYL ETHER
540-84-1		2.1100000000000	0.0000000000000			TRIMETHYL PENTANE,2,2,4-
71-43-2		1.3000000000000	0.0000000000000			BENZENE
91-20-3		1.8300000000000	0.0000000000000			NAPHTHALENE
95-63-6		0.2600000000000	0.0000000000000			1,2,4-TRIMETHYL BENZENE
98-82-8		0.0100000000000	0.0000000000000			CUMENE

Product Information:

Ingredients:

Sources/Stations Site: WRMC Yr: 92 Printed 10/27/93 14:50
Created: 04/16/92 By KJC Last Upt: 08/14/92 By CMH Review: 08/14/92 Valid

----------Key Fields----------
*Station Number TK-A028
---

*Station Type: EXTFLT
*Site: WRMC
Building:
Process Unit:
Source Desc.: UNLEAD REG GRD GAS
BPU/RU:
UTM X:
UTM Y:
WRMC Permit: WRR-28
Permit No.: 73010832
Permit Name: DISPATCHING
:

Alt. Equp. No. 1:
Alt. Equip. No. 2:
*No. of Devices: 1
*Exhaust Type(s): Hood/Vent Y Area N
Abated? N
Area Number:

Specific Name:
Generic Name:
Confidential?: N

*Audit By: KJC
Date Prepared: 04/16/92

Treatment/Recyling Stations: SARA Treatment/Recycling Code:

Hrs/Day	Days/Week	Weeks/Yr
24.00	7	52

Monthly Percentages

Jan.	8.33	Mar.	8.33	May	8.33	Jul.	8.33	Sep.	8.33	Nov.	8.33
Feb.	8.33	Apr.	8.33	Jun.	8.33	Aug.	8.33	Oct.	8.33	Dec.	8.33

Number of Operating Days

Jan.	0	Mar.	0	May	0	Jul.	0	Sep.	0	Nov.	0
Feb.	0	Apr.	0	Jun.	0	Aug.	0	Oct.	0	Dec.	0

HON Information:
HON Exempt: N
Emissions Avg Group:
Products:

HON Group (1,2):

Contacts:

Name	Mail Stop	Phone

Comments:

EXTERNAL FLOATING ROOF TANK

DMR Comments:

Station Configuration:

Code	Value	Unit	Required?	Description
CLINGFC	.0015	NA	N	CLINGAGE FACTOR
EXTFF	101.7	NA	N	FITTING FACTOR LOSS
SEALTYP	1C		Y	SEAL TYPE
[illegible]	[illegible]	FT	Y	TANK DIAMETER

Emission Factors Site: WRMC Yr: 92 Printed 10/28/93 18:59
Created: 03/27/92 By Last Upt: 05/20/92 By JML Review: 03/27/92 Valid

----------Key Fields----------
*Station Type EXTFLT
Material ID
CAS
---

*C/W/A	Emission Factor	Activity Unit	Emiss Unit	Basis	Expression
A	0.800000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '1A'
A	0.800000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '1B'
A	0.200000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '1C'
A	0.500000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '2A'
A	0.500000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '2B'
A	0.500000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '2C'
A	1.000000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '3A'
A	1.100000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '3B'
A	0.400000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '3C'
A	1.300000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '4A'
A	1.400000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '4B'
A	0.200000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '4C'
A	1.600000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '1A'
A	1.100000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '1B'
A	0.900000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '1C'
A	1.100000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '2A'
A	1.000000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '2B'
A	0.500000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '2C'
A	1.700000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '3A'
A	1.600000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '3B'
A	1.500000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '3C'
A	1.500000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '4A'
A	1.200000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '4B'
A	1.600000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '4C'

On Wednesday, October 27, 1993, at 19:52:16 WRMC-92/CMH

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

Station: TK-A063 Station Type: INTFLT Air Emissions Equation: INTFLT
Process Unit: Source Desc.: BENZENE BPU/RU:
UTM X: UTM Y: WRMC Permit: WRR-28
Permit No.: 73110832 Permit Name: DISPATCHING

Activity and Material Information:
Material: TSTREAM 05
BENZENE
Amount: 243390.0000000000 Max Hourly: 27.7000000000 Units: BBL
Start Date: 01/01/92 End Date: 12/31/92 Application Equipment: STAND Operation:
Material Density: 7.370000 LB/GAL BTU/SCF: 0.00000 Liquid Molecular Wt.: 78.11000 Vapor Molecular Wt.: 78.11000 Shift Code:

Attributes and Intermediate Calculations:

Code	Value	Units	CAS Number	Chemical Name
HR USE	0.0000000000	GAL		
USAGE	0.0000000000	GAL		
ADJ FAC	1.0000000000			
CLING	0.0015000000			
DECKFAC	0.2800000000			
DECKLOS	351.9000000000			
FORM G	99.0000000000		71-43-2	BENZENE
FORM M	99.0000000000		71-43-2	BENZENE
PR DSL	0.0000000000		71-43-2	BENZENE
PR FACT	1.0000000000			
PR FLWL	30.0811946790		71-43-2	BENZENE
PR LF	873.7278375000		71-43-2	BENZENE
PRFLSSL	670.3794149600		71-43-2	BENZENE
VAP FAC	0.0321081345			
CLINGFC	0.0015	NA		
COLDIA	1.0	FT		

SHELL EP-19

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

tation: TK-A063 Station Type: INTFLT Air Emissions Equation: INTFLT
rocess Unit: Source Desc.: BENZENE BPU/RU:
TM X: UTM Y: WRMC Permit: WRR-28
ermit No.: 73110832 Permit Name: DISPATCHING :

DCKCON	W	
DECKFF	351.9	NA
NUMCOL	7	NA
SEALTYP	5A	
SHELCON	W	
TKCAP	0	MGAL
TKDIA	90	FT
WINDAVG	10	MPH

)verrides:

CAS No. and Chemical Name	Activity 1st Value	Activity 2nd Value	Activity 3rd Value	Max Hourly Activity 1st Value	Max Hourly Activity 2nd Value	Max Hourly Activity 3rd Value	Activity Units 1st Unit	Activity Units 2nd Unit	Activity Units 3rd Unit

:rrors Found:

:missions:

CAS No. and Chemical Name	Control Devices Eff. Pct.	Prim.	2nd.	Emissions Factors Emis. Factor	Emis. Basis	Activ Units	Emis. Units	Emissions Emis. Total	Max Hourly	Mass Balance Info New MSDS	New Station	Dest Code	Dest. Name
71-43-2 BENZENE	0.0000			0.000000000000000 06		LB	LB	1544	0.17578634				

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

:tation: TK-A063 Station Type: INTFLT Air Emissions Equation: INTFLT
'rocess Unit: Source Desc.: BENZENE BPU/RU:
JTM X: UTM Y: WRMC Permit: WRR-28
'ermit No.: 73110832 Permit Name: DISPATCHING :

\ctivity and Material Information:
Material: TSTREAM 05
BENZENE
Amount: 243390.0000000000 Max Hourly: 27.7000000000 Units: BBL
Start Date: 01/01/92 End Date: 12/31/92 Application Equipment: WITHD Operation: Shift Code:
Material Density: 7.370000 LB/GAL BTU/SCF: 0.00000 Liquid Molecular Wt.: 78.11000 Vapor Molecular Wt.: 78.11000

\ttributes and Intermediate Calculations:

Code	Value	Units	CAS Number	Chemical Name
HR USE	1.1637500000	MGAL		
USAGE	10222.3800000000	MGAL		
ADJ FAC	1.0000000000			
CLING	0.0015000000			
DECKFAC	0.2800000000			
DECKLOS	351.9000000000			
FORM G	99.0000000000		71-43-2	BENZENE
FORM M	99.0000000000		71-43-2	BENZENE
PR DSL	0.0000000000		71-43-2	BENZENE
PR FACT	1.0000000000			
PR FLWL	30.0811946790		71-43-2	BENZENE
PR LF	873.7278375000		71-43-2	BENZENE
PRFLSSL	670.3794149600		71-43-2	BENZENE
VAP FAC	0.0321081345			
CLINGFC	0.0015	NA		
COLDIA	1.0	FT		

SHELL OIL COMPANY
AIR EMISSIONS CALCULATIONS PRINTOUT

Station: TK-A063 Station Type: INTFLT Air Emissions Equation: INTFLT
Process Unit: Source Desc.: BENZENE BPU/RU:
UTM X: UTM Y: WRMC Permit: WRR-28
Permit No.: 73110832 Permit Name: DISPATCHING

DCKCON	W	
DECKFF	351.9	NA
NUMCOL	7	NA
SEALTYP	5A	
SHELCON	W	
TKCAP	0	MGAL
TKDIA	90	FT
WINDAVG	10	MPH

Overrides:

CAS No. and Chemical Name	Activity 1st Value	Activity 2nd Value	Activity 3rd Value	Max Hourly Activity 1st Value	Max Hourly Activity 2nd Value	Max Hourly Activity 3rd Value	Activity Units 1st Unit	Activity Units 2nd Unit	Activity Units 3rd Unit

Errors Found:

Emissions:

CAS No. and Chemical Name	Control Devices Eff. Pct.	Prim.	2nd.	Emissions Factors Emis. Factor	Emis. Basis	Activ Units	Emis. Units	Emissions Emis. Total	Max Hourly	Mass Balance Info New MSDS	New Station	Dest Code	Dest. Name
71-43-2 BENZENE	0.0000			0.000000000000000	06	LB	LB	30.081195	0.00342454				

Activity Data Site: WRMC Yr: 92 Printed 10/28/93 09:39
Created: 04/16/92 By LJM Last Upt: 10/27/93 By CMH Review: Valid

Key Fields

From Station:
*This Station: TK-A063
*Material/CAS: TSTREAM 05
Operation:
Application Equip.:
*From 01/01/92 *To 12/31/92
Shift Code:

Computer Generated? N

To enter Usage, enter fields a - d, OR e.

a) Beginning Quantity: 0.0000000 e) Quantity Used: 243390.0000000
b) Supply Quantity: 0.0000000
c) Disposed Quantity: 0.0000000
d) Ending Quantity: 0.0000000 Units: BBL

Maximum Hourly Usage: 27.7000000

HON Exempt: N

Is this projected activity? N

Monthly Usage Percentages

Jan.	0.00	Mar.	0.00	May.	0.00	Jul.	0.00	Sep.	0.00	Nov.	0.00
Feb.	0.00	Apr.	0.00	Jun.	0.00	Aug.	0.00	Oct.	0.00	Dec.	0.00

Number of Operating Days Per Month

Jan.	0	Mar.	0	May.	0	Jul.	0	Sep.	0	Nov.	0
Feb.	0	Apr.	0	Jun.	0	Aug.	0	Oct.	0	Dec.	0

Hrs/Day	Days/Wk	Wks/Yr
0.00	0	0

Default Attributes:

Code	Value	Units	Required?	Description

Specific Attributes:

Code	Value	Units	Required?	Description

Materials/Waste Database Site: WRMC Yr: 92 Printed 06/28/93 16:04
Created: 04/13/92 By REC Last Upt: 09/16/92 By RRP Review: Valid

----------Key Fields----------
*Material: TSTREAM 05 Date of Material: 04/13/92

Vendor:
Name: BENZENE
Alias Matl Numbers:
Material Type: TANK STORAGE
Mil Spec:
Trade Secret: N

Hazards:
Fire:
Reactivity:
Sudden Rel. of Pressure:
Acute Health:
Chronic Health:

State/Local Code:

Computer Generated
N

Custom Fields:
Custom field 1:
Custom field 2:
Custom field 3:
Custom field 4:
Custom field 5:
Custom field 6:
Custom field 7:
pH:
MSDS Number:

VOC (g/L): 0.00 % VOC: 0.00
BTU/SCF: 0.0 *Phasestate: L (S/L/G)

Flash Point: Method: (OC=Open Cup, CC=Closed Cup)

Reference:	MSDS	Units
*Density:	7.37000	* LB/GAL
Comp. Solv. Dens.:	0.00000	
Vapor Pressure:	1.772000	PSIA
Vapor Molecular Wt:	78.11	
Liq. Molec. Wt.:	78.11	

Note:
% Solids: 0.0000 by (M/V)

*Speciation by Mass/Volume: M

Constituents

CAS No.	SARA Rpt.	Percent	Vapor Mass%	% Description	Em. Basis	Chemical Name
100-41-4		0.0000000000000	0.0000000000000			ETHYLBENZENE
106-42-3		0.0000000000000	0.0000000000000			P-XYLENE
108-38-3		0.0000000000000	0.0000000000000			M-XYLENE
108-88-3		0.0000000000000	0.0000000000000			TOLUENE
110-54-3		0.0000000000000	0.0000000000000			HEXANE
110-82-7		0.0000000000000	0.0000000000000			CYCLOHEXANE
1319-77-3		0.0000000000000	0.0000000000000			CRESOLS (MIXED ISOMERS)
1330-20-7		0.0000000000000	0.0000000000000			XYLENE (MIXED ISOMERS)
1634-04-4		0.0000000000000	0.0000000000000			METHYL TERT-BUTYL ETHER
540-84-1		0.0000000000000	0.0000000000000			TRIMETHYL PENTANE,2,2,4-
71-43-2		99.0000000000000	0.0000000000000			BENZENE
7783-06-4		0.0000000000000	0.0000000000000			HYDROGEN SULFIDE
91-20-3		0.0000000000000	0.0000000000000			NAPHTHALENE
95-47-6		0.0000000000000	0.0000000000000			O-XYLENE
95-63-6		0.0000000000000	0.0000000000000			1,2,4-TRIMETHYL BENZENE
98-82-8		0.0000000000000	0.0000000000000			CUMENE

Product Information:

Sources/Stations Site: WRMC Yr: 92 Printed 10/27/93 19:53
Created: 04/16/92 By LJM Last Upt: 10/04/93 By RRP Review: 08/14/92 Valid

----------Key Fields----------
*Station Number TK-A063
---

*Station Type: INTFLT
*Site: WRMC
Building:
Process Unit:
Source Desc.: BENZENE
BPU/RU:
UTM X:
UTM Y:
WRMC Permit: WRR-28
Permit No.: 73110832
Permit Name: DISPATCHING
:

Alt. Equp. No. 1:
Alt. Equip. No. 2:
*No. of Devices: 1
*Exhaust Type(s): Hood/Vent Y Area N
Abated? N
Area Number:

Specific Name:
Generic Name:
Confidential?: N

*Audit By: LJM
Date Prepared: 04/16/92

Treatment/Recyling Stations: SARA Treatment/Recycling Code:

Hrs/Day	Days/Week	Weeks/Yr
24.00	7	52

Monthly Percentages

Jan.	8.33	Mar.	8.33	May	8.33	Jul.	8.33	Sep.	8.33	Nov.	8.33
Feb.	8.33	Apr.	8.33	Jun.	8.33	Aug.	8.33	Oct.	8.33	Dec.	8.33

Number of Operating Days

Jan.	0	Mar.	0	May	0	Jul.	0	Sep.	0	Nov.	0
Feb.	0	Apr.	0	Jun.	0	Aug.	0	Oct.	0	Dec.	0

HON Information:
HON Exempt: N
Emissions Avg Group:
Products:

HON Group (1,2):

Contacts:

Name	Mail Stop	Phone

Comments:

INTERNAL FLOATING ROOF TANK

DMR Comments:

Station Configuration:

Code	Value	Unit	Required?	Description
CLINGFC	0.0015	NA	N	CLINGAGE FACTOR
COLDIA	1.0	FT	N	EFFECTIVE COLUMN DIAMETER
DCKCON	W		N	DECK CONSTRUCTION
DECKFF	351.9	NA	N	DECK FIT FACTOR

NUMCOL	7	NA	Y	NUMBER OF COLUMNS
SEALTYP	5A		Y	SEAL TYPE
SHELCON	W		N	SHELL CONSTRUCTION
TKCAP	0	MGAL	Y	STORAGE TANK CAPACITY
TKDIA	90	FT	Y	TANK DIAMETER
WINDAVG	10	MPH	N	AVERAGE WIND SPEED

Emission Factors Site: WRMC Yr: 92 Printed 10/28/93 18:59
Created: 03/27/92 By Last Upt: 05/04/92 By JML Review: 03/27/92 Valid

----------Key Fields----------
*Station Type INTFLT
Material ID
CAS
---

*C/W/A	Emission Factor	Activity Unit	Emiss Unit	Basis	Expression
A	3.000000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '5A'
A	1.600000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '5B'
A	6.700000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '6A'
A	2.500000000000000	LB	LB	06	MultFact='SEALFAC' .AND. FactVal = '6B'
A	0.000000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '5A'
A	0.000000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '5B'
A	0.000000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '6A'
A	0.000000000000000	LB	LB	06	MultFact='WINDEXP' .AND. FactVal = '6B'

Materials/Waste Database Site: WRMC Yr: 92 Printed 10/28/93 15:31
Created: 04/13/92 By REC Last Upt: 10/27/93 By CMH Review: Valid

----------Key Fields----------
*Material: TSTREAM 05 Date of Material: 04/13/92

Vendor:
Name: BENZENE
Alias Matl Numbers:
Material Type: TANK STORAGE
Mil Spec:
Trade Secret: N

Computer Generated
N

Custom Fields:
Petroleum Exclusion:
PSM Regulated: X
Custom field 3:
Custom field 4:
Custom field 5:
Custom field 6:
Custom field 7:
pH:
MSDS Number:

Hazards:
Fire:
Reactivity:
Sudden Rel. of Pressure:
Acute Health:
Chronic Health:

State/Local Code:
CERCLA 101(14) Hazardous?: F

VOC (g/L): 0.00 % VOC: 0.00
BTU/SCF: 0.0 *Phasestate: L (S/L/G)

Flash Point: Method: (OC=Open Cup, CC=Closed Cup)

Reference: MSDS Units
*Density: 7.37000 * LB/GAL
Comp. Solv. Dens.: 0.00000
True Vapor Pressure: 1.772000 PSIA
Reid Vapor Pressure: 0.00 Tank Vap Pres Calc Choice:
Distillation Slope: 0.0
Vapor Molecular Wt: 78.11
Liq. Molec. Wt.: 78.11
Note:
% Solids: 0.0000 by (M/V) Constituents Displayed In Percent

*Speciation by Mass/Volume: M

Constituents

CAS No.	SARA Rpt.	Amount	Vapor Amount	% Description	Em. Basis	Chemical Name
71-43-2		99.0000000000	99.0000000000			BENZENE

Product Information:

Ingredients:

Physical/Chemical Characteristics:

Fire and Explosion Hazard:

APPENDIX D

FLARE EMISSION CALCULATIONS

RADIAN CORPORATION

FLARES

Description and Assumptions

Emissions of criteria pollutants and toxic substances from refinery gas-fired flares are estimated based on emission factors from AP-42, Section 11.5. The emission factors derived from AP-42 are expressed in units of pounds per 10^6 BTU.

Emission Estimating Technique (Equation type: DEFLT)

$$M_i = EF_i \times Q \times UHV \times (1 - CE_i/100)$$

where:

- M_i = average annual mass emission rate of chemical i, lb/yr [maximum hourly mass emission rate of chemical i, lb/hr]
- EF_i = emission factor for chemical i, lb/10^6BTU [For toxic substances (e.g., ethylene, propylene), the emission factor is derived by multiplying the total hydrocarbon (THC) emission factor by the weight percent of chemical i in the flare gas composition]
- Q = throughput of gas to combustion unit, 10^6 SCF/yr [10^6SCF/hr]
- UHV = upper heating value of process gas, BTU/SCF (material screen)
- CE_i = control efficiency for chemical i, percent

Instead of this, API factor of 0.14 # THC/10^6 BTU was used. (See attached)

CMH 11/93

OMH 11/93

Flare Emissions - 1992

AP-42* Emission Factor = 0.14 #/mmBtu THC
0.37 CO
0.068 NOX

Flare gas Btu value = 965.0 Btu/SCF

HC composition of flare emissions

Methane	34%
Ethylene	2.97 %
Acetylene	5.00 %
Propane	12.00 %
Propylene	2.46 %

Example calculation:

Alky flare - flow = 99.73 mmSCF

For total HC:

$$\#/year = \frac{99.73\ mmSCF}{year} \left| \frac{965\ Btu}{SCF} \right| \frac{0.14\ \#\ HC}{mmBtu}$$

= 13,470 #/year

For propylene:

#/year = 13,470 (.0246)

= 330 #/year

*11.5-4, 9/91 AP-42 update

13-782 500 SHEETS, FILLED 5 SQUARE
42-381 50 SHEETS EYE-EASE® 5 SQUARE
42-382 100 SHEETS EYE-EASE® 5 SQUARE
42-389 200 SHEETS EYE-EASE® 5 SQUARE
42-392 100 RECYCLED WHITE 5 SQUARE
42-399 200 RECYCLED WHITE 5 SQUARE
Made in U.S.A.
National® Brand

WMC FLARE EMISSIONS

Station No.	Material No.	Material Name	Chemical No.	Chemical Name	Amt. Avg. Usage	Units	Chemical %	Amt. Avg. Emissions	Em. Factor	Em. Override	
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	115-07-1	PROPYLENE (PROPENE)	99.730000000	MMSCF	0.000	327.21413000	0.0034		F
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	630-08-0	CARBON MONOXIDE	99.730000000	MMSCF	0.000	35608.59650000	0.3700		F
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-82-8	METHANE	99.730000000	MMSCF	0.000	4580.99782000	0.0476		F
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-85-1	ETHYLENE	99.730000000	MMSCF	0.000	404.20589000	0.0042		F
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-86-2	ACETYLENE	99.730000000	MMSCF	0.000	673.67615000	0.0070		F
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-98-6	PROPANE	99.730000000	MMSCF	0.000	1616.82276000	0.0168		F
FLR-ALKY	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASX260	TOTAL HYDROCARBONS	99.730000000	MMSCF	0.000	13473.52300000	0.1400		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASNOX	NITROGEN OXIDES	74.230000000	MMSCF	0.000	6544.28260000	0.0680		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	115-07-1	PROPYLENE (PROPENE)	74.230000000	MMSCF	0.000	243.54963000	0.0034		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	630-08-0	CARBON MONOXIDE	74.230000000	MMSCF	0.000	26503.82150000	0.3700		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-82-8	METHANE	74.230000000	MMSCF	0.000	3409.69002000	0.0476		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-85-1	ETHYLENE	74.230000000	MMSCF	0.000	300.85419000	0.0042		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-86-2	ACETYLENE	74.230000000	MMSCF	0.000	501.42365000	0.0070		F
FLR-ARCM-NORTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-98-6	PROPANE	74.230000000	MMSCF	0.000	1203.41676000	0.0168		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASX260	TOTAL HYDROCARBONS	74.230000000	MMSCF	0.000	10028.47300000	0.1400		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASNOX	NITROGEN OXIDES	70.580000000	MMSCF	0.000	4870.97280000	0.0680		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	115-07-1	PROPYLENE (PROPENE)	70.580000000	MMSCF	0.000	231.57290000	0.0034		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	630-08-0	CARBON MONOXIDE	70.580000000	MMSCF	0.000	25200.58900000	0.3700		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-82-8	METHANE	70.580000000	MMSCF	0.000	3242.02172000	0.0476		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-85-1	ETHYLENE	70.580000000	MMSCF	0.000	286.06074000	0.0042		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-86-2	ACETYLENE	70.580000000	MMSCF	0.000	476.76790000	0.0070		F
FLR-ARCM-SOUTH	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-98-6	PROPANE	70.580000000	MMSCF	0.000	1144.24256000	0.0168		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASX260	TOTAL HYDROCARBONS	55.240000000	MMSCF	0.000	9535.35900000	0.1400		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASNOX	NITROGEN OXIDES	55.240000000	MMSCF	0.000	4631.45960000	0.0680		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	115-07-1	PROPYLENE (PROPENE)	55.240000000	MMSCF	0.000	181.24244000	0.0034		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	630-08-0	CARBON MONOXIDE	55.240000000	MMSCF	0.000	19723.44200000	0.3700		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-82-8	METHANE	55.240000000	MMSCF	0.000	2537.39416000	0.0476		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-85-1	ETHYLENE	55.240000000	MMSCF	0.000	223.88772000	0.0042		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-86-2	ACETYLENE	55.240000000	MMSCF	0.000	373.14620000	0.0070		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	74-98-6	PROPANE	55.240000000	MMSCF	0.000	895.55080000	0.0168		F
FLR-DIST	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASX260	TOTAL HYDROCARBONS	55.240000000	MMSCF	0.000	7462.92400000	0.1400		F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	CASNOX	NITROGEN OXIDES	10.000000000	MMSCF	0.000	3624.84880000	0.0680		F
			115-07-1	PROPYLENE (PROPENE)			0.000	32.81000000	0.0034		F

WRMC FLARE EMISSIONS

Station No.	Material No.	Material Name	Ann. Avg. Usage	Units	Chemical No.	Chemical Name	Chemical %	Ann. Avg. Emissions	Em. Factor	Em. Override
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	630-08-0	CARBON MONOXIDE	0.000	3570.500000000	0.3700	F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	74-82-8	METHANE	0.000	459.340000000	0.0476	F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	74-85-1	ETHYLENE	0.000	40.530000000	0.0042	F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	74-86-2	ACETYLENE	0.000	67.550000000	0.0070	F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	74-98-6	PROPANE	0.000	162.120000000	0.0168	F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	CAS0260	TOTAL HYDROCARBONS	0.000	1351.000000000	0.1400	F
FLR-LUBE	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	10.000000000	MMSCF	CASNOX	NITROGEN OXIDES	0.000	656.200000000	0.0680	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	115-07-1	PROPYLENE (PROPENE)	0.000	136.719270000	0.0034	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	630-08-0	CARBON MONOXIDE	0.000	14878.273500000	0.3700	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	74-82-8	METHANE	0.000	1914.069780000	0.0476	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	74-85-1	ETHYLENE	0.000	168.888510000	0.0042	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	74-86-2	ACETYLENE	0.000	281.480850000	0.0070	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	74-98-6	PROPANE	0.000	675.554040000	0.0168	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	CAS0260	TOTAL HYDROCARBONS	0.000	5629.617000000	0.1400	F
FLR-NP	FLARE GAS	FLARE OFF-GAS THC (FROM AP-42,	41.670000000	MMSCF	CASNOX	NITROGEN OXIDES	0.000	2734.385400000	0.0680	F

APPENDIX E

COBALT THRESHOLD CALCULATION

Toxic Chemical Threshold Determination (cont)

1,3-Butadiene - more than 25,000 lbs manufactured

produced at CCU-1. In wet gas @ 0.11% mole

(30 MMSCF/D wet gas) $\left(\frac{84.0011 \text{ lb mole } 1,3 \text{ but}}{\text{lb mole}}\right)\left(\frac{54 \text{ lb But}}{\text{lb mole}}\right) = 4700 \text{ lb/D}$

n-butyl alcohol - less than 10,000 lbs used

PET 7330 = none purchased in 1990
other use is in paints used for facility equipment upkeep.

butyl benzyl phthalate - more than 10,000 lbs used

monsanto sintacizer 160 - none used
Olea 9725 BX (208,795 gal)(1.007 sg)(8.34 lb/gal)(2%) = 36,000 lbs

chlorine - more than 10,000 lbs used

Pier RCL purchased 754,000 lbs in 1990.

Chromium compds - more than 10,000 lbs used

see chrome balance

Cobalt compounds - less than 10,000 lbs used

		use	% Co Compd	
criterion	244	(0)	4%	0
	344	(81,600 lb)	3%	2448
	444	(15,600 + 16,700 + 5740)	4%	1506
	447	(79,200)	4.5%	3564
	534	0	2.5%	
	544	0	2.2%	
TK-550		(2400)	3.4%	82
TK-710		(0)	2.0%	
				7600 lbs

7518

Copper compounds more than 10,000 lbs used

ECA 13081 (449,577 gal)(10%)(.96 sg)(8.34 lb/gal) = 360,000 lbs.

APPENDIX F

COBALT UPDATED FORM R

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

November 22, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

EPCRA Reporting Center
P.O. Box 3348
Merrifield, VA 22116-3348

ATTENTION: TOXIC CHEMICAL RELEASE INVENTORY
VOLUNTARY REVISION TO 1991 REPORT

To Whom It May Concern:

Enclosed are voluntary revisions to two of our EPA Form R "Toxic Chemical Release Inventory Reporting Forms" for the year 1991. These forms cover the following chemicals: cobalt compounds and molybdenum trioxide. Due to an inadvertent oversight, the quantity of these chemicals sent off-site for metals recovery was not included as an off-site waste shipment in our original report.

The revised forms are also being sent to the Illinois Environmental Protection Agency.

Sincerely,

J. N. Brewster

J. N. Brewster
Manager, Environmental Conservation
Wood River Manufacturing Complex

Enclosure

CMH\L9332302.WCB

EPA FORM R TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

United States Environmental Protection Agency

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

WHERE TO SEND COMPLETED FORMS:
1. EPCRA Reporting Center, P.O. Box 23779, Washington, DC 20026-3779, ATTN: TOXIC CHEMICAL RELEASE INVENTORY
2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision: X

For EPA use only:

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR

19 91

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 3 trade secret?
☐ Yes (Answer question 2.2; Attach substantiation forms) ☒ No (Do not answer 2.2; Go to Section 3)

2.2 If yes in 2.1, is this copy: ☐ Sanitized ☐ Unsanitized

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

Name and official title of owner/operator or senior management official: J. N. Brewster, Manager Environmental Conservation

Signature: J. N. Brewster (J. N. Brewster 11/19/93) Date Signed: 6/28/93

SECTION 4. FACILITY IDENTIFICATION

4.1
- Facility or Establishment Name: Shell Wood River Manufacturing Complex
- TRI Facility ID Number: 62084SHLLLRTE11
- Street Address: Rte. 111 and SA-11A
- City: Roxana
- County: Madison
- State: Illinois
- Zip Code: 62084
- Mailing Address (if different from street address): P. O. Box 252
- City: Wood River
- State: IL
- Zip Code: 62095

PUT LABEL HERE

EPA
United States Environmental Protection Agency

EPA FORM R

PART I. FACILITY IDENTIFICATION INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

SECTION 4. FACILITY IDENTIFICATION (Continued)

4.2	This report contains information for: (Important: check only one)	a. [X] An entire facility		b. [ ] Part of a facility			
4.3	Technical Contact	Name: J. N. Brewster			Telephone Number (include area code): (618) 255-2478		
4.4	Public Contact	Name: D. B. McKinney			Telephone Number (include area code): (618) 255-2483		
4.5	SIC Code (4-digit)	a. 2911	b. NA	c.	d.	e.	f.
4.6	Latitude and Longitude	Latitude: Degrees 38, Minutes 50, Seconds 15			Longitude: Degrees 90, Minutes 04, Seconds 03		
4.7	Dun & Bradstreet Number(s) (9 digits)	a. 08-001-2305					
		b. NA					
4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	a. ILD080012305					
		b. NA					
4.9	Facility NPDES Permit Number(s) (9 characters)	a. IL0000205					
		b. NA					
4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)	a. NA					
		b. NA					

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	[ ] NA Shell Oil Company
5.2	Parent Company's Dun & Bradstreet Number	[ ] NA (9 digits) 00-809-0938

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you complete Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.) ~~N096~~ CAC 500
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) Cobalt Compounds
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes." Generic Name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY (Important: Check all that apply.)

3.1	Manufacture the toxic chemical:	a. [ ] Produce b. [ ] Import	If produce or import: c. [ ] For on-site use/processing d. [ ] For sale/distribution e. [ ] As a byproduct f. [ ] As an impurity
3.2	Process the toxic chemical:	a. [ ] As a reactant b. [ ] As a formulation component	c. [ ] As an article component d. [ ] Repackaging
3.3	Otherwise use the toxic chemical:	a. [X] As a chemical processing aid b. [ ] As a manufacturing aid	c. [ ] Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	04 (Enter two-digit code from instruction package.)

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

SECTION 5. RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-SITE

			A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	☐ NA	0	0	
5.2	Stack or point air emissions	☐ NA	0	0	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
5.3.1	Stream or Water Body Name: Mississippi River		0	0	NA
5.3.2	Stream or Water Body Name: Unnamed ditch tributary to Grassy Lake		0	0	0
5.3.3	Stream or Water Body Name: NA				
5.4	Underground injections on-site	X NA			
5.5	Releases to land on-site				
5.5.1	Landfill	X NA			
5.5.2	Land treatment/application farming	X NA			
5.5.3	Surface impoundment	X NA			
5.5.4	Other disposal	X NA			

☐ Check here only if additional Section 5.3 information is provided on page 5 of this form.

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

SECTION 5.3 ADDITIONAL INFORMATION ON RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-SITE

5.3	Discharges to receiving streams or water bodies (enter one name per box)	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.3.__	Stream or Water Body Name			
5.3.__	Stream or Water Body Name			
5.3.__	Stream or Water Body Name			

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTW)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1 Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)
NA	

6.1.B POTW Name and Location Information

6.1.B.__ POTW Name: NA	6.1.B.__ POTW Name:
Street Address:	Street Address:
City:	City:
County:	County:
State:	State:
Zip Code:	Zip Code:

If additional pages of Part II, Sections 5.3 and/or 6.1 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Sections 5.3/6.1 page this is, here. ☐ (example: 1, 2, 3, etc.)

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2.1 Off-site EPA Identification Number (RCRA ID No.): NA LAD058472721

Off-Site Location Name: AMAX METALS RECOVERY, INC.

Street Address: HIGHWAY 3137

City: BRAITHWAITE County: PLAQUEMINES

State: Zip Code: Is location under control of reporting facility or parent company? ☐ Yes ☒ No

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/Recycling/Energy Recovery (enter code)
1. 4,900	1. C	1. M 24
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2.1 Off-site EPA Identification Number (RCRA ID No.): LAD980622161

Off-Site Location Name: CATALYST RECOVERY INC.

Street Address: 100 AMERICAN BLVD, SOUTH PARK INDUSTRIAL PARK

City: LAFAYETTE County: LAFAYETTE

State: LA Zip Code: 70508 Is location under control of reporting facility or parent company? ☐ Yes ☒ No

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/Recycling/Energy Recovery (enter code)
1. 8,100	1. C	1. M 24
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

If additional pages of Part II, Section 6.2 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.2 page this is, here. ☐ (example: 1, 2, 3, etc.)

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Cobalt Compounds

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☒ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b 1 2 3 4 5 6 7 8	7A.1c	7A.1d %	7A.1e Yes ☐ No ☐
7A.2a	7A.2b 1 2 3 4 5 6 7 8	7A.2c	7A.2d %	7A.2e Yes ☐ No ☐
7A.3a	7A.3b 1 2 3 4 5 6 7 8	7A.3c	7A.3d %	7A.3e Yes ☐ No ☐
7A.4a	7A.4b 1 2 3 4 5 6 7 8	7A.4c	7A.4d %	7A.4e Yes ☐ No ☐
7A.5a	7A.5b 1 2 3 4 5 6 7 8	7A.5c	7A.5d %	7A.5e Yes ☐ No ☐

If additional copies of page 7 are attached, indicate the total number of pages in this box ☐ and indicate which page 7 this is, here. ☐ (example: 1, 2, 3, etc.)

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Toxic Chemical, Category, or General Name: Cobalt Compounds

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[x] Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods (enter 3-character code(s))

1 [ ] 2 [ ] 3 [ ] 4 [ ]

SECTION 7C. ON-SITE RECYCLING PROCESSES

[x] Not Applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods (enter 3-character code(s))

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ]

EPA
United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Chemical, Category, or General Name: Cobalt Compounds

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

All quantity estimates can be reported using up to two significant figures.		Column A 1990 (pounds/year)	Column B 1991 (pounds/year)	Column C 1992 (pounds/year)	Column D 1993 (pounds/year)
8.1	Quantity released *	NA	0	0	0
8.2	Quantity used for energy recovery on-site	NA	0	0	0
8.3	Quantity used for energy recovery off-site	NA	0	0	0
8.4	Quantity recycled on-site	NA	0	0	0
8.5	Quantity recycled off-site	NA	13,000 ~~0~~	13,000 ~~0~~	13,000 ~~0~~
8.6	Quantity treated on-site	NA	0	0	0
8.7	Quantity treated off-site	NA	0	0	0
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)	0			
8.9	Production ratio or activity index	1.03			

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	NA	a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

		YES	NO
8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)	[ ]	[X]

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

APPENDIX G

MOLYBDENUM TRIOXIDE UPDATED FORM R

Shell Oil Company

P. O. Box 262
Wood River, IL 62095

November 22, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

EPCRA Reporting Center
P.O. Box 3348
Merrifield, VA 22116-3348

ATTENTION: TOXIC CHEMICAL RELEASE INVENTORY
VOLUNTARY REVISION TO 1991 REPORT

To Whom It May Concern:

Enclosed are voluntary revisions to two of our EPA Form R "Toxic Chemical Release Inventory Reporting Forms" for the year 1991. These forms cover the following chemicals: cobalt compounds and molybdenum trioxide. Due to an inadvertent oversight, the quantity of these chemicals sent off-site for metals recovery was not included as an off-site waste shipment in our original report.

The revised forms are also being sent to the Illinois Environmental Protection Agency.

Sincerely,

J. N. Brewster

J. N. Brewster
Manager, Environmental Conservation
Wood River Manufacturing Complex

Enclosure

CMH\L9332302.WCB

EPA FORM R TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

United States Environmental Protection Agency

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

Trade Secret Facility ID Number	62084SHLLLRTE11
Toxic Chemical, Category, or General Name	Molybdenum Trioxide

WHERE TO SEND COMPLETED FORMS:
1. EPCRA Reporting Center, P.O. Box 23779, Washington, DC 20026-3779, ATTN: TOXIC CHEMICAL RELEASE INVENTORY
2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision: X

For EPA use only:

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR

19 91

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 3 trade secret?
- [ ] Yes (Answer question 2.2; Attach substantiation forms)
- [X] No (Do not answer 2.2; Go to Section 3)

2.2 If yes in 2.1, is this copy:
- [ ] Sanitized
- [ ] Unsanitized

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

Name and official title of owner/operator or senior management official:
J. N. Brewster, Manager Environmental Conservation

Signature: J. N. Brewster 11/22/93

Date Signed: 6/28/92

SECTION 4. FACILITY IDENTIFICATION

4.1

Facility or Establishment Name: Shell Wood River Manufacturing Complex

TRI Facility ID Number: 62084SHLLLRTE11

Street Address: Rte. III and SA-11A

City: Roxana

County: Madison

State: Illinois

Zip Code: 62034

Mailing Address (if different from street address): P. O. Box 262

City: Wood River

State: IL

Zip Code: 62095

PUT LABEL HERE

EPA United States Environmental Protection Agency

PART I. FACILITY IDENTIFICATION INFORMATION (CONTINUED)

62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Molybdenum Trioxi

SECTION 4. FACILITY IDENTIFICATION (Continued)

4.2	This report contains information for: (Important: check only one)	a. [X] An entire facility	b. [ ] Part of a facility
4.3	Technical Contact	Name: J. N. Brewster	Telephone Number (include area code): (618) 255-2478
4.4	Public Contact	Name: D. B. McKinney	Telephone Number (include area code): (618) 255-2483
4.5	SIC Code (4-digit)	a. 2911 b. NA c. d. e. f.	
4.6	Latitude and Longitude	Latitude: Degrees 38, Minutes 50, Seconds 15	Longitude: Degrees 90, Minutes 04, Seconds 03
4.7	Dun & Bradstreet Number(s) (9 digits)	a. 08-001-2305	b. NA
4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	a. ILD080012305	b. NA
4.9	Facility NPDES Permit Number(s) (9 characters)	a. IL0000205	b. NA
4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)	a. NA	b. NA

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	[ ] NA Shell Oil Company
5.2	Parent Company's Dun & Bradstreet Number	[ ] NA (9 digits) 00-809-1938

EPA United States Environmental Protection Agency

PART II. CHEMICAL-SPECIFIC INFORMATION

62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Molybdenum Trioxide

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you complete Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.): 1313-27-5
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.): Molybdenum Trioxide
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "Yes." Generic Name must be structurally descriptive.):

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.):

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY (Important: Check all that apply.)

			If produce or import:
3.1	Manufacture the toxic chemical:	a. [ ] Produce b. [ ] Import	c. [ ] For on-site use/processing d. [ ] For sale/distribution e. [ ] As a byproduct f. [ ] As an impurity
3.2	Process the toxic chemical:	a. [ ] As a reactant b. [ ] As a formulation component	c. [ ] As an article component d. [ ] Repackaging
3.3	Otherwise use the toxic chemical:	a. [X] As a chemical processing aid b. [ ] As a manufacturing aid	c. [ ] Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	05 (Enter two-digit code from instruction package.)

United States Environmental Protection Agency

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Molybdenum Trioxide

SECTION 5. RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-SITE

			A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	☐ NA	0	0	
5.2	Stack or point air emissions	☐ NA	0	0	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
5.3.1	Stream or Water Body Name: Mississippi River		0	0	NA
5.3.2	Stream or Water Body Name: Unnamed ditch tributary to Grassy Lake		0	0	0
5.3.3	Stream or Water Body Name: NA				
5.4	Underground injections on-site	☒ NA			
5.5	Releases to land on-site				
5.5.1	Landfill	☒ NA			
5.5.2	Land treatment/application farming	☒ NA			
5.5.3	Surface impoundment	☒ NA			
5.5.4	Other disposal	☒ NA			

☐ Check here only if additional Section 5.3 information is provided on page 5 of this form.

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

United States Environmental Protection Agency

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Toxic Chemical, Category, or Generic Name: Molybdenum Trioxide

SECTION 5.3 ADDITIONAL INFORMATION ON RELEASES OF THE TOXIC CHEMICAL TO THE ENVIRONMENT ON-SITE

5.3	Discharges to receiving streams or water bodies (enter one name per box)	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.3.__	Stream or Water Body Name			
5.3.__	Stream or Water Body Name			
5.3.__	Stream or Water Body Name			

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTW)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1 Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)
NA	

6.1.B POTW Name and Location Information

6.1.B.__ POTW Name: NA	6.1.B.__ POTW Name:
Street Address:	Street Address:
City: / County:	City: / County:
State: / Zip Code:	State: / Zip Code:

If additional pages of Part II, Sections 5.3 and/or 6.1 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Sections 5.3/6.1 page this is, here. ☐ (example: 1, 2, 3, etc.)

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA United States Environmental Protection Agency

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Toxic Chemical, Category, or Generic name: Molybdenum Trioxide

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2-1 Off-site EPA Identification Number (RCRA ID No.): NA LAD058472721

Off-Site Location Name: AMAX METALS RECOVERY, INC.

Street Address: HIGHWAY 3137

City: BRAITHWAITE County: PLAQUEMINES

State: LA Zip Code: 70040 Is location under control of reporting facility or parent company? ☐ Yes ☒ No

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/Recycling/Energy Recovery (enter code)
1. 18,000	1. C	1. M 24
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2-2 Off-site EPA Identification Number (RCRA ID No.): LAD980622161

Off-Site Location Name: CATALYST RECOVERY INC.

Street Address: 100 AMERICAN BLVD, SOUTH PARK INDUSTRIAL PARK

City: LAFAYETTE County: LAFAYETTE

State: LA Zip Code: 70508 Is location under control of reporting facility or parent company? ☐ Yes ☒ No

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/Recycling/Energy Recovery (enter code)
1. 30,000	1. C	1. M 24
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

If additional pages of Part II, Section 6.2 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.2 page this is, here: ☐ (example: 1, 2, 3, etc.)

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA United States Environmental Protection Agency

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Toxic Chemical, Category, or Generic name: Molybdenum Trioxide

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☒ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b 1 2 3 4 5 6 7 8	7A.1c	7A.1d %	7A.1e Yes ☐ No ☐
7A.2a	7A.2b 1 2 3 4 5 6 7 8	7A.2c	7A.2d %	7A.2e Yes ☐ No ☐
7A.3a	7A.3b 1 2 3 4 5 6 7 8	7A.3c	7A.3d %	7A.3e Yes ☐ No ☐
7A.4a	7A.4b 1 2 3 4 5 6 7 8	7A.4c	7A.4d %	7A.4e Yes ☐ No ☐
7A.5a	7A.5b 1 2 3 4 5 6 7 8	7A.5c	7A.5d %	7A.5e Yes ☐ No ☐

If additional copies of page 7 are attached, indicate the total number of pages in this box: ☐ and indicate which page 7 this is, here: ☐ (example: 1, 2, 3, etc.)

EPA FORM R

United States Environmental Protection Agency

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Molybdenum Trioxide

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[X] Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods (enter 3-character code(s))

1 [ ] 2 [ ] 3 [ ] 4 [ ]

SECTION 7C. ON-SITE RECYCLING PROCESSES

[X] Not Applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods (enter 3-character code(s))

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ]

United States Environmental Protection Agency

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

62084SHLLLRTE11

Molybdenum Trioxide

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

All quantity estimates can be reported using up to two significant figures.		Column A 1990 (pounds/year)	Column B 1991 (pounds/year)	Column C 1992 (pounds/year)	Column D 1993 (pounds/year)
8.1	Quantity released *	0	0	0	0
8.2	Quantity used for energy recovery on-site	0	0	0	0
8.3	Quantity used for energy recovery off-site	0	0	0	0
8.4	Quantity recycled on-site	0	0	0	0
8.5	Quantity recycled off-site	65,000 ~~0~~	48,000 ~~0~~	48,000 ~~0~~	48,000 ~~0~~
8.6	Quantity treated on-site	0	0	0	0
8.7	Quantity treated off-site	0	0	0	0
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)	0			
8.9	Production ratio or activity index	1.03			

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities (enter code(s))	Methods to Identify Activity (enter codes)		
8.10.1	NA	a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

		YES	NO
8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)	[ ]	[X]

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

APPENDICES

A TSCA Inspection Forms
B Exit Conference Attendance Lists
C Annual Documents
D Photographs
E Inventories of Hydraulic and Heat Transfer Systems

APPENDIX A

TSCA INSPECTION FORMS

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

TOXIC SUBSTANCES CONTROL ACT M73-01

Form Approved
OMB No. 2070-0007
Expires 3-31-88

NOTICE OF INSPECTION

1. INVESTIGATION IDENTIFICATION			2. TIME	3. FIRM NAME
DATE 10/27/93	INSPECTOR NO. 63361	DAILY SEQ. NO.	8:25 AM	SHELL OIL WOOD RIVER COMPLEX

4. INSPECTOR ADDRESS	5. FIRM ADDRESS
U.S. EPA - NEIC BLDG 53, BOX 25227, DFC DENVER, CO 80225	P.O. BOX 262, WOOD RIVER, IL 62095 LOCATION: RT 111, ROXANA, IL

REASON FOR INSPECTION

Under the authority of Section 11 of the Toxic Substances Control Act:

☑ For the purpose of inspecting (including taking samples, photographs, statements, and other inspection activities) an establishment, facility, or other premises in which chemical substances or mixtures or articles containing same are manufactured, processed or stored, or held before or after their distribution in commerce (including records, files, papers, processes, controls, and facilities) and any conveyance being used to transport chemical substances, mixtures, or articles containing same in connection with their distribution in commerce (including records, files, papers, processes, controls, and facilities) bearing on whether the requirements of the Act applicable to the chemical substances, mixtures, or articles within or associated with such premises or conveyance have been complied with.

☐ In addition, this inspection extends to *(Check appropriate blocks)*:

- ☐ A. Financial data
- ☐ B. Sales data
- ☐ C. Pricing data
- ☐ D. Personnel data
- ☐ E. Research data

The nature and extent of inspection of such data specified in A through E above is as follows:

INSPECTOR SIGNATURE		RECIPIENT SIGNATURE	
Sergio Y. Siao		Jay D. Rankin	
NAME SERGIO Y. SIAO		NAME Jay D. RANKIN	
TITLE CHEM. ENGR.	DATE SIGNED 10/27/93	TITLE SNR. ENGINEER	DATE SIGNED 10/27/93

EPA Form 7740-2 (12-89)

INSPECTION 1 F

EPA

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT M73-01

Form Approved
OMB No. 2070-0007
Expires 3-31-88

TSCA INSPECTION CONFIDENTIALITY NOTICE

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE 10/27/93	INSPECTOR NO. 63361	DAILY SEQ. NO.	SHELL OIL WOOD RIVER COMPLEX
3. INSPECTOR NAME: SERGIO Y. SIAO			4. FIRM ADDRESS: P.O. BOX 262 WOOD RIVER, IL 62095 LOCATION: RT. 111, ROXANA, IL.
5. INSPECTOR ADDRESS: US EPA - NEIC BLDG. 53, BOX 25227, DFC DENVER, CO 80225			6. CHIEF EXECUTIVE OFFICER NAME
			7. TITLE

TO ASSERT A CONFIDENTIAL BUSINESS INFORMATION CLAIM

It is possible that EPA will receive public requests for release of the information obtained during inspection of the facility above. Such requests will be handled by EPA in accordance with provisions of the Freedom of Information Act (FOIA), 5 USC 552; EPA regulations issued thereunder, 40 CFR Part 2; and the Toxic Substances Control Act (TSCA), Section 14. EPA is required to make inspection data available in response to FOIA requests unless the Administrator of the Agency determines that the data contain information entitled to confidential treatment or may be withheld from release under other exceptions of FOIA.

Any or all the information collected by EPA during the inspection may be claimed confidential if it relates to trade secrets or commercial or financial matters that you consider to be confidential business information. If you assert a CBI claim, EPA will disclose the information only to the extent, and by means of the procedures set forth in the regulations (cited above) governing EPA's treatment of confidential business information. Among other things, the regulations require that EPA notify you in advance of publicly disclosing any information you have claimed as confidential business information.

A confidential business information (CBI) claim may be asserted at any time. You may assert a CBI claim prior to, during, or after the information is collected. The declaration form was developed by the Agency to assist you in asserting a CBI claim. If it is more convenient for you to assert a CBI claim on your own stationery or by marking the individual documents or samples "TSCA confidential business information," it is not necessary for you to use this form. The inspector will be glad to answer any questions you may have regarding the Agency's CBI procedures.

While you may claim any collected information or sample as confidential business information, such claims are unlikely to be upheld if they are challenged unless the information meets the following criteria:

1. Your company has taken measures to protect the confidentiality of the information, and it intends to continue to take such measures.
2. The information is not, and has not been, reasonably obtainable without your company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on showing of special need in a judicial or quasi-judicial proceeding).
3. The information is not publicly available elsewhere.
4. Disclosure of the information would cause substantial harm to your company's competitive position.

At the completion of the inspection, you will be given a receipt for all documents, samples, and other materials collected. At that time, you may make claims that some or all of the information is confidential business information.

If you are not authorized by your company to assert a CBI claim, this notice will be sent by certified mail, along with the receipt for documents, samples, and other materials to the Chief Executive Officer of your firm within 2 days of this date. The Chief Executive Officer must return a statement specifying any information which should receive confidential treatment.

The statement from the Chief Executive Officer should be addressed to:

and mailed by registered, return-receipt requested mail within 7 calendar days of receipt of this Notice. Claims may be made any time after the inspection, but inspection data will not be entered into the special security system for TSCA confidential business information until an official confidentiality claim is made. The data will be handled under the agency's routine security system unless and until a claim is made.

TO BE COMPLETED BY FACILITY OFFICIAL RECEIVING THIS NOTICE:		If there is no one on the premises of the facility who is authorized to make business confidentiality claims for the firm, a copy of this Notice and other inspection materials will be sent to the company's chief executive officer. If there is another company official who should also receive this information, please designate below.
I have received and read the notice		NAME
SIGNATURE: Jay D. Rankin		TITLE
NAME: Jay D. RANKIN		ADDRESS
TITLE: SENIOR ENGINEER	DATE SIGNED: 11/3/93	

EPA Form 7740-4 (12-82)

EPA

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT M73-01

DECLARATION OF CONFIDENTIAL BUSINESS INFORMATION

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE 11/5/93	INSPECTOR NO. 63361	DAILY SEQ. NO.	SHELL OIL WOOD RIVER MANUFACTURING
3. INSPECTOR ADDRESS: U.S EPA - NEIC BLDG 53, BOX 25227, DFC DENVER, CO 80225			4. FIRM ADDRESS: P.O. BOX 262 WOOD RIVER, IL 62095 LOCATION: RT. 111, ROXANA, IL.

INFORMATION DESIGNATED AS CONFIDENTIAL BUSINESS INFORMATION

NO.	DESCRIPTION
	PCB - item - no confidentiality claimed

ACKNOWLEDGEMENT BY CLAIMANT

The undersigned acknowledges that the information described above is designated as Confidential Business Information under Section 14(c) of the Toxic Substances Control Act. The undersigned further acknowledges that he/she is authorized to make such claims for his/her firm.

The undersigned understands that challenges to confidentiality claims may be made, and that claims are not likely to be upheld unless the information meets the following guidelines: (1) The company has taken measures to protect the confidentiality of the information and it intends to continue to take such measures; (2) The information is not, and has not been reasonably attainable without the company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding); (3) The information is not publicly available elsewhere; and (4) Disclosure of the information would cause substantial harm to the company's competitive position.

INSPECTOR SIGNATURE		CLAIMANT SIGNATURE
NAME: SERGIO Y. SIAO		NAME: Jay D Rankin
TITLE: CHEMICAL ENGINEER	DATE SIGNED: 11/5/93	TITLE / DATE SIGNED

EPA

US ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT M73-01

RECEIPT FOR SAMPLES AND DOCUMENTS

Form Approved.
OMB No. 2070-0007
Approval expires 3-31-88

1. INVESTIGATION IDENTIFICATION

DATE	INSPECTOR NO.	DAILY SEQ. NO.
11/5/93	63361	

2. FIRM NAME
SHELL OIL
WOOD RIVER MANUFACTURING COMPLEX

3. INSPECTOR ADDRESS
US EPA - NEIC
BLDG 53, BOX 25227, DFC
DENVER, CO 80225

4. FIRM ADDRESS
P.O. BOX 262
WOOD RIVER, IL 62095

LOCATION:
RT. 111, ROXANA, IL.

The documents and samples of chemical substances and/or mixtures described below were collected in connection with the administration and enforcement of the Toxic Substances Control Act.

RECEIPT OF THE DOCUMENT(S) AND/OR SAMPLE(S) DESCRIBED IS HEREBY ACKNOWLEDGED:

NO.	DESCRIPTION
	no Samples (PCB-item) taken Photo Log & Document Log attached

OPTIONAL:

DUPLICATE OR SPLIT SAMPLES: REQUESTED AND PROVIDED ☐ NOT REQUESTED ☐

INSPECTOR SIGNATURE		RECIPIENT SIGNATURE	
Sergio Siao		Jay R Rank	
NAME: SERGIO SIAO		NAME: Jay D RANKIN	
TITLE: CHEMICAL ENGINEER	DATE SIGNED: 11/4/93	TITLE: Sanc Engr	DATE SIGNED: 11/5/93

EPA Form 7740-1 (12-82)

PHOTO LOG
(PCB-ITEM)

11/27/93
ROLL 1
#1 Substation No. 13
#2 Substation Alky Sub West

11/1/93
#8 POLE MOUNTED Transformer
#T-784, #T-785, & #T-786

DOCUMENT LOG

10/27/93	PCB #1	PCB Analysis for the hydraulic machines (pages 1-4)
	PCB #2	PCB 1991 Annual Report (pages 1-3)
	PCB #3	PCB 1992 Annual Report (pages 1-3)
10/28	PCB #4	H Lat Medium System (pages 1-3)
11/1	Pole Mounted PCB #8	Non-PCB Pole Transformers T-784, T-785 & T-786.
		← This should be in the photo log section left.
11/1	PCB #5	Hydraulic equipment list.
11/4	PCB #6	PCB 1990 Annual Report (pages 1-8)

APPENDIX B

EXIT CONFERENCE ATTENDANCE LISTS

NAME	COMPANY	Number
KEN GARING	EPA-NEIC	(303) 236-5124
Daren Vanderberghe	EPA-NEIC	(303) 236-5124
Clyde Wiseman	Shell	(618) 255-3375
Linda Tekrony	EPA-NEIC	(303) 236-5124
Anne Billington	EPA-NEIC	(303) 236-5124
Gary Spears	Shell	618-255-3375
Joe Brewster	Shell	618-255-2478
LARRY HEUCATTER	SHELL	618 255-2448
Jeff Deerhake	Shell	255-2369
Chris Cahnovsky	IEPA	346-5120
JOHN Justice	IEPA	618/346-5120
Jay Ranken	Shell	618 255 2737
Colleen Hutchings	Shell	618-255-2265
ERIC PETERSEN	Shell	618-255-3190
Randy Zerkel	Shell	618-255-2734
ROBERT MILLER	SHELL	(618) 255-2405
KENT PECCOLA	Shell	(618) 255-2758
Robert Gillette	Shell	(618) 255-2755
Gina Nicholson	Shell	618-255-2512
Jeff Benhenck	State of Ill EPA	618-346-5120
SERGIO SIAO	EPA-NEIC	(303) 236-5124
Gayle Johnson	Shell	(618) 255 2201

APPENDIX C

ANNUAL DOCUMENTS

PCB-#3
Pages 1-2
10/27/93
J. Rankin

NOTE TO EC FILE 7210.10
ANNUAL PCB REPORT

Attached is the Wood River Manufacturing Complex Annual PCB Report, completed June 29, 1993.

Required records are being maintained.

J. N. Brewster

J. N. Brewster

JDR/cb (6/29/93)

Attachment

cc: Head Office
(without attachment)
J. R. Armstrong

WRMC
(with attachment)
J. D. Rankin
A. J. Schoen
L. L. Ganzer

JDR\R9318003.WCB

PCB-#2
Pages 1-2
10/27/93
J Rankin

NOTE TO EC FILE 7210.09
ANNUAL PCB REPORT

Attached is the Wood River Manufacturing Complex annual PCB report, completed June 30, 1992.

Required records are being maintained.

J. N. Brewster

JDR/cb (6/30/92)

Attachment

cc: Head Office
(without attachments)
A. F. Schmit

WRMC
(with attachments)
J. D. Rankin
A. J. Schoen

JDRR9218201.WCB

PCB-#6
Pages 1-8
11/4/93
J. Rankin

NOTE TO EC FILE 7217
ANNUAL PCB REPORT

Attached is the Wood River Manufacturing Complex annual PCB report, completed June 28, 1990. Included as attachments are work sheets from Operations listing all equipment numbers, locations, etc., as required.

Required records are being maintained.

J. N. Brewster

JDR/cb (6/28/90)

Attachment

cc: Head Office
(without attachments)
Mr. T. R. Williams

WRMC
(without attachments)
Mr. J. D. Rankin
Mr. A. J. Schoen

CSBE9017902 - 0001.0.0

Att 3

SHELL OIL COMPANY
WOOD RIVER MANUFACTURING COMPLEX
PCB REPORT PURSUANT TO 40 CFR 761

Send Copies to:
Electric Shop Foreman
Electric Shop Inspector
Util Oprns Supvsr, D.W. Bolton
Eng Oprns Support, J.D. Rankin
Purchasing, M.D. Tracy
Foreman on Cleanup - Keep a Co

DEPARTMENT Cat Cracker

DATE 1-9-90

NAME OF PERSON MAKING REPORT DW Garofoli

1) ITEM(S) INCLUDE QUANTITY	2) DRUM,* TRANSFORMER, CAPACITOR, OR OTHER ELECTRICAL EQUIPMENT NO.	3) ESTIMATED WEIGHT OF CONTAMINATED MATERIALS, WEIGHT OF CAPACITORS, OR WEIGHT OF LIQUID IN TRANS OR ELECT EQUIP IN KG (LBS X .45)	4) DATE** REMOVED FROM SERVICE	5) DATE STORED AT TEMPORARY STORAGE	6) DATE*** STORED AT CATCO	7) DATE SHIPPED FROM COMPLEX	8) NAME OF DISPOSAL COMPANY	9) MANIFEST NO.	10) DISPO SITE
400 lite ballasts capacitors unregulated "small" capacitors.	#261	182 KG	1-9-90	1-9-90	5-29-90	6-22-90	CWM Chemical Services	IL 3367220	Chic Del

* Show here also transformer, capacitor, or other electrical equipment brand, serial number, and location removed from.

For Electric Shop drums, use the "date removed from service" of the first item placed in the drum. This is available from the Electric Shop Drum Inventory. For spills, cleanups, etc., include here the date any PCB's were cleaned up.

*** For Electric Shop drums, use the "date stored in drum" of the first item placed in the drum. This is available from the Electric Shop Drum Inventory.

JDR/cb (Rev 6/86)

CSBE8617703

Att. 1

SHELL OIL COMPANY
WOOD RIVER MANUFACTURING COMPLEX
PCB REPORT PURSUANT TO 40 CFR 761

Send Copies to:
Electric Shop Foreman
Electric Shop Inspector
Util Oprns Supvsr, D.W. Bolton
Eng Oprns Support, J.D. Rankin
Purchasing, M.D. Tracy
Foreman on Cleanup - Keep a Cop

DEPARTMENT LUBE, CWT #15 T-594

DATE 1 NOV 1989

NAME OF PERSON MAKING REPORT Harrison E. Wood Jr.

1) ITEM(S) INCLUDE QUANTITY	2) DRUM,* TRANSFORMER, CAPACITOR, OR OTHER ELECTRICAL EQUIPMENT NO.	3) ESTIMATED WEIGHT OF CONTAMINATED MATERIALS, WEIGHT OF CAPACITORS, OR WEIGHT OF LIQUID IN TRANS OR ELECT EQUIP IN KG (LBS X .45)	4) DATE** REMOVED FROM SERVICE	5) DATE STORED AT TEMPORARY STORAGE	6) DATE*** STORED AT CATCO	7) DATE SHIPPED FROM COMPLEX	8) NAME OF DISPOSAL COMPANY	9) MANIFEST NO.	10) DISPOS SITE
OIL FROM T-594 80 ppm	DRUMS #253 254 255 256 257 258 #259	~~[illegible] LBS~~ 1300 KG (186 KG EACH)	1 NOV 89	1 NOV 89	1 NOV 89	3-23-90	CWM Chemical Services	IL 03157065	Chicag Del

* Show here also transformer, capacitor, or other electrical equipment brand, serial number, and location removed from.

** For Electric Shop drums, use the "date removed from service" of the first item placed in the drum. This is available from the Electric Shop Drum Inventory. For spills, cleanups, etc., include here the date any PCB's were cleaned up.

*** For Electric Shop drums, use the "date stored in drum" of the first item placed in the drum. This is available from the Electric Shop Drum Inventory.

JDR/cb (Rev 6/86)

CSBE8617703

APPENDIX D

PHOTOGRAPHS

ATTACH. 5

SHELL OIL COMPANY
WOOD RIVER MANUFACTURING COMPLEX
PCB REPORT PURSUANT TO 40 CFR 761

Send Copies to:
Electric Shop Foreman
Electric Shop Inspector
Util Oprns Supvsr, D.W. Bolt
Eng Oprns Support, J.D. Rank
Purchasing, M.D. Tracy
Foreman on Cleanup - Keep a

DEPARTMENT Utilities

NAME OF PERSON MAKING REPORT Arthur J. Schoen

DATE 11-30-88

1) ITEM(S) INCLUDE QUANTITY	2) DRUM,* TRANSFORMER, CAPACITOR, OR OTHER ELECTRICAL EQUIPMENT NO.	3) ESTIMATED WEIGHT OF CONTAMINATED MATERIALS, WEIGHT OF CAPACITORS, OR WEIGHT OF LIQUID IN TRANS OR ELECT EQUIP IN KG (LBS X .45)	4) DATE** REMOVED FROM SERVICE	5) DATE STORED AT TEMPORARY STORAGE	6) DATE*** STORED AT CATCO	7) DATE SHIPPED FROM COMPLEX	8) NAME OF DISPOSAL COMPANY	9) MANIFEST NO.	10) DIS SI
1	Transformer + oil T-5731	2,000 lbs.	11-30-88	11-30-88	11-30-88				

10 Gal/ea
300 LBS wet wt

* Show here also transformer, capacitor, or other electrical equipment brand, serial number, and location removed from.

** For Electric Shop drums, use the "date removed from service" of the first item placed in the drum. This is available from the Electric Shop Drum Inventory. For spills, cleanups, etc., include here the date any PCB's were cleaned up.

*** For Electric Shop drums, use the "date stored in drum" of the first item placed in the drum. This is available from the Electric Shop Drum Inventory.

JDR/cb (Rev 6/86)

CSBE8617703

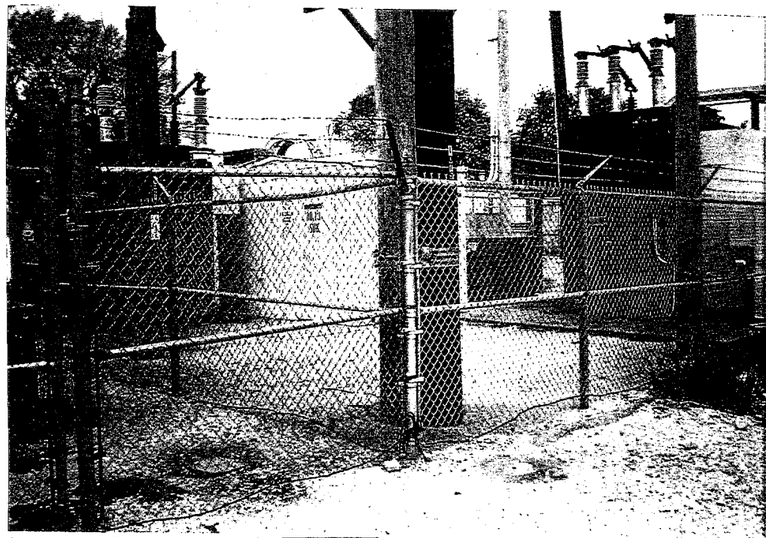

PHOTO NO. 1

Non-PCB Transformers in Substation No. 13

PHOTO NO. 2

Non-PCB Transformers in Alkyl West Substation

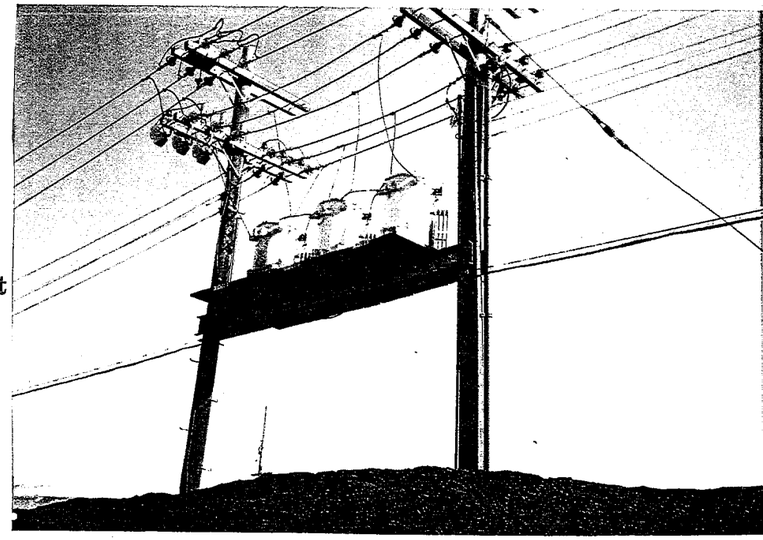

PHOTO NO. 3

Pole Mounted Non-PCB Transformers by Product Tank Farm

APPENDIX E

INVENTORIES OF HYDRAULIC AND HEAT TRANSFER SYSTEMS

PC B-#5
Page 1
11/1/93
J. Rankin

100 ton press
portable coupling puller
60 ton Manley press

GARAGE:

100 Manley press
Misc. hydraulic jacks

BOILER FAB:

Manley press
Lodge & Shippley Shear (Tin Shop)
Metal Worker
Tube puller(stationary)
2 portable tube pullers

PIPE FAB:

Hydraulic bender

VIEW THE NOTE

From: WR34AMH --VM34
To: WR34JDR --VM34 J D RANKIN Date and time 10/28/93 11:33:3

PCB #4 (pages 1-3)
10/28/93
Jay Rankin

From: Mark Harper
Wood River Manufacturing Complex
Subject: Heat medium systems
Jay,

There are three heat medium systems in Alky/BEU. A common heat medium system connects the Alky DIB H1 and BEU H2 heaters. This system has been in service since 1953. A second heat medium system exists in the Rerun H1 heater. This heater has been in service since 1943. A third heat medium system exists in the BEU H2 heater. This heater has been in service since 1942.

The following note from Mindy Diehl in August, 1992, explains that we use a lube product as heat medium. It also gives several of the properties of the material. She would probably have a complete GC if required. The contamination referred to is water.

MSG FROM: WR34MDD --VM34 TO: WR34AMH --VM34 08/10/92 14:18:37
To: WR34DEC2--VM34 D. E. CAMPBELL WR34AMH --VM34 A. M. HARPER
PF1 Alternate PFs PF2 File NOTE PF3 Keep PF4 Erase PF5 Forward Note
PF6 Reply PF7 Resend PF8 Print PF9 Help PF10 Next PF11 Previous PF12 Return

VIEW THE NOTE

To: WR34DEC2--VM34 D. E. CAMPBELL WR34AMH --VM34 A. M. HARPER E01

From: M. D. Diehl
Engineer, Lubricants
Subject: Alky Heat Medium from Lubes

Mark and Bruce: Alky and/or the BEU use a lube product as heat medium. I've been asked on a couple of occasions for help identifying the product or determining if your heat medium is contaminated. I wanted to give you two some of the properties of the product so that if you are ever in doubt you could sample and compare to what it should look like.

product: HVI 350...vis @ 40 C: 55-70 cSt (typically 65-70 cSt)...VI: min 88... pour point: max +20 F...flash, COC: min 420 F...Karl Fischer: max 100 ppm

Today, Pete from Alky called to let me know that they wanted to sample the heat medium before the BEU shutdown to see if it was "clean" enough to send back to us to store for you to use later. I gave him the tests he ought to run (vis and POPS for water) and he is going to send results to me to verify before you pump the stuff back to us. I would send him this note too, but I don't know his last name.It's not a big deal for me to be involved, but I wan
PF1 Alternate PFs PF2 File NOTE PF3 Keep PF4 Erase PF5 Forward Note
PF6 Reply PF7 Resend PF8 Print PF9 Help PF10 Next PF11 Previous PF12 Return

VIEW THE NOTE

don't know his last name.It's not a big deal for me to be involved, but I wan
ted you to have access to the specs on this stuff. Let me know if you have
questions.

cc: WR34LLB --VM34 L. L. BARRINGER

MINDY DIEHL - PROFS MDD34
PLW RM.215 - SSN 236-3703
|| | Alky Heat Medium from Lubes
A. M. Harper
Engineer-Process Fuels
SSN 236-3410
Nickname "amh34"
*** Forwarding note from WR34MCD --VM34 10/27/93 12:41 ***
To: WR34JDR --VM34 J D RANKIN

From: M. C. Dill
Subject: Heat medium systems
Jay,

I just talked to Mark Harper and he will be responding with the details on
PF1 Alternate PFs PF2 File NOTE PF3 Keep PF4 Erase PF5 Forward Note
PF6 Reply PF7 Resend PF8 Print PF9 Help PF10 Next PF11 Previous PF12 Return

PCB - #1
Pages 1-4
10/27/93
J Rankin

[illegible]

[illegible] are PCB analysis for the hydraulic machines in the [illegible]

Machine	PCB Content
[illegible] Hydraulic Press Northend Boiler Hab Shop	2 ppm - Test # 20728
[illegible] and [illegible] [illegible] Shop	Less than 1 ppm - Test # 20752
[illegible] Coupling Puller Machine Shop	Less than 1 ppm - Test # 24210
[illegible] Hydraulic Press Machine Shop	Less than 1 ppm - Test # 24138
Metal Worker Boiler Hab Shop	Less than 1 ppm - Test # 24003
Hydraulic Tube Puller Boiler Hab Shop	Less than 1 ppm - Test # 22290
Hydraulic Bender Pipe Bender	2 ppm - Test # 20709

Jay

Shell Oil Co.
P.O.Box 262
Wood River, IL 62095

ENVIRONMETRICS

1567 North Warson Road
St. Louis, MO 63132
(314) 427-0550

ANALYSIS RESULTS
PCBs in Oil

Sample No.	Identification	Total ppm	Type
20709	Hydraulic oil from bender at Pipe Shop	2	1254

*All values are ± 10%

January 13, 1986

Eugene P. Scheide, Ph.D.
Laboratory Director

Shell Oil Company
Box 262
Wood River, IL 62095

ENVIRONMETRICS

1567 North Warson Road
St. Louis, MO 63132
(314) 427-0550

ANALYSIS RESULTS
PCBs in Oil

Sample No.	Identification	Total ppm	Type
22290	Hyd tube puller Boiler Fab Shop	less than 1	----
24003	Iron worker metal Boiler Fab Shop	less than 1	----
24138	100 ton hydraulic press M.S.	less than 1	----
24210	Portable coupling puller M.S.	less than 1	----

*All values are ± 10%

November 29, 1985

Eugene P. Scheide, Ph.D.
Laboratory Director

Shell Oil Co.
P.O.Box 262
Wood River, IL 62095

PO# WRG26004/10

ENVIRONMETRICS
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St. Louis, MO 63132
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ANALYSIS RESULTS
PCBs in Oil

Sample No.	Identification	Total ppm	Type
20728	Manley Hydraulic Press Boiler Shop Hydraulic Oil	3	1254
20752	No. 8 Shear Tin Shop Hydraulic Oil	less than 1	----

APPENDIX

EXIT CONFERENCE ATTENDANCE LISTS

NAME	COMPANY	Number
KEN GARING	EPA-NEIC	(303) 236-5124
Daren Vanderbeighe	EPA-NEIC	(303) 236-5124
Clyde Wiseman	Shell	(618) 255-3375
Linda Tekrony	EPA-NEIC	(303) 236-5124
Anne Billington	EPA-NEIC	(303) 236-5124
Gary Spears	Shell	618-255-3375
Joe Brewster	Shell	618-255-2478
LARRY HEUCATTER	SHELL	618 255-2448
Jeff Weerhave	Shell	255-2369
Chris Cahnovsky	IEPA	346-5120
JOHN Justice	IEPA	618/346-5120
Jay Ranton	Shell	618 255 2737
Colleen Hutchings	Shell	618-255-2265
ERIC PETERSEN	Shell	618-255-3190
Randy Zerkel	Shell	618-255-2734
ROBERT MILLER	SHELL	(618) 255-2405
KENT PECCOLA	Shell	(618) 255-2758
Robert Gillette	Shell	(618) 255-2755
Gina Nicholson	Shell	618-255-2512
Jeff Benhenck	State of Ill EPA	618-346-5120
SERGIO SIAO	EPA-NEIC	(303) 236-5124
Gayle Johnson	Shell	(618) 255 2201