

GW - 22

**GENERAL
CORRESPONDENCE**

YEAR(S):

1991 - 1989



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

February 25, 1991

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-082

Mr. James F. Trickett
Amoco Production Company
P. O. Box 3092
Houston, Texas 77253

RE: Discharge Plan GW-22
Empire Abo Gas Plant
Eddy County, New Mexico

Dear Mr. Trickett:

The Oil Conservation Division (OCD) has received your proposal dated February 4, 1991, to replace rather than test the underground waste piping and sumps at the above referenced facility.

Based on the information provided in your correspondence, the change will afford increased protection to the environment and does not alter the completion date committed to in the discharge plan. Your proposal is therefore approved.

Please notify this office when the project is completed.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Artesia Office



COMMISSION

RECEIVED FEB 11 1991

Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager

February 4, 1991

Certified Mail No. P 362 495 943

David G. Boyer, Hydrogeologist,
Environmental Bureau Chief
Oil Conservation Division
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, NM 87504

File: JFT-2564-988.SWM35NM

Dear Mr. Boyer:

Proposed Amendments
Discharge Plan GW-22
Empire Abo Gasoline Plant
Eddy County, New Mexico

This letter addresses our plans to bring our process drain system to the Empire Abo Gasoline Plant into compliance with current New Mexico Oil Conservation Division (NMOCD) guidelines. Please reference your correspondence dated December 6, 1989, entitled "Discharge Plan GW-22, Empire Abo Gasoline Plant, and our correspondence dated September 7, 1990, File: JFT-2420-986.631NM.

Amoco has examined the process drain system at the Empire Abo Gasoline Plant, including the drain piping and below grade sumps. We do not believe this system can be retrofit to insure leak detection and mechanical integrity; therefore, it will be replaced. Amoco has developed preliminary plans for a new process drain system, as shown in Attachment No. 1. These plans consist of a new drain piping network and several below grade sumps. The new drain piping will include several isolation valves to facilitate testing for mechanical integrity. The below grade sumps will each consist of a steel or fiberglass tank within a secondary containment device, such as a fiberglass liner, steel liner, or concrete box. These tanks will be visually inspected for leaks. In the event of such a leak, process waste will be held with the secondary containment device. This new drain system will satisfy NMOCD guidelines for leak detection and mechanical integrity.

David G. Boyer
Page 2
February 4, 1991

The magnitude of this project is much greater than was previously anticipated. In addition to satisfying NMOCD guidelines, we are also addressing some safety concerns associated with such a system. Most notably, a closed drain system is being incorporated for those process fluids which may emit flammable vapors. Because additional scope changes are possible, Amoco anticipates two more months of design and preparation time will be necessary before the project can be released for construction. We anticipate construction commencing in the second quarter of this year with a construction period of three months. As proposed, we do not anticipate any problems in meeting the December 31, 1991, completion date.

Amoco Production Company is committed to develop a system which will meet and exceed NMOCD guidelines. If you have questions regarding our proposed plans, please phone Dave Blazer of my staff at (713) 556-2656.

Yours very truly,

S. F. Trickett
84

DLB:sdw

Attachment

David G. Boyer
Page 3
February 4, 1991

bcc: Richard Ross -8.102
A. F. Cremer - 19.102
P. E. Haney - Empire Abo Gas Plant



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager
Certified Mail No. P 463 296 698

September 7, 1990

David G. Boyer, Hydrogeologist,
Environmental Bureau Chief
Oil Conservator Division
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87504

File: JFT-2420-986.631NM

Discharge Plan Renewal GW-22
Empire Abo Gasoline Plant
Eddy County, New Mexico

Dear Mr. Boyer:

This letter is written to furnish certain additional information requested by your letter dated December 6, 1989, in order to finalize renewal approval of the above referenced discharge plan. The following discussion will address each of the five (5) items listed .

1. Underground Piping: Figure 89-1 of the original renewal application is a schematic showing both the cooling water flow system and generally depicts the waste fluids drain lines. Figure 89-3 is a more detailed drawing of the plant sumps, process and the waste fluid drainage system which essentially consists of all underground piping. Attached is a revised Figure 89-1 which reflects corrections and/or changes that have been made since the preparation of the original renewal application dated September 12, 1989. (The revised Figure 89-1 should be inserted in the plan originally submitted.) Most of the cooling water piping is underground piping. The compressor jacket water piping and coolers are all aboveground piping. Other than the inlet gas lines, the cooling water piping and the waste fluid collection and drain piping, there is no other underground piping in the plant.

The original plant and associated piping was constructed in 1960. A second sweetening and fractionation system was installed in 1970 and numerous additions and/or replacements of vessels and piping have been made periodically throughout the history of the plant. The cooling water and the waste fluids collection and drain systems are interconnected; therefore, it is not feasible nor practicable to isolate sections according to age to conduct tests to ensure integrity. Because of this, a detailed schematic with the age of the specific sections of piping is not shown on either Figure 89-1 (revised 9-6-90) or Figure 89-1.

In order to satisfy NMOCD requirements to demonstrate integrity of the underground piping, Amoco provides the following information and proposal for ensuring integrity of the lines.

(a) Approximately 650 feet of the original cooling water system piping trunk line distribution system was damaged by pressure resulting from the fire that occurred March 16, 1990, and was replaced with 16 inch polyethylene pipe. This piping is all in the "Process Area" shown on Figure 89-1 and the new sections were hydrostatically tested at that time.

(b) Although the remaining approximate 600 feet of 8 and 10 inch steel lateral lines were not pressure tested, and most sections are less than 25 years old, only two (2) leaks are known to have occurred in the remaining lines during the 30 year history of plant operations. In the past, the existence of leaks has been readily apparent by increased water and treatment chemical consumption.

(c) The cooling water piping is all interconnected, operates with a continuous 25 to 30 psi pressure and cannot be hydrostatically tested without a complete shut down of the plant.

Considering the above discussed factors, Amoco proposes to hydrostatically test to 40 psi maximum the cooling water system piping during any future plant shut downs. In the absence of a need for a plant shut-down, Amoco proposes that monitoring water and chemical usage will continue to be adequate to detect leaks.

With further regard to the waste fluids collection and drainage piping system, this system is similarly all interconnected and operates by gravity flow and cannot be tested without a complete shut-down of plant operations. This system is considered to require major modifications and/or replacement, along with other changes in plant operations currently under consideration. Therefore, Amoco proposes to complete engineering evaluation and design of the modifications by December 31, 1990, and will submit a proposed amendment to the Discharge Plan for NMOCD review and acceptance by February 1, 1991. Amoco further commits that all work to implement the changes in the waste fluid drainage and collection system will be completed before December 31, 1991.

2. Below Grade Facilities (Sumps): The only below grade facilities at the Empire Abo Gasoline Plant are the sumps associated with the waste fluid collection and drainage system. These sumps are all of concrete construction and interconnected by underground piping. As discussed above, major modifications to the plant waste fluid collection system are currently being evaluated. Amoco proposes to satisfy the NMOCD requirement of ensuring integrity of the sumps by replacing and/or retrofitting the existing sumps with sumps that contain leak detection. In this connection, Amoco commits to complete engineering design work and review same with NMOCD before February 1, 1991, with the

understanding that work will be completed before December 31, 1991.

3. Berming of Tanks: Other than the waste fluid storage tanks, addressed in the original application, which are equipped with earthen dikes of adequate volume, there are aboveground bulk storage tanks containing sodium hydroxide (caustic), sulphuric acid and cooling water treating chemicals. Work is in progress and will be completed by October 1, 1990, to construct concrete floors and walls surrounding the chemical storage tanks. The spill containment walls will also serve to keep the chemicals segregated should a spill occur. We feel these are the only storage tanks that meet the berming criteria described in your letter.

4. Paving and Curbing: The following addresses the status of work being performed, or planned on each of the specific areas mentioned in your letter:

(a) The chemical storage east (should be west) of the office in the bulk tank storage area discussed in Item No. 3 above, which has had concrete walls constructed.

(b) Same status as stated in "a" above.

(c) The EDR unit is no longer in use and, the caustic and acid storage tanks at the EDR unit building have been emptied and will be removed by October 1, 1990.

(d) A 10' x 40' concrete slab with an 8" high curb has been constructed to serve as a central drum storage facility near No. 9 compressor building. A concrete slab with curbing will be constructed by November 1, 1990, at the chemical use area near the boiler building.

(e) The lube oil storage and transfer pumps will be equipped with concrete pads and curbs. Work will be completed by October 1, 1990.

(f) The drain pipe from the boiler fuel gas scrubber will be tied into the waste fluid drainage system by November 1, 1990.

(g) Same status and plans as stated for Item "e" above to contain oil leaks from pumps.

Installation of spill containment is either completed or in process in those areas where leaks and spills were evident. All other pumps not currently equipped with drip pans with drains connected to sumps will be reconstructed in conjunction with work currently in progress at the plant.

5. Attached is a copy of a laboratory analysis of an ethane-propan filter which should be added to Appendix 89-3 of

the original renewal application. You will note the analysis is for a filter from the Amoco operated Slaughter Plant located in our West Texas operations. The product and filter is very similar to the Empire Abo Plant and should adequately represent the characteristics of the Empire Abo Plant filter. The new EPA TCLP method was used and the filter does not have any hazardous characteristics. A filter from the Empire Abo Plant will be analyzed the next time the filter is replaced.

As you are aware, a major failure in a section of gas piping occurred on March 16, 1990, resulting in a fire and plant shut down for repairs until May 5, 1990. As a result, work to pursue developing a response to your December 6, 1989, letter was negatively affected and we apologize for the delays. We trust the action Amoco has taken and/or is committed to implement in the immediate future will satisfy NMOCD requirements for pollution prevention at the Empire Abo Gasoline Plant. If you have questions or need additional information or clarification, please do not hesitate to contact either Dave Blazer of my staff at (713) 556-2656, or Phil Haney, Plant Foreman at (505) 397-8267 in Artesia.

Yours very truly,

J. F. Trickett
84

DLB:sdw

attachments

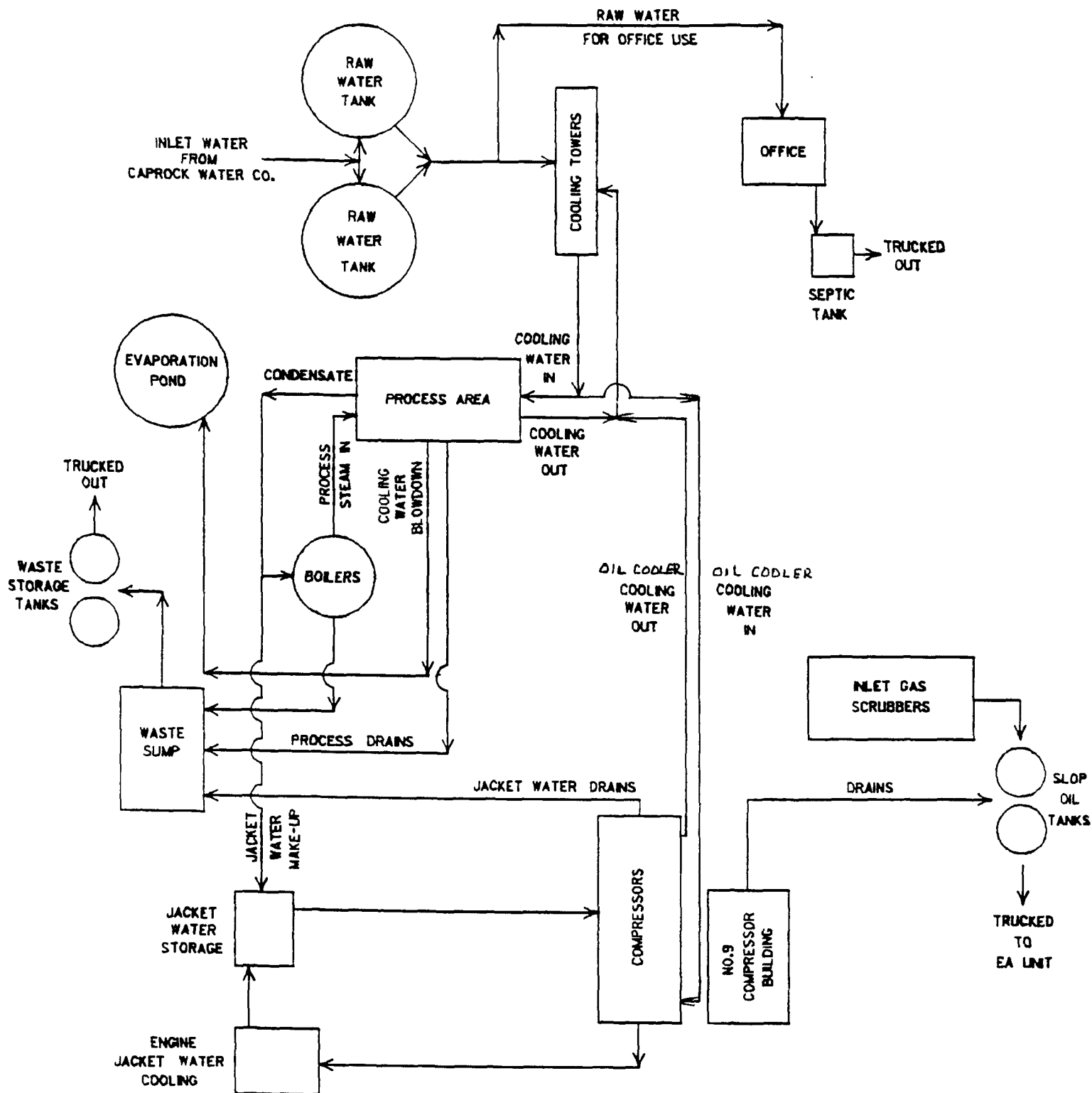


FIGURE 89-1

| | |
|---------------------------|---------------|
| AMOCO PRODUCTION COMPANY | |
| EFFLUENT FLOW | |
| EMPIRE-ABO GASOLINE PLANT | |
| Eddy County, New Mexico | |
| DWG NO D-5171 | DATE 09-01-89 |

Revised 09-06-90



Lubbock Christian University Institute of Water Research

5601 West 19th Street • Lubbock, Texas 79407
(806) 796-8800

ANALYTICAL RESULTS FOR
AMOCO PRODUCTION COMPANY
Attention: Tommy Pugh
Box 1140
Sundown, TX 79372

September 6, 1990
Receiving Date: 8/27/90
Sample Type: Filter
Project No: NA
Project Location: Slaughter Plant

Sampling Date: 3/9/90
Sample Condition: Inact
Sample Received by: JC
Project Name: EP Coalescer
Foreman: Robert Travis

LCUWNR # Field Code

| TCLP METALS (ppm) | | | | | | | |
|-------------------|------|------|------|------|------|------|------|
| As ✓ | Se ✓ | Cr ✓ | Cd ✓ | Pb ✓ | Ba ✓ | Hg ✓ | Ag ✓ |

| Y13924 | EP Coalescer Filter | QC | Quality Control |
|--------|---------------------|------|-----------------|
| <0.1 | <0.2 | <0.1 | <0.1 |
| 0.91 | 0.94 | 1.01 | 0.94 |
| <0.2 | 0.48 | <1.0 | 0.012 |
| 9.8 | 0.0098 | 4.87 | |

| % Precision | % Instrument Accuracy |
|-------------|-----------------------|
| 100 | 91 |
| 100 | 94 |
| 100 | 101 |
| 100 | 94 |
| 100 | 96 |
| 102 | 98 |
| 100 | 98 |
| 100 | 97 |

| IGNITABILITY | REACTIVITY (ppm) | CORROSIVITY |
|----------------|------------------|-------------|
| Nonignitable ✓ | Sulfide Cyanide | pH (s.u) ✓ |
| <25.0 | <2.5 | 10.06 |
| 100 | 100 | 100 |
| NR | 100 | NR |
| | | 94.6 |

METHODS: EPA SW 846 7060, 7740, 7191, 7131, 7421, 7081, 7470, 7761; 40CRF268 Appendix I;
SW-846 7.3.4.2, 7.3.3.2, 9040, 1010.
TCLP QC: Blank spiked with 1.00 ppm As, Se, Cr, Cd; 0.50 ppm Pb; 0.010 ppm Hg;
and 10.0 ppm Ba.

163

4-6-90

Director, Dr. Blair Leftwich

Asst. Dir., Dr. Bruce McDonell

Date



OIL CONSERVATION DIVISION
RECEIVED

'90 SEP 12 AM 9 05

Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager
Certified Mail No. P 463 296 698

September 7, 1990

David G. Boyer, Hydrogeologist,
Environmental Bureau Chief
Oil Conservator Division
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87504

File: JFT-2420-986.631NM

Discharge Plan Renewal GW-22
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Yours very truly,

J. F. Trickett
84

DLB:sdw

attachments

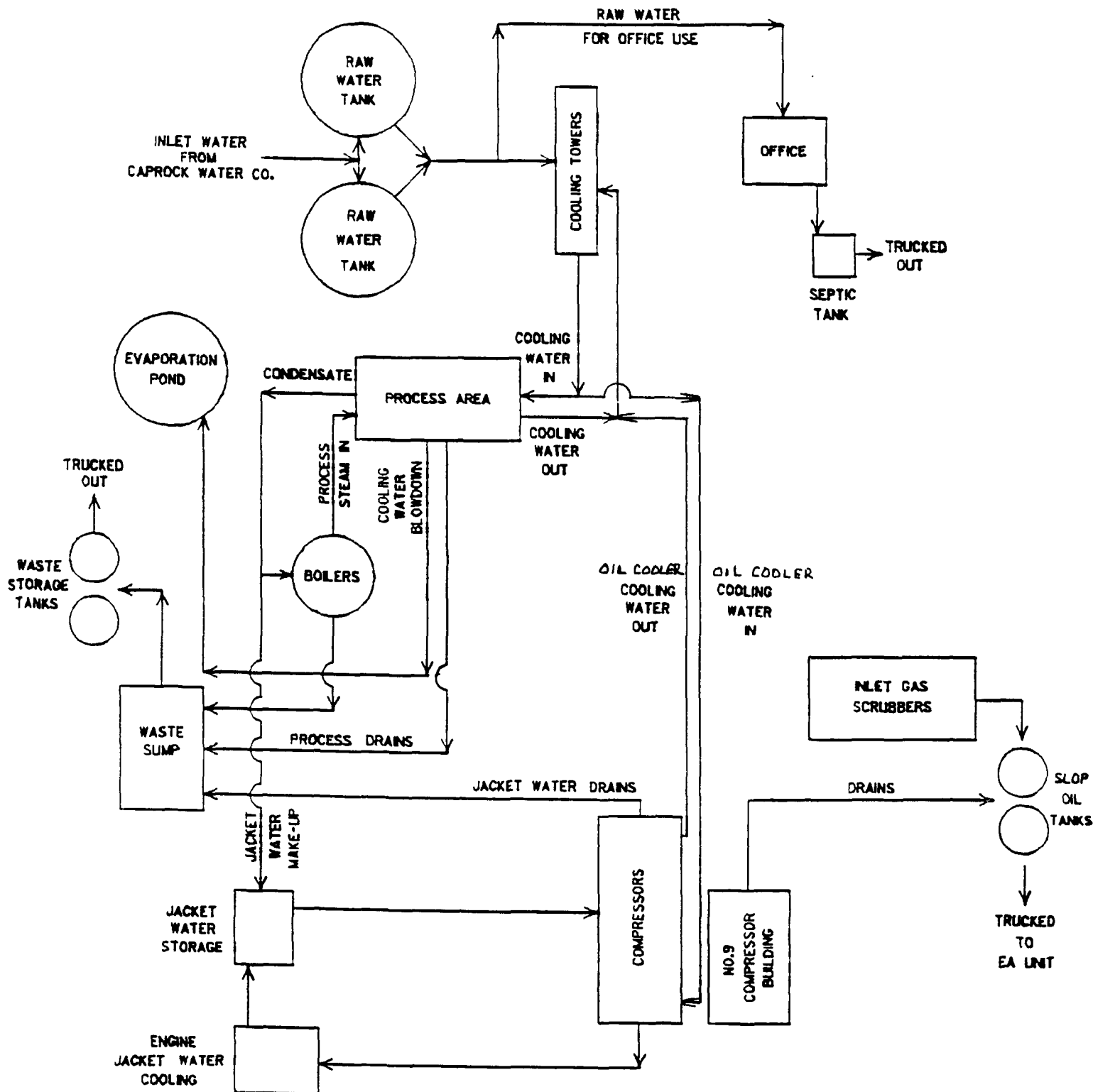


FIGURE 89-1

| | |
|---------------------------|---------------|
| AMOCO PRODUCTION COMPANY | |
| EFFLUENT FLOW | |
| EMPIRE-ABO GASOLINE PLANT | |
| Eddy County, New Mexico | |
| DWG NO D-5171 | DATE 09-01-89 |

Revised 09-06-90



Lubbock Christian University Institute of Water Research

5601 West 19th Street • Lubbock, Texas 79407

(806) 796-8800

ANALYTICAL RESULTS FOR
AMOCO PRODUCTION COMPANY
Attention: Tommy Pugh
Box 1140
Sundown, TX 79372

September 6, 1990
Receiving Date: 8/27/90
Sample Type: Filter
Project No: NA
Project Location: Slaughter Plant

Sampling Date: 3/9/90
Sample Condition: Intact
Sample Received by: JC
Project Name: EP Coalescer
Foreman: Robert Travis

LCUIWR # Field Code

As ✓ TCLP METALS (ppm) Se ✓ Cr ✓ Cd ✓ Pb ✓ Ba ✓ Hg ✓ Ag ✓

| Y13924 | EP Coalescer Filter | <0.1 | <0.2 | <0.1 | <0.1 | <0.2 | <1.0 | 0.012 | <0.1 |
|--------|---------------------|------|------|------|------|------|------|--------|------|
| QC | Quality Control | 0.91 | 0.94 | 1.01 | 0.94 | 0.48 | 9.8 | 0.0098 | 4.87 |

| % Precision | 100 | 100 | 100 | 100 | 100 | 100 | 102 | 100 | 100 |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| % Instrument Accuracy | 91 | 94 | 101 | 94 | 96 | 98 | 98 | 98 | 97 |

| IGNITABILITY | REACTIVITY (ppm) | CORROSIVITY |
|----------------|------------------|-------------|
| Nonignitable ✓ | Sulfide Cyanide | pH (s.m) ✓ |
| <25.0 | <2.5 | 10.06 |

| Y13924 | EP Coalescer Filter | 100 | 100 | 100 | 100 |
|-------------|---------------------|-----|-----|-----|------|
| % Precision | | NR | 100 | NR | 94.6 |
| % Accuracy | | | | | |

METHODS: EPA SW 846 7060, 7140, 7191, 7131, 7421, 7081, 7470, 7161; 40CRF268 Appendix I;
SW-846 7.3.4.2, 7.3.3.2, 9040, 1010.
TCLP QC: Blank spiked with 1.00 ppm As, Se, Cr, Cd; 0.50 ppm Pb; 0.010 ppm Hg;
and 10.0 ppm Ba.

BS

Director, Dr. Blair Leftwich

Asst. Dir., Dr. Bruce McDonell

Date

4-6-90

Sx

NEW MEXICO OIL CONSERVATION DIVISION

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

MAR 23 '90

90 MAR 29 AM 9 52

Q.C.D.

| | | | | | | | |
|---|--|---|--|---|---|---|-------------|
| NAME OF OPERATOR Amoco Production Company | | | | ADDRESS P. O. Box 3092, Houston, TX 77253 | | | |
| REPORT OF | FIRE <input checked="" type="checkbox"/> | BREAK | SPILL | LEAK | BLOWOUT | OTHER* | |
| TYPE OF FACILITY | DRLG WELL | PROD WELL | TANK BATT | PIPE LINE | GASO PLNT <input checked="" type="checkbox"/> | OIL RFY | OTHER |
| NAME OF FACILITY Empire Abo Gasoline Plant | | | | | | | |
| LOCATION OF FACILITY (QUARTER/QUARTER SECTION OR FOOTAGE DESCRIPTION) | | | | SEC. 3 | TWP. 18S | RGE. 27E | COUNTY Eddy |
| DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK | | | | 9 miles East of Artesia on Hwy. 82 & 3 miles South on Co. Rd. | | | |
| DATE AND HOUR OF OCCURENCE 3-17-90 12:00 A.M. | | | | DATE AND HOUR OF DISCOVERY 3-17-90 12:00 A.M. | | | |
| WAS IMMEDIATE NOTICE GIVEN? | YES <input checked="" type="checkbox"/> | NO | NOT REQUIRED | IF YES, TO WHOM Mike Williams - Artesia | | | |
| BY WHOM David Nixon | | | | DATE AND HOUR 3-17-90 9:45 A.M. | | | |
| TYPE OF FLUID LOST None | | | | QUANTITY OF LOSS - | | VOLUME RECOVERED - | |
| DID ANY FLUIDS REACH A WATERCOURSE? | | YES | NO <input checked="" type="checkbox"/> | QUANTITY | | | |
| IF YES, DESCRIBE FULLY** | | | | | | | |
| DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN** Rupture in 700# psi, 6", 3rd and 4th stage discharge line from compressors. Resulted in explosion and fire. Plant shut down within half hour. The Artesia and Loco Hills Fire Departments were notified and the fire was completely extinguished within 2 hours. | | | | | | | |
| DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN** Melted and damaged equipment located around #6 gas cooler. | | | | | | | |
| DESCRIPTION OF AREA | FARMING | GRAZING <input checked="" type="checkbox"/> | URBAN | OTHER* | | | |
| SURFACE CONDITIONS | SANDY | SANDY LOAM | CLAY | ROCKY/SAND <input checked="" type="checkbox"/> | WET | DRY <input checked="" type="checkbox"/> | SNOW |
| DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)** Approximate temperature in the 50's. | | | | | | | |
| I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF | | | | | | | |
| SIGNED M. J. McKinley | | | | TITLE Sr. Administrative Analyst DATE 3-20-90 | | | |

*SPECIFY

**ATTACH ADDITIONAL SHEETS IF NECESSARY

OK LD 3127/90

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

December 6, 1989

CERTIFIED MAIL
RETURN RECEIPT NO. P-106-675-179

Mr. James F. Trickett
AMOCO PRODUCTION COMPANY
P. O. Box 3092
Houston, Texas 77253

RE: Discharge Plan GW-22
Empire Abo Gasoline Plant
Eddy County, New Mexico

Dear Mr. Trickett:

The Oil Conservation Division (OCD) has received and is in the process of reviewing the above referenced discharge plan renewal application. The following comments and requests for additional information are based on review of the application, dated September 12, 1989, and observations during the OCD site visit on June 21, 1989.

1. Underground piping: Pursuant to current OCD guidelines for discharge plans at gas plants, all underground piping at gas plants in excess of twenty five (25) years old must be tested for integrity prior to discharge plan renewal. Submit a schematic of all underground piping at the facility and a proposal for testing or ensuring the integrity of these lines.
2. Below grade facilities: A number of below grade sumps were observed during the inspection and/or mentioned in your renewal application. The OCD is requiring that all newly constructed or repaired sumps be installed with leak detection. Since the sumps were constructed prior to this requirement, retrofitting will not be required if an approved method of periodic integrity testing these sumps is instituted at the facility. Submit a proposal and schedule for testing the integrity of the sumps.

Mr. James F. Trickett
December 6, 1989
Page -2-

3. Berming of tanks: The OCD is requiring that above grade tanks that contain materials with constituents that can be harmful to fresh water and the environment, if a sudden and catastrophic spill were to occur, must be contained at the site of the spill and mitigated immediately. Containment in a small area at the tank site allows for maximum recovery of fluids and small volumes of contaminants available for infiltration. Without berming, the rupture of a tank will spread its contents over a large area minimizing the amount that can be recovered and increasing the surface area of contaminated soil available to leach contaminants. All tanks that contain these types of materials must be bermed to prevent migration of the fluids and decrease the potential for infiltration. Therefore a commitment and completion schedule is required for the berming of vessels that contain fluids other than fresh water. The bermed areas shall be large enough to hold one-third more than the volume of the largest vessel or one-third larger than the total volume of all interconnected vessels contained within the berm.

The waste storage tanks were addressed in the application but the caustic tank on the south side of the boiler room was not mentioned. Submit a plan and schedule for berming this tank and any other tanks at the facility that meets the berming criteria.

4. Paving and curbing: The OCD requires the paving and curbing of process and storage areas where leaks or spills can occur. The purpose of this requirement is to contain and prevent migration and infiltration of any spilled or leaked materials that may contaminate the environment. The following is a list of those areas where we observed evidence of leaks or spills during the site inspection, or storage areas that require containment:
 - a. The chemical storage east of the office.
 - b. Chemical storage on the west side of the boiler room.
 - c. The caustic and acid storage on the north side of the EDR building.
 - d. The drum storage east of No. 9 compressor building.
 - e. The lube oil storage pumps were leaking.
 - f. At gas scrubber 7, blowdown was to the ground.

Mr. James F. Trickett
December 6, 1989
Page -3-

- g. The condensate "C" pumps south of the boiler room were leaking oil.

Submit a completion schedule for paving and curbing the above areas and any other areas where leaks or spills can occur. This schedule must include all drum storage areas.

5. Appendix 89-3 was missing the waste characterization analysis for the ethane-propane filter.


Submission of the above requested information will allow the review of your application to continue. Due to OCD delay in providing this response to your September 21 submittal, the discharge plan will likely expire prior to completion to the review. Since the responsibility was ours, there will be no penalty for continuation of operations after expiration of the discharge plan provided a timely response to this letter is provided.

Attached is a copy of a letter received in response to the public notice of the discharge plan renewal. OCD requirements to protect migratory birds (Order R-8952) apply at your facility, and an exception to netting of your pond was approved by the Artesia OCD office on September 29, 1989.

Also enclosed are the analysis results from samples taken by the OCD during the plant inspection.

If you have any questions, please do not hesitate to call Roger Anderson at (505) 827-5884.

Sincerely,



David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB/RCA/sl

Enclosure

cc: OCD Artesia Office



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

November 21, 1989

Mr. William J. Lemay, Director
State of New Mexico Energy, Minerals and
Natural Resources Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Lemay:

This responds to the public notice received November 7, 1989, regarding the effects on fish, shellfish and wildlife resources by the granting of discharge permits. We have used the information in the public notice as a guide to narrow our comments to the species and habitats that would be affected by each discharge.

(GW-22) Amoco Production Company, Empire Abo Gasoline Plant, located in SE/4, Section 3, Township 18 South, Range 37 East, NMPM, Eddy County, New Mexico.

The Fish and Wildlife Service (Service) recommends the double lined evaporation pond and the above grade steel tanks be covered or screened to exclude migratory birds from gaining access, especially if a film of oil is present on the surface of the water.

(GW-19) Arrow Gas Company, Loco Hills brine discharge facility, located in the NW/4 SE/4 Section 22, Township 17 South, Range 29 East, NMPM, Eddy County, New Mexico.

The Service recommends the 2.44 million gallon storage pond be screened to exclude migratory birds from gaining access, especially if a film of oil is present on the surface of the water.

Thank you for the opportunity to comment. If you have any questions, call Rick Roy at (505) 883-7877.

Sincerely yours,

Thomas F. O'Brien
for John C. Peterson
Field Supervisor

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife
Enhancement, Albuquerque, New Mexico

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:


(GW-22) Amoco Production Company, James F. Trickett, Regional Environmental Safety and Regulatory Affairs Manager, P. O. Box 3092, Houston, Texas 77253, has submitted an application for renewal of its previously approved discharge plan for its Empire Abo Gasoline Plant located in the SE/4, Section 3, Township 18 South, Range 37 East, NMPM, Eddy County, New Mexico. Approximately 17,500 gallons per day of process waste water is disposed of in a double lined evaporation pond with leak detection or stored in above grade steel tanks for disposal at an OCD approved offsite disposal. Waste water has a total dissolved solids (TDS) concentration of approximately 11000 mg/l. Ground water most likely to be affected by any discharge to the surface is at a depth of approximately 50 feet with a total dissolved solids concentrations of approximately 300 mg/l. The discharge plan addresses how spills, leaks or other discharges to the ground will be handled.

(GW-19) Arrow Gas Company, Robert L. Guest, Vice President and General Manager, P. O. Box 1771, Roswell, New Mexico 88201, has submitted an application for renewal of its previously approved discharge plan for its Loco Hills brine discharge facility located in the NW/4 SE/4, Section 22, Township 17 South, Range 29 East, NMPM, Eddy County, New Mexico. Arrow Gas Company proposes continuation of brine discharge to an existing 2.44 million gallon plastic-lined storage pond. The brine discharge is the result of propane injection to three salt domes. The brine storage pond contains a secondary plastic liner and a leak detection system. The brine is reinjected to the domes when propane extraction is desired. The ground water most likely to be affected by any discharges at the surface is at a depth of 75 feet with a concentration in excess of 10,000 mg/l total dissolved solids. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest. If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 31st day of October, 1989. To be published on or before November 10, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


WILLIAM J. LEMAY, Director

S E A L



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

October 31, 1989

RE: NOTICE OF PUBLICATION

Advertising Manager
ARTESIA DAILY PRESS
P. O. Drawer 179
Artesia, New Mexico 88210

Dear Sir:

Please publish the attached notice one time immediately on receipt of this request. Please proofread carefully, as any error in a land description or in a key word or phrase can invalidate the entire notice.

Immediately upon completion of publication, please send the following to this office:

1. Publisher's affidavit in duplicate.
2. Statement of cost (also in duplicate).
3. CERTIFIED invoices for prompt payment.

We should have these immediately after publication in order that the legal notice will be available for the hearing which it advertises, and also so that there will be no delay in your receiving proper payment.

Please publish the notice not later than November 10, 1989.

Sincerely,

William J. LeMay
Director

WJL:sl

Attachment

P-106 675 088

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

| | |
|----------------|---------------------|
| Sent to | Artesia Daily Press |
| Street and No. | |

act
STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 31st day of October, 1989. To be published on or before November 10, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY, Director

S E A L

Affidavit of Publication

No. 12962

STATE OF NEW MEXICO,
County of Eddy:

Gary D. Scott being duly sworn, says: That he is the Publisher of The Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached Legal Notice

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for 1 consecutive weeks on the same day as follows:

First Publication November 8, 1989

Second Publication

Third Publication

Fourth Publication

and that payment therefore in the amount of \$ has been made.

Subscribed and sworn to before me this 9th day

of November, 1989

Notary Public, Eddy County, New Mexico

My Commission expires September 23, 1991

LEGAL NOTICE

STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES
DEPARTMENT
OIL CONSERVATION
DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan renewal

Copy of Publication

applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800.

(GW-22) Amoco Production Company, James F. Trickett, Regional Environmental Safety and Regulatory Affairs Manager, P.O. Box 3092, Houston, Texas 77253, has submitted an application for renewal of its previously approved discharge plan for its Empire Abo Gasoline Plant located in the SE/4, Section 3, Township 18 South, Range 37 East, NMPM, Eddy County, New Mexico. Approximately 17,500 gallons per day of process waste water is disposed of in a double lined evaporation pond with leak detection or stored in above grade steel tanks for disposal at an OCD approved offsite disposal. Waste water has a total dissolved solids (TDS) concentration of approximately 11000 mg/l. Ground water most likely to be affected by any discharge to the surface is at a depth of approximately 50 feet with a total dissolved solids concentrations of approximately 300 mg/l. The discharge plan addresses how spills, leaks or other discharges to the ground will be handled.

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Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest. If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 31st day of October, 1989. To be published on or before November 10, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION
DIVISION

s- William J. LeMay
WILLIAM J. LEMAY,
Director

SEA L
Published in the Artesia Daily Press, Artesia, N.M. November 8, 1989.

Legal 12962



ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNORPOST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

October 31, 1989

RE: NOTICE OF PUBLICATION

Albuquerque Journal
717 Silver SW
Albuquerque, NM 87102

Dear Sir:

Please publish the attached notice one time immediately on receipt of this request. Please proofread carefully, as any error in a land description or in a key word or phrase can invalidate the entire notice.

Immediately upon completion of publication, please send the following to this office:

1. Publisher's affidavit in duplicate.
2. Statement of cost (also in duplicate).
3. CERTIFIED invoices for prompt payment.

We should have these immediately after publication in order that the legal notice will be available for the hearing which it advertises, and also so that there will be no delay in your receiving proper payment.

Please publish the notice not later than November 10, 1989.

Sincerely,

William J. LeMay
Director

P-106 675 455

WJL:sl

Attachment

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

| | |
|-------------------------------------|----|
| Sent to <i>Albq. Journal</i> | |
| Street and No. <i>717 Silver SW</i> | |
| P.O., State and ZIP Code | |
| Postage | \$ |

OIL CONSERVATION DIVISION
Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800.

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 31st day of October, 1989. To be published on or before November 10, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director
Journal, November 9, 1989

50

County of Bernalillo)
THOMAS J. STEPHENSON

being duly sworn declares and

says that he is. NAT'L. ADV. MFR. of the Albuquerque Journal, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs, that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for times, the first publication being on the day
of 1989, and the subsequent consecutive

publications on

198

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this 4 day of July, 1987.

PRICE

83/05

Statement to come at end of month

ACCOUNT NUMBER

081184

EDJ-15 (R-2/86)

OFFICIAL SEAL

OFFICIAL SEAL
Seventh of July
1867
NATIONAL ARCHIVES
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

Submit 4 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-134
Aug. 1, 1989

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

RECEIVED

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

Permit No. A-023

(For Division Use Only)

O. C. D.
ARTESIA, OFFICE

APPLICATION FOR EXCEPTION TO DIVISION ORDER R-8952
FOR PROTECTION OF MIGRATORY BIRDS Rule 8(b), Rule 105(b), Rule 312(h), Rule 313, or Rule 711(I)

Operator Name: Amoco Production Company

Operator Address: P.O. Box 3092

Lease or Facility Name Empire Abo Gasoline Plant Location - - 3 18S 27E
Ut. Ltr. Sec. Twp. Rge

Size of pit or tank: Approx 300 Ft. x 80 Ft. 3 ft depth

Operator requests exception from the requirement to screen, net or cover the pit or tank at the above-described facility.

 The pit or tank is not hazardous to migratory waterfowl. Describe completely the reason pit is non-hazardous.

See attached lab report from NUS Corporation dated 4/15/83. There have been no

changes in operations that would yield different results since this analysis was
performed. Pond is used to contain water coming off cooling tower blowdown.

1) If any oil or hydrocarbons should reach this facility give method and time required for removal:

No lines containing oil or hydrocarbon lead directly to the pond. However, if oil
or hydrocarbon were to get in pond indirectly, transport or vacuum truck could empty
pit at the very latest in 24 hours.

2) If any oil or hydrocarbons reach the above-described facility the operator is required to notify the
appropriate District Office of the OCD with 24 hours.

 Operator proposes the following alternate protective measures: None

CERTIFICATION BY OPERATOR: I hereby certify that the information given above is true and complete to the best of my
knowledge and belief.

Signature James F. Trickett Title Regional Environmental Affairs & Safety Manager Date

Printed Name James F. Trickett Telephone No. (713) 556-3341

FOR OIL CONSERVATION DIVISION USE

Date Facility Inspected 9-26-89

Inspected by M.S. OK

Pictures #12 #13

Approved by Nike Williams

Title SUPERVISOR, DISTRICT II

Date 9-29-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

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OIL CONSERVATION DIVISION

P.O. Box 2088

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Operator Name: Amoco Production Company

Operator Address: P.O. Box 3092

Lease or Facility Name Empire Abo Gasoline Plant Location - - 3 18S 27E
Size of pit or tank: Approx 300 Ft. x 30 Ft. 3 ft depth
Ut. Ltr. Sec. Twp. Rge

Operator requests exception from the requirement to screen, net or cover the pit or tank at the above-described facility.

 The pit or tank is not hazardous to migratory waterfowl. Describe completely the reason pit is non-hazardous.

 See attached lab report from NUS Corporation dated 4/15/83. There have been no

changes in operations that would yield different results since this analysis was
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knowledge and belief.

Signature James F. Trickett Title Regional Environmental Affairs & Safety Manager Date

Printed Name James F. Trickett Telephone No. (713) 556-3341

FOR OIL CONSERVATION DIVISION USE

Date Facility Inspected 9-26-89

Inspected by M.S. OK

Pictures #12 #13

Approved by Mike Williams

Title SUPERVISOR, DISTRICT II

Date 9-29-89



RECEIVED

SEP 25 '89

O. C. D.
ARTESIA, OFFICE

Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager

September 21, 1989

New Mexico Oil Conservation Division
P.O. Drawer DD
Artesia, NM 88211-0719

File: WGW-5999-986.6x716

Gentlemen:

Application for Exception
Empire Abo Gasoline Plant
Eddy County, New Mexico

Attached is Form C-134, requesting an exception to Division Order R-8952 concerning the protection of migratory birds. The application pertains to the evaporation pond at our Empire Abo Gasoline Plant and provides information on the non-hazardous effect to migratory waterfowl.

If you have any questions, please contact Bill Guthrie at (713) 556-2810.

Yours very truly,

MFM/cat

Attachment

Submit 4 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-134
Aug. 1, 1989

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

RECEIVED
OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Permit No. A-023

(For Division Use Only)

O. C. D.
ARTESIA, OFFICE

APPLICATION FOR EXCEPTION TO DIVISION ORDER R-8952
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Operator Name: Amoco Production Company

Operator Address: P.O. Box 3092

Lease or Facility Name Empire Abo Gasoline Plant Location - - 3 18S 27E

Size of pit or tank: Approx 300 Ft. x 30 Ft. 3 ft depth

Operator requests exception from the requirement to screen, net or cover the pit or tank at the above-described facility.

 The pit or tank is not hazardous to migratory waterfowl. Describe completely the reason pit is non-hazardous.

 See attached lab report from NUS Corporation dated 4/15/82. There have been no changes in operations that would yield different results since this analysis was performed. Pond is used to contain water coming off cooling tower blowdown.

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 Operator proposes the following alternate protective measures: None

CERTIFICATION BY OPERATOR: I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature James F. Trickett Title Affairs & Safety Manager Date

Printed Name James F. Trickett Telephone No. (713) 556-3341

FOR OIL CONSERVATION DIVISION USE

Date Facility Inspected 9-26-89

Inspected by M.S. OK

Pictures #12 #13

Approved by Nike Williams

Title SUPERVISOR, DISTRICT II

Date 9-29-89



NUS
CORPORATION

RECEIVED

SEP 25 '89

O. C. D.
ARTESIA, OFFICE

LABORATORY SERVICES DIVISION
800 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
800 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 68110

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 29031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|-------|--------------------------------|----------|-------|-------------------|-------|-----------------------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| M030 | Arsenic (As) | 0.032 | ug/l | | | | |
| M040 | Barium (Ba) | 0.2 | ug/l | | | | |
| M090 | Cadmium (Cd) | 0.005 | ug/l | | | | |
| M140 | Chromium (Cr) | < 0.03 | ug/l | | | | |
| M160 | Copper (Cu) | 0.14 | ug/l | | | | |
| M190 | Iron, Total (Fe) | 0.40 | ug/l | | | | |
| M200 | Lead (Pb) | 0.12 | ug/l | | | | |
| M240 | Manganese (Mn) | 0.02 | ug/l | | | | |
| M250 | Mercury (Hg) | < 0.0002 | ug/l | | | | |
| M290 | Selenium (Se) | 0.006 | ug/l | | | | |
| M300 | Silver (Ag) | 0.02 | ug/l | | | | |
| M370 | Uranium (U) | < 0.5 | ug/l | | | | |
| M390 | Zinc (Zn) | 0.16 | ug/l | | | | |
| M130 | Chloride (Cl) | 240 | ug/l | | | | |
| M270 | Cyanide, Total (CN) | < 0.01 | ug/l | | | | |
| M300 | Fluoride, Soluble (F) | 3.4 | ug/l | | | | |
| M390 | Nitrate (N) | 8.3 | ug/l | | | | |
| M490 | pH | 6.4 | | | | | |
| M500 | Phenolics | < 0.01 | ug/l | | | | |
| M730 | Sulfate, Turbidimetric (SO4) | 1100 | ug/l | | | | |
| G110 | VOLATILES-PP IN WATER(EPA 624) | | | | | | |
| OV01 | Acrolein | * | ug/l | | | | |
| OV02 | Acrylonitrile | * | ug/l | | | | |
| OV03 | Benzene | < 5 | ug/l | | | | |
| OV05 | Bromoform | < 5 | ug/l | | | | |
| OV06 | Carbon tetrachloride | < 5 | ug/l | | | | |
| OV07 | Chlorobenzene | < 5 | ug/l | | | | |
| OV08 | Dibromochloromethane | < 5 | ug/l | | | | |
| OV09 | Chloroethane | < 10 | ug/l | | | | |
| OV10 | 2-Chloroethylvinyl ether | < 10 | ug/l | | | | |



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SEP 25 '89

O. C. D.
ARTESIA, OFFICELABORATORY SERVICES DIVISION
300 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

REMIT TO:
300 GEMINI AVENUE
HOUSTON, TX 77058

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: F.O. DRAWER 70
ARTESIA

NM 68210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291218

NUS SAMPLE NO: 23031505

VENDOR NO: 02964933

WORK ORDER NO: 55530

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|------|--------------------------------|---------|-------|-------------------|-------|-----------------------|-------|
| 0V11 | Chloroform | < 5 | ug/l | | | | |
| 0V12 | Bromodichloromethane | < 5 | ug/l | | | | |
| 0V13 | trans-1,3-Dichloropropene* | < 5 | ug/l | | | | |
| 0V14 | 1,1-Dichloroethane | < 5 | ug/l | | | | |
| 0V15 | 1,2-Dichloroethane | < 5 | ug/l | | | | |
| 0V16 | 1,1-Dichloroethene | < 5 | ug/l | | | | |
| 0V17 | 1,2-Dichloropropane | < 5 | ug/l | | | | |
| 0V18 | cis-1,3-Dichloropropene* | < 5 | ug/l | | | | |
| 0V17 | Ethylbenzene | < 5 | ug/l | | | | |
| 0V20 | Methyl bromide | < 10 | ug/l | | | | |
| 0V21 | Methyl chloride | < 10 | ug/l | | | | |
| 0V22 | Methylene chloride | 6 | ug/l | | | | |
| 0V23 | 1,1,2,2-Tetrachloroethane | < 5 | ug/l | | | | |
| 0V24 | Tetrachloroethene | < 5 | ug/l | | | | |
| 0V25 | Toluene | < 5 | ug/l | | | | |
| 0V26 | trans-1,2-Dichloroethene | < 5 | ug/l | | | | |
| 0V27 | 1,1,1-Trichloroethane | < 5 | ug/l | | | | |
| 0V28 | 1,1,2-Trichloroethane | < 5 | ug/l | | | | |
| 0V29 | Trichloroethene | < 5 | ug/l | | | | |
| 0V31 | Vinyl chloride | < 10 | ug/l | | | | |
| 0V50 | d8-Toluene(Surrogate) | | | 50 | ug/l | 100 | ug/l |
| 0V51 | Bromofluorobenzene(Surrogate) | | | 50 | ug/l | 112 | ug/l |
| 0V52 | d4-1,2-Dichloroethane(Surr.) | | | 50 | ug/l | 94 | ug/l |
| 0130 | BASE/NEUTRAL EXTRACT.(EPA 625) | | | | | | |
| 0B01 | Acenaphthene | < 10 | ug/l | | | | |
| 0B02 | Acenaphthylene | < 10 | ug/l | | | | |
| 0B03 | Anthracene | < 10 | ug/l | | | | |
| 0B04 | Benaidine | < 50 | ug/l | | | | |
| 0B05 | Benzo[a]anthracene | < 10 | ug/l | | | | |
| 0B06 | Benzo[a]pyrene | < 10 | ug/l | | | | |



NUS
CORPORATION

ED

LABORATORY SERVICES DIVISION
900 GEMINI AVE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVE
HOUSTON, TX 77058

713-488-1810

SEP 25 '89

O. C. D.
ARTESIA, OFFICE

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|-------|------------------------------|---------|-------|-------------------|-------|-----------------------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 0807 | Benzo[b]fluoranthene | < 10 | us/l | | | | |
| 0808 | Benzo[ghi]perylene | < 10 | us/l | | | | |
| 0809 | Benzo[k]fluoranthene | < 10 | us/l | | | | |
| 0810 | Bis(2-chloroethoxy)methane | < 10 | us/l | | | | |
| 0811 | Bis(2-chloroethyl)ether | < 10 | us/l | | | | |
| 0812 | Bis(2-chloroisopropyl)ether | < 10 | us/l | | | | |
| 0813 | Bis(2-ethylhexyl)phthalate | < 10 | us/l | | | | |
| 0814 | 4-Bromophenyl phenyl ether | < 10 | us/l | | | | |
| 0815 | Benzyl butyl phthalate | < 10 | us/l | | | | |
| 0816 | 2-Chloronaphthalene | < 10 | us/l | | | | |
| 0817 | 4-Chlorophenyl phenyl ether | < 10 | us/l | | | | |
| 0818 | Chrysene | < 10 | us/l | | | | |
| 0819 | Dibenzo[ah]anthracene | < 10 | us/l | | | | |
| 0820 | 1,2-Dichlorobenzene | < 10 | us/l | | | | |
| 0821 | 1,3-Dichlorobenzene | < 10 | us/l | | | | |
| 0822 | 1,4-Dichlorobenzene | < 10 | us/l | | | | |
| 0823 | 3,3'-Dichlorobenzidine | < 20 | us/l | | | | |
| 0824 | Diethyl phthalate | < 10 | us/l | | | | |
| 0825 | Dimethyl phthalate | < 10 | us/l | | | | |
| 0826 | Di-n-butyl phthalate | < 10 | us/l | | | | |
| 0827 | 2,4-Dinitrotoluene | < 10 | us/l | | | | |
| 0828 | 2,6-Dinitrotoluene | < 10 | us/l | | | | |
| 0829 | Di-n-octyl phthalate | < 10 | us/l | | | | |
| 0830 | 1,2-Biphenylhydrazine(Azobz) | < 10 | us/l | | | | |
| 0831 | Fluoranthene | < 10 | us/l | | | | |
| 0832 | Fluorene | < 10 | us/l | | | | |
| 0833 | Hexachlorbenzene | < 10 | us/l | | | | |
| 0834 | Hexachlorobutadiene | < 10 | us/l | | | | |
| 0835 | Hexachlorocyclopentadiene | < 10 | us/l | | | | |
| 0836 | Hexachloroethane | < 10 | us/l | | | | |



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C. L. D.
ARTESIA, OFFICE

LABORATORY SERVICES DIVISION
300 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

REMIT TO:
300 GEMINI AVENUE
HOUSTON, TX 77058

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 88210

ATTENTION: STEVE REDDICK

REPORT DATE: 04/15/88

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55660

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|------|--------------------------------|---------|-------|-------------------|-------|-----------------------|-------|
| 0837 | Indeno[1,2,3-cd]pyrene | < 10 | ug/l | | | | |
| 0838 | Isophorone | < 10 | ug/l | | | | |
| 0839 | Naphthalene | < 10 | ug/l | | | | |
| 0840 | Nitrobenzene | < 10 | ug/l | | | | |
| 0841 | N-Nitrosodimethylamine | < 10 | ug/l | | | | |
| 0842 | N-Nitrosodi-n-propylamine | < 10 | ug/l | | | | |
| 0843 | N-Nitrosodiphenylamine | < 10 | ug/l | | | | |
| 0844 | Phenanthrene | < 10 | ug/l | | | | |
| 0845 | Pyrene | < 10 | ug/l | | | | |
| 0846 | 1,2,4-Trichlorobenzene | < 10 | ug/l | | | | |
| 0850 | d5-Nitrobenzene (Surrogate) | | | 100 | ug/l | 70 | ug/l |
| 0851 | 2-Fluorobiphenyl (Surrogate) | | | 100 | ug/l | 67 | ug/l |
| 0852 | d-14-p-Terphenyl (Surrogate) | | | 100 | ug/l | 36 | ug/l |
| 0853 | Decafluorobiphenyl (Surrogate) | | | 100 | ug/l | 45 | ug/l |
| 0152 | TOTAL PCB IN WATER | | | | | | |
| 0P82 | Total PCB's in Water | < 1 | ug/l | | | | |
| 0P59 | Monochlorobiphenyl (Surrogate) | | | 10.1 | ug/l | ** | ug/l |

COMMENTS: *NOT REQUIRED BY THIS METHOD; **SX INTERFERENCE PREVENTS SURROGATE RECOVERY.

Reviewed and Approved by: Diane Meyer

PAGE NO: 4



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CORPORATION

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SEP 25 '89

O. C. D.
ARTESIA, OFFICE

LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTIONS CO.
ADDRESS: P.O. DRAWER 70
ARTESIA NM 88210

REPORT DATE: 04/28/88

NUS CLIENT NO: 900101
NUS SAMPLE NO: 28031506
VENDOR NO: 02984933
WORK ORDER NO: 55680
DATE RECEIVED: 03/17/88

ATTENTION: STEVE REDDICK

SAMPLE IDENTIFICATION: EVAPORATION WATER POND

RADIOCHEM

| TEST | DETERMINATION | RESULTS | UNITS |
|------|---------------|---------|-------|
| 0M78 | R-226 | < 0.2 | pCi/l |
| 0M83 | R-228 | < 2 | pCi/l |

COMMENTS:

Reviewed and Approved by: Sandra Green



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager

September 14, 1989

File: JFT-381-988.SWD00

Director
Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088

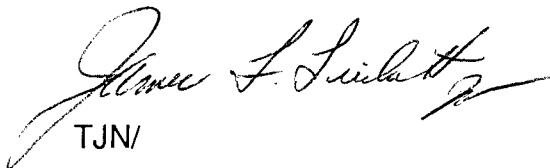
RE: Discharge Plan Renewal Application
Empire Abo Gasoline Plant
Eddy County, New Mexico

Dear Sir:

This Application for Renewal for the discharge plan at the Amoco Production Company, Empire Abo Gasoline Plant was prepared according to guidelines and directives from your office. The application was prepared by Timothy J. Nagengast, Environmental Specialist in the APC Houston Region Environmental Affairs Group.

The application attached hereto is does not contain the waste characterization lab report for the Ethane-Propane filters that is indicated at Appendix 89-3. The missing report will be forwarded to you in triplicate upon receipt in this office.

We appreciate your cooperation in the preparation and review of this application. If you have any questions or require additional information, please contact Tim Nagengast at (713) 556-2518.



TJN/

Attachments

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SEP 21 1989
OIL CONSERVATION DIV.
SANTA FE



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager

August 3, 1989

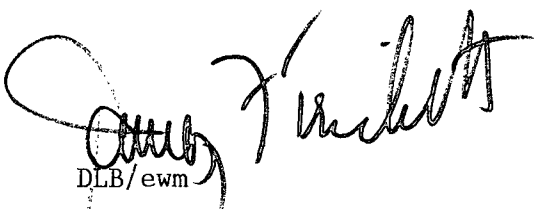

Mr. David G. Boyer, Hydrogeologist
Environmental Bureau Chief
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico

File: JFT-364-986.6

Dear Mr. Boyer:

Discharge Plan (GW-22)
Empire Abo Gasoline Plant
Eddy County, New Mexico

This is to confirm understanding reached during a telephone conversation on August 1, 1989 between Mr. Tim Nagengast of my staff and Mr. Robert Anderson of your staff during which Mr. Anderson advised that it will not be necessary to submit our application for renewal of the Discharge Plan by August 15, 1989 as requested in your letter dated June 12, 1989. It was further agreed that submitting our proposed amended plan by September 1, 1989 will provide adequate time for your review. Thank you for your favorable consideration in this matter.


DLB/ewm


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AUG 7 1989

OIL CONSERVATION DIV.
SANTA FE



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
wpl
OR89-0914-C

REPORT TO: DAVID BOYER S.L.D. No. OR-
N.M. OIL CONSERVATION DIVISION DATE REC. 6-27-89
P.O. Box 2088 PRIORITY 3
Santa Fe, NM 87504-2088 PHONE(S): 827-5812
COLLECTION CITY: Artesia; COUNTY: Edm.
COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 89062117124
LOCATION CODE: (Township-Range-Section-Tracts) 18S+27E+03+4-1 (10N06E24342)
USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or
Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-AA Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= 7; Conductivity= 220 umho/cm at 25 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Amoco Empire Nbo Gas Plant - Cooling Tower,
SE corner, Ripped

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): W. H. Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from to

at (location) on / / - : and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐

Signatures

For OCD use: Date owner notified: 8/3/89 Phone or Letter? Initials W. H. Boyer

ANALYSES PERFORMED

LAB. No.: OR-

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☐ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- | | |
|--------------------------|---|
| <input type="checkbox"/> | (751) Aliphatic Hydrocarbons |
| <input type="checkbox"/> | (755) Base/Neutral Extractables |
| <input type="checkbox"/> | (758) Herbicides, Chlorophenoxy acid |
| <input type="checkbox"/> | (759) Herbicides, Triazines |
| <input type="checkbox"/> | (760) Organochlorine Pesticides |
| <input type="checkbox"/> | (761) Organophosphate Pesticides |
| <input type="checkbox"/> | (767) Polychlorinated Biphenyls (PCB's) |
| <input type="checkbox"/> | (764) Polynuclear Aromatic Hydrocarbons |
| <input type="checkbox"/> | (762) SDWA Pesticides & Herbicides |

ANALYTICAL RESULTS

| COMPOUND(S) DETECTED | CONC. [PPB] |
|----------------------|----------------|
| | |
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| | |
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| | |
| | |
| * DETECTION LIMIT * | * |

| COMPOUND(S) DETECTED | CONC. [PPB] |
|----------------------|----------------|
| | |
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| | |
| | |
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| | |
| | |
| | |
| + DETECTION LIMIT + | + |

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☐ No ☐ Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: _____ . Analyst's signature: _____

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: _____

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

July 25, 1989

ANALYTICAL REPORT
SLD Accession No. OR-89-0914

Distribution

(■) Submitter
(☒) SLD Files

To: NM Oil Conserv. Div.
State Land Office Bldg.
P. O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A purgeable water sample submitted to this laboratory on June 27, 1989

User:

OIL CONSERVATION DIV
State Land Office Bldg.
P. O. Box 2088
Santa Fe, NM 87504-2088

DEMOGRAPHIC DATA

| COLLECTION | LOCATION |
|---------------------------------|----------|
| On: 21-Jun-89 By: Boy . . . | |
| At: 11:24 hrs. In/Near: Artesia | |

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

| Parameter | Value | Note | MDL | Units |
|-----------------------------|-------|------|------|-------|
| Halogenated Purgeables (33) | 0.00 | N | 0.50 | ppb |
| Aromatic Purgeables (6) | 0.00 | N | 1.00 | ppb |

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;

T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks: Amcoc Gas Plant- Cooling Tower

Analyst: Michael J. Owen 7-12-89
Michael J. Owen Analysis
Analyst, Organic Chemistry Date

Reviewed By: Richard F. Meyerheim 07/25/89
Richard F. Meyerheim
Supervisor, Organic Chemistry Section

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV,
SANTA FE



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNN

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

| | | | | | |
|------------------------------|----------|-----------------------------|----------------------------|-----------|--|
| DATE RECEIVED | 06/27/89 | LAB NO. | WC 2323 | USER CODE | <input type="checkbox"/> 59300 <input type="checkbox"/> 59600 <input checked="" type="checkbox"/> OTHER: 82235 |
| Collection DATE | 06/27/89 | SITE INFORMATION | Sample location | | |
| Collection TIME | 11:24 | | Amoco Empire N60 Gas Plant | | |
| Collected by — Person/Agency | | Collection site description | | | |
| Boyer/Anderson /OCD | | Cooling tower, SE corner | | | |

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5312

Station/
well code 185-27E-03.4
Owner

SAMPLING CONDITIONS

| | | | | |
|---|---|---------------------|------------------------------|-------------|
| <input type="checkbox"/> Bailed <input checked="" type="checkbox"/> Dipped | <input type="checkbox"/> Pump <input type="checkbox"/> Tap | Water level | Discharge | Sample type |
| pH (00400) | Conductivity (Uncorrected) | Water Temp. (00010) | Conductivity at 25°C (00094) | |
| 7 | 2774 µmho | 26.5 °C | | |
| Field comments | | | | |
| Dipped from basin | | | | |

SAMPLE FIELD TREATMENT — Check proper boxes

| | | | | |
|---|---|---|--|--|
| No. of samples submitted | 1 | <input checked="" type="checkbox"/> NF: Whole sample (Non-filtered) | <input type="checkbox"/> F: Filtered in field with 0.45 µm membrane filter | <input type="checkbox"/> A: 2 ml H ₂ SO ₄ /L added |
| <input checked="" type="checkbox"/> NA: No acid added | | <input type="checkbox"/> Other-specify: | <input type="checkbox"/> A: 5ml conc. HNO ₃ added | <input type="checkbox"/> A: 4ml fuming HNO ₃ added |

ANALYTICAL RESULTS from SAMPLES

| NA | Units | Date analyzed | From | NA Sample: | Date Analyzed |
|---|-------|---------------|--|---------------|---------------|
| <input checked="" type="checkbox"/> Conductivity (Corrected) 25°C (00095) | µmho | 7/16 | 2774 | | |
| <input type="checkbox"/> Total non-filterable residue (suspended) (00530) | mg/l | | | | |
| <input checked="" type="checkbox"/> Other: Lab pH | | 6/30 | 6.65 | | |
| <input type="checkbox"/> Other: | | | | | |
| <input type="checkbox"/> Other: | | | | | |
| A-H₂SO₄ | | | | | |
| <input type="checkbox"/> Nitrate-N +, Nitrate-N total (00630) | mg/l | | | | |
| <input type="checkbox"/> Ammonia-N total (00610) | mg/l | | | | |
| <input type="checkbox"/> Total Kjeldahl-N () | mg/l | | | | |
| <input type="checkbox"/> Chemical oxygen demand (00340) | mg/l | | | | |
| <input type="checkbox"/> Total organic carbon () | mg/l | | | | |
| <input type="checkbox"/> Other: | | | | | |
| <input type="checkbox"/> Other: | | | | | |
| | | | Calcium | 324 mg/l | 8/04 |
| | | | Potassium | 62 mg/l | 7/10 |
| | | | Magnesium | 77.5 mg/l | 8/04 |
| | | | Sodium | 219 mg/l | 7/10 |
| | | | Bicarbonate | 87.6 mg/l | 6/30 |
| | | | Chloride | 227 mg/l | 7/10 |
| | | | Sulfate | 1084 mg/l | 7/27 |
| | | | Total Solids | 2490 mg/l | 7/19 |
| | | | R _T | 40.20 | 7/11 |
| | | | CO ₂ | 0 | 6/30 |
| | | | <input checked="" type="checkbox"/> Cation/Anion Balance | | |
| Laboratory remarks | | | Analyst | Date Reported | Reviewed by |
| | | | | 8/7/89 | C. J. Jern |

FOR OCD USE -- Date Owner Notified 12/5/89 Phone or Letter? Letter Initials AJB

CATIONS

| ANALYTE | MEQ. | PPM | DET. LIMIT |
|---------|-------|--------|---------------|
| Ca | 16.17 | 324.00 | <3.0 |
| Mg | 6.37 | 77.50 | <0.3 |
| Na | 9.53 | 219.00 | <10.0 |
| K | 1.59 | 62.00 | <0.3 |

| | | |
|----|------|------|
| Mn | 0.00 | 0.00 |
| Fe | 0.00 | 0.00 |

SUMS 33.64 682.50

Total Dissolved Solids= 2490
Ion Balance = 110.59%

ANIONS

| ANALYTE | MEQ. | PPM | DET. LIMIT |
|---------|-------|---------|---------------|
| HCO3 | 1.44 | 87.60 | <1.0 |
| SO4 | 22.58 | 1084.00 | <10.0 |
| CL | 6.40 | 227.00 | <5.0 |

| | | | |
|-----|------|------|------|
| NO3 | 0.00 | 0.00 | < 0. |
| CO3 | 0.00 | 0.00 | < 1. |
| NH3 | 0.00 | 0.00 | < 0. |
| PO4 | 0.00 | 0.00 | < 0. |

30.42 1398.60

WC No. = 8902373
Date out/By CS 5/7/89



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received 06/27/89 Lab No. ICAP 371 User Code ☒ 82235 ☐ Other:

COLLECTION DATE & TIME: yy mm dd hh mm 06 06 21 11 24 COLLECTION SITE DESCRIPTION Cooling tower basin

COLLECTED BY: Boyer/Anderson AC SE corner

TO: OWNER: AMOCO Empire Bldg
Gas plant

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:
County: Eddy

Township, Range, Section, Tract: (10N06E24342)

11S15+21E+013+41-F

ATTN: B. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☐ Pump Water Level: Discharge: Sample Type: Gravel
☒ Dipped ☐ Tap

pH(00400) 7 Conductivity(Uncorr.) 2420 μmho Water Temp.(00010) 26.5 $^{\circ}\text{C}$ Conductivity at 25 $^{\circ}\text{C}$ (00094) μmho

FIELD COMMENTS:

SAMPLE FIELD TREATMENT

Check proper boxes:

☒ WPN: Water Preserved w/HNO₃ Non-Filtered
☐ WPF: Water Preserved w/HNO₃ Filtered

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

| ELEMENT | ICAP VALUE | AA VALUE | ELEMENT | ICAP VALUE | AA VALUE |
|------------|-----------------|--|-----------|----------------|--|
| Aluminum | <u>0.1</u> | | Silicon | <u>1.6</u> | |
| Barium | <u>0.4</u> | | Silver | <u><0.1</u> | <input type="checkbox"/> |
| Beryllium | <u><0.1</u> | | Strontium | <u>2.9</u> | |
| Boron | <u>0.5</u> | | Tin | <u><0.1</u> | |
| Cadmium | <u><0.1</u> | <input type="checkbox"/> | Vanadium | <u>0.1</u> | |
| Calcium | <u>340.</u> | | Zinc | <u>0.3</u> | |
| Chromium | <u><0.1</u> | <input checked="" type="checkbox"/> <u>0.014</u> | Arsenic | | <input checked="" type="checkbox"/> <u>0.021</u> |
| Cobalt | <u><0.05</u> | | Selenium | | <input type="checkbox"/> |
| Copper | <u><0.1</u> | | Mercury | | <input type="checkbox"/> |
| Iron | <u>1.0</u> | | | | <input type="checkbox"/> |
| Lead | <u><0.1</u> | <input type="checkbox"/> | | | <input type="checkbox"/> |
| Magnesium | <u>62.</u> | | | | <input type="checkbox"/> |
| Manganese | <u><0.05</u> | | | | <input type="checkbox"/> |
| Molybdenum | <u><0.1</u> | | | | <input type="checkbox"/> |
| Nickel | <u><0.1</u> | | | | <input type="checkbox"/> |

RECEIVED

OCT 10 1989

OIL CONSERVATION DIV.
SANTA FE

DIGESTED.

LAB COMMENTS:

For OCD Use:

Date Owner Notified: 12/5/89

Phone or letter?

Initials:

ICAP Analyst

Date Analyzed 7/31/89

Reviewer

Date Received 10/2/89



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
wpu

OR89-0913-C

REPORT TO: DAVID BOYER S.L.D. No. OR-
N.M. OIL CONSERVATION DIVISION DATE REC. 6-27-89
P.O. Box 2088 PRIORITY 3
Santa Fe, NM 87504-2088 PHONE(S): 827-5812

COLLECTION CITY: Astoria; COUNTY: Eddy
COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 890621191431
LOCATION CODE: (Township-Range-Section-Tracts) 1815+217E+03+4-1 (10N06E24342)
USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____
Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-AA Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 7; Conductivity= 10,000 umho/cm at 24 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Amoco Empire ABD Gas Plant - Wastewater pond
(receives non-oily effluent)

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): A. G. Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____
at (location) _____ on _____ - _____ and that
the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐
Signatures _____

For OCD use: Date owner notified: 8/3/89 Phone or Letter? Initials RCB

ANALYSES PERFORMED

LAB. No.: OR-

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☐ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

| COMPOUND(S) DETECTED | CONC. [PPB] | COMPOUND(S) DETECTED | CONC. [PPB] |
|----------------------|----------------|----------------------|----------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| * DETECTION LIMIT * | * | + DETECTION LIMIT + | + |

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: _____

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☐ No ☐ Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: _____ . Analyst's signature: _____

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: _____

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

July 25, 1989

ANALYTICAL REPORT
SLD Accession No. OR-89-0913

Distribution

(■) Submitter
(☒) SLD Files

To: NM Oil Conserv. Div.
State Land Office Bldg.
P. O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A purgeable water sample submitted to this laboratory on June 27, 1989

User:

OIL CONSERVATION DIV
State Land Office Bldg.
P. O. Box 2088
Santa Fe, NM 87504-2088

DEMOGRAPHIC DATA

| COLLECTION | LOCATION |
|---------------------------------|----------|
| On: 21-Jun-89 By: Boy . . . | |
| At: 11:43 hrs. In/Near: Artesia | |

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

| Parameter | Value | Note | MDL | Units |
|-----------------------------|-------|------|------|-------|
| Halogenated Purgeables (33) | 0.00 | N | 0.50 | ppb |
| Aromatic Purgeables (6) | 0.00 | N | 1.00 | ppb |

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks: Amoco Gas Plant Wastewater Pnd

One unidentified unsaturated compound at trace to 2ppb was detected.

Analyst:

Michael J. Owen
Michael J. Owen
Analyst, Organic Chemistry

7-17-89

Analysis
Date

Reviewed By:

Richard F. Meyerheim
Richard F. Meyerheim 07/25/89
Supervisor, Organic Chemistry Section

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV.
SANTA FE



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNN

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

| | | |
|--|------------------------|--|
| DATE RECEIVED <u>06/27/89</u> | LAB NO. <u>WC 2370</u> | USER CODE <input type="checkbox"/> 59300 <input type="checkbox"/> 59600 <input checked="" type="checkbox"/> OTHER: 82235 |
| Collection DATE <u>06/21/89</u> | SITE INFORMATION | Sample location <u>Amoco Empire H₂O Gas plant</u> |
| Collection TIME <u>1143</u> | | Collection site description <u>Waste water pond (non-irrigation only effluent)</u> |
| Collected by Person/Agency <u>Boyer/Huderton/OCD</u> | | |

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

| | | | | |
|---|---|----------------------------------|--|-------------------------|
| <input type="checkbox"/> Bailed <input checked="" type="checkbox"/> Dipped | <input type="checkbox"/> Pump <input type="checkbox"/> Tap | Water level <u> </u> | Discharge <u> </u> | Sample type <u>Grab</u> |
| pH (00400) <u>7</u> | Conductivity (Uncorrected) <u>10000</u> μ mho | Water Temp. (00010) <u>29</u> °C | Conductivity at 25°C (00094) <u> </u> μ mho | |
| Field comments <u>Dipped 5 ft in East side, North Center</u> | | | | |

SAMPLE FIELD TREATMENT — Check proper boxes

| | | | |
|---|---|---|--|
| No. of samples submitted <u>1</u> | <input checked="" type="checkbox"/> NF: Whole sample (Non-filtered) | <input type="checkbox"/> F: Filtered in field with 0.45 μ m membrane filter | <input type="checkbox"/> A: 2 ml H ₂ SO ₄ /L added |
| <input checked="" type="checkbox"/> NA: No acid added | | <input type="checkbox"/> Other-specify: <u> </u> | <input type="checkbox"/> A: 5ml conc. HNO ₃ added <input type="checkbox"/> A: 4ml fuming HNO ₃ added |

ANALYTICAL RESULTS from SAMPLES

| NA | Units | Date analyzed | From <u>NA</u> , NA Sample: | Date Analyzed |
|---|-------------------------|-------------------|--|-----------------------------|
| <input checked="" type="checkbox"/> Conductivity (Corrected) 25°C (00095) | <u>131760</u> μ mho | <u>7/10</u> | <input checked="" type="checkbox"/> Calcium <u>1100</u> mg/l | <u>8/03</u> |
| <input type="checkbox"/> Total non-filterable residue (suspended) (00530) | <u> </u> mg/l | <u> </u> | <input checked="" type="checkbox"/> Potassium <u>101</u> mg/l | <u>7/10</u> |
| <input checked="" type="checkbox"/> Other: <u>1.6 pH</u> | <u>7.68</u> | <u>6/30</u> | <input checked="" type="checkbox"/> Magnesium <u>143</u> mg/l | <u>8/03</u> |
| <input type="checkbox"/> Other: <u> </u> | <u> </u> | <u> </u> | <input checked="" type="checkbox"/> Sodium <u>1908</u> mg/l | <u>7/10</u> |
| <input type="checkbox"/> Other: <u> </u> | <u> </u> | <u> </u> | <input checked="" type="checkbox"/> Bicarbonate <u>38.3</u> mg/l | <u>6/30</u> |
| A-H₂SO₄ | | | <input checked="" type="checkbox"/> Chloride <u>2324</u> mg/l | <u>7/11</u> |
| <input type="checkbox"/> Nitrate-N +, Nitrate-N total (00630) | <u> </u> mg/l | <u> </u> | <input checked="" type="checkbox"/> Sulfate <u>4324</u> mg/l | <u>7/26</u> |
| <input type="checkbox"/> Ammonia-N total (00610) | <u> </u> mg/l | <u> </u> | <input checked="" type="checkbox"/> Total Solids <u>10,820</u> mg/l | <u>7/19</u> |
| <input type="checkbox"/> Total Kjeldahl-N () | <u> </u> mg/l | <u> </u> | <input checked="" type="checkbox"/> <u>CD₅₀</u> <u>0</u> | <u>6/30</u> |
| <input type="checkbox"/> Chemical oxygen demand (00340) | <u> </u> mg/l | <u> </u> | <input checked="" type="checkbox"/> <u>B₅</u> <u><0.20</u> | <u>7/11</u> |
| <input type="checkbox"/> Total organic carbon () | <u> </u> mg/l | <u> </u> | <input checked="" type="checkbox"/> Cation/Anion Balance <u> </u> | <u> </u> |
| <input type="checkbox"/> Other: <u> </u> | <u> </u> | <u> </u> | Analyst <u> </u> | Date Reported <u>8/7/89</u> |
| <input type="checkbox"/> Other: <u> </u> | <u> </u> | <u> </u> | Reviewed by <u> </u> | |
| Laboratory remarks <u> </u> | | | | |

FOR OCD USE -- Date Owner Notified 12/5/89 Phone or Letter? Initials DW/12

CATIONS

| ANALYTE | MEQ. | PPM | DET. LIMIT |
|---------|-------|---------|---------------|
| Ca | 54.89 | 1100.00 | <3.0 |
| Mg | 11.75 | 143.00 | <0.3 |
| Na | 82.99 | 1908.00 | <10.0 |
| K | 4.63 | 181.00 | <0.3 |

| | | |
|----|------|------|
| Mn | 0.00 | 0.00 |
| Fe | 0.00 | 0.00 |

SUMS 154.26 3332.00

Total Dissolved Solids= 10820
Ion Balance = 98.71%

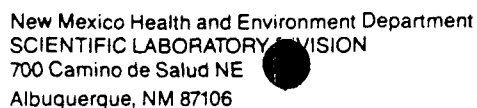
ANIONS

| ANALYTE | MEQ. | PPM | DET. LIMIT |
|---------|-------|---------|---------------|
| HC03 | 0.63 | 38.30 | <1.0 |
| SO4 | 90.08 | 4324.00 | <10.0 |
| CL | 65.56 | 2324.00 | <5.0 |

| | | | |
|-----|------|------|------|
| NO3 | 0.00 | 0.00 | < 0. |
| CO3 | 0.00 | 0.00 | < 1. |
| NH3 | 0.00 | 0.00 | < 0. |
| PO4 | 0.00 | 0.00 | < 0. |

156.27 6686.30

WC No. = 8902370
Date out/By 8/7/89 C. L. Kim



Telephone: (505)841-2553

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 8 | 5 | + | 2 | 7 | + | 0 | 3 | + | 1 | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

TO:

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

ATTN: D. B. 122
TELEPHONE: 827-5812

STATION/ WELL CODE: | | | | | | | | | |

LATITUDE, LONGITUDE: | | | | | | | | | | - | | |

SAMPLING CONDITIONS:

| | | | | | | | | | |
|---|--|---|--|---|--|--|--|---------------------------|--|
| <input type="checkbox"/> Bailed <input checked="" type="checkbox"/> Dipped | | <input type="checkbox"/> Pump <input type="checkbox"/> Tap | | Water Level: _____ | | Discharge: _____ | | Sample Type: <u>brack</u> | |
| pH (00400) <u>7</u> | | Conductivity (Uncorr.) <u>10,000</u> μmho | | Water Temp. (00010) <u>24</u> $^{\circ}\text{C}$ | | Conductivity at 25 $^{\circ}\text{C}$ (00094) _____ μmho | | | |

FIELD COMMENTS:

Appet from Foster Co, North Carolina

SAMPLE FIELD TREATMENT

Check proper boxes:

| | | |
|--|---|--|
| <input checked="" type="checkbox"/> WPN: Water Preserved w/HNO ₃ Non-Filtered | <input type="checkbox"/> WPF: Water Preserved w/HNO ₃ Filtered | <input checked="" type="checkbox"/> ICAP Scan Mark box next to metal if AA is required. |
|--|---|--|

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA
is required.

ANALYTICAL RESULTS (MG/L)

| ELEMENT | ICAP VALUE | AA VALUE | ELEMENT | ICAP VALUE | AA VALUE |
|------------|------------|--|-----------|------------|---|
| Aluminum | <0.1 | | Silicon | 45. | |
| Barium | 0.1 | | Silver | <0.1 | <input type="checkbox"/> |
| Beryllium | <0.1 | | Strontium | 9.4 | |
| Boron | 1.1 | | Tin | <0.1 | |
| Cadmium | <0.1 | <input checked="" type="checkbox"/> 0.002 | Vanadium | <0.1 | |
| Calcium | 1100. | | Zinc | <0.1 | |
| Chromium | <0.1 | <input checked="" type="checkbox"/> 0.001 | Arsenic | | <input checked="" type="checkbox"/> 0.022 |
| Cobalt | <0.05 | | Selenium | | <input type="checkbox"/> |
| Copper | <0.1 | | Mercury | | <input type="checkbox"/> |
| Iron | <0.1 | | | | <input type="checkbox"/> |
| Lead | <0.1 | <input checked="" type="checkbox"/> <0.005 | | | <input type="checkbox"/> |
| Magnesium | 130. | | | | <input type="checkbox"/> |
| Manganese | <0.05 | | | | <input type="checkbox"/> |
| Molybdenum | <0.1 | | | | <input type="checkbox"/> |
| Nickel | <0.1 | | | | <input type="checkbox"/> |

RECEIVED

OCT 10 1989

U.S. CONSERVATION DIV.

LAB COMMENTS:

For OCD Use:

Date Owner Notified: 12/5/89

Phone or Letter?

Initials: AYB

ICAP Analyst

Date Analyzed**Reviewer**

Date Received

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 12, 1989

CERTIFIED MAIL
RETURN RECEIPT NO. P-106-675-170

District Manager
AMOCO PRODUCTION COMPANY
P. O. Box 68
Hobbs, New Mexico 88240

RE: Discharge Plan (GW-22)
Empire Abo Gasoline Plant
Eddy County, New Mexico

Dear Sir:

On December 13, 1984, the ground water discharge plan, GW-22, for the Empire Abo Gasoline Plant located in Eddy County was approved by the Director of the Oil Conservation Division (OCD). This discharge plan was required and submitted pursuant to Water Quality Control Commission Regulations and it was approved for a period of five years. The approval will expire on December 13, 1989.

If your facility continues to have effluent or leachate discharges and you wish to continue discharging, please submit your application for renewal of plan approval 120 days prior to expiration of the plan. The OCD is reviewing discharge plan submittals and renewals carefully and the review time can often extend for several months. Please indicate whether you have made, or intend to make, any changes in your discharge system, and if so, include an application for plan amendment with your application for renewal. To assist you in preparation of your renewal application, I have enclosed a copy of the OCD's guidelines for preparation of ground water discharge plans at natural gas processing plants. These guidelines will be used in review of your removal application.

The disposal of all solids waste generated at your facility will be addressed in your discharge plan renewal. The guidelines are being revised to include the solid waste provisions as enacted by the New Mexico Legislature in the 1989 Legislative session.

If you no longer have discharges and discharge plan renewal is not needed, please notify this office.

District Manager
June 12, 1989
Page -2-

If you have any questions, please do not hesitate to contact Roger Anderson at (505) 827-5884.

Sincerely,

A handwritten signature in cursive script, reading "David G. Boyer". The signature is written in dark ink and is positioned above the typed name.

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB:RCA:sl

Enclosure

cc: OCD Artesia Office

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

May 15, 1989

CERTIFIED MAIL
RETURN RECEIPT NO. P-106 675 051

Mr. James F. Trickett
AMOCO PRODUCTION COMPANY
P. O. Box 3029
Houston, Texas 77253

RE: Spent Sulfur Recovery Catalyst
Empire Abo Gasoline Plant
Eddy County, New Mexico


Dear Mr. Trickett:

The Oil Conservation Division (OCD) has received your request, dated May 3, 1989, to dispose of approximately 500 cubic feet of waste sulfur recovery unit catalyst material by land spreading at the Empire Abo Gasoline Plant site.

Interim land spreading of the waste will be allowed pending laboratory test results for EP Toxicity. Final disposition of this waste will be determined after the analyses are reviewed by the OCD.

If you have any questions, please call me at (505) 827-5884.

Sincerely,


Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Artesia Office
Dave Blazer - Amoco, Houston



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

713-556-2000

James F. Trickett
Regional Environmental
Affairs and Safety Manager

May 5, 1989

William Hargraves
Program Manager Surveillance & Enforcement Section
Environmental Improvement Division Air Quality Bureau
P. O. Box 968
Santa Fe, New Mexico 87504-0968

File: JFT-335-986.621

Dear Dear Mr. Hargraves:

Empire Abo Gas Plant
Sulfur Plant Catalyst Changeout
Eddy County, NM.

RECEIVED

MAY 11 1989

OIL CONSERVATION DIV.
SANTA FE

This is to document Amoco's and Arco's meeting with you in Santa Fe, New Mexico on April 27, 1989, concerning the shutdown of the Empire Abo Sulfur Plant scheduled May 15, 1989.

Amoco is planning a 3 day shutdown to changeout the sulfur plant catalyst. Personnel will work around the clock dismantling piping, inspecting equipment, removing the catalyst, and recharging the converter beds. We do not anticipate any major problems; however, if one does occur such as a major refractory repair, then the shutdown may need to be extended a day or two.

To minimize emissions during the shutdown, Arco (Empire Abo field operator), will divert the high H₂S content gas to the Phillips Gas Plant. Arco will also shutin the high GOR wells so that the total sulfur emissions from the Empire Abo Gas Plant (EAGP) will be at or below 15 TPD (30,000 lbs/day). This shutin of gas will amount to an inlet gas reduction to the plant of approximately 10-12 MMSCFD.

Amoco will monitor the H₂S content and inlet flow to the plant during the shutdown to verify that plant emissions do not exceed 15 TPD sulfur. The daily average content and gas volumes will be reported to you in a letter following the shutdown. In the event problems do occur during the changeout Steve Reddick, the EAGP plant foreman, will notify you. The shutdown schedule presented to you during the meeting and a notification form AQCR 801 are included as attachments.

If you have any questions, please contact Brent McCarthy at 713-556-3122.

Yours very truly,


BJM

Attachments

NOTIFICATION OF EXCESS EMISSIONS PER AQCR 801

Enforcement Section, Air Quality Bureau
New Mexico Environmental Improvement Division
Post Office Box 968
Santa Fe, NM 87503

To Whom It May Concern:

Subject: Malfunction Reporting

| | | | | | |
|---|--------------------------|--|--------------------------|--|------------------------------|
| DATE OF SUBMISSION 5/5/89 | | TIME OF SUBMISSION 3:00 PM | | COMPANY NAME Amoco Production Company | |
| NAME OF INDIVIDUAL REPORTING Brent McCarthy | | | TITLE Sr. Plant Engr. | | PHONE NUMBER 713-556-3122 |
| PLANT NAME/UNIT NUMBER Empire Abo Gas Plant | | LOCATION (County) Eddy | | DATE OF FAILURE 5/15/89 | TIME OF FAILURE 4:00 PM |
| DATE CONDITION CORRECTED | TIME CONDITION CORRECTED | DURATION OF EXCESS EMISSIONS (Hours) NO _x : SO ₂ : Particulate : Sulfur 72 : or Total All Emissions | | | |
| DESCRIPTION OF EQUIPMENT INVOLVED Sulfur Plant | | | | | |
| NATURE AND CAUSE OF MALFUNCTION | | | | | |

Temperature profiles of the first two converter beds indicate deterioration of the catalyst. A three day sulfur plant shutdown will be necessary to changeout the converter beds.

CORRECTIVE MEASURES COMPLETED AND/OR INITIATED TO REDUCE EMISSIONS

The sulfur plant shutdown is scheduled beginning 4:00PM Monday, May 15, 1989. To minimize emissions during the shutdown, ARCO (Empire Abo field operator), will divert the high H₂S content gas to Phillips Gas Plant and will shutin 10-12 MMSCFD of gas from high GOR wells. Personnel will work around the clock during the shutdown dismantling piping, inspecting equipment, removing the catalyst, and recharging the converter beds.

| | | | | | |
|--|-------------------|---------------|-------------|---|--|
| AIR CONTAMINANT AND ESTIMATED EMISSIONS (#/MBTU) or (Tons) | | | | BASIS OF ESTIMATE | |
| NO _x ≥ | SO ₂ ≥ | Particulate ≥ | Sulfur ≥ 15 | <input type="checkbox"/> COMPLIANCE TESTING | |
| SIGNATURE X <i>Brent McCarthy</i> | | | | <input type="checkbox"/> CEM | |
| | | | | <input checked="" type="checkbox"/> CALCULATION | |
| | | | | <input type="checkbox"/> OPERATING LOGS | |

TIME LOG FOR SULFUR PLANT
CATALYST CHANGE AT EMPIRE ABO

MONDAY, MAY 15 4:00 PM SHUT DOWN SULFUR PLANT FURNACE AND BLIND
ACID GAS & AIR INTO FURNACE

MONDAY, MAY 15 5:00 PM START PURGING/COOLING CATALYST BEDS WITH
N2 (GO INTO #1 BED, THROUGH PIPING & OUT
INCINERATOR)

TUESDAY, MAY 16 5:00 AM COMPLETE COOLING OF BEDS TO 200° F

TUESDAY, MAY 16 8:00 AM HAVE BLINDS INSTALLED IN & OUT OF #1 & #2
REACTOR BEDS; ALSO BLIND INCINERATOR

TUESDAY, MAY 16 10:00 AM START UNLOADING #1 & #2 REACTOR BEDS
W/VACUUM UNIT (HAVE CRANE AT PLANT BY 1:00 PM)

TUESDAY, MAY 16 11:00 AM BEGIN INSPECTING BURNER AND INSIDE OF
FURNACE; ALSO INSTALL NEW THERMOCOUPLES AS NEEDED
ON MISC. PIPING

TUESDAY, MAY 16 6:00 PM INSPECT SCREENS AND REPAIR AS NECESSARY.
NOTE: THIS COULD TAKE ALL NIGHT IF SCREENS ARE
BAD

TUESDAY, MAY 16 7:00 PM (IF SCREENS ARE NOT BAD) LOAD AT LEAST ONE
CATALYST BED (TAKE ABOUT 4 HOURS)

WEDNESDAY, MAY 17 7:00 AM LOAD SECOND CATALYST BED OR BOTH BEDS
DEPENDING ON SCREEN STATUS; ALSO INSPECT INSIDE OF
INCINERATOR

WEDNESDAY, MAY 17 3:00 PM PULL BLINDS ON REACTOR BEDS

WEDNESDAY, MAY 17 6:00 PM BEGIN LIGHTING PROCEDURE ON FURNACE

THURSDAY, MAY 18 6:00 AM SULFUR UNIT ON FULL PRODUCTION (NOTE THIS
MAY SLIP INTO EVENING ON THE MAY 18 DEPENDING ON
PREVIOUS STEPS & COOLDOWN TIME ON REACTOR BEDS)

QUALIFICATIONS:

IT WILL TAKE LONGER THAN 3 DAYS IF WE HAVE TO DO ANY MAJOR REFRACTORY
WORK ON THE FURNACE OR INCINERATOR. MAJOR REFRACTORY WORK IS NOT
EXPECTED



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

713-556-2000

James F. Trickett
Regional Environmental
Affairs and Safety Manager

May 3, 1989

Mr. David G. Boyer
Environmental Bureau
New Mexico Oil Conservation Division
P. O Box 2088
Santa Fe, NM 87504

File: JFT-331-986.60

RECEIVED

Dear Mr. Boyer:

MAY - 8 1989

Disposal of Spent Catalyst
from Sulfur Recovery Unit
Empire Abo Gasoline Plant
Eddy County, New Mexico

OIL CONSERVATION DIV.
SANTA FE

As requested during recent telephone conversation between Dave Blazer of my staff and Mr. Roger Anderson of the NMOCD, this letter is to request your approval to dispose of approximately 500 cubic feet of waste sulfur recovery unit catalyst material by landspreading at the Empire Abo Gasoline Plant site. The work to replace the catalyst beds is planned for the week of May 15, 1989.

In our telephone discussion on April 20, 1989, Roger Anderson requested we provide written notification of our waste disposal plans and to include a copy of a waste analysis for EP toxicity. Attached is a copy of the product data sheet for Alcoa S-100 catalyst which is activated alumina. Laboratory analysis for hazardous waste characteristics has been performed on catalyst samples from other facilities which indicated the waste to be inert, but we are unable to locate a copy of the previously performed waste analyses.

As discussed in a telephone conversation on May 1, 1989, since we are unable to locate a copy of the waste analyses, your approval is requested to proceed with the landpreading with the understanding that a sample will be analyzed and the results furnished to you after the work is complete. Based on product and process knowledge, we are confident the sample analysis will confirm the waste does not have hazardous characteristics. However, should sample analyses indicate any hazardous characteristics, further action will be taken to remove the material and properly dispose of same.

If you have questions or need additional information, please contact Dave Blazer at 713-556-2656.

DLB/ewm

Attachment

PRODUCT DATA

S-100

CHE 942

Alcoa Chemicals Division

Activated Alumina for Claus Catalysis

From Vidalia, Louisiana

Revised August 1984

Product Information

Alcoa® S-100 is a smooth sphere of activated alumina produced by Alcoa's unique manufacturing process. It is an excellent Claus catalyst for either the straight flow, split flow, direct oxidation or sulfur recycle process. It can be used efficiently in the first, second or third converters. S-100 is also excellent in subdewpoint tail-gas processes where its high activity is fully utilized. In addition, S-100 is tough and abrasion resistant. And like other Alcoa aluminas, its chemical purity is higher than less refined catalysts.

Product Background

Increasingly stringent air quality legislation is placing an even greater emphasis on the operation of Claus plants for maximum sulfur recovery and resultant minimum sulfur emission levels. These overall recovery goals are dependent upon outstanding service from the Claus catalyst, since catalyst activity is a major factor influencing plant performance. To meet the more severe requirements of recent times, many plant operators have found it economical to

turn to a better performing, high surface area, refined activated alumina—Alcoa S-100.

Produced with the latest automated equipment controlled by a sophisticated computer system, S-100 is unequalled in its physical properties as a Claus catalyst.

Product Benefits

1. *Uniform ball size.* Alcoa S-100 is a uniformly sized sphere. The uniform size yields a low pressure drop through Claus catalytic converters. Higher pressure drop results in less gas throughput or higher operating costs due to increased blower loads.
2. *Smooth surface.* Alcoa S-100's smooth surface allows optimum gas flow through a reactor bed.
3. *Low abrasion loss.* The low abrasion loss of S-100 ensures less dusting during transport, loading and service life. Dusting causes a high pressure drop through Claus catalytic converters. Furthermore, alumina dust in heat exchangers causes lower heat transfer and has often formed a concrete-like mass that plugs liquid sulfur seal-legs.
4. *High crush strength.* Alcoa S-100 has a high crush strength which is very important for resistance to acid aging, sulfur fires and during pneumatic loading of large reactors.
5. *Sulfur conversion.* S-100 provides excellent sulfur conversion of H_2S , SO_2 , COS and CS_2 due to its efficient pore structure, low sulfation, and high surface activity.

The uniform size also prevents catalyst segregation during pneumatic loading, thus minimizing channeling and yielding more efficient use of the entire converter.

On the reverse side are descriptions and applications of various sizes of Alcoa S-100.

TYPICAL PHYSICAL PROPERTIES OF S-100 CLAUS CATALYST - 1/4" (6.4 mm)

| | |
|---------------------|------------------------------------|
| Surface area | 325 m ² /gram |
| Total pore volume | 0.5 cc/gram |
| Alumina XRD phase | Amorphous, chi & gamma |
| Crush strength | 65 lbs (29 kgs) |
| Abrasion loss | 0.1 wt% |
| Loose bulk density | 45 lbs/ft ³ (0.72 g/cc) |
| Packed bulk density | 47 lbs/ft ³ (0.75 g/cc) |





TYPICAL CHEMICAL PROPERTIES OF S-100 CLAUS CATALYST

| | wt% |
|--------------------------------|------|
| Al ₂ O ₃ | 95.1 |
| SiO ₂ | .02 |
| Fe ₂ O ₃ | .02 |
| Na ₂ C | .30 |
| LOI (250-1200°C) | 4.5 |



Product Applications

In properly designed converters, all of the following Claus catalysts can achieve theoretical or thermodynamic conversions. S-100 1/4" is the preferred size, since it offers a good balance between pressure drop and activity. The 1/4", 3/16" and 1/8" sizes are designed for pneumatic loading.

APPLICATIONS OF ALCOA S-100 CLAUS CATALYSTS *(bags, drums, sling bins and bulk)*

| NOMINAL SIZE | TYPICAL CRUSH STRENGTH, lbs (kgs) | TYPICAL SURFACE AREA, m ² /g | CLAUS APPLICATION |
|--|---|---|---|
| 5/16" (7.9 mm)  | 80 (36) | 310 | Where severe coking is a problem, S-100 5/16" can be used for minimal pressure drop. |
| 1/4" (6.4 mm)  | 65 (29) | 325 | Both 1/4" and 3/16" S-100 have excellent activity for all Claus reactions. Both sizes are suitable for all converters and subdewpoint tail-gas processes. For the lowest pressure drop, the 1/4" size is recommended and is particularly effective where coking is a problem. |
| 3/16" (4.8 mm)  | 55 (25) | 340 | |
| 1/8" (3.2 mm)  | 30 (14) | 355 | Some Claus subdewpoint tail-gas processes prescribe the 1/8" size of catalyst. This S-100 size has a higher intrinsic reaction rate for the Claus reaction, but also has higher pressure drop than larger S-100 sizes. |

APPLICATIONS OF ALCOA HIGH SURFACE AREA SRU BED SUPPORTS *(drums and sling bins)*

| | | | |
|---|----------|-----|--|
| 1/2" (12.7 mm)  | 125 (57) | 240 | Sulfur recovery unit (SRU) bed supports have ~ 1/3 to 1/2 the bulk density of ceramic bed supports but have activity for the Claus reaction. The additional contact time for reaction with SRU bed supports will yield higher conversions than ceramic bed support media. This is especially helpful for COS and CS ₂ conversion. |
| 3/8" (9.5 mm)  | 90 (41) | 290 | |

For product samples and information on availability and price of S-100 activated alumina, please contact your nearest Alcoa sales office. The Chemical Sales Unit at (800) 643-8771 can also answer your inquiry.

Information presented herein is believed to be accurate and reliable but does not imply any guarantee or warranty by Alcoa. Nothing herein shall be construed as an invitation to use processes covered by patents without proper arrangements with individuals or companies owning those patents.

Aluminum Company of America

1501 Alcoa Building • Chemicals Division • Pittsburgh, PA 15219

Form No. F35-14251



Printed in U.S.A. 8408



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONY ANAYA
GOVERNOR

July 15, 1986

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501-2088
(505) 827-5800

Mr. L. R. Smith
District Manager
Amoco Production Co.
P. O. Box 68
Hobbs, New Mexico 88240

RE: MODIFICATION TO DISCHARGE PLAN (GW-22)
EMPIRE ABO GASOLINE PLANT
EDDY COUNTY, NEW MEXICO

Dear Mr. Smith:

We have received the proposed modification dated June 30, 1986, to the above-referenced discharge plan. The modification will consist of a spray system to enhance evaporation. The discharge plan (GW-22), with supplements, was approved on December 13, 1984 and must be renewed prior to December 13, 1989.

Pursuant to Section 3-109F. of the New Mexico Water Quality Control Commission regulations, the requested modification to discharge Plan GW-22 is hereby approved with the following provisions:

- (1) Under normal spraying operations, the spray mist will remain in the confines of the pit boundaries.
- (2) Windborn drift will be kept to a minimum and will not leave the property, will not form pools of water on the surface or will not allow salt buildup on the ground surface.
- (3) If excessive drift is observed, the spray system will be inactivated until the atmospheric conditions permit its reactivation.

These restrictions are intended to prevent excessive ponding and salt buildup that can leach to and have the potential to contaminate ground water.

Please be advised that the approval of this modification, as with the plan, does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

This modification does not alter any other conditions or aspects of the original discharge plan as approved. Discharges must be consistent with the terms and conditions of the plan.

Pursuant to Subsection 3-109.G.4 of the N.M. WQCC regulations, a plan approval is for a period of five (5) years. Modifications to an existing plan do not alter the expiration date of that plan.

The modification of the evaporation with a spray system as requested does not constitute a significant modification, therefore, a public notice will not be required.

On behalf of the staff of the Oil Conservation Division, I wish to thank you and your staff for your cooperation during this discharge plan modification review.

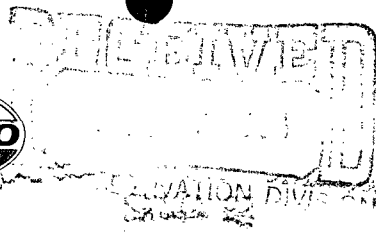
Sincerely,

A handwritten signature in dark ink, appearing to read "R. L. Stamets", with a stylized flourish at the end.

R. L. STAMETS
Director

RLS:RCA:dp

cc: OCD, Artesia



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

June 30, 1986

File: GLB-178-716

Re: Modification to Discharge Plan
Empire Abo Gasoline Plant
Eddy County, New Mexico

Oil Conservation Division
Energy & Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501-2088

Attention: Roger Anderson
Environmental Engineer

Due to inadequate evaporation rates from the evaporation pond constructed in accordance with the Discharge Plan submitted August 23, 1984, we wish to modify the design of said pond. The modification will consist of a system of spray nozzles which will produce a relatively coarse spray of approximately ten feet in height. The total system flow rate is expected to be 180 gallons per minute. The system will be constructed of plastic piping and supported by flotation on the water surface and thus will not endanger the integrity of the pond liner. Spray nozzles will be chosen to produce a droplet of sufficient size so as to minimize drift, while still enhancing evaporation rates.

We do not believe that this is a significant modification to the existing discharge plan. If you require any additional information, please contact David Lehmann in our Hobbs District Office, 393-1781.

DEL/sh
EPLNT3-E

cc: F. W. Frazier - Houston, Tx
S. L. Reddick - EAGP

Attachment



Amoco Production Company

ENGINEERING CHART

SUBJECT EVAPORATION POND SPRAY SYSTEM
EAGP

SHEET NO.

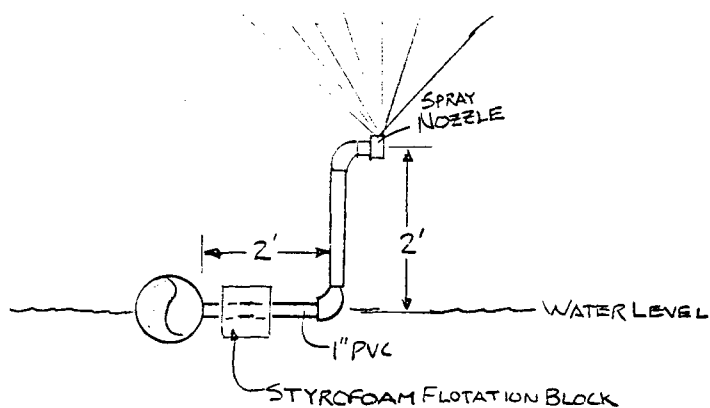
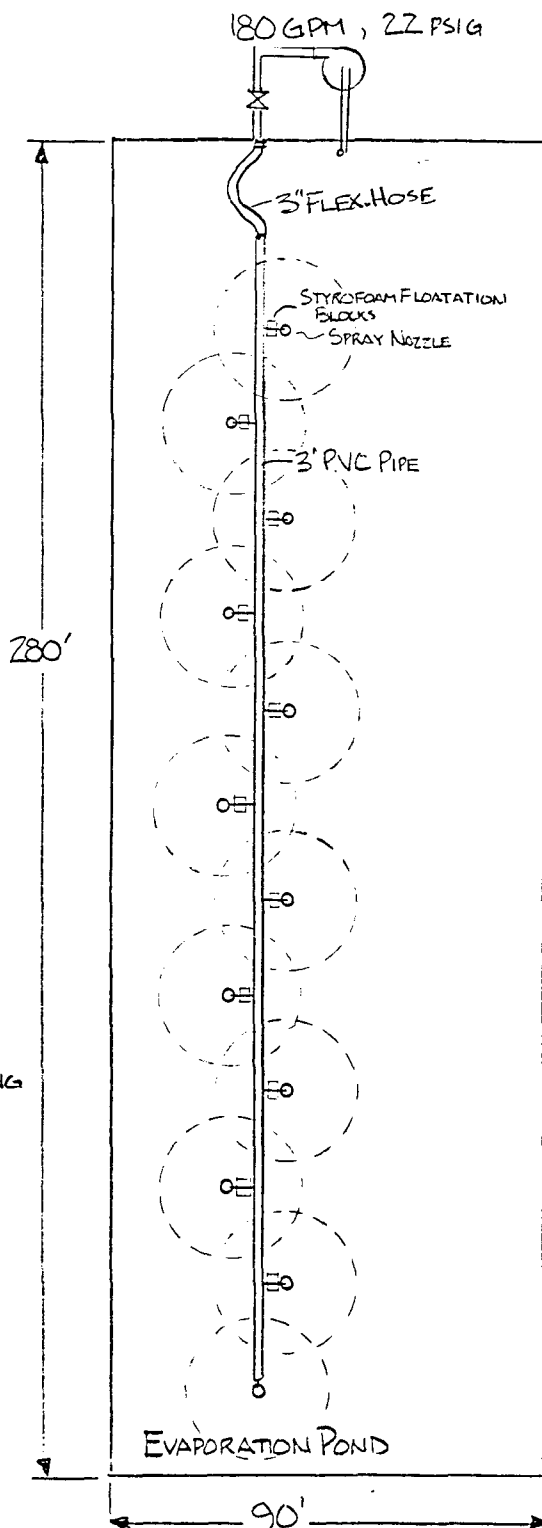
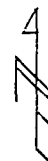
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APPN

DATE 6-26-86

BY NE



SPRAY ARM DETAIL (TYP.)

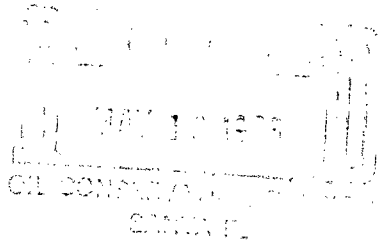


Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

May 6, 1985



File: LRS-128-716

Re: Discharge Plan (GW-22) for Empire Abo
Gasoline Plant, Eddy County, NM

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets, Director

All construction has been completed to bring the Empire Abo Gasoline Plant into full compliance with the approved groundwater discharge plan (GW-22) and material dated October 26, 1984, November 28, 1984, and December 5, 1984, submitted as supplements to the discharge plan. Since December 19, 1984, all effluent has been evaporated from the lined evaporation pond or trucked out by a licensed disposal company and we are currently monitoring plant equipment for spills or leaks that will be reported as specified in the discharge plan and supplements.

Any future amendments to the plan will be made in accordance with New Mexico Water Quality Control Commission Regulation 3-109.E. and 3-109.F. Also, we will submit an application for reapproval of the discharge plan before the December 13, 1989, approval expiration date. Should you require any further information on this matter, contact David Crowther or Steve Reddick in the Hobbs District Office.

L.R. Smith

DCC/tjt
EPLNT1-I

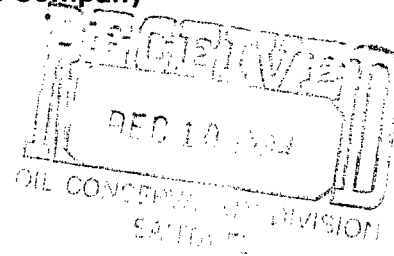
cc: David G. Boyer
Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
Santa Fe, NM 87501



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager



December 5, 1984

File: LRS-264-716

Re: Seaming Methods for Evaporation Tank Liner
for the Proposed Discharge Plan for the
Empire Abo Gasoline Plant, Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets, Director

Phillip Baca has reviewed our proposed method of sealing the evaporation tank's polyethylene liner to the PVC leak detection system and recommended we use an adhesive to bond the liner to the pipe. We will use Water Saver WS-400, a chemically bonding adhesive, to glue the pipe to the liner. Royston Tac-Tape will also be used to ensure the integrity of the seal.

All of the other liner field seams will be made by the solvent method that softens the material and bonds it together. Factory seams are dielectric seams made by high frequency current that melts the liner material together. Should you require any additional information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

L. R. SMITH

DSD/ps1
EPLNT5-R

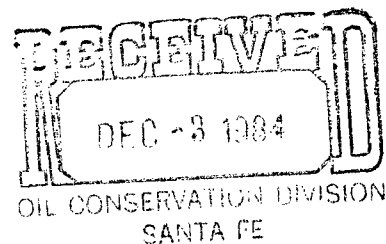
cc: Phillip Baca



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager



November 28, 1984

File: LRS-450-716

Re: Transmittal of Seal Tape Product Data Sheet;
Proposed Discharge Plan for the Empire Abo
Gasoline Plant, Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P.O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets, Director

Attached is the product data sheet for Royston Tac-Tape, which Philip Baca requested from us. This tape will be used to seal the evaporation tank's polyethylene liner to the PVC leak detection piping. Hose clamps will be used to provide a tight mechanical seal between the liner, seal tape and leak detection piping.

We plan to finish building the evaporation tank by December 21, 1984. Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

DSD/ps1
EAUT03-P

Attachment

cc: Philip Baca

ROYSTON LABORATORIES, INC., 128 First Street, Pittsburgh, Pennsylvania 15238 • Telephone 412/828-1500 Telex 86-6541

ROYSTON TAC-TAPE

WHAT IT IS

ROYSTON TAC-TAPE is a soft, tacky, moldable, unbacked elastomeric tape with high electrical resistivity and exceptional adhesive and cohesive properties. It is resistant to moisture and weathering, and maintains flexibility down to below zero temperatures.

WHAT IT DOES

ROYSTON TAC-TAPE adheres strongly to a wide variety of substrates without a primer, and even more strongly when used with ROYSTON ROYBOND 747 primer on appropriate surfaces. It seals, caulks and waterproofs; it insulates electrically, thermally and acoustically; it protects against weathering and corrosion; and it is pliable and moldable without shrinking, flowing, hardening or cracking under all climatic conditions. It maintains its properties after extended storage periods.

WHERE TO USE IT

ROYSTON TAC-TAPE has hundreds of potential uses of which only a few can be suggested. It is especially useful on underground pipelines for filling irregular contours around seams and fittings, for repairs to damaged coatings and for protecting welded anode attachments. It may be covered with other coatings and wraps if desired. It is an excellent seal or repair material for metal flashings and ducts, and for leaky roofs, windows and gutters. Because of its excellent electrical resistivity it is useful for insulating splices in power or communication lines and for repairing damaged areas. Increased interest in preventing noise pollution suggests many uses for ROYSTON TAC-TAPE as a sound deadener or a vibration dampener on metal panels and housings for fans, motors and noisy machinery.

HOW TO USE IT

Although ROYSTON TAC-TAPE adheres strongly to practically all substrates, good surface preparation is required for best performance. Surfaces should be free from moisture, oil, grease, mud, dirt and other contaminants. Adhesion to metals and some other surfaces is improved considerably by applying ROYSTON ROYBOND 747 primer and allowing it to dry to a non-glossy appearance before applying the tape.

ROYSTON TAC-TAPE may be used just as it comes from the roll, by cutting to size with knife or scissors, or it may be molded by hand into any shape required

for the job at hand. It should be pressed firmly against the substrate without entrapping air bubbles. Holes and voids may be patched by merely bridging over the openings, or by forcing the tape into the cavities.

Successive widths should be lapped over about one-half inch and pressed at the overlap to insure a perfect seal. Successive layers may be built up to any desired thickness.

The tape may be covered with a variety of other materials in applications where the tacky surface might be undesirable.

PHYSICAL PROPERTIES:

Composition: Compounded synthetic elastomer with resins and fillers.

Color: Black.

Thickness: 125 mils.

Elongation: More than 300%.

Water Absorption: 0.16% ASTM D-570.

Ozone Resistance: 72 hours ASTM D-1149.

Dielectric Constant: 3.60 ASTM D-150.

Volume Resistivity: 9.2×10^{13} ohms-cm³. ASTM D-257.

Surface Resistivity: $> 1.4 \times 10^{17}$ ohms-cm. ASTM D-257.

Percent Non-Volatile: 100%

Service Temperature: -50°F. to 185°F.

Shelf Life: At least one year.

ORDERING INFORMATION: ROYSTON TAC-TAPE at 125 mils thickness is available from inventory in ten foot rolls, two inches wide packaged eight per carton, and four inches wide packaged four per carton. Gross weight is 13 pounds per carton.

The technical data furnished is true and accurate to the best of our knowledge. However, no guarantee of accuracy is given or implied. We guarantee our products to conform to Royston quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. Prices and cost data shown are subject to change without prior notice.

11/5/84

Phone conversation with Doug Dailey on 11/5/84:

- Conveyed my concern over the use of tape for sealing the leak detection pipe to the base liner boat. I suggested solvent welding.
- Doug indicated that the pender maintained the seal will be as good as a solvent weld. Doug will attempt to obtain tech. info. on the tape and send to me.

Phil Boss



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

October 26, 1984

File: LRS-392-716

Re: Proposed Discharge Plan for the
Empire Abo Gasoline Plant
Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets
Acting Director

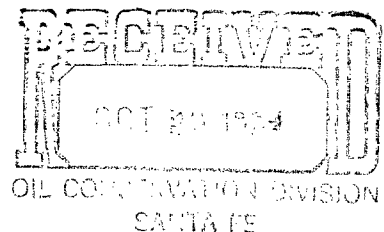
Attached is Amoco's response to Dave Boyer's request dated September 19, 1984, for additional clarifying information pertaining to the Proposed Discharge Plan for the Empire Abo Gasoline Plant.

In Mr. Boyer's letter we were given permission to begin ordering and fabrication of the evaporation pond based on the type and thickness of the base liner (36 mil CPE). On October 17, 1984, Mr. Philip Baca of your office gave us verbal approval to use 30 mil CPE for the bottom of the base and top liner.

We trust the additional information will satisfy Mr. Boyer's request. Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

DSD/tjt
EPLNT5-H

Attachments



October 25, 1984
File: LRS-392-716
Page 2

cc: David G. Boyer
Oil Conservation Division
Energy and Minerals Department
P.O. Box 2088
Santa Fe, NM 87501

EVAPORATION POND DESIGN

1. The liners will be protected from rips with polyethylene seal tape reinforcement in the areas where the liner is cut around the posts.
2. Polyethylene seal tape will be used to bond the PVC leak detection pipes to the base liner to prevent any leakage around the pipe.
3. The evaporation pond will be located on a pad that is a level, one foot deep, compacted layer of caliche that is rolled smooth and free of holes, rocks, or any other debris which might rupture the liner.
4. The leak detection system sump will be checked daily to ensure there is no leakage from the primary liner. Any fluid found in the leak detection sumps will be analyzed to determine the source, and should the primary liner be found to need repair, the pond will be pumped dry and repaired. Any water in the pond and effluent generated during repair will be trucked to the Loco Hills Disposal System for disposal. Amoco will notify the NMOCD within one week, in writing, of the failure and the disposal method used while the pond is under repair.
5. The evaporation pond will be located inside the plant site alongside the plant's east fence, in between North 0-00' and North 3-75' on Figure 4.
6. The revised Figure 7 has been attached for your reference.

PLANT PROCESSES

1. The storage tanks shown in Figure 1 are located south of the Amine Storage tank on Figure 4 at North 2-25' and West 7-90'. A detailed drawing of these tanks is shown in Figure 6.
2. The process drains shown in Figure 5 are below ground gravity drains.
3. All of the drain sumps are concrete lined. Process fluids are pumped from the sump located at South 0-20' and West 9-00' on Figure 4 to the storage tanks shown in Figure 6.
4. The process storage tanks shown in Figure 6 are currently and shall remain in use as effluent collection and storage.
5. All storage tanks and separators shown in Figures 4A, 4B and 5 are above ground. The sumps are all concrete, below ground gravity drain sumps.

Should a leak or equipment failure be detected in either the process or utility effluent systems, the malfunctioning equipment will be isolated, removed from service and replaced or repaired. If the equipment failure results in the effluent being disposed of by a method other than is described in the "Proposed Discharge Plan, Empire Abo Gasoline Plant", Amoco will notify the NMOCD within one week, in writing, of the failure and the disposal method used until the malfunctioning equipment is repaired and returned to service.

6. The 5000 gpd of boiler effluent is currently, and will continue to be recycled to the cooling tower for makeup. This industrial quality boiler water needs no treatment for use as cooling tower water because it will have a total dissolved solids content of less than 5 ppm.
7. The EDR has a design recovery efficiency of 85%. This results in an average volume of reject water of 5040 gpd.
8. No fluids are discharged into the flare pit.
9. Less than 500 ml per day of spent chemical reagents are discharged into the septic tank shown in Figure 1. The reagents used are; acetic acid, hydrochloric acid, methanol, potassium iodate-iodide, silver nitrate, sodium thiosulfate, and sulfuric acid.
10. I & W, Inc., P. O. Box 176, Artesia, NM 88210, is shipping the utility and process effluent to the Loco Hills Water Disposal, P. O. Box 68, Loco Hills, NM 88256, for disposal.

SPILL/LEAK PREVENTIONS AND HOUSEKEEPING PROCEDURES

1. Leaks and spills from the process and utility system would be contained within the plant site without the use of curbing and storm drains since the plant is situated on an area with little relief. Any hydrocarbon or chemical spills will be removed from the plant by a vacuum truck to the Loco Hills Disposal System. Amoco will notify the NMOCD by writing, within one week if disposal off the plant site is by any other method than those listed here or in the "Proposed Discharge Plan, Empire Abo Gasoline Plant".
2. The carbon steel plant tanks are protected from corrosion by painting all exterior surfaces, and are set on foundations to ensure any leaks can be detected by visual inspection. Any leaks detected from these tanks will be analyzed to determine the source and should equipment repair be required the water will be trucked out for disposal until repairs are completed.

As part of normal daily plant operations, all above ground in-plant piping is inspected by plant operators for signs of leakage. Leaks in underground in-plant piping can be detected by seepage to the surface. Any leaks detected will be repaired and any resultant spills will be cleaned up and trucked out of the plant for disposal with other process effluent.

3. Any in-plant spills or precipitation run-off from in-plant "housekeeping" will be collected in the plant drainage system and trucked out of the plant for disposal with the other plant process effluent.

Most precipitation on the plant area quickly soaks into the soil or evaporates. The land surface area of the plant has little relief and is protected from runoff entering the plant by two foot high curbing and drainage along the north end of the plant. The attached Figure 8 shows the exact location of the curbing on the north end of the plant.

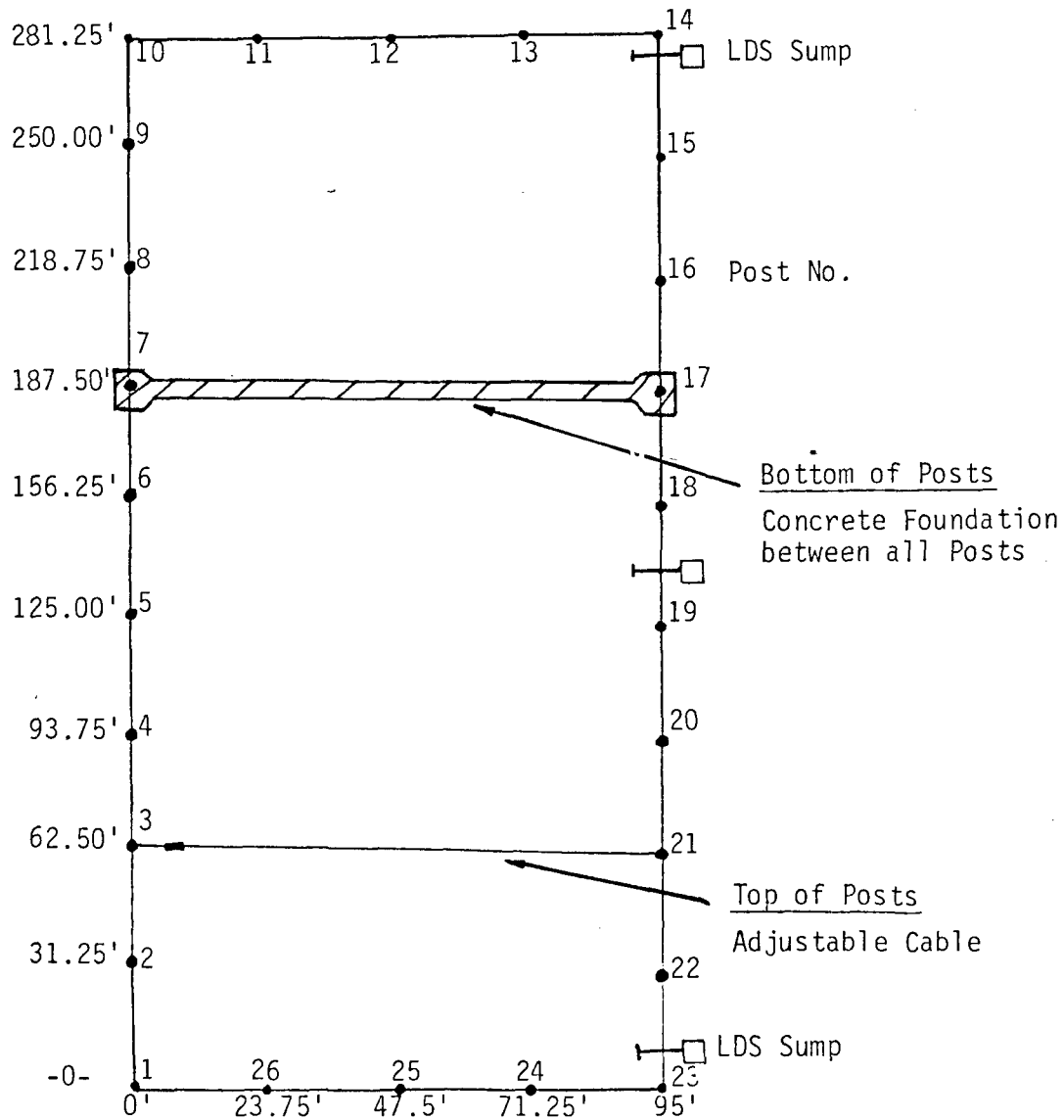
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 1

EVAPORATION TANK

TOP VIEW



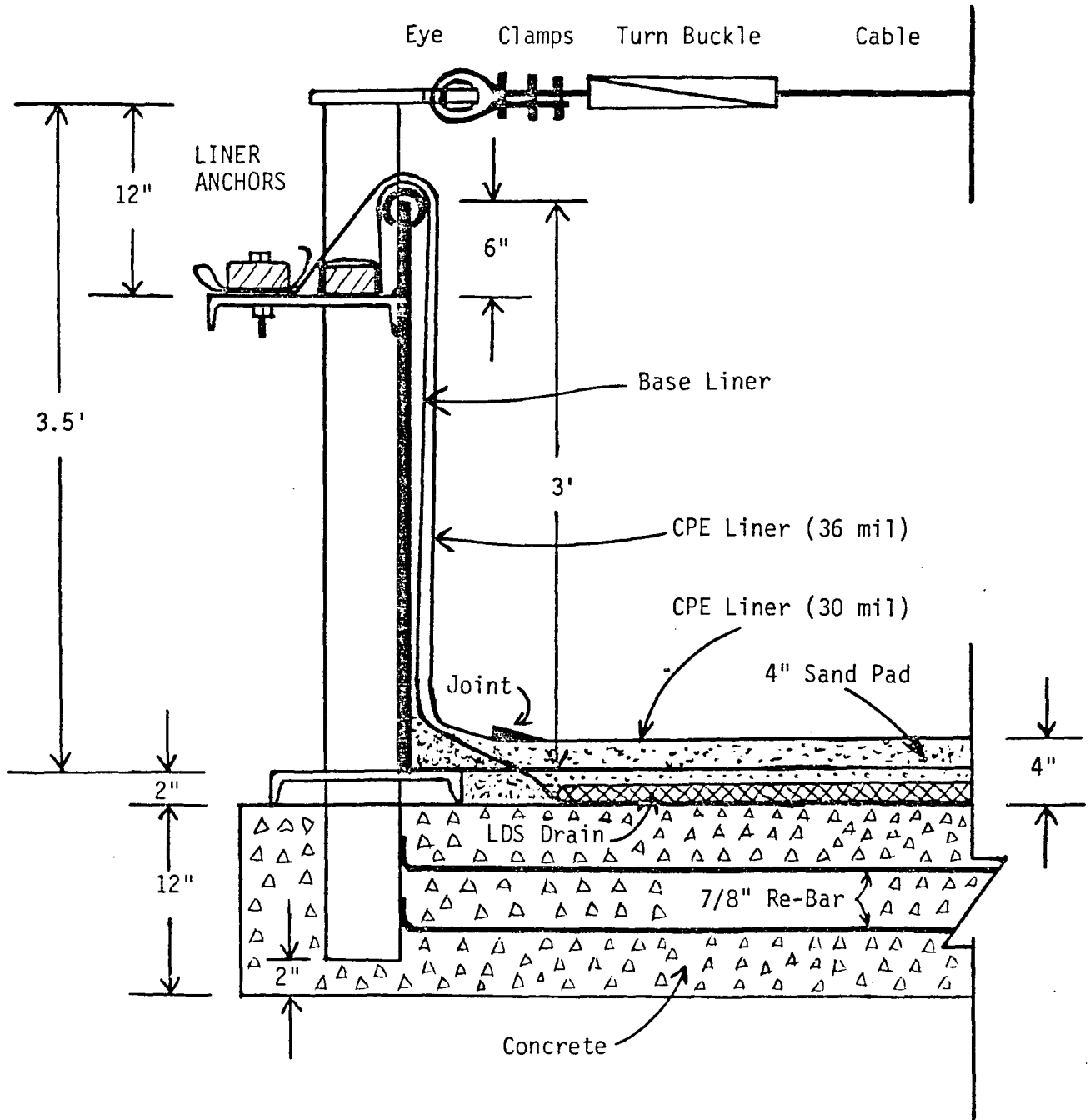
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 2

EVAPORATION TANK

ANCHOR POST - SIDE VIEW



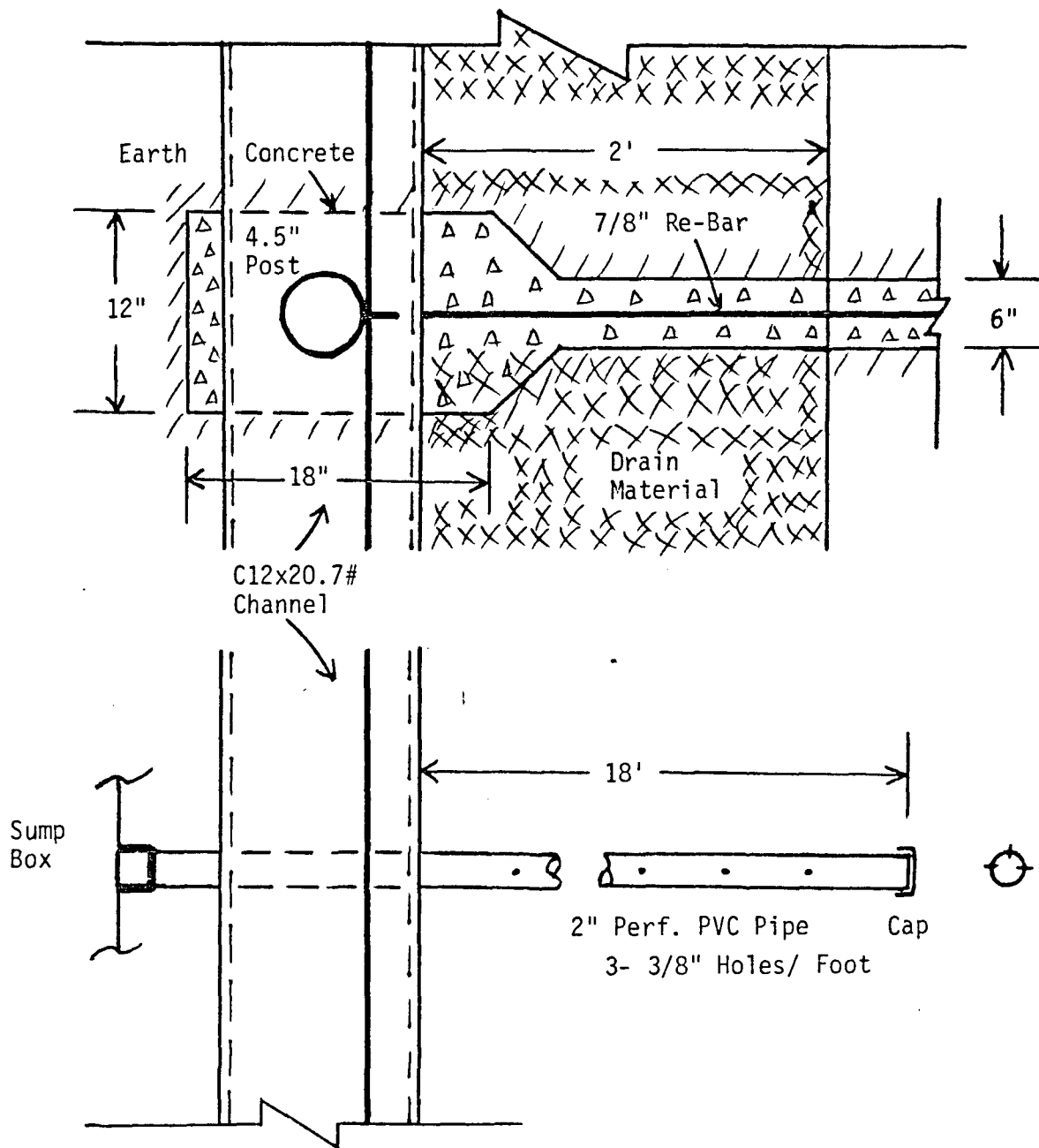
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 3

EVAPORATION TANK

ANCHOR POST - TOP VIEW



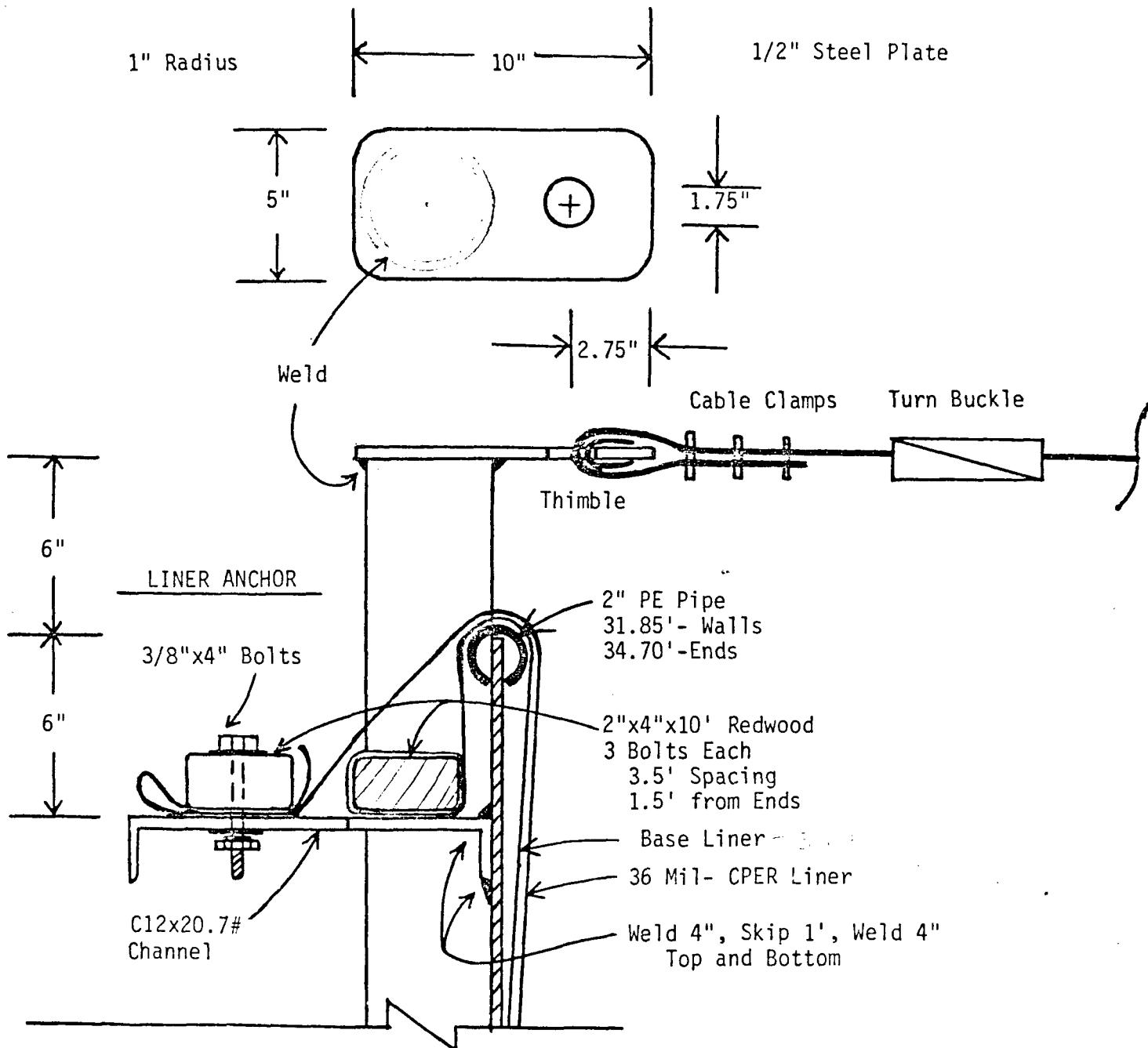
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 4

EVAPORATION TANK

BRACE PLATE AND SUPPORT POST - LINER ANCHOR



AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT DRAWING # 5

EVAPORATION TANK

LINER ANCHOR

TOP VIEW

CHANNEL WELDS

2"x4" Redwood
Base Liner Anchor

1/4" Steel Plate

Cut for Post

4 1/2" Post

Welds

C12 x 20.7#
Channel

Top Welds

Bottom Welds

12"

3.5'

(Anchor Plate on Top of Post not Shown)

2" x 4" Redwood Liner Anchor

1/2" Holes

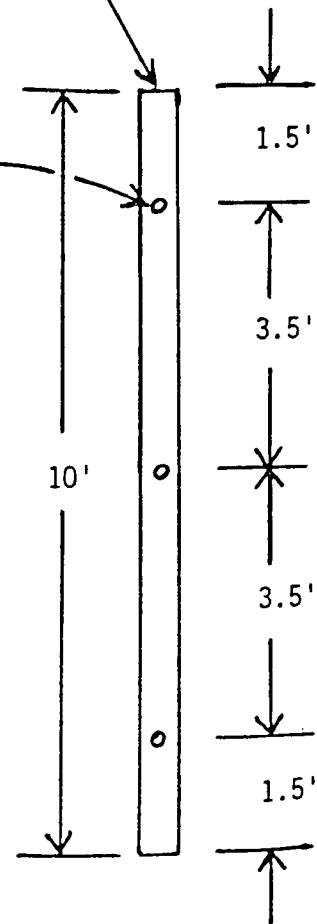
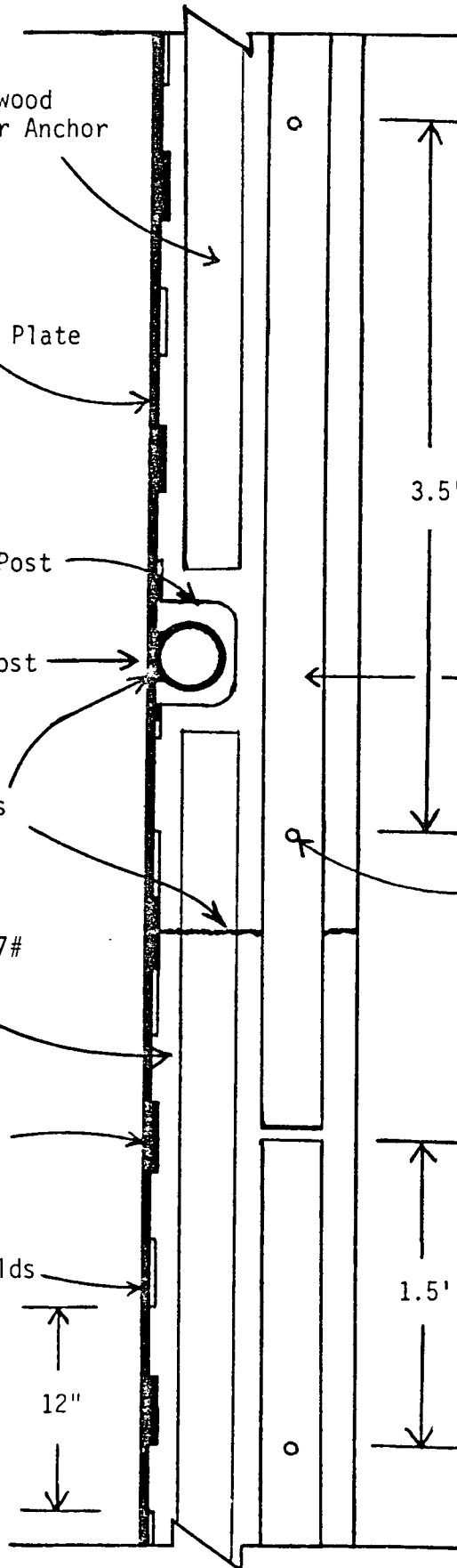
10'

1.5'

3.5'

3.5'

1.5'



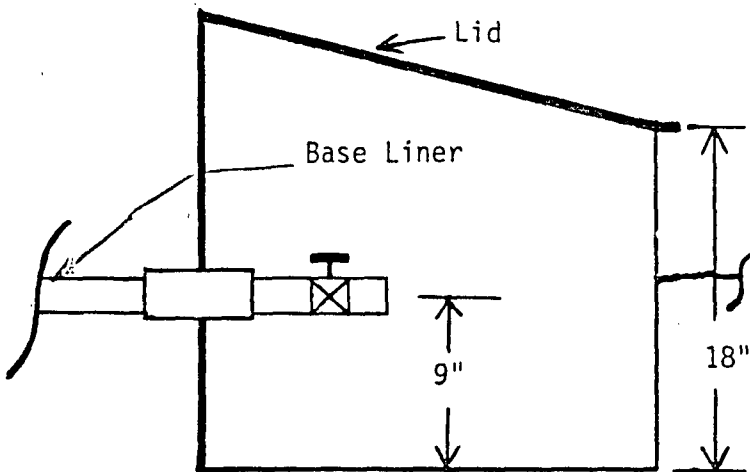
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

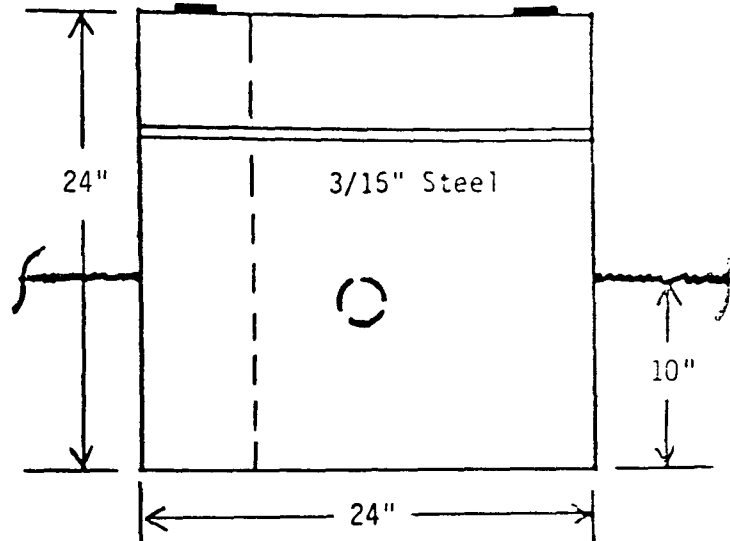
DRAWING # 6

EVAPORATION TANK

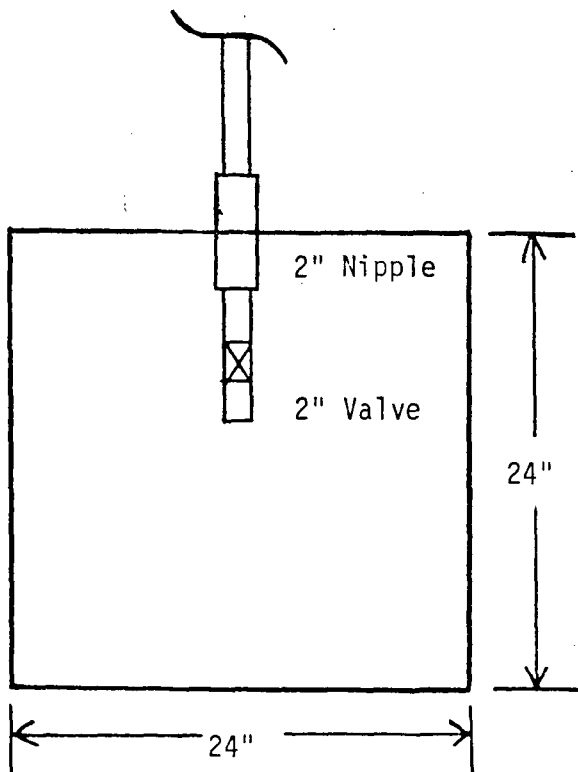
SIDE



FRONT



TOP VIEW



PIPE DETAIL:
See Drawing # 3

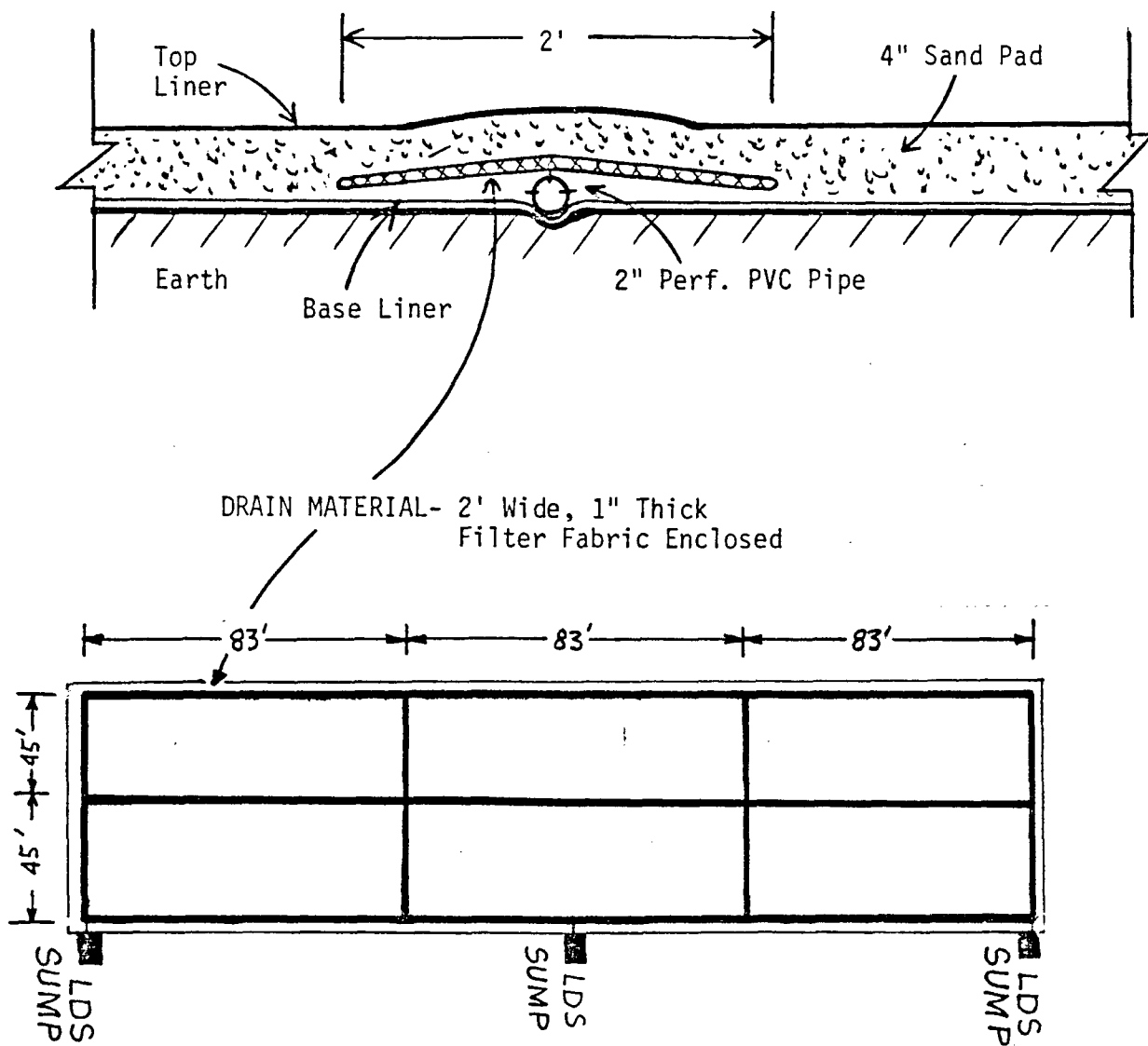
AMOCO PRODUCTION COMPANY

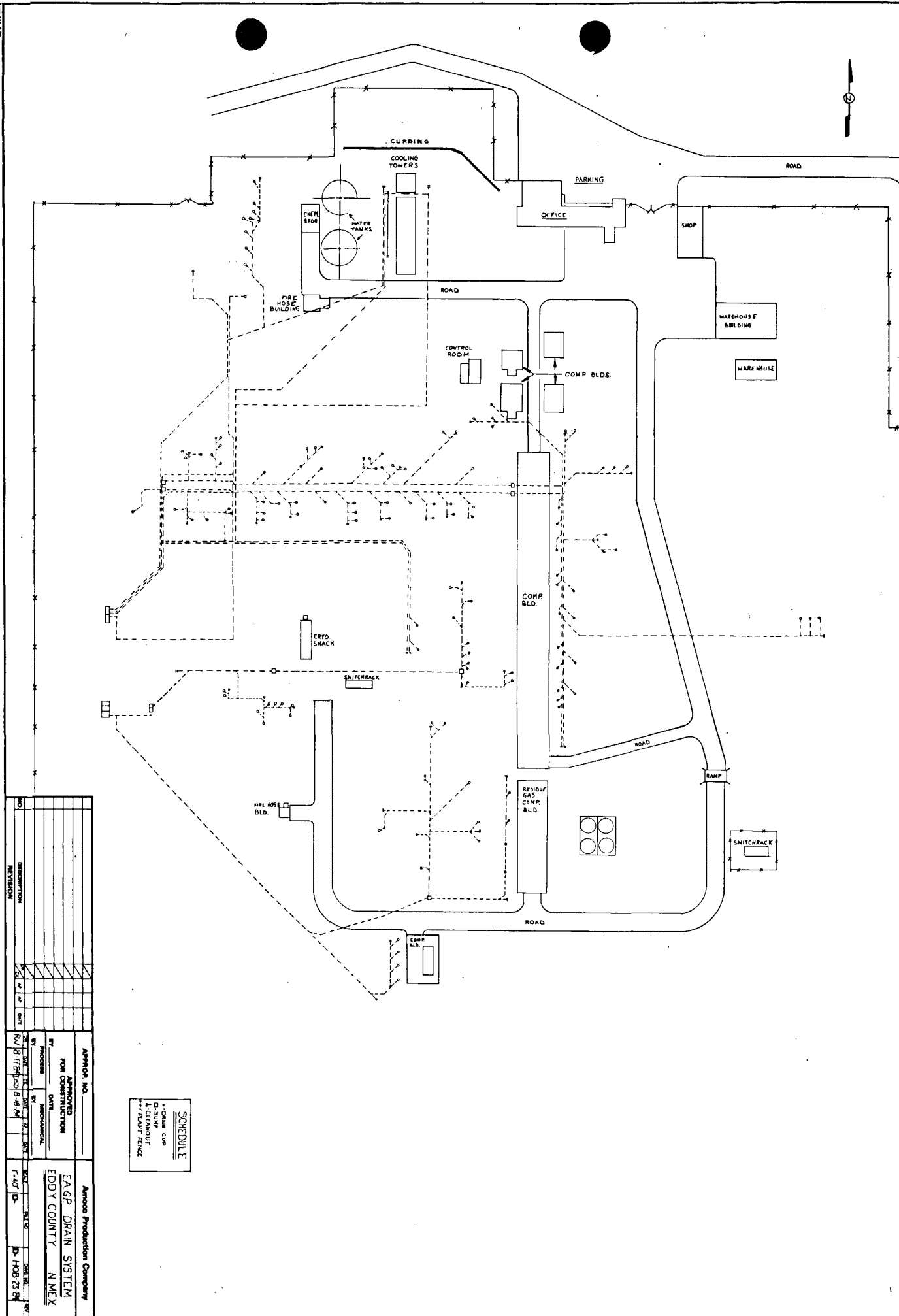
EMPIRE ABO UNIT

DRAWING # 7

EVAPORATION TANK

LEAK DETECTION SYSTEM





Phone Conversation w/ Doug Daily (Amoco)

393-2167

- Reference to letter of 9/19
Evaporation pond construction

¹⁵⁺ proposed 36 mil primary liner } CPE
+ 36 mil base liner } Mat'l

Now will have 36 mil primary liner } CPE
+ 30 mil base liner } Mat'l

Holding water w/ 10^4 TDS

Made reference to OCD Report (Spec.)

Design and Construction of Lined Evaporation
Ponds

Section III (Mat'l's)

Paragraph C

10/29 - Phone conversation with Daily -
OK'd 30 mil liner for

Notice Dates:

10/1/84 (ARTESIA)
10/3/84 (ALB.)

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plan has been submitted for approval to the Director of the Oil Conservation Division, P. O. Box 2088, State Land Office Building, Santa Fe, New Mexico 87501, telephone (505) 827-5800.

AMOCO PRODUCTION COMPANY, Empire Abo Gasoline Plant (SE 1/4 Section 3, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico), L. R. Smith, District Manager, P. O. Box 68, Hobbs, New Mexico 88240, proposes to modify its existing facility by desalination of approximately 28,000 gallons per day of cooling tower blowdown water in an electrodialysis reversal unit for reuse as boiler feed water. The reject water will be disposed of in a double lined evaporation pond at the plant site. Previously blowdown effluent was discharged onto the ground near a dry arroyo. Approximately 2,000 gallons per day of process fluids from separators, drains, and engine cooling systems are stored in two 200 barrel storage tanks. These process fluids will continue to be trucked to an approved disposal site. The ground water most likely to be affected is at a depth of approximately 50 feet with total dissolved solids concentrations of approximately 300 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which

comments may be submitted to him and a public hearing may be requested by an interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 28th day of September, 1984.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


R. L. STAMETS
Acting Director

S E A L



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

September 19, 1984

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. L. R. Smith, District Manager
Amoco Production Company
Hobbs, NM 88240

Re: Proposed Discharge Plan
for Amoco's Empire Abo
Gasoline Plant, Eddy
County, New Mexico

Dear Mr. Smith:

The proposed discharge plan dated August 22, 1984, for the above referenced facility has been reviewed by me for compliance with the New Mexico Water Quality Control Commission (WQCC) Regulations. The proposed addition of a lined evaporation pond to handle utility effluent greatly simplifies the review of the discharge plan since upon approval and construction these effluents will no longer be discharged onto the surface of the ground. I do have several questions, comments, or requests for additional clarifying information on the material you submitted.

Evaporation Pond Design

- 1) Describe how the liners will be protected from rips during installation by the anchor posts. Will they be reinforced at these points since they must go around the posts to be anchored?
- 2) Describe how the base liner will be sealed to prevent leakage at the points where the PVC leak detection pipes pass through.
- 3) Describe subgrade preparation to protect puncture of the base liner.

- 4) How often is the leak detection system proposed to be checked and what notification and action is proposed if leaks are found?
- 5) Where on Figure 4 will the pond be located?
- 6) Please revise Figure 7 (Evaporation Tank Design) to reflect the changes requested in this letter.

On September 17, Mr. Doug Dailey of your office, provided me with the type and thickness of the base liner (36 mil CPE). Based upon this and the discussion on other items in this section regarding the pond, the proposed design is acceptable and you may begin ordering and fabricating the various components. Temporary approval to begin use of the pond, prior to approval of the complete facility discharge plan, can be granted if a satisfactory response to the other questions in this section is given.

Plant Processes

- 1) Which numbered tanks on Figure 4 are the process storage tanks shown in Figure 1? Are these the same tanks shown in Figure 6?
- 2) Are the process drains shown on Figure 5 pressurized or gravity? Are they above or below the ground?
- 3) Are the sumps lined or unlined? If lined, with what material? How are the process fluids moved from the sumps to the storage tanks?
- 4) Are the process storage tanks shown in Figure 6 currently in use or proposed? If proposed, what is the current method of process water collection and storage?
- 5) Indicate whether the storage tanks, sumps, and separators shown on Figures 4A, 4B and 5 are above or below ground. For those below ground, what is their composition? Describe the proposed actions and procedures (including OCD notification) to be undertaken by the discharger in the event of detecting leaks or failure in either the process or utility discharge systems.
- 6) Will the 5,000 gpd of boiler effluent also go to the EDR? If not, what treatment does it receive?

- 7) What is the expected daily volume of reject water from the EDR to the evaporation pond?
- 8) Describe the composition and volume of fluids discharged to the flare pit and the frequency of discharge.
- 9) Are any effluents other than domestic sanitary waste discharged into the septic tank shown in Figure 1 (eg. solvents, laboratory chemicals, etc.)?
- 10) Provide the name and address of the trucking company or companies shipping the process and utility system waters and the name, address and location of the receiving facilities.
- 11) Table 2 includes chemical analyses of the inorganic contaminants listed in Section 3-103 A. of the WQCC Regulations. Several hydrocarbon components (eg. benzene), solvents and/or biocides listed in that section or listed as toxic pollutants (Section 1-101.UU) may be present in the discharge as processing or utility system by-products. Under the Regulations analyses for these contaminants can be required. However, if all discharges are now, or soon will be self-contained, the OCD will not at this time ask for additional chemical analyses.

Spill/Leak Prevention and Housekeeping Procedures

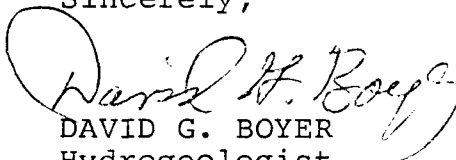
- 1) Describe procedures addressing containment and cleanup in case of spills from process and utility units (i.e. contingency plans). Include information as to whether plant areas are curbed and drained to sumps, final disposition of spill material, proposed schedule for OCD notification of spills, etc.
- 2) Describe methods used to detect leaks and ensure integrity of above and below ground tanks, and in-plant piping. Discuss procedures to be undertaken if significant leaks are detected.
- 3) Discuss general "housekeeping" procedures for containment in-plant of spills, precipitation runoff, etc., not directly associated with major plant processes (eg. cleaning operations, truck washing). Include information on curbing, drainage, disposition, notification, etc. (See Item 1 above.)

Hydrology

Only minimum information on site hydrology was provided in the discharge plan since the 1983 report by G. E. Welder cited in the plan does not cover the hydrology of the area east of the Pecos River. However, depth to ground water, as shown in a 1978 report, is approximately 50 feet ("Collection of Hydrologic Data, Eastside Roswell Range E/S Area, New Mexico", Geohydrology Associates, Inc., Albuquerque). Total dissolved solids concentrations reported for two shallow wells about 3 miles southeast of the plant are about 300 ppm. These volumes will be used for purposes of issuing public notice. I will await and evaluate your response to the above questions before requesting additional hydrologic information (if necessary).

I will be out of the office until October 24 and unavailable to answer any questions before that date. Mr. Philip Baca, Environmental Engineer, will be available beginning October 9, to answer engineering questions regarding proposed evaporation pond.

Sincerely,


DAVID G. BOYER
Hydrogeologist

DGB/dp

cc: Artesia OCD District Office

P 505 905 727

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

| | |
|---|----|
| Sent to R. L. Smith | |
| Street and No. Amoco Production Co. | |
| P.O. State and ZIP Code Hobbs, NM 88240 | |
| Postage | \$ |
| Certified Fee | |



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

August 22, 1984

File: LRS-346-716xER

Re: Proposed Discharge Plan
Empire Abo Gasoline Plant
Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: Joe D. Ramey
Director

Attached for your review and approval is the proposed discharge plan you requested for the Amoco Production Company operated Empire Abo Gasoline Plant (Section 3, Township 18 South, Range 27 East). The discharge plan was prepared in accordance with Part 3 of Water Quality Control Commission Regulation 82-1 and covers all effluent discharges by the Plant.

We have revised the design of the evaporation pond per Dave Boyer's comments in your August 6, 1984 correspondence granting Amoco a 90-day extension to submit a discharge plan. The new pond design can be found as Figure 7 in the proposed discharge plan. We request you expedite the review of the evaporation pond design so we can begin construction of the pond.

Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

L. R. Smith

DSD/kih
EAUT04-D

Attachments

cc: J. R. Barnett



*Discharge plan
in 3-ring notebook
on shelf. AGR*



Amoco Production Company

501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

Shaven

June 5, 1984

RECEIVED

AUG 14 1984

File: JCA-716-283

WATER QUALITY BUREAU

Re: Discharge from Empire Abo Plant

Ms. Jayne Watson, Chief
Permits Issuance Section (6W-PS)
Environmental Protection Agency
InterFirst Two Building
1201 Elm Street
Dallas, TX 75270

Dear Ms. Watson:

As requested in your letter of April 27, 1984, we have reviewed our Empire Abo Gas Processing Plant with respect to requirements of the National Pollutant Discharge Elimination System (NPDES) as established by the Clean Water Act (CWA) of 1977. To eliminate any potential environmental problems, we have elected to install a completely new water treatment system that will eliminate all discharges from our facility.

Our plans are to purchase a membrane desalination system. This system will handle the total waste stream of 800 B/D through either an electrodialysis or a reverse osmosis pretreatment unit. Seventy-five percent (600 B/D) of the water passed through this system will be of industrial quality and reused in the plant system. The remaining 25 percent (200 B/D) will be placed in an open top evaporation tank.

A major benefit of this system is the reduction of fresh water usage. The membrane desalination unit will reduce our water purchases by 500 barrels per day and will reduce our steam usage by 7500 pounds per hour by shutdown of the plant's evaporator.

The purchase and installation cost of this system is \$263,000; we expect to have it installed and running by October 1, 1984.

RECEIVED

JUN 8 1984

6W-PS

Ms. Jayne Watson
June 4, 1984
Page 2

Attached is a flow diagram of the water disposal plan. We trust this will satisfy your concerns as expressed in your letter of April 27, 1984. If you have any questions, please contact Ms. Laurie Beppler at 713/556-2182 or Mr. Forrest Frazier at 713/556-3813.

Very truly yours,

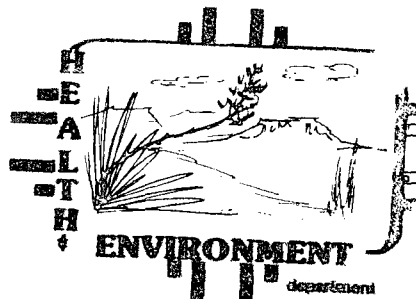
L. R. Smith

L. R. Smith
District Manager

FWF/pap
OP4D066

Attachment

cc: J. C. Allen - 4.538
N. E. Spencer - 23.186



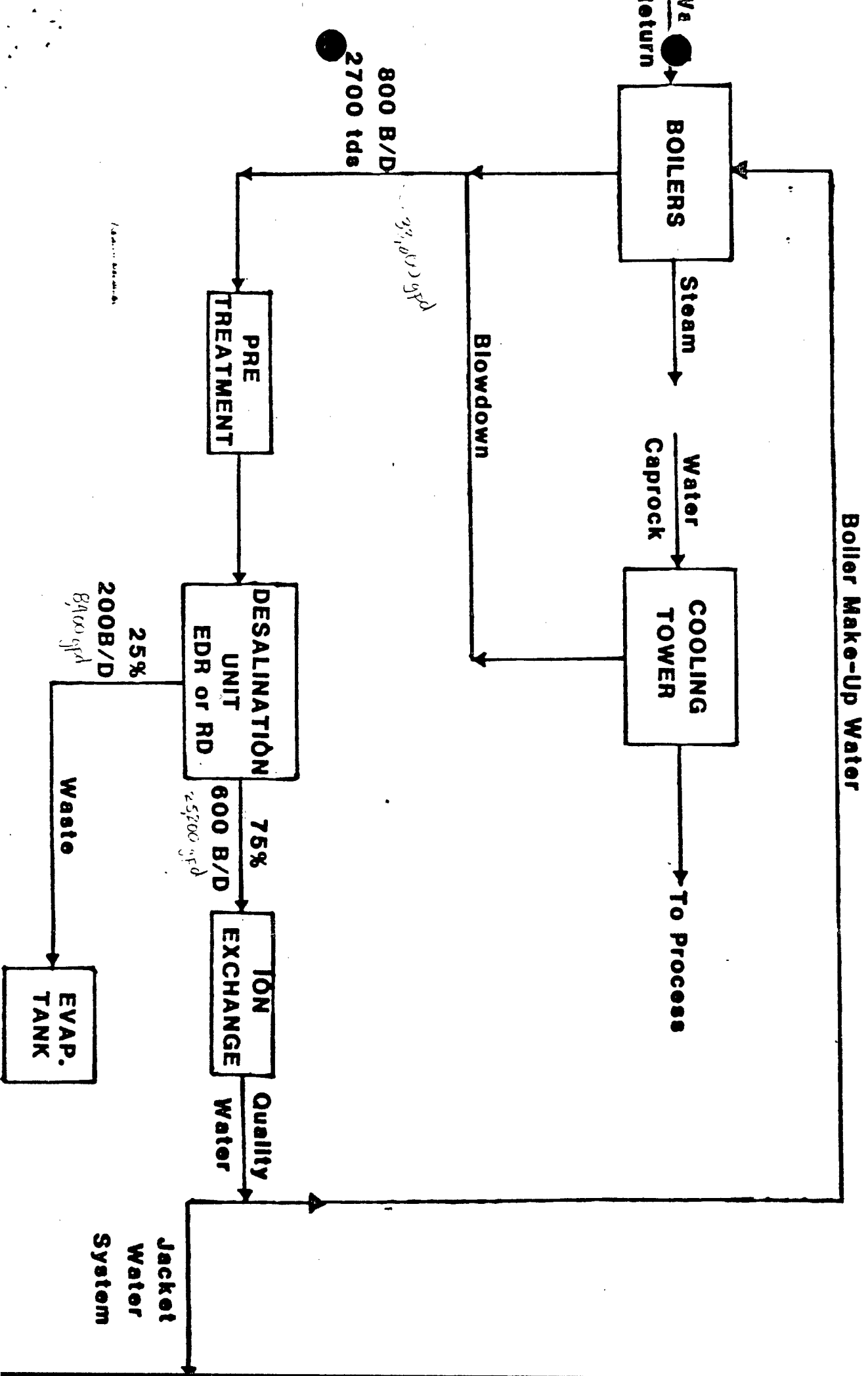
8/15/84

Done -

FYT/files

Kathy Siskins

EMPIRE ABO GASOLINE PLANT PROPOSED WATER DISPOSAL PLAN



Standard Oil Company (Indiana)

200 East Randolph Drive
Post Office Box 5910-A
Chicago, Illinois 60680
312-856-7935

Ronald J. Ganim
Attorney

July 30, 1984

RECEIVED

AUG 14 1984

Ralph Corley, Esq.
Office of Regional Counsel
U.S. Environmental Protection Agency
1201 Elm Street/Region VI
Dallas, Texas 75270

SURFACE WATER QUALITY BUREAU

Dear Mr. Corley:

This letter is a followup to our meeting with you and EPA technical staff on July 9, 1984.

Kindly note for your records that discharges from the Empire Abo Gasoline Plant, jointly owned by Amoco and Arco Oil & Gas Company were terminated after the meeting. The water is now being trucked off site for disposal as an interim measure until the membrane desalination system can be installed by the end of October, 1984. This system will recycle most of the water and allow for a zero discharge operation.

In the week following our meeting, a detailed reconnaissance of the facility was conducted by Amoco's environmental coordinator. Several interesting facts were learned from that visit which may bear on EPA's opinion:

1. Based on observations of the site, it appears that the discharge when it occurred traveled only approximately 100 yards from the gasoline plant and because of the dry, arid soil and desert environment, the water evaporated.
2. No vegetation or other environmental damage was observed within the area impacted by the discharge.
3. The discharge did not enter any flowing stream or creek.
4. There was no evidence that the small discharge ever reached the Pecos River which is approximately six miles away. In fact, at the Pecos River at the point where Skoggins Draw might be expected to run into the river, there is no channel into the river.

Based on the foregoing inspection, I would question EPA's preliminary conclusion that an NPDES permit was necessary for the discharge when it occurred since the nearest navigable water would have to be the Pecos River, six miles away. However, even assuming that EPA's preliminary conclusion

is correct, the discharge would have to be classified as minor with no environmental impact.

As we mentioned at the meeting, we are certainly amenable to negotiating further with EPA on this matter without a lawsuit. Such litigation, particularly in view of the fact that there is currently no discharge, would not seem to be a proper direction of federal or company resources.

Thank you for the opportunity to meet with you on the 9th.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Ron Ganim", with a long horizontal flourish extending to the right.

Ronald J. Ganim
Mail Code 2102A

RJG/bd

Tom Giesberg, EPA



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

August 6, 1984

TONY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

CERTIFIED MAIL -
RETURN RECEIPT REQUESTED

Mr. L. R. Smith
District Manager
Amoco Production Company
P. O. Box 68
Hobbs, New Mexico 88240

Re: Empire Abo Plant

Dear Mr. Smith:

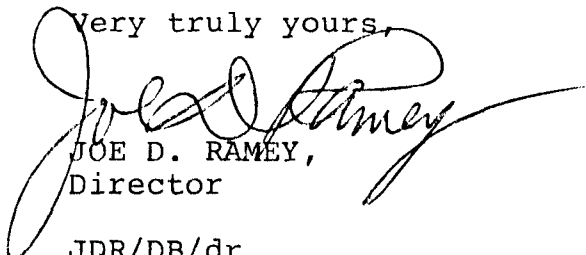
By Oil Conservation Division (OCD) letter dated March 26, 1984, Amoco Production Company was required to submit a discharge plan for its Empire Abo Plant for Director approval within 120 days of receipt of the notification. Amoco received the written notice on March 29, 1984, and was required to submit the plan by July 27, 1984. On July 24, 1984, OCD received a written request (dated July 20) from Amoco to delay submittal of the discharge plan. The request included information that the previous off-site discharge of process water at the plant has ceased and the water is being stored in tanks on-site until trucked to a disposal site. Amoco states that various waste water treatment/disposal alternatives are being evaluated prior to final selection and presentation in the discharge plan.

Pursuant to Section 3-106.A. of the New Mexico Water Quality Control Commission Regulations and for good cause shown, Amoco is hereby granted an extension of 90 days until October 25, 1984, to submit its discharge plan for OCD approval. Section 3-106.A. also requires that no later than 240 days after receipt by Amoco of written notice, no discharges without an approved plan are allowed. Because of the extension for discharge plan submittal, the review of the plan after OCD receipt, issuance of public notice, and receipt of public comment will extend beyond the 240-day period ending November 24, 1984. Therefore, Amoco is granted an extension of 90 days until February 22, 1985, to discharge without an approved discharge plan.

Regarding your request for approval of the preliminary evaporation pond design presented in your July 20 letter, the concept of a double-lined pond with a leak-detection system is an acceptable methodology to satisfy the discharge plan requirements. One of the major items to be considered in this type of design is the compatibility of the liner material (a Chevron Industrial Membrane) with the type of fluids to be discharged into the pond. If the material is compatible to pond fluids, then standard engineering procedures and manufacturer instructions must be followed in site and subgrade preparation and liner installation. Providing integrity for the leak detection system to prevent capture of extraneous non-pond fluids is also an important design consideration. Although Amoco must supply, with the discharge plan, information on material/fluid compatibility and site-specific engineering details and installation procedures for review prior to final approval, preliminary comments on pond design by Mr. David Boyer, staff Hydrogeologist, are attached.

If you have any questions on this extension or on the discharge plan process, please contact Mr. Boyer at 827-5812.

Very truly yours,


JOE D. RAMEY,
Director

JDR/DB/dr

enc.

cc: Oil Conservation Division, Artesia
Kathy Sisneros, EID Surface Water
Section

P 505 905 698

RECEIPT FOR CERTIFIED MAIL

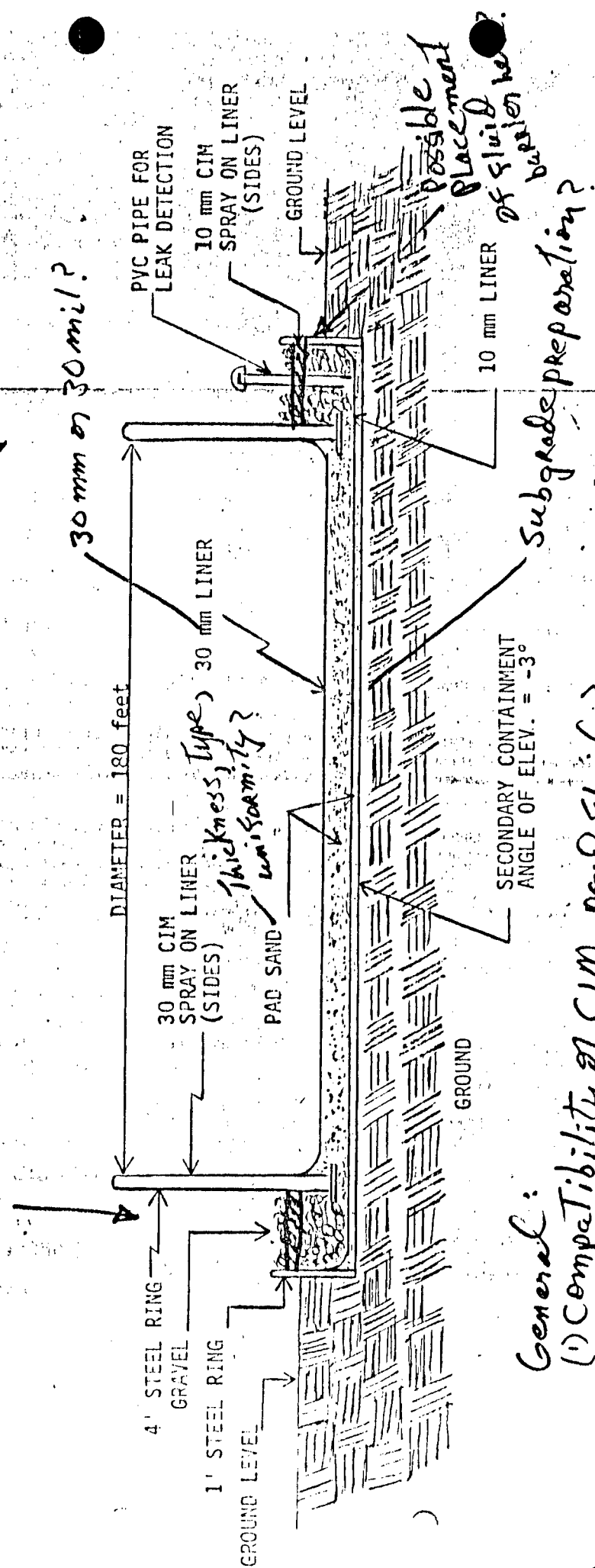
NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

| | |
|---|-------------------|
| Sent to | Smith - Amoco |
| Street and No. | Box 68 |
| P.O., State and ZIP Code | Hobbs, N.M. 88240 |
| Postage | \$ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to whom and Date Delivered | |
| Return Receipt Showing to whom, Date, and Address of Delivery | |
| TOTAL Postage and Fees | \$ |
| Postmark or Date | |

why leak detection system open to atmosphere to capture
sprinkled, other extraneous fluids?

PRELIMINARY EVAPORATION POND DESIGN



General:

- (1) Compatibility of CIM, pond fluids?
- (2) Site preparation and liner installation specifics
- (3) Proper sizing to prevent overflow, adequate freeboard
- (4) Criteria for sample analysis if fluids detected, contingency plan

DRB 8/6/84



Amoco Production Company

P. O. Box 68
Hobbs, New Mexico 88240

July 20, 1984

File: JCA-716-291

Re: Request for Extension of Time
on Submittal of Discharge Plan

RECEIVED

JUL 24 1984

OIL CONSERVATION DIVISION

Mr. Joe D. Ramey, Director
State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

This is in response to your letter dated March 26, 1984, requesting a discharge plan from our Empire Abo Plant. We have since discontinued discharging our process water and are now routing it to storage tanks located in the plant, where it is trucked out on a daily basis. Because we are presently evaluating several different water treatment systems, we are hereby requesting an extension of 90 days in submitting our discharge plan.

We have attached a preliminary design of our proposed evaporation pond which will be part of our discharge plan. Please advise if the design meets with the state's approval so that we may begin soliciting bids for construction.

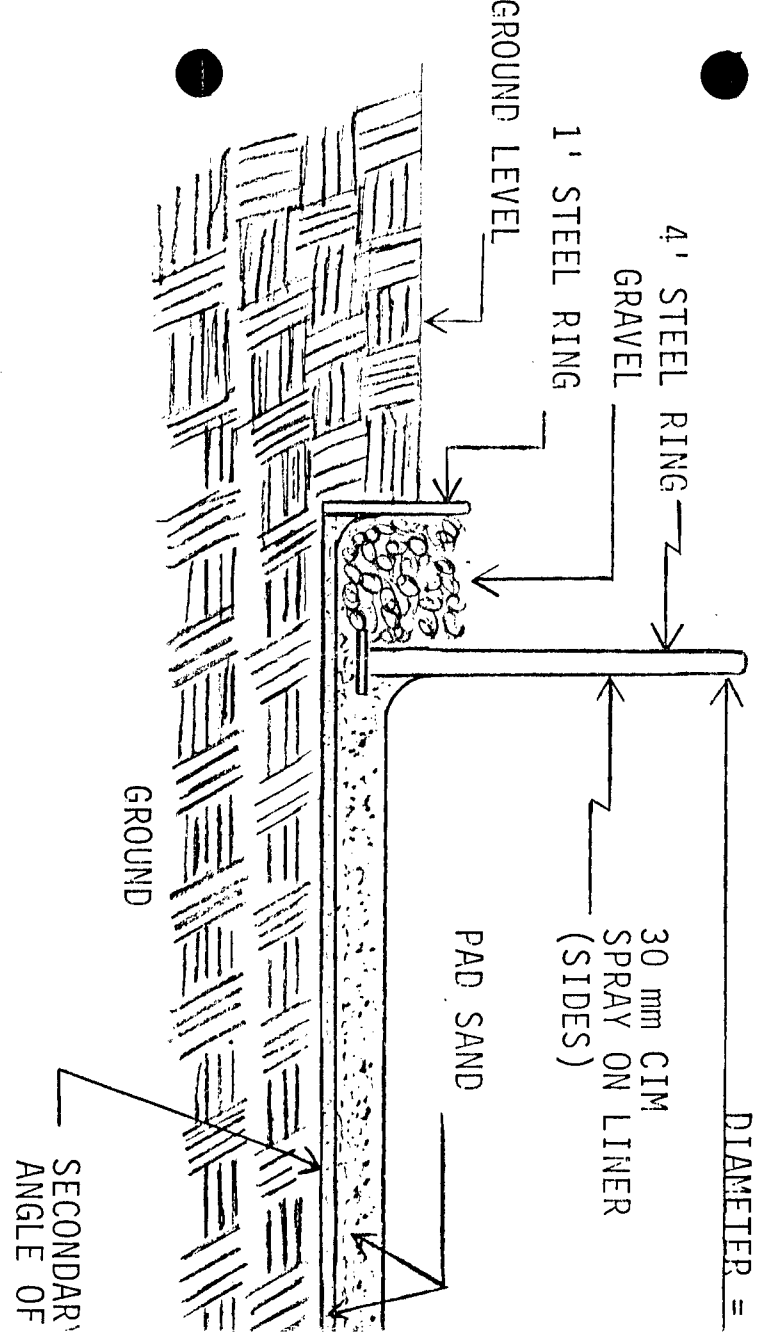
If you have any questions, please contact Forrest Frazier at (713) 556-3813.

Very truly yours,

L. R. Smith
District Manager

FWF/pbm
Attachment

PRELIMINARY EVAPORATOR





STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

March 26, 1984

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Amoco Production Company
Box 68
Hobbs, New Mexico 88240

Re: Request for Discharge Plan

Gentlemen:

Under provisions of the regulations of the Water Quality Control Commission you are hereby notified that the filing of a discharge plan for your Abo Gasoline Plant (Section 2, Township 18 South, Range 27 East) is required. Discharge plans are defined in Section 1-101.1 of the regulations and a copy of the regulations is enclosed for your convenience.

This plan should cover all discharge of effluent at the plant site or adjacent to the plant site. Section 3-106A. of the regulations requires submittal of the discharge plan within 120 days of receipt of this notice unless an extension of this period is sought and approved.

The discharge plan should be prepared in accordance with Part 3 of the Regulations.

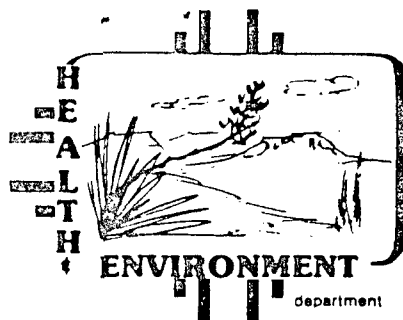
If there are any questions on this matter, please do not hesitate to call.

Very truly yours,

JOE D. RAMEY
Director

JDR/fd
enc.

cc: Oil Conservation Division - Artesia



STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

Steven Asher, Director

TONEY ANAYA
GOVERNOR

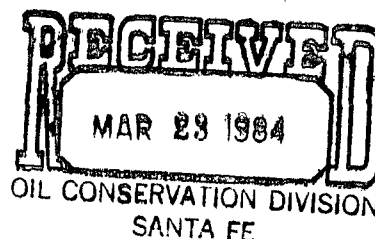
ROBERT McNEILL
SECRETARY

ROBERT L. LOVATO, M.A.P.A.
DEPUTY SECRETARY

JOSEPH F. JOHNSON
DEPUTY SECRETARY

March 19, 1984

Mr. Roger Hartung
Chief, Enforcement Branch 6W-E
U.S. EPA
1201 Elm Street
Dallas, TX 75270



Dear Mr. Hartung:

This Division has received information concerning an unpermitted discharge from a natural gas processing plant located in Eddy County, New Mexico. The plant is the Empire ABO Plant and is owned jointly by ARCO and AMOCO, the plant is operated by AMOCO. Representatives from the Bureau of Land Management (BLM) observed the discharge and have sampled the effluent. The USGS Water Resources Division laboratory performed the analysis.

The discharge occurs from a pipe which originates from the natural gas plant. The discharge flows overland for a distance and then into Skoggins Draw. The Draw drains into the Pecos River. The discharge thus occurs to "Waters of the United States." I have enclosed analysis results of the samples collected by BLM. The discharge when observed was estimated to be 0.45 gpm.

The following is a list of names and addresses which you may find useful concerning this matter:

Mr. Bob Cotrell
Plant Superintendent
Empire ABO Plant
Artesia, NM

Mr. Leroy Troop
ARCO Oil & Gas
P.O. Box 1710
Hobbs, NM 88240

(505) 392-3551

Mr. Roger Hartung

Page 2

March 19, 1984

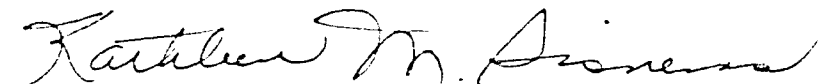
Mr. John Knovosad (505) 887-6544
Bureau of Land Management
P.O. Box 1778
Carlsbad, NM 88220

Mr. Jim Konopinski (505) 622-7670
Bureau of Land Management
P.O. Box 1397
Roswell, NM 88201

Messrs. Knovosad and Konopinski should be contacted if information is needed concerning sample collection and preservation. The location of the plant is: Section 2, Range 27E, Township 18S. Skoggins Draw is located in Section 10. The Draw is approximately two miles from the Pecos River.

I am requesting that your agency follow-up on this complaint and pursue actions necessary to bring this discharge into compliance with federal law. Please feel free to contact me if you have any questions.

Sincerely,



Kathleen M. Sisneros
Environmental Scientist
Surface Water Section

KMS/ml

CC: John Guinn, EID, District Manager
Steve Gilrein, EPA, Enforcement
Bob Cotrell, Empire ABO
Leroy Troop, ARCO
John Knovosad, BLM
Jim Konopinski, BLM
Joe Ramey, OCD
Charles Nylander, EID SWQB
Sam Becker, EPA, Industrial Permits

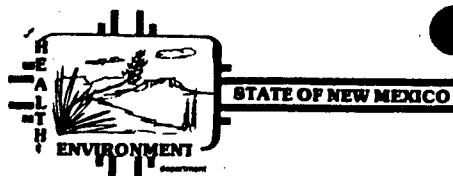
DISCHARGE FROM EMPIRE ABO NATURAL GAS PROCESSING PLANT
September 1983
SAMPLES COLLECTED BY: BUREAU OF LAND MANAGEMENT

| <u>Parameter</u> | <u>Level</u> | <u>Units</u> |
|------------------|--------------|--------------|
| Oil & Grease | 34 | mg/l |
| pH (lab) | 8.9 | SU |
| Conductivity | 4090 | µmhos |
| total Sulfides | 4.4 | mg/l |
| Water temp. | 34.0 | °C |
| As, diss | 20 | µg/l |
| Ba, diss | 100 | µg/l |
| Cd, diss | 1 | µg/l |
| Ca, diss | 79 | mg/l |
| Cl, diss | 340 | mg/l |
| Cr, diss | 10 | µg/l |
| Cu, diss | 2 | µg/l |
| F, diss | 2.6 | mg/l |
| Fe, diss | 80 | µg/l |
| hardness | 290 | mg/l |
| Pb, diss | 1 | µg/l |
| Mg, diss | 23 | mg/l |
| Mn, diss | 20 | µg/l |
| Hg, diss | 0.3 | µg/l |
| K, diss | 56 | mg/l |
| Se, diss | 8 | µg/l |
| Silica, diss | 79 | mg/l |
| Ag, diss | 1 | µg/l |
| Na, diss | 420 | mg/l |
| Sulfate, diss | 820 | mg/l |
| Zn, diss | 10 | µg/l |

Flow estimated to be approximately 0.45 gpm

Discharge appeared to be opaque--

Discharge occurs from a pipe originating from the plant, runs overland and flows into Skoggins Draw.



MEMORANDUM

DATE: September 8, 1983

TO: Eddy County File

FROM: David Boyer, WRS III, GWS

SUBJECT: Hydrocarbon Discharge South of Artesia

On September 7, 1983, I received a phone call from John Novosad, BLM Carlsbad (887-6544) regarding a hydrocarbon discharge into Scoggin Draw, southeast of Artesia. Scoggin Draw is a tributary to the Pecos River immediately above Lake McMillan. The discharge of about 1/2 gpm was observed at a road culvert at Scoggin Draw 4 or 5 miles up from the Pecos River (T18S, R27E, NW $\frac{1}{4}$ NE $\frac{1}{4}$, Section 10). The specific origin of the flow was unknown, but less than one mile up gradient, a large natural gas processing plant, Empire ABO, is located in the Empire Oil Field. The flow was first observed by BLM several months ago, but is not thought to reach the Pecos. BLM has had an inquiry from a cattleman whose grazing lease includes the Draw and whose cattle are drinking the fluid. BLM is also worried about a flood event washing the effluent down to the Pecos. BLM sampled the fluid the week of August 29 - September 2, 1983, and noticed an oil sheen and oil globules on the surface and a hydrocarbon and/or sulfurous odor.

I contacted Jim Konopinski of BLM Roswell (622-7670) for water quality data. The sample collected last week had a conductivity of 3,200 umhos and was sent to the USGS lab in Denver for analysis. Analyses will be performed for arsenic, barium, cadmium, calcium, chloride, chromium, copper, fluoride, hardness, iron, lead, magnesium, manganese, mercury, nitrate, pH, potassium, selenium, silica, silver, sodium, sulfate, zinc, TDS, cation-anion balance, and total oil and grease. The analyses will not be available for at least several weeks.

DB:egr

cc: Tony Drypolcher, Surface Water Section
Charles Nylander, Chief, WPCB
✓ Oscar Simpson, Ground Water Section
Joe Ramey, OCD

1/29pm

Flow at Culvert at below location
NW NE 1/4 sect. 185 27E

Empire Abo - Natural Gas, Butane,
Propane.

9/7

Flow does not reach PECOS

First noticed several months ago
Last week sampled USGS
Oil Sheen on surface, H/C odor
Cows drinking

Thurs^{9/8} Jim Konopinski. 622-7670
Oil & Grease

Stock Drinking - 3200 ppm
oil globules
sulphur smell

Effluent crosses Federal land
Flood prone area
neutral.

Jeff Sacka S-10 T-188
Empire Babo R-27E
NE 1/4
NE 1/4

Carlsbad area

BLM - Carl
887-6544

John Overhead

| | |
|----------|-----------------|
| As | Mn |
| Be | Hg |
| Co | NO ₃ |
| Ca | pH-Cond |
| Cl | K |
| Cd | Se |
| Cu | Si |
| F | Ag |
| Hardness | Na |
| Fe | SO ₄ |



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

July 28, 1983

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Amoco Production Company
P.O. bOx 68
Hobbs, New Mexico 88240

Attention: Doug Daily

Re: Submittal of Information
Concerning Discharge
Plans and Lined Pit
Specifications

Dear Sir:

I am sending you a copy of the Water Quality Control Commission Regulations which state the requirements and information that must be contained in a discharge plan. Refer to Section 1-101 (P) "Discharge Plan", page 2, for a definition of a discharge plan.

The discharge plans should be prepared in accordance with Part 3, page 16 of the regulations. When you are officially notified to submit a formal discharge plan for your Empire Abo Plant, you will have 120 days in which to do so. Refer to Section 3-106A, page 24.

The information that is requested in Sections 3-106 (C) and 3-107 (A) must be incorporated in your plan.

If there are any questions on this matter, please do not hesitate to call me at (505) 827-5822.

Sincerely,

OSCAR A. SIMPSON, III
Water Resource Specialist

OS/dp

Enc.

cc: JOE D. RAMEY
Director



Amoco Production Company

P.O. Drawer A
Levelland, Texas 79336

V. E. Staley
Area Superintendent

December 1, 1978

Posted
1-11-79

File: VES-716-324

Re: Pits, Ponds and Lagoons Associated With
Refining and Gasoline Plant Operations

Eddie Seay
Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico 88240

Mr. Seay:

Attached is the information pertaining to Amoco Production Company's Empire Abo Gasoline Plant, concerning the above mentioned memorandum by your Mr. Ramey. Attachment 1 is a map showing the location of the four pits around the plant area, and Attachment 2 is a tabulation listing the additional information about the pits. If you have any questions concerning this matter, please contact Mr. Mark Dinello, phone 806-894-3163. Thank you.

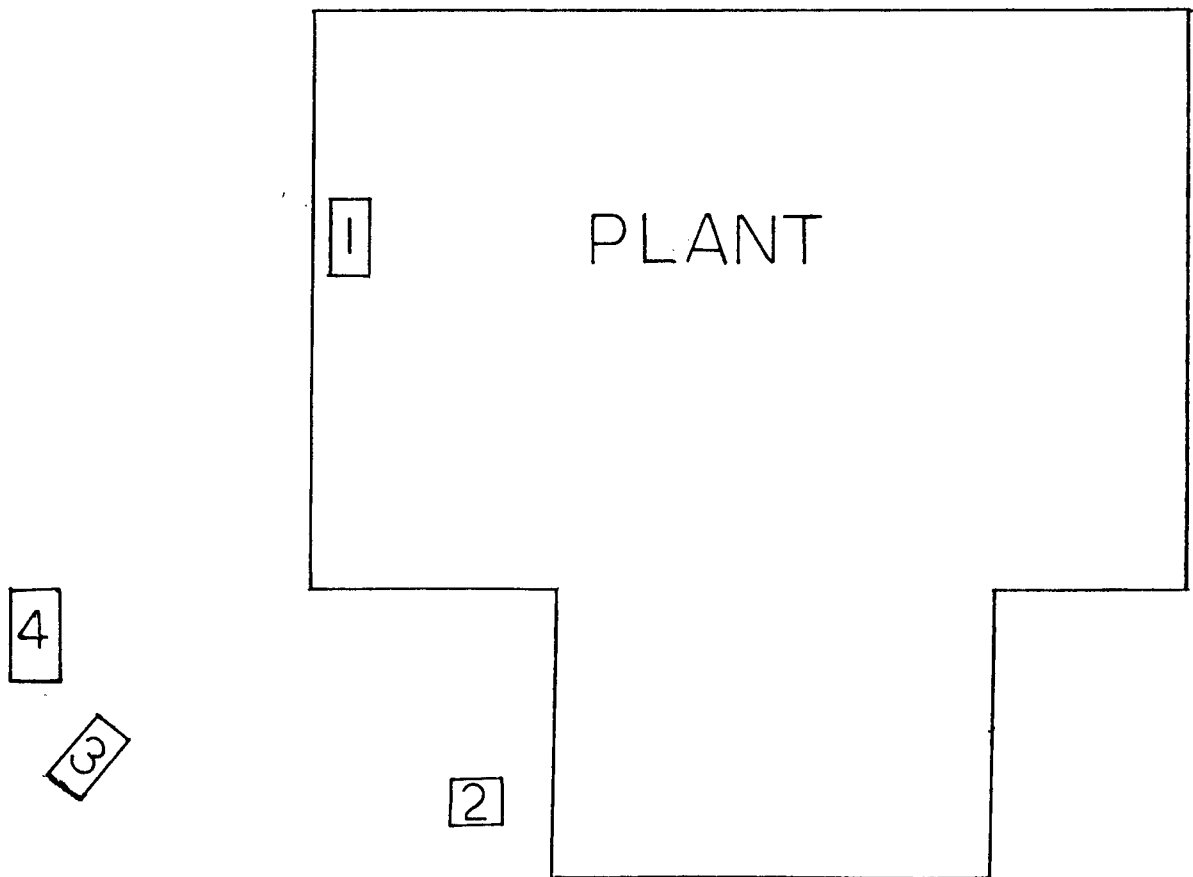
Very truly yours,

MSD:jb

Attachments

Attachment 1
Pit Locations

All in S/4 of SE/4 of the NE/4 and
N/4 of the SE/4 of Section 3
T-18-S R-27-E NMPM



Attachment 2
Pit Data

No. 1 Length: 21 feet
Width: 7 feet
Depth: 4 feet
Lining: Concrete

Analysis of fluid placed in pit

Lube Oil
Caustic Soda
Phosphate
Sodium Sulfide
Silica
Salt
Sour (H_2S) Water
Water

Annual volume of fluid placed in pit
1800 Bbl

No. 2 Length: 25 feet
Width: 25 feet
Depth: 4 feet
Lining: None

Analysis of fluid placed in pit

Lube Oil
Water

Annual volume of fluid placed in pit
700 Bbl

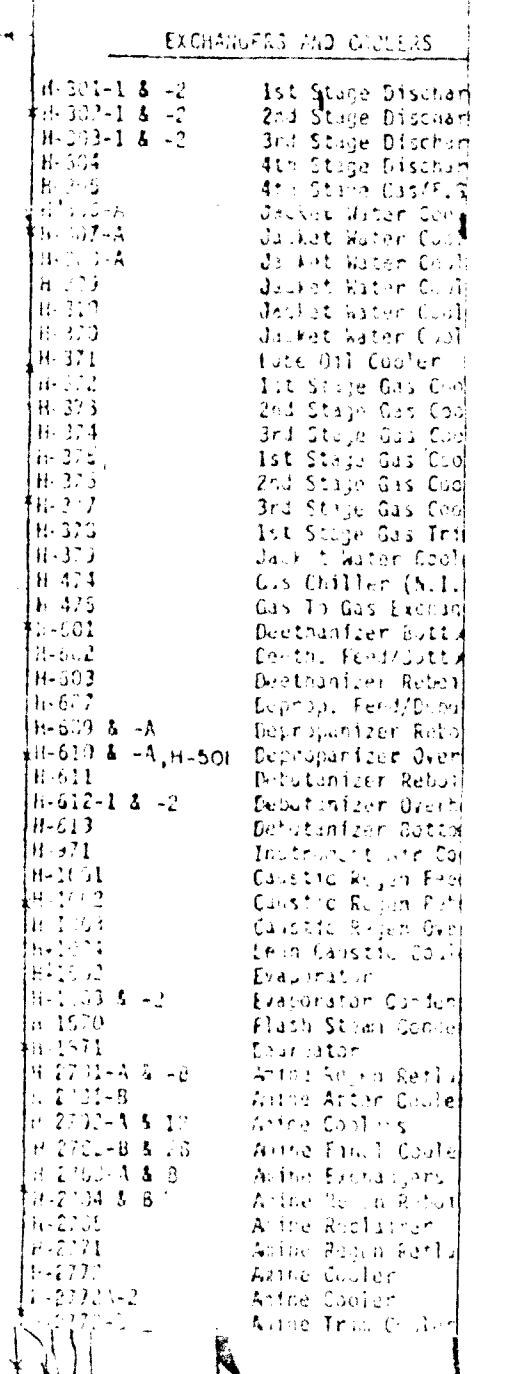
No. 3 Length: 45 feet
Width: 30 feet
Depth: 4 feet
Lining: None

Annual volume placed in pit
0 Bbl

No. 4 Length: 20 feet
Width: 15 feet
Depth: 4 feet
Lining: None

Annual volume place in pit
0 Bbl

| | |
|--------|------|
| A-1000 | 1000 |
| A-1001 | 1001 |
| A-1002 | 1002 |
| A-1003 | 1003 |
| A-1004 | 1004 |
| A-1005 | 1005 |
| A-1006 | 1006 |
| A-1007 | 1007 |
| A-1008 | 1008 |
| A-1009 | 1009 |
| A-1010 | 1010 |
| A-1011 | 1011 |
| A-1012 | 1012 |
| A-1013 | 1013 |
| A-1014 | 1014 |
| A-1015 | 1015 |
| A-1016 | 1016 |
| A-1017 | 1017 |
| A-1018 | 1018 |
| A-1019 | 1019 |
| A-1020 | 1020 |
| A-1021 | 1021 |
| A-1022 | 1022 |
| A-1023 | 1023 |
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| A-1037 | 1037 |
| A-1038 | 1038 |
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| A-1124 | 1124 |
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| A-1169 | 1169 |
| A-11 | |



- | Towers | | Process Equipment | |
|---------|-------------------------------------|-------------------|-------------------------------|
| VIO-402 | Deethanizer | E-272 | Gas Absorber |
| | | E-4191 | Reflux Gas Cooler/Reboiler |
| | Waters and Tanks | E-4192 | Reflux Gas Cooler |
| | | E-4193 | Process Gas Cooler |
| | | E-4194 | Process Gas Cooler |
| | | E-4195-1 & 2 | Process Gas Cooler |
| BE-4301 | Flare Knockout Tank | | |
| BE-4311 | Flare Knockout Tank | | |
| BE-4321 | 2nd Stage Section Header | | |
| BE-4322 | 3rd Stage Section Header | | |
| BE-4323 | 1st Stage Section Header | | |
| BE-4324 | 2 Stage Section Header | | |
| BE-4325 | Acid Gas Header K.O. Tank (Skid #1) | | |
| BE-4326 | Griller Separator (Skid #2) | | |
| BE-4327 | Separator Separator (Skid #3) | | |
| BE-4328 | Exchanger Interceptor Skid | | |
| BE-4329 | Gas Separator | | |
| BE-4330 | 1st Stage Filter | E-4330T-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4331 | Reflux Gas Separator | E-4331-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4332 | 2nd Stage Filter | E-4332-1 | Gas Separator Cooler/Reboiler |
| BE-4333 | Reflux Gas Separator | E-4333 | Gas Separator Cooler/Reboiler |
| BE-4334 | 3rd Stage Filter | E-4334 | Gas Separator Cooler/Reboiler |
| BE-4335 | Reflux Gas Separator | E-4335 | Gas Separator Cooler/Reboiler |
| BE-4336 | 4th Stage Filter | E-4336 | Gas Separator Cooler/Reboiler |
| BE-4337 | Reflux Gas Separator | E-4337-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4338 | 5th Stage Filter | E-4338-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4339 | Reflux Gas Separator | E-4339-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4340 | 6th Stage Filter | E-4340-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4341 | Reflux Gas Separator | E-4341-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4342 | 7th Stage Filter | E-4342-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4343 | Reflux Gas Separator | E-4343-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4344 | 8th Stage Filter | E-4344-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4345 | Reflux Gas Separator | E-4345-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4346 | 9th Stage Filter | E-4346-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4347 | Reflux Gas Separator | E-4347-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4348 | 10th Stage Filter | E-4348-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4349 | Reflux Gas Separator | E-4349-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4350 | 11th Stage Filter | E-4350-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4351 | Reflux Gas Separator | E-4351-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4352 | 12th Stage Filter | E-4352-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4353 | Reflux Gas Separator | E-4353-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4354 | 13th Stage Filter | E-4354-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4355 | Reflux Gas Separator | E-4355-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4356 | 14th Stage Filter | E-4356-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4357 | Reflux Gas Separator | E-4357-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4358 | 15th Stage Filter | E-4358-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4359 | Reflux Gas Separator | E-4359-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4360 | 16th Stage Filter | E-4360-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4361 | Reflux Gas Separator | E-4361-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4362 | 17th Stage Filter | E-4362-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4363 | Reflux Gas Separator | E-4363-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4364 | 18th Stage Filter | E-4364-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4365 | Reflux Gas Separator | E-4365-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4366 | 19th Stage Filter | E-4366-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4367 | Reflux Gas Separator | E-4367-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4368 | 20th Stage Filter | E-4368-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4369 | Reflux Gas Separator | E-4369-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4370 | 21st Stage Filter | E-4370-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4371 | Reflux Gas Separator | E-4371-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4372 | 22nd Stage Filter | E-4372-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4373 | Reflux Gas Separator | E-4373-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4374 | 23rd Stage Filter | E-4374-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4375 | Reflux Gas Separator | E-4375-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4376 | 24th Stage Filter | E-4376-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4377 | Reflux Gas Separator | E-4377-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4378 | 25th Stage Filter | E-4378-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4379 | Reflux Gas Separator | E-4379-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4380 | 26th Stage Filter | E-4380-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4381 | Reflux Gas Separator | E-4381-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4382 | 27th Stage Filter | E-4382-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4383 | Reflux Gas Separator | E-4383-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4384 | 28th Stage Filter | E-4384-1 & 2 | Gas Separator Cooler/Reboiler |
| BE-4385 | Reflux Gas Separator | E-4385-1 & 2 | Gas Separator Cooler/Reboiler |
| | | | |

| | | | |
|--|------|--|------|
| APPROVED TO APPROVED FOR CONSTRUCTION | | APPROVED BY APPROVED FOR CONSTRUCTION | |
| BY | DATE | BY | DATE |
| EX | EX | EX | EX |
| DESCRIPTION REVISION | | EMPIRE ABO GAS PLANT FORDY CO. NEW MEXICO | |



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JOSEPH ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

December 13, 1984

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. L. R. Smith,
District Manager
Amoco Production Company
P.O. Box 68
Hobbs, NM 88240

RE: Discharge Plan (GW-22)
for Empire Abo Gasoline
Plant, Eddy County, NM

Dear Mr. Smith:

The groundwater discharge plan (GW-22) for the Empire Abo Gasoline Plant located in the SE/4 of Section 3, Township 18 South, Range 27 East, NMPM, Eddy, County, New Mexico, is hereby approved. The approved discharge plan consists of the plan dated August 22, 1984, and the materials dated October 26, 1984, November 28, 1984, and December 5, 1984, submitted as supplements to the discharge plan.

The discharge plan was submitted pursuant to Section 3-106 of the N.M. Water Quality Control Commission Regulations. It is approved pursuant to Section 3-109. Please note subsections 3-109.E. and 3-109.F., which provide for possible future amendment of the plan. Please be advised that the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

There will be no routine monitoring or reporting requirements. Reporting of spills or leaks will be as specified in the discharge plan.

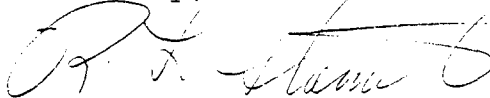
Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan."

Please be aware that in this discharge plan you have made commitments which are legally enforceable under the New Mexico Water Quality Act. These include constructing all aspects of your installation as designed. You are susceptible to fines should you not fulfill these obligations.

Pursuant to subsection 3-109.G.4., this plan approval is for a period of 5 years. This approval will expire December 13, 1989 and you should submit an application for new approval in ample time before that date.

On behalf of the staff of the Oil Conservation Division, I wish to thank you for your cooperation during this discharge plan review.

Sincerely,

A handwritten signature in cursive script, appearing to read "R. L. Stamets", written in dark ink.

R. L. STAMETS
Director

RLS/DB/dp

cc: Artesia OCD Field Office
EID Surface Water Section

RECEIVED
OIL CONSERVATION
DIVISION
DECEMBER 5 1984

December 5, 1984

File: LRS-264-716

Re: Seaming Methods for Evaporation Tank Liner
for the Proposed Discharge Plan for the
Empire Abo Gasoline Plant, Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets, Director

Phillip Baca has reviewed our proposed method of sealing the evaporation tank's polyethylene liner to the PVC leak detection system and recommended we use an adhesive to bond the liner to the pipe. We will use Water Saver WS-400, a chemically bonding adhesive, to glue the pipe to the liner. Royston Tac-Tape will also be used to ensure the integrity of the seal.

All of the other liner field seams will be made by the solvent method that softens the material and bonds it together. Factory seams are dielectric seams made by high frequency current that melts the liner material together. Should you require any additional information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

Original Signed By
L. R. Smith

L. R. SMITH

DSD/ea
EPLNT5-P

cc: Phillip Baca ✓



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

December 5, 1984

File: LRS-264-716

Re: Seaming Methods for Evaporation Tank Liner
for the Proposed Discharge Plan for the
Empire Abo Gasoline Plant, Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets, Director

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All of the other liner field seams will be made by the solvent method that softens the material and bonds it together. Factory seams are dielectric seams made by high frequency current that melts the liner material together. Should you require any additional information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

L. R. SMITH

DSD/ps1
EPLNT5-R

cc: Phillip Baca



Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

November 28, 1984

File: LRS-450-716

Re: Transmittal of Seal Tape Product Data Sheet;
Proposed Discharge Plan for the Empire Abo
Gasoline Plant, Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P.O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets, Director

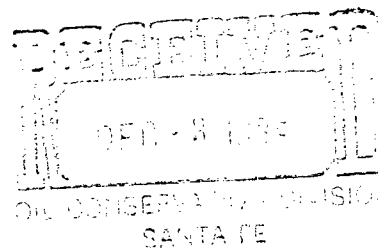
Attached is the product data sheet for Royston Tac-Tape, which Philip Baca requested from us. This tape will be used to seal the evaporation tank's polyethylene liner to the PVC leak detection piping. Hose clamps will be used to provide a tight mechanical seal between the liner, seal tape and leak detection piping.

We plan to finish building the evaporation tank by December 21, 1984. Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

DSD/psl
EAUT03-P

Attachment

cc: Philip Baca



ROYSTON LABORATORIES, INC., 128 First Street, Pittsburgh, Pennsylvania 15238 • Telephone 412/828-1500 Telex 86-6541

ROYSTON TAC-TAPE

WHAT IT IS

ROYSTON TAC-TAPE is a soft, tacky, moldable, unbacked elastomeric tape with high electrical resistivity and exceptional adhesive and cohesive properties. It is resistant to moisture and weathering, and maintains flexibility down to below zero temperatures.

WHAT IT DOES

ROYSTON TAC-TAPE adheres strongly to a wide variety of substrates without a primer, and even more strongly when used with ROYSTON ROYBOND 747 primer on appropriate surfaces. It seals, caulks and waterproofs; it insulates electrically, thermally and acoustically; it protects against weathering and corrosion; and it is pliable and moldable without shrinking, flowing, hardening or cracking under all climatic conditions. It maintains its properties after extended storage periods.

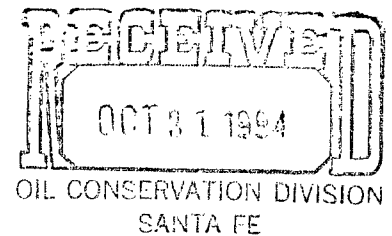
WHERE TO USE IT

ROYSTON TAC-TAPE has hundreds of potential uses of which only a few can be suggested. It is especially useful on underground pipelines for filling irregular contours around seams and fittings, for repairs to damaged coatings and for protecting welded anode attachments. It may be covered with other coatings and wraps if desired. It is an excellent seal or repair material for metal flashings and ducts, and for leaky roofs, windows and gutters. Because of its excellent electrical resistivity it is useful for insulating splices in power or communication lines and for repairing damaged areas. Increased interest in preventing noise pollution suggests many uses for ROYSTON TAC-TAPE as a sound deadener or a vibration dampener on metal panels and housings for fans, motors and noisy machinery.

HOW TO USE IT

Although ROYSTON TAC-TAPE adheres strongly to practically all substrates, good surface preparation is required for best performance. Surfaces should be free from moisture, oil, grease, mud, dirt and other contaminants. Adhesion to metals and some other surfaces is improved considerably by applying ROYSTON ROYBOND 747 primer and allowing it to dry to a non-glossy appearance before applying the tape.

ROYSTON TAC-TAPE may be used just as it comes from the roll, by cutting to size with knife or scissors, or it may be molded by hand into any shape required



October 26, 1984

File: LRS-392-716

Re: Proposed Discharge Plan for the
Empire Abo Gasoline Plant
Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: R. L. Stamets
Acting Director

Attached is Amoco's response to Dave Boyer's request dated September 19, 1984, for additional clarifying information pertaining to the Proposed Discharge Plan for the Empire Abo Gasoline Plant.

In Mr. Boyer's letter we were given permission to begin ordering and fabrication of the evaporation pond based on the type and thickness of the base liner (36 mil CPE). On October 17, 1984, Mr. Philip Baca of your office gave us verbal approval to use 30 mil CPE for the bottom of the base and top liner.

We trust the additional information will satisfy Mr. Boyer's request. Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

Original Signed By
L.R. Smith

DSD/tjt
EPLNT5-H

Attachments

October 25, 1984
File: LRS-392-716
Page 2

cc: David G. Boyer
Oil Conservation Division
Energy and Minerals Department
P.O. Box 2088
Santa Fe, NM 87501



EVAPORATION POND DESIGN

1. The liners will be protected from rips with polyethylene seal tape reinforcement in the areas where the liner is cut around the posts.
2. Polyethylene seal tape will be used to bond the PVC leak detection pipes to the base liner to prevent any leakage around the pipe.
3. The evaporation pond will be located on a pad that is a level, one foot deep, compacted layer of caliche that is rolled smooth and free of holes, rocks, or any other debris which might rupture the liner.
4. The leak detection system sump will be checked daily to ensure there is no leakage from the primary liner. Any fluid found in the leak detection sumps will be analyzed to determine the source, and should the primary liner be found to need repair, the pond will be pumped dry and repaired. Any water in the pond and effluent generated during repair will be trucked to the Loco Hills Disposal System for disposal. Amoco will notify the NMOCD within one week, in writing, of the failure and the disposal method used while the pond is under repair.
5. The evaporation pond will be located inside the plant site alongside the plant's east fence, in between North 0-00' and North 3-75' on Figure 4.
6. The revised Figure 7 has been attached for your reference.

PLANT PROCESSES

1. The storage tanks shown in Figure 1 are located south of the Amine Storage tank on Figure 4 at North 2-25' and West 7-90'. A detailed drawing of these tanks is shown in Figure 6.
2. The process drains shown in Figure 5 are below ground gravity drains.
3. All of the drain sumps are concrete lined. Process fluids are pumped from the sump located at South 0-20' and West 9-00' on Figure 4 to the storage tanks shown in Figure 6.
4. The process storage tanks shown in Figure 6 are currently and shall remain in use as effluent collection and storage.
5. All storage tanks and separators shown in Figures 4A, 4B and 5 are above ground. The sumps are all concrete, below ground gravity drain sumps.

Should a leak or equipment failure be detected in either the process or utility effluent systems, the malfunctioning equipment will be isolated, removed from service and replaced or repaired. If the equipment failure results in the effluent being disposed of by a method other than is described in the "Proposed Discharge Plan, Empire Abo Gasoline Plant", Amoco will notify the NMOCD within one week, in writing, of the failure and the disposal method used until the malfunctioning equipment is repaired and returned to service.

6. The 5000 gpd of boiler effluent is currently, and will continue to be recycled to the cooling tower for makeup. This industrial quality boiler water needs no treatment for use as cooling tower water because it will have a total dissolved solids content of less than 5 ppm.
7. The EDR has a design recovery efficiency of 85%. This results in an average volume of reject water of 5040 gpd.
8. No fluids are discharged into the flare pit.
9. Less than 500 ml per day of spent chemical reagents are discharged into the septic tank shown in Figure 1. The reagents used are; acetic acid, hydrochloric acid, methanol, potassium iodate-iodide, silver nitrate, sodium thiosulfate, and sulfuric acid.
10. I & W, Inc., P. O. Box 176, Artesia, NM 88210, is shipping the utility and process effluent to the Loco Hills Water Disposal, P. O. Box 68, Loco Hills, NM 88256, for disposal.

SPILL/LEAK PREVENTIONS AND HOUSEKEEPING PROCEDURES

1. Leaks and spills from the process and utility system would be contained within the plant site without the use of curbing and storm drains since the plant is situated on an area with little relief. Any hydrocarbon or chemical spills will be removed from the plant by a vacuum truck to the Loco Hills Disposal System. Amoco will notify the NMOCDC by writing, within one week if disposal off the plant site is by any other method than those listed here or in the "Proposed Discharge Plan, Empire Abo Gasoline Plant".
2. The carbon steel plant tanks are protected from corrosion by painting all exterior surfaces, and are set on foundations to ensure any leaks can be detected by visual inspection. Any leaks detected from these tanks will be analyzed to determine the source and should equipment repair be required the water will be trucked out for disposal until repairs are completed.

As part of normal daily plant operations, all above ground in-plant piping is inspected by plant operators for signs of leakage. Leaks in underground in-plant piping can be detected by seepage to the surface. Any leaks detected will be repaired and any resultant spills will be cleaned up and trucked out of the plant for disposal with other process effluent.

3. Any in-plant spills or precipitation run-off from in-plant "housekeeping" will be collected in the plant drainage system and trucked out of the plant for disposal with the other plant process effluent.

Most precipitation on the plant area quickly soaks into the soil or evaporates. The land surface area of the plant has little relief and is protected from runoff entering the plant by two foot high curbing and drainage along the north end of the plant. The attached Figure 8 shows the exact location of the curbing on the north end of the plant.

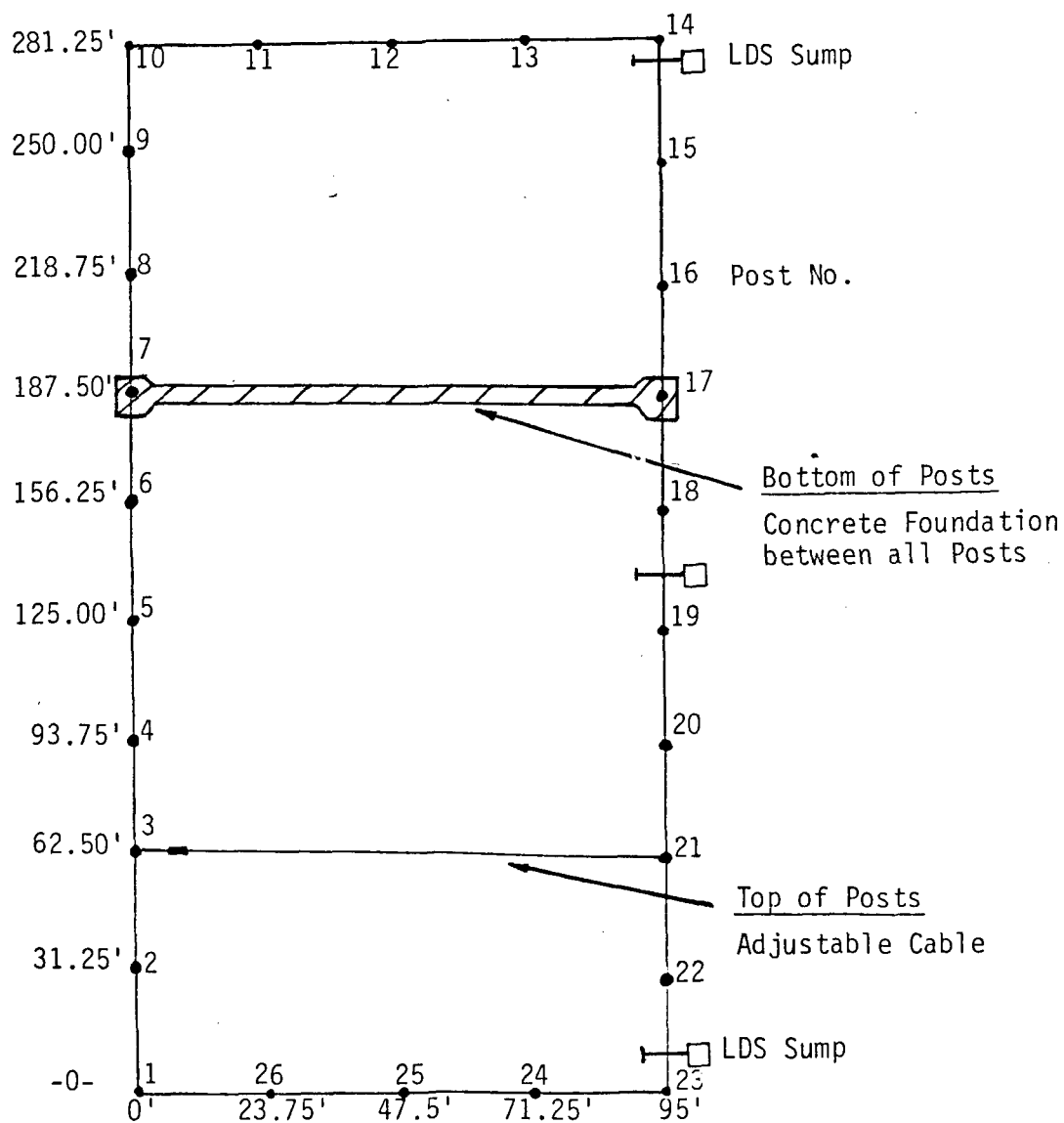
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 1

EVAPORATION TANK

TOP VIEW



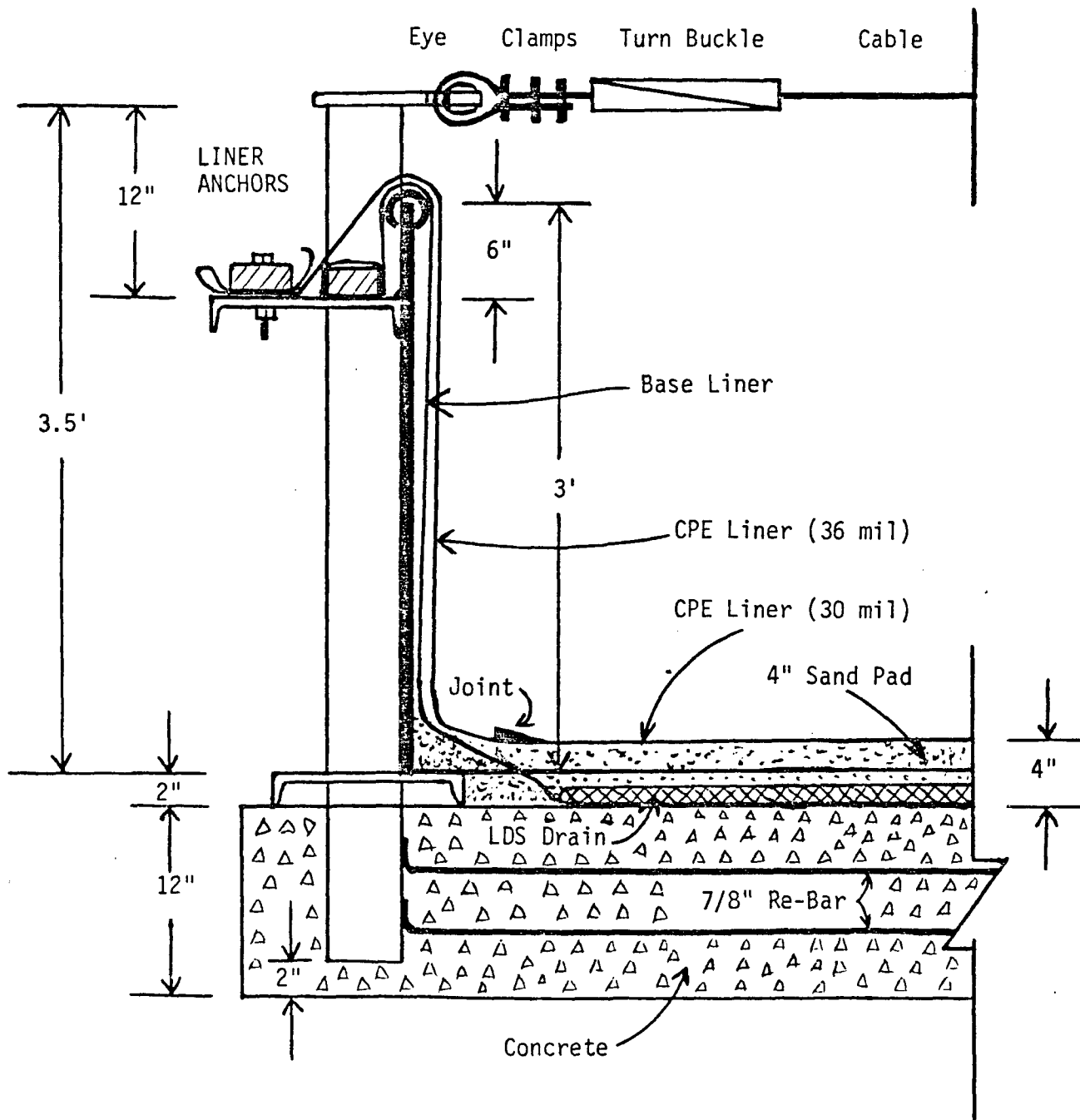
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 2

EVAPORATION TANK

ANCHOR POST - SIDE VIEW



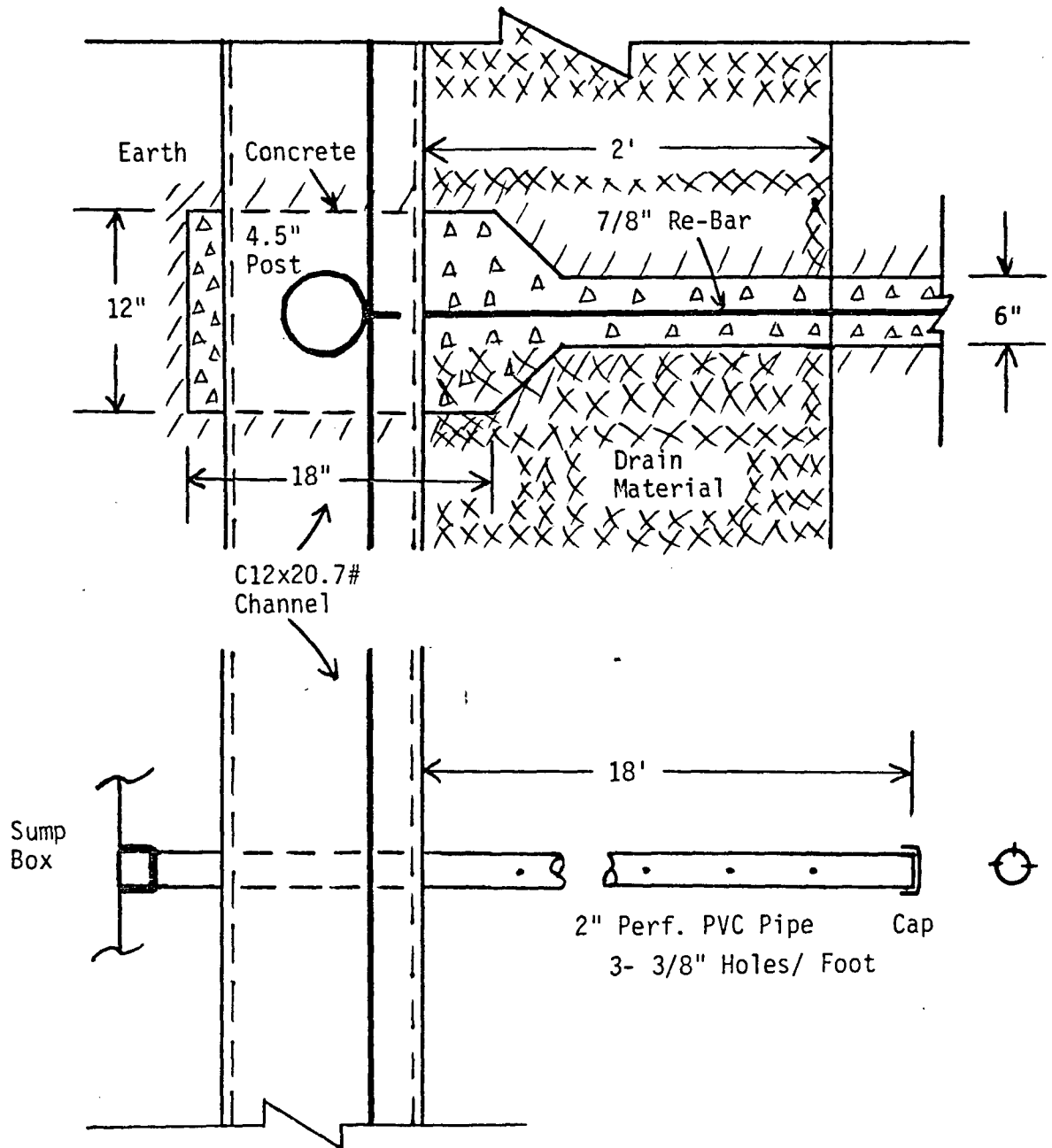
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 3

EVAPORATION TANK

ANCHOR POST - TOP VIEW



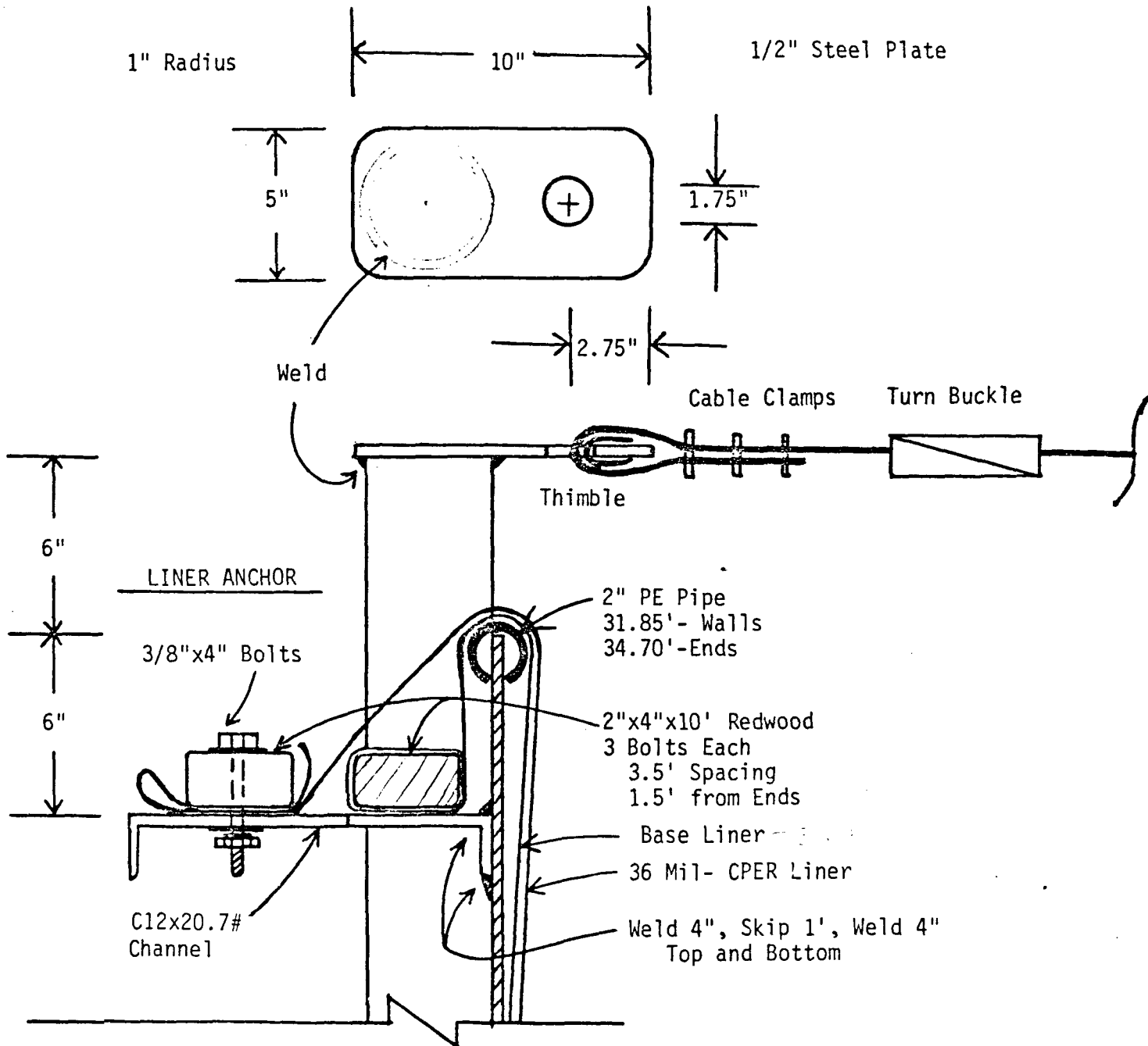
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 4

EVAPORATION TANK

BRACE PLATE AND SUPPORT POST - LINER ANCHOR



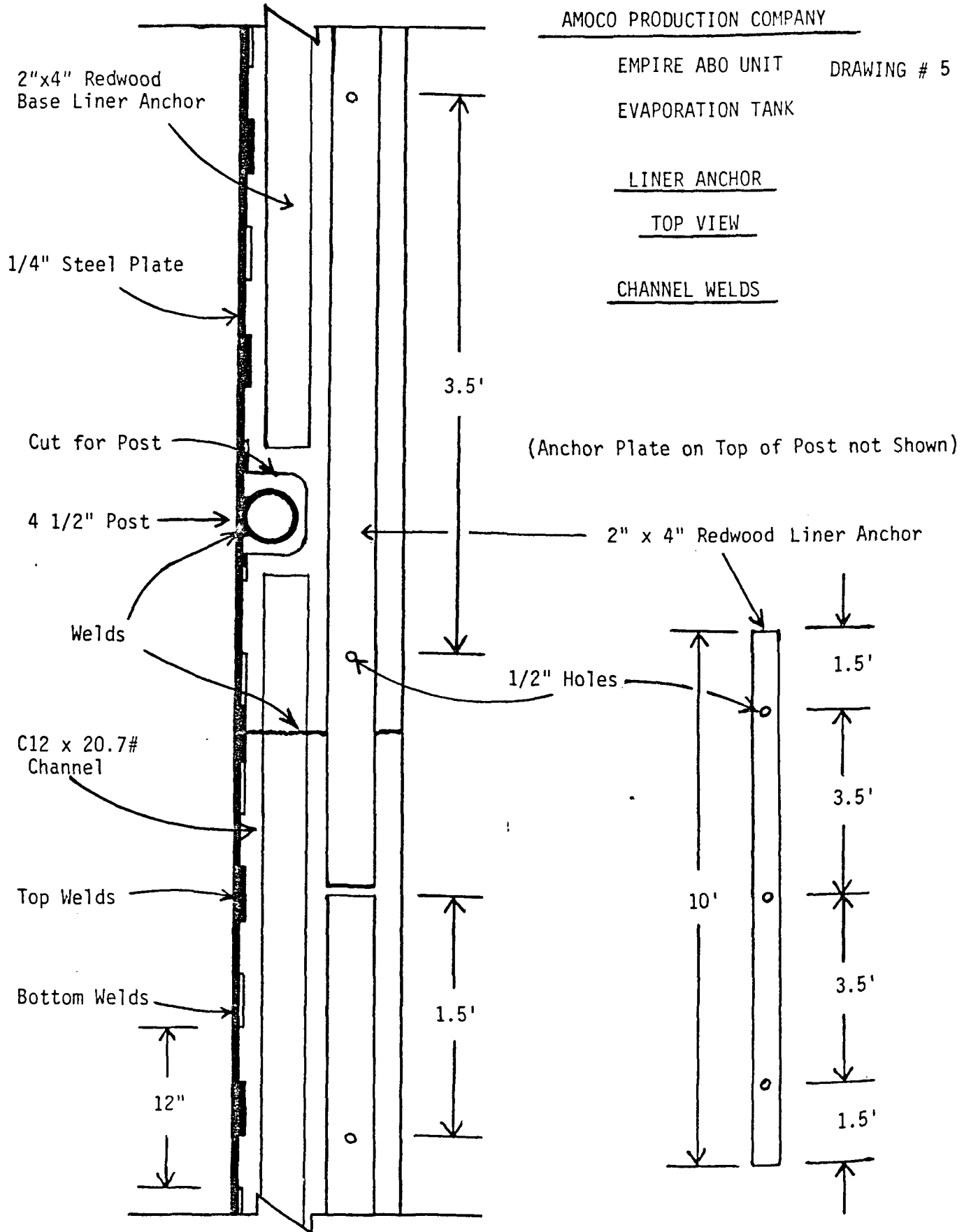
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT DRAWING # 5
EVAPORATION TANK

LINER ANCHOR

TOP VIEW

CHANNEL WELDS



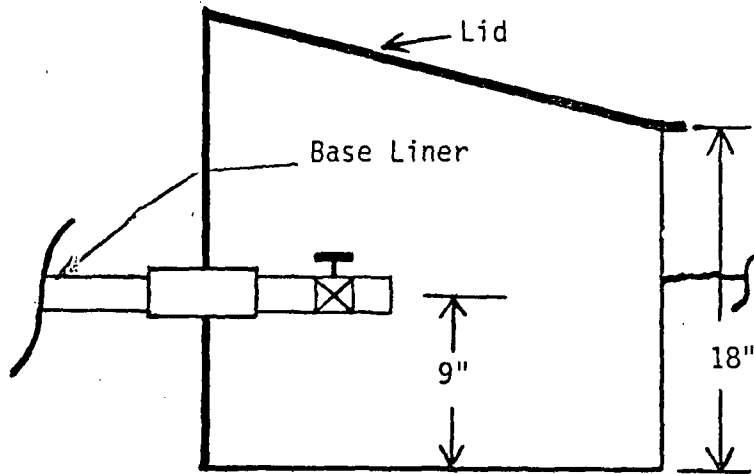
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

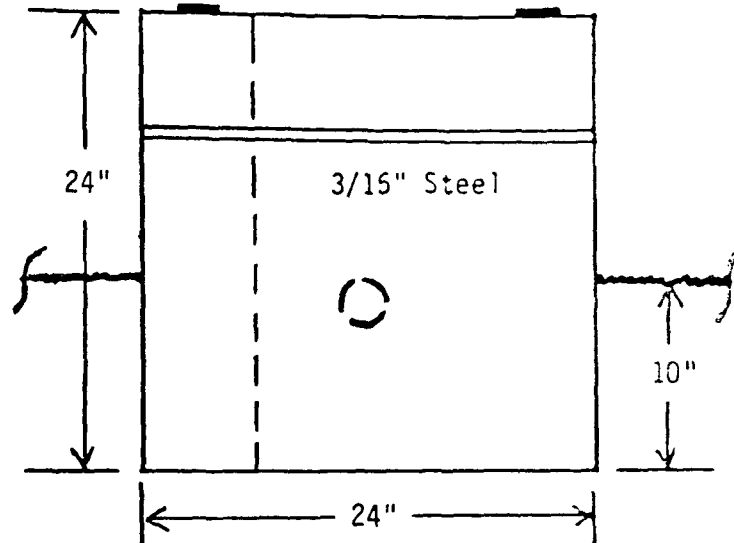
DRAWING # 6

EVAPORATION TANK

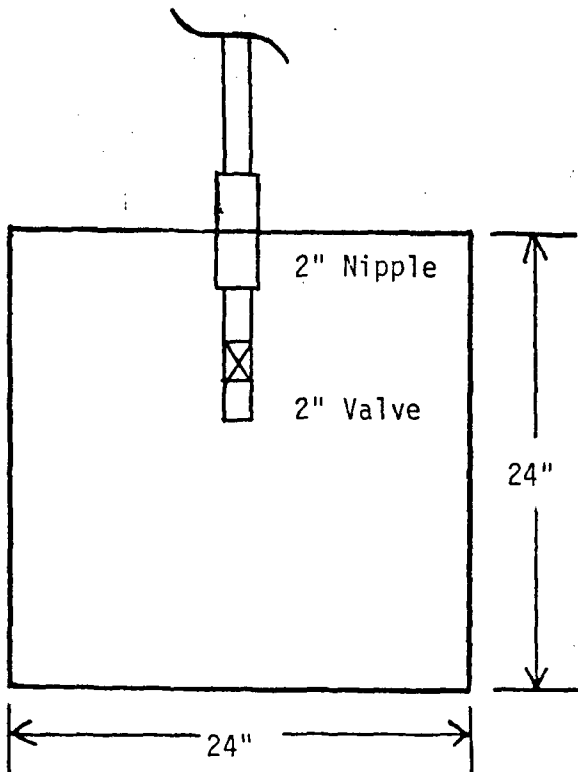
SIDE



FRONT



TOP VIEW



PIPE DETAIL:

See Drawing # 3

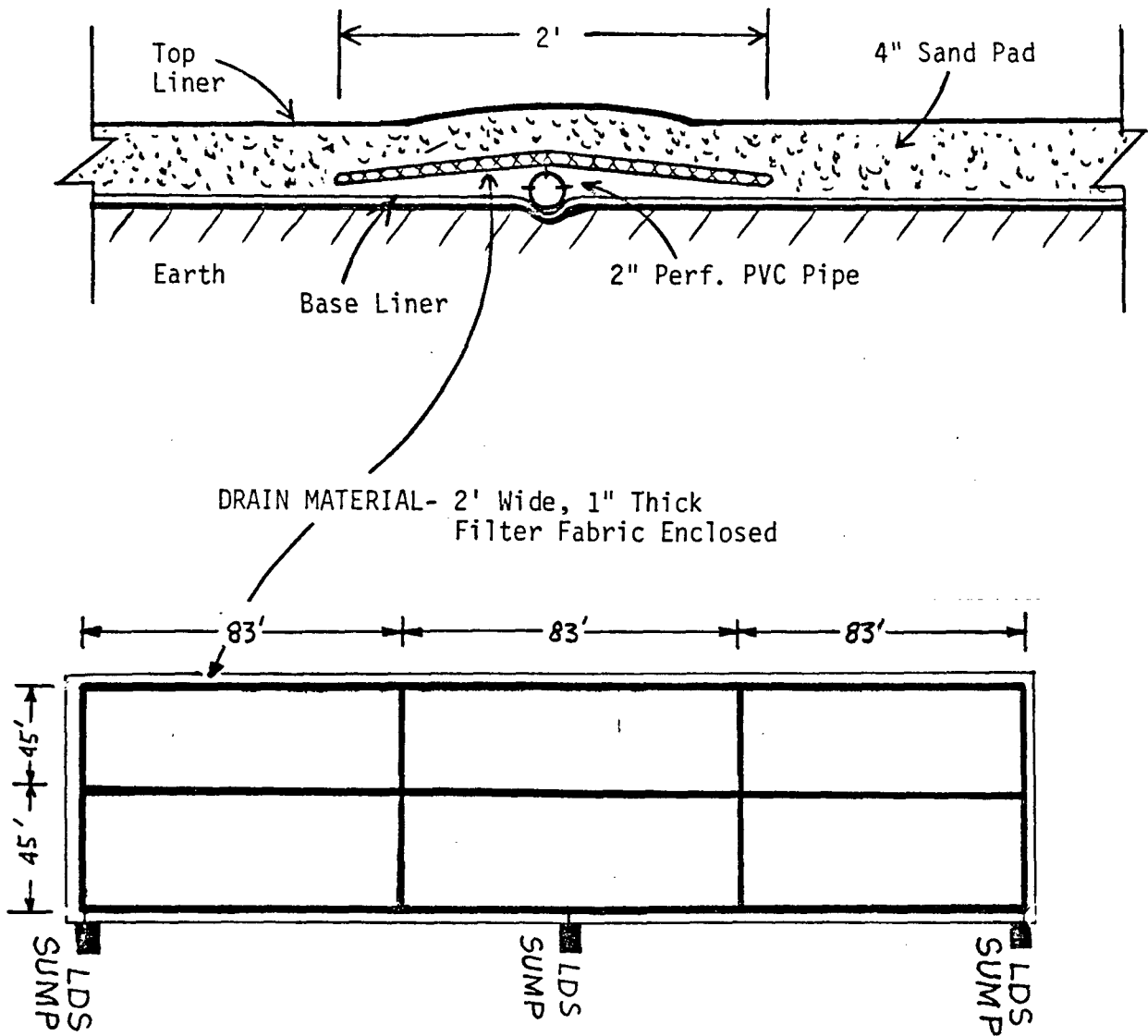
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 7

EVAPORATION TANK

LEAK DETECTION SYSTEM





Boyer
Workcopy
0125
267

Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

August 22, 1984

File: LRS-346-716xER

Re: Proposed Discharge Plan
Empire Abo Gasoline Plant
Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: Joe D. Ramey
Director

Attached for your review and approval is the proposed discharge plan you requested for the Amoco Production Company operated Empire Abo Gasoline Plant (Section 3, Township 18 South, Range 27 East). The discharge plan was prepared in accordance with Part 3 of Water Quality Control Commission Regulation 82-1 and covers all effluent discharges by the Plant.

We have revised the design of the evaporation pond per Dave Boyer's comments in your August 6, 1984 correspondence granting Amoco a 90-day extension to submit a discharge plan. The new pond design can be found as Figure 7 in the proposed discharge plan. We request you expedite the review of the evaporation pond design so we can begin construction of the pond.

Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

L. R. Smith

DSD/kih
EAUT04-D

Attachments

cc: J. R. Barnett

393-1701

-0234/construct

PROPOSED DISCHARGE PLAN FOR AMOCO PRODUCTION COMPANY
EMPIRE ABO GASOLINE PLANT

I. Introduction

This document describes a proposed discharge plan (the Plan) pertaining to Amoco Production Company (Amoco), Empire Abo Gasoline Plant (EAGP or sometimes, the Plant), located in Section 3, T-18-S, R-27-E in Eddy County, New Mexico. The purpose of this Plan is to meet the requirements of Water Quality Commission regulation WQCC 82-1, which are designed to ensure the water quality in the area will not be degraded.

The Plan is presented in Section III of this document and has been formatted to respond directly to Part 3 of the New Mexico Water Quality Control Commissions regulation WQCC 82-1. Each regulation has been reproduced and underlined for reference with the following response answering the specific information requirement of the regulation.

II. Summary

The Empire Abo Gasoline Plant is composed of compression, treating and product extraction facilities. Steam generation and water cooling are used extensively as part of this operation, utilizing water obtained from the City of Carlsbad, N.M. water supply. The liquid effluent streams from certain plant facilities are currently trucked out of the plant for disposal in a New Mexico Oil Conservation Division (NMOCD) approved salt water disposal well (NMOCD Order No. R-6811B).

Amoco is in the process of installing an effluent desalination unit for the EAGP that will recycle 75% of the utility system discharge. Upon installation in November, 1984, the unit will desalinate cooling tower water for re-use as boilerfeed water. Reject water from the desalination unit will be evaporated in a pond to be constructed on the plant site. When operational, this water treatment facility will reduce the utility system effluent discharge to zero.

This proposed discharge plan demonstrates that any wastewater generated at the EAGP will be disposed of by membrane desalination, evaporation, or injection, before such water has the opportunity to reach New Mexico surface waters or ground waters, and thereby removes the threat of any ion concentrations or toxic pollutants from entering the New Mexico ground water or surface water system.

III. The Proposed Discharge Plan

The following Proposed Discharge Plan is formatted to respond directly to Water Quality Control Commission Regulation 3-106. The response to each regulation follows the listing of the regulation.

3-106. APPLICATION FOR DISCHARGE PLAN APPROVAL.

- C. A proposed discharge plan shall set forth in detail the methods or techniques the discharger proposes to use or processes expected to naturally occur which; will ensure compliance with these regulations. At least the following information shall be included in the plan:

1. Quantity, quality and flow characteristics of the discharge;

There are two types of effluent from the EAGR which are best described as process effluent and utilities system effluent.

Process effluent includes water made during compression of water saturated inlet gas, water drained from the closed loop gas compressor cooling systems, and any spent chemicals from the plant's sweetening systems. The quantity of the process effluent averages 2,000 gallons per day. This volume can increase to 2,500 gallons per day when major repairs to a compressor or its cooling system takes place. The utility system effluent is boiler and cooling tower blowdown. All the utility system effluent is from the Plant's cooling tower blowdown water that averages 28,000 gallons per day.

Figure 1 is a water schematic for the Empire Abo Gasoline Plant, which illustrates the paths of the two effluent systems. The waste characteristics of these two streams are shown in Table 1.

Samples of the Plant's two effluent streams were collected and analyzed in accordance with EPA test methods. Chemical analyses of the two waters are shown in Table 2. These analyses when compared to water samples collected over the past two years indicate these water samples are truly characteristic of the effluent generated by the Plant. The supporting samples are included as Attachment A of this document.

2. Location of the discharge and of any bodies of water, watercourses and groundwater discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;

The Empire Abo Plant is located in Sec. 3, T-18-S, R-27-E, in Eddy County, New Mexico. A survey of the plant site is attached as Figure 2.

The discharge is from within the plant fence, as indicated by the arrow point away from the storage tank area in Figure 1.

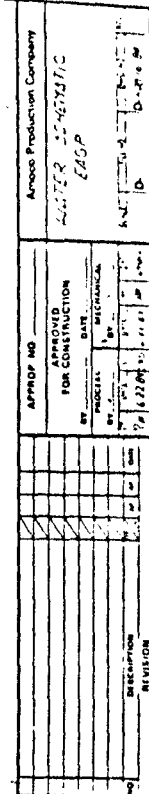


Figure 1

Table 1
Characteristics of Effluent Streams
Empire Abo Gasoline Plant

| Source | Primary Effluent | Estimated Flow (GPD) | Material Added | Additives to Stream | Name of Additive |
|---------------------------|--------------------------|----------------------|---|---------------------|---|
| <u>Process System</u> | | | | | |
| 1. Separators | Water/H.C. Liquids | 1,500 | None | | ----- |
| 2. Drains | Oily Water/Caustic Amine | 300 | a) Soda Ash | | Organic Removal and Amine Solution |
| 3. Engine Cooling Systems | Water/Oil/H.C. Liquids | 200 | a) "Hercules 5580" | | Corrosion Inhibitor |
| <u>Utility System</u> | | | | | |
| 1. Boiler/Condensate | Low TDS Water | 5,000 | a) "Hercules 3430" | | Oxygen Scavenger |
| 2. Cooling Tower | High TDS Water | 28,000 | b) "Hercules 3545" c) "Hercules MB 103" d) "Hercules MB 128" e) Chlorine f) Caustic g) Sulfuric acid | | Corrosion Inhibitor Scale Inhibitor Scale Inhibitor Scale Inhibitor Scale Inhibitor Scale Inhibitor Scale Inhibitor |

DSD/kih
EAUT04-D

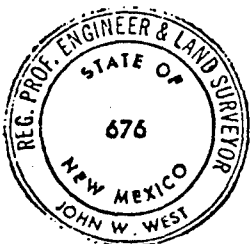
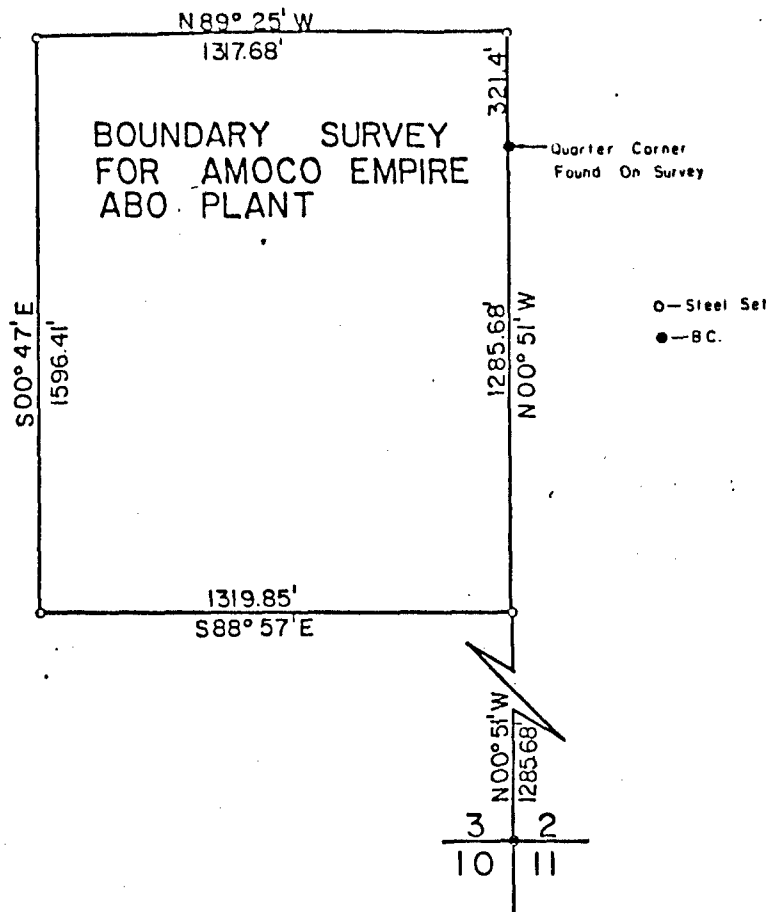
Table 2
Water Analyses of Process and Utility Systems Effluent
Result Reported In Milligrams Per Liter (Mg/L)

| | Process Water | Utilities Water |
|--|---------------|-----------------|
| Specific Gravity @ 60°F | 1.0031 | 1.0033 |
| pH | 8.9 | 6.2 |
| Carbonate as CO ₃ | 264 | 0 |
| Bicarbonate as HCO ₃ | 390 | 18 |
| Total Hardness as CaCO ₃ | 21 | 845 |
| Calcium as Ca | 4 | 250 |
| Magnesium as Mg | 3 | 53 |
| Sodium and/or Potassium as ion | 448 | 118 |
| Sulfate as SO ₄ | 23 | 755 |
| Chloride as Cl | 149 | 213 |
| Iron as Fe | 1.1 | 0.86 |
| Barium as Ba | 0 | 0 |
| Turbidity, Electric | 21 | 1 |
| Color as Pt | 48 | 2 |
| Total Solids, Calculated | 1,281 | 1,408 |
| Temperature °F | 82 | 70 |
| Carbon Dioxide, Calculated | 2 | 20 |
| Aluminum as Al | 0.03 | 0.03 |
| Ammonia as N | 27.8 | 0.0 |
| Arsenic as As | 0.009 | 0.006 |
| B.O.D. - 5 day | 243 | 0.0 |
| C.O.D. | 825 | 7.63 |
| Benzene ₁ | 0.0 | 0.0 |
| Boron as B | 0.0 | 0.0 |
| Bromide as Br | 0.0 | 0.0 |
| Cadmium as Cd | 0.0 | 0.0 |
| Carbon Tetrachloride ₁ | 0.0 | 0.0 |
| Chromium as Cr | | |
| Total | 0.0 | 0.0 |
| Hexavalent | 0.0 | 0.0 |
| Copper as Cu | 0.0 | 0.0 |
| Cyanide as CN | 0.0 | 0.0 |
| Fluoride as F | 0.8 | 4.5 |
| Lead as Pb | 0.0 | 0.0 |
| Manganese as MN | 0.0 | 0.0 |
| Mercury as Hg | 0.004 | 0.0007 |
| Nickel as Ni | 0.0 | 0.0 |
| Nitrate as N | 0.45 | 18.2 |
| Nitrite as N | 0.21 | 0.02 |
| Kjeldahl Nitrogen Total as N | 27.96 | 0.0 |
| Organic Nitrogen as N | 0.16 | 0.0 |
| Oil and Grease | 9.2 | 0.0 |
| Phenols | 1.39 | 0.0 |
| Phosphate as PO ₄ | 0.4 | 29.6 |
| Polychlorinated Biphenols ₁ | 0.0 | 0.0 |
| Selenium as Se | 0.0 | 0.0 |
| Silver as Ag | 0.0 | 0.0 |
| Sulfite as SO ₃ | 0.0 | 0.0 |
| Surfactant (detergent) | 0.1 | 0.0 |
| Toluene ₁ | 0.0 | 0.0 |
| Uranium ₁ | 0.0 | 0.0 |
| Zinc as Zn | 0.0 | 0.0 |
| Total Solids @ 103-105°C | 62.0 | 1,918 |
| Total Dissolved Solids @ 180° C | 590 | 1,838 |
| Total Suspended Solids @ 103-105° C | 17 | 11 |
| Radioactivity ₁ | -- | -- |

1. No tests were run for the presence of these items since they are not used by any of the EAGP systems.

DSD/kih
EAUT04-D

Figure 2



I HEREBY CERTIFY THAT THIS PLAT WAS
MADE FROM NOTES TAKEN IN THE FIELD IN
A BONA FIDE SURVEY MADE UNDER MY SUPER-
VISION, AND THAT THE SAME IS TRUE AND
CORRECT TO THE BEST OF MY KNOWLEDGE
AND BELIEF.

John W. West
JOHN W. WEST, N.M. P.E. & L.S. NO 676
TEXAS R.P.S. NO. 1138
RONALD J. EIDSON, N.M. L.S. NO 3239
TEXAS R.P.S. NO 1883

AMOCO PRODUCTION CO.

Boundary Survey for Empire Abo Plant in Section 3,
Township 18 South, Range 27 East, Eddy County, New
Mexico.

JOHN W. WEST ENGINEERING COMPANY
CONSULTING ENGINEERS HOBBS, NEW MEXICO
Scale: 1" = 400' Drawn by: EWR
Date: December 9, 1970 Sheet 1 of 1 Sheets

There is no body of water or groundwater discharge site within one mile of the plant site. There are two draws in the area; Scoggin and Chalk Bluff Draws. Both are ephemeral washes. Figures 3A, 3B and 3C are U.S. Geological Survey Quadrangle maps of the Plant site and the draws are highlighted.

3. Depth to and TDS concentration of the ground water most likely to be affected by the discharge;

The Plant is located in an area overlain by clastic and sedimentary rocks of Permian and younger age. The area has been characterized by G. E. Welder, (1983), as a Tansill and younger undivided formation, and is underlain by the Yates formation.

There are two aquifers to be considered when evaluating the effect of discharges on the Tansill formation. The most likely to be affected is the shallow aquifer of the Roswell basin contained in the Seven Rivers formation (six hundred feet below the top of the Tansill formation); secondarily the deeper underlying artesian aquifer of the Roswell basin contained in the undivided Queen - Grayburg formations (1200 feet below the top of the Tansill formation) may be affected. It is unlikely either of these aquifers will be affected by the discharge since the east end of the aquifers are considered "no-flow" boundaries due to low permeability of the formations.

The quality of the water from these aquifers range from 3300 ppm TDS in the shallow to 1600 ppm TDS in the Artesia aquifer.

artesian?

4. Flooding potential of the site;

The plant is located in an area of little relief (see Figure 4A and 4B) bordered to the south and west by Scoggin Draw. Scoggin Draw is an ephemeral wash that will flow during heavy summer thunderstorms. Most precipitation on the plant site quickly soaks into the soil or evaporates with any runoff flowing down the draw. Flooding potential is extremely low, based on the largest calculated values for a 100-year, 24-hour storm of 5.0 inches (See Table 3) and the draw's excellent drainage for the area.

5. Location and design of site(s) and method(s) to be available for sampling, and for measurement or calculation of flow;

Water from the process drains will be contained in two 200 hundred barrel tanks located on the plant site, as shown as storage tanks on Figure 1. These tanks serve as holding vessels for said water. Figure 5 is a schematic

3 Process drains pressurized
or gravity? above or below
ground

Table 3
PRECIPITATION DATA FOR
EMPIRE ABO GASOLINE PLANT
(inches)

| RECURRENCE | <u>STORM DURATION (Hours)</u> | |
|----------------|-------------------------------|-----------|
| INTERVAL | | |
| <u>(Years)</u> | <u>6</u> | <u>24</u> |
| 2 | 1.6" | 2.0" |
| 5 | 2.2" | 2.7" |
| 10 | 2.6" | 3.2" |
| 25 | 3.2" | 4.0" |
| 50 | 3.6" | 4.4" |
| 100 | 4.1" | 5.0" |

Data compiled from "Precipitation Frequency Atlas of the Western United States" Volume IV - New Mexico

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of the Plant process drain system showing all drain lines and sumps currently in use. A drawing of the tank design is attached as Figure 6. Valves on the tank are provided for sampling. Flow measurement into the tank will be by plant operation personnel three times per day (once per 8 hour shift), with an API approved tank gauging device. This water is currently and will continue to be trucked out for disposal by an approved water disposal company.

Where
Located
on figure
5

The utility system blowdown effluent will be desalinated in an Electrodialysis Reversal Unit (EDR) for use as boilerfeed water. The reject water from the EDR will be sent to an evaporation pond located in the plant site. The surface area required by the pond for disposal was calculated from yearly evaporation rates for nearby Lake McMillan and provides 60 days water storage. The pond and foundation are designed in accordance with NMOCD specifications for the design and construction of lined evaporation pits, and will be constructed of materials compatible with the industrial environment of the EAGP. Figure 7 shows the detailed design of the evaporation pond and leak detection system.

Flow into the pond will be measured by a suitable measurement system, such as an orifice plate and differential pressure meter with chart recorder. Valving near the meter station will allow sampling of the water.

How often
checked
leak
detection
system
?

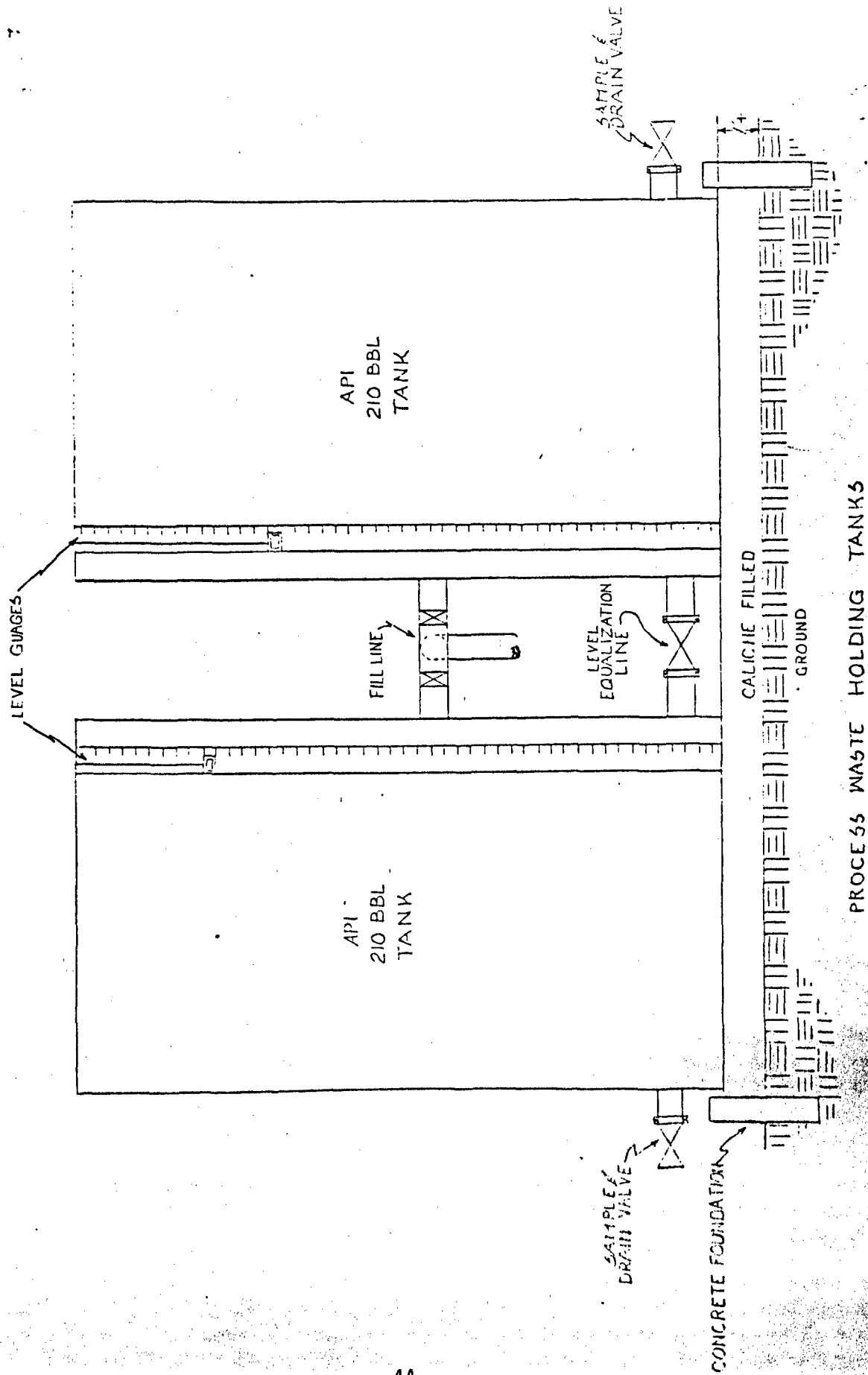
Water level in the pond will be monitored, and should water accumulation result in a high level, the water will be trucked out for disposal by an approved water disposal company. Any accumulation of solids in the evaporation pond will be evaluated and removed as needed. Disposal will be in an acceptable manner in an approved landfill.

6. Depth to and lithological description of rock at base of alluvium below the discharge site if such information is available;

The Plant site east of the Pecos River alluvium is underlined by the Yates Formation of Permian time. The top of the Yates occurs between two and three hundred feet below the plant and is approximately 400 to 500 feet thick.

7. Any additional information that may be necessary to demonstrate that approval of the discharge plan will not result in concentrations in excess of the standards of Section 3-103 or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use. Detailed information on site geologic and hydrologic conditions may be required for a technical evaluation of the applicant's proposed discharge plan;

FIGURE 6



The proposed discharge plan demonstrates the methods Amoco will use for disposal of effluent generated by the EAGP. Any leaks from the containment vessels or evaporation pond will be analyzed to determine the source and should equipment repairs be required, the water will be trucked out for disposal until repairs are completed. The information provided in the Plan, in our opinion, demonstrates that there will be no concentration in excess of the standards of acceptable ions in the regulations; nor will any toxic pollutants be introduced. By installing desalination facilities to process utility system effluent, and by either evaporation or injection of the process effluent, Amoco will remove the opportunity for the EAGP to contaminate the surface waters or ground waters of the State of New Mexico.

Detailed information on site geologic and hydrologic condition of the plant area is readily available in Geohydrologic Framework of the Roswell Ground-water Basin, Chaves and Eddy Counties, New Mexico by G.E. Welder. This document is enclosed as Attachment B of this document.

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4. Hudson, J. D. and Borton, R. L., Ground-Water Levels in New Mexico, 1978-1980, New Mexico State Engineer, Santa Fe, NM, 1980.
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6. Miller, J. F., R. H. Frederick, and R. J. Tracey, NOAA Atlas 2, Precipitation-Frequency Atlas of the Western United States, Volume IV - New Mexico, U. S. Department of Commerce, National Weather Service, MD, 1973.
7. New Mexico Geological Society, Guidebook of Southeastern New Mexico, Fifth Field Conference, New Mexico Bureau of Mines and Mineral Resources, Socorro, NM, 1954.
8. New Mexico Oil Conservation Commission, Specifications for the Design and Construction of Lined Evaporation Pits, New Mexico Oil Conservation Commission, State Land Office Building, Santa Fe, NM, No date.
9. Reynolds, S. E., Climatological Summary New Mexico, Technical Report No. 5, New Mexico State Engineer, Santa Fe, NM, 1956.
10. Welder, G. E., Geohydrologic Framework of the Roswell Ground-Water Basin, Chaves and Eddy Counties, New Mexico, Technical Report 42, New Mexico State Engineer, Santa Fe, NM, 1983.
11. Wright, J. I., Contamination of Fresh Ground-Water Supplies in Southeastern New Mexico, New Mexico State Engineer, Roswell, NM, 1979.
12. Wright, J. I., Quality of Water in Southeastern New Mexico, New Mexico State Engineer, Roswell, NM, 1979.

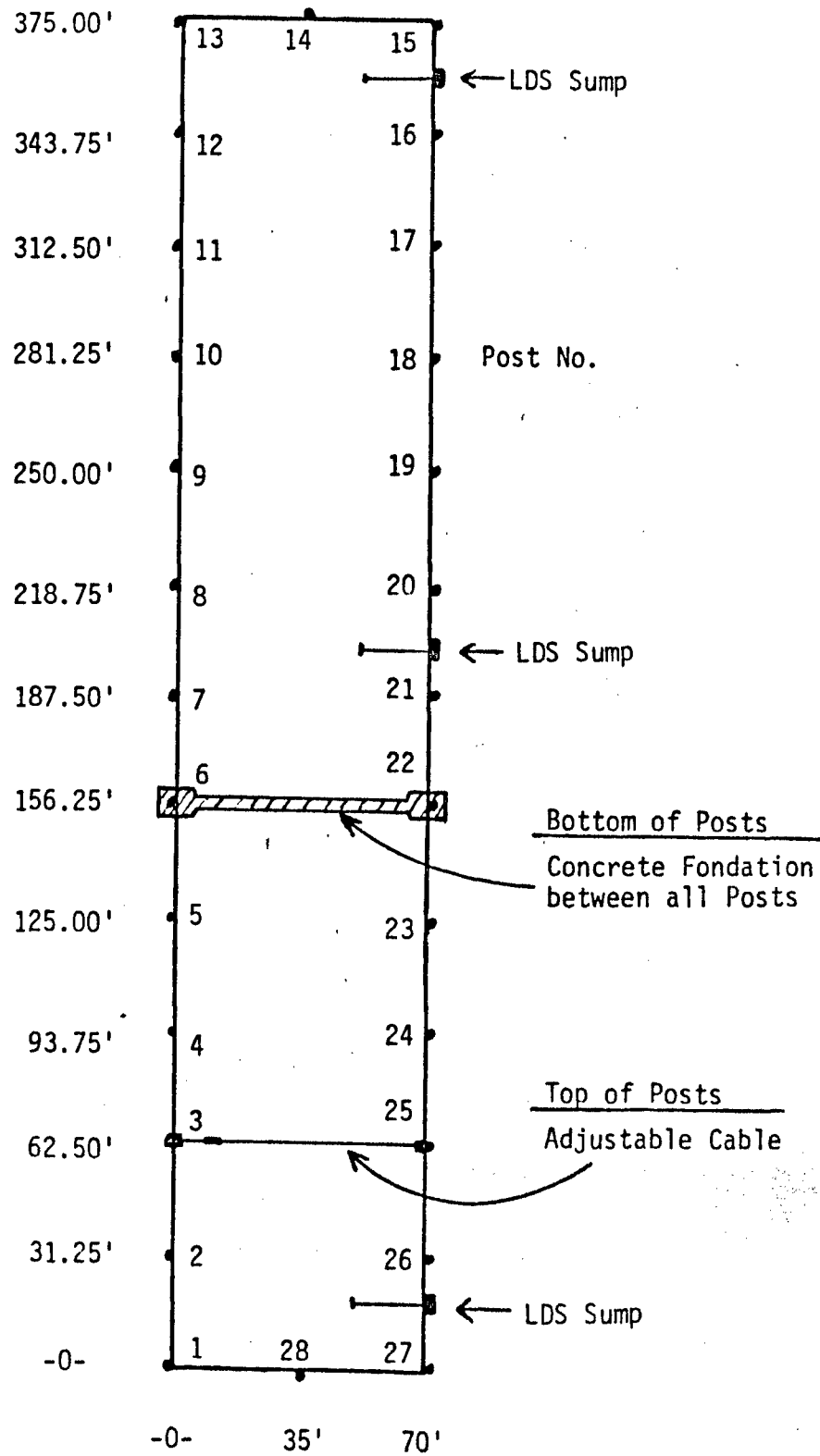
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

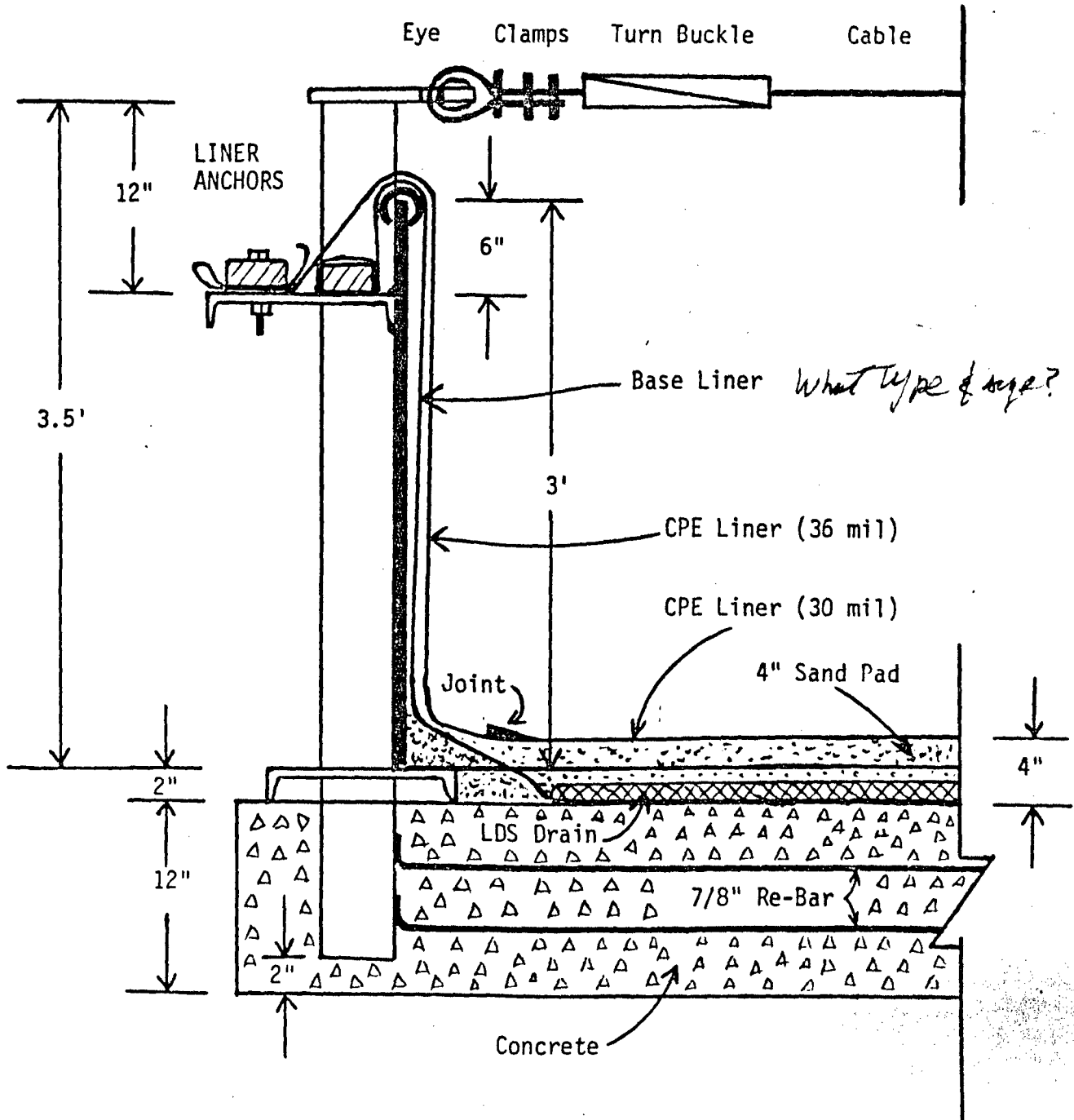
DRAWING # 1

EVAPORATION TANK

TOP VIEW



ANCHOR POST - SIDE VIEW



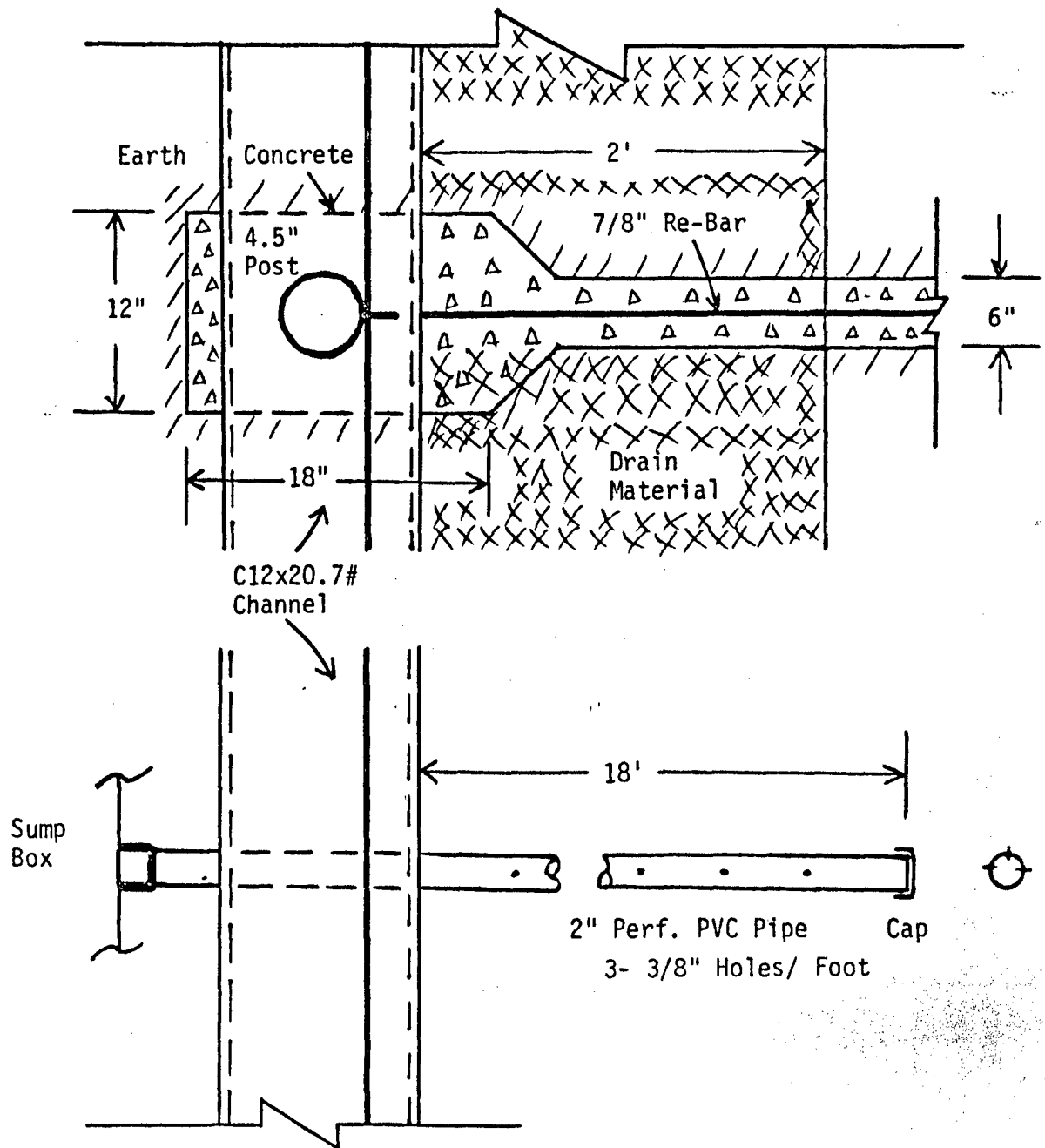
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 3

EVAPORATION TANK

ANCHOR POST - TOP VIEW



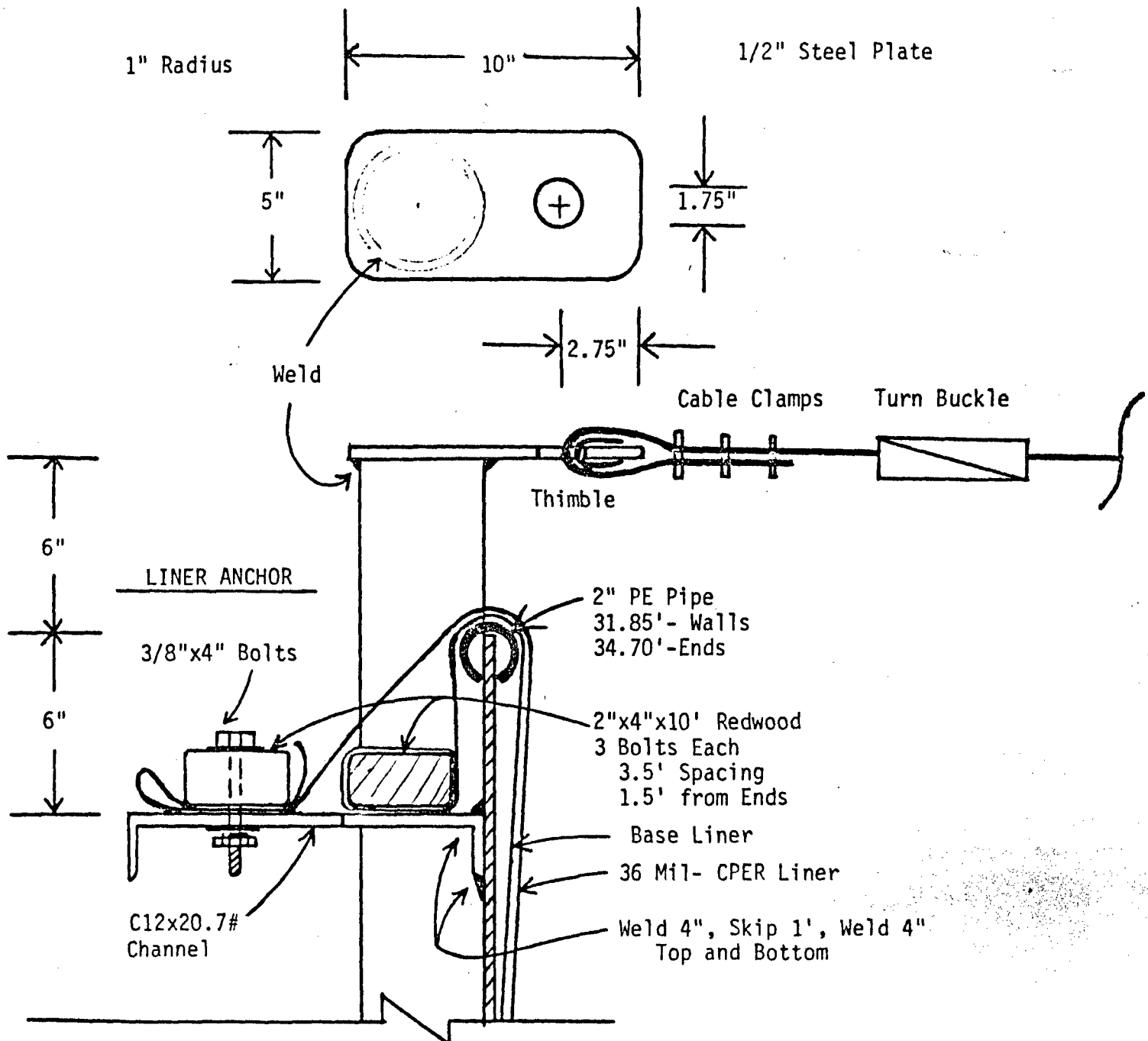
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 4

EVAPORATION TANK

BRACE PLATE AND SUPPORT POST - LINER ANCHOR



LINER ANCHOR

TOP VIEW

CHANNEL WELDS

2"x4" Redwood
Base Liner Anchor

1/4" Steel Plate

Cut for Post

4 1/2" Post

Welds

C12 x 20.7#
Channel

Top Welds

Bottom Welds

12"

3.5'

(Anchor Plate on Top of Post not Shown)

2" x 4" Redwood Liner Anchor

1/2" Holes

1.5'

3.5'

10'

1.5'

3.5'

1.5'

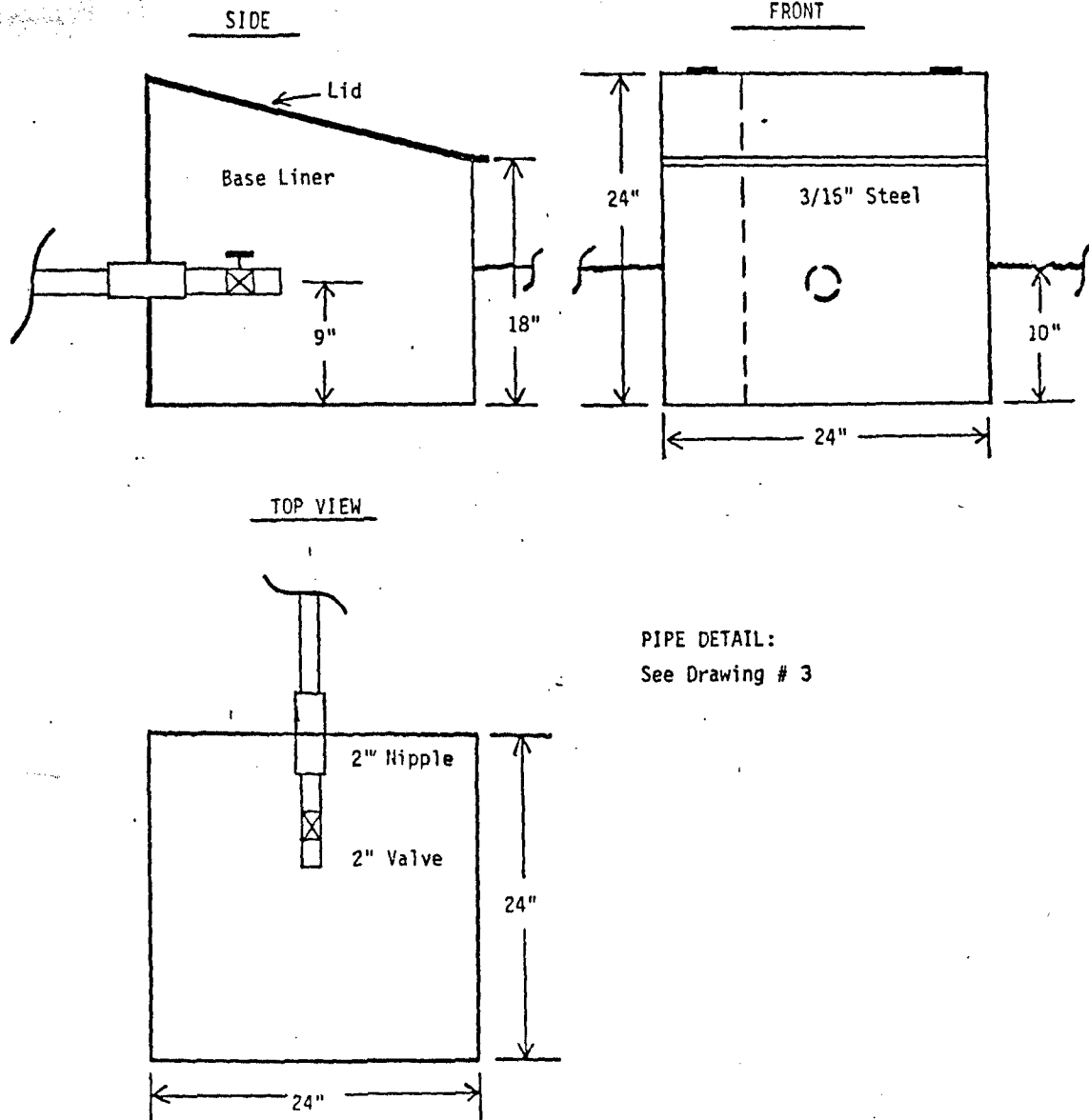
*inside tank or outside
? Reinforced How do you keep from tearing liner
How do you seal PVC base
liner when PVC pipes stuck thru.*

AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 6

EVAPORATION TANK



PIPE DETAIL:
See Drawing # 3

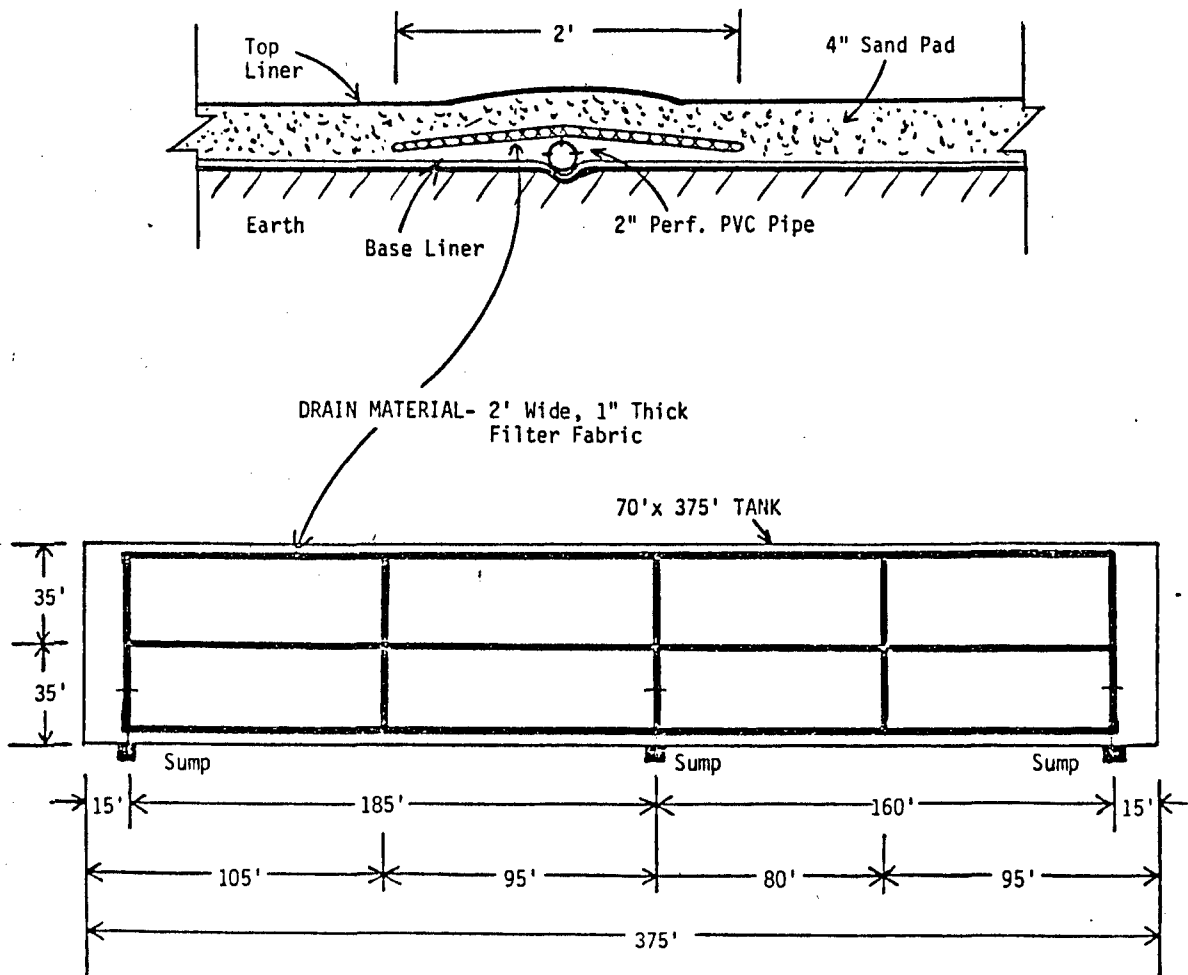
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 7

EVAPORATION TANK

LEAK DETECTION SYSTEM





Amoco Production Company

Post Office Box 68
Hobbs, New Mexico 88240

L. R. Smith
District Manager

August 22, 1984

File: LRS-346-716xER

Re: Proposed Discharge Plan
Empire Abo Gasoline Plant
Eddy County, New Mexico

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

Attention: Joe D. Ramey
Director

Attached for your review and approval is the proposed discharge plan you requested for the Amoco Production Company operated Empire Abo Gasoline Plant (Section 3, Township 18 South, Range 27 East). The discharge plan was prepared in accordance with Part 3 of Water Quality Control Commission Regulation 82-1 and covers all effluent discharges by the Plant.

We have revised the design of the evaporation pond per Dave Boyer's comments in your August 6, 1984 correspondence granting Amoco a 90-day extension to submit a discharge plan. The new pond design can be found as Figure 7 in the proposed discharge plan. We request you expedite the review of the evaporation pond design so we can begin construction of the pond.

Should you require any further information on this matter, contact Doug Dailey or Steve Reddick in the Hobbs District Office.

L. R. Smith

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EAUT04-D

Attachments

cc: J. R. Barnett

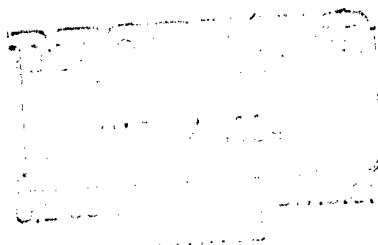


TABLE OF CONTENTS

| | <u>Page No.</u> |
|---|-----------------|
| List of Figures | ii |
| List of Tables | iii |
| I. Introduction | 1 |
| II. Summary | 1 |
| III. The Proposed Discharge Plan | |
| 3-106: C (1) Quantity, Quality and Flow Characteristics of the Discharge | 2 |
| (2) Location of Water Bodies and Existing or Proposed Wells | 2 |
| (3) Depth to and TDS of Ground-water Most Likely Affected by Discharge | 3 |
| (4) Flooding Potential of Site | 3 |
| (5) Location and Design of Site and Methods for Sampling and Measurement or Calculation of Flow | 3 |
| (6) Depth to and Lithological Description of Rock at Base of Alluvium Below the Discharge Site | 4 |
| (7) Additional Information | 4 |
| Bibliography | 6 |
| Appendices | 7 |

FIGURES

| <u>Figure</u> | <u>Page</u> |
|---------------------------------------|-------------|
| 1. Water Schematic EAGP | 2A |
| 2. Boundary Survey for the EAGP | 2D |
| 3. USGS Topographic Maps of EAGP Site | 3A |
| 4. Relief Map of EAGP Plant Area | 3B |
| 5. Plant Drain System Schematic | 3D |
| 6. Holding Tank Design | 4A |
| 7. Evaporation Tank Design | 4B |

TABLES

| <u>Table</u> | <u>Page</u> |
|---|-------------|
| 1. Characteristics of Effluent Streams | 2B |
| 2. Water Analyses of Effluent Streams | 2C |
| 3. Precipitation Data for Empire Abo Gasoline Plant | 3C |

PROPOSED DISCHARGE PLAN FOR AMOCO PRODUCTION COMPANY
EMPIRE ABO GASOLINE PLANT

I. Introduction

This document describes a proposed discharge plan (the Plan) pertaining to Amoco Production Company (Amoco), Empire Abo Gasoline Plant (EAGP or sometimes, the Plant), located in Section 3, T-18-S, R-27-E in Eddy County, New Mexico. The purpose of this Plan is to meet the requirements of Water Quality Commission regulation WQCC 82-1, which are designed to ensure the water quality in the area will not be degraded.

The Plan is presented in Section III of this document and has been formatted to respond directly to Part 3 of the New Mexico Water Quality Control Commissions regulation WQCC 82-1. Each regulation has been reproduced and underlined for reference with the following response answering the specific information requirement of the regulation.

II. Summary

The Empire Abo Gasoline Plant is composed of compression, treating and product extraction facilities. Steam generation and water cooling are used extensively as part of this operation, utilizing water obtained from the City of Carlsbad, N.M. water supply. The liquid effluent streams from certain plant facilities are currently trucked out of the plant for disposal in a New Mexico Oil Conservation Division (NMOCD) approved salt water disposal well (NMOCD Order No. R-6811B).

Amoco is in the process of installing an effluent desalination unit for the EAGP that will recycle 75% of the utility system discharge. Upon installation in November, 1984, the unit will desalinate cooling tower water for re-use as boilerfeed water. Reject water from the desalination unit will be evaporated in a pond to be constructed on the plant site. When operational, this water treatment facility will reduce the utility system effluent discharge to zero.

This proposed discharge plan demonstrates that any wastewater generated at the EAGP will be disposed of by membrane desalination, evaporation, or injection, before such water has the opportunity to reach New Mexico surface waters or ground waters, and thereby removes the threat of any ion concentrations or toxic pollutants from entering the New Mexico ground water or surface water system.

III. The Proposed Discharge Plan

The following Proposed Discharge Plan is formatted to respond directly to Water Quality Control Commission Regulation 3-106. The response to each regulation follows the listing of the regulation.

3-106. APPLICATION FOR DISCHARGE PLAN APPROVAL.

- C. A proposed discharge plan shall set forth in detail the methods or techniques the discharger proposes to use or processes expected to naturally occur which; will ensure compliance with these regulations. At least the following information shall be included in the plan:

1. Quantity, quality and flow characteristics of the discharge;

There are two types of effluent from the EAGP which are best described as process effluent and utilities system effluent.

Process effluent includes water made during compression of water saturated inlet gas, water drained from the closed loop gas compressor cooling systems, and any spent chemicals from the plant's sweetening systems. The quantity of the process effluent averages 2,000 gallons per day. This volume can increase to 2,500 gallons per day when major repairs to a compressor or its cooling system takes place. The utility system effluent is boiler and cooling tower blowdown. All the utility system effluent is from the Plant's cooling tower blowdown water that averages 28,000 gallons per day.

Figure 1 is a water schematic for the Empire Abo Gasoline Plant, which illustrates the paths of the two effluent systems. The waste characteristics of these two streams are shown in Table 1.

Samples of the Plant's two effluent streams were collected and analyzed in accordance with EPA test methods. Chemical analyses of the two waters are shown in Table 2. These analyses when compared to water samples collected over the past two years indicate these water samples are truly characteristic of the effluent generated by the Plant. The supporting samples are included as Attachment A of this document.

2. Location of the discharge and of any bodies of water, watercourses and groundwater discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;

The Empire Abo Plant is located in Sec. 3, T-18-S, R-27-E, in Eddy County, New Mexico. A survey of the plant site is attached as Figure 2.

The discharge is from within the plant fence, as indicated by the arrow point away from the storage tank area in Figure 1.

Table 1
Characteristics of Effluent Streams
Empire Abo Gasoline Plant

| Source | Primary Effluent | Estimated Flow (GPD) | Additives to Stream | |
|---------------------------|--------------------------|----------------------|---|--|
| | | | Material Added | Purpose of Additive |
| <u>Process System</u> | | | | |
| 1. Separators | Water/H.C. Liquids | 1,500 | None | ----- |
| 2. Drains | Oily Water/Caustic Amine | 300 | a) Soda Ash | Oxygen Removal from Amine Solution |
| 3. Engine Cooling Systems | Water/Oil/H.C. Liquids | 200 | a) "Hercules 5580" | Corrosion Inhibitor |
| <u>Utility System</u> | | | | |
| 1. Boiler/Condensate | Low TDS Water | 5,000 | a) "Hercules 3430" | Oxygen Scavenger |
| 2. Cooling Tower | High TDS Water | 28,000 | b) "Hercules 3545" c) "Hercules MB 103" d) "Hercules MB 128" e) Chlorine f) Caustic g) Sulfuric acid | Corrosion Inhibitor Biocide Biocide Biocide pH adjustment pH adjustment |

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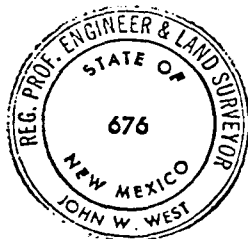
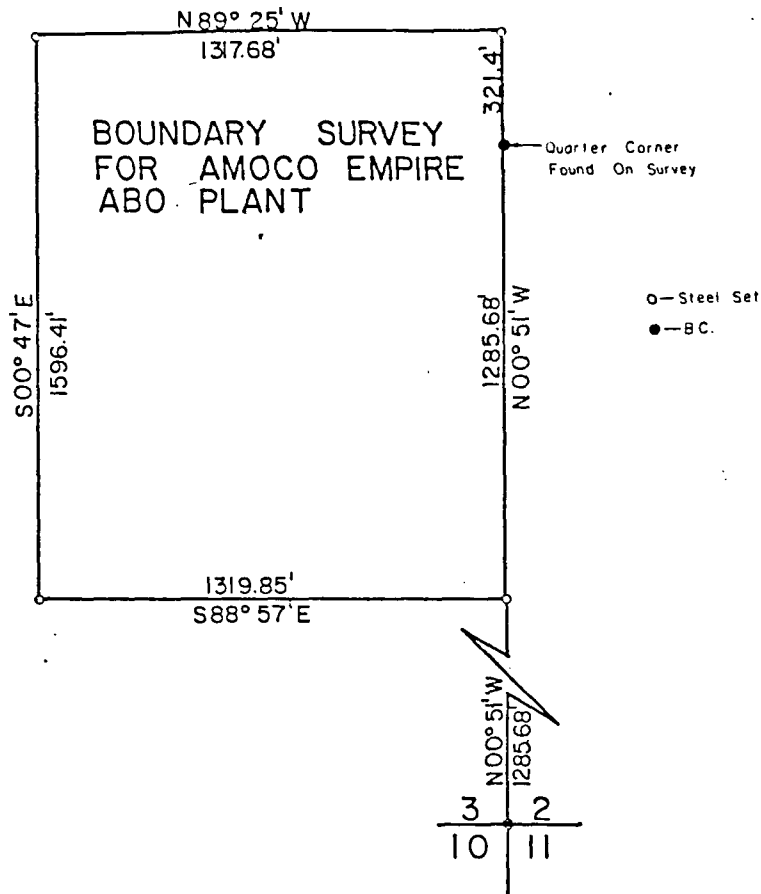
Table 2
Water Analyses of Process and Utility Systems Effluent
Result Reported In Milligrams Per Liter (Mg/L)

| | Process Water | Utilities Water |
|--|---------------|-----------------|
| Specific Gravity @ 60°F | 1.0031 | 1.0033 |
| pH | 8.9 | 6.2 |
| Carbonate as CO ₃ | 264 | 0 |
| Bicarbonate as HCO ₃ | 390 | 18 |
| Total Hardness as CaCO ₃ | 21 | 845 |
| Calcium as Ca | 4 | 250 |
| Magnesium as Mg | 3 | 53 |
| Sodium and/or Potassium as ion | 448 | 118 |
| Sulfate as SO ₄ | 23 | 755 |
| Chloride as Cl | 149 | 213 |
| Iron as Fe | 1.1 | 0.86 |
| Barium as Ba | 0 | 0 |
| Turbidity, Electric | 21 | 1 |
| Color as Pt | 48 | 2 |
| Total Solids, Calculated | 1,281 | 1,408 |
| Temperature °F | 82 | 70 |
| Carbon Dioxide, Calculated | 2 | 20 |
| Aluminum as Al | 0.03 | 0.03 |
| Ammonia as N | 27.8 | 0.0 |
| Arsenic as As | 0.009 | - 0.006 |
| B.O.D. - 5 day | 243 | 0.0 |
| C.O.D. | 825 | 7.63 |
| Benzene ₁ | 0.0 | 0.0 |
| Boron as B | 0.0 | 0.0 |
| Bromide as Br | 0.0 | 0.0 |
| Cadmium as Cd | 0.0 | 0.0 |
| Carbon Tetrachloride ₁ | 0.0 | 0.0 |
| Chromium as Cr | | |
| Total | 0.0 | 0.0 |
| Hexavalent | 0.0 | 0.0 |
| Copper as Cu | 0.0 | 0.0 |
| Cyanide as CN | 0.0 | 0.0 |
| Fluoride as F | 0.8 | 4.5 |
| Lead as Pb | 0.0 | 0.0 |
| Manganese as MN | 0.0 | 0.0 |
| Mercury as Hg | 0.004 | 0.0007 |
| Nickel as NI | 0.0 | 0.0 |
| Nitrate as N | 0.45 | 18.2 |
| Nitrite as N | 0.21 | 0.02 |
| Kjeldahl Nitrogen Total as N | 27.96 | 0.0 |
| Organic Nitrogen as N | 0.16 | 0.0 |
| Oil and Grease | 9.2 | 0.0 |
| Phenols | 1.39 | 0.0 |
| Phosphate as PO ₄ | 0.4 | 29.6 |
| Polychlorinated Biphenols ₁ | 0.0 | 0.0 |
| Selenium as Se | 0.0 | 0.0 |
| Silver as Ag | 0.0 | 0.0 |
| Sulfite as SO ₃ | 0.0 | 0.0 |
| Surfactant (detergent) | 0.1 | 0.0 |
| Toluene ₁ | 0.0 | 0.0 |
| Uranium ₁ | 0.0 | 0.0 |
| Zinc as Zn | 0.0 | 0.0 |
| Total Solids @ 103-105°C | 62.0 | 1,918 |
| Total Dissolved Solids @ 180° C | 590 | 1,838 |
| Total Suspended Solids @ 103-105° C | 17 | 11 |
| Radioactivity ₁ | -- | -- |

1. No tests were run for the presence of these items since they are not used by any of the EAGP sytems.

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Figure 2



I HEREBY CERTIFY THAT THIS PLAT WAS MADE FROM NOTES TAKEN IN THE FIELD IN A BONA FIDE SURVEY MADE UNDER MY SUPERVISION, AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

John W. West

JOHN W. WEST, N.M. P.E. & L.S. NO 676
TEXAS R.P.S. NO. 1138
RONALD J. EIDSON, N.M. L.S. NO 3239
TEXAS R.P.S. NO 1883

AMOCO PRODUCTION CO.

Boundary Survey for Empire Abo Plant in Section 3, Township 13 South, Range 27 East, Eddy County, New Mexico.

JOHN W. WEST ENGINEERING COMPANY
CONSULTING ENGINEERS HOBBS, NEW MEXICO
Scale: 1" = 400' Drawn by: EWR
Date: December 9, 1978 Sheet 1 of 1 Sheets

There is no body of water or groundwater discharge site within one mile of the plant site. There are two draws in the area; Scoggin and Chalk Bluff Draws. Both are ephemeral washes. Figures 3A, 3B and 3C are U.S. Geological Survey Quadrangle maps of the Plant site and the draws are highlighted.

3. Depth to and TDS concentration of the ground water most likely to be affected by the discharge;

The Plant is located in an area overlain by clastic and sedimentary rocks of Permian and younger age. The area has been characterized by G. E. Welder, (1983), as a Tansill and younger undivided formation, and is underlain by the Yates formation.

There are two aquifers to be considered when evaluating the effect of discharges on the Tansill formation. The most likely to be affected is the shallow aquifer of the Roswell basin contained in the Seven Rivers formation (six hundred feet below the top of the Tansill formation); secondarily the deeper underlying artesian aquifer of the Roswell basin contained in the undivided Queen - Grayburg formations (1200 feet below the top of the Tansill formation) may be affected. It is unlikely either of these aquifers will be affected by the discharge since the east end of the aquifers are considered "no-flow" boundaries due to low permeability of the formations.

The quality of the water from these aquifers range from 3300 ppm TDS in the shallow to 1600 ppm TDS in the Artesia aquifer.

4. Flooding potential of the site;

The plant is located in an area of little relief (see Figure 4A and 4B) bordered to the south and west by Scoggin Draw. Scoggin Draw is an ephemeral wash that will flow during heavy summer thunderstorms. Most precipitation on the plant site quickly soaks into the soil or evaporates with any runoff flowing down the draw. Flooding potential is extremely low, based on the largest calculated values for a 100-year, 24-hour storm of 5.0 inches (See Table 3) and the draw's excellent drainage for the area.

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Water from the process drains will be contained in two 200 hundred barrel tanks located on the plant site, as shown as storage tanks on Figure 1. These tanks serve as holding vessels for said water. Figure 5 is a schematic

Table 3
PRECIPITATION DATA FOR
EMPIRE ABO GASOLINE PLANT
(inches)

| RECURRENCE INTERVAL (Years) | <u>STORM DURATION (Hours)</u> | |
|---|-------------------------------|------|
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| 2 | 1.6" | 2.0" |
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Data compiled from "Precipitation Frequency Atlas of the Western United States" Volume IV - New Mexico

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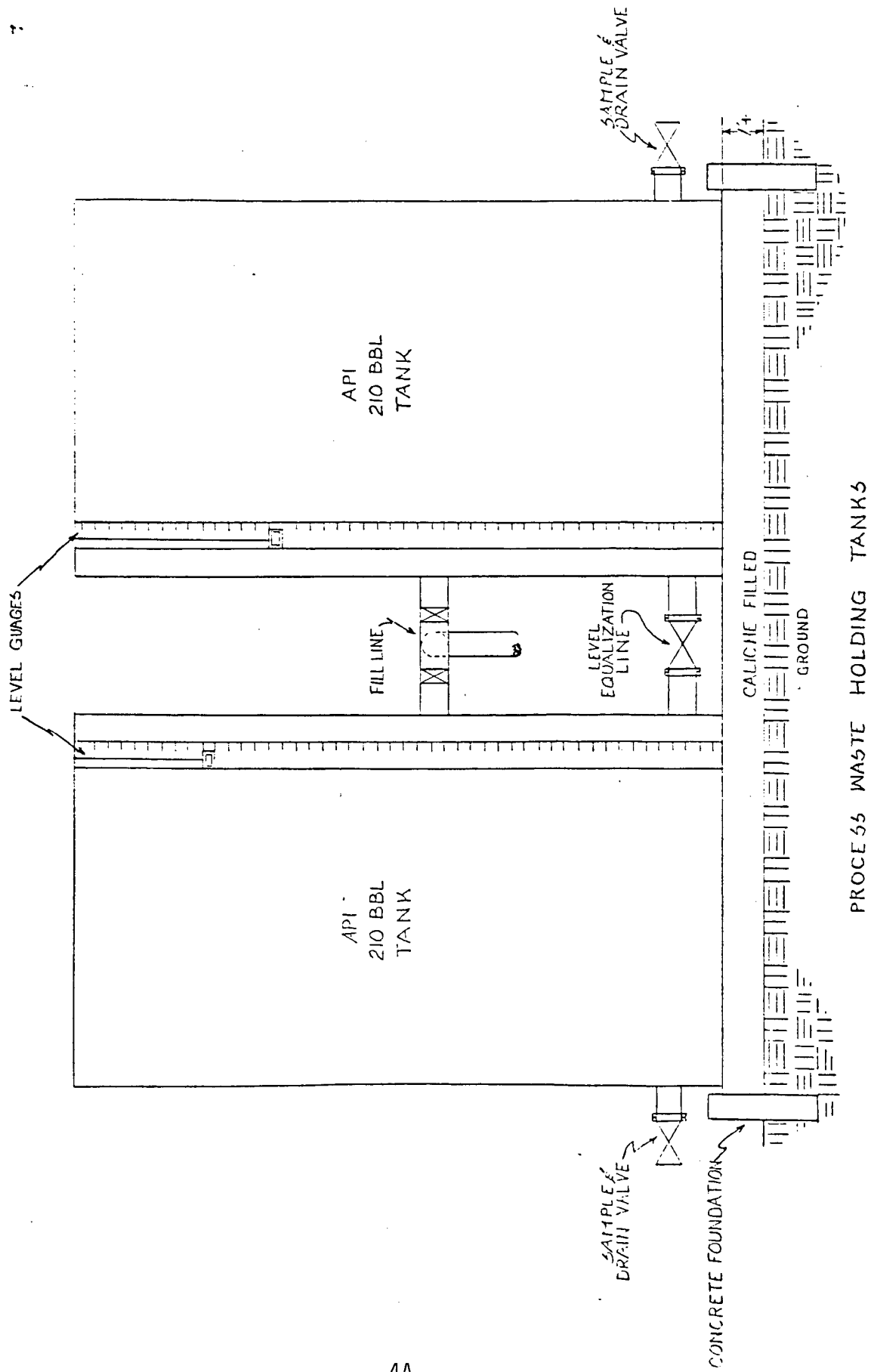
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6. Depth to and lithological description of rock at base of alluvium below the discharge site if such information is available;

The Plant site east of the Pecos River alluvium is underlined by the Yates Formation of Permian time. The top of the Yates occurs between two and three hundred feet below the plant and is approximately 400 to 500 feet thick.

7. Any additional information that may be necessary to demonstrate that approval of the discharge plan will not result in concentrations in excess of the standards of Section 3-103 or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use. Detailed information on site geologic and hydrologic conditions may be required for a technical evaluation of the applicant's proposed discharge plan;

FIGURE 6



The proposed discharge plan demonstrates the methods Amoco will use for disposal of effluent generated by the EAGP. Any leaks from the containment vessels or evaporation pond will be analyzed to determine the source and should equipment repair be required, the water will be trucked out for disposal until repairs are completed. The information provided in the Plan, in our opinion, demonstrates that there will be no concentration in excess of the standards of acceptable ions in the regulations; nor will any toxic pollutants be introduced. By installing desalination facilities to process utility system effluent, and by either evaporation or injection of the process effluent, Amoco will remove the opportunity for the EAGP to contaminate the surface waters or ground waters of the State of New Mexico.

Detailed information on site geologic and hydrologic condition of the plant area is readily available in Geohydrologic Framework of the Roswell Ground-water Basin, Chaves and Eddy Counties, New Mexico by G.E. Welder. This document is enclosed as Attachment B of this document.

DSD/kih
EAUT04-D

BIBLIOGRAPHY

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12. Wright, J. I., Quality of Water in Southeastern New Mexico, New Mexico State Engineer, Roswell, NM, 1979.

SPRING LAKE QUADRANGLE
NEW MEXICO-EDDY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



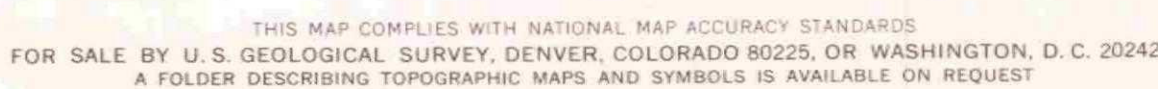
Revisions shown in purple compiled from aerial photographs taken 1975. This information not field checked



NEW MEXICO

QUADRANGLE LOCATION

1955
PHOTOREVISED 1975
AMS 5149 IV SE—SERIES V881



Mapped, edited, and published by the Geological Survey
Control by USGS and USCAGS
Culture and drainage in part compiled from aerial photographs
taken 1947. Topography by plane-table surveys 1955
Polyconic projection. 1927 North American datum
10,000-foot grid based on New Mexico coordinate system,
east zone
Dashed land lines indicate approximate locations
All wells not labeled are inactive oil wells
1000-meter Universal Transverse Mercator grid ticks,
zone 13, shown in blue

ROAD CLASSIFICATION

Heavy-duty ————— Light-duty —————
Medium-duty ————— Unimproved dirt —————

U. S. Route State Route

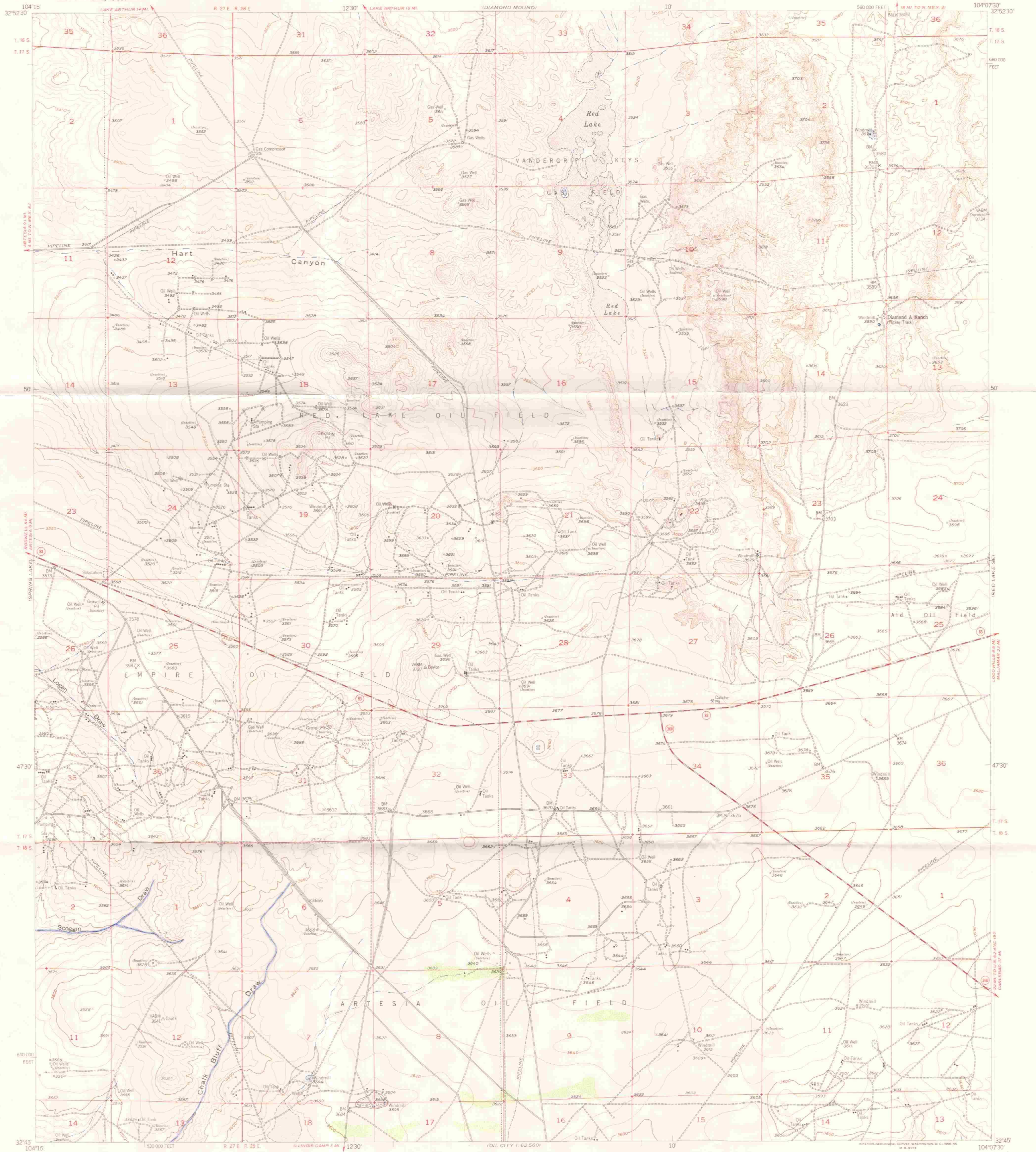
LAKE MC MILLAN NORTH, N. MEX.
N3237.5—W10415/7.5

1955

AMS 5149 III NE-SERIES V881

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RED LAKE QUADRANGLE
NEW MEXICO-EDDY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Culture and drainage in part compiled from aerial photographs taken 1946. Topography by planetable surveys 1955

Polyconic projection. 1927 North American datum
10,000-foot grid based on New Mexico coordinate system,
east zone

All oil wells labeled inactive are dry, capped, or abandoned



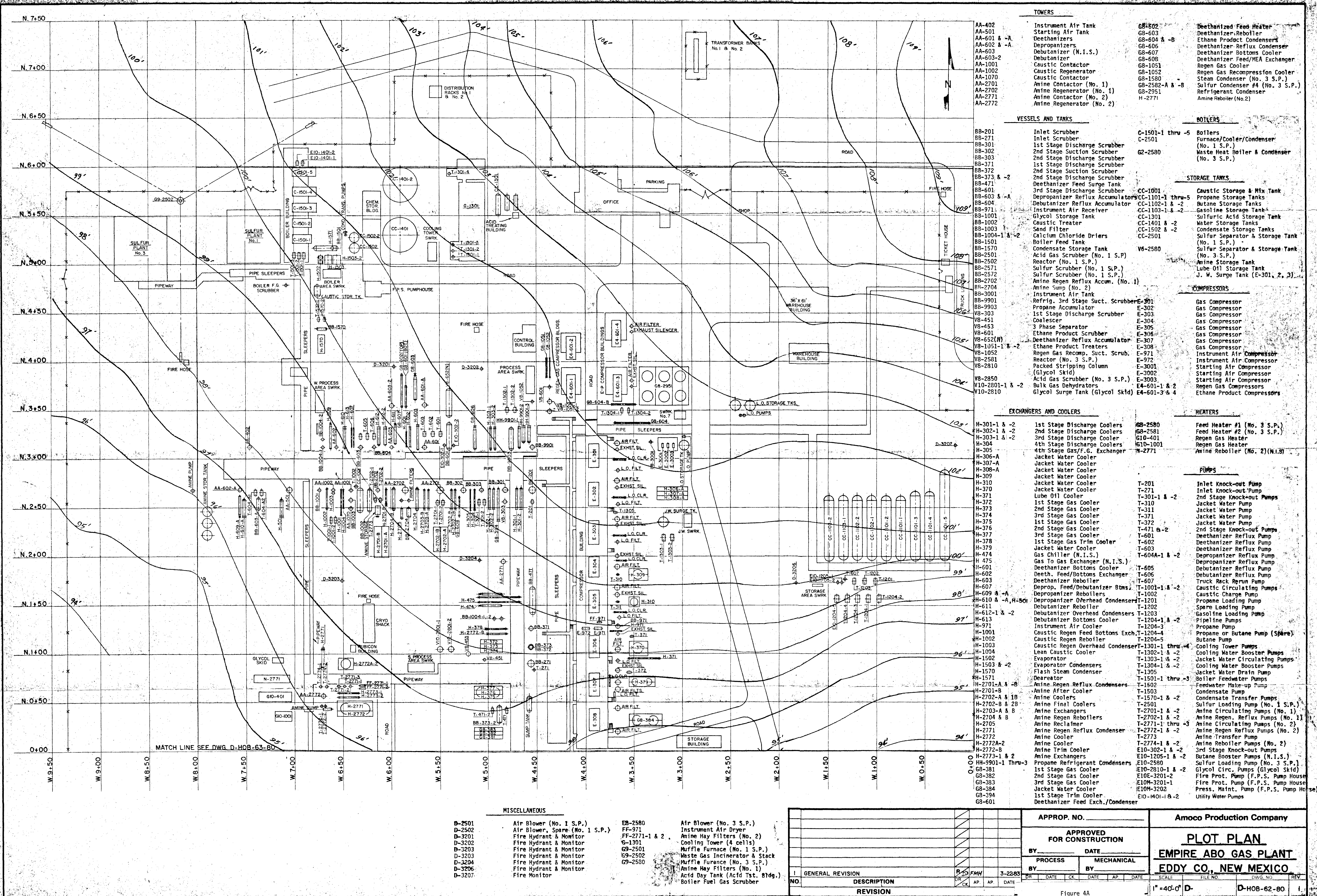
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

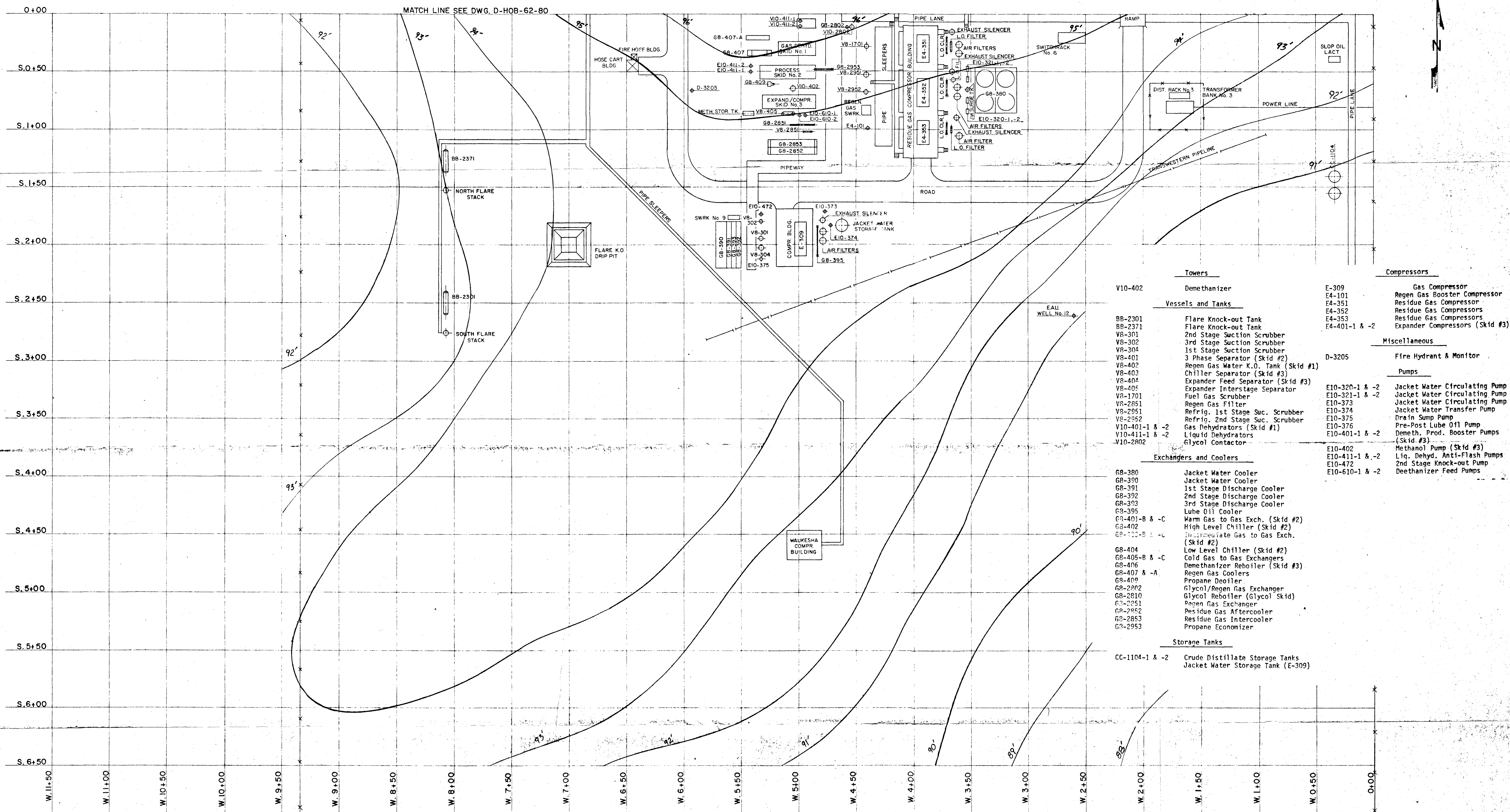


RED LAKE, N. MEX.
N3245-W10407.5/7.5

1955

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, FEDERAL CENTER, DENVER 2, COLORADO OR WASHINGTON 25, D.C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

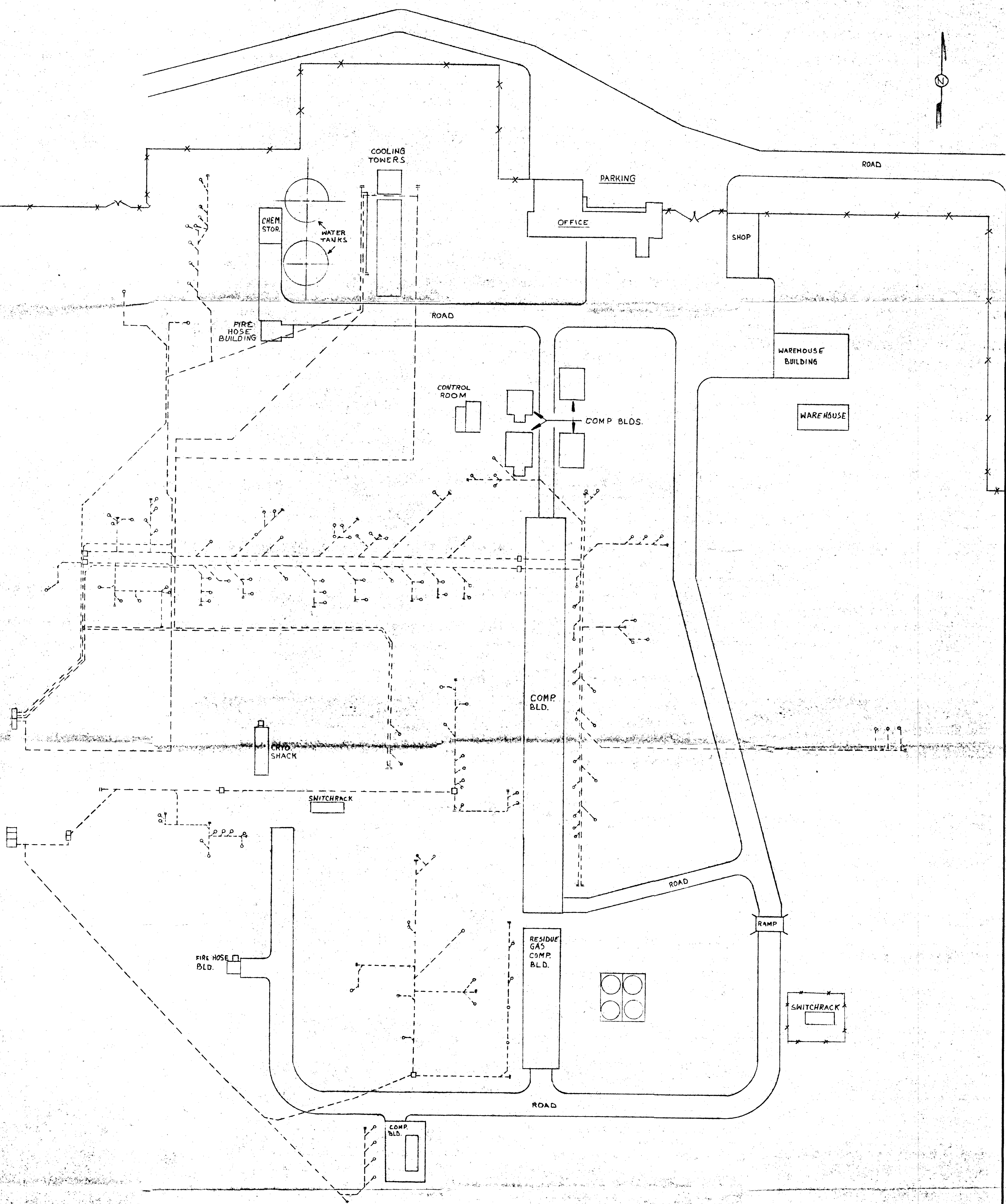




| Towers | | Compressors | |
|------------------------|---|------------------------|---------------------------------------|
| V10-402 | Demethanizer | E-309 | Gas Compressor |
| Vessels and Tanks | | E4-101 | Regen Gas Booster Compressor |
| BB-2301 | Flare Knock-out Tank | E4-351 | Residue Gas Compressor |
| BB-2371 | Flare Knock-out Tank | E4-352 | Residue Gas Compressor |
| V8-301 | 2nd Stage Suction Scrubber | E4-353 | Residue Gas Compressor |
| V8-302 | 3rd Stage Suction Scrubber | E4-401-1 & -2 | Expander Compressors (Skid #3) |
| V8-304 | 1st Stage Suction Scrubber | Miscellaneous | |
| V8-401 | 3 Phase Separator (Skid #2) | Fire Hydrant & Monitor | |
| V8-402 | Regen Gas Water K.O. Tank (Skid #1) | Pumps | |
| V8-403 | Chiller Separator (Skid #3) | D-3205 | Jacket Water Circulating Pump |
| V8-404 | Expander Feed Separator (Skid #3) | E10-320-1 & -2 | Jacket Water Circulating Pump |
| V8-405 | Expander Interstage Separator | E10-321-1 & -2 | Jacket Water Circulating Pump |
| V8-1701 | Fuel Gas Scrubber | E10-373 | Jacket Water Transfer Pump |
| V8-2851 | Regen Gas Filter | E10-374 | Jacket Water Transfer Pump |
| V8-2851 | Refrig. 1st Stage Suc. Scrubber | E10-375 | Drain Sump Pump |
| V8-2852 | Refrig. 2nd Stage Suc. Scrubber | E10-376 | Pre-Post Lube Oil Pump |
| V10-401-1 & -2 | Gas Dehydrators (Skid #1) | E10-376 | Demeth. Prod. Booster Pumps (Skid #3) |
| V10-411-1 & -2 | Liquid Dehydrators | E10-401-1 & -2 | Methanol Pump (Skid #3) |
| V10-2802 | Glycol Contactor | E10-402 | Liq. Dehyd. Anti-Flash Pumps |
| Exchangers and Coolers | | E10-411-1 & -2 | 2nd Stage Knock-out Pump |
| 68-380 | Jacket Water Cooler | E10-472 | Deethanizer Feed Pumps |
| 68-390 | Jacket Water Cooler | | |
| 68-391 | 1st Stage Discharge Cooler | | |
| 68-392 | 2nd Stage Discharge Cooler | | |
| 68-393 | 3rd Stage Discharge Cooler | | |
| 68-395 | Lube Oil Cooler | | |
| 68-401-B & -C | Warm Gas to Gas Exch. (Skid #2) | | |
| 68-402 | High Level Chiller (Skid #2) | | |
| 68-402-B & -C | Intermediate Gas to Gas Exch. (Skid #2) | | |
| 68-404 | Low Level Chiller (Skid #2) | | |
| 68-405-B & -C | Cold Gas to Gas Exchangers | | |
| 68-406 | Demethanizer Reboiler (Skid #3) | | |
| 68-407 & -A | Regen Gas Coolers | | |
| 68-409 | Propane Deoiler | | |
| 68-2802 | Glycol/Regen Gas Exchanger | | |
| 68-2810 | Glycol Reboiler (Glycol Skid) | | |
| 68-2851 | Regen Gas Exchanger | | |
| 68-2852 | Residue Gas Aftercooler | | |
| 68-2853 | Residue Gas Intercooler | | |
| 68-2953 | Propane Economizer | | |
| Storage Tanks | | | |
| CC-1104-1 & -2 | Crude Distillate Storage Tanks | | |
| | Jacket Water Storage Tank (E-309) | | |

| | | | |
|---------------------------|-------------|--------------------------|-------------|
| APPROX. NO. | | Amoco Production Company | |
| APPROVED FOR CONSTRUCTION | | PLOT PLAN | |
| BY | DATE | EMPIRE ABO GAS PLANT | |
| PROCESS | MECHANICAL | EDDY CO., NEW MEXICO | |
| BY | DATE | SCALE | FILE NO. |
| DR | DATE | 1" = 40'-0" | D-HOB-63-80 |
| CK | DATE | | |
| NO. | DESCRIPTION | DR | DATE |
| | REVISION | CK | DATE |

Figure 48



SCHEDULE

Figure 5

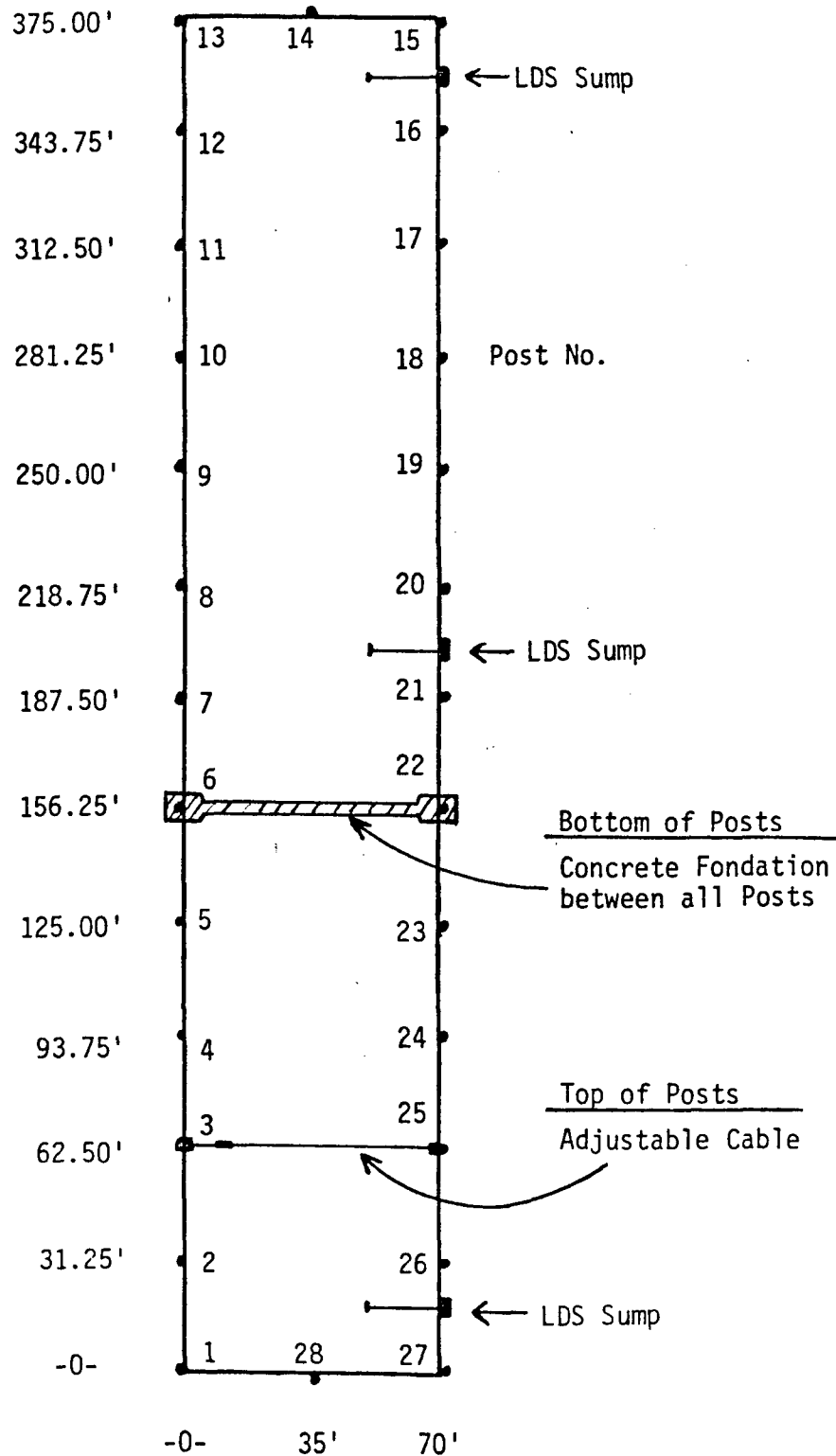
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 1

EVAPORATION TANK

TOP VIEW



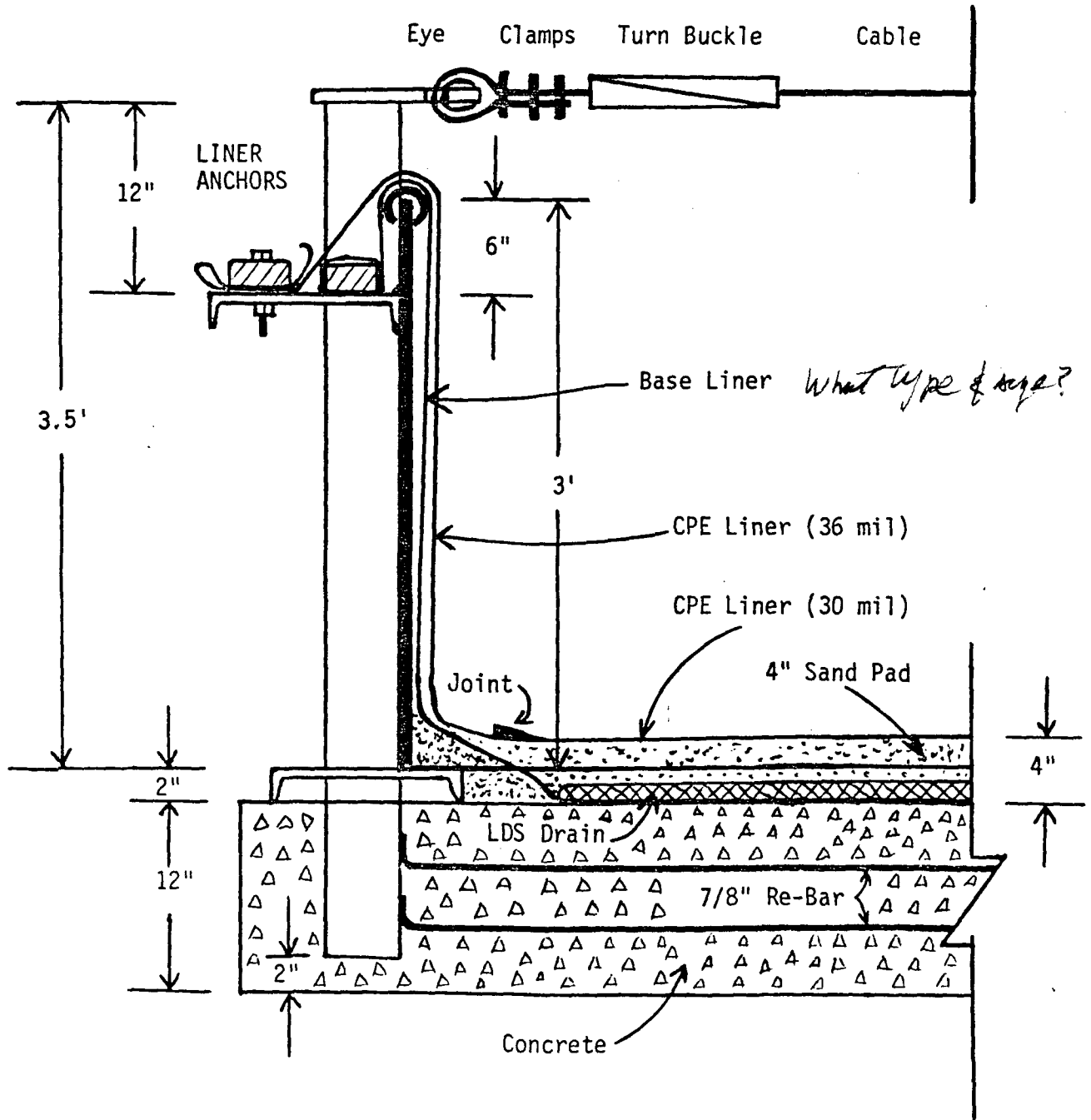
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 2

EVAPORATION TANK

ANCHOR POST - SIDE VIEW



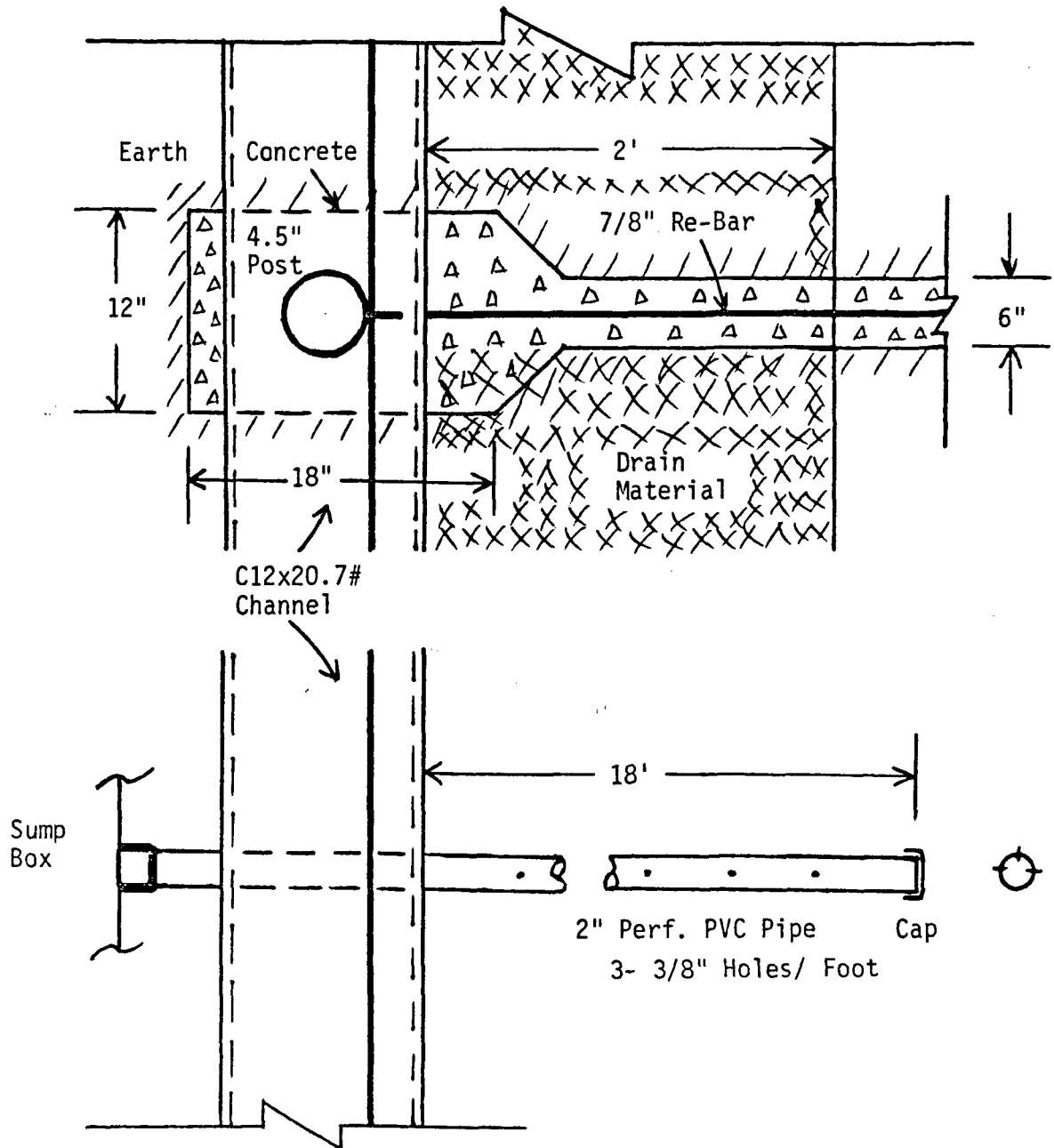
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 3

EVAPORATION TANK

ANCHOR POST - TOP VIEW



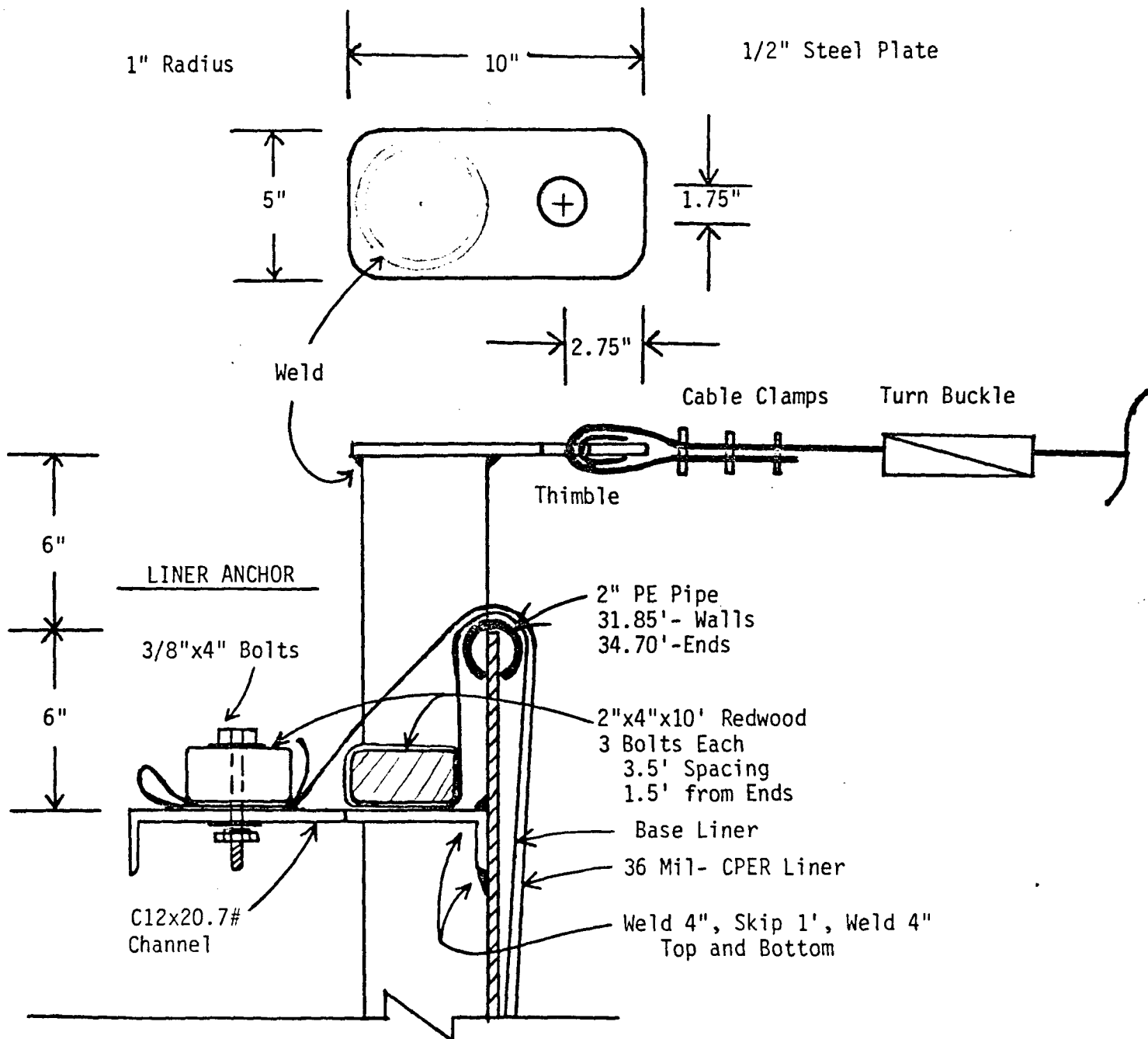
AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 4

EVAPORATION TANK

BRACE PLATE AND SUPPORT POST - LINER ANCHOR



AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 5

EVAPORATION TANK

LINER ANCHOR

TOP VIEW

CHANNEL WELDS

2"x4" Redwood
Base Liner Anchor

1/4" Steel Plate

Cut for Post

4 1/2" Post

Welds

C12 x 20.7#
Channel

Top Welds

Bottom Welds

12"

3.5'

(Anchor Plate on Top of Post not Shown)

2" x 4" Redwood Liner Anchor

1/2" Holes

10'

1.5'

3.5'

3.5'

1.5'

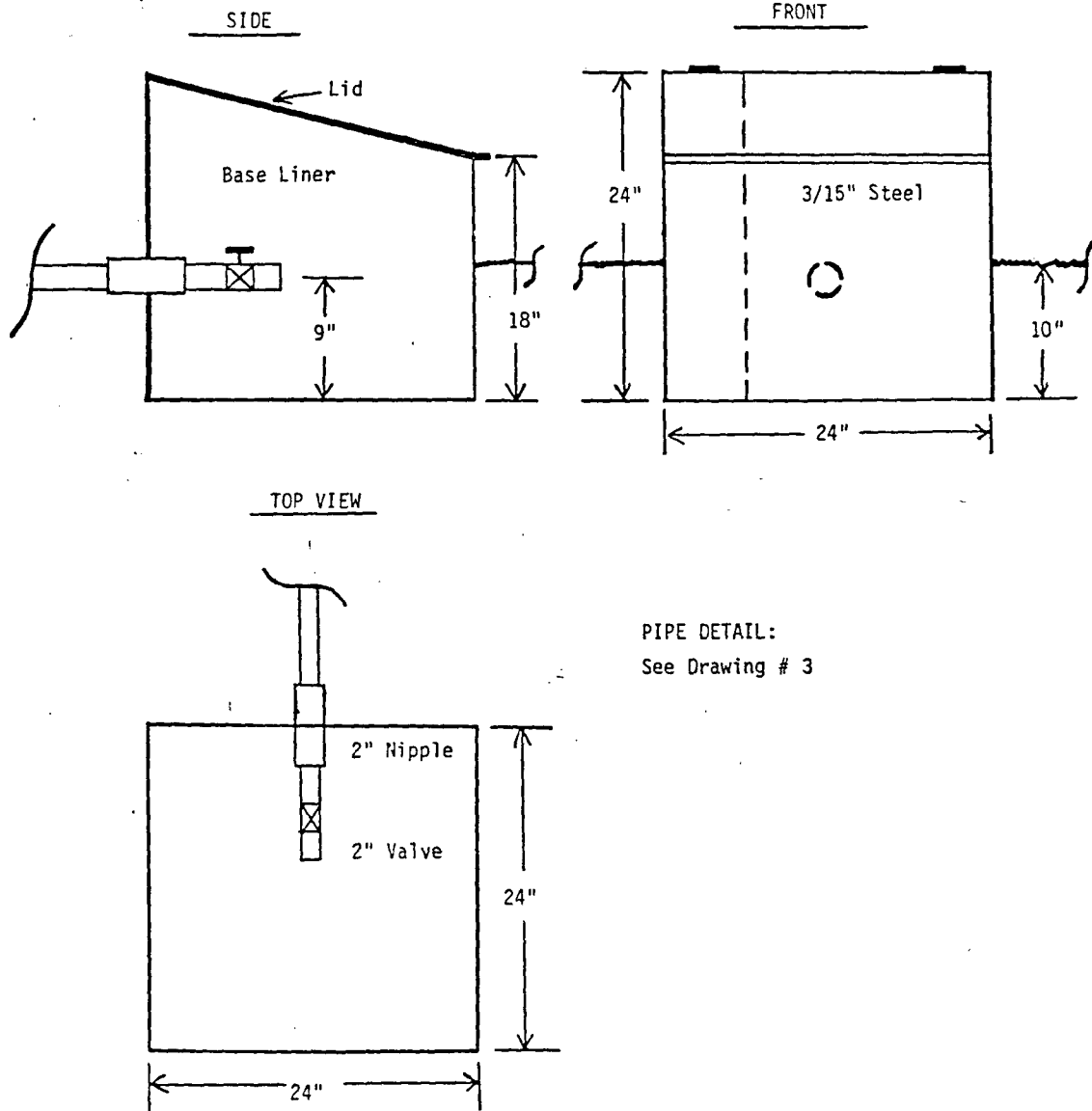
*inside tank or outside
How do you keep from tearing liner
How do you seal ~~the~~ base
liner when PVC pipes stuck thru.*

AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 6

EVAPORATION TANK



PIPE DETAIL:
See Drawing # 3

AMOCO PRODUCTION COMPANY

EMPIRE ABO UNIT

DRAWING # 7

EVAPORATION TANK

LEAK DETECTION SYSTEM

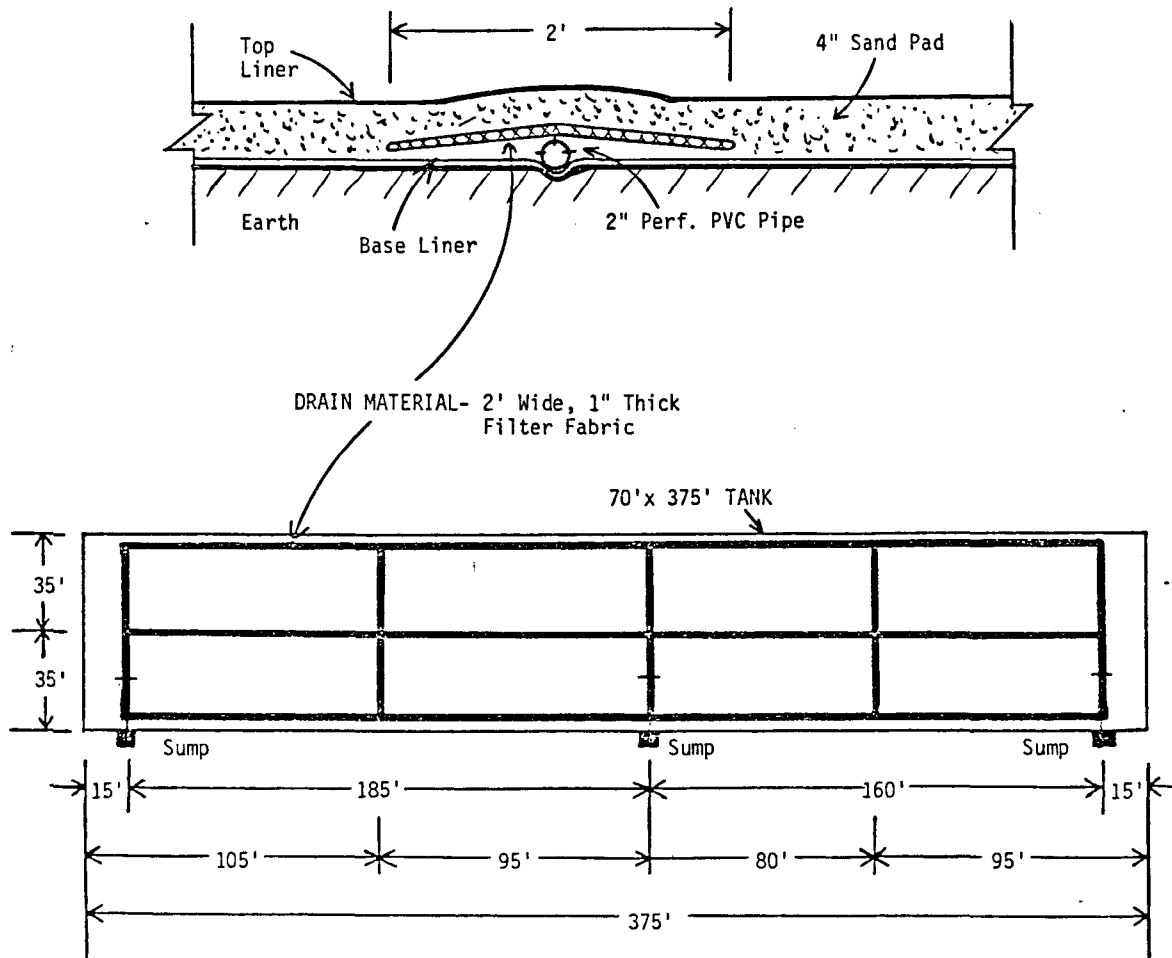


Figure 7 - Evaporation
Tank Design

Attachment A

Water Analysis of
Empire Abo Gasoline Plant
Discharge

Martin Water Laboratories, Inc.

COPIES DISTRIBUTED

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

TO: Mr. Doug Dailey
P.O. Box 68, Hobbs, NM

LABORATORY NO. 584163
SAMPLE RECEIVED 5-9-84
RESULTS REPORTED 5-16-84

MAY 19 1984

COMPANY Amoco Production Company LEASE Empire Abo Gas Plant
FIELD OR POOL Empire
SECTION BLOCK SURVEY COUNTY Eddy STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

| | | |
|-------|----------------------|--------|
| NO. 1 | Raw water. | 5-9-84 |
| NO. 2 | Cooling Tower water. | 5-9-84 |
| NO. 3 | Blowdown water. | 5-9-84 |
| NO. 4 | Process drain water. | 5-9-84 |

NO. 4

REMARKS: Samples taken by Mr. Ronnie D. Tucker, Martin Water Labs., Inc. FILE

| CHEMICAL AND PHYSICAL PROPERTIES | | | | |
|--|--------|--------|--------|--------|
| | NO. 1 | NO. 2 | NO. 3 | NO. 4 |
| Specific Gravity at 60° F. | 1.0019 | 1.0030 | 1.0033 | 1.0031 |
| pH When Sampled | 7.6 | 6.2 | 6.2 | 8.9 |
| pH When Received | 7.71 | 6.36 | 6.02 | 8.74 |
| Bicarbonate as HCO ₃ | 185 | 26 | 18 | 390 |
| Supersaturation as CaCO ₃ | | | | |
| Undersaturation as CaCO ₃ | | | | |
| Total Hardness as CaCO ₃ | 176 | 840 | 845 | 21 |
| Calcium as Ca | 53 | 254 | 250 | 4 |
| Magnesium as Mg | 11 | 50 | 53 | 3 |
| Sodium and/or Potassium | 32 | 114 | 118 | 448 |
| Sulfate as SO ₄ | 36 | 730 | 755 | 23 |
| Chloride as Cl | 39 | 219 | 213 | 149 |
| Iron as Fe | 0.23 | 0.62 | 0.86 | 1.1 |
| Barium as Ba | 0 | 0 | 0 | 0 |
| Turbidity, Electric | 1 | 1 | 1 | 21 |
| Color as Pt | 0 | 0 | 2 | 48 |
| Total Solids, Calculated | 356 | 1,392 | 1,408 | 1,281 |
| Temperature °F. | 68 | 71 | 70 | 82 |
| Carbon Dioxide, Calculated | 8 | 28 | 20 | 2 |
| Dissolved Oxygen, Winkler | | | | |
| Hydrogen Sulfide, as S | 0.0 | 0.0 | 0.0 | 19.8 |
| Resistivity, ohms/m at 77° F. - measured | 18.87 | 4.25 | 4.29 | 8.26 |
| Suspended Oil | | | | |
| Filtrable Solids as mg/l | | | | |
| Volume Filtered, ml | | | | |
| Carbonate, as CO ₃ | 0 | 0 | 0 | 264 |
| Chlorine Residual | 0.0 | 1.2 | 0.0 | 0.0 |
| Conductivity, umhos/cm @ 77°F. | 530 | 2,350 | 2,330 | 1,210 |

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks

Source of sample and date taken:

- #1. Raw water. 5-9-84
- #2. Cooling tower water. 5-9-84
- #3. Blowdown water. 5-9-84
- #4. Process drain water. 5-9-84

| <u>Determination, mg/l</u> | <u>#1</u> | <u>#2</u> | <u>#3</u> | <u>#4</u> |
|---------------------------------|-----------|-----------|-----------|-----------|
| Aluminum, as Al | 0.02 | 0.02 | 0.03 | 0.03 |
| Ammonia, as N | 0.0 | 0.0 | 0.0 | 27.8 |
| Arsenic, as As | 0.000 | 0.004 | 0.006 | 0.009 |
| Biochemical Oxygen Demand-5 day | 0.0 | 0.0 | 0.0 | * |
| Boron, as B | 0.0 | 0.0 | 0.0 | 0.0 |
| Bromide, as Br | 0.0 | 0.0 | 0.0 | 0.0 |
| Cadmium, as Cd | 0.00 | 0.00 | 0.00 | 0.00 |
| Chemical Oxygen Demand | 0.00 | 6.78 | 7.63 | 825.00 |
| Chromium, as Cr | | | | |
| Total | 0.00 | 0.00 | 0.00 | 0.00 |
| Hexavalent | 0.00 | 0.00 | 0.00 | 0.00 |
| Copper, as Cu | 0.00 | 0.00 | 0.00 | 0.00 |
| Cyanide, as CN | 0.0 | 0.0 | 0.0 | 0.0 |
| Fluoride, as F | 1.2 | 4.5 | 4.5 | 0.8 |
| Lead, as Pb | 0.00 | 0.00 | 0.00 | 0.00 |
| Manganese, as Mn | 0.00 | 0.00 | 0.00 | 0.00 |
| Mercury, as Hg | 0.0003 | 0.0014 | 0.0007 | 0.0040 |
| Nickel, as Ni | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrate, as N | 4.8 | 19.3 | 18.2 | 0.45 |
| Nitrite, as N | 0.02 | 0.01 | 0.02 | 0.21 |

*Results of this test will be forthcoming.

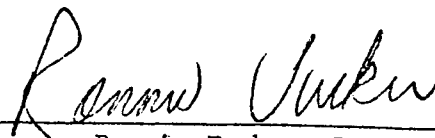
Source of sample and date taken:

- #1. Raw water. 5-9-84
- #2. Cooling tower water. 5-9-84
- #3. Blowdown water. 5-9-84
- #4. Process drain water. 5-9-84

| <u>Determination, mg/l</u> | <u>#1</u> | <u>#2</u> | <u>#3</u> | <u>#4</u> |
|--|-----------|-----------|-----------|-----------|
| Kjeldahl Nitrogen, Total as N | 0.00 | 0.00 | 0.00 | 27.96 |
| Organic Nitrogen, as N | 0.00 | 0.00 | 0.00 | 0.16 |
| Oil & Grease | 0.0 | 0.0 | 0.0 | 9.2 |
| Phenols | 0.00 | 0.00 | 0.00 | 1.39 |
| Total Phosphate, as PO ₄ | 0.0 | 26.7 | 29.6 | 0.4 |
| Selenium, as Se | 0.00 | 0.00 | 0.00 | 0.00 |
| Silver, as Ag | 0.00 | 0.00 | 0.00 | 0.00 |
| Sulfite, as SO ₃ | 0.0 | 0.0 | 0.0 | 0.0 |
| Surfactant (detergent) | 0.0 | 0.0 | 0.0 | 0.1 |
| Zinc, as Zn | 0.00 | 0.00 | 0.00 | 0.00 |
| Total Solids @ 103-105°C | 306 | 1,944 | 1,918 | 620 |
| Total Volatile Solids @ 550°C | 24.0 | 166 | 178 | 54.0 |
| Total Dissolved (filtrable) Solids @ 180°C | 310 | 1,870 | 1,838 | 590 |
| Total Suspended (non-filtrable) Solids, @ 103-105°C | 5.0 | 23.0 | 11.0 | 17.0 |

Notation: Sampling procedures and test methods in compliance with U.S.
Environmental Protection Agency regulations (EPA-600) and/or
APHA methods.

Remarks: The undersigned certifies the above to be true and correct to the best of
his knowledge and belief.


Ronnie Tucker, B.S.

Source of sample and date taken:

- #1. Raw water. 5-9-84
- #2. Cooling tower water. 5-9-84
- #3. Blowdown water. 5-9-84
- #4. Process drain water. 5-9-84

| <u>Determination, mg/l</u> | <u>#1</u> | <u>#2</u> | <u>#3</u> | <u>#4</u> |
|--|-----------|-----------|-----------|-----------|
| Kjeldahl Nitrogen, Total as N | 0.00 | 0.00 | 0.00 | 27.96 |
| Organic Nitrogen, as N | 0.00 | 0.00 | 0.00 | 0.16 |
| Oil & Grease | 0.0 | 0.0 | 0.0 | 9.2 |
| Phenols | 0.00 | 0.00 | 0.00 | 1.39 |
| Total Phosphate, as PO ₄ | 0.0 | 26.7 | 29.6 | 0.4 |
| Selenium, as Se | 0.00 | 0.00 | 0.00 | 0.00 |
| Silver, as Ag | 0.00 | 0.00 | 0.00 | 0.00 |
| Sulfite, as SO ₃ | 0.0 | 0.0 | 0.0 | 0.0 |
| Surfactant (detergent) | 0.0 | 0.0 | 0.0 | 0.1 |
| Zinc, as Zn | 0.00 | 0.00 | 0.00 | 0.00 |
| Total Solids @ 103-105°C | 306 | 1,944 | 1,918 | 620 |
| Total Volatile Solids @ 550°C | 24.0 | 166 | 178 | 54.0 |
| Total Dissolved (filtrable) Solids @ 180°C | 310 | 1,870 | 1,838 | 590 |
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Notation: Sampling procedures and test methods in compliance with U.S.
Environmental Protection Agency regulations (EPA-600) and/or
APHA methods.

Remarks: The undersigned certifies the above to be true and correct to the best of
his knowledge and belief.

Ronnie Tucker, B.S.

Martin Water Laboratories, Inc.

P.O. BOX 1468
MONAHANS, TEXAS 79756
PH. 943-3234 or 563-1040

Martin Water Laboratories, Inc.
WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

To: Mr. Doug Dailey
P.O. Box 68
Hobbs, NM

Laboratory No. B58425
Sample received 5-9-84
Results reported 5-16-84

Company: Amoco Production Company
County: Eddy, NM
Field: Empire
Lease: Empire Abo Gas Plant

Source of sample and date taken:

#1. Blowdown water. 5-9-84

| | #1 |
|-----------------------------------|--------------|
| Iron bacteria | Not detected |
| Sulfur bacteria | Not detected |
| Sulfate-reducing bacteria | Not detected |
| Other aerobes | Not detected |
| Other anaerobes | Not detected |
| Fungi (& aciduric bacteria) | Not detected |
| Algae | Not detected |
| Protozoa | Not detected |

Total count NONE

pH 6.2

Temperature 70

Chlorine Residual 0.0

Note: All numerical results are reported as the number of cells per milliliter of the sample as determined by plate counts; except iron, algae, and protozoa, which are determined microscopically.

Remarks: It is apparent there is no bacterial activity in these waters.

Ronnie Tucker
Ronnie Tucker, B.S.

September 1983
SAMPLES COLLECTED BY: BUREAU OF LAND MANAGEMENT

| <u>Parameter</u> | <u>Level</u> | <u>Units</u> |
|------------------|--------------|--------------|
| Oil & Grease | 34 | mg/l |
| pH (lab) | 8.9 | SU |
| Conductivity | 4090 | µmhos |
| total Sulfides | 4.4 | mg/l |
| Water temp. | 34.0 | °C |
| As, diss | 20 | µg/l |
| Ba, diss | 100 | µg/l |
| Cd, diss | 1 | µg/l |
| Ca, diss | 79 | mg/l |
| Cl, diss | 340 | mg/l |
| Cr, diss | 10 | µg/l |
| Cu, diss | 2 | µg/l |
| F, diss | 2.6 | mg/l |
| Fe, diss | 80 | µg/l |
| hardness | 290 | mg/l |
| Pb, diss | 1 | µg/l |
| Mg, diss | 23 | mg/l |
| Mn, diss | 20 | µg/l |
| Hg, diss | 0.3 | µg/l |
| K, diss | 56 | mg/l |
| Se, diss | 8 | µg/l |
| Silica, diss | 79 | mg/l |
| Ag, diss | 1 | µg/l |
| Na, diss | 420 | mg/l |
| Sulfate, diss | 820 | mg/l |
| Zn, diss | 10 | µg/l |

Flow estimated to be approximately 0.45 gpm

Discharge appeared to be opaque--

Discharge occurs from a pipe originating from the plant, runs overland and flows into Skoggins Draw.

HERCULES INCORPORATED

DISTRIBUTION:

Water Management Chemicals

LABORATORY WATER ANALYSIS^(a)

S. Stafford

M. Cooper

K. Hansen

Sample From: Amoco Production

PAGE 1 OF 2

Location: Artesia, NM

Date Sampled: 5/18/83

| SAMPLE DESCRIPTION | Raw H ₂ O | CT | Treated H ₂ O | Boiler Feed | Boiler No. 4 | Con. Ret. |
|--|----------------------|-------|--------------------------|-------------|--------------|-----------|
| pH | 8.0 | 6.2 | 8.5 | 8.7 | 11.6 | 8.6 |
| "P" Alkalinity (CaCO ₃) | | | 6 | 1 | 336 | |
| "M" Alkalinity (CaCO ₃) | 152 | 44 | 162 | 4 | 536 | |
| Chloride (Cl) | 46 | 310 | 56 | 6 | 64 | |
| Sulfate (SO ₄) | 29 | | | | | |
| o-Phosphate (PO ₄) | | 173 | *0.2 | | 139 | |
| Organic Phosphate (PO ₄) | | | | | | |
| t-Phosphate (PO ₄) | 0.2 | 200 | 0.4 | *0.2 | | |
| Chromate (CrO ₄) | | | | | | |
| Silica (SiO ₂) | 36 | 163 | 37 | *0.1 | 31 | |
| Total Hardness (CaCO ₃) | 168 | 1015 | 2 | *0.2 | | |
| Calcium (CaCO ₃) | 133 | 754 | 2 | | | |
| Magnesium (CaCO ₃) | 35 | 261 | 0.33 | | | |
| Iron (Fe) | 0.06 | 0.90 | 0.07 | 0.06 | 28.5 | 0.11 |
| Copper (Cu) | *0.05 | *0.05 | | | | |
| Nonneutralized Conductivity at 77° (micromhos) | 520 | 2900 | 580 | 3.9 | 1900 | 4.5 |
| Neutralized Conductivity at 77° (micromhos) | 490 | | 540 | | 1100 | |
| Sample Number | 34987 | 34986 | 34988 | 34989 | 34990 | 3499 |

(a) All results are reported in parts per million unless otherwise stated.
(*) Indicates less than.

/la 6/6/83
1675E pgl



P. O. BOX 1499

HOBBS, NEW MEXICO 88240

707 NORTH LEECH

PHO. (505) 393-7751

WATER ANALYSIS REPORT

(Expressed in ppm Unless Indicated Otherwise)

FOR: AMOCO PRODUCTION COMPANY

DATE SAMPLED: 5-1-81

PLANT: EMPIRE ABO

DATE SUBMITTED: 5-1-81

LOCATION: HOBBS, NEW MEXICO

DATE ANALYZED: 5-3-81

SAMPLE SOURCE:

| Sample # 1 | Sample # 2 | Sample # 3 | |
|------------|------------|------------|--|
| Draw Water | Draw water | Draw Water | |
| | | | |
| | | | |
| | | | |
| 7.7 | 9.3 | 6.2 | |
| NIL | 472 | NIL | |
| 152 | 916 | 156 | |
| | | | |
| | | | |
| | | | |
| | | | |
| 784 | 476 | 852 | |
| 592 | 404 | 692 | |
| 192 | 72 | 160 | |
| 196 | 188 | 200 | |
| 903 | 923 | 1150 | |
| 6.9 | 1.8 | 2.50 | |
| 6.2 | 1.6 | 2.35 | |
| .7 | .2 | .15 | |
| 160.0 | 101.6 | 111.2 | |
| NIL | NIL | 0.45 | |
| | | | |
| 1739.0 | 1807 | 1908 | |
| | | | |
| | | | |

OIL & GREASE

NIL

19.6

COPPER(Cu) (AA)

NIL

NIL

NIL

CHROMIUM(Cr) (AA)

NIL

NIL

NIL



WATER ANALYSIS REPORT

Amoco Chemicals Corporation

Oil Production Chemicals Division
706 North Main - P. O. Box 5
Seminole, Texas 79360

Date: 7-9-81

Company: Amoco Production Co.
Attn: J. R. S.
County:
State: NM
Field:
Lease: EAGE
Well:
Lab #: 7862

Formation:
Date Sampled: 6-26-81 (DSD)
Sampled By:
Sample Source: Process H₂) - Cooling Tower

DISSOLVED SOLIDS

CATIONS

| | mg/l | me/l |
|--------------------|------|------|
| Sodium, Na (calc.) | 343 | 15 |
| Calcium, Ca | 329 | 16 |
| Magnesium, Mg | 63 | 5 |
| Barium, Ba | | |

ANIONS

| | mg/l | me/l |
|-------------------------------|-------|------|
| Chloride, Cl | 380 | 11 |
| Sulfate, SO ₄ | 1,167 | 24 |
| Carbonate, CO ₃ | 0 | 0 |
| Bicarbonate, HCO ₃ | 93 | 2 |

Total Dissolved Solids (calc.)
2,375

Iron, Fe (total) 0
Sulfide, as H₂S

REMARKS & RECOMMENDATIONS:

Stiff & Davis Index:

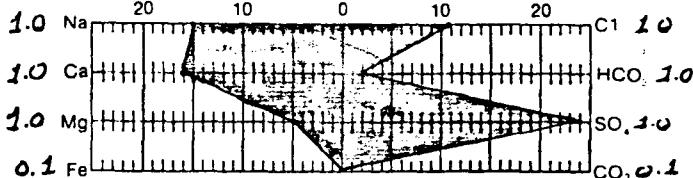
| | | | | |
|-----------------|--------|--------|--------|--------|
| CO ₃ | 60° | 100° | 120° | 180° |
| | -1.24 | -0.82 | -0.64 | -0.05 |
| SO ₄ | 55° | 95° | 122° | 176° |
| | -57.51 | -58.16 | -58.16 | -55.26 |

OTHER PROPERTIES

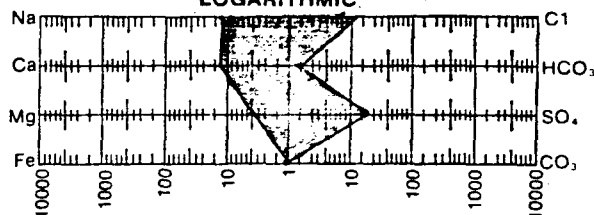
pH 6.0
Specific Gravity, 60/60 F. 1.0140
Resistivity (ohm-meters) F.
Nonograph SpGr 1.002-1.004

WATER PATTERNS — me/l

STANDARD



LOGARITHMIC



[Signature]

Attachment B

Geohydrologic Framework
of the Roswell Ground-water Basin,
Chaves and Eddy Counties, New Mexico

ON Library Bookshelf

File Copy
(Copy 1/2)

DISCHARGE PLAN RENEWAL

EMPIRE ABO GASOLINE PLANT
EDDY COUNTY
NEW MEXICO

AMOCO PRODUCTION COMPANY



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager

September 14, 1989

File: JFT-381-988.SWD00

Director
Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088

RE: Discharge Plan Renewal Application
Empire Abo Gasoline Plant
Eddy County, New Mexico

Dear Sir:

This Application for Renewal for the discharge plan at the Amoco Production Company, Empire Abo Gasoline Plant was prepared according to guidelines and directives from your office. The application was prepared by Timothy J. Nagengast, Environmental Specialist in the APC Houston Region Environmental Affairs Group.

The application attached hereto is does not contain the waste characterization lab report for the Ethane-Propane filters that is indicated at Appendix 89-3. The missing report will be forwarded to you in triplicate upon receipt in this office.

We appreciate your cooperation in the preparation and review of this application. If you have any questions or require additional information, please contact Tim Nagengast at (713) 556-2518.

TJN/

Attachments

RECEIVED

SEP 21 1989

OIL CONSERVATION DIV.
SANTA FE

DISCHARGE PLAN RENEWAL APPLICATION

AMOCO PRODUCTION COMPANY

EMPIRE ABO GASOLINE PLANT

EDDY COUNTY, NEW MEXICO

Timothy J. Nagengast
Environmental Specialist

September 12, 1989

List of Attachments

Tables

- 89-1. Characteristics of Effluent Streams EAGP**
- 89-2. Solid Waste Management EAGP**

Figures

- 89-1. Effluent Flow Schematic EAGP**
- 89-2. EAGP Operations Plot Plan**
- 89-3. EAGP Plant Drainage System Schematic**

Appendices

- 89-1. MSDS's for Chemicals Potentially in Effluent Streams**
- 89-2. Analyses of Evaporation Pond Water**
- 89-3. Waste Characterization Laboratory Reports**
- 89-4. EAGP SPCC Plan**

Discharge Plan Renewal Application
Amoco Production Company
Empire Abo Gasoline Plant
Section 3, T-18-S, R-27-E
Eddy County, New Mexico

This application for renewal of the discharge plan for the Amoco, Empire Abo Gasoline Plant will follow the Discharge Plan Guidelines for Natural Gas Plants printed by the New Mexico Oil Conservation Division (OCD) in April, 1988, as well as additional directives included in the June 12, 1989 certified letter informing Amoco of the renewal requirement. The original plan was approved December 13, 1984, with a subsequent modification approved July 15, 1986. The format for this application is to reference the modified plan and indicate changes and additions where appropriate.

I. GENERAL INFORMATION

A. Amoco Production Co. Empire Abo Gasoline Plant
Drawer 70
Artesia, NM 88210
(505) 677-2154

B. P. E. Haney
Plant Foreman

Same as Above

J. F. Trickett
Regional Environmental Affairs &
Safety Manager
P. O. Box 3092
Houston, TX 77253
(713) 556-2000

C-D. No major changes in plant operations have occurred since the original plan was approved and none are contemplated in the foreseeable future.

F. The required affirmation and signature are included on page four of this application.

II. PLANT PROCESSES

A. Sources of effluent and process fluids are much the same as described in the original plan but quantities are somewhat different, as is indicated on Table 89-1. The additives column includes new chemical products, as well as products that will no longer be used once the supply on hand is depleted. Material Safety Data Sheets (MSDSs) for these products are included in Appendix 89-I.

- B. No significant changes. A sample of the water in the evaporation pond was subjected to a complete chemical analysis on 8/12/86 and 4/15/88. A copy of the lab report for each sample is included in Appendix 89-2.

III. EFFLUENT DISPOSAL

- A. Although no changes have been made in operations, some additional information is provided here to clarify existing procedures.

1) The EAGP water schematic that was included in the original plan as Figure 1 has been modified, as were Figures 4 and 5. These diagrams are included in this application for renewal as Figures 89-1, 89-2 and 89-3, respectively. Changes to be noted on the new figures are described below.

Figure 89-1: The former 'storage tank' receiving effluent from process drains and jacket water systems has been renamed 'waste storage tanks' and moved to the other side of the schematic to more closely represent physical relationships observed at the plant; the 'waste sump' has been added to the upstream side of the 'waste storage tanks'. The location of the evaporation pond was similarly moved from one side of the figure to the other and the flow line representing boiler blow down was redirected to represent blow down to the evaporation pond instead of the cooling tower.

Figure 89-2: The contour lines on the original figure were not included in the new figure because they have not changed. Revisions include the addition of the evaporation pond and a new representation of the amine storage tanks and waste storage tanks located near N. 2+50, W. 8+00. The location of the 'waste sump' has also been indicated.

Figure 89-3: In order to install the evaporation pond at the plant it was necessary to remove one of the original waste sumps and redirect the effluent lines to the other sump. This has been indicated on the new schematic. Another modification to the schematic was to remove lines in the vicinity of the cooling tower that represented water lines between the cooling tower and the process area. Also, the drainage from No. 9 compressor building at the southern edge of the plant is now shown to be directed to the 'slop oil' tanks, which were also new additions to the schematic. This last modification to the drawing does not represent a change in operations, only a clarification as described below in Item 2.

2) The crude distillate tanks, or 'slop oil' tanks receive effluent from the process drainage system in the No. 9 compressor building, in addition to the water/hydrocarbon liquids from inlet gas scrubbers as described in the original plan. This effluent consists of water and oil from the compressor engine and jacket water cooling system. The contents of the 'slop oil' tanks is hauled by truck to a tank battery in the Arco operated Empire Abo Unit.

3) Used motor oil that is drained from engine oil filters is collected in drums for temporary storage prior to disposal into the waste sump.

- B. Proposed modifications to the current disposal methods include the possibility of redirecting the boiler blow down to discharge into the evaporation pond, rather than to the waste sump as is the current method. Also, water from the evaporation pond may be conveyed to the Arco Empire Abo Unit, either by pipeline or by truck for use as a carrying medium for heat and chemical treatment of producing wells, or for disposal in the Unit disposal wells. Some of the water from the evaporation pond may be transferred to the county for use in road construction or repair.

IV. SITE CHARACTERISTICS

During the plant inspection by NMOCD personnel, a request was made for additional information about the presence of groundwater under the EAGP. This information was to have come from records on groundwater test wells that were reported to have been drilled early in the plant's history. After a thorough search, it is apparent that the wells in question are, in fact, the same wells that were noted in the discharge plan for the Phillips Petroleum Company Artesia Gasoline Plant in Section 7, Township 18 South, Range 28 East. The reported data from those wells, and the technical report included with the original Amoco discharge plan, support the original interpretation that there is a very low potential for significant accumulations of useable groundwater under the EAGP.

V. ADDITIONAL INFORMATION

A. Solid Waste Disposal

There are two methods of disposal for solid wastes generated at the EAGP. The breakdown of waste types and methods of disposal are shown on Table 89-2. Office trash, crates, boxes, empty containers, etc., are collected by Waste Control of New

Mexico and disposed of in the Eddy County Landfill at Dark Canyon. Used filters are drained of all excess filterable material and likewise collected by Waste Control of NM. Spent catalyst from the sulfur recovery unit and waste molecular sieve are landspread at the plant. Waste characterization lab analyses for the various solid wastes are included in Appendix 89-3.

B. The Spill Prevention Control and Countermeasure (SPCC) plan for the EAGP is included with this application as Appendix 89-4.

C. In response to specific concerns indicated by David Boyer and Roger Anderson of the NMOCD during their plant inspection on 6-21-89, the following actions have been taken:

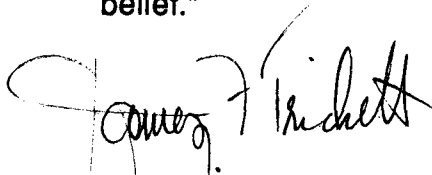
1) Additional material has been added to dikes around the waste storage tanks to insure that the volume of the enclosed area is sufficient to contain at least 560 bbls, which is 1.33 times the volume of both tanks.

2) A diversion dike has been constructed near the sump that collects process effluent prior to transfer into the waste storage tanks in order to reduce the threat of storm water entering the sump and overfilling it.

3) A dike has been constructed around the jacket water storage tank next to the No. 9 compressor building, and an overflow alarm has also been installed on the tank.

AFFIRMATION

"I hereby certify that I am familiar with the information contained in and submitted with this application and that such information is true, accurate and complete to the best of my knowledge and belief."



James F. Trickett
Regional Environmental
Affairs and Safety Manager

9/15/89
(Date)

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Table 89-1
Characteristics of Effluent Streams
Empire Abo Gasoline Plant

| Source | Primary Effluent | Estimated Flow (GPD) | Material Added | Additives to Stream Purpose of Additive |
|------------------------------|------------------------------|-------------------------|--|--|
| <u>Process System</u> | | | | |
| 1. Separators | Water/H.C. Liquids | 3360 | None | --- |
| 2. Drains | Oily Water/Caustic/ Amine | 840 | None | --- |
| 3. Engine Cooling Systems | Water/Oil/ H.C. Liquids | 420 | Unichem Ke-Tone BN | Corrosion Inhibitor |
| <u>Utility Systems</u> | | | | |
| 1. Boiler/Condensate | Low TDS Water | 2200 | Calgon BLR - 3152 " " - 3430 " UltrAmine 130 Unichem Boiler-Hib 430 " " 530 " " 341 | Corrosion Inhibitor Scale Inhibitor Oxygen Scavenger Corrosion Inhibitor Scale and Corrosion Inhibitor Oxygen Scavenger |
| 2. Cooling Tower | High TDS Water | 10500 | H2SO4 Caustic Liquid Chlorine Unichem Alpha 570 " " 520 " " 512 Unichem 1719 " 1300 | pH Control pH Control Biocide Biocide Biocide Biocide Biocide Scale and Corrosion Inhibitor |

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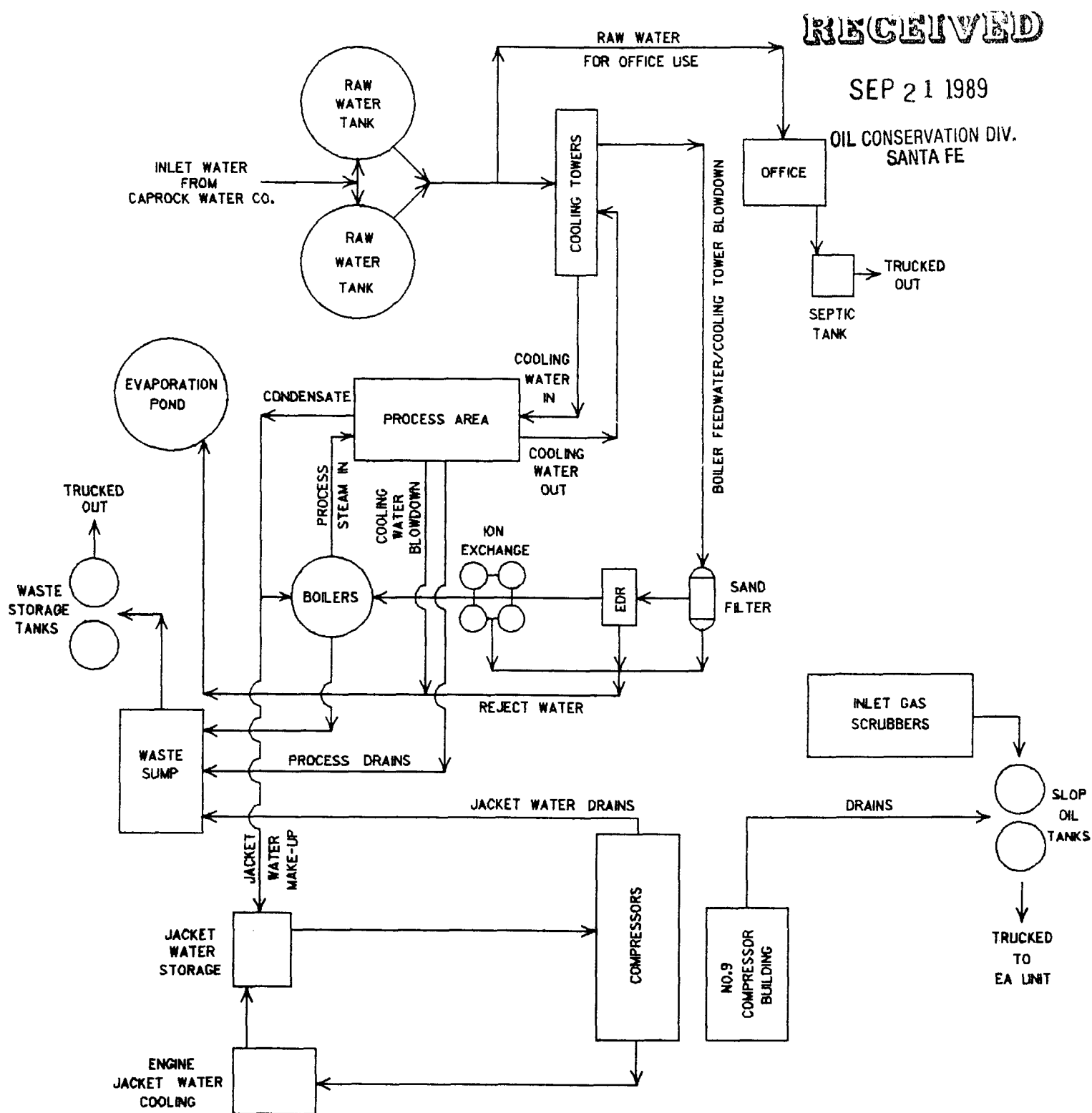
SEP 21 1989

OIL CONSERVATION DIV.
SANTA FE

Table 89-2
Solid Wastes Management
Empire Abo Gasoline Plant

| Waste | Source | Annual Quantity | Disposal Method |
|------------------------|----------------------|-----------------|---|
| Oil Filters | Compressor Engines | 550 | Eddy County Landfill at Dark Canyon (via: Waste Control of New Mexico) |
| 'Hay' Filters | Amine Systems | 12 | " |
| Ethane-Propane Filters | Process | 96 | " |
| Molecular Sieve | Gas Dehydrators | 100 M lbs. (*) | Landspread at Plant |
| Spent Catalyst | Sulfur Recovery Unit | 30 M lbs. (*) | " |

* Mole sieve and SRU Catalyst are replaced only once every 3 to 5 years.
Volumes shown are total amount in use at plant.



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OFFICE

SEPTIC TANK
TRUCKED OUT

INLET WATER FROM
CAPROCK WATER CO.

RAW WATER TANK

RAW WATER TANK

RAW WATER FOR OFFICE USE

COOLING TOWERS

COOLING WATER IN

COOLING WATER OUT

BOILER FEEDWATER/COOLING TOWER BLOWDOWN

EVAPORATION POND

CONDENSATE

PROCESS AREA

PROCESS STEAM IN

COOLING WATER BLOWDOWN

ION EXCHANGE

BOILERS

EDR

SAND FILTER

REJECT WATER

PROCESS DRAINS

WASTE SUMP

JACKET WATER DRAINS

JACKET WATER STORAGE

ENGINE JACKET WATER COOLING

COMPRESSORS

NO. 9 COMPRESSOR BUILDING

INLET GAS SCRUBBERS

DRAINS

SLOP OIL TANKS

TRUCKED TO EA UNIT

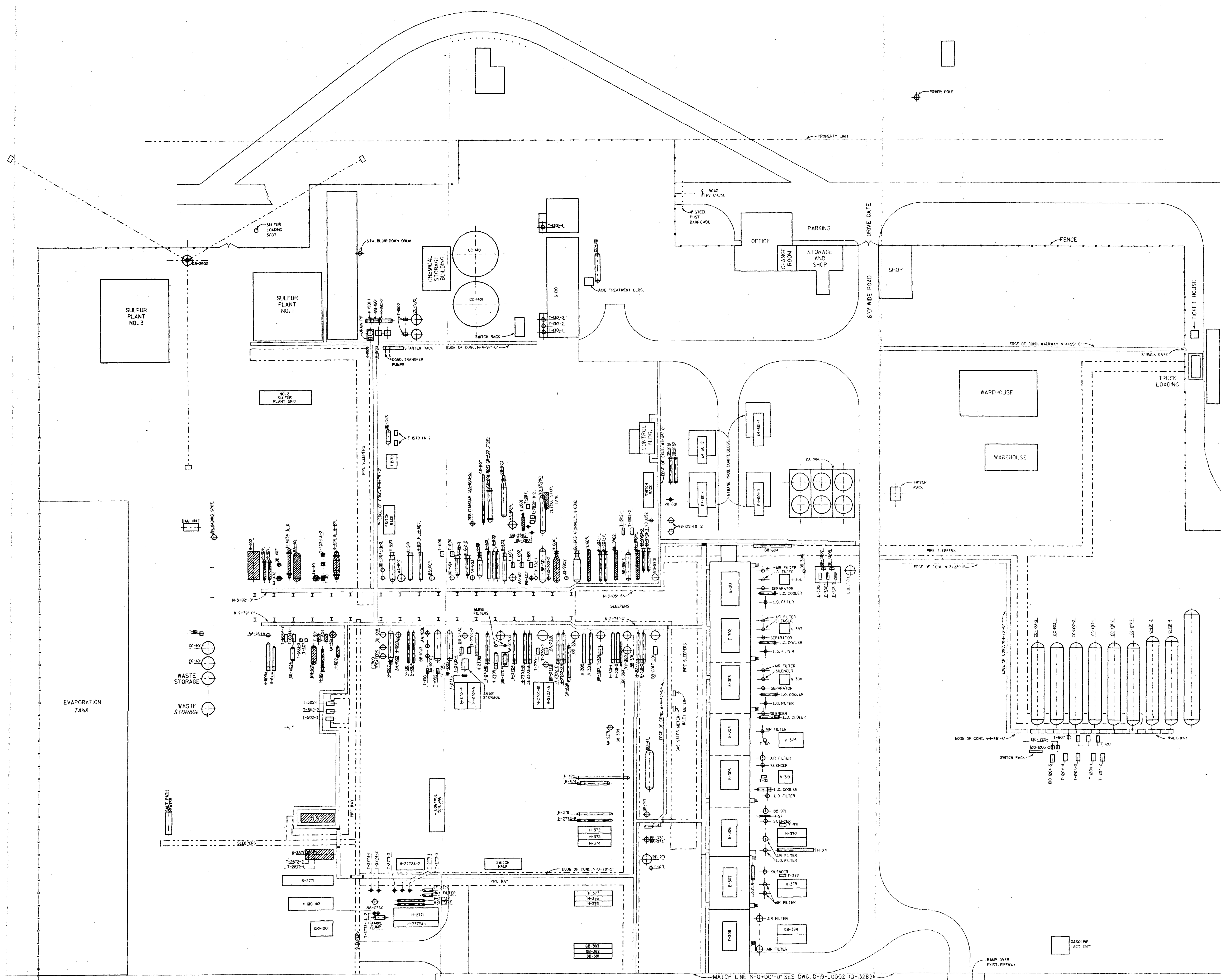
FIGURE 89-1

AMOCO PRODUCTION COMPANY

EFFLUENT FLOW
EMPIRE-ABO GASOLINE PLANT
Eddy County, New Mexico

DWG NO D-5171

DATE 09-01-89



| EQUIPMENT SCHEDULE | | | |
|--|------------------------------|----------------------|-----------------------------|
| NOTES FOR CRYOGENIC RECOVERY FAC. EQUIP. LIST SEE DWG. D-19-0002 (D-13283) | | | |
| TOWERS | | EXCHANGERS & COOLERS | |
| AA-401 | ABSORBER & SCRUBBER | CB-394 | 1st STAGE TRIM COOLER |
| AA-402 | DETHANIZER REABSORBER | H-301-1,2 | 1st STAGE DIS. COOLERS |
| AA-501 | STILL | H-302-1,2 | 2nd STAGE DIS. COOLERS |
| AA-601 | DETHANIZER | H-303-1,2 | 3rd STAGE DIS. COOLERS |
| AA-602 | DEPROPANIZER | H-304 | 4th STAGE DIS. COOLER |
| AA-602A | DEPROPANIZER | H-305 | 4th STAGE GAS/F.C. EXCH. |
| AA-603-1 | DEBUTANIZER | H-306 | STEAM CONDENSER |
| AA-603-2 | DEBUTANIZER | H-307 | STEAM CONDENSER |
| AA-1001 | CAUSTIC CONTACTOR | H-308 | STEAM CONDENSER |
| AA-1002 | CAUSTIC REGENERATOR | H-309 | J.W. COOLER |
| AA-1070 | CAUSTIC CONTACTOR | H-310 | J.W. COOLER |
| AA-2701 | AMINE CONTACTOR | H-370 | J.W. COOLER |
| AA-2702 | AMINE REGENERATOR | H-371 | LUBE OIL COOLER |
| AA-2771 | AMINE CONTACTOR | H-372 | 1st STAGE GAS COOLER |
| AA-2772 | AMINE REGENERATOR | H-373 | 2nd STAGE GAS COOLER |
| BB-301 | INLET SCRUBBER | H-374 | 3rd STAGE GAS COOLER |
| BB-271 | INLET SCRUBBER | H-375 | 1st STAGE DISCH. COOLER |
| BB-301 | 1st STAGE DIS. SCRUBBER | H-376 | 2nd STAGE DISCH. COOLER |
| BB-302 | 2nd STAGE DIS. SCRUBBER | H-377 | 3rd STAGE DISCH. COOLER |
| BB-303 | 2nd STAGE DIS. SCRUBBER | H-378 | 4th STAGE GAS TRIM COOLER |
| BB-371 | 1st STAGE DIS. SCRUBBER | H-379 | JACKET WATER COOLER |
| BB-372 | 2nd STAGE DIS. SCRUBBER | H-401 | PRESSURIZER CHILLER |
| BB-373 | 2nd STAGE DIS. SCRUBBER | H-402 | LEAN OIL COOLER |
| BB-401 | RICH OIL FLASH TANK | H-403A,B | DEETH. REABS. HEAT EXCH. |
| BB-402 | RECOMPR. SUC. SCRUBBER | H-404 | LEAN OIL CHILLER |
| BB-471 | 3rd STAGE ACCUMULATOR | H-405 | DEETH. REABS. REBOILER |
| BB-501 | STILL REF. ACCUMULATOR | H-406 | DEETH. REABS. SIDE HTR. |
| BB-601 | 3rd STAGE COND. ACCUM. | H-474 | GAS CHILLER |
| BB-602 | DEETH. REFLUX ACCUM. | H-475 | GAS TO GAS EXCHANGER |
| BB-603 | DEETH. REFLUX ACCUM. | H-501 | STILL CONDENSER |
| BB-603A | DEETH. REFLUX ACCUM. | H-502 | OIL RECLAIMER |
| BB-604 | DEETH. REFLUX ACCUM. | H-601 | DEETH. BTMS. COOLER |
| BB-604 | DEETH. REFLUX ACCUM. | H-602 | DEETH. FEED BTMS. EXCH. |
| BB-671 | INSTR. AIR RECEIVER | H-603 | DEETH. REBOILER |
| BB-1001 | CAUSTIC TREATER | H-604 | GAS CHILLER |
| BB-1002 | CAUSTIC TREATER | H-605 | GAS TO GAS EXCHANGER |
| BB-1003 | SAND FILTER | H-606 | DEETH. OVHD. CONDENSER |
| BB-1004-1,2 | CALCIUM CHLORIDE DRYERS | H-607 | DEETH. FEED BTMS. EXCH. |
| BB-1501 | BOILER FEED TANK | H-609 | DEPROPANIZER REBOILER |
| BB-1570 | CONDENSATE STORAGE TANK | H-609A | DEPROPANIZER REBOILER |
| BB-2501 | ACID GAS SCRUB. (S.P.L.) | H-610 | DEPROP. OVHD. COND. |
| BB-2502 | REACTOR (SULFUR PLANT) | H-610A | DEPROP. OVHD. COND. |
| BB-2511 | SULFUR SCRUBBER (S.P.L.) | H-611 | DEBUTANIZER REBOILER |
| BB-2572 | SULFUR SCRUBBER (S.P.L.) | H-612-1,2 | DEBUT. OVHD. COND. |
| BB-2702 | AMINE REGEN. REF. ACCUM. | H-612 | DEBUT. BTMS. COOLER |
| BB-2704 | AMINE SUMP | H-671 | INSTR. AIR COOLER |
| BB-2801 | GLYCOL SURGE TANK | H-672 | CAUSTIC REG. FEED BTMS. EX. |
| BB-2802 | GLYCOL FILTER | H-1002 | CAUSTIC REGEN. REBOILER |
| BB-3001 | AIR TANK | H-1003 | CAUSTIC REGEN. COND. |
| BB-3002 | INSTR. AIR DRYER | H-1004 | LEAN CAUSTIC COOLER |
| BB-3003 | INSTR. AIR DRYER | H-1004-1,2 | DEAERATOR |
| BB-3901 | REFRIG. INLET SCRUBBER | H-1502 | EVAPORATOR |
| BB-3902 | PROPANE PURIFIER | H-1503-1,2,3 | EVAPORATOR CONDENSER |
| BB-3903 | PROPANE ACCUMULATOR | H-1570 | STEAM CONDENSER |
| VB-303 | 1st STAGE DISCHARGE SCRUBBER | H-2701A,B | AMINE REFLUX CONDENSERS |
| C-1501-1,2,3,4 | BOILERS (BOILER BLDG.) | H-2702A | AMINE COOLER |
| C-2501 | FURN. (CL. COND.) (S.P.L.) | H-2702-1,2 | AMINE COOLER |
| CC-1001 | CAUS. STRG. & MIX TANK | H-2702-3,4 | AMINE FINAL COOLERS |
| CC-1011 | LEAN OIL STORAGE TANK | H-2703A,B | AMINE EXCHANGERS |
| CC-1011-1,2,3,4 | PROPANE STORAGE TANKS | H-2704 | AMINE REGEN. REBOILER |
| CC-1021-1,2 | BUTANE STORAGE TANKS | H-2704B | AMINE REGEN. REBOILER |
| CC-1031-1,2 | GASOLINE STORAGE TANKS | H-2705 | AMINE RECLAIMER |
| CC-1301 | SULFURIC ACID STRG. TANK | H-2721-1,2 | AMINE COOLER |
| CC-1401 | WATER STORAGE TANK | H-2722B | AMINE TRIM COOLER |
| CC-1501 | CONDENSATE STORAGE TANKS | H-2731-1,2 | AMINE EXCHANGER |
| CC-2501 | SEP. STRG. TANK (S.P.L.) | H-2731 | GLYCOL REBOILER |
| CC-2501 | GLYCOL STORAGE TANK | H-2731-1,2,3 | PROPANE CONDENSERS |
| CC-2501 | LUBE OIL STORAGE TANK | H-2731-1,2,3 | PROPANE CONDENSERS |
| CC-2501 | AMINE STORAGE TANK | H-2731-1,2,3 | PROPANE CONDENSERS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-201 | INLET KNOCKOUT PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-271 | INLET KNOCKOUT PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-301 | 2nd STAGE KNOCKOUT PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-301 | JACKET WATER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-31 | JACKET WATER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-371 | JACKET WATER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-372 | J.W. PUMP - COMP. #7 |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-401 | WATERATOR OIL PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-403-1,2 | HIGH PR. LEAN OIL PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-471 | 2nd STAGE KNOCKOUT PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-501 | STILL REFLUX PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-502-1,2,3 | HOT OIL PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-503-1,2 | STILL REFLUX PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-601 | DETHANIZER FEED PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-602 | DEETH. FEED PUMP (SPARC) |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-603 | DEETH. REFLUX PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-604 | STILL REFLUX PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-604A-1,2 | DEPROP. REFLUX PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-605 | DEBUT. REF. PUMP (SPARC) |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-606 | DEBUT. REFLUX PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-607 | MUFFLE FURNACE (SULFUR) |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1000 | CAUSTIC CIRC. PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1002 | CAUSTIC CHARGE PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-101 | LEAN OIL MAKE-UP PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1201 | TRUCK RACK PROPANE PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1202 | PIPELINE BUTANE PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1203 | TRUCK RACK GAS PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1204-1,2,3,4 | PIPELINE PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1301-1,2,3,4 | COOLING TOWER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1302-1,2 | COOLING WTR. HSTR. PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1501-1,2,3 | DR. FUM. PUMP (BL.BLG.) |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1502 | FWTR. MK. UP PUMP (BL.BLG.) |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1503 | CONDENSATE PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-1570-1,2 | CONDENSATE TRANSFER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2501 | LOADING PUMP (S.P.L.) |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2701-1,2 | AMINE CIRCULATING PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2702-1,2 | AMINE REGEN. REF. PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2771-1,2,3 | AMINE CIRCULATING PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2772-1,2 | REGENERATOR REF. PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2773 | AMINE TRANSFER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2774-1,2 | AMINE REBOILER PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2801-1,2 | GLYCOL PUMPS |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2871 | GLYCOL TRANSFER PUMP |
| E-301 THRU E-303 | 6 GAS COMPRESSORS | T-2872-1,2 | GLYCOL PUMPS |

NOTES:
 1. ALL CONC. WALKWAYS ARE TO BE 2'-6" WIDE
 2. * INDICATES EQUIPMENT FURNISHED BY TUSA PRO-QUIP, INC.
 3. [Symbol] INDICATES EQUIPMENT OUT OF SERVICE

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FIGURE 89-2

NORTH HALF

SCALE
1" = 40'

AMOCO PRODUCTION COMPANY

PLOT PLAN

EMPIRE-ABO GASOLINE PLANT

Eddy County, New Mexico

D-19-0004

DWG NO D-5171

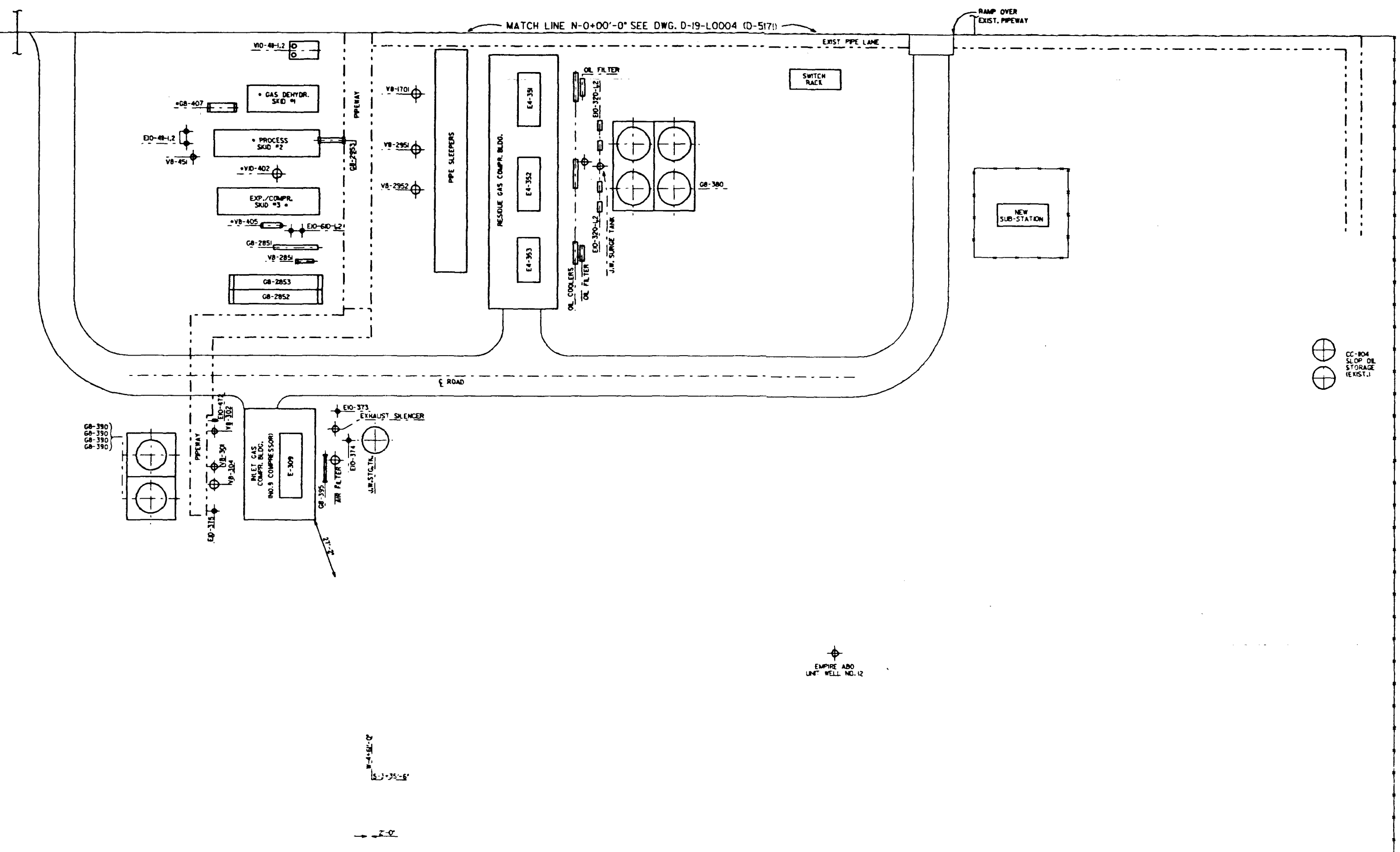
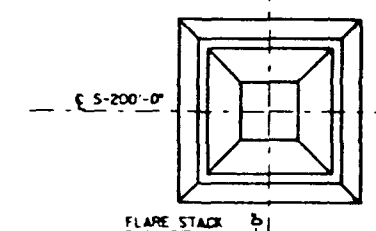
DATE 07-12-88

SUMP

BB-237
FLARE STACK
(EXIST.)

BB-238
FLARE STACK
(EXIST.)

BB-239
FLARE STACK
(EXIST.)



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| EQUIPMENT SCHEDULE | | |
|---------------------------------------|--------------------------|------------|
| INLET GAS COMPRESSOR ADDITION 1976 | | |
| VESSELS | | |
| V-301 | 2nd STAGE SUCTION SCRUB. | D-19-L0002 |
| V-302 | 3rd STAGE SUCTION SCRUB. | D-19-L0002 |
| V-303 | 1st STAGE DISCH. SCRUB. | D-19-L0004 |
| V-304 | 1st STAGE SUCTION SCRUB. | D-19-L0002 |
| EXCHANGERS | | |
| C-390 | JACKET WATER COOLER | D-19-L0002 |
| C-391 | 1st STAGE DISCH. COOLER | D-19-L0002 |
| C-392 | 2nd STAGE DISCH. COOLER | D-19-L0002 |
| C-393 | 3rd STAGE DISCH. COOLER | D-19-L0002 |
| C-394 | 1st STAGE TRIM COOLER | D-19-L0004 |
| C-395 | LUBE OIL COOL.ER | D-19-L0002 |
| COMPRESSORS | | |
| E-309 | GAS COMPRESSOR | D-19-L0002 |
| PUMPS | | |
| EIO-373 | J.W. CIRCULATING PUMP | D-19-L0002 |
| EIO-374 | J.W. TRANSFER PUMP | D-19-L0002 |
| EIO-375 | DRAIN SUMP PUMP | D-19-L0002 |
| EIO-376 | PRE. POST. LUBE OIL PUMP | D-19-L0002 |
| EIO-472 | 2nd STAGE KO PUMP | D-19-L0002 |

NOTES:
1. * INDICATES EQUIPMENT FURNISHED BY TULSA PRO-DUP, INC.
2. ** FORMERLY H-604
3. *** FORMERLY T-501-L2
4. FOR PLOT PLAN DWG. D-19-L0004 SEE FILE # D-571
5. FOR PLOT PLAN DWG. D-19-L0002 SEE FILE # D-13283

| EQUIPMENT SCHEDULE | | |
|-----------------------------|-----------------------------------|-----------------------|
| CRYOGENIC RECOVERY FACILITY | | |
| ITEM NO. | DESCRIPTION | PLOT PLAN DWG. NO. |
| VESSELS | | |
| AA-604A | DEETHANIZERS | D-19-L0004 |
| AA-602,2A | DEPROPANIZERS | D-19-L0004 |
| AA-603 | DEBUTANIZER | D-19-L0004 |
| AA-1001 | CAUSTIC CONTACTOR | D-19-L0004 |
| AA-1002 | CAUSTIC REGEN. | D-19-L0004 |
| AA-1070 | CAUSTIC CONTACTOR | D-19-L0004 |
| BB-303 | 2nd STAGE DISCH. SCRUB. | D-19-L0004 |
| BB-373 | 2nd STAGE DISCH. SCRUB. | D-19-L0004 |
| BB-471 | DEETH. FEED SURGE TK. | D-19-L0004 |
| BB-601 | 3rd STAGE DISCH. SCRUB. | D-19-L0004 |
| BB-604 | DEPROP. REFLUX ACCUM. | D-19-L0004 |
| BB-1002 | CAUSTIC TREATER | D-19-L0004 |
| BB-1003 | SAND FILTER | D-19-L0002 |
| BB-1004-L2 | SORBED DRYERS | D-19-L0004 |
| BB-9901 | REFRIG. 3rd STAGE SCRUB. | D-19-L0004 |
| BB-9903 | REFRIG. SURGE TANK | D-19-L0004 |
| V-8-401 | INLET SEP. (ON SKID #2) | D-19-L0002 |
| V-8-402 | REGEN. GAS WATER KO TK. (SKID #1) | D-19-L0002 |
| V-8-403 | CHILLER SEP. (ON SKID #3) | D-19-L0002 |
| V-8-404 | EXP. FEED SEP. (ON SKID #3) | D-19-L0002 |
| V-8-405 | EXP. INTERSTAGE SEP. | D-19-L0002 |
| V-8-451 | COALESCE | D-19-L0002 |
| V-8-601 | ETHANE PROD. SCRUB. | D-19-L0004 |
| V-8-62(N) | DEETH. REFLUX ACCUM. | D-19-L0004 |
| V-8-105-L2 | ETHANE PROD. TREATERS | D-19-L0004 |
| V-8-170 | FUEL GAS SCRUBBER | D-19-L0002 |
| V-8-2851 | REGEN. GAS FILTER | D-19-L0002 |
| V-8-2951 | REFRIG. 1st STAGE SCRUB. | D-19-L0002 |
| V-8-2952 | REFRIG. 2nd STAGE SCRUB. | D-19-L0002 |
| VIO-401-L2 | GAS DEHYD. (SKID #1) | D-19-L0002 |
| VIO-402 | DEMETHANIZER | D-19-L0002 |
| VIO-411-L2 | LIQUID DEHYDRATORS | D-19-L0002 |
| EXCHANGERS & COOLERS | | |
| C-8-380 | COMPR. JACKET WTR. CLR. | D-19-L0002 |
| C-8-381 | 1st STAGE GAS CLR. | D-19-L0004 |
| C-8-382 | 2nd STAGE GAS CLR. | D-19-L0004 |
| C-8-383 | 3rd STAGE GAS CLR. | D-19-L0004 |
| C-8-384 | JACKET WATER CLR. | D-19-L0004 |
| C-8-408/C | WARM GAS TO GAS EXCH. (SKID #2) | D-19-L0002 |
| C-8-402 | HIGH LEVEL CHILLER (SKID #2) | D-19-L0002 |
| C-8-403B/C | WARM GAS TO GAS EXCH. (SKID #2) | D-19-L0002 |
| C-8-404 | LOW LEVEL CHILLER (SKID #2) | D-19-L0002 |
| C-8-405B/C | COLD GAS TO GAS EXCH. (SKID #2) | D-19-L0002 |
| C-8-406 | DEMETH. REBOILER (SKID #3) | D-19-L0002 |
| C-8-407 | REGEN. GAS COOLER | D-19-L0002 |
| C-8-409 | PROPANE DEOILER (SKID #2) | D-19-L0002 |
| C-8-601 | DEETH. FEED EXCH./COND. | D-19-L0004 |
| C-8-602 | DEETH. FEED WTR. | D-19-L0004 |
| C-8-603 | DEETH. REBOILER | D-19-L0004 |
| C-8-604 | ETHANE PROD. COND. | D-19-L0004 |
| C-8-606(N) | DEETH. REFLUX COND. | D-19-L0004 |
| C-8-607 | DEETH. BTMS. COOLER | D-19-L0004 |
| C-8-608 | DEETH. FD./MEA EXCH. | D-19-L0004 |
| C-8-1051 | REGEN. GAS COOLER | D-19-L0004 |
| C-8-1052 | REGEN. GAS RECOMP. COOLER | D-19-L0004 |
| C-8-2851 | REGEN. GAS EXCH. | D-19-L0002 |
| C-8-2852 | RESIDUE GAS AFTERCOOLER | D-19-L0002 |
| C-8-2853 | RESIDUE GAS INTERCOOLER | D-19-L0002 |
| C-8-2951 | REFRIG. COND. | D-19-L0004 |
| C-8-2953 | REFRIG. ECONOMIZER | D-19-L0002 |
| H-303-L2 | 3rd STAGE DISCH. COOLER | D-19-L0004 |
| H-304 | 4th STAGE DISCH. GAS CLR. | D-19-L0004 |
| H-305 | 4th STG. GAS TO FUEL GAS EXCH. | D-19-L0004 |
| H-374 | 3rd STAGE GAS COOLER | D-19-L0004 |
| H-601 | DEPROP. FEED-DEBUT. BTMS. EXCH. | D-19-L0004 |
| H-609,9A | DEPROP. REBOILERS | D-19-L0004 |
| H-610,10A | DEPROP. CONDENSERS | D-19-L0004 |
| H-611 | DEBUT. REBOILER | D-19-L0004 |
| H-612-L2 | DEBUT. CONDENSER | D-19-L0004 |
| H-613 | DEBUT. BTMS. COOLER | D-19-L0004 |
| H-1001 | CAUSTIC REGEN. FEED BTMS. EXCH. | D-19-L0004 |
| H-1002 | CAUSTIC REGEN. REB. | D-19-L0004 |
| H-1003 | CAUSTIC REGEN. COND. | D-19-L0004 |
| H-1004 | LEAN CAUSTIC COOLER | D-19-L0004 |
| H-9901-2,3 | REFRIG. S. COOLERS | D-19-L0004 |
| PUMPS | | |
| EIO-302-L2 | 3rd DISCH. SCRUB. KO PUMPS | D-19-L0004 |
| EIO-320-L2 | JACKET WATER PUMPS | D-19-L0002 |
| EIO-321-L2 | CIRCULATING PUMPS | D-19-L0002 |
| EIO-401-L2 | DEMETH. PROD. BOOSTER (SKID #3) | D-19-L0002 |
| EIO-402 | METHANOL PUMP (SKID #3) | D-19-L0002 |
| EIO-411-L2 | LIO. DEHYD. ANTIFLASH PUMPS | D-19-L0002 |
| EIO-610-L2 | DEETH. FEED PUMPS | D-19-L0002 |
| EIO-1204-5 | PIPELINE PUMP | D-19-L0004 |
| EIO-1205-L2 | BUTANE BOOSTER PUMP | D-19-L0004 |
| T-301 | KO PUMP | D-19-L0004 |
| T-471 | KO PUMP | D-19-L0004 |
| T-601,2 | DEETH. REFLUX PUMPS | D-19-L0004 |
| T-604A-L2 | DEPROP. REFLUX PUMPS | D-19-L0004 |
| T-605,5 | DEBUT. REFLUX PUMPS | D-19-L0004 |
| T-1001 | CAUSTIC CIRC. PUMP | D-19-L0004 |
| T-1002 | CAUSTIC C-ARGE PUMP | D-19-L0004 |
| T-1204-L2,3,4 | PIPELINE PUMPS | D-19-L0004 |
| COMPRESSORS | | |
| E-301-308 | GAS COMPRESSORS | D-19-L0004 |
| E-972 | INSTR. AIR COMP. IN COMP. BLDG. | D-19-L0004 |
| E4-351,2,3 | RESIDUE GAS COMPRESSORS | D-19-L0002 |
| E4-401-L2 | EXPANDER COMP. (SKID #3) | D-19-L0002 |
| E4-601-L2 | REGEN. GAS COMP. | D-19-L0004 |
| E4-601-3,4 | ETHANE PROD. COMP. | D-19-L0004 |
| HEATERS | | |
| QIO-401 | REGEN. GAS HEATER | D-19-L0004 |
| QIO-1001 | REGEN. GAS HEATER | D-19-L0004 |
| TANKS | | |
| CC-1001 | CAUSTIC STORAGE & MIX TANKS | D-19-L0004 |

FIGURE 89-2
SOUTH HALF

SCALE
1" = 40'
0 20' 40' 60' 80'

AMOCO PRODUCTION COMPANY
PLOT PLAN
EMPIRE-ABCO GASOLINE PLANT
Eddy County, New Mexico
D-19-L0002
DWG NO D-13283 DATE 07-12-88

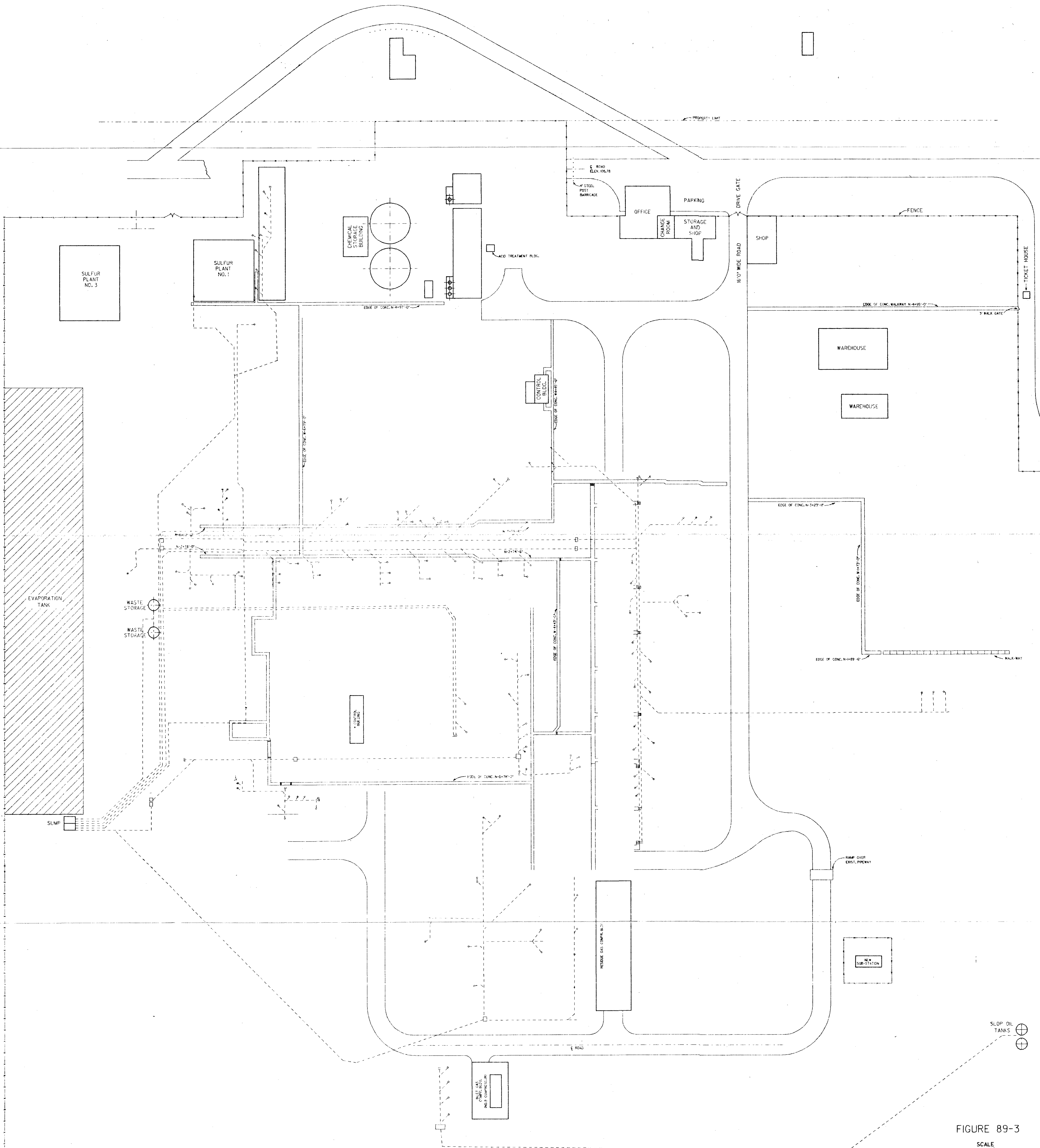


FIGURE 89-3

SCALE
1" = 40'

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AMOCO PRODUCTION COMPANY

DRAIN SYSTEM
EMPIRE-ABO GASOLINE PLANT
Eddy County, New Mexico

D-19-L0004

DWG NO D-5171

DATE 07-12-88

Appendix 89-1.

Material Safety Data Sheets for Chemicals
Potentially in Effluent Streams

| <u>Manufacturer</u> | <u>Trade Name</u> |
|---------------------------------------|---|
| Calgon Corporation | BLR - 3152 BLR - 3430 UltrAmine 130 |
| Climax Chemical Co. | Sulfuric Acid (H ₂ SO ₄) |
| Diamond Shamrock Chemicals Company | Caustic Soda Liquid |
| General Electric Co. | Hydrochloric Acid (HCl) |
| Unichem International | Ke-Tone BN Chlorine Triethylene Glycol Boiler-Hib 430 Boiler-Hib 530 Boiler-Hib 341 Alpha 512 Alpha 520 Alpha 570 Unichem 1300 Unichem 1710 Unichem 2310 |
| Union Carbide Corp. | Monoethanolamine Mixture 3367 |
| Vulcan Chemicals | Sodium Hydroxide Solution |



MATERIAL SAFETY DATA SHEET

"Essentially Similar" to Form OSHA-20

Date Prepared December 1985

Supersedes Previous Sheet Dated 1979

I PRODUCT IDENTIFICATION

UNICHEM INTERNATIONAL
707 N. Leech / P. O. Box 1499 / Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NO.
(505) 393-7751

PRODUCT NAME Chlorine

TRADE NAME: Chlorine Gas

CHEMICAL DESCRIPTION:

Halogen Gas Cl_2

II HAZARDOUS INGREDIENTS

| MATERIAL | % | TLV (UNITS) |
|--------------|-----|-------------|
| Chlorine Gas | 100 | 1 ppm |

JAN 20 '86

III PHYSICAL DATA

| | | | |
|---|-------------|-----------------------|--------|
| BOILING POINT, 760 mm Hg | -29.29°F | FREEZING POINT: | |
| SPECIFIC GRAVITY ($\text{H}_2\text{O}=1$) | 1.47 @ 32°F | VAPOR PRESSURE @ 68°F | 4800 |
| VAPOR DENSITY (AIR=1) | 2.48 @ 32 | SOLUBILITY IN WATER | Slight |
| PERCENT VOLATILES BY WEIGHT | | EVAPORATION RATE | 980.5 |

APPEARANCE AND ODOR Green - yellow gas or liquid

IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
(TEST METHOD) NA

| | | |
|--------------------------------------|-------|-------|
| FLAMMABLE LIMITS IN AIR, % BY VOLUME | LOWER | UPPER |
|--------------------------------------|-------|-------|

EXTINGUISHING MEDIA In case of fire remove all chlorine cylinders or spray to keep cool.

SPECIAL FIRE FIGHTING PROCEDURES Wear SCBA

UNUSUAL FIRE AND EXPLOSION HAZARDS Powerful oxidizing agent.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V HEALTH HAZARD DATA

| | |
|------------------------------------|--|
| THRESHOLD LIMIT VALUE | 1 ppm/3 mg/m ³ |
| EFFECTS OF OVEREXPOSURE | Chlorine vapor strongly irritates the mucous membranes, the respiratory system and the skin. Strong concentrations irritate the eyes and causes coughing and labored breathing. Liquid chlorine may cause skin and eye burns on contact. Remove victim to fresh air at once. Administer artificial respiration if necessary. Wash affected skin or eyes with water for at least 15 minutes. See a physician immediately. |
| EMERGENCY AND FIRST AID PROCEDURES | |

VI REACTIVITY DATA

| | | | |
|---|----------------|--|--|
| STABILITY | | CONDITIONS TO AVOID | |
| UNSTABLE | STABLE | | |
| | X | | |
| INCOMPATIBILITY (MATERIALS TO AVOID) | | Hydrogen, finely divided metals, oxides, (combines readily with all materials except rare gases and nitrogen). | |
| HAZARDOUS DECOMPOSITION PRODUCTS | | | |
| HAZARDOUS POLYMERIZATION. MAY OCCUR | | CONDITIONS TO AVOID | |
| | WILL NOT OCCUR | | |
| | XXX | | |

VII SPILL OR LEAK PROCEDURES

| | |
|--|---|
| STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED | Clear contaminated area of personnel. Stay up wind. Only specially trained and equipped men should be allowed in area. Close and tighten all valves. If container wall is leaking turn container on side so that gas and not liquid will escape. Do not use water-on-leak method. |
| WASTE DISPOSAL METHOD | Follow all applicable federal, state and local regulations regarding health and safety and natural resource pollution. |

VIII SPECIAL PROTECTION INFORMATION

| | | | |
|---------------------------------------|----------------------|---|----------------|
| RESPIRATORY PROTECTION (SPECIFY TYPE) | | Supplied air, SCBA or canister gas mask depending upon concentration of vapors. | |
| VENTILATION | LOCAL EXHAUST | | SPECIAL |
| | MECHANICAL (GENERAL) | In case of leak only-1-4 minute rate of change. | OTHER |
| PROTECTIVE GLOVES | | Protection from extreme cold from liquid | EYE PROTECTION |
| OTHER PROTECTIVE EQUIPMENT | | Chemical splash goggles | |

IX SPECIAL PRECAUTIONS

| | |
|---|---|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING | Store containers in cool, dry, relatively isolated areas, protected from weather and extreme temperature changes. Store containers off floor or ground. |
| OTHER PRECAUTIONS | |



MATERIAL SAFETY DATA SHEET

24 Hour Emergency Phone (316) 524-5751

Division of Vulcan Materials Company / P.O. Box 7689 • Birmingham, AL 35253-0689

I - IDENTIFICATION

| | | |
|--|--------------------------|--------------------------------|
| CHEMICAL NAME Sodium Hydroxide Solution | CHEMICAL FORMULA NaOH | MOLECULAR WEIGHT 40.00 |
| TRADE NAME Caustic Soda, 73%, 50% and Weaker Solutions | | |
| SYNONYMS Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye | | DOT IDENTIFICATION NO. 1824 |

II - PRODUCT AND COMPONENT DATA

| COMPONENT(S) CHEMICAL NAME | CAS REGISTRY NO. | % (Approx) | ACGIH TLV-TWA |
|--|------------------|--------------------|--------------------------------|
| Sodium Hydroxide Note: This Material Safety Data Sheet is also valid for caustic soda solutions weaker than 50%. The boiling point, vapor pressure, and specific gravity will be different from those listed. | 1310-73-2 | 73, 50 and less | 2 mg/m ³ Ceiling |

III - PHYSICAL DATA

| | |
|--|--|
| APPEARANCE AND ODOR Colorless or slightly colored, clear or opaque; odorless | SPECIFIC GRAVITY 50% Solution: 1.53 @ 60°F/60°F 73% Solution: 1.72 @ 140°F/4°F |
| BOILING POINT 50% Solution: 293°F (145°C) 73% Solution: 379°F (192.8°C) | VAPOR DENSITY IN AIR (Air = 1) N/A |
| VAPOR PRESSURE 50% = 6.3 mm Hg @ 104°F 73% = 6.0 mm Hg @ 158°F | % VOLATILE, BY VOLUME 0 |
| EVAPORATION RATE 0 | SOLUBILITY IN WATER 100% |

IV - REACTIVITY DATA

| | |
|---|---------------------------------|
| STABILITY Stable | CONDITIONS TO AVOID None |
| INCOMPATIBILITY (Materials to avoid) Chlorinated hydrocarbons, acetaldehyde, acrolein, aluminum, chlorine trifluoride, hydroquinone, maleic anhydride and phosphorous pentoxide. Dilution with water evolves large amount of heat. | |
| HAZARDOUS DECOMPOSITION PRODUCTS Will not decompose (Refer to Section V) | |
| HAZARDOUS POLYMERIZATION Will not occur | |

Caustic pg 2
V - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)
None

FLAMMABLE LIMITS IN AIR
None

EXTINGUISHING AGENTS
N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS

Firefighters should wear self-contained positive pressure breathing apparatus, and avoid skin contact. Will react with some metals, e.g., aluminum, tin, zinc, to form flammable hydrogen gas.

VI - TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the TLV must be defined in the workplace.)

ACGIH: 2 mg/m³ Ceiling

OSHA 2 mg/m³ (8 hr) TWA

Effects described in this section are believed not to occur if exposures are maintained at or below appropriate TLVs. Because of the wide variation in individual susceptibility, TLVs may not be applicable to all persons and those with medical conditions listed below.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

No known medical conditions aggravated by exposure.

ACUTE TOXICITY

Primary route(s) of exposure:

☒ Inhalation

☒ Skin ~~Absorption~~

☐ Ingestion

Inhalation: Inhalation of solution mist can cause mild irritation at 2 mg/m³. More severe burns and tissue damage at the upper respiratory tract, can occur at higher concentrations. Pneumonitis can result from severe exposures.

Skin: Major potential hazard - contact with the skin can cause severe burns with deep ulcerations. Contact with solution or mist can cause multiple burns with temporary loss of hair at burn site. Solutions of 4% may not cause irritation and burning for several hours, while 25 to 50% solutions cause these effects in less than 3 minutes.

Eyes: Major potential hazard - Liquid in the eye can cause severe destruction and blindness. These effects can occur rapidly affecting all parts of the eye. Mist or dust can cause irritation with high concentrations causing destructive burns.

Ingestion: Ingestion of sodium hydroxide can cause severe burning and pain in lips, mouth, tongue, throat and stomach. Severe scarring of the throat can occur after swallowing. Death can result from ingestion.

FIRST AID

Inhalation: Move person to fresh air. If breathing stops, administer artificial respiration. Get medical attention immediately.

Skin: Remove contaminated clothing immediately and wash skin thoroughly for a minimum of 15 minutes under safety shower. Get medical attention immediately.

Eyes: Wash eyes immediately with large amounts of water (preferably eye wash fountain), lifting the upper and lower eyelids and rotating eyeball. Continue washing for a minimum of 15 minutes. Get medical attention immediately.

Ingestion: If person is conscious, give large quantities of water to dilute caustic. Do not induce vomiting. Get medical attention immediately.

CHRONIC TOXICITY

No known chronic effects

Carcinogenicity: No studies were identified relative to sodium hydroxide and carcinogenicity. Sodium hydroxide is not listed on the IARC, NTP or OSHA carcinogen lists.

Reproductive Toxicity: No studies were identified relative to sodium hydroxide and reproductive toxicity.

VII - PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION

For levels which exceed or are likely to exceed $2\text{mg}/\text{m}^3$ use approved high-efficiency particulate filter with full facepiece or self-contained breathing apparatus. Follow any applicable respirator use standards and regulations.

VENTILATION

As necessary to maintain concentration in air below $2\text{mg}/\text{m}^3$.

SKIN PROTECTION

Wear neoprene, PVC, or rubber gloves; PVC rain suit; rubber boots with pant legs over boots.

EYE PROTECTION

Chemical goggles which are splashproof and faceshield.

HYGIENE

Avoid contact with skin and avoid breathing mist. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using bathroom. Any protective clothing, clothing or shoes which become contaminated with caustic should be removed immediately and thoroughly laundered before wearing again.

OTHER CONTROL MEASURES

Safety shower and eyewash station must be located in immediate work area. Any non-impervious clothing or shoes which become contaminated with caustic should be removed immediately, and thoroughly laundered before wearing again. To determine the exposure level(s), monitoring should be performed regularly.

VIII - STORAGE AND HANDLING PRECAUTIONS

Follow protective controls set forth in Section VII when handling this product.
Store in closed, properly labeled tanks or containers.
Do not remove or deface labels or tags

When diluting with water, slowly add caustic solution to the water. Heat will be produced during dilution. Full protective clothing should be worn. Do not add water to caustic because excessive heat formation will cause boiling and spattering.

Contact of caustic soda cleaning solutions with food and beverage products (in enclosed vessels or spaces) may produce lethal concentrations of carbon monoxide gas.

IX - SPILL LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cleanup personnel must wear proper protective equipment (refer to Section VII). Completely contain spilled material with dikes, sandbags, etc., and prevent run-off into ground or surface waters or sewers. Recover as much material as possible into containers for disposal. Remaining material may be diluted with water and neutralized with dilute hydrochloric acid. Neutralization products, both liquid and solid, must be recovered for disposal.

WASTE DISPOSAL METHOD

Recovered solids or liquids may be sent to a licensed reclaimer or disposed of in a permitted waste management facility. Consult federal, state, or local disposal authorities for approved procedures.

X - TRANSPORTATION

DOT HAZARD CLASSIFICATION

Corrosive

PLACARD REQUIRED

Corrosive

LABEL REQUIRED

Corrosive. Label as required by OSHA Hazard Communication Standard, and any applicable state and local regulations.

Medical Emergencies

Call collect 24 hours a day
for emergency toxicological
information 415/821-5338

Other Emergency information

Call 316/524-5751 (24 hours)

For any other information contact:

Vulcan Chemicals
Technical Service Department
P. O. Box 7689
Birmingham, AL 35253-0689
205/877-3459
8 AM to 5 PM Central Time
Monday through Friday

DATE OF PREPARATION: May 1, 1986

NOTICE: Vulcan Chemicals believes that the information contained on this Material Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulations, rules or insurance requirements.

NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE IS MADE.

Form 3239-210

VMC-3239



MATERIAL SAFETY DATA SHEET

Date Prepared 05/15/87

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 512

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Potassium Dimethyldithiocarbamate CAS# 128-03-0
Methanol CAS# 000-067-561

None Established
200 ppm (Skin) 8 Hour TWA or 260 mg/m³

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|-----------------|---------------------|----------|
| Boiling Point, 760 mm Hg | 150°F (Initial) | Freezing Point | -35°F |
| Specific Gravity (H ₂ O=1) | 1.0 g/ml | Solubility in Water | Complete |

Appearance and Odor Brown Clear Liquid; Alcoholic - Sulfur Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 69°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray, or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards Methanol is a moderate explosion hazard and a dangerous fire hazard when exposed to heat, sparks, or flames and can react vigorously with oxidizing agents.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract. Harmful or fatal if swallowed. Symptoms of overexposure to liquid or vapor include dizziness, visual impairment, nausea, and narcosis.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Induce vomiting, if conscious. Give patient water or milk.

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Strongly Acidic Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon, Nitrogen, and Sulfur
Carbon Disulfide, Dimethylamine

| | | |
|--------------------------|----------------|---------------------|
| Hazardous Polymerization | May Occur | Conditions to Avoid |
| | Will Not Occur | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation...
Remove sources of ignition. Contain and absorb spill. This material is toxic to fish.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceeds TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|---|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of vapors above TLV | Special | None |
| | Mechanical (General) | | Other | None |

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 570

Chemical Description

Proprietary Biocide Blend

II. HAZARDOUS INGREDIENTS

Material

Alkyl Dimethyl Benzylammonium Chloride
Alkyl Dimethyl Ethylammonium Bromide
Tributyltin Neodecanoate

TLV (Units)

Not Established
Not Established
Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|------------|---------------------|----------|
| Boiling Point, 760 mm Hg | 208°F | Freezing Point | 32°F |
| Specific Gravity (H ₂ O=1) | 0.998 g/ml | Solubility in Water | Complete |

Appearance and Odor Light Straw Color, Slight Musty Odor; Liquid

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.



V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined Acute Oral LD₅₀: 0.88 g/kg (Male rats) 1.08 g/kg (Female Rat)
Acute Dermal LD₅₀: Greater than 2 g/Kg for male and female rats

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk. See note to physician below. (Section IX - Other Precautions)

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

| | | | | |
|--------------------------|----------------|---|---------------------|------|
| Hazardous Polymerization | May Occur | | Conditions to Avoid | None |
| | Will Not Occur | X | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill. This product is toxic to fish. Keep out of lakes, streams, and ponds.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|--------------------------------------|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of | Special | None |
| | Mechanical (General) | vapors above TLV | Other | None |

Protective Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest. TO PHYSICIANS: Probably mucosal damage may contraindicate the use of gastric lavage. Measures against circulation shock, respiratory depression, and convulsion may be needed.

ALPHA 512

UNICHEM
INTERNATIONAL

PRODUCT BULLETIN

ALPHA 512 is a broad-spectrum microbiocide effective in the control of sulfate-reducing bacteria, aerobic bacteria, algae, and fungi.

Active Ingredient: Potassium Dimethyldithiocarbamate..30 wt.%

ALPHA 512 is used in industrial and/or commercial recirculating cooling tower systems and industrial air-washing systems to control microbiological slime. Prior to the use of ALPHA 512 in industrial and/or commercial recirculating cooling tower systems, systems should be cleaned to remove algal growth, microbiological slime, and other deposits. Then make an initial slug addition of 4 to 6 fluid ounces of ALPHA 512 per 1000 gallons of water to provide 33 to 50 ppm of ALPHA 512, based on total weight of water in the system. Repeat initial dosage until control is evident. Make subsequent slug addition of 2 to 6 fluid ounces of ALPHA 512 per 1000 gallons of water (17 to 50 ppm ALPHA 512) every two to five days or as needed. The frequency of addition depends upon the relative amount of bleedoff and the severity of the microbiological problem. Slug additions should be made in the sump of recirculating cooling tower systems.

| | |
|------------------------------|--------------------|
| Density (Pounds per Gallon): | 8.63 |
| Freeze Point: | -35°F |
| Flash Point (TCC): | 69°F |
| Appearance: | Brown Clear Liquid |

Danger! Contains methanol, which may cause blindness. Avoid skin and eye contact. Avoid breathing vapors or mists. Wear protective safety equipment including goggles and rubber gloves. Refer to Material Safety Data Sheet and drum label for further information.

Prolonged contact of concentrated ALPHA 512 with copper or copper alloys should be avoided.

ALPHA 512 is available in drum or bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/15/87

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 512

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Potassium Dimethyldithiocarbamate CAS# 128-03-0
Methanol CAS# 000-067-561

None Established
200 ppm (Skin) 8 Hour TWA or 260 mg/m³

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|-----------------|---------------------|----------|
| Boiling Point, 760 mm Hg | 150°F (Initial) | Freezing Point | -35°F |
| Specific Gravity (H ₂ O=1) | 1.0 g/ml | Solubility in Water | Complete |

Appearance and Odor Brown Clear Liquid; Alcoholic - Sulfur Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 69°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards Methanol is a moderate explosion hazard and a dangerous fire hazard when exposed to heat, sparks, or flames and can react vigorously with oxidizing agents.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract. Harmful or fatal if swallowed. Symptoms of overexposure to liquid or vapor include dizziness, visual impairment, nausea, and narcosis.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Induce vomiting, if conscious. Give patient water or milk.

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Strongly Acidic Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon, Nitrogen, and Sulfur
Carbon Disulfide, Dimethylamine

| | | | |
|--------------------------|----------------|---------------------|------|
| Hazardous Polymerization | May Occur | Conditions to Avoid | None |
| | Will Not Occur | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation... Remove sources of ignition. Contain and absorb spill. This material is toxic to fish.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceeds TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|--------------------------------------|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of | Special | None |
| | Mechanical (General) | vapors above TLV | Other | None |

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

ALPHA 520

UNICHEM
INTERNATIONAL

PRODUCT BULLETIN

TWIN-CHAIN QUATERNARY AMMONIUM COMPOUND CONCENTRATE WATER TREATMENT MICROBIOCIDES FOR BUILDING AND INDUSTRIAL COOLING TOWERS

Active Ingredients:

| | |
|---|-----|
| Didecyl dimethyl ammonium chloride..... | 50% |
| Isopropyl alcohol..... | 20% |

| | |
|---------------------------|------|
| <u>Inert Ingredients:</u> | 30% |
| | 100% |

| | |
|---------------------------------|----------|
| <u>EPA Registration Number:</u> | 10485-14 |
|---------------------------------|----------|

| | |
|--------------------|----------|
| <u>Net Weight:</u> | 400 lbs. |
|--------------------|----------|

| | |
|--------------------|----------|
| <u>Net Volume:</u> | 55 gals. |
|--------------------|----------|

To control algae and bacterial slimes, use ALPHA 520 as directed. For best results, slug feed. The frequency of addition of microbicide needed depends on many factors. To optimize your use of ALPHA 520 follow this procedure:

Initially use 6 fluid ounces per 1000 gallons of water to be treated (20 ppm active quaternary). Should the above dosage not give satisfactory results, use 9 fluid ounces per 1000 gallons of water. Repeat the initial dose every seven days, or increase the frequency if needed. When the above treatment level is successful, use 2 to 3 fluid ounces per 1000 gallons of water to maximize efficiency. Repeat weekly as needed. Should slime develop again, go back to initial dosage. Cooling tower waters that are inherently low in algae growth and bacteria count may be adequately controlled by the lower range of these dosages, slug fed every seven days. Dilute the appropriate amount of ALPHA 520 in 1 or 2 gallons of water then add to the sump of the tower.

Note:- this product weights 7.49 pounds per gallon (at 20° C.). ALPHA 520 will control algae and bacterial slimes found in circulating cooling tower waters. ALPHA 520 helps clean and loosen slime debris from cooling system surfaces. When used in slug doses, no other microbicide is required. ALPHA 520 is economical to use because it is concentrated. It should be handled with care.

DANGER - Keep out of reach of children.

Corrosive. Causes severe eye and skin damage. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. Avoid

contamination of food.

First Aid: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse. If swallowed, drink promptly a large quantity of milk, egg whites, gelatine solution; or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

NOTE TO PHYSICIAN: Probably mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.

Caution: This product is toxic to fish. Treatment effluent should not be discharged where it will drain into lakes, streams, ponds, or public water. Should tower be heavily fouled, a pre-cleaning is required. Do not re-use empty drum. Return to drum reconditioner or rinse well with soap solution and discard. Do not contaminate water by disposal of waste. Do not use, pour, spill, or store near heat or open flame.

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UNICHEM INTERNATIONAL INC.

REV 10/80



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 520

Chemical Description

Proprietary Biocide Blend

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Didecyl Dimethyl Ammonium Chloride
Ethanol

Not Determined
1000 ppm 8 hour TWA or 1900 mg/m³

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|---------------|---------------------|----------|
| Boiling Point, 760 mm Hg | 173°F Initial | Freezing Point | 19°F |
| Specific Gravity (H ₂ O=1) | 0.92 | Solubility in Water | Complete |

Appearance and Odor Pale Yellow Liquid; Slight Alcoholic Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 107°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined Acute Oral LD₅₀: 450 mg/Kg

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk. See Note to Physician. (Section IX)

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen, Ammonia, Hydrogen Chloride

| | | | |
|--------------------------|----------------|---------------------|------|
| Hazardous Polymerization | May Occur | Conditions to Avoid | None |
| | Will Not Occur | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|--------------------------------------|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of | Special | None |
| | Mechanical (General) | vapors above TLV | Other | None |

Protective Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest. Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock as well as oxygen and measures to support breathing manually or mechanically may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short acting barbiturate drug.



MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: November, 1985



DO NOT DUPLICATE THIS FORM. REQUEST ORIGINAL.

Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of safety you should (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to inform their employees and customers as well.

PRODUCT NAME: MONOETHANOLAMINE MIXTURE 3367

CHEMICAL NAME: Monoethanolamine, aqueous CHEMICAL FAMILY: Alkanolamines

FORMULA: Not applicable MOLECULAR WEIGHT: Not applicable

SYNONYMS: Aqueous - 2-Hydroxyethylamine; 2-Aminoethanol; B-aminoethyl Alcohol; Ethanolamine

CAS # 141-43-5 CAS NAME Ethanol, 2-Amino-

| | | | |
|--|---|---|--------------|
| BOILING POINT, 760 mm Hg | ~135°C (~340°F) | FREEZING POINT | ~-14°C (7°F) |
| SPECIFIC GRAVITY (H ₂ O = 1) | 1.029 at 20/20°C | VAPOR PRESSURE at 20°C. | 2 mm Hg |
| VAPOR DENSITY (air = 1) | 1.6 | SOLUBILITY IN WATER, % by wt. at 20°C | 100 |
| APPEARANCE AND ODOR | Water-white liquid; characteristic odor. | EVAPORATION RATE (Butyl Acetate = 1) | ~0.17 |

| MATERIAL | % | TLV | HAZARD |
|------------------|----|------------------|---------------|
| Monoethanolamine | 85 | 3 ppm, ACGIH | See Section V |
| Water | 15 | None established | See Section V |

| | | | |
|---|---|----------------|----------------------|
| FLASH POINT | 146°F, Pensky-Martens closed cup ASTM D 93 235°F, Cleveland open cup ASTM D 92 | | |
| FLAMMABLE LIMITS IN AIR, % by volume | LOWER | Not determined | UPPER Not determined |
| EXTINGUISHING MEDIA | - Apply alcohol-type or all-purpose-type foams by manufacturers' recommended techniques for large fires. Use dry chemical media for small fires. | | |
| SPECIAL FIRE FIGHTING PROCEDURES | Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Use protective clothing, eye protection, and have self-contained breathing apparatus available. Use remote spray monitors or fight fire from behind shields. Oxides of nitrogen can be evolved from a fire. | | |
| UNUSUAL FIRE AND EXPLOSION HAZARDS | None | | |

HAZARD SOURCE

See Section III

EFFECTS OF ACUTE OVEREXPOSURE

| | |
|-----------------|---|
| SWALLOWING | May cause chemical burns of the mouth, throat, esophagus, and stomach. Signs and symptoms will include pain or discomfort in the mouth, chest, and abdomen, nausea, vomiting, diarrhea, dizziness, drowsiness, faintness, weakness, collapse, and coma. |
| SKIN ABSORPTION | Prolonged or widespread skin contact may result in the absorption of potentially harmful amounts of material. |
| INHALATION | Vapors may be irritating and cause coughing and discomfort in the nose, throat, and chest. Prolonged exposure may cause local injury to the respiratory tract. |
| SKIN CONTACT | Brief contact may cause irritation, seen as local redness. Prolonged contact, as with clothing wet with the material, may cause chemical burns. |
| EYE CONTACT | May cause severe irritation, seen as marked excess redness and swelling of the conjunctiva. May cause chemical burns. |

EFFECTS OF REPEATED OVEREXPOSURE

May possibly cause kidney and liver damage.

OTHER EFFECTS OF OVEREXPOSURE

Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease. Because of its irritating properties, this material may aggravate an existing dermatitis.

EMERGENCY TREATMENT AND FIRST AID

| | |
|------------|--|
| SWALLOWING | Give at least two glasses of milk or water, unless the patient is unconscious. Do not induce vomiting. Call a physician. |
| SKIN | Remove contaminated clothing and wash skin with soap and water. Wash clothing before reuse. Call a physician. |
| INHALATION | Remove to fresh air. Give artificial respiration if not breathing. Oxygen may be given if necessary. Call a physician. |
| EYES | Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention promptly, preferably an ophthalmologist. |

(continued)

NOTES TO PHYSICIAN

The hazards of this material are mainly due to its severe irritant properties on the skin and mucosal surfaces. Careful gastric lavage is required. There is no specific antidote, and treatment should be directed at the control of symptoms and the clinical condition.

STABILITY

| UNSTABLE | STABLE | CONDITIONS TO AVOID | See Section IX. |
|----------|--------|------------------------|-----------------|
| -- | X | | |

INCOMPATIBILITY (materials to avoid)

Strong acids, strong oxidizing agents.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

Burning can produce nitrogen oxides, carbon monoxide and/or carbon dioxide.

HAZARDOUS POLYMERIZATION

| May Occur | Will Not Occur | CONDITIONS TO AVOID | None |
|-----------|----------------|------------------------|------|
| -- | X | | |

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Wear suitable protective equipment; avoid contact with liquid and vapors! Collect for disposal. Toxic to fish; avoid discharge to natural waters.

WASTE DISPOSAL METHOD

Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations. See Section IX.

RESPIRATORY PROTECTION (specify type)

Self contained breathing apparatus in high vapor concentrations.

VENTILATION This product should be confined within covered equipment, in which case, general (mechanical) room ventilation is expected to be adequate. Special local ventilation is suggested at points where vapors can be expected to escape to the workplace air.

| | | | |
|-----------------------------------|---|-----------------------|-------------|
| PROTECTIVE GLOVES | PVC - coated or rubber | EYE PROTECTION | Monogoggles |
| OTHER PROTECTIVE EQUIPMENT | Eye bath, safety shower, and chemical apron | | |

(continued)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Do not get in eyes, on skin, on clothing.
Keep away from heat and flame.
Avoid breathing vapor.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Do not take internally.

FOR INDUSTRY USE ONLY

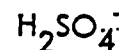
OTHER PRECAUTIONS

- Stability** - Monoethanolamine and iron form a complex molecule, trisethanol-amino-iron. This material can spontaneously decompose at temperatures between 130 and 160°C, and has been suspected of causing a fire in a nearly empty storage tank containing a 'heel' of MEA in contact with carbon steel steam coils. If steam coil heating is used, low pressure steam in stainless steel coils is preferred.
- Disposal** - Monoethanolamine is toxic to aquatic life at relatively low concentrations in water. Incineration is the preferred method of disposal. Laboratory tests indicate that monoethanolamine is rapidly biodegraded at very low concentration (~10 ppm) in water. However, a large spill might be detrimental. If spilled material cannot be collected, it may be possible to neutralize with dilute hydrochloric acid and, then, landfill the neutral salt.

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor as "essentially similar" to Form LSB-00S-4)



PRODUCT

SECTION I-IDENTIFICATION OF PRODUCT

| | | |
|--|--|--|
| MANUFACTURER'S NAME Climax Chemical Company | | EMERGENCY TELEPHONE NO. 1-800-545-7823 |
| ADDRESS (Number, Street, City, State and ZIP Code) Box 1595, Hobbs, New Mexico 88240 | | |
| TRADE NAME Sulfuric Acid, Oil of Vitrol | CHEMICAL NAME Sulfuric Acid | |
| CHEMICAL FAMILY Inorganic Acid | CHEMICAL FORMULA H₂SO₄ | |

SECTION II-HAZARDOUS COMPONENTS OF MIXTURES

This compound is highly corrosive to most metals; particularly at concentrations below 60% Be' with evolution of hydrogen gas.

SECTION III-TYPICAL PHYSICAL DATA

| | |
|--|---|
| APPEARANCE AND ODOR Clear, colorless and cloudy. Oleum has a sharp, penetrating odor | SPECIFIC GRAVITY 93% - 1.8279 99% - 1.8342 |
| BOILING POINT (°F) | PERCENT VOLATILE (BY VOLUME) |
| VAPOR PRESSURE | EVAPORATION RATE (n-BUTYL ACETATE = 1) |
| VAPOR DENSITY (AIR 1) | |
| SOLUBILITY IN WATER | |

SECTION IV-FIRE AND EXPLOSION HAZARD DATA

| | | | |
|--|--------------------------------------|-----|-----|
| FLASH POINT (Method) None | FLAMMABLE LIMITS (PERCENT BY VOLUME) | Lel | Uel |
| FIRE EXTINGUISHING MEDIA Equipment normally used for other hazards present should be used. | | | |
| SPECIAL FIRE FIGHTING PROCEDURES | | | |
| UNUSUAL FIRE AND EXPLOSION HAZARDS Normally non-flammable, but reacts with most metal with the generation of hydrogen gas. When mixed with air may result in fire or explosion if ignited. | | | |
| HAZARDOUS PRODUCTS OF COMBUSTION May cause ignition by contact with combustible materials when acid is in high concentration. | | | |

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS.

HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABLENESS AND COMPLETENESS OF SUCH INFORMATION.

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
1 milligram per cubic meter for 8 day, for 40 hour week.

EFFECTS OF OVEREXPOSURE
Death--moderate exposure a severe burn.

EMERGENCY AND FIRST AID PROCEDURES
Immediately flush skin and eyes with copious quantity of water for at least 15 minutes, remove saturated clothing, refer to doctor.

SECTION VI REACTIVITY DATA

| STABILITY | UNSTABLE | | CONDITIONS TO AVOID |
|-----------|----------|---|--|
| | STABLE | X | Violent reaction if water spills in acid |

INCOMPATIBILITY (Materials to avoid)
Unknown

HAZARDOUS DECOMPOSITION PRODUCTS
None

| HAZARDOUS POLYMERIZATION | MAY OCCUR | | CONDITIONS TO AVOID |
|-----------------------------|----------------|---|---------------------|
| | WILL NOT OCCUR | X | |

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Keep people from area and flush area with a plentiful quantity of water--traces of acid can be neutralized with lime or soda ash.

WASTE DISPOSAL METHOD
Neutralize with soda ash or lime and dispose of in accordance with local, state and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
Self-contained breathing apparatus (oxygen) or cannister type gas mask.

| VENTILATION | LOCAL EXHAUST Adequate to keep TLV in Section V below acceptable limits | SPECIAL |
|-------------|---|---------------|
| | MECHANICAL (General) Fan inside building | N.A. OTHER |

PROTECTIVE GLOVES
Gauntlet type rubber or plastic

EYE PROTECTION
Chemical safety goggles and face shield.

OTHER PROTECTIVE EQUIPMENT
Rubber apron, hat, long sleeve shirt, and boots or complete safety suit.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Do not add water to sulfuric acid storage tank as large amount of heat will be produced.

OTHER PRECAUTIONS
Do not get in eyes, on skin, on clothing. In case of contact, immediately flush with plenty of water for 15 minutes and get medical attention.

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
120 ERIE BOULEVARD
SCHENECTADY, N.Y. 12305



NO. 30A

HYDROCHLORIC ACID
Revision A

DATE June 1984

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: HYDROCHLORIC ACID

DESCRIPTION: This material is a water solution of hydrogen chloride gas.

OTHER DESIGNATIONS: Muriatic Acid, Concentrated Hydrochloric Acid, GE Material D4A3,
CAS# 007 647 010, Aqueous Hydrochloric Acid

MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS

| | % | HAZARD DATA |
|------------------------------------|---------|--|
| Hydrogen Chloride (HCl) | <38 | 8-hr TWA 5 ppm or 7 mg/m ³ (C)* |
| Impurities (depends on acid grade) | Traces | Human, Inhalation |
| Water | Balance | LCLo 1300ppm/30 M |
| | | Rabbit, Oral |
| | | LD50 900 mg/kg |
| | | Rat, Oral (200Be') |
| | | LD50 700 mg/kg |
| | | Rabbit, Skin (200Be') |
| | | LD50 >5g/kg, 24 H-C |

*Current OSHA PEL and ACGIH (1983) TLV Ceiling Level.

SECTION III. PHYSICAL DATA

| | 18°Be' | 20°Be' | 22°Be' | 23°Be' |
|------------------------------------|--------|--------|--------|----------|
| Weight % HCl | 27.9 | 31.5 | 35.2 | 37.1 |
| Boiling pt, 1 atm, deg F | 208 | 182 | 144 | 123 |
| Freezing point, deg F (approx) | -43 | -63 | -86 | -101 |
| Specific gravity, 60/60 F | 1.142 | 1.162 | 1.179 | 1.189 |
| Vap. Press., 25C, HCl/Total, mm Hg | ~7/15 | ~25/33 | ~87/92 | ~186/190 |

All materials are completely water soluble with ~100% volatiles and pH <1.

Appearance & Odor: Clear, colorless to lt. yellow, fuming* liquid with a pungent, irritating odor. 1-5 ppm HCl detected by smell; 5-10 ppm is disagreeable.

*Higher conc. tend to be fuming liquids at room temperature.

SECTION IV. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air | Lower | Upper |
|------------------------|--------------------|----------------------------|-------|-------|
| N/A | N/A | N/A | - | - |

Extinguishing media: Select that suitable for surrounding fire. Use a water spray to cool fire exposed containers to prevent rupture.

Nonflammable, but acid can react with many metals, such as iron, to produce flammable hydrogen gas. (Flammable conc. may accumulate inside metal equipment.) Neutralize acid with limestone, slaked lime or soda ash to minimize formation of potentially explosive hydrogen gas.

Firefighters should use full protective clothing and self-contained breathing apparatus when this material is involved in a fire situation.

SECTION V. REACTIVITY DATA

This material is stable when properly contained and handled. It is a strong mineral acid and is, thus, highly reactive with materials such as metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. It is highly corrosive to many materials; it must have proper containment for handling and storage.

It liberates significant levels of HCl gas by vapor pressure at room temperature when concentrated and large amounts of HCl when heated.

Reaction with most metals will produce flammable hydrogen gas.

Incompatible with materials such as cyanides, sulfides, sulfites and formaldehyde (may release HCN, H₂S, SO₂, bischloromethyl ether, respectively).

| | |
|---|---|
| SECTION VI. HEALTH HAZARD INFORMATION | TLV 5 ppm Ceiling Level (as HCl) |
| <p>Aqueous HCl and its vapors are strong irritants of the eyes, mucous membranes, and skin. Severity of eye injury from splashes [from irritation to severe burns] depends on quantity, conc. and duration of contact. Excessive acute exposure to HCl vapors/mists promptly irritates the upper respiratory tract and can result in coughing, burning of the throat, choking sensation and, if inhaled deeply, pulmonary edema. Prolonged or repeated low level exposure may cause teeth erosion. Skin exposure can cause burns; repeated or prolonged exposure to dilute soln. may cause dermatitis. Ingestion can cause severe burns and possible laryngeal spasm.</p> <p>FIRST AID: Eye Contact: Contact physician! Immediately flush with running water for 15 min. including under eyelids. Skin Contact: Flush affected area well with water. Remove grossly contaminated clothing under safety shower. Get medical help if large skin area contacted or if irritation persists. Inhalation: Remove to fresh air. Restore and/or support breathing as needed. Use O₂ therapy for coughing, difficult breathing. Get medical help. Keep warm and at rest. Ingestion: If victim is conscious, give 2-3 glasses of water, then milk of magnesia or limewater. Contact physician! <u>Do not induce vomiting!</u></p> | |
| SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES | |
| <p>Report large spills to safety personnel. Evacuation may be needed; keep upwind. Remove sources of ignition if H₂ is a hazard. Provide optimum ventilation. Those involved in clean-up of large spills must use full protective clothing, boots, and self-contained breathing apparatus.</p> <p>Small spills and residues can be covered with excess of a mixture of soda ash and slaked lime to neutralize, and the slurry picked up for landfill burial or flushed with much water.</p> <p>Contain large spills. Collect or flush with water to holding area for neutralization. Do not flush directly to sewer or surface waters.</p> <p>DISPOSAL: Dispose of acid via licensed contractor or neutralize with limestone, soda ash or slaked lime. Flushing to sewer depends on allowable neutral salt concentrations in effluent water. Follow Federal, State and Local regulations. Consider use of waste acid to neutralize alkaline wastes. EPA (CWA) RO is 3000 15.140 CFR 117)</p> | |
| SECTION VIII. SPECIAL PROTECTION INFORMATION | |
| <p>Provide adequate exhaust ventilation to meet TLV requirements. Face velocity of hoods should exceed 100 fpm. Use approved respirator or self-contained breathing apparatus for emergency or non-routine conditions with full facepiece above 50 ppm.</p> <p>Those handling hydrochloric acid should use protective clothing and equipment to prevent body contact with the liquid. Use rubber gloves or gauntlets, apron, boots, long sleeved shirt, body suit, etc. Use chemical safety goggles and/or face shield for eye protection against splashing of acid.</p> <p>An eyewash station, washing facilities, and safety shower must be readily available to areas of use and handling.</p> | |
| SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS | |
| <p>Store closed containers out of direct sunlight, in a clean, cool, open or well-ventilated area, away from oxidizing agents, away from alkaline material and sources of heat. Area should have acid resistant floor and approved drainage. Protect containers from physical damage. Use nonsparking tools in areas around tanks and pipes where hydrogen might be generated.</p> <p>Use with good ventilation. Avoid inhalation of HCl vapors. Odor of HCl gives adequate warning for a prompt voluntary withdrawal from excessive exposure. Do not get in eyes or on skin or clothing. Wash thoroughly after handling.</p> <p>Provide emergency neutralization materials and equipment near storage and use areas.</p> <p>DOT Classification: CORROSIVE MATERIAL I.D. No. UN1789 Label: CORROSIVE IMO Class 8</p> <p>DATA SOURCE(S) CODE: 1-12, 14-16, 27, 31, 34, 37, 38, 47-49</p> | |
| <p>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company assumes no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</p> | <p>APPROVALS: MIS/CRD <i>J. M. Nissen</i></p> <p>INDUST. HYGIENE/SAFETY <i>UTV 6-2-84</i></p> <p>MEDICAL REVIEW: 15 June 1984</p> |

MATERIAL SAFETY DATA SHEET



Diamond Shamrock
Chemicals Company

MSDS NUMBER: M1184

PRODUCT NAME: **CAUSTIC SODA-
LIQUID**

MSDS DATE: OCTOBER 4, 1985

24 HOUR EMERGENCY PHONE: (214) 922-2700

I. PRODUCT IDENTIFICATION

3 HEALTH HAZARD, 0 FIRE HAZARD, & 1 REACTIVITY rating based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974)

MANUFACTURER'S NAME AND ADDRESS: Diamond Shamrock Chemicals Company,
Chlor-Alkali Division, 351 Phelps Court, P.O. Box 152300,
Irving, Texas 75015-2300
CHEMICAL NAME: Sodium Hydroxide CAS NUMBER: 1310-73-2
SYNONYMS/Common Names: Sodium Hydroxide; NaOH
CHEMICAL FORMULA: NaOH
DOT PROPER SHIPPING NAME: Caustic Soda, Liquid
DOT HAZARD CLASS: Corrosive Material
DOT I.D. NUMBER: UN 1824 HAZARDOUS SUBSTANCE: RQ-1000

II. HAZARDOUS INGREDIENTS

| MATERIAL OR COMPONENT | HAZARD DATA | CAS NUMBER | % |
|-----------------------|---|------------|----|
| Sodium Hydroxide | PEL = 2 mg/m ³ TLV = 2 mg/m ³ Ceiling | 1310-73-2 | 50 |
| Water | See Section V This material is listed in the TSCA Inventory. | 7732-18-5 | 50 |

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: 143°C VAPOR DENSITY (Air=1): N/A
FREEZING POINT: 12.1°C (54°F)
VAPOR PRESSURE: 13 mmHg @ 60°C
SPECIFIC GRAVITY (H₂O=1): 1.54 @ 15.6°C
SOLUBILITY IN H₂O % BY WT: Completely Soluble
% VOLATILES BY VOL.: <50%
APPEARANCE AND ODOR: Clear with no odor
pH: 7.5% solution has pH 14.0

IV. FIRE AND EXPLOSION DATA

FLASH POINT: NA AUTOIGNITION TEMPERATURE: Nonflammable
FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: Nonflammable
LOWER: Nonflammable

EXTINGUISHING MEDIA:

This product is not combustible. Water spray, foam, carbon dioxide or dry chemicals may be used where this product is stored.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and pressure-demand self-contained breathing apparatus should be worn by firefighters in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARD:

None.

CAS = Chemical Abstract Service Number
PEL = OSHA Permissible Exposure Limit
TLV = TLV®, ACGIH Threshold Limit Value, Current

N/A = No relevant information found or not available
NA = Not Applicable

Diamond Shamrock Chemicals Company - A subsidiary of Diamond Shamrock

This Material Safety Data Sheet was prepared in accordance with 29 CFR 1910.1200. All information, recommendations and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied is made by Diamond Shamrock Chemicals Company as to the effects of such use or the results to be obtained or the safety and toxicity of the product nor does Diamond Shamrock Chemicals Company assume any liability arising out of use by others of the product referred to herein. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

V. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA:

Caustic Soda is a corrosive material.

Sodium Hydroxide: Acute Oral LD₅₀ = 140-340 mg/kg (rat)

Acute Dermal LD₅₀ = 1.35 gm/kg (rabbit)

ROUTES OF EXPOSURE

INHALATION:

Airborne concentrations of dust, mist, or spray of caustic soda may cause damage to the upper respiratory tract and even to the lung tissue proper which could produce chemical pneumonia, depending upon severity of exposure.

SKIN CONTACT:

This product is destructive to tissues contacted and produces severe burns.

SKIN ABSORPTION:

See "Skin Contact".

EYE CONTACT:

This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

INGESTION:

This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus and stomach.

EFFECTS OF OVEREXPOSURE

ACUTE:

Corrosive to all body tissues with which it comes in contact.

CHRONIC:

The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness.

EMERGENCY AND FIRST AID PROCEDURES

EYES:

OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN:

Wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. Seek medical attention immediately.

INHALATION:

Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION:

NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY:

Under normal conditions, this material is stable.

INCOMPATIBILITY:

Avoid direct contact with water. Caustic Soda - Liquid may be added slowly to water or acids with dilution and agitation to avoid a violent reaction. When handling Caustic Soda, avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction. Avoid contact with leather or wool.

HAZARDOUS DECOMPOSITION PRODUCTS:

None.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:

Material is not known to polymerize.

VII. ENVIRONMENTAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Leaks should be stopped. Spills should be contained and cleaned up immediately. Spills should be removed by using a vacuum truck. Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, and acetic acid. The spill area should then be flushed with water followed by liberal covering of sodium bicarbonate. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement, e.g., dirt or sand, may be handled by removing the affected soils and placing in approved containers. Persons performing clean-up work should wear adequate personal protective equipment and clothing.

Caution: Caustic Soda may react violently with acids and water.

WASTE DISPOSAL METHOD:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health and environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of spill and disposal methods.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS:

Use adequate local exhaust ventilation where mist, sprays or resuspended dust may be generated. NOTE: Where carbon monoxide may be generated, special ventilation may be required.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY:

Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where mists, sprays or resuspended dust may be generated. Follow manufacturers recommendations.

EYE:

Face shield and goggles or chemical goggles should be worn.

GLOVES:

Gloves should be worn. Gloves may be decontaminated by washing with mild soap and water. Natural and butyl rubber have been suggested.

OTHER CLOTHING AND EQUIPMENT:

Protective clothing to minimize skin contact. Chemically resistant safety shoes. Wash contaminated clothing with soap and water and dry before reuse. Showers and eyewash facilities should be accessible.

MONITORING EXPOSURE

BIOLOGICAL:

N/A

PERSONAL/AREA:

NIOSH P & CAM (Method) 241, S381.

IX. SPECIAL PRECAUTIONS

SIGNAL WORD: DANGER

STATEMENT OF HAZARDS:

CAUSES SEVERE BURNS TO SKIN AND EYES

CONTACT WITH EYES CAN CAUSE PERMANENT EYE DAMAGE.

INHALATION OF DUST, MIST OR SPRAY CAN CAUSE SEVERE LUNG DAMAGE.

PRECAUTIONARY STATEMENTS:

Do not get into eyes, on skin, on clothing.

Avoid breathing dust, mists, or spray.

Do not take internally.

Use with adequate ventilation and employ respiratory protection when exposure to dust, mist or spray is possible.

When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing.

Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.

Keep container closed.

IX. SPECIAL PRECAUTIONS

...continued

PRECAUTIONARY STATEMENTS:

Product can react violently with water, acids, and other substances - read special mixing and handling instructions below carefully before using.

Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1-1977).

FIRST AID:

IN CASE OF CONTACT:

For eyes:

Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire eye surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

For skin:

Immediately wash with plenty of water. Remove contaminated clothing and footwear. Wash clothing before reuse and discard footwear which cannot be decontaminated. Seek medical attention immediately.

IF INHALED:

Remove person out of contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered, if available. Seek medical attention immediately.

IF SWALLOWED:

Do not induce vomiting. Give large quantities of water. If available, give several glasses of milk. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

IN CASE OF SPILL OR LEAK:

Leaks should be stopped. Spills, after containment, should be shoveled up or removed by vacuum truck (if liquid) to chemical waste area. Neutralize residue with dilute acid, flush spill area with water followed by liberal covering of sodium bicarbonate. Dispose of wash water and spill by-products according to federal, state, and local regulations.

SPECIAL MIXING AND HANDLING INSTRUCTIONS:

Considerable heat is generated when water is added to caustic soda; therefore, when making solutions always add the caustic soda to the water with constant stirring. The water should always be lukewarm (80°-100°F). Never start with hot or cold water. If caustic soda becomes concentrated in one area, or if added too rapidly, or if added to hot or cold water, a rapid temperature increase can result in DANGEROUS BOILING and/or spattering or may cause an immediate VIOLENT ERUPTION.

When handling product, avoid contact with aluminum, tin, zinc, and alloys containing these metals.

Caustic soda can react violently or explosively with acids and many organic chemicals - when mixing caustic soda with such chemicals, add very gradually while agitating to prevent violent or explosive reaction.

Caustic soda reacts with reducing sugars such as fructose, lactose, maltose, galactose, levulose, and arabinose to form carbon monoxide. While the potential for worker exposure to carbon monoxide may be small, a potential does exist during cleaning of certain dairy and possibly other industry equipment.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

More information on the hazards and handling of caustic soda appear in Diamond Shamrock Corporation's Material Safety Data Sheet (MSDS) M1184 and caustic soda handbook EC-LDC-1c.

DISPOSAL:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of disposal.

FOR INDUSTRIAL USE ONLY

MATERIAL SAFETY DATA SHEETDATE October 14, 1986

6602-10-30-85

PRODUCT NAME

UltrAmine 130

**SECTION I**

MANUFACTURER'S NAME

Calgon Corporation

EMERGENCY

TELEPHONE NO. (412) 777-8000

ADDRESS

P. O. Box 1346, Pittsburgh, Pennsylvania 15230

CHEMICAL NAME
AND SYNONYMS

Amine Solution

FORMULA

Multicomponent Liquid

SECTION II HAZARDOUS INGREDIENTS

| PRINCIPAL HAZARDOUS COMPONENT (S) | % | ORAL LD ₅₀ | DERMAL LD ₅₀ | TLV (Units) |
|------------------------------------|----|-----------------------|-------------------------|-------------|
| Morpholine (CAS No. 110-91-8) | 33 | Rat ① 1050 mg/kg | Rabbit ① 500 mg/kg | 20 ppm ② |
| Cyclohexylamine (CAS No. 108-91-8) | 11 | Rat ① 156 mg/kg | Rabbit ① 320 mg/kg | 10 ppm ③ |
| | | | | |
| | | | | |
| | | | | |

① NIOSH Registry of Toxic Effects of Chemical Substances, 1981-82

② OSHA Standard 29 CFR 1910.1000

③ American Conference of Governmental Industrial Hygienists TLV 1983-84

SECTION III PHYSICAL DATA

| | | | |
|------------------------|----------|---------------------------------------|-------------|
| BOILING POINT (°F) | > 212° F | SPECIFIC GRAVITY (H ₂ O=1) | 1.003-1.013 |
| VAPOR PRESSURE (mmHg.) | Unknown | PERCENT VOLATILE BY VOLUME (%) | 100 |
| VAPOR DENSITY (AIR=1) | Unknown | pH | 12.8 |
| SOLUBILITY IN WATER | Complete | | |

APPEARANCE AND ODOR

Amber liquid with amine odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)

131° F

FLAMMABLE LIMITS

Lel

Uel

EXTINGUISHING MEDIA

In case of fire, use water, dry chemical, CO₂ or "alcohol" foam.SPECIAL FIRE FIGHTING
PROCEDURESExercise caution when fighting any chemical fire.
Respiratory protection is essential.UNUSUAL FIRE AND
EXPLOSION HAZARDS

None

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Causes burns to eyes, skin and mucous membranes. Harmful if swallowed.

EMERGENCY AND FIRST AID PROCEDURES

EYE & SKIN: In case of contact, immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Seek medical aid. Wash clothing before reuse.

INTERNAL: If swallowed, do NOT induce vomiting. Give large quantities of water. Seek medical aid immediately. Never give anything by mouth to an unconscious person.

SECTION VI REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|-------------------------------|
| STABILITY | STABLE | X | CONDITIONS TO AVOID | Keep away from heat and flame |
| | UNSTABLE | | | |

INCOMPATIBILITY (Materials to Avoid) Acids, strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS Oxides of nitrogen

| | | |
|--------------------------|--|---------------------|
| HAZARDOUS POLYMERIZATION | | CONDITIONS TO AVOID |
| MAY OCCUR | NO X | |

SECTION VII SPILL OR LEAK PROCEDURES

REPORTABLE QUANTITIES (RQ) IN LBS. OF EPA HAZARDOUS SUBSTANCES IN PRODUCT

1. N/A
2. _____
3. _____

NOTIFY EPA OF PRODUCT SPILLS EQUAL TO OR EXCEEDING N/A LBS.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dispose of in accordance with local, state and federal regulations. Dike area to contain as much spilled material as possible. Remove any remaining material by absorbing on vermiculite or other suitable absorbing material and place in a sealed metal container for disposal.

WASTE DISPOSAL METHOD

Incinerate or landfill in accordance with local, state and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type)

A NIOSH approved respirator is recommended if the TLV for morpholine and cyclohexylamine are exceeded.

| | | | |
|-------------|----------------------|-------------|---------|
| VENTILATION | LOCAL EXHAUST | Recommended | SPECIAL |
| | MECHANICAL (General) | Recommended | OTHER |

| | | | |
|-------------------|--------|----------------|---------------------------------|
| PROTECTIVE GLOVES | Rubber | EYE PROTECTION | Eye goggles or full-face shield |
|-------------------|--------|----------------|---------------------------------|

OTHER PROTECTIVE EQUIPMENT Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Do not get in eyes, on skin or on clothing. Avoid breathing vapor or mist. Keep container closed. Wash thoroughly after handling.

OTHER PRECAUTIONS

Use only in well-ventilated areas that will maintain air levels below limits established by local, state and federal regulations.

CALGON CORPORATION
P.O. Box 1346
Pittsburgh, Pennsylvania 15230

MATERIAL SAFETY DATA SHEET

MSDS No.: 6P65-01-21-87-726
Date: 03/05/87
Page: 1 of 3

24-Hour Emergency Telephone--(412) 777-8000

I. PRODUCT IDENTIFICATION

WARNING! MAY CAUSE EYE IRRITATION.

BLR-3152

Appearance and odor: Colorless liquid; slight ammonia odor

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

| <u>Chemical & Common Names of Hazardous Ingredients</u> | <u>Recommended Air-borne levels</u> |
|---|-------------------------------------|
| | OSHA PEL TLV*-TWA 1985-86 |
| Tetrapotassium pyrophosphate [7320-34-5] | Not established |

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

| | | | |
|------------------------|---------------------------|----------------------|----------|
| Boiling point: | 99-102°C (210-216°F) | Solubility in water: | Complete |
| Vapor pressure @ 20°C: | Not determined | Specific gravity: | 1.10 |
| Vapor density: | Not determined | pH: | 8.3 |
| % volatile (vol.): | Negligible at 20°C (68°F) | Evaporation rate: | <1 |
| Freezing point: | -8 to -4°C (18-25°F) | | |

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

Flash point: Not flammable Flammable limits: N/A
Autoignition temperature: N/A
Extinguishing media: N/A
Special fire-fighting procedures: None
Unusual fire & explosion hazards: None

Continued...

*TLV is a registered trademark of Amer. Conf. of Gov. Indust. Hygienists for Threshold Limit Values.
N/A - not applicable

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON..

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...Continued

Stability considerations: Stable

Incompatibility with: None

Hazardous decomposition products: When heated to decomposition, can emit highly toxic fumes of PO_x and CO_x .

Hazardous products of combustion: Not combustible.

Hazardous polymerization: Will not occur.

V. HEALTH HAZARD DATA

WARNING! MAY CAUSE EYE IRRITATION.

Signs & symptoms of overexposure in the workplace:

Eyes: May cause eye irritation.

Skin: None expected.

Inhalation: None expected.

Ingestion: None expected.

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of water for at least 15 minutes. Seek medical aid.

SKIN: N/A

INHALATION: N/A

INGESTION: N/A

Medical conditions generally recognized as being aggravated by exposure: NonePrimary Routes of Entry: EyesNone of the components of this product are listed as carcinogens by NTP (National Toxicology Program); not regulated as carcinogens by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer).

Continued...

V. HEALTH HAZARD DATA

...Continued

Reported Human Effects: Calgon Corporation has not received any reports of adverse effects from workers handling this product.

Reported Animal Effects: Calgon Corporation has not conducted any toxicity testing on this product.

VI. SPILL & LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Small Spills: Add absorbent, sweep up and discard. Large Spills: Dike to contain and pump into drums for use or disposal.

Waste Disposal Method: This product at normal use concentrations is routinely handled in industrial wastewater systems. However, discharge must meet local, state and federal regulations.

This product is not listed in federal hazardous waste regulations 40CFR261.33 paragraphs (e) and (f), i.e. chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40CFR261 Subpart C. State or local hazardous waste regulations may apply if different from federal.

When drum is empty, rinse it with plenty of water before discarding.

VII. APPLICABLE CONTROL MEASURES

Appropriate hygienic practices: Avoid contact with eyes.
Wash thoroughly after handling, and before eating, drinking or smoking.

Personal protective equipment: Chemical splash goggles

Work practices: Eyewash fountains and safety showers should be easily accessible.

Engineering controls: Provide adequate ventilation.

CALGON CORPORATION
P.O. Box 1346
Pittsburgh, Pennsylvania 15230

MATERIAL SAFETY DATA SHEET

MSDS No.: 6P89-01-21-87-725
Date: 02/24/87
Page: 1 of 3

24-Hour Emergency Telephone--(412) 777-8000

I. PRODUCT IDENTIFICATION

WARNING! MAY CAUSE EYE AND SKIN IRRITATION.

BLR-3430

Appearance and odor: Light straw-colored liquid; slight sulfurous odor

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

Chemical & Common Names of Hazardous Ingredients

Recommended Air-borne Levels
OSHA PEL TLV*-TWA 1985-86

Sodium bisulfite [7631-90-5]

Not established 5 mg/m³

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

| | | | |
|------------------------|--------------------|----------------------|---------------------------|
| Boiling point: | 104°C (219°F) | Solubility in water: | Complete |
| Vapor pressure @ 20°C: | Not determined | Specific gravity: | 1.29 |
| Vapor density: | Not determined | pH: | 4.1 |
| % volatile (vol.): | Negligible at 20°C | Evaporation rate: | Slower than butyl acetate |
| Freezing point: | -16.5°C (1°F) | | |

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

Flash point: Nonflammable

Flammable limits: N/A

Autoignition temperature: N/A

Extinguishing media: None. This product is not combustible nor does it support combustion.

Special fire-fighting procedures: None

Unusual fire & explosion hazards: None

Continued...

*TLV is a registered trademark of Amer. Conf. of Gov. Indust. Hygienists for Threshold Limit Values.
N/A - not applicable

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...Continued

Stability considerations: Stable

Incompatibility with: Acids and oxidizers

Hazardous decomposition products: When heated to decomposition, will emit sulfur dioxide.

Hazardous products of combustion: Nonflammable material.

Hazardous polymerization: Will not occur.

V. HEALTH HAZARD DATA

WARNING! MAY CAUSE EYE AND SKIN IRRITATION.

Signs & symptoms of overexposure in the workplace:

- Eyes: May cause eye irritation; pain, tearing, conjunctival swelling (edema), redness and conjunctivitis may also be seen.
- Skin: May cause skin irritation; pain, burns, stains, redness and dermatitis may also be seen.
- Inhalation: Inhaling mists may cause respiratory irritation; sore throat, coughing, nausea, dyspnea, respiratory distress, and hypotension may also be seen.
- Ingestion: Although ingestion is not a common route of industrial exposure, this material is expected to be a gastric irritant and may cause abdominal pain, nausea, vomiting, diarrhea, hypotension and possible suffocation (asphyxia) due to glottal edema.

EMERGENCY & FIRST AID PROCEDURES:

- EYES: In case of contact, immediately flush with plenty of low pressure water for at least 15 minutes. Remove any contact lenses to assure thorough flushing. Call a physician.
- SKIN: Promptly flush with running water. Remove contaminated clothing. Wash clothing before reuse.
- INHALATION: Remove to fresh air. Treat any irritation symptomatically. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Call a physician.
- INGESTION: If conscious, the person should immediately drink large quantities of milk or water to dilute this product. Do NOT induce vomiting. Call a physician. Never give liquids to an unconscious person.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

Medical conditions generally recognized as being aggravated by exposure: None known

Primary Routes of Entry: Skin, inhalation

The components of this solution are not listed as carcinogens by NTP (National Toxicology Program); not regulated as carcinogens by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer).

Reported Human Effects: Calgon Corporation has not received any reports of adverse effects in workers handling this product.

Reported Animal Effects: Calgon Corporation has not conducted any toxicology testing with this formulated product. Sodium bisulfite has reported rat LD₅₀'s of 2000 mg/kg orally, 650 mg/kg by intraperitoneal injection, and 115 mg/kg upon intravenous administration. Data on mutagenic effects of sodium bisulfite are also reported in the literature.

VI. SPILL & LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Small Spills: Add absorbent, sweep up, and discard. Large Spills: Dike to contain and pump into drums for use or disposal.

Waste Disposal Method: This product at normal use concentrations is routinely handled in industrial wastewater treating systems. However, discharge must meet local, state, and federal discharge regulations.

This product is not listed in federal hazardous waste regulations 40CFR261.33 paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40CFR261 Subpart C. State or local hazardous waste regulations may apply if different from the federal.

EPA Reportable Quantity (RQ): BLR-3430 contains sodium bisulfite that is a "Hazardous Substance" listed in 40CFR302.4. BLR-3430 has a "Reportable Quantity" of 13,157 lbs.

When drum is empty, rinse it with plenty of water and discard.

VII. APPLICABLE CONTROL MEASURES

Appropriate hygienic practices: Avoid contact with eyes, skin, and clothing.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid breathing mists or vapors.
Wash thoroughly after handling.

Personal protective equipment: Safety glasses
Impervious gloves
Appropriate respirator is recommended when exposure to airborne contaminant is likely to exceed acceptable limits.

Work practices: Eyewash fountains and safety showers should be easily accessible.

Handling and storage precautions: Store in cool, dry place.
Keep container tightly closed.
This product may react with acids and oxidizers and should not be stored near such materials.

Engineering controls: Adequate ventilation should be provided to keep mist and vapor concentrations below acceptable exposure limits.



UNICHEM
INTERNATIONAL

MATERIAL SAFETY DATA SHEET

"Essentially Similar" to Form OSHA-20

Date Prepared 9/14/83

Supersedes Previous Sheet Dated _____

I PRODUCT IDENTIFICATION

UNICHEM INTERNATIONAL
707 N. Leech / P. O. Box 1499 / Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NO.
(505) 393-7751

PRODUCT NAME Triethylene Glycol

TRADE NAME:

CHEMICAL DESCRIPTION:

II HAZARDOUS INGREDIENTS

MATERIAL

Triethylene glycol

%

99

TLV (UNITS)

(Not a specification value)

III PHYSICAL DATA

| | | | |
|---------------------------------------|---------------|-----------------------|---------------------|
| BOILING POINT, 760 mm Hg | 545.9 | FREEZING POINT: | |
| SPECIFIC GRAVITY (H ₂ O=1) | 1.1 @ 25/25°C | VAPOR PRESSURE @ 20°C | less than 1.0 |
| VAPOR DENSITY (AIR=1) | 5.18 | SOLUBILITY IN WATER | completely miscible |
| PERCENT VOLATILES BY WEIGHT | NA | EVAPORATION RATE | |

APPEARANCE AND ODOR Colorless, mild liquid

IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
(TEST METHOD) 320°C COC

| | | | | |
|--------------------------------------|-------|------|-------|------|
| FLAMMABLE LIMITS IN AIR, % BY VOLUME | LOWER | 0.9% | UPPER | 9.2% |
|--------------------------------------|-------|------|-------|------|

EXTINGUISHING
MEDIA Water fog, alcohol foam, CO₂, Dry chemical

SPECIAL FIRE
FIGHTING PROCEDURES NONE

UNUSUAL FIRE AND
EXPLOSION HAZARDS NONE

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V HEALTH HAZARD DATA

| | |
|------------------------------------|--|
| THRESHOLD LIMIT VALUE | No TLV suggested as material has very low volatility and is low in single dose oral tox. |
| EFFECTS OF OVEREXPOSURE | Very low in single dose oral toxicity: LD50 lab animals range from 8000 to 16800 mg/kg. Essentially no irritation and no corneal injury if eye contact. For skin contact, essentially no irritation will occur. Not considered a problem because of its low single dose oral tox in case of skin absorption. |
| EMERGENCY AND FIRST AID PROCEDURES | EYE & SKIN: Flush eyes with water. Get medical attention if ill effects develop. Wash skin with soap & water. INHALATION: not likely a problem. INGESTION: Induce vomiting if large amounts are swallowed. Treat symptomatically. No known antidote. |

VI REACTIVITY DATA

| | | | |
|------------------------------------|----------------|---------------------|-----------------------------|
| STABILITY | | CONDITIONS TO AVOID | Will ignite in air at 700°F |
| UNSTABLE | STABLE | | |
| | XXX | | |
| COMPATIBILITY (MATERIALS TO AVOID) | | Oxidizing material | |
| HAZARDOUS DECOMPOSITION PRODUCTS | | | |
| HAZARDOUS POLYMERIZATION MAY OCCUR | | CONDITIONS TO AVOID | |
| | WILL NOT OCCUR | | |
| | XXX | | |

VII SPILL OR LEAK PROCEDURES

| | |
|--|-------------------------------------|
| STEPS TO BE TAKEN WHEN MATERIAL IS RELEASED OR SPILLED | Dam to prevent water pollution. |
| FASTEST DISPOSAL METHOD | Burn in accordance with local laws. |

VIII SPECIAL PROTECTION INFORMATION

| | | | |
|---------------------------------------|-----------------------------|------------------------------------|------------------------|
| RESPIRATORY PROTECTION (SPECIFY TYPE) | None likely to be required. | | |
| VENTILATION | LOCAL EXHAUST | | SPECIAL |
| | MECHANICAL (GENERAL) | Good ventilation normally adequate | OTHER |
| PROTECTIVE GLOVES | | EYE PROTECTION | Not normally necessary |

OTHER PROTECTIVE EQUIPMENT

IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Practice reasonable care to avoid exposure.

OTHER PRECAUTIONS



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 10/31/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1300

Chemical Description

Proprietary Scale and Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material

Potassium Hydroxide CAS# 1310-58-3
Proprietary Corrosion Inhibitor
Proprietary Corrosion/Scale Inhibitors

TLV (Units)

2 mg/m³
10 mg/m³
Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|----------|---------------------|----------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 0°F |
| Specific Gravity (H ₂ O=1) | 1.3 g/ml | Solubility in Water | Complete |

Appearance and Odor Amber, Clear Liquid; Slight Sweet Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.



V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

| | | | |
|--------------------------|----------------|---------------------|------|
| Hazardous Polymerization | May Occur | Conditions to Avoid | None |
| | Will Not Occur | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|---|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of vapors above TLV | Special | None |
| | Mechanical (General) | | Other | None |

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

**UNICHEM
INTERNATIONAL****DESCRIPTION**

UNICHEM 1300 is an organic scale and corrosion inhibitor and dispersant for use in cooling tower recirculating water systems. UNICHEM 1300 contains specific compounds proportioned for scale and corrosion inhibition. UNICHEM 1300 is a highly effective anti-precipitant for calcium phosphate, calcium carbonate, and calcium sulfate. In addition, it contains tolyltriazole for copper and copper alloy corrosion inhibitions. UNICHEM 1300 additionally inhibits iron deposition at inhibition percentages approaching 100%. It is an excellent dispersant for particulate matter such as mud, silt, and dead bacteria (slime) commonly found in cooling water systems.

BROAD PA RANGE

APPLICATION

UNICHEM 1300 should be fed to the system continuously. The amount of UNICHEM 1300 normally used should be 50 to 100 ppm. The amount of UNICHEM 1300 fed to the system is normally controlled by an orthophosphate residual of 10 to 14 ppm.

PROPERTIES

| | |
|---------------|--------------------|
| Appearance: | Clear Amber |
| Form: | Liquid |
| Density: | 11.2 pounds/gallon |
| Freeze Point: | 0°F |
| Flash Point: | None |

HANDLING

UNICHEM 1300 is low in toxicity; however, due care should be exercised in the handling of any water treatment compound in its concentrated form. If spilled, wash thoroughly with copious quantities of water. If irritation persists, contact a physician.

PACKAGING

UNICHEM 1300 is available in 55 gallon drums or in bulk quantities.



UNICHEM
INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 10/31/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1300

Chemical Description

Proprietary Scale and Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material

Potassium Hydroxide CAS# 1310-58-3
Proprietary Corrosion Inhibitor
Proprietary Corrosion/Scale Inhibitors

TLV (Units)

2 mg/m³
10 mg/m³
Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|----------|---------------------|----------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 0°F |
| Specific Gravity (H ₂ O=1) | 1.3 g/ml | Solubility in Water | Complete |

Appearance and Odor Amber, Clear Liquid; Slight Sweet Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.



V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

| | | | |
|--------------------------|----------------|---------------------|------|
| Hazardous Polymerization | May Occur | Conditions to Avoid | None |
| | Will Not Occur | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|---|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of vapors above TLV | Special | None |
| | Mechanical (General) | | Other | None |

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.



MATERIAL SAFETY DATA SHEET

"Essentially Similar" to Form OSHA-20

Date Prepared 9-25-85

Supersedes Previous Sheet Dated _____

I PRODUCT IDENTIFICATION

UNICHEM INTERNATIONAL
707 N. Leech / P. O. Box 1499 / Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NO.
(505) 393-7751

PRODUCT NAME UNICHEM 1710

TRADE NAME:

CHEMICAL DESCRIPTION:

Proprietary Dispersant and Scale Inhibitor

II HAZARDOUS INGREDIENTS

| MATERIAL | % | TLV (UNITS) |
|----------|---|-------------|
| | | |
| | | |
| | | |
| | | |

III PHYSICAL DATA

| | | | |
|---------------------------------------|-------|------------------------|------------|
| BOILING POINT, 760 mm Hg | 212°F | FREEZING POINT: | 25°F |
| SPECIFIC GRAVITY (H ₂ O=1) | 1.127 | VAPOR PRESSURE @ | |
| VAPOR DENSITY (AIR=1) | | SOLUBILITY IN WATER | Infinitely |
| PERCENT VOLATILES BY WEIGHT | | EVAPORATION RATE | |

APPEARANCE AND ODOR Gold Clear

IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
(TEST METHOD) None

FLAMMABLE LIMITS IN AIR, % BY VOLUME

LOWER

UPPER

EXTINGUISHING
MEDIA Water Spray, Dry Chemical, CO₂

SPECIAL FIRE
FIGHTING PROCEDURES None

UNUSUAL FIRE AND
EXPLOSION HAZARDS None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V HEALTH HAZARD DATA

| | |
|------------------------------------|---|
| THRESHOLD LIMIT VALUE | Unknown |
| EFFECTS OF OVEREXPOSURE | Corrosive to skin and eyes if overexposed. May be harmful if ingested or absorbed through skin in large quantities. |
| EMERGENCY AND FIRST AID PROCEDURES | Flush with water for at least 15 minutes and contact a physician if skin irritation persists. For eye contact, or ingestion, contact a physician. |

VI REACTIVITY DATA

| STABILITY | | CONDITIONS TO AVOID | None |
|---|----------------|------------------------------|------|
| UNSTABLE | STABLE | | |
| | X | | |
| INCOMPATIBILITY (MATERIALS TO AVOID) | | Strongly alkaline compounds. | |
| HAZARDOUS DECOMPOSITION PRODUCTS | | None | |
| HAZARDOUS POLYMERIZATION MAY OCCUR | | CONDITIONS TO AVOID | |
| | WILL NOT OCCUR | | |
| | X | | |

VII SPILL OR LEAK PROCEDURES

| | |
|--|---|
| STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED | Wash down contaminated area with water or soak up with absorbant material. Do not allow wash water to drain into important water sources. |
| WASTE DISPOSAL METHOD | Incinerate in an incinerator or an approved disposal facility. |

VIII SPECIAL PROTECTION INFORMATION

| | | | | |
|--|----------------------|-----------------------------|----------------|------------------------|
| RESPIRATORY PROTECTION (SPECIFY TYPE) | | None likely to be required. | | |
| VENTILATION | LOCAL EXHAUST | Control to Comfort | SPECIAL | |
| | MECHANICAL (GENERAL) | | OTHER | |
| PROTECTIVE GLOVES | | Rubber | EYE PROTECTION | Face Shield or Goggles |
| OTHER PROTECTIVE EQUIPMENT Rubber Boots, Apron, and/or Coveralls | | | | |

IX SPECIAL PRECAUTIONS

| | |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING | Do not transfer to improperly marked containers. Keep container closed when not in use. Do not allow material to contact skin or eyes. |
| OTHER PRECAUTIONS | Keep out of reach of children. |



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 2310

Chemical Description

Proprietary Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material

Sodium Nitrite (Oxidizer)

TLV (Units)

None Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|-----------|---------------------|----------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 22°F |
| Specific Gravity (H ₂ O=1) | 1.16 g/ml | Solubility in Water | Complete |

Appearance and Odor Light Yellow to Water White Clear Liquid; Slight Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Prolonged skin contact will cause dryness and irritation. Ingestion may cause catharsis. Inhalation of mist may cause respiratory irritation. Eye contact will cause irritation.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

| | |
|--------------------------------------|------------------------|
| Incompatibility (Materials to Avoid) | Acids, Reducing Agents |
|--------------------------------------|------------------------|

| | |
|-------------------------------------|-------------------------------|
| Hazardous Decomposition of Products | Oxides of Carbon and Nitrogen |
|-------------------------------------|-------------------------------|

| | | | |
|--------------------------|----------------|---------------------|------|
| Hazardous Polymerization | May Occur | Conditions to Avoid | None |
| | Will Not Occur | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

| | |
|-----------------------|--|
| Waste Disposal Method | Dispose via a licensed waste disposal company. Follow local, state, and federal regulations. |
|-----------------------|--|

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|---|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of vapors above TLV | Special | None |
| | Mechanical (General) | | Other | None |

| | | | |
|-------------------|--------|----------------|---|
| Protective Gloves | Rubber | Eye Protection | Safety Glasses, Goggles, and/or Face Shield |
|-------------------|--------|----------------|---|

| | |
|----------------------------|--|
| Other Protective Equipment | Overalls, Rubber Boots, Eyewash Stations, Safety Showers |
|----------------------------|--|

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep container closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

KE-TONE BN

Compressor Jacket Water

PRODUCT BULLETIN

KE-TONE BN is a non-chromate corrosion inhibitor which utilizes strong anti-oxidants. This compound contains organic inhibitors which have proven highly successful in the protection of copper and copper alloys in addition to mild steel.

KE-TONE BN is recommended for use in closed water systems which contain glycol or alcohol antifreeze compounds or are subjected to sour gas leaks.

KE-TONE BN should be fed to the system at the rate of 2 gallons per 1,000 gallons of contained water or makeup. KE-TONE BN is compatible with all compounds which are normally used in water treatment.

| | |
|---------------------|----------------|
| Form | Liquid |
| Color | Water White |
| Density | 9.7 lbs/gallon |
| Pour Point | 22° F. |
| Flash Point | None |
| Viscosity @ 100° F. | 36.3 S.U. |
| pH | 8.4 |

KE-TONE BN is not classified as a hazardous compound; however, due care should be exercised in the handling of this compound in its concentrated form.

KE-TONE BN is available in 5 gallon carboys, 55 gallon drums, or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name KETONE BN

Chemical Description

Proprietary Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Sodium Nitrite (Oxidizer)

None Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|-----------|---------------------|----------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 22°F |
| Specific Gravity (H ₂ O=1) | 1.16 g/ml | Solubility in Water | Complete |

Appearance and Odor Light Yellow to Water White Clear Liquid; Slight Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

BOILER-HIB 430 is a volatile neutralizing amine corrosion inhibitor.

BOILER-HIB 430 is used for corrosion protection in steam and condensate lines and in auxiliary equipment of boiler plants. This compound volatilizes and quickly neutralizes carbon dioxide and other acidic components in steam at the point of condensation. In addition to corrosion prevention in the return condensate system, this compound effectively reduces the iron content of the feed to the boiler water and thus minimizes boiler deposits created by iron supplied by corrosive condensate return.

BOILER-HIB 430 should be fed continuously to the boiler feed water in proportion to the quantity of makeup water. A pH of 6.8 to 7.5 should be maintained in the condensate return.

| | |
|--------------------------|-------------|
| Color: | Water White |
| Form: | Liquid |
| Pour Point: | 16° F |
| Flash Point, Open Cup: | 165° F |
| Flash Point, Closed Cup: | 140° F |
| Viscosity @ 100° F: | 42.3 S.U. |
| pH: | 12.6 |

BOILER-HIB 430 is a highly alkaline compound and due care should be exercised in its handling. If this compound is spilled on the skin or in the eyes, wash with copious amounts of water. In case of eye contact a physician should be consulted.

BOILER-HIB 430 is normally sold in 55 gallon drums or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 430

Chemical Description Proprietary Neutralizing Amine

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Proprietary Neutralizing Amine

10 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|-------|---------------------|---------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 16°F |
| Specific Gravity (H ₂ O=1) | 0.948 | Solubility in Water | Soluble |

Appearance and Odor Water White Clear Liquid; Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 140°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

PRODUCT BULLETIN

BOILER-HIB 530 is a phosphate chelant internal boiler treatment which contains colloids, sludge conditioning agents, embrittlement inhibitors, organic synthetic polymers, and antifoam agents.

The use of BOILER-HIB 530 for internal boiler water treatment offers the following advantages:

1. Sludge conditioning for easy removal by blowdown.
2. Helps prevent carryover by agglomerating fine precipitates that form in the boiler.
3. Reduces priming and foaming in the boiler due to its surface active effect in forming large bubbles that break easily without building up a big foam layer.
4. Protects the boiler from caustic embrittlement.
5. Usually lowers operating costs.
6. Does not color the water or introduce insoluble solids in the boiler water.
7. Maintains cleaner operating surfaces.
8. Chelates any trace hardness present in the boiler water.

BOILER-HIB 530 should be fed continuously to the boiler to achieve the best results. This compound is a combination chelant-phosphate type treatment. Normally maintain 20-40 ppm phosphate in the boiler water.

| | |
|-------------------|-----------------|
| Color | Light Tan |
| Form | Liquid |
| Density | 10.8 lbs/gallon |
| Pour Point | 10° F. |
| Flash Point | None |
| Viscosity @ 100°F | 38.5 S.U. |
| pH | 13.4 |

BOILER-HIB 530 is non-toxic; however, ordinary care should be given to the handling of this compound.

BOILER-HIB 530 is available in 55 gallon drums or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name **BOILERHIB 530**

Chemical Description **Proprietary Boiler Water Scale and Corrosion Inhibitor**

II. HAZARDOUS INGREDIENTS

| Material | TLV (Units) |
|---|---------------------|
| Proprietary Chelant | 5 mg/m ³ |
| Potassium Hydroxide CAS# 1310-58-3 (Corrosive) | 2 mg/m ³ |
| Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic. | |

III. PHYSICAL DATA

| | | | |
|---------------------------------------|----------|---------------------|----------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 10°F |
| Specific Gravity (H ₂ O=1) | 1.3 g/ml | Solubility in Water | Complete |

Appearance and Odor **Light Brown Liquid; No Significant Odor**

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) **None**

Extinguishing Media **Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.**

Special Fire Fighting Procedures **Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.**

Unusual Fire and Explosion Hazards **None**

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

**PRODUCT
BULLETIN**UNICHEM
INTERNATIONAL

BOILER-HIB 341 is a water soluble solution of catalyzed sulfite.

BOILER-HIB 341 is used for the removal of dissolved oxygen in boilers and other closed system water heating installations.

Add BOILER-HIB 341 continuously to the boiler feedwater at a rate sufficient to maintain a sulfite residual of 20-40 ppm.

| | |
|--------------|---------------------|
| Color: | Purple, Clear |
| Form: | Liquid |
| Density: | 10.0 pounds/gallon |
| pH: | 4.2 |
| Flash Point: | Greater than 200°F. |

BOILER-HBI 341 is a strong skin and tissue irritant. If contacted, wash affected area for fifteen minutes with fresh water. If irritation or redness persist, consult a physician. If ingested, consult a physician immediately.

Take usual precautions necessary for handling industrial chemicals. Do not allow to contaminate food or food products. Keep out of reach of children. Keep containers closed when not in use.

BOILER-HIB 341 is packaged in 55 gallon steel drums or sold in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 341

Chemical Description Proprietary Boiler Water Oxygen Scavenger

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Proprietary Oxygen Scavenger

1 ppm (ACGIH)

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

| | | | |
|---------------------------------------|----------|---------------------|----------|
| Boiling Point, 760 mm Hg | 212°F | Freezing Point | 13°F |
| Specific Gravity (H ₂ O=1) | 1.2 g/ml | Solubility in Water | Complete |

Appearance and Odor Water White Clear Liquid; Slight Musty Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artificial respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

| | | | | |
|-----------|----------|---|---------------------|------|
| Stability | Stable | X | Conditions to Avoid | None |
| | Unstable | | | |

Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Sulfur

| | | | |
|--------------------------|----------------|---------------------|------|
| Hazardous Polymerization | May Occur | Conditions to Avoid | None |
| | Will Not Occur | | |

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

| | | | | |
|-------------|----------------------|---|---------|------|
| Ventilation | Local Exhaust | As needed to prevent accumulation of vapors above TLV | Special | None |
| | Mechanical (General) | | Other | None |

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

Appendix 89-2.

Analyses of Evaporation Pond Water

| <u>Sample Date</u> | <u>Sample ID</u> |
|--------------------|------------------------|
| 8-12-86 | EAGP #3 |
| 3-17-88 | Evaporation Pond Water |



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68

H0685

NH 88240

REPORT DATE: 09/09/86

ATTENTION: DAVID NIXON

NUS CLIENT NO: 291912

NUS SAMPLE NO: 26080988

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 08/19/86

SAMPLE IDENTIFICATION: EASP-3

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | 0.04 | mg/l |
| M049 | Barium, EP Extraction | 0.26 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.03 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | 0.01 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | 0.03 | mg/l |
| S193 | Sulfide, RCRA (S) | < 0.1 | mg/l |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | > 212 | F |

*Per conversation with Forrest Frazier this sample is
not a Hazardous waste.*

EFH

COMMENTS:

Reviewed and Approved by: DM



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NH 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|------|--------------------------------|----------|-------|-------------------|-------|-----------------------|-------|
| M030 | Arsenic (As) | 0.032 | mg/l | | | | |
| M040 | Barium (Ba) | 0.2 | mg/l | | | | |
| M090 | Cadmium (Cd) | < 0.005 | mg/l | | | | |
| M140 | Chromium (Cr) | < 0.03 | mg/l | | | | |
| M160 | Copper (Cu) | 0.14 | mg/l | | | | |
| M190 | Iron, Total (Fe) | 0.40 | mg/l | | | | |
| M200 | Lead (Pb) | 0.12 | mg/l | | | | |
| M240 | Manganese (Mn) | 0.02 | mg/l | | | | |
| M250 | Mercury (Hg) | < 0.0002 | mg/l | | | | |
| M290 | Selenium (Se) | 0.006 | mg/l | | | | |
| M300 | Silver (Ag) | 0.02 | mg/l | | | | |
| M370 | Uranium (U) | < 0.5 | mg/l | | | | |
| M390 | Zinc (Zn) | 0.16 | mg/l | | | | |
| W130 | Chloride (Cl) | 240 | mg/l | | | | |
| W270 | Cyanide, Total (CN) | < 0.01 | mg/l | | | | |
| W300 | Fluoride, Soluble (F) | 3.4 | mg/l | | | | |
| W390 | Nitrate (N) | 8.3 | mg/l | | | | |
| W490 | pH | 6.4 | | | | | |
| W500 | Phenolics | < 0.01 | mg/l | | | | |
| W730 | Sulfate, Turbidimetric (SO4) | 1100 | mg/l | | | | |
| 0110 | VOLATILES-PP IN WATER(EPA 624) | | | | | | |
| OV01 | Acrolein | * | ug/l | | | | |
| OV02 | Acrylonitrile | * | ug/l | | | | |
| OV03 | Benzene | < 5 | ug/l | | | | |
| OV05 | Bromoform | < 5 | ug/l | | | | |
| OV06 | Carbon tetrachloride | < 5 | ug/l | | | | |
| OV07 | Chlorobenzene | < 5 | ug/l | | | | |
| OV08 | Dibromochloromethane | < 5 | ug/l | | | | |
| OV09 | Chloroethane | < 10 | ug/l | | | | |
| OV10 | 2-Chloroethylvinyl ether | < 10 | ug/l | | | | |



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70
ARTESIA

NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|------|---------------------------------|---------|-------|-------------------|-------|-----------------------|-------|
| QV11 | Chloroform | < 5 | ug/l | | | | |
| QV12 | Bromodichloromethane | < 5 | ug/l | | | | |
| QV13 | trans-1,3-Dichloropropene* | < 5 | ug/l | | | | |
| QV14 | 1,1-Dichloroethane | < 5 | ug/l | | | | |
| QV15 | 1,2-Dichloroethane | < 5 | ug/l | | | | |
| QV16 | 1,1-Dichloroethene | < 5 | ug/l | | | | |
| QV17 | 1,2-Dichloropropane | < 5 | ug/l | | | | |
| QV18 | cis-1,3-Dichloropropene* | < 5 | ug/l | | | | |
| QV19 | Ethylbenzene | < 5 | ug/l | | | | |
| QV20 | Methyl bromide | < 10 | ug/l | | | | |
| QV21 | Methyl chloride | < 10 | ug/l | | | | |
| QV22 | Methylene chloride | 6 | ug/l | | | | |
| QV23 | 1,1,2,2-Tetrachloroethane | < 5 | ug/l | | | | |
| QV24 | Tetrachloroethene | < 5 | ug/l | | | | |
| QV25 | Toluene | < 5 | ug/l | | | | |
| QV26 | trans-1,2-Dichloroethene | < 5 | ug/l | | | | |
| QV27 | 1,1,1-Trichloroethane | < 5 | ug/l | | | | |
| QV28 | 1,1,2-Trichloroethane | < 5 | ug/l | | | | |
| QV29 | Trichloroethene | < 5 | ug/l | | | | |
| QV31 | Vinyl chloride | < 10 | ug/l | | | | |
| QVS0 | d8-Toluene(Surrogate) | | | 50 | ug/l | 100 | ug/l |
| QVS1 | Bromofluorobenzene(Surrogate) | | | 50 | ug/l | 112 | ug/l |
| QVS2 | d4-1,2-Dichloroethane(Surr.) | | | 50 | ug/l | 94 | ug/l |
| 0130 | BASE/NEUTRAL EXTRACT. (EPA 625) | | | | | | |
| QB01 | Acenaphthene | < 10 | ug/l | | | | |
| QB02 | Acenaphthylene | < 10 | ug/l | | | | |
| QB03 | Anthracene | < 10 | ug/l | | | | |
| QB04 | Benzidine | < 50 | ug/l | | | | |
| QB05 | Benzo[a]anthracene | < 10 | ug/l | | | | |
| QB06 | Benzo[a]pyrene | < 10 | ug/l | | | | |



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.
ADDRESS: P.O. DRAWER 70
ARTESIA NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918
NUS SAMPLE NO: 28031505
VENDOR NO: 02984933
WORK ORDER NO: 55680
DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|------|------------------------------|---------|-------|-------------------|-------|-----------------------|-------|
| QB07 | Benzo[b]fluoranthene | < 10 | ug/l | | | | |
| QB08 | Benzo[ghi]perylene | < 10 | ug/l | | | | |
| QB09 | Benzo[k]fluoranthene | < 10 | ug/l | | | | |
| QB10 | Bis(2-chloroethoxy)methane | < 10 | ug/l | | | | |
| QB11 | Bis(2-chloroethyl)ether | < 10 | ug/l | | | | |
| QB12 | Bis(2-chloroisopropyl)ether | < 10 | ug/l | | | | |
| QB13 | Bis(2-ethylhexyl)phthalate | < 10 | ug/l | | | | |
| QB14 | 4-Bromophenyl phenyl ether | < 10 | ug/l | | | | |
| QB15 | Benzyl butyl phthalate | < 10 | ug/l | | | | |
| QB16 | 2-Chloronaphthalene | < 10 | ug/l | | | | |
| QB17 | 4-Chlorophenyl phenyl ether | < 10 | ug/l | | | | |
| QB18 | Chrysene | < 10 | ug/l | | | | |
| QB19 | Dibenzo[a,h]anthracene | < 10 | ug/l | | | | |
| QB20 | 1,2-Dichlorobenzene | < 10 | ug/l | | | | |
| QB21 | 1,3-Dichlorobenzene | < 10 | ug/l | | | | |
| QB22 | 1,4-Dichlorobenzene | < 10 | ug/l | | | | |
| QB23 | 3,3'-Dichlorobenzidine | < 20 | ug/l | | | | |
| QB24 | Diethyl phthalate | < 10 | ug/l | | | | |
| QB25 | Dimethyl phthalate | < 10 | ug/l | | | | |
| QB26 | Di-n-butyl phthalate | < 10 | ug/l | | | | |
| QB27 | 2,4-Dinitrotoluene | < 10 | ug/l | | | | |
| QB28 | 2,6-Dinitrotoluene | < 10 | ug/l | | | | |
| QB29 | Di-n-octyl phthalate | < 10 | ug/l | | | | |
| QB30 | 1,2-Diphenylhydrazine(Azobz) | < 10 | ug/l | | | | |
| QB31 | Fluoranthene | < 10 | ug/l | | | | |
| QB32 | Fluorene | < 10 | ug/l | | | | |
| QB33 | Hexachlorbenzene | < 10 | ug/l | | | | |
| QB34 | Hexachlorobutadiene | < 10 | ug/l | | | | |
| QB35 | Hexachlorocyclopentadiene | < 10 | ug/l | | | | |
| QB36 | Hexachloroethane | < 10 | ug/l | | | | |



LABORATORY SERVICES DIVISION
300 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
300 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.
ADDRESS: P.O. DRAWER 70
ARTESIA NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918
NUS SAMPLE NO: 28031505
VENDOR NO: 02984933
WORK ORDER NO: 55660
DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

| TEST | DETERMINATION | RESULTS | UNITS | SURROGATE CONC | UNITS | SURROGATE RECOVERY | UNITS |
|------|--------------------------------|---------|-------|-------------------|-------|-----------------------|-------|
| QB37 | Indeno[1,2,3-cd]pyrene | < 10 | us/l | | | | |
| QB38 | Isophorone | < 10 | us/l | | | | |
| QB39 | Naphthalene | < 10 | us/l | | | | |
| QB40 | Nitrobenzene | < 10 | us/l | | | | |
| QB41 | N-Nitrosodimethylamine | < 10 | us/l | | | | |
| QB42 | N-Nitrosodi-n-propylamine | < 10 | us/l | | | | |
| QB43 | N-Nitrosodiphenylamine | < 10 | us/l | | | | |
| QB44 | Phenanthrene | < 10 | us/l | | | | |
| QB45 | Pyrene | < 10 | us/l | | | | |
| QB46 | 1,2,4-Trichlorobenzene | < 10 | us/l | | | | |
| QBS0 | d5-Nitrobenzene (Surrogate) | | | 100 | us/l | 70 | us/l |
| QBS1 | 2-Fluorobiphenyl (Surrogate) | | | 100 | us/l | 67 | us/l |
| QBS2 | d-14-p-Terphenyl (Surrogate) | | | 100 | us/l | 56 | us/l |
| QBS3 | Decafluorobiphenyl (Surrogate) | | | 100 | us/l | 45 | us/l |
| Q182 | TOTAL PCB IN WATER | | | | | | |
| QPB2 | Total PCB's in Water | < 1 | us/l | | | | |
| QPS9 | Monochlorobiphenyl (Surrogate) | | | 10.1 | us/l | ** | us/l |

COMMENTS: *NOT REQUIRED BY THIS METHOD; **SX INTERFERENCE PREVENTS SURROGATE RECOVERY.

Reviewed and Approved by: Diane Meyer

PAGE NO: 4



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

INORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT & ALIQOUT | DUPLICATE RESULT & ALIQOUT | SPIKE AMT/CONC | SPIKE RESULT & ALIQOUT | THEORETICAL RESULT | UNIT |
|------|------------------------|-----------|--------------|--------------------|------------------|---------------------------------|----------------------------------|-----------------------|------------------------------|-----------------------|------|
| M030 | Arsenic (As) | 28031108 | LS | 03/22/88 07:58 | 2-206.2 | 0.106 5/10ml | 0.105 2/10ml | 5 ml of 0.050 mg/l | 0.22 2/10ml | 0.23 | mg/l |
| M049 | Barium, EP Extraction | 28031516 | DQ | 03/25/88 22:12 | 19-6010 | 210 1/40ml | 210 1/100ml | 50 ml of 2.0 mg/l | 320 1/100ml | 310 | mg/l |
| M090 | Cadmium (Cd) | 28031505 | DQ | 03/24/88 16:04 | 2-213.1 | < 0.005 10/10ml | < 0.005 10/10ml | 2 ml of 1.0 mg/l | 0.40 5/10ml | 0.40 | mg/l |
| M140 | Chromium (Cr) | 28031677 | JR | 03/24/88 12:01 | 2-200.7 | < 0.03 10/10ml | < 0.03 10/10ml | 5 ml of 0.50 mg/l | 0.50 5/10ml | 0.50 | ug/l |
| M160 | Copper (Cu) | 28031388 | DQ | 03/22/88 19:26 | 2-220.1 | 5.9 1/10ml | 6.2 1/20ml | 8 ml of 1.0 mg/l | 10 1/20ml | 9.9 | mg/l |
| M190 | Iron, Total (Fe) | 28031538 | DR | 03/29/88 12:19 | 2-236.1 | 1.0 10/10ml | 1.1 5/10ml | 2 ml of 1.0 mg/l | 1.5 5/10ml | 1.4 | mg/l |
| M200 | Lead (Pb) | 28031108 | LS | 03/22/88 13:41 | 2-239.1 | 0.89 10/10ml | 0.90 5/10ml | 2 ml of 1.0 mg/l | 1.3 5/10ml | 1.3 | mg/l |
| M240 | Manganese (Mn) | 28031008 | DQ | 03/22/88 22:00 | 2-200.7 | 0.20 10/10ml | 0.21 5/10ml | 5 ml of 0.50 mg/l | 0.71 5/10ml | 0.70 | mg/l |
| M259 | Mercury, EP Extraction | 28031486 | RKN | 03/26/88 08:30 | 2-245.1 | 0.0002 100ml | 0.0002 50ml | 2 ml of 0.1 mg/l | 0.0036 50ml | 0.0042 | mg/l |
| M290 | Selenium (Se) | 28031690 | DQ | 03/22/88 15:29 | 2-270.2 | < 0.005 10/10ml | < 0.005 10/10ml | 5 ml of 0.50 mg/l | 0.046 5/10ml | 0.05 | mg/l |
| M300 | Silver (Ag) | 28031635 | LS | 03/23/88 09:57 | 2-272.1 | 0.02 10/10ml | 0.02 10/10ml | 2 ml of 1.0 mg/l | 0.40 5/10ml | 0.42 | mg/l |

LITERARY REFERENCES:

2. EPA-Environmental Protection Agency, "Methods for Chemical Analysis of Water and Wastes," 1979 & "Tech. Add." 1982, 1984.
19. EPA-Environmental Protection Agency, "Test Methods for Evaluating Solid Waste," SW-846, 3rd Edition, November, 1986.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
300 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
300 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA NM 88210

ATTENTION: STEVE REDDICK

REPORT DATE: 04/15/88

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

INORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT & ALIQUOT | DUPLICATE RESULT & ALIQUOT | SPIKE AMT/CONC | SPIKE RESULT & ALIQUOT | THEORETICAL RESULT | UNIT |
|------|----------------------------|-----------|-----------|-----------------|------------------|---------------------------|----------------------------|--------------------------|------------------------|--------------------|------|
| M370 | Uranium (U) | 28031505 | GW | 04/12/88 | ICP | < 0.5 10/10ml | < 0.5 10/10ml | 5 ml of 5.0 ug/l | 4.7 5/10ml | 5.0 | ug/l |
| M390 | Zinc (Zn) | 28031634 | DG | 03/22/88 | 2-289.1 16:40 | 1.24 5/10ml | 1.25 2/10ml | 2 ml of 1.0 ug/l | 2.25 2/10ml | 2.24 | ug/l |
| M130 | Chloride (Cl) | 28031532 | BJJ | 03/18/88 | 2-300.0 15:00 | 930 10/10ml | 940 10/10ml | 5.00 ml of 100.0 ug/l | 1940 5/10ml | 1930 | ug/l |
| M270 | Cyanide, Total (CN) | 28031647 | JH | 03/23/88 | 3-4120 07:30 | 0.37 250ml | 0.37 100ml | 5 ml of 5.5 ug/l | 0.59 100ml | 0.64 | ug/l |
| M300 | Fluoride, Soluble (F) | 28031505 | BJJ | 03/18/88 | 2-300.0 15:00 | 3.4 10/10ml | 3.3 10/10ml | | 12.5 5/10ml | 13.4 | ug/l |
| M390 | Nitrate (N) | 28031505 | BJJ | 03/18/88 | 2-300.0 15:00 | 8.3 10/10ml | 8.1 10/10ml | 5 ml of 10 ug/l | 18.2 5/10ml | 18.3 | ug/l |
| M490 | pH | 28031505 | GC | 03/17/88 | 3-423 16:00 | 6.4 | 6.4 | | | | |
| M500 | Phenolics | 28031649 | DMS | 04/03/88 | 1-D1783 23:00 | 0.08 200/200ml | 0.08 100/200ml | 10 ml of 1.0 ug/l | 0.18 100/200ml | 0.18 | ug/l |
| M730 | Sulfate, Turbidimetric (S) | 28031505 | BJJ | 03/18/88 | 2-300.0 15:00 | 1100 1/10ml | 1100 1/10ml | 1 ml of 1000 ug/l | 2200 1/10ml | 2100 | ug/l |

LITERARY REFERENCES:

1. ASTM-American Society for Testing and Materials, "Annual Book of Standards," Part 31, Water, 1979.
2. EPA-Environmental Protection Agency, "Methods for Chemical Analysis of Water and Wastes," 1979 & "Tech. Add." 1982, 1984.
3. American Public Health Association, "Standard Methods for the Examination of Water and Wastewater," 16th Edition, 1985.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT | SPIKE CONC | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT BLANK | UNIT |
|------|--------------------------|-----------|--------------|--------------------|------------------|--------------------|---------------|-----------------------|-------------------------|------------------|------|
| OPB2 | Total PCB's in Water | 28031505 | NM | 04/06/88 11:56 | 5-608 | < 1 | 10.1 | 59.4 | ND TO ND | | |
| OV01 | Acrolein | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | | 50 | ND | TO ND | * | ug/l |
| OV02 | Acrylonitrile | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | | 50 | ND | TO ND | * | ug/l |
| OV03 | Benzene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 114 | 37 TO 151 | < 5 | ug/l |
| OV05 | Bromoform | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 86 | 45 TO 169 | < 5 | ug/l |
| OV06 | Carbon tetrachloride | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 88 | 70 TO 140 | < 5 | ug/l |
| OV07 | Chlorobenzene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 100 | 37 TO 160 | < 5 | ug/l |
| OV08 | Dibromochloromethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 114 | 53 TO 149 | < 5 | ug/l |
| OV09 | Chloroethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 10 | 50 | 124 | 14 TO 230 | < 10 | ug/l |
| OV10 | 2-Chloroethylvinyl ether | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 10 | 50 | 104 | 0 TO 305 | < 10 | ug/l |
| OV11 | Chloroform | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 104 | 51 TO 138 | < 5 | ug/l |
| OV12 | Bromodichloromethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 88 | 35 TO 155 | < 5 | ug/l |

LITERARY REFERENCES:

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 88210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL SPIKE | | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT | |
|------|----------------------------|-----------|--------------|--------------------|------------------|----------------|------|-----------------------|-------------------------|---------|------|
| | | | | | | RESULT | CONC | | | BLANK | UNIT |
| OV13 | trans-1,3-Dichloropropene* | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 106 17 | TO 183 | < 5 | ug/l |
| OV14 | 1,1-Dichloroethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 100 59 | TO 155 | < 5 | ug/l |
| OV15 | 1,2-Dichloroethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 106 49 | TO 155 | < 5 | ug/l |
| OV16 | 1,1-Dichloroethene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 96 D | TO 234 | < 5 | ug/l |
| OV17 | 1,2-Dichloropropane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 94 D | TO 210 | < 5 | ug/l |
| OV18 | cis-1,3-Dichloropropene* | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 106 D | TO 227 | < 5 | ug/l |
| OV19 | Ethylbenzene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 96 37 | TO 162 | < 5 | ug/l |
| OV20 | Methyl bromide | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 10 | 50 | 98 D | TO 242 | < 10 | ug/l |
| OV21 | Methyl chloride | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 10 | 50 | 114 D | TO 273 | < 10 | ug/l |
| OV22 | Methylene chloride | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | 7 | 50 | 104 D | TO 221 | 6 | ug/l |
| OV23 | 1,1,2,2-Tetrachloroethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 80 46 | TO 157 | < 5 | ug/l |
| OV24 | Tetrachloroethene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 100 64 | TO 148 | < 5 | ug/l |

LITERARY REFERENCES:

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 65210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL SPIKE | | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT | |
|------|--------------------------|-----------|--------------|--------------------|------------------|----------------|------|-----------------------|-------------------------|---------|------|
| | | | | | | RESULT | CONC | | | BLANK | UNIT |
| GV25 | Toluene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 100 47 | TO 150 | < 5 | ug/l |
| GV26 | trans-1,2-Dichloroethene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 98 54 | TO 156 | < 5 | ug/l |
| GV27 | 1,1,1-Trichloroethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 92 52 | TO 162 | < 5 | ug/l |
| GV28 | 1,1,2-Trichloroethane | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 118 52 | TO 150 | < 5 | ug/l |
| GV29 | Trichloroethene | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 5 | 50 | 134 71 | TO 157 | < 5 | ug/l |
| GV31 | Vinyl chloride | 28031397 | SAB | 03/22/88 05:38 | 5-M624 | < 10 | 50 | 120 0 | TO 251 | < 10 | ug/l |

LITERARY REFERENCES:

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 68210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA | SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT | SPIKE CONC | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT BLANK | UNIT |
|------|-----------------------------|----------|--------|--------------|--------------------|------------------|--------------------|---------------|-----------------------|-------------------------|------------------|------|
| 0801 | Acenaphthene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | 31/30 | 47 TO 145 | < 10 | ug/l |
| 0802 | Acenaphthylene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 33 TO 145 | < 10 | ug/l |
| 0803 | Anthracene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 27 TO 133 | < 10 | ug/l |
| 0804 | Benzidine | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 50 | 100 | UNSPIKED | ND TO ND | < 50 | ug/l |
| 0805 | Benzo[a]anthracene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 33 TO 143 | < 10 | ug/l |
| 0806 | Benzo[a]pyrene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 17 TO 163 | < 10 | ug/l |
| 0807 | Benzo[b]fluoranthene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 24 TO 159 | < 10 | ug/l |
| 0808 | Benzo[ghi]perylene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | D TO 219 | < 10 | ug/l |
| 0809 | Benzo[k]fluoranthene | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 11 TO 162 | < 10 | ug/l |
| 0810 | Bis(2-chloroethoxy)methane | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 33 TO 184 | < 10 | ug/l |
| 0811 | Bis(2-chloroethyl)ether | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | 1000 | 100 | UNSPIKED | 12 TO 158 | < 10 | ug/l |
| 0812 | Bis(2-chloroisopropyl)ether | 28031713 | SB | 04/12/88 | 04:00 | 5-M625 | < 10 | 100 | UNSPIKED | 36 TO 166 | < 10 | ug/l |

LITERARY REFERENCES

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 66210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT | SPIKE CONC | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT BLANK | UNIT |
|------|-----------------------------|-----------|--------------|--------------------|------------------|--------------------|---------------|-----------------------|-------------------------|------------------|------|
| 0813 | Bis(2-ethylhexyl)phthalate | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 8 | TO 158 | < 10 | ug/l |
| 0814 | 4-Bromophenyl phenyl ether | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 53 | TO 127 | < 10 | ug/l |
| 0815 | Benzyl butyl phthalate | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 0 | TO 152 | < 10 | ug/l |
| 0816 | 2-Chloronaphthalene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 60 | TO 118 | < 10 | ug/l |
| 0817 | 4-Chlorophenyl phenyl ether | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 25 | TO 158 | < 10 | ug/l |
| 0818 | Chrysene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 17 | TO 168 | < 10 | ug/l |
| 0819 | Dibenzo[ah]anthracene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 0 | TO 227 | < 10 | ug/l |
| 0820 | 1,2-Dichlorobenzene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 32 | TO 129 | < 10 | ug/l |
| 0821 | 1,3-Dichlorobenzene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 0 | TO 172 | < 10 | ug/l |
| 0822 | 1,4-Dichlorobenzene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | 29/23 20 | TO 124 | < 10 | ug/l |
| 0823 | 3,3'-Dichlorobenzidine | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 20 | 100 | UNSPIKED 0 | TO 262 | < 20 | ug/l |
| 0824 | Diethyl phthalate | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 0 | TO 114 | < 10 | ug/l |

LITERARY REFERENCES:

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 66210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT | SPIKE CONC | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT BLANK | UNIT |
|------|-------------------------------|-----------|--------------|--------------------|------------------|--------------------|---------------|-----------------------|-------------------------|------------------|------|
| 0825 | Bimethyl phthalate | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 0 | TO 112 | < 10 | ug/l |
| 0826 | Di-n-butyl phthalate | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 1 | TO 116 | < 10 | ug/l |
| 0827 | 2,4-Dinitrotoluene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | 36/35 39 | TO 139 | < 10 | ug/l |
| 0828 | 2,6-Dinitrotoluene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 50 | TO 158 | < 10 | ug/l |
| 0829 | Di-n-octyl phthalate | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 4 | TO 146 | < 10 | ug/l |
| 0830 | 1,2-Diphenylhydrazine (Azobz) | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED ND | TO ND | < 10 | ug/l |
| 0831 | Fluoranthene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 26 | TO 137 | < 10 | ug/l |
| 0832 | Fluorene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 59 | TO 121 | < 10 | ug/l |
| 0833 | Hexachlorbenzene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 0 | TO 152 | < 10 | ug/l |
| 0834 | Hexachlorobutadiene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 24 | TO 116 | < 10 | ug/l |
| 0835 | Hexachlorocyclopentadiene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED ND | TO ND | < 10 | ug/l |
| 0836 | Hexachloroethane | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 40 | TO 113 | < 10 | ug/l |

LITERARY REFERENCES:

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713-488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70

ARTESIA

NM 66210

REPORT DATE: 04/15/88

ATTENTION: STEVE REDDICK

NUS CLIENT NO: 291918

NUS SAMPLE NO: 28031505

VENDOR NO: 02984933

WORK ORDER NO: 55680

DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION POND WATER

ORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL SPIKE RESULT | CONC | SPIKE RECOVERY (%) | ACCEPTABLE RANGE (%) | REAGENT BLANK | UNIT |
|------|---------------------------|-----------|-----------|-----------------|---------------|-----------------------|------|--------------------|----------------------|---------------|------|
| 0837 | Indeno[1,2,3-cd]pyrene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED D | TO 171 | < 10 | ug/l |
| 0838 | Isophorone | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 21 | TO 196 | < 10 | ug/l |
| 0839 | Naphthalene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 21 | TO 133 | < 10 | ug/l |
| 0840 | Nitrobenzene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 35 | TO 180 | < 10 | ug/l |
| 0841 | N-Nitrosodimethylamine | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED ND | TO ND | < 10 | ug/l |
| 0842 | N-Nitrosodi-n-propylamine | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | 33/29 D | TO 230 | < 10 | ug/l |
| 0843 | N-Nitrosodiphenylamine | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED ND | TO ND | < 10 | ug/l |
| 0844 | Phenanthrene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | UNSPIKED 54 | TO 120 | < 10 | ug/l |
| 0845 | Pyrene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | 31/27 52 | TO 115 | < 10 | ug/l |
| 0846 | 1,2,4-Trichlorobenzene | 28031713 | SB | 04/12/88 04:00 | 5-M625 | < 10 | 100 | 44/37 44 | TO 142 | < 10 | ug/l |

LITERARY REFERENCES:

5. EPA-Environmental Protection Agency, "Federal Register," October 26, 1984, Vol. 49, No. 209, 40 CFR Part 136.

Reviewed and Approved by: Diane Meyer



LABORATORY SERVICES DIVISION
300 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
300 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTIONS CO.
ADDRESS: P.O. DRAWER 70
ARTESIA NM 88210
ATTENTION: STEVE REDDICK

REPORT DATE: 04/28/88

NUS CLIENT NO: 900101
NUS SAMPLE NO: 28031506
VENDOR NO: 02984933
WORK ORDER NO: 55680
DATE RECEIVED: 03/17/88

SAMPLE IDENTIFICATION: EVAPORATION WATER POND

RADIOCHEM

| TEST | DETERMINATION | RESULTS | UNITS |
|------|---------------|---------|-------|
| DM78 | R-226 | < 0.2 | pCi/l |
| DM83 | R-228 | < 2 | pCi/l |

COMMENTS:

Reviewed and Approved by: Sandra Green

Appendix 89-3.

Waste Characterization Laboratory Reports

| <u>Sample No.</u> | <u>Waste</u> |
|-------------------|---|
| EAGP 1 | Plant Drainage Effluent |
| EAGP 2 | 'Slop Oil' Tank |
| EAGP 4 | Evaporation Pond Bottoms |
| EAGP 5 | Spent Mole Sieve (Sodium Alumino Silicate) |
| EAGP 9 | 'Hay' Filter - #1 Amine System |
| EAGP 10 | Oil Filter - #9 Compressor |
| EAGP 11 | Batch Caustic |
| --- | Sulfur Plant Catalyst |
| --- | Ethane-Propane Filter |



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

OK

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68
HOBBS

NM 88240

REPORT DATE: 09/09/86

ATTENTION: DAVID NIXON

NUS CLIENT NO: 291912

NUS SAMPLE NO: 26080986

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 08/19/86

SAMPLE IDENTIFICATION: EAGP-1

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|---------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | < 0.01 | mg/l |
| M049 | Barium, EP Extraction | 0.02 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.03 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | 0.0010 | mg/l |
| M299 | Selenium, EP Extraction | < 0.01 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 0.01 | mg/l |
| S193 | Sulfide, RCRA (S) | 55 | mg/l |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | > 212 | F |

Per conversation with Forrest Frazier this sample is
not a Hazardous waste.

DBN

COMMENTS:

Reviewed and Approved by: DM



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68

HOBBS

NM 88240

REPORT DATE: 09/09/86

ATTENTION: DAVID NIXON

NUS CLIENT NO: 291912

NUS SAMPLE NO: 26080987

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 08/19/86

SAMPLE IDENTIFICATION: EASP-2

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | 0.15 | mg/l |
| M049 | Barium, EP Extraction | 0.26 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.03 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | < 0.01 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | 4.8 | mg/l |
| S193 | Sulfide, RCRA (S) | 380 | mg/l |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | 131 | F |

SDD limit

limit to 1000 140

*Per conversation with Forrest Frazier
This sample shows
the Flash Point is a little low.*

*However this is of no concern because it is
produced Crude + saltwater.*

ABN

COMMENTS:

Reviewed and Approved by: DM



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68

HOBBS

NH 88240

ATTENTION: DAVID NIXON

REPORT DATE: 09/09/86

NUS CLIENT NO: 271912

NUS SAMPLE NO: 26089989

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 08/19/86

SAMPLE IDENTIFICATION: EAGP-4

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | 0.04 | mg/l |
| M049 | Barium, EP Extraction | 0.03 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.03 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | < 0.01 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 0.25 | mg/kg |
| S193 | Sulfide, RCRA (S) | < 5 | mg/l |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | > 212 | F |

*Per conversation with Forrest Frazier is sample is
not a Hazardous waste.*

COMMENTS:

Reviewed and Approved by: DM



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68

HOBBS

NH 88240

ATTENTION: DAVID NIXON

REPORT DATE: 07/09/86

NUS CLIENT NO: 291912

NUS SAMPLE NO: 26080990

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 08/19/86

SAMPLE IDENTIFICATION: EAGP-5

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | < 0.01 | mg/l |
| M049 | Barium, EP Extraction | < 0.01 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.03 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | < 0.01 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 0.25 | mg/kg |
| S193 | Sulfide, RCRA (S) | < 5 | mg/l |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | > 212 | F |

*Per Conversation with Forrest Frazier this sample
is not a Hazardous waste.*

DFM

COMMENTS:

Reviewed and Approved by: DM



A Halliburton Company



REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

NUS CLIENT NO: 291912
NUS SAMPLE NO: 26122219
VENDOR NO: 02984915
WORK ORDER NO: 55680
DATE RECEIVED: 12/24/86

ATTENTION: DAVID NIXON

SAMPLE IDENTIFICATION: EAGP-9

12/16

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | < 0.1 | mg/l |
| M049 | Barium, EP Extraction | 0.1 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.03 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | < 0.1 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 2.5 | mg/kg |
| S193 | Sulfide, RCRA (S) | 64 | mg/kg |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | > 212 | F |

[illegible]

File ~~220~~ 986.67

COMMENTS:

Reviewed and Approved by: DM

CC:JOHN WARNER -AMOCO P.O. BOX 3092,HOUSTON 77253



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

RECEIVED NAME:
HOBBS ADDRESS:
DISTRICT

AMOCO PRODUCTION CO.

P.O. BOX 68

HOBBS

NM 88240

REPORT DATE: 01/08/87

NUS CLIENT NO: 291912
NUS SAMPLE NO: 26122219
VENDOR NO: 02984915
WORK ORDER NO: 55680
DATE RECEIVED: 12/24/86

ATTENTION: DAVID NIXON

SAMPLE IDENTIFICATION: EAGP-9

12/16

INORGANICS

| TEST DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT & ALIQUOT | DUPLICATE RESULT & ALIQUOT | SPIKE AMT/CONC | SPIKE RESULT & ALIQUOT | THEORETICAL RESULT | UNIT |
|---------------------------------|-----------|-----------|-----------------|---------------|---------------------------|----------------------------|-----------------------|------------------------|--------------------|------|
| M039 Arsenic, EP Extraction | 26121232 | JR | 12/31/86 12:27 | 2-200.7 | < 0.1 10/10ml | < 0.1 10/10ml | 5 ml of 2.0 mg/l | 1.9 5/10ml | 2.0 | mg/l |
| M049 Barium, EP Extraction | 26121232 | JR | 12/31/86 13:26 | 2-200.7 | 0.4 10/10ml | 0.4 5/10ml | 5 ml of 2.0 mg/l | 2.5 5/10ml | 2.4 | mg/l |
| M099 Cadmium, EP Extraction | 26121232 | JR | 12/31/86 12:27 | 2-200.7 | < 0.005 10/10ml | < 0.005 10/10ml | 5 ml of 0.20 mg/l | 0.198 5/10ml | 0.200 | mg/l |
| M149 Chromium, EP Extraction | 26121232 | JR | 12/31/86 12:27 | 2-200.7 | < 0.03 10/10ml | < 0.03 10/10ml | 5 ml of 0.50 mg/l | 0.53 5/10ml | 0.50 | mg/l |
| M209 Lead, EP Extraction | 26121232 | JR | 12/31/86 12:27 | 2-200.7 | < 0.05 10/10ml | < 0.05 10/10ml | 5 ml of 0.50 mg/l | 0.52 5/10ml | 0.50 | mg/l |
| M259 Mercury, EP Extraction | 26121728 | LW | 12/29/86 07:00 | 2-245.1 | < 0.0002 100ml | < 0.0002 50ml | 2.0 ml of 0.1 mg/l | 0.0040 50ml | 0.0040 | mg/l |
| M299 Selenium, EP Extraction | 26122220 | JR | 01/07/87 15:00 | 2-200.7 | < 0.1 10/10ml | < 0.1 10/10ml | 5 ml of 2.0 mg/l | 2.0 5/0ml | 2.0 | mg/l |
| M300 Silver (Ag) | 26121883 | DQ | 12/30/86 18:00 | 2-272.1 | < 0.02 10/10ml | < 0.02 10/10ml | 2 ml of 1.0 mg/l | 0.40 5/10ml | 0.40 | mg/l |
| S071 Corrosion Rate | 26121495 | MP | 12/24/86 10:45 | 4-1110 | < 0.01 10.84g | < 0.01 10.75g | | | | IPY |
| M270 Cyanide, Total (CN) | 26122009 | PJB | 01/05/87 09:00 | 3-412D | < 0.01 250ml | < 0.01 150ml | 5.0 ml of 5.5 mg/l | 0.20 150ml | 0.18 | mg/l |
| S090 Flash Point (Pensky-Marte) | 26122220 | JF | 12/31/86 09:00 | 4-1010 | > 212 | > 212 | | | | F |

LITERARY REFERENCES:

2. EPA-Environmental Protection Agency, "Methods for Chemical Analysis of Water and Wastes," 1979 & "Tech. Add." 1982, 1984.
3. American Public Health Association, "Standard Methods for the Examination of Water and Wastewater," 16th Edition, 1985.
4. EPA-Environmental Protection Agency, "Test Methods for Evaluating Solid Waste," SW-846, 2nd Edition, April, 1984.

Reviewed and Approved by: DM



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

QUALITY ASSURANCE REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68
HOBBS

NN 88240

REPORT DATE: 01/08/87

ATTENTION: DAVID NIXON

NUS CLIENT NO: 291912

NUS SAMPLE NO: 26122219

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 12/24/86

SAMPLE IDENTIFICATION: EAGP-9

12/16

INORGANICS

| TEST | DETERMINATION | QA SAMPLE | ANA- LYST | DATE & TIME RUN | LIT REFERENCE | ORIGINAL RESULT & ALIQUOT | DUPLICATE RESULT & ALIQUOT | SPIKE AMT/CONC | SPIKE RESULT & ALIQUOT | THEORETICAL RESULT | UNIT |
|------|------------------------|-----------|-----------|-----------------|---------------|---------------------------|----------------------------|----------------|------------------------|--------------------|------|
| S191 | Sulfide | 26120930 | MD | 12/22/86 | 3-427D | < 5 | < 5 | | | | mg/k |
| | | | | 07:00 | | 10.0g | 10.0g | | | | |
| S910 | EP Toxicity Extraction | 26122219 | SH | 12/26/86 | 4-1310 | DONE | | | | | |
| | | | | 12:00 | | | | | | | |

LITERARY REFERENCES:

3. American Public Health Association, "Standard Methods for the Examination of Water and Wastewater," 16th Edition, 1985.
4. EPA-Environmental Protection Agency, "Test Methods for Evaluating Solid Waste," SW-846, 2nd Edition, April, 1984.

Reviewed and Approved by: DM



NUS
CORPORATION

Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. BOX 68

HOBBS

NM 88240

ATTENTION: DAVID NIXON

REPORT DATE: 01/08/87

NUS CLIENT NO: 291912

NUS SAMPLE NO: 26122220

VENDOR NO: 02984915

WORK ORDER NO: 55680

DATE RECEIVED: 12/24/86

SAMPLE IDENTIFICATION: EAGP-10

12/16

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | < 0.1 | mg/l |
| M049 | Barium, EP Extraction | < 0.1 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | 0.03 | mg/l |
| M209 | Lead, EP Extraction | 1.3 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | < 0.1 | mg/l |
| M309 | Silver, EP Extraction | < 0.02 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 0.26 | mg/kg |
| S193 | Sulfide, RCRA (S) | < 5 | mg/kg |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | > 212 | F |

COMMENTS:

Reviewed and Approved by: DM

CC:JOHN WARNER -AMOCO P.O. BOX 3092,HOUSTON 77253



Laboratory Services Division
900 Gemini Avenue
Houston, TX 77058

REMIT TO:
900 Gemini Avenue
Houston, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.
ADDRESS: P.O. BOX 68
HOBBS

NH 88240

REPORT DATE: 07/23/87

ATTENTION: DAVID NIXON

NUS CLIENT NO: 291912
NUS SAMPLE NO: 27070818
VENDOR NO: 02984915
WORK ORDER NO: 55680
DATE RECEIVED: 07/13/87

SAMPLE IDENTIFICATION: EACP #11

06/25

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|---------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | < 1 | mg/l |
| M049 | Barium, EP Extraction | < 1 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.05 | mg/l |
| M149 | Chromium, EP Extraction | 0.30 | mg/l |
| M209 | Lead, EP Extraction | < 0.5 | mg/l |
| M259 | Mercury, EP Extraction | 0.0092 | mg/l |
| M299 | Selenium, EP Extraction | < 1 | mg/l |
| M309 | Silver, EP Extraction | < 0.2 | mg/l |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 0.25 | mg/kg |
| S193 | Sulfide, RCRA (S) | 4100* | mg/l |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S090 | Flash Point (Pensky-Marten) | 90 | F |
| S149 | pH 1:1 | 13.3 | |

COMMENTS: *AQUEOUS SAMPLE.

Reviewed and Approved by: DM

CC:JOHN WARNER -AMOCO P.O. BOX 3092,HOUSTON 77253



LABORATORY SERVICES DIVISION
900 GEMINI AVENUE
HOUSTON, TX 77058

REMIT TO:
900 GEMINI AVENUE
HOUSTON, TX 77058

713 - 488-1810

LAB ANALYSIS REPORT

CLIENT NAME: AMOCO PRODUCTION CO.

ADDRESS: P.O. DRAWER 70
ARTESIA

NH 80210

REPORT DATE: 06/27/89

ATTENTION: STEVE RIDDICK

NUS CLIENT NO: 291910

NUS SAMPLE NO: 29061027

VENDOR NO: 02904933

WORK ORDER NO: 55680

DATE RECEIVED: 06/12/89

SAMPLE IDENTIFICATION: ALCOA BRAND SULFUR PLANT CATALYST

| TEST | DETERMINATION | RESULTS | UNITS |
|------|-----------------------------|----------|-------|
| M350 | EP TOXICITY METALS | | |
| M039 | Arsenic, EP Extraction | < 0.003 | mg/l |
| M049 | Barium, EP Extraction | < 0.2 | mg/l |
| M099 | Cadmium, EP Extraction | < 0.005 | mg/l |
| M149 | Chromium, EP Extraction | < 0.01 | mg/l |
| M209 | Lead, EP Extraction | < 0.05 | mg/l |
| M259 | Mercury, EP Extraction | < 0.0002 | mg/l |
| M299 | Selenium, EP Extraction | < 0.003 | mg/l |
| M309 | Silver, EP Extraction | < 0.01 | mg/l |
| S908 | Aqueous Dig, EPX | | |
| S907 | Aqueous Dig, EPX(As, Se) | | |
| S910 | EP Toxicity Extraction | | |
| S249 | REACTIVITY | | |
| S074 | Cyanide, RCRA (CN) | < 0.25 | mg/kg |
| S193 | Sulfide, RCRA (S) | < 16 | mg/kg |
| S071 | Corrosion Rate | < 0.01 | IPY |
| S070 | Flash Point (Pensky-Marten) | > 212 | F |
| S149 | pH 1:1 | 4.68 | |

COMMENTS:

Reviewed and Approved by: Diane Meyer

Appendix 89-4.
EAGP SPCC Plan



Amoco Production Company

Houston Region
501 WestLake Park Boulevard
Post Office Box 3092
Houston, Texas 77253

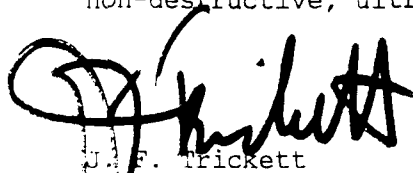
James F. Trickett
Regional Environmental, Safety &
Regulatory Affairs Manager

August 14, 1989

MEMORANDUM TO SPCC PLAN

Empire Abo Gasoline Plant - SPCC Plan

A review of the subject property was conducted on June 21, 1989. It was determined that effective controls and prevention technology is in place to reduce the likelihood of a spill event. A minor change was made to the existing plan, reference Part II Alternate A, Bulk Storage Tanks, item no. 3. The wall thickness of the NGL storage tanks will be checked once every three years, instead of every year, with a non-destructive, ultrasonic instrument.


J. F. Trickett
REK/cat

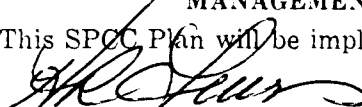
SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

PART I GENERAL INFORMATION

1. Name of facility EMPIRE ABO GASOLINE PLANT
2. Type of facility GAS PROCESSING AND INJECTION FACILITY
3. Location of facility EDDY COUNTY, NEW MEXICO - APPROXIMATELY 8.0 MILES
SOUTHEAST OF ARTESIA, NEW MEXICO
4. Name and address of owner or operator:
Name AMOCO PRODUCTION COMPANY
Address P. O. BOX 4072
ODESSA, TEXAS 79760
5. Designated person accountable for oil spill prevention at facility:
Name and title S. L. REDDICK, PLANT FOREMAN
6. Facility experienced a reportable oil spill event during the twelve months prior to Jan. 10, 1974 (effective date of 40 CFR, Part 112). (If YES, complete Attachment #1.) _____

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature 
Name H. R. LEWIS
Title DISTRICT MANAGER

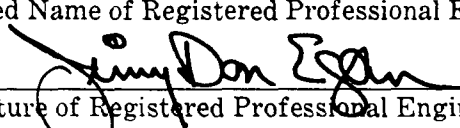
CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

(Seal)

Date OCTOBER 21, 1987

JIMMY DON EGAN
Printed Name of Registered Professional Engineer


Signature of Registered Professional Engineer

Registration No. 32424 State TEXAS

PART I
GENERAL INFORMATION

7. Potential Spills — Prediction & Control:

| Source | Major Type of Failure | Total Quantity (bbls) | Rate (bbls/hr) | Direction of Flow* | Secondary Containment |
|--|---|---|--|--------------------|---|
| 1. 9-Storage Tanks (NGL) | a) Corrosion From Inside Tank | C ₄ & C ₅ ⁺ Only 4570 | C ₄ & C ₅ ⁺ Only 50 bbl/hr | SW | Earthen Dike Enclosure w/ 6800 bbl Capacity |
| | b) Valve Mal-function (Block or Relief) | | | | |
| 2. 2-Storage Tanks (Slop Oil) | Corrosion from Inside Tank | 400 | 5 bbl/hr | SW | Earthen Dike Enclosure w/ 700 bbl Capacity |
| 3. 5-Storage Tanks (Process Drainage) | Corrosion From Inside Tank | 600 | 5 bbl/hr | SW | Earthen Dike Enclosure w/ 900 bbl Capacity |
| 4. 2-Storage Tanks (Lube Oil Main Plant) | Corrosion from Inside Tank | 320 | 320 bbl (On Site) | SW | Earthen Dike Enclosure w/ 600 bbl Capacity |
| 5. 1-Storage Tank (Oil At In-jection Stn) | Corrosion from Inside Tank | 120 | 320 bbl (On Site) | SW | Earthen Dike Enclosure w/ 240 bbl Capacity |
| 6. 1-Storage Tank (In-jection Stn Pump Tank) | Corrosion from Inside Tank | 200 | 200 bbl (On Site) | SW | Earthen Dike Enclosure w/ 240 bbl Capacity |

DISCUSSION-

In the NGL Storage Area, only the butane (C₄) and Gasoline (C₅⁺) will not quickly evaporate even in cold (-10°F) weather. Therefore, the dike for this area is designed to handle the maximum capacity of the two gasoline tanks and the two butane tanks, plus an additional 24-hour volume of production.

In the other five areas, the dikes will be constructed to contain the maximum amount of fluid ever to be stored on location plus an additional 24-hour volume of production (where applicable as in Cases 2 & 3). Drawings have been attached to show the dimensions of the dikes in all six areas of contaminent.

Name of facility Empire Abo Gasoline Plant

*Attach map if appropriate
See attached Topographic Map

Operator Amoco Production Company

**PART I
GENERAL INFORMATION**

[Response to statements should be: YES, NO, or NA (Not Applicable).]

8. Containment or diversionary structures or equipment to prevent oil from reaching navigable waters are practicable. (If NO, complete Attachment #2.) YES

9. Inspections and Records

- A. The required inspections follow written procedures. YES
B. The written procedures and a record of inspections, signed by the appropriate supervisor or inspector, are attached. YES

Discussion: The facilities are visually inspected every 12-hour shift by plant operators during their normal duties. An inspection of the containment facilities is made by the Maintenance Foreman once a year and will be part of the SPCC file.

10. Personnel Training and Spill Prevention Procedures

- A. Personnel are properly instructed in the following:
(1) operation and maintenance of equipment to prevent oil discharges, and YES
(2) applicable pollution control laws, rules, and regulations. YES
Describe procedures employed for instruction: The plant operators, Shift Foreman, and Maintenance Foreman have a thorough knowledge of the equipment and have received instructions in the applicable pollution control laws as described below in Part B.

- B. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. YES
Describe briefing program: Applicable pollution control laws are discussed with all employees at least annually, this is presented during a regularly scheduled monthly safety meeting.

Name of facility Empire ABO Gasoline Plant

Operator Amoco Production Company, P.O. Box 4072, Odessa, TX 79760

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

A. Facility Drainage

1. Drainage from diked storage areas is controlled as follows (include operating description of valves, pumps, ejectors, etc. (Note: Flapper-type valves should not be used): The drainage of NGL from the dike containment will be with a 100-barrel per hour portable pump. The NGL will be returned to a good tank. The other dikes will be drained with 50-barrel per hour portable pumps. The fluid from these tanks will be returned to good tanks.

2. Drainage from undiked areas is controlled as follows (include description of ponds, lagoons, or catchment basins and methods of retaining and returning oil to facility): N/A

3. The procedure for supervising the drainage of rain water from secondary containment into a storm drain or an open watercourse is as follows (include description of (a) inspection for pollutants, and (b) method of valving security). (A record of inspection and drainage events is to be maintained on a form similar to Attachment #3): The storage system is located in an area of low annual rainfall. Should any rain accumulate within the dike containment, it is expected to absorb into the soil and/or evaporate within a day or two.

Name of facility Empire Abo Gasoline Plant

Operator Amoco Production Company

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or N/A (Not Applicable).]

B. Bulk Storage Tanks

1. Describe tank design, materials of construction, fail-safe engineering features, and if needed, corrosion protection: In the NGL storage area there are nine storage tanks. Two tanks 11' x 63.7' rated at 54 psi contain gasoline and two tanks 10.5' x 76-1/2' rated at 125 psi contain butane. The others contain lighter components which will evaporate. The NGL tanks are protected with ASME Code relief valves. In the other five areas of the plant are welded steel tanks. These tanks have thief hatches (relief devices) and vent lines as appropriate.
2. Describe secondary containment design, construction materials, and volume: The containment in each of the six areas will be an earthen dike. Each dike will contain the maximum amount of liquid which is stored at that location plus 24 hours of production in those areas where fluid is produced into the tanks. The dike around the NGL storage tanks is built to contain the storage capacity of butane and gasoline plus 24 hours of production. The attached diagrams show the dike dimensions and capacities for each of the diked areas.
3. Describe tank inspection methods, procedures, and record keeping: The NGL storage tanks are checked once per year for wall thickness with a non-destructive, ultrasonic instrument.
4. Internal heating coil leakage is controlled by one or more of the following control factors:
 - (a) Monitoring the steam return or exhaust lines for oil. N/A
Describe monitoring procedure: _____
 - (b) Passing the steam return or exhaust lines through a settling tank, skimmer, or other separation system. N/A
 - (c) Installing external heating systems. N/A
5. Disposal facilities for plant effluents discharged into navigable waters are observed frequently for indication of possible upsets which may cause an oil spill event. Yes
Describe method and frequency of observations: Since the plant is fully manned on a 24-hour basis, the spill containment facilities are observed at least once every 12 hours when shift changes occur.

Name of facility Empire Abo Gasoline Plant

Operator Amoco Production Company

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

C. Facility Transfer Operations, Pumping, and In-plant Process

1. Corrosion protection for buried pipelines:

(a) Pipelines are wrapped and coated to reduce corrosion.

Yes

(b) Cathodic protection is provided for pipelines if determined necessary by electrolytic testing.

Yes

(c) When a pipeline section is exposed, it is examined and corrective action taken as necessary.

Yes

2. Pipeline terminal connections are capped or blank-flanged and marked if the pipeline is not in service or on standby service for extended periods.

Yes

Describe criteria for determining when to cap or blank-flange: Lines are capped or blind-flanged to prevent leakage for environmental and/or safety reasons.

3. Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contraction.

Yes

Describe pipe support design: The lines are supported with a piece of angle iron which slides in a slotted wear plate to prevent abrasion and corrosion on the pipe.

4. Describe procedures for regularly examining all above-ground valves and pipelines (including flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces): The plant operators regularly inspect (at least every 12 hours) the above-ground valves and pipelines for signs of wear or leakage. Small leaks are easily detected by visible spray. Large leaks would be contained by the dike and would soon be noticed.

5. Describe procedures for warning vehicles entering the facility to avoid damaging above-ground piping: Only authorized vehicles are allowed to enter the facility as approved by the plant foreman. There are designated drive areas through the plant and at locations where liquid transfer to trucks occurs.

Name of facility Empire Abo Gasoline Plant

Operator Amoco Production Company

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or N/A (Not Applicable).]

D. Facility Tank Car & Tank Truck Loading/Unloading Rack

Tank car and tank truck loading/unloading occurs at the facility. (If YES, complete 1 through 5 below.)

Yes

1. Loading/unloading procedures meet the minimum requirements and regulations of the Department of Transportation.

Yes

2. The unloading area has a quick drainage system.

Yes

3. The containment system will hold the maximum capacity of any single compartment of a tank truck loaded/unloaded in the plant.

Yes

Describe containment system design, construction materials, and volume:

A concrete sump and drain system has been installed which will return any truck tank or hose spillage to the process drain storage tanks. This drain system will handle the capacity (290 bbls) of a tank truck.

4. An interlocked warning light, a physical barrier system, or warning signs are provided in loading/unloading areas to prevent vehicular departure before disconnect of transfer lines.

Yes

Describe methods, procedures, and/or equipment used to prevent premature vehicular departure: The truck wheels are blocked so that the vehicle cannot depart before lines are disconnected.

5. Drains and outlets on tank trucks and tank cars are checked for leakage before loading/unloading or departure.

Yes

Name of facility Empire Abo Gasoline Plant

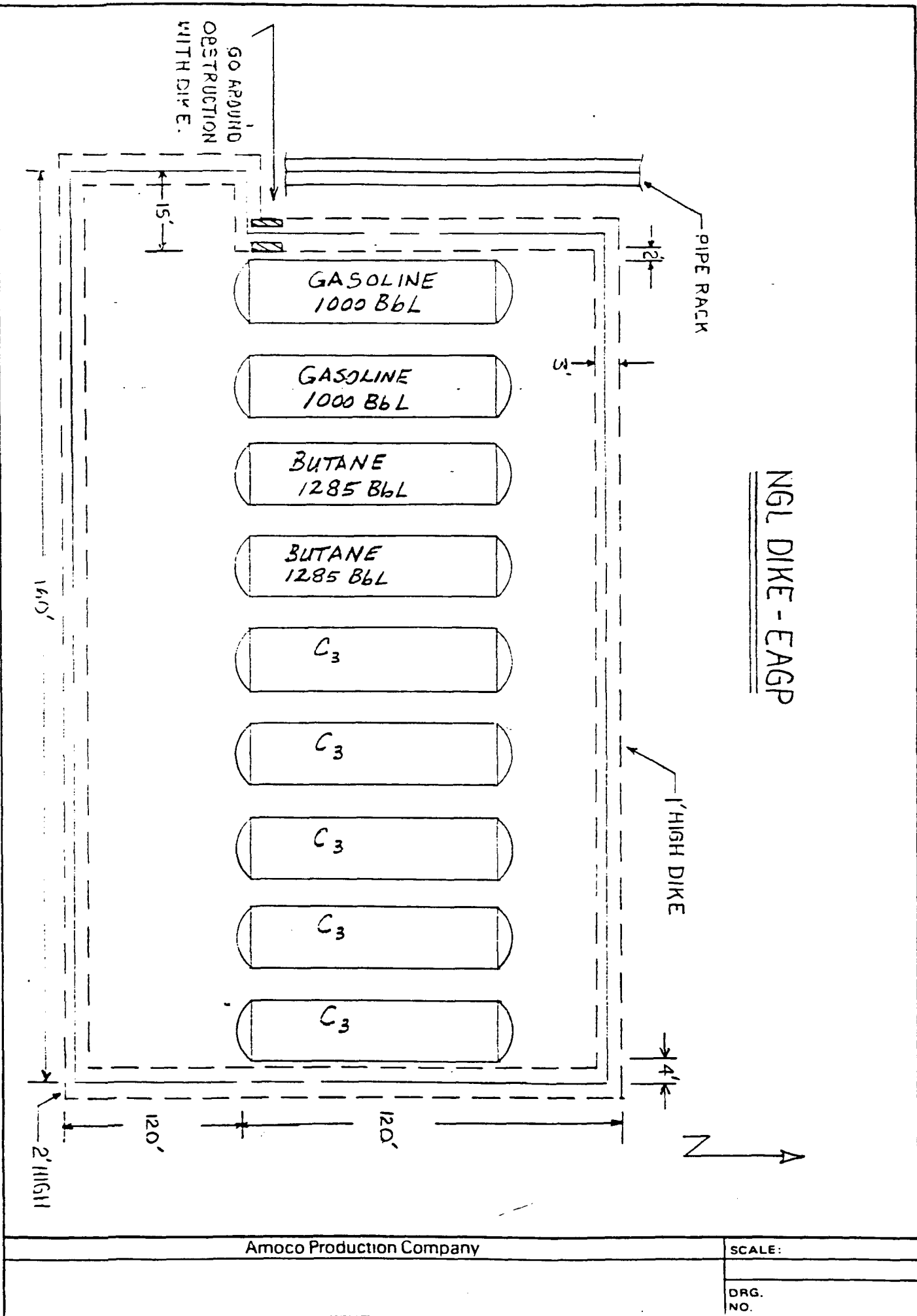
Operator Amoco Production Company

[Response to statements should be: YES, NO, or NA (Not Applicable).]

1. Plants handling, processing, or storing oil are fenced. Yes
2. Entrance gates are locked and/or guarded when the plant is unattended or not in production. (Plant is always attended and operates continuously.) N/A
3. Any valves which permit direct outward flow of a tank's contents are locked closed when in non-operating or standby status. No (See Below)
4. Starter controls on all oil pumps in non-operating or standby status are:
 - (a) locked in the off position; No
 - (b) located at site accessible only to authorized personnel. Yes
5. Discussion of items 1 through 4 as appropriate:
Although the valves on the storage tanks are not locked, these valves are within the plant fence and are monitored by operators who run the plant 24 hours per day.

6. Discussion of the lighting around the facility: The storage areas covered by this plan are adequately lighted so that operators can quickly detect leaks into the diked areas. As described in other parts of this plan, the plant is fully attended at all times so that leaks could quickly be spotted.

Operator Amoco Production Company



NGL DIKE - EAGP

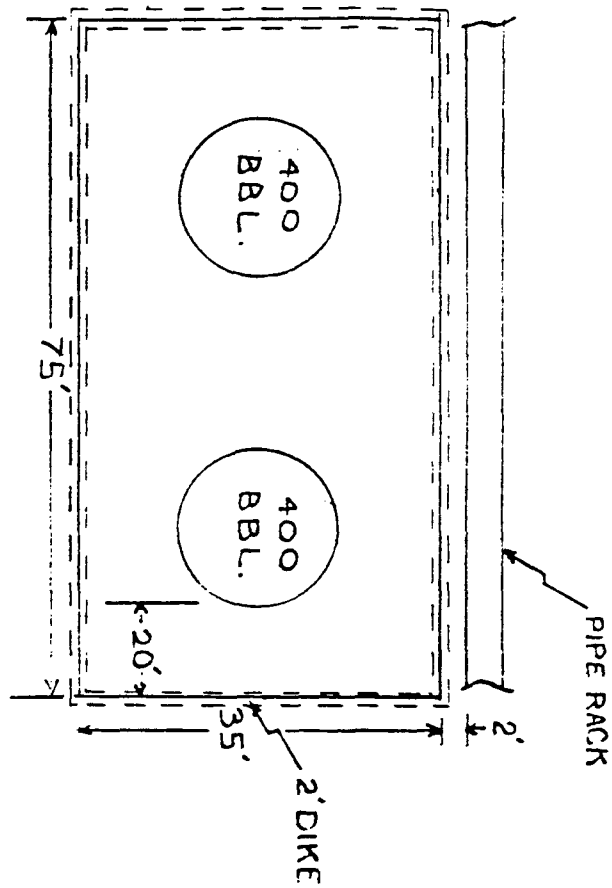
| | | |
|--------------------------|--|----------|
| Amoco Production Company | | SCALE: |
| | | ORG. NO. |

700 1000 1000

SLOP OIL TANKS EAGP

1 1/2' DIKE (SLOPES
TO 2' DIKES ON SOUTH
EDGE).

N



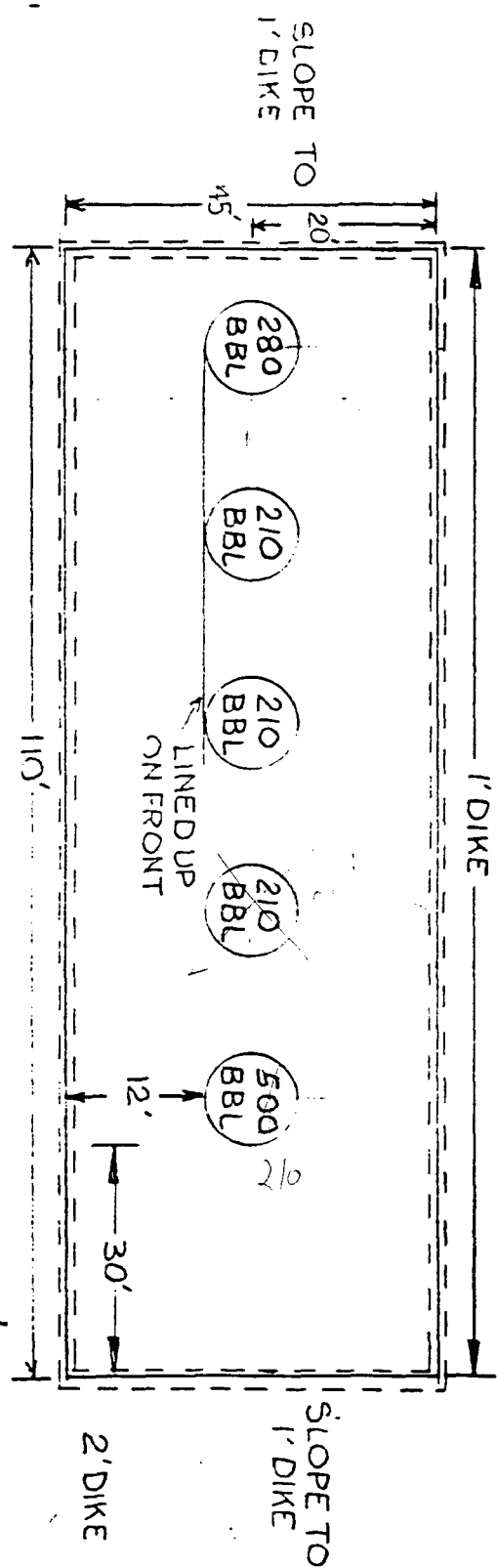
Amoco Production Company

SCALE:

DRG.
NO.

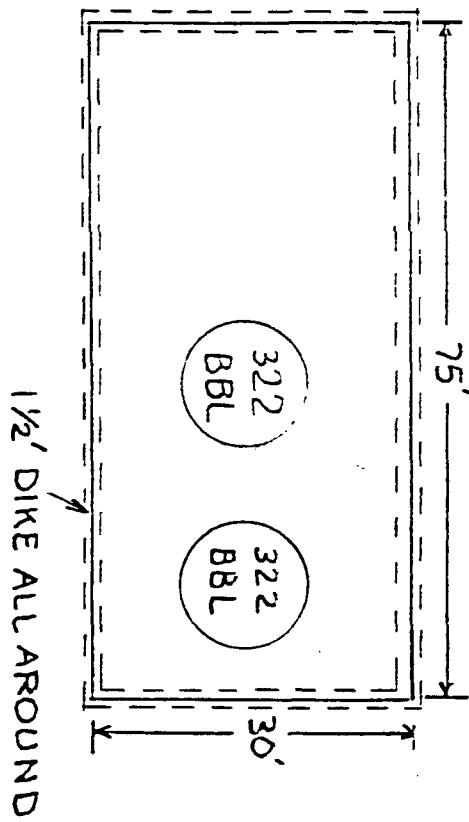


PROCESS DRAIN STORAGE DIKING
EAGP



| | | |
|--------------------------|--|----------|
| Amoco Production Company | | SCALE: |
| | | |
| | | DRG. NO. |

LUBE OIL STORAGE EAGP

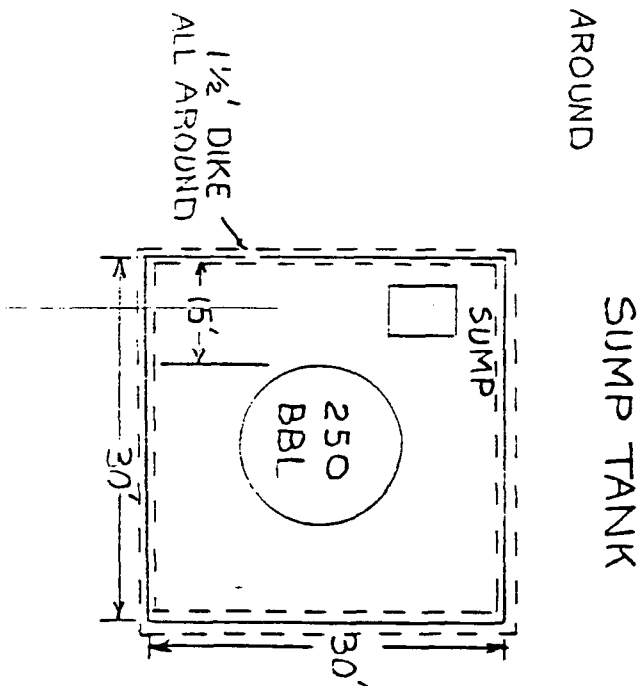
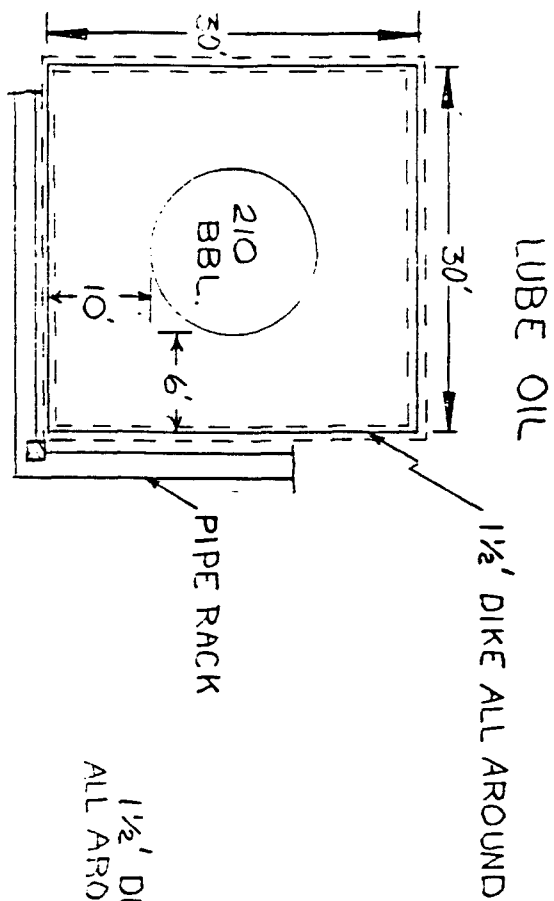
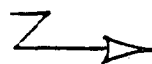


Amoco Production Company

SCALE:

DRG.
NO.

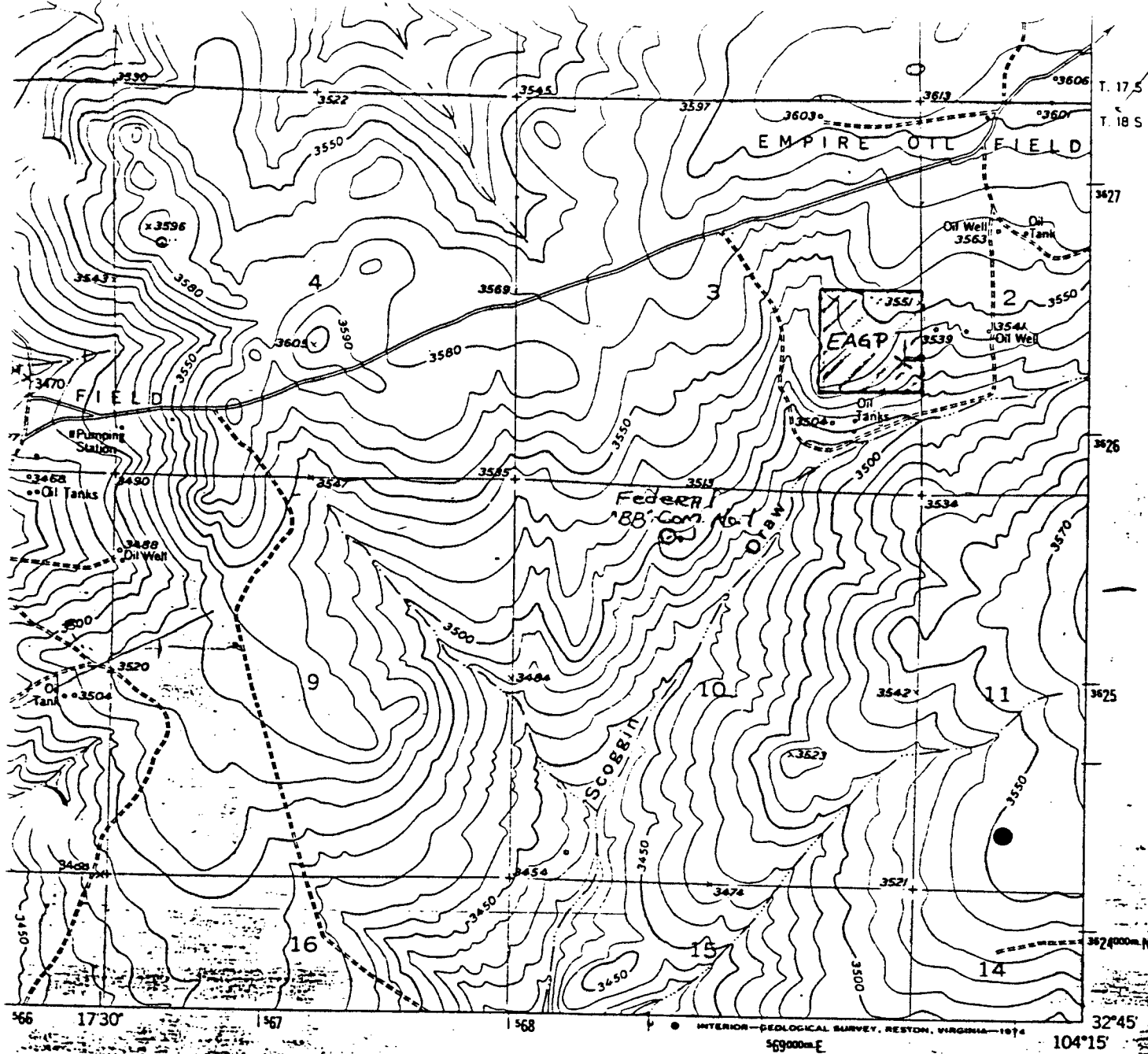
INJECTION AREA DIKING EAGP



Amoco Production Company

SCALE:

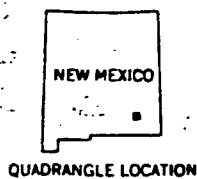
DRG.
NO.



1 MILE

3

2



ROAD CLASSIFICATION

Heavy-duty ————— Light-duty —————
 Medium-duty ————— Unimproved dirt - - - - -
 U. S. Route ○ State Route

SPRING LAKE, N. MEX.

N3245—W10415/7.5

1955

AMS 5149 IV SE—SERIES V881