

GW - 15

**GENERAL
CORRESPONDENCE**

YEAR(S):

1989 - 1979

RECEIVED

JUN 29 1989

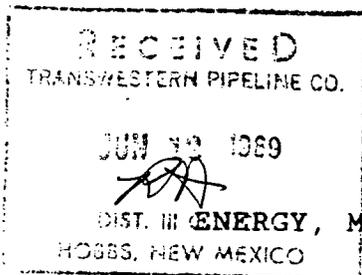
OIL CONSERVATION DIV.
SANTA FE

NORTHERN NATURAL GAS COMPANY

HOBBS PLANT

Response to
Request For Clarification
Concerning Renewal of
Discharge Plan GW-15

A



NOTICE OF PUBLICATION

STATE OF NEW MEXICO

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 2038, Santa Fe, New Mexico 87504-2038, Telephone (505) 827-5800:

(GW-16) Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Eunice Gas Plant located in the SE/4 NE/4, Section 5, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 15,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. The total dissolved solids content of the wastewater is approximately 1750 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 30 to 150 feet with a total dissolved solids concentration from 1000 to 1700 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

(GW-15) Northern Natural Gas Company, a Division of ENRON Corp., Jimmy D. Harp, Sr. Environmental Project Engineer, P. O. Box 1188, Houston, Texas 77251-1188, has submitted an application for renewal of its previously approved discharge plan for its Hobbs Gas Plant located in the NE/4, Section 6, Township 19 South, Range 39 East, NMPM, Lea County, New Mexico. Approximately 60,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. There is a 2 1/2 acre lined evaporation pond with leak detection on site for emergency storage. The total dissolved solids content of the wastewater is approximately 1200 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 120 to 145 feet with a total dissolved solids content from 400 to 850 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

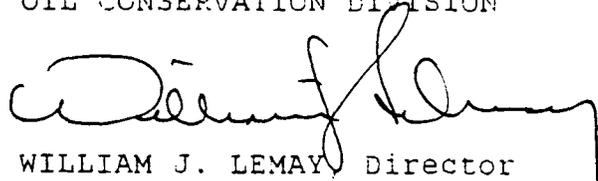
Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation 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 8th day of June, 1989. To be published on or before June 16, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY, Director

S E A L

Approved:

By:

Route To:

B. Anderson	_____
D. Emmett	_____ ✓
G. Martin	_____ ✓
R. Hernandez	_____
J. Williams	_____
C. Burnett	_____
J. Barton	_____
J.artin	_____
J. Bessey	_____
J. Jacobs	_____ ✓
J. Choatey	_____ ✓

B



Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

SLUDGE ANALYSIS

CLIENT NAME: ENRON
FACILITY: HOBBS PLANT
LOCATION: HOBBS, NM

DATE: 06/07/89
SAMPLE DATE: 06/05/89
DATE ANALYZED: 06/06/89

SAMPLE IDENTIFICATION - LINED WASTE WATER PIT

Table with 5 columns: Parameter, Value, Unit, AS, Element. Rows include pH, CHLORIDE, IRON, COPPER, CHROMIUM, LEAD, NICKEL, ZINC, and their total concentrations.

SAMPLE IDENTIFICATION - HBA JW PIT

Table with 5 columns: Parameter, Value, Unit, AS, Element. Rows include pH, CHLORIDE, IRON, COPPER, CHROMIUM, LEAD, NICKEL, ZINC, and their total concentrations.

ANALYZED BY: Mitchell Jordan (HOBBS LAB)

APPROVED BY: [Signature]

*** INDICATES THAT THIS TEST WAS NOT RUN



Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

WATER ANALYSIS

CLIENT NAME: ENRON
FACILITY: HOBBS FRAC PLANT
LOCATION: HOBBS, NM

DATE: 06/05/89
SAMPLE DATE: 05/25/89
DATE ANALYZED: 05/26/89

SAMPLE IDENTIFICATION - NORTH WELL WATER No. 3

Table with 6 columns: Element, Value, Unit, AS, Element. Rows include IRON (0.95 PPM), COPPER (0.08 PPM), MANGANESE (0.284 PPM), CHROMIUM (NIL), LEAD (NIL), NICKEL (0.06 PPM), ZINC (NIL), VANADIUM (0.20 PPM).

SAMPLE IDENTIFICATION - WASTE WATER

Table with 6 columns: Element, Value, Unit, AS, Element. Rows include IRON (0.09 PPM), COPPER (0.29 PPM), MANGANESE (0.112 PPM), CHROMIUM (0.01 PPM), LEAD (0.02 PPM), NICKEL (0.03 PPM), ZINC (0.01 PPM), VANADIUM (0.70 PPM).

ANALYZED BY:

Joanna Bonds (HOBBS LAB)

APPROVED BY:

[Signature]

*** INDICATES THAT THIS TEST WAS NOT RUN



Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

W A T E R A N A L Y S I S

ALL RESULTS EXPRESSED IN PPM UNLESS OTHERWISE NOTED

CLIENT NAME:	ENRON GAS PIPELINE	DATE:	06/12/89
FACILITY:	HOBBS COMPLEX	SAMPLE DATE:	06/01/89
LOCATION:	HOBBS, NM	DATE ANALYZED:	06/09/89

SAMPLE IDENTIFICATION :

WELL
WATER

WASTE
WATER

		7.45	7.62
pH		7.45	7.62
PHENO ALKALINITY	(CaCO3)	NIL	NIL
TOTAL ALKALINITY	(CaCO3)	192	360
BICARBONATE	(HCO3)	234.2	439.2
CARBONATE	(CO3)	NIL	NIL
HYDROXIDE	(OH)	NIL	NIL
TOTAL HARDNESS	(CaCO3)	144	1960
CALCIUM	(Ca)	48.0	488.0
CALCIUM	(CaCO3)	120	1220
MAGNESIUM	(Mg)	5.8	177.6
MAGNESIUM	(CaCO3)	24	740
CHLORIDE	(Cl)	44	7160
SULFATE	(SO4)	53	2445
TOTAL PHOSPHATE	(PO4)	NIL	16.7
ORTHO PHOSPHATE	(PO4)	NIL	15.1
POLY PHOSPHATE	(PO4)	NIL	1.6
SILICA	(SiO2)	***	***
SPECIFIC CONDUCTANCE	(mmhos)	417	13800
IRON	(Fe)	***	***
COPPER	(Cu)	***	***
CALCULATED :			
TOTAL DISSOLVED SOLIDS		461	15813
SODIUM	(Na)	76	5087

ANALYZED BY: Mitchell Irvin
(HOBBS LAB)

APPROVED BY: [Signature]

*** INDICATES THAT THIS TEST WAS NOT RUN

ENRON
HOBBS DISTRICT
11525 W CARLSBAD HIGHWAY
HOBBS NM 88240

TO: Jim Harp
FROM: Bob Anderson
DATE: June 15, 1989
SUBJECT: CHROMATE DISPOSAL - HOBBS PLANT COOLING SYSTEM

Scope of Work:

1. REMOVE AND TEMPORARILY STORE COOLANT FROM COOLING SYSTEM:

The coolant in the two systems was analyzed to determine the amount of CHROMATE in each system and were found to be as follows:

Jacket water system	257 PPM CHROMATE
Oil Cooling water system	310 PPM CHROMATE

The coolant was removed from the system and temporarily stored in leased, portable tanks until disposal arrangements can be made. A disposal well licensed to receive CHROMATE was located in Odessa, Texas and samples submitted for verification. Transportation bids have been gathered, and contracts will be written forthwith.

2. RECHARGE AND FLUSH SYSTEM WITH WATER:

The systems were recharged with clean soft water and circulated through out the cooling system for 27 hours.

3. ANALYZE FLUSHED WATER:

Samples of this flushed water were taken and found to contain as follows:

Jacket water system	62 PPM CHROMATE
Oil Cooling water system	83 PPM CHROMATE

4. REMOVE AND TEMPORARILY STORE FLUSHED WATER:

This flushed water has been removed and placed in temporary storage beside the original coolant.

TO: Jim Harp
PAGE: 2
SUBJECT: CHROMATE DISPOSAL - HOBBS PLANT COOLING SYSTEM

5. HYDRO-BLAST CLEAN SUMP WALLS AND FLOOR:

The interior walls of both sumps were hydro-blasted clean with 7000 PSI water pressure to remove residue. Self-contained breathing apparatus, disposable coveralls, rubber gloves & footwear and rainsuits were used for personnel protection. Air removers were implemented to draw fresh air through the man ways and exhausted outside the structure by means of existing sump vents. A portable air monitor was in service at all times to insure no explosive gases or H₂S were collecting and that the oxygen level remained at 21.5% or above.

6. REMOVE SLUDGE AND CLEANING RESIDUE:

While using the same personnel safety precautions, the sludge and hydro-blast water were removed and decanted to separate solids and liquids. This sludge contains no more than 13000 PPM CHROMATES and a large amount of dirt and pipe scale. 1/2 barrel solids were removed from the oil cooling water sump pit and 1 1/2 barrels from the jacket water sump pit.

7. INSPECT AND EVALUATE PUMP SUMP INTERIOR WALLS FOR CRACKS AND DETERIORATION:

Surprisingly, the wall and floor concrete was in excellent condition. A few hairline cracks were found. No separation or stress cracks that might have allowed leakage into surrounding soil were found. We are trying to locate a construction AS-Built drawings to determine wall thicknesses, concrete mixture formulas, and reinforcement placements. Based on the integrity of concrete sump structure, I do not believe any structural corrective action will need to be taken.

8. SAND BLAST AND SEAL WALLS:

All interior walls and floors of the two sumps will be sandblasted with #2 sandblast media down to bare-tooth concrete. They will be spray coated with a polyester-resin-epoxy type coating to a 40-mil wet gage thickness.

This Celcote Flakeline material #251 - has a wet immersion temperature factor of 160 degrees Fahrenheit and is impervious to any of the additives we plan to use in the future.

TO: Jim Harp
PAGE: 3
SUBJECT: CHROMATE DISPOSAL - HOBBS PLANT COOLING SYSTEM

9. RECHARGE AND PLACE IN-SERVICE:

The present plan is to recharge the systems with clear water and circulate in service for a two-week period. Samples will be taken daily to determine what the CHROMATE content is and if it is increasing. This will indicate that the CHROMATE is being removed from the cooling jackets and piping.

10. ANALYZE COOLANT AND EVALUATE:

If the CHROMATE PPM remains stable and below legal limits, no further action will be necessary.

11. FURTHER ACTION AS NECESSARY:

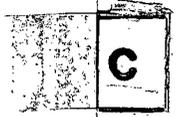
If the CHROMATE PPM is above legal limits, we will notify you and go back to step #10. Hopefully, we will not have to do this.

Presently, we have in temporary storage:

94,500 gallons of CHROMATE contaminated coolant and flush water,
two full barrels of solid CHROMATE waste

Storage and sample records are being kept on a daily basis. After use, all temporary tanks and equipment used in this process will be decontaminated.

cc Jim Carter



TEST SCHEDULE

BURIED WASTE WATER PIPING AND BELOW GRADE SUMPS

The testing is to be completed over a three year period. The Plant is taken out of service and completely shut down annually for major maintenance. The testing program will allow for tests on one third of the waste water piping and process sumps each year during these regularly scheduled maintenance shut downs.

Each test of the waste water piping will be conducted at a static pressure of three pounds per square inch gauge pressure, for one-half hour. The sumps will be drained, cleaned, and visually inspected.

The locations of the drains and sumps to be tested are identified below, according to the area of the Plant in which they are located.

First Year Testing

1. Number 3 and 4 MEA stills
2. Numbers 1 through 4 MEA pumps
3. Treater building drains
4. Number 1 through 4 MEA contactors
5. Dehydrator contactor and scrubber
6. Clark engine room
7. Auxiliary building

Second Year Testing

1. Gasoline plant product pumps
2. Number 1 through 4 absorbers
3. Gasoline plant still, stripper, and reabsorber/per-saturator
4. Products treater and chiller
5. Cooper engine room
6. Cooper inlet propane scrubber and condenser
7. Lean oil building

Third Year Testing

1. Boiler building
2. Water treater building
3. Cooling tower blowdowns
4. Technical shop area

D

LIST OF ALL SOLID WASTE DISPOSED OF OFF SITE

1. Cardboard, paper, shipping, and packing materials
2. Wood and scrap wood products
3. Oil filters - drained of all free flowing liquids
4. Sweetening plant filters - drained of all free flowing liquids
5. Fuel filters - drained of all free flowing liquids
6. Cleaning supplies - aerosol cans, plastic bottles
7. Paint cans - drained and allowed to air dry
8. Non-asbestos insulation materials (fiberglass, polyfoam, etc.)



WATER WELL NUMBER SIX DATA

1. Proof of completion for well number L-7680 (Northern Natural Gas Co. well number 6)
2. Application for extension of time for well number L-7680
3. All quarterly reports associated with well number 6



Water Well

STATE OF NEW MEXICO

NATURAL RESOURCES DEPARTMENT

WATER RESOURCES DIVISION

S. E. REYNOLDS
STATE ENGINEER

July 10, 1981

P. O. BOX 1717
ROSWELL, NEW MEXICO—
88201

File: L-7680

Northern Natural Gas Co.
400 Commercial Bank Building
Midland, Texas 79701

Attention: L. J. Kruse

Gentlemen:

Enclosed is your copy of Proof of Completion of Well No. L-7680, which has been accepted for filing.

Yours very truly,

Dale Berning
Basin Supervisor

DB/fh
Encl.
cc: Santa Fe

PROOF OF COMPLETION OF WELL

Permit No. 2-7680

- Name of Water Right Owner Northern Natural Gas Co.
Mailing address 400 Commercial Bank Building
City and State Midland, Texas 79701
- Permit is for Supplemental well from shallow ground water.
(supplemental well, change location of well) (artesian or shallow)
- Description of well:
Located in the NE 1/4 NE 1/4 NE 1/4 of Sec. 29 Twp. 8S Rge. 37E N.M.P.M., or Tract No. _____
of Map No. _____ of the _____ District; total depth, 200 feet; is well cased Yes;
outside diameter of top casing (or hole, if uncased), 24 inches; if artesian, is well equipped with gate
valve _____; date drilled August 24 1977; Name of driller Abbott Brothers
Completed September 8, 1977
- Record of Pumping Test, if made (to be supplied by person or firm making test); Name and address of
person making test, Lasater - King Pump Service P. O. Box 1687 Seminole, Tx. 77360
date of test 9-6 & 9-7 1977; depth to water before test, 55 feet below land surface,
(above, below)
and pumping level during test, 60.5 feet; length of test, 36 hours; average discharge, 300 G.P.M.;
specific capacity of well, _____ gals./min. per foot of drawdown.
- Permanent Pump Equipment:
(a) Description of pump: Make Layne - Western; Type RKAC;
size of discharge 4 inches; if turbine type, give size of column, 6 inches; diameter of
bowls 8 inches; number of bowls 1; length of suction pipe 10 feet; total length of
column, bowls and suction pipe 216 feet; if centrifugal type, give size of pump _____ inches;
if other type, describe _____;
rated capacity of pump (if known), 300 G.P.M., at 1760 rev. per min., from a depth of 290 feet.
(b) Description of power plant: Make Westinghouse; Type Life Line;
rated horsepower (if available) 30; type of drive connection to pump direct
(direct, gearhead, or belt)
(c) Actual discharge of pump, 300 G.P.M., at _____ rev. per min., from a depth of _____ feet;
Date of test September 7, 1977.
- If reservoir is used, give approximate size: length _____ feet; width _____; depth _____.
- If above well replaced an old well to be plugged or abandoned, fill out the following: the well abandoned
is located in the _____ 1/4 _____ 1/4 _____ 1/4 of Sec. _____, Twp. _____, Rge. _____.
Describe plugging method _____
Name of plugging contractor _____
- Well Record filed with State Engineer's Office Yes.
(Yes or No)

I, L. J. Kruse, affirm that the foregoing statements are true to the best of my knowledge and belief and that I am the agent for owner and holder of said water right.
(sole, partial, agent for, etc.,)

Northern Natural Gas Company, Permittee
By: L. J. Kruse

JUN 29 8 45 AM '81
STATE ENGINEER
ROSWELL NM

STATEMENT OF STATE ENGINEER'S REPRESENTATIVE

I hereby certify that I have inspected the well and find it constructed in accordance with the conditions of the permit. Note any exceptions _____

N.P.
Well was producing _____ gpm against a _____ head of _____ feet at _____ rpm.
(measured) (estimated)
N/A
Old well has been _____
(plugged) (capped) (retained for other rights)

By: Bob Manning
Lea County Basin Supervisor
Title: July 10, 1981



STATE OF NEW MEXICO

NATURAL RESOURCES DEPARTMENT
WATER RESOURCES DIVISION

Water Well

S. E. REYNOLDS
STATE ENGINEER

July 10, 1981

P. O. BOX 1717
ROSWELL, NEW MEXICO
88201

File: L-7680

Northern Natural Gas Company
400 Commercial Bank Building
Midland, Texas 79701

Attention: L. J. Kruse

Gentlemen:

Enclosed is your copy of Application for Extension of Time No. L-7680, which has been approved, subject to the conditions on the Extension.

Proof of Application of Water to Beneficial Use will be due in this office on or before June 30, 1982.

The above due date is critical as your rights under this permit will be subject to cancellation unless proof is filed in this office on or before that date.

Yours very truly,

Dale Berning

Dale Berning
Basin Supervisor

DB/fh
Encl.
cc: Santa Fe

No. 92403

STATE ENGINEER
SANTA FE, NEW MEXICO

OFFICIAL RECEIPT

CONTROL NUMBER

DATE

June 29, 1981

FILE NO	AMT RECD		TOTAL
	GW	SW	
L-7680			
	CASH		
	CHECK		5.00

Check #391

BANK

Commercial Bank & Trust Co., Midland, Texas**Five dollars and no/100**

FOR PAYMENT AS INDICATED BELOW

Application for Extension of Time*Northern Natural Gas Company*

NAME AND ADDRESS

Laura J. Kruse

4000 W. Illinois, Apt. 209

Midland, Texas 79701

FOR USE BY ADMINISTRATIVE DIVISION

FOR USE BY SANTA FE OFFICE ONLY

WATER RIGHTS

DATE	EARNED		REFUND	TRANSCRIPT EXP.	BALANCE
	GW	SW			

IMPORTANT--(READ INSTRUCTIONS ON BACK BEFORE FILLING OUT THIS FORM)

APPLICATION FOR EXTENSION OF TIME

File No. L-7680

Name of permittee Northern Natural Gas Company
Mailing address 400 Commercial Bank Building
City and State Midland, Texas 79701

hereby applies for an extension of time in which to Apply water to beneficial use
(complete the well, apply water to beneficial use)

The period of time has proved to be insufficient and additional time is requested for the following reasons (state reasons in detail and if desirable or necessary, submit affidavits, photographs, etc., as evidence in support of statement): An excessive amount of sand in the water from Water Well #6 is the reason that this well has not been put to beneficial use and an extension is requested. The water does not clear up even after the well has been pumped for several days.

A settling tank was installed in the Hobbs Plant Yard to clear up the water. However, the sand is very fine and there is so much of it that it takes alot of time to clear the water.

A seperator is now being looked at to be installed at the water well, which is approximately five miles from the Hobbs Plant. It is estimated that it will take a year to plan and install the seperator and put the water to beneficial use.

The State Engineer is hereby requested to extend the time previously granted by extending the limiting date to June 30, 19 81.

I, L. J. Kruse, affirm that the foregoing statements are true to the best of my knowledge and belief and that I am the agent for owner and holder of said water right. (sole, partial, agent for, etc.,)

Northern Natural Gas Company, Permittee,

By: L. J. Kruse

JUN 29 8 45 AM '81
STATE ENGINEER
ROSWELL, N.M.

ACTION OF THE STATE ENGINEER

By authority vested in me, this application for additional time is approved (~~denied~~) and do hereby grant the permittee an extension of time to the following dates:

Complete the well on or before _____, 19 _____

Apply Water to Beneficial Use on or before June 30, 19 82

Witness my hand and official seal this 10th day of July A.D., 19 81

S. E. Reynolds, State Engineer

By: S. E. Reynolds

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-4-89
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 3-31-89 Reading 776221
Quantity of water used FIRST Quarter, 1989, 11,746,800 GAL
5. REMARKS:

ENRON GAS PIPELINE OPERATING COMPANY

By: *Bob M. [Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 1-4-89
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 12-31-88 Reading 658753
Quantity of water used FOURTH Quarter, 1988, 11,978,300 GA
5. REMARKS:

ENRON GAS PIPELINE OPERATING COMPANY

By: Bob Martin

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 10-6-88
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: SEPTEMBER 30, 1988 Reading 538970
Quantity of water used THIRD Quarter, 19 88, 9,689,400 GAL
5. REMARKS:

ENRON GAS PIPELINE OPERATING COMPANY

BY: Bob Mastly / EC

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 7-11-88
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: JUNE 30, 1988 Reading 442076
Quantity of water used SECOND Quarter, 1988, 5,870,100 GAL
5. REMARKS:

ENRON GAS PIPELINE OPERATING COMPANY

By: Bob Dandy / EC

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-4-88
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: MARCH 31, 1988 Reading 383375
Quantity of water used FIRST Quarter, 1988, 9,665,400 GAL
5. REMARKS:

ENRON GAS PIPELINE OPERATING COMPANY

By: *Bob White*

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 1-11-88
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 12-31-87 Reading 286721
Quantity of water used FOURTH Quarter, 1987, 1053930 GAL.
5. REMARKS:

ENRON GAS PIPELINE OPERATING COMPANY

By: *[Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 10-7-87
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE¹/₄/NE¹/₄/NE¹/₄ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: SEPTEMBER 30, 1987 Reading 181328
Quantity of water used THIRD Quarter, 19 87, 353,610
5. REMARKS:
PUMP REBUILT IN AUGUST 87

ENRON GAS PIPELINE OPERATING COMPANY

BY: *[Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: JULY 7, 1987
NAME: NORTHERN NATURAL GAS COMPANY (TRANSWESTERN PIPELINE)
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 6-30-87 Reading 145967
Quantity of water used SECOND Quarter, 19 87, 3,603,060 GAL
5. REMARKS:

TRANSWESTERN PIPELINE COMPANY

By: *[Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: APRIL 6, 1987
NAME: NORTHERN NATURAL GAS COMPANY (TRANSWESTERN PIPELINE CO.)
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXROBO Multiplier 100
4. READING
Date: 3-31-87 Reading 83599
Quantity of water used FIRST Quarter, 19 87, 785,660 GAL.
5. REMARKS:

TRANSWESTERN PIPELINE CO.

By: *[Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:
(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: _____
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: _____ Reading _____
Quantity of water used _____ Quarter, 19____, _____
5. REMARKS: _____

ENRON GAS PIPELINE OPERATING COMPANY

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: _____
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY

2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E

3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100

4. READING
Date: _____ Reading _____
Quantity of water used _____ Quarter, 19____, _____

5. REMARKS: _____

ENRON GAS PIPELINE OPERATING COMPANY

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:
(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: _____
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE¹/NE¹/NE¹ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: _____ Reading _____
Quantity of water used _____ Quarter, 19____, _____
5. REMARKS: _____

ENRON GAS PIPELINE OPERATING COMPANY

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: _____
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY

2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE $\frac{1}{4}$ /NE $\frac{1}{4}$ /NE $\frac{1}{4}$ Sec. 29 Twp. 18S Rge. 37E

3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100

4. READING
Date: _____ Reading _____
Quantity of water used _____ Quarter, 19____, _____

5. REMARKS: _____

ENRON GAS PIPELINE OPERATING COMPANY

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: _____
NAME: ENRON GAS PIPELINE OPERATING COMPANY
ADDRESS: 11525 W. CARLSBAD HIGHWAY
2. WELL DESCRIPTION
S. E. File No. L-7860 Company Well No. 6
Location: Subdv. NE¹/NE²/NE¹ Sec. 29 Twp. 18S Rge. 37E
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: _____ Reading _____
Quantity of water used _____ Quarter, 19____, _____
5. REMARKS: _____

ENRON GAS PIPELINE OPERATING COMPANY

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File NO. or NO. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: JANUARY 4, 1987
NAME: NORTHERN NATURAL GAS COMPANY (TRANSWESTERN PIPELINE COMPANY)
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: DECEMBER 31, 1986 Reading 503330
Quantity of water used FOURTH Quarter, 1986, 4,331,850 GAL.
5. REMARKS:

TRANSWESTERN PIPELINE COMPANY

By: *[Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 9-30-86
NAME: NORTHERN NATURAL GAS COMPANY (TRANSWESTERN PIPELINE COMPANY)
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBOBO Multiplier 100
4. READING
Date: SEPTEMBER 30, 1986 Reading 936515
Quantity of water used THIRD Quarter, 1986 7,666,600
5. REMARKS:

TRANSWESTERN PIPELINE COMPANY

By: EE [Signature]

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: JUNE 1986
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 333 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: JUNE 30, 1986 Reading 85984900
Quantity of water used SECOND Quarter, 19 86, 5,542,600
5. REMARKS:

TRANSWESTERN PIPELINE CO.

By: cc cpl

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: MARCH 1986
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: MARCH 31, 1986 Reading 803523
Quantity of water used FIRST Quarter, 1986, 5,744,800
5. REMARKS:

TRANSWESTERN PIPELINE CO.

By: *sc*

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: January 10, 1986
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: December, 31, 1985 Reading 746, 075
Quantity of water used fourth Quarter, 1985, 5,337,200
5. REMARKS:

NORTHERN NAT GAS Co
By: [Signature]

INSTRUCTIONS:

Specific questions should be answered as follows:
(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: October 10, 1985
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: September 30, 1985 Reading 693,703
Quantity of water used third Quarter, 1985, 8,724,700
5. REMARKS:

NORTHERN NATURAL GAS Co
BY: E E Chubb

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 86201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: July 15, 1985
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: June 30, 1985 Reading 605.456
Quantity of water used second Quarter, 1985, 7,102.300
5. REMARKS:

NORTHERN NATURAL GAS CO.

By: EC Stanley

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: April 4, 1985
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXROBO Multiplier 100
4. READING
Date: March 31, 1985 Reading 534,433
Quantity of water used First Quarter, 1985, 9,506,000
5. REMARKS:

NORTHERN NATURAL GAS

By: Eul Chudy

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: JANUARY 9, 1985
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: DECEMBER 31, 1984 Reading 439,373
Quantity of water used 4TH Quarter, 1984 10,736,400
5. REMARKS:

NORTHERN NATURAL GAS COMPANY

By: *Earl R. [Signature]*

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

Correction

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. 1-7680 DATE: October 2, 1984
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. 1-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: September 30, 1984 Reading 332,009
Quantity of water used 3rd Quarter, 1984, 8,093,200
5. REMARKS:

NORTHERN NATURAL GAS CO.

By: *E. E. Chaff*

INSTRUCTIONS:
Specific questions should be answered as follows:
(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 7-5-84
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 6-30-84 Reading 251,077
Quantity of water used 2nd Quarter, 1984, 413,900 Gal.
5. REMARKS:

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-4-84
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 3-31-84 Reading 209,687
Quantity of water used 527,540 Quarter, 1984.
5. REMARKS:

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 1-3-84
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 12-31-83 Reading 136933
44
Quantity of water used 891,6600 Quarter, 1983.
5. REMARKS:

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 10-3-83
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240

2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4

3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100

4. READING
Date: 9-30-83 Reading 067767
Quantity of water used 514,830.0 3rd Quarter, 1983.

5. REMARKS:

By: _____

INSTRUCTIONS:
Specific questions should be answered as follows:
(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 7-5-83
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 100
4. READING
Date: 6-30-83 Reading 016284
Quantity of water used 162,840 ^{2nd.} Quarter, 1983.
5. REMARKS:

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-12-83
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10
4. READING
Date: 3-21-83 Reading - 0 -
Quantity of water used 4ch Quarter, 1983,
5. REMARKS: Well not Pumped

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 1-6-83
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10
4. READING
Date: 12-31-82 Reading -0-
Quantity of water used 4th Quarter, 1982
5. REMARKS: Well Not Being Pumped.

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 10-4-82
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10
4. READING
Date: 10-1-82 Reading -0-
Quantity of water used Third Quarter, 1982, -0-
5. REMARKS:
Well Not Being Pumped

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-15-77

NAME: NORTHERN NATURAL GAS COMPANY

ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240

2. WELL DESCRIPTION

S. E. File No. L-7680 Company Well No. 6

Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E

3. TOTALIZING METER NE 1/4, NE 1/4

Serial No. 86139 Units GALLONS

Make FOXBORO Multiplier 10

4. READING

Date: 7-8-82 Reading _____

Quantity of water used Second Quarter, 1982. 0 Gal.

5. REMARKS: METER WAS INSTALLED ON 8-8-77.

Well not Being Pumped

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-15-77
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10
4. READING
Date: 4-1-82 Reading 1
Quantity of water used 1qt. Quarter, 1982, 0
5. REMARKS: METER WAS INSTALLED ON 8-8-77.
Well Not Being Pumped

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-15-77

NAME: NORTHERN NATURAL GAS COMPANY

ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240

2. WELL DESCRIPTION

S. E. File No. L-7680 Company Well No. 6

Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E

3. TOTALIZING METER NE 1/4, NE 1/4

Serial No. 86139 Units GALLONS

Make FOXBORO Multiplier 10

4. READING

Date: 12-31-81 Reading _____

Quantity of water used NONE South Quarter, 1981, 0 Gal.

5. REMARKS: METER WAS INSTALLED ON 8-8-77.

Well Not Being Pumped

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 10-2-81
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10
4. READING
Date: 10-2-81 Reading _____
Quantity of water used NONE ^{3RD} Quarter, 19 81, 0
5. REMARKS: METER WAS INSTALLED ON 8-8-77.
WELL NOT BEING PUMPED

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 7-10-81
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240

2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4

3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10

4. READING
Date: 6-30-81 Reading _____
Quantity of water used 0 ^{2nd.} Quarter, 1981, 0

5. REMARKS: METER WAS INSTALLED ON 8-8-77.
Well not being pumped

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-10-81

NAME: NORTHERN NATURAL GAS COMPANY

ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240

2. WELL DESCRIPTION

S. E. File No. L-7680 Company Well No. 6

Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E

3. TOTALIZING METER NE 1/4, NE 1/4

Serial No. 86139 Units GALLONS

Make FOXBORO Multiplier 10

4. READING

Date: 3-31-81 Reading 003794

Quantity of water used 0 *First* Quarter, 1981,

5. REMARKS: METER WAS INSTALLED ON 8-8-77.

Well not being pumped.

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-15-77
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier 10
4. READING
Date: 1-3-81 Reading 003794
Quantity of water used 0 Quarter, 1980, 12-31-80
5. REMARKS: METER WAS INSTALLED ON 8-8-77.
WELL NOT IN USE

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-15-77
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-5 Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier ~~DIRECT READING~~ 10
4. READING
Date: 10-1-80 Reading 003794
Quantity of water used 0 Quarter, 1980, 9-30-80
5. REMARKS: METER WAS INSTALLED ON 8-8-77.
well not turned on

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

- (1) State Engineer's File No. or No. of well reported and name and address of owner.
- (2) Description of well to which meter attached.
- (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc.
- (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier.
- (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

NEW MEXICO STATE ENGINEER
TOTALIZING METER REPORT

State Engineer Office
P. O. Box 1717
Roswell, New Mexico 88201

Attention: Basin Supervisor

Dear Sir:

In accordance with the State Engineer regulation which requires that quarterly reports of meter readings be submitted on or before the 10th of January, April, July and October, the following information is submitted.

1. FILE NO. L-7680 DATE: 4-15-77
NAME: NORTHERN NATURAL GAS COMPANY
ADDRESS: STAR ROUTE A, BOX 338 HOBBS, NEW MEXICO 88240
2. WELL DESCRIPTION
S. E. File No. L-7680 Company Well No. 6
Location: Subdv. NE 1/4 Sec. 29 Twp. 18-S Rge. 37-E
NE 1/4, NE 1/4
3. TOTALIZING METER
Serial No. 86139 Units GALLONS
Make FOXBORO Multiplier DIRECT READING
4. READING
Date: 7-7-80 Reading 003794
Quantity of water used 0 Quarter, 19 80, 6-30-80
5. REMARKS: METER WAS INSTALLED ON 8-8-77.

By: _____

INSTRUCTIONS:

Specific questions should be answered as follows:

(1) State Engineer's File No. or No. of well reported and name and address of owner. (2) Description of well to which meter attached. (3) Description of meter, including multiplier or constant by which reading must be multiplied to obtain actual quantity of water. Units refers to units of measurement such as acre feet, gallons, barrels, etc. (4) Reading of figures on the meter and amount obtained by multiplying reading by multiplier. (5) Under Remarks, give any pertinent information such as reading and date of installation of meter if a first report, information concerning repair of meter and dates out of service, etc.

FILE NO. _____ LOCATION NO. _____

**TRANSWESTERN
Pipeline Company**



MARCH 26, 1978
HOBBS, NEW MEXICO

NEW MEXICO STATE LAND OFFICE
P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148
ATTN: SURFACE DIVISION

RE: CHANGE OF ADDRESS

ALL CORRESPONDENCE THAT FORMERLY WENT TO NORTHERN NATURAL GAS COMPANY IN MIDLAND, TEXAS, SHOULD NOW BE SENT TO THE FOLLOWING ADDRESS:

TRANSWESTERN PIPELINE COMPANY
P.O. BOX 2018
ROSWELL, NEW MEXICO 88201
ATTN: BILL NOLAN

THIS CHANGE WAS NECESSITATED BY THE RELOCATION OF OUR REGIONAL OFFICE TO ROSWELL DUE TO THE MERGER OF INTERNORTH AND HOUSTON NATURAL GAS COMPANY.

IF YOU HAVE ANY QUESTIONS OR CONCERNS, PLEASE CONTACT ME.

EARL CHANLEY
DIRECTOR-PLANT O&M
HOBBS, NEW MEXICO

CC: BILL NOLAN
ROSWELL

BOB MARTIN
HOBBS

NEW MEXICO STATE LAND OFFICE
ATTN: ALEX FRALEY
3830 N. GRIMES
UNIT C
HOBBS, NEW MEXICO 88240

FILE

STATEMENT

OFFICE OF THE COMMISSIONER OF PUBLIC LANDS
P.O. BOX 1148 • SANTA FE, NEW MEXICO • 87504-1148

LEASE OR CONTRACT NO.	ACCOUNT NO.	SOURCE	BILLING DATE	DUE DATE	PENALTY	INTEREST	AMOUNT DUE	BALANCE
W005330000	12	WATER	05/29/87	06/24/87	\$ 00.00	\$ 00.00	\$ 15000.00	

COMMENTS: RENTAL NOTICE, PAYMENT SHOULD BE ON OR BEFORE THE ABOVE DUE-DATE.
A RENEWAL APPLICATION FORM WILL BE MAILED 30 DAYS BEFORE EXPIRATION.

APPROVED FOR PAYMENT
79-2515-436

NORTHERN NAT GAS CO ATT BILL NOLAN
P O BOX 2018 NM 88201
ROSWELL



TO INSURE PROPER CREDIT YOU MUST RETURN THIS COPY WITH REMITTANCE

F



**UNICHEM
INTERNATIONAL**

UNICHEM 2310

PRODUCT BULLETIN

DESCRIPTION

UNICHEM 2310 is a nitrite based corrosion inhibitor. UNICHEM 2310 contains buffering agents and other inorganic compounds which act together with the nitrite to form a highly effective corrosion inhibitor. UNICHEM 2310 also contains specific inhibitors for the protection of copper, copper alloys, and other metals in mixed metal systems.

USES

UNICHEM 2310 is recommended for use in closed water systems. UNICHEM 2310 may be used in systems utilizing glycol or alcohol as antifreeze without adversely affecting the inhibitor or the antifreeze. UNICHEM 2310 should be used in systems with low to moderate hardness levels.

APPLICATION

UNICHEM 2310 should be applied to the system at the rate of two to three gallons per one thousand gallons of contained water or makeup. The system pH should be maintained above a pH of 7.5 to prevent degradation of the nitrite. A sodium nitrite residual should be maintained at 400-600 ppm as sodium nitrite.

PROPERTIES

- Appearance.....Light Yellow Clear Liquid
- Density.....9.70 lbs/gallon
- Pour Point.....22^o F
- Flash Point (TCC).....None

HANDLING

Due care should be taken when handling any industrial compound. Avoid contact with eyes, skin, and clothing. If contact occurs, flush thoroughly with water. If irritation persists, seek medical aid. Use with adequate ventilation.

PACKAGING

UNICHEM 2310 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 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	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.

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

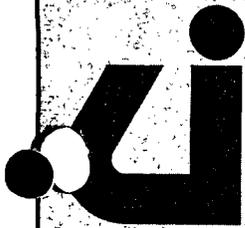
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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**

BOILER-HIB 310

PRODUCT BULLETIN

DESCRIPTION

BOILER-HIB 310 is a catalyzed sodium sulfite compound and is much more effective than commercial grade sodium sulfite.

USES

BOILER-HIB 310 is recommended for removal of dissolved oxygen in boilers and closed system water heaters. This product effectively removes oxygen at lower temperatures than commercial grade sodium sulfite and may be used at lower concentrations at all temperatures. When used properly, it also aids in preventing oxygen corrosion in steam condensate systems.

APPLICATION

BOILER-HIB 310 should be fed continuously to boiler systems in proportion to the quantity of makeup. Normally a residual of 20-40 ppm sulfite is maintained in the boiler water.

PROPERTIES

Form
Solubility

White Powder
Completely soluble
in warm water

HANDLING

No special precautions are needed when handling BOILER-HIB 310. This product is deliquescent, therefore the container should be kept tightly sealed.

PACKAGING

BOILER-HIB 310 is normally sold in 55 gallon open top drums, weighing approximately 600 pounds.



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 310**

Chemical Description **Proprietary Boiler Water Oxygen Scavenger**

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

None

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	900°C (Decomp.)	Freezing Point	Not Determined
Specific Gravity (H ₂ O=1)	2.6 g/cc	Solubility in Water	Approx. 25% @ 25°C
Appearance and Odor	White Granular Powder; Odorless		

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 **High temperature as in a fire situation may decompose this product yielding sulfur dioxide gas, which is toxic and corrosive, and sodium sulfide residual which is flammable and a strong irritant.**

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 Dust will irritate eyes upon contact and may irritate skin upon prolonged contact. Inhalation of dust will irritate entire respiratory tract. Ingestion may irritate digestive tract and may cause an allergic reaction in some asthmatics. Ingestion may be fatal. Solutions will irritate eyes and skin and may cause severe burns to the eyes.

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) None

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 will release hazardous quantities of sulfur dioxide gas upon contact with acids.

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 a dust respirator approved by NIOSH. If sulfur dioxide gas should be released, use a self-contained breathing apparatus or air supplied apparatus.

Ventilation	Local Exhaust	As needed to prevent accumulation of vapors	Special	None
	Mechanical (General)		Other	None

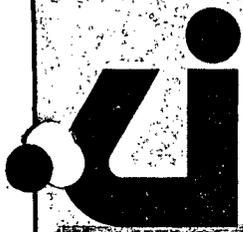
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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. Keep

Other Precautions from acids and oxidizers. Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest. Aqueous solutions are exothermic.



**UNICHEM
INTERNATIONAL**

UNICHEM 3030

PRODUCT BULLETIN

DESCRIPTION:

UNICHEM 3030 is a phosphate chelant internal boiler treatment which contains colloids, sludge conditioning agents, embrittlement inhibitors, organic synthetic polymers, and antifoam agents.

USES:

The use of UNICHEM 3030 for internal boiler water treatment offers the following advantages:

1. Sludge conditioning for easy removal of 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.

APPLICATION:

UNICHEM 3030 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.

PROPERTIES:

Appearance:	Light Tan Liquid
Density:	10.8 lbs/gal
Pour Point:	10 °F
Flash Point:	None
Viscosity @ 100°F:	38.5 S.U.
pH:	13.4

HANDLING:

UNICHEM 3030 is non-toxic; however, ordinary care should be given to the handling of this compound.

PACKAGING:

UNICHEM 3030 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 UNICHEM 3030

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.

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

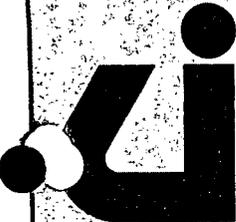
IX. SPECIAL PRECAUTIONS

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 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.

UNICHEM 3141

PRODUCT BULLETIN



**UNICHEM
INTERNATIONAL**

DESCRIPTION:

UNICHEM 3141 is a water soluble solution of catalyzed sulfite.

USES:

UNICHEM 3141 is used for the removal of dissolved oxygen in boilers and other closed system water heating installations.

APPLICATION:

Add UNICHEM 3141 continuously to the boiler feedwater at a rate sufficient to maintain a sulfite residual of 20-40 ppm.

PROPERTIES:

Appearance:	Purple clear liquid
Density:	10.0 lbs/gal
pH:	4.2
Flash Point:	>200°F

HANDLING:

UNICHEM 3141 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.

PACKAGING:

UNICHEM 3141 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 UNICHEM 3141

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	Special	None
	Mechanical (General)	vapors above TLV	Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

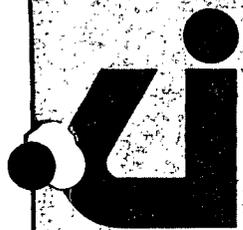
Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

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 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.

UNICHEM 3200



**UNICHEM
INTERNATIONAL**

PRODUCT BULLETIN

DESCRIPTION:

UNICHEM 3200 is a stabilized ammonium based corrosion inhibitor.

USES:

UNICHEM 3200 is used in steam generating systems to neutralize carbon dioxide in the condensate return lines at the point of condensation.

APPLICATION:

UNICHEM 3200 should be continuously fed in proportion to the quantity of makeup. The pH of the condensate should be maintained between 7.0 to 8.0.

PROPERTIES:

Appearance:	Yellow liquid
pH:	4.0
Pour Point:	0°F
Density:	8.8 lbs/gal
Flash Point:	None
Viscosity @ 100°F:	34.3 S.U.

HANDLING:

No special precautions are needed when handling UNICHEM 3200.

PACKAGING:

UNICHEM 3200 is normally sold in 55 gallon drums, or in accordance with our bulk treatment program.



MATERIAL SAFETY DATA SHEET

Date Prepared 12-1-88Supersedes 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 3200

Chemical Description Proprietary Neutralizer Blend

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

None

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 (initial)	Freezing Point	0°F
Specific Gravity (H ₂ O=1)	1.06 g/ml	Solubility in Water	Soluble

Appearance and Odor Bright Yellow, No 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	<input checked="" type="checkbox"/>	Conditions to Avoid	None
	Unstable			

Incompatibility (Materials to Avoid) None

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	May Occur		Conditions to Avoid	None
	Will Not Occur	<input checked="" type="checkbox"/>		

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 exceeds TLV for this product or its ingredients, if applicable.

Ventilation	Local Exhaust	As Needed to Prevent Accumulation of Vapors	Special	None
	Mechanical (General)		Other	None

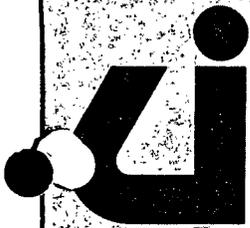
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles and/or Face Shield

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 to improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.



UNICHEM
INTERNATIONAL

UNICHEM 1000

PRODUCT BULLETIN

DESCRIPTION

UNICHEM 1000 is an organic dispersant designed to be utilized with a biocide treatment program.

UNICHEM 1000 will loosen and disperse dead slime and or algae deposits for easy removal of blowdown in a cooling water recirculating system. This dispersant action will allow better contact between the biocide and the bacteria or algae.

APPLICATION

UNICHEM 1000 is normally used between 20-100 ppm depending on the severity of foulant present in the system. UNICHEM 1000 normally should be added to the system after biocide treatment or between biocide additions in heavily fouled systems.

PROPERTIES

Appearance.....Brown liquid
Density.....7.10 lbs/gal
Freeze Point.....-20^oF
Flash Point (TCC).....60^oF

HANDLING

Due care should be taken when handling any industrial compound. Avoid contact with eyes, skin, and clothing. If contact occurs, flush thoroughly with water. If irritation persists, seek medical aid. Use with adequate ventilation.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

PACKAGING

UNICHEM 1000 is normally sold in 55 gallon drums or in bulk quantities.



**UNICHEM
INTERNATIONAL**

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 03/03/81

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 1000

Chemical Description Proprietary Dispersant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropyl Alcohol	400 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	180°F (IPA)	Freezing Point	-20°F
Specific Gravity (H ₂ O=1)	0.852	Solubility in Water	Soluble
Appearance and Odor Tan to Brown Liquid; Slight Ammonia Odor			

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 60°F ICC

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 Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 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) 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.

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

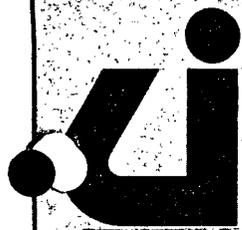
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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.



**UNICHEM
INTERNATIONAL**

UNICHEM 1300

PRODUCT BULLETIN

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.

APPLICATION:

UNICHEM 1300 should be fed to the system continuously. The amount of UNICHEM 1300 normally used should be 80 to 140 ppm. The amount of UNICHEM 1300 fed to the system is normally controlled by an orthophosphate residual of 8 to 16 ppm. The total phosphate residual should be maintained at 10 to 18 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 bulk quantities.



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	TLV (Units)
Potassium Hydroxide CAS# 1310-58-3	2 mg/m ³
Proprietary Corrosion Inhibitor	10 mg/m ³
Proprietary Corrosion/Scale Inhibitors	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	Special	None
	Mechanical (General)	vapors above TLV	Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

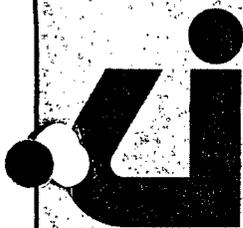
Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

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 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.

ALPHA 512



**UNICHEM
INTERNATIONAL**

PRODUCT BULLETIN

DESCRIPTION

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.%

USES AND APPLICATION

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.

TYPICAL PROPERTIES

Density (Pounds per Gallon):	8.63
Freeze Point:	-35°F
Flash Point (TCC):	69°F
Appearance:	Brown Clear Liquid

HANDLING

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.

PACKAGING

ALPHA 512 is available in drum or bulk quantities.



**UNICHEM
INTERNATIONAL**

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	None Established
Methanol CAS# 000-067-561	200 ppm (Skin) 8 Hour TWA or 260 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	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 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

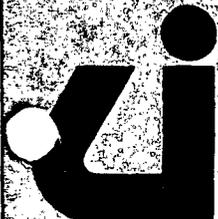
IX. SPECIAL PRECAUTIONS

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.

ALPHA 542

PRODUCT BULLETIN



UNICHEM
INTERNATIONAL

WATER TREATMENT MICROBIOCIDES

FOR THE CONTROL OF ALGAE, BACTERIA AND FUNGI IN
INDUSTRIAL APPLICATIONS

COMPOSITION

ACTIVE INGREDIENTS*	13.5%
SODIUM PENTACHLOROPHENATE	11.85%
SODIUM SALTS OF OTHER CHLOROPHENOLS	1.65%
INERT INGREDIENTS	86.5%
*CALCULATED AS SODIUM PENTACHLOROPHENATE (MOLECULAR WEIGHT 288.3)	
NET WEIGHT 55 GALLON DRUM	497.2 LBS.

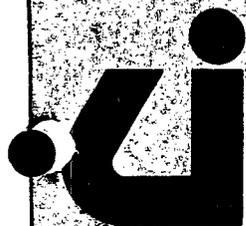
APPLICATIONS

ALPHA 542 IS USED TO CONTROL ALGAE, BACTERIA AND FUNGI IN RECIRCULATING COMMERCIAL AND INDUSTRIAL WATER COOLING TOWERS. BEGIN TREATMENT WHEN THE SYSTEM IS IN JEOPARDY OF BECOMING AFFECTED OR AFTER CLEANING SYSTEMS WHOSE EFFICIENCY IS ALREADY IMPAIRED. BADLY FOULED SYSTEMS MUST BE CLEANED BEFORE TREATMENT IS BEGUN. AN INITIAL SLUG ADDITION OF 1.0 QUART TO 2.0 QUARTS PER 1,000 GALLONS OF WATER IN THE SYSTEM TO PROVIDE A CONCENTRATION OF 40-80 PPM OF ACTIVE INGREDIENT BASED ON THE TOTAL WEIGHT OF THE WATER IN THE SYSTEM IS RECOMMENDED. REPEAT UNTIL CONTROL IS ESTABLISHED. SUBSEQUENT ADDITIONS OF 0.5 QUARTS TO 1.0 QUARTS PER 1,000 GALLONS OF WATER IN THE SYSTEM SHOULD BE EMPLOYED EVERY ONE TO TWO WEEKS OR MORE OFTEN IF OBSERVATIONS INDICATE THE NEED. THE FREQUENCY OF ADDITION WILL DEPEND ON THE RELATIVE AMOUNT OF BLEEDOFF AND THE SEVERITY OF THE MICROBIOLOGICAL INFESTATION. SLUG ADDITIONS SHOULD BE MADE INTO THE SUMP OF THE WATER COOLING TOWER.

DANGER

KEEP OUT OF REACH OF CHILDREN

CAUSES EYE DAMAGE. MAY PRODUCE SEVERE BURNS. DO NOT GET IN EYES, ON SKIN OR ON CLOTHING. PROTECT EYES AND SKIN WHEN HANDLING. HARMFUL OR FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. DO NOT BREATHE VAPOR OR MIST.



UNICHEM
INTERNATIONAL

PRODUCT BULLETIN

FIRST AID: IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION. IN CASE OF SKIN CONTACT, WASH WITH SOAP AND PLENTY OF WATER. WASH CONTAMINATED CLOTHING BEFORE REUSE. IF SWALLOWED, INDUCE VOMITING BY STICKING FINGER DOWN THE THROAT OR BY GIVING AN EMETIC SUCH AS 2 TABLESPOONSFUL OF SALT IN A GLASS OF WARM WATER. CALL A PHYSICIAN.

WASH THOROUGHLY AFTER HANDLING

DO NOT REUSE EMPTY CONTAINER. DISPOSE OF IT BY PERFORATING OR CRUSHING IT AND BURYING IT WITH WASTE, OR BURNING IT. STAY AWAY FROM SMOKE OR FUMES.

THIS PRODUCT IS TOXIC TO FISH AND WILDLIFE. TREATED EFFLUENT SHOULD NOT BE DISCHARGED WHERE IT WILL DRAIN INTO LAKES, STREAMS, PONDS, OR PUBLIC WATER. DO NOT CONTAMINATE WATER BY CLEANING OF EQUIPMENT OR DISPOSAL OF WASTES. APPLY THIS PRODUCT ONLY AS SPECIFIED ON THIS LABEL.

KEEP PACKAGE TIGHTLY CLOSED WHEN NOT IN USE

MANUFACTURED BY

UNICHEM INTERNATIONAL, INC.

EPA REG. NO. 10485-17



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 542

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Sodium Pentachlorophenate and Sodium Salts of other Chlorophenols	0.5 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	30°F
Specific Gravity (H ₂ O=1)	1.08 g/ml	Solubility in Water	Soluble

Appearance and Odor Brown Hazy Liquid; Chlorine 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. Product may be absorbed through the skin.

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 HCl, Chlorinated Dibenzo-p-dioxins

Hazardous Polymerization	May Occur	X	Conditions to Avoid	Temperatures >150°C
	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

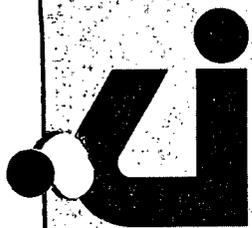
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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**

ALPHA 570

**PRODUCT
BULLETIN**

INGREDIENTS

Active Ingredients:

Alkyl (C ₁₂ , 61%; C ₁₄ , 23%; C ₁₆ , 11%; C ₈ & C ₁₀ , 2.5%; C ₁₈ , 2.5%) dimethyl Benzyl ammonium chloride	9.0%
Tributyltin neodecanoate	5.0%
Alkyl (C ₁₄ , 58%; C ₁₆ , 28%; C ₁₂ , 14%) dimethyl benzyl ammonium chloride	4.5%
Alkyl (C ₁₄ , 90%; C ₁₆ , 5%; C ₁₂ , 5%) dimethyl ethyl ammonium bromide	1.5%
Inert Ingredients	80.0%
Total Ingredients	100.0%

DESCRIPTION

ALPHA 570 is a product formulated to provide control of the growth of algae in recirculating water cooling towers and evaporative condensers.

USE

If heavy algae slime growths are present, clean the system before initial treatment. If algae growth is absent or just noticeable, proceed with the initial dose. Add all treatments directly to the sump.

INITIAL DOSE: When the system is fouled, apply a dose of four fluid ounces per 100 gallons water in the system. Repeat daily until control is achieved.

SUBSEQUENT DOSE: When algae control is evident, add two fluid ounces per 100 gallons water in the system every seven days (weekly), or as needed to maintain control. Badly fouled systems may be manually or chemically cleaned before treatment is begun.

WARNING

Do not allow water that contains this algicide to come in contact with grass or plants. Do not use in drinking water or in swimming pools.

HANDLING

KEEP OUT OF REACH OF CHILDREN. Corrosive. Causes eye damage and skin irritation. 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, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

**PHYSICIAN &
ENVIRONMENT
WARNING**

Probably mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed. This product is toxic to fish. Keep out of lakes, streams, or ponds. Treated effluent should not be discharged where it will drain into lakes, streams, ponds, or public water. Do not contaminate water by cleaning of equipment or disposal of wastes. Apply this product only as specified on this label. Rinse empty container thoroughly with water and discard it.

PACKAGING

55 gallon drums. Manufactured for Unichem International, Inc. P. O. Box 1499, 707 North Leech Street, Hobbs, New Mexico 88240. EPA registration number 5185-168-10485. EPA est. number 5185-GA-1.



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 570

Chemical Description
Proprietary Biocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Alkyl Dimethyl Benzylammonium Chloride	Not Established
Alkyl Dimethyl Ethylammonium Bromide	Not Established
Tributyltin Neodecanoate	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 rats)
 Acute Dermal LD₅₀: Greater than 2 g/Kg for male and female rat

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

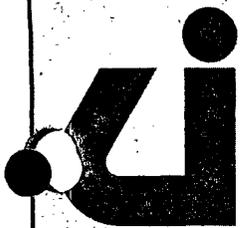
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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 PHYSICIAN: Probably mucosul damage may contraindicate the use of gastric lavage. Measures against circulation shock, respiratory depression, and convulsion may be needed.



**UNICHEM
INTERNATIONAL**

TECHNI-HIB 7020

PRODUCT BULLETIN

DESCRIPTION

TECHNI-HIB 7020 is a specially designed corrosion inhibitor containing both volatile and non-volatile film forming amines. This combination provides corrosion protection and anti-foulant properties to both the vapor and liquid phases of aqueous systems containing ethanalamines and/or glycols.

USES

TECHNI-HIB 7020 is intended for use in amine and glycol systems upstream of the stripper stills to provide corrosion protection and to prevent deposition of undesirable compounds in these systems.

APPLICATION

The recommended treatment rate of TECHNI-HIB 7020 is 25 to 50 ppm on a continuous basis. Intermittent slug treating schedules should provide enough residual of this compound to equal the continuous amount during the same treatment period. To provide easy control of pumping rates, TECHNI-HIB 7020 may be diluted with water.

PROPERTIES

Form:	Liquid
Color:	Brown
Density:	8.1 lbs/gallon
Pour Point:	18°F
Flash Point Open Cup:	185°F
Flash Point Closed Cup:	92°F
Viscosity @ 100°F:	54.0 S.U.
pH:	6.6

HANDLING

Do not take internally. Avoid contact with skin, eyes, and clothing. In case of contact, wash with copious amounts of water. Do not expose this compound to open flame or heat.

PACKAGING

TECHNI-HIB 7020 is normally sold in 55 gallon drums or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 11/12/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name **TECHNIHIB 7020**

Chemical Description

Proprietary Corrosion Inhibitor

II. HAZARDOUS INGREDIENTS

Material

None

TLV (Units)

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	18°F
Specific Gravity (H ₂ O=1)	0.972	Solubility in Water	Soluble

Appearance and Odor Amber to Brown Liquid; No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 92°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.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 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) 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

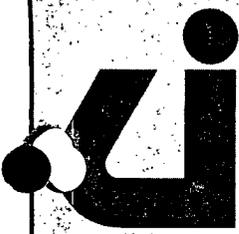
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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 7055 is a high molecular weight filming amine type inhibitor for corrosion control in refinery equipment. It is especially formulated to provide corrosion protection at low pH and remain chemically stable at high temperatures. UNICHEM 7055 is propane soluble.

USES

UNICHEM 7055 is recommended for corrosion control in refinery process equipment. Appropriate treatment points should be well upstream of trouble spots for fouling and corrosive attack.

APPLICATION

UNICHEM 7055 should be fed into a hydrocarbon slip stream and injected into the horizontal section of the overhead vapor line at a dosage of from 6-9ppm of product. Complementary injection points directly ahead of isolated areas that have a history of severe corrosion are also recommended.

PROPERTIES

Appearance.....	Brown Liquid
Density.....	7.8 lbs/gal
Solubility.....	Oil Soluble, Water Dispersible
Pour Point.....	<-20 ^o F
Flash Point (TCC).....	70 ^o F

HANDLING

Do not expose this product to open flame or extreme heat. Avoid contact with skin, eyes, or clothing. In case of eye contact, flush with water for at least fifteen minutes. Seek medical help if irritation persists. For skin contact, flush with water and wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. Avoid breathing fumes or vapors.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

PACKAGING

UNICHEM 7055 is available in 55 gallon drums or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared May 22, 1986

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 7055

Chemical Description
Proprietary Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material

Aromatic Solvent
Isopropyl Alcohol

TLV (Units)

100 ppm for 8 hour work day (recommended)
400 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	180°F (IPA)	Freezing Point	< -20°F
Specific Gravity (H ₂ O=1)	0.936 g/ml	Solubility in Water	Dispersible

Appearance and Odor Brown Liquid, Slight Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 70°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.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 Inhalation of high vapor concentrations may have results ranging from mild depression to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitis. Eye contact may cause burning and irritation. Aspiration can be hazard if material is ingested.

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) 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.

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

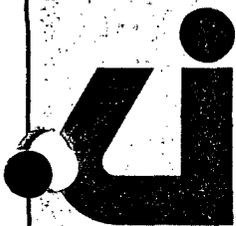
Protective Gloves	Rubber	Eye Protection	Safety Glasses, Goggles, and/or Face Shield
-------------------	--------	----------------	---

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. Do not transfer to improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.



**UNICHEM
INTERNATIONAL**

TECHNI-HIB 7061

PRODUCT BULLETIN

DESCRIPTION

TECHNI-HIB 7061 is a high molecular weight filming amine type inhibitor for corrosion control in refinery equipment. TECHNI-HIB 7061 is an antifoulant for crude oil heat exchangers. It is especially formulated to provide corrosion protection at low pH and remain chemically stable at high temperatures.

USES

TECHNI-HIB 7061 is recommended for corrosion control and to diminish fouling problems in refinery process equipment. Appropriate treatment points should be well upstream of trouble spots for fouling and corrosive attack.

APPLICATION

For maximum results as an antifoulant corrosion inhibitor, continuous feeding of 20 to 40 ppm is recommended. Dilute TECHNI-HIB 7061 with an aromatic solvent to provide easy chemical injection. Reduce dosage rates when heat transfer studies show fouling has been reduced or minimized. For corrosion protection of overhead systems, inject 3-10 ppm.

PROPERTIES

Color	Brown
Form	Liquid
Density	7.8 lbs/gallon
Solubility	Oil Soluble Water Dispersible
Pour Point	Below -20°F
Flash Point Open Cup	87°F
Flash Point Closed Cup	70°F
Viscosity @ 100°F	41.3 S.U.

HANDLING

Do not take internally. Avoid contact with skin, eyes or clothing. In case of contact, wash with copious quantities of water. In case of eye contact, wash with water and consult a physician. Do not expose this compound to open flame or heat.

PACKAGING

TECHNI-HIB 7061 is normally sold in 55 gallon drums or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared May 22, 1986

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 TECHNIHIB 7061

Chemical Description
Proprietary Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material

TLV (Units)

Aromatic Solvent
Isopropyl Alcohol

100 ppm for 8 hour work day (recommended)
400 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	180°F (IPA)	Freezing Point	< -20°F
Specific Gravity (H ₂ O=1)	0.936 g/ml	Solubility in Water	Dispersible

Appearance and Odor Brown Liquid, Slight Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 70°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.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 Inhalation of high vapor concentrations may have results ranging from mild to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitis. Eye contact may cause burning and irritation. Aspiration can be hazardous if material is ingested.

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) 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

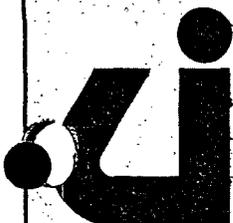
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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, fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer to improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.



**UNICHEM
INTERNATIONAL**

UNICHEM 7135

PRODUCT BULLETIN

DESCRIPTION

UNICHEM 7135 is an amidine based corrosion inhibitor specifically developed to control corrosion in light gas and LPG. The inhibitor combines a maximum solubility in light hydrocarbons and excellent dispersibility in water; it does not impart emulsification tendencies to the light hydrocarbons.

UNICHEM 7135 is recommended for use to control corrosion in gas gathering distribution systems, gas processing plants and refineries, and LPG pipelines.

APPLICATION

UNICHEM 7135 should be atomized into gas lines at the initial rate of 2 pints per MMCFD until a film has been formed. This dosage should then be lowered to 0.5-1 pint per MMCFD for film maintenance. The amount of UNICHEM 7135 in liquid systems is normally used at 5-20 ppm.

PROPERTIES

Appearance.....Dark Brown Liquid
Density.....7.7 lbs/gal
Pour Point.....<-20^oF
Flash Point (TCC).....74^oF

HANDLING

Do not expose this product to open flame or extreme heat. Avoid contact with skin, eyes, or clothing. In case of eye contact, flush with water for at least fifteen minutes. Seek medical help if irritation persists. For skin contact, flush with water and wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. Avoid breathing fumes or vapors.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

PACKAGING

UNICHEM 7135 is available in 55 gallon drums or in bulk quantities.



UNICHEM
INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared May 23, 1986

Supersedes Previous Sheet Dated August 1, 1984

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 7135

Chemical Description
Proprietary Filming Amine

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropyl Alcohol	400 ppm
Aromatic Solvent	100 ppm for 8 hour workday (recommended)

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	180°F (IPA)	Freezing Point	-20°F
Specific Gravity (H ₂ O=1)	0.924	Solubility in Water	Dispersible

Appearance and Odor Amber to Brown Liquid--Slight Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 74°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.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 Inhalation of high vapor concentrations may have results ranging from mild depression to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitis. Eye contact may cause burning and irritation. Aspiration can be hazard if material is ingested.

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) 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.

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

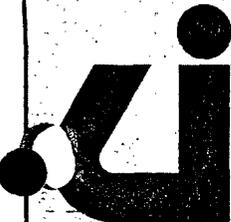
IX. SPECIAL PRECAUTIONS

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. Do not transfer to improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

TECHNI-HIB 7116

PRODUCT BULLETIN



UNICHEM
INTERNATIONAL

DESCRIPTION:

TECHNI-HIB 7116 is an amidine based corrosion inhibitor specifically developed to control corrosion in light gas and LPG. The inhibitor combines a maximum solubility in light hydrocarbons and excellent dispersability in water; it does not impart emulsification tendencies to the light hydrocarbons.

USES:

TECHNI-HIB 7116 is recommended for use to control corrosion in gas gathering and distribution systems, gas processing plants and refineries, and LPG pipelines.

APPLICATION:

TECHNI-HIB 7116 should be atomized into gas lines at the initial rate of 2 pints per MMCFD until a film has been formed. This dosage should then be lowered to 0.5 - 1 (one) pint per MMCFD for film maintenance. The amount of TECHNI-HIB 7116 in liquid systems is normally used at 5-20 ppm.

PROPERTIES:

Form:	Liquid
Color:	Dark Brown
Density:	7.7 lbs./gallon
Flash Point Open Cup:	99° F
Flash Point Closed Cup:	74° F
Pour Point:	Below - 20° F

HANDLING:

TECHNI-HIB 7116 may be irritable to skin in concentrated form. Use caution when handling concentrate. Wash affected area with water. If irritation or redness persist consult a physician. Keep out of reach of children. Keep container closed when not in use.

PACKAGING:

TECHNI-HIB 7116 is normally sold in 55 gallon drums or bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared May 23, 1986

Supersedes Previous Sheet Dated August 1, 1984

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name **TECHNIHIB 7116**

Chemical Description

Proprietary Filming Amine

II. HAZARDOUS INGREDIENTS

Material

Isopropyl Alcohol
Aromatic Solvent

TLV (Units)

400 ppm
100 ppm for 8 hour workday (recommended)

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	180°F (IPA)	Freezing Point	-20°F
Specific Gravity (H ₂ O=1)	0.924	Solubility in Water	Dispersible

Appearance and Odor **Amber to Brown Liquid--Slight Amine Odor**

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) **74°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.**

Unusual Fire and Explosion Hazards **Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 Inhalation of high vapor concentrations may have results ranging from mild depression to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitis. Eye contact may cause burning and irritation. Aspiration can be hazard if material is ingested.

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) 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.

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

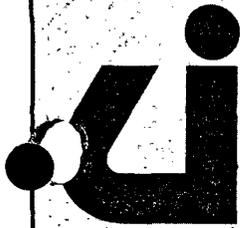
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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. Do not transfer to improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.



**UNICHEM
INTERNATIONAL**

UNICHEM 7424

PRODUCT BULLETIN

DESCRIPTION:

UNICHEM 7424 is a hydrocarbon soluble antifouling additive formulated for gas compressor fouling. This antifoulant is specially formulated to disperse solids formed from corrosion products, and to prevent accumulation and agglomeration of particulate matter when it is formed.

USES:

UNICHEM 7424 should be injected upstream of the problem area. Compressors fouling with elemental sulfur and corrosion products have shown excellent response to treatment.

APPLICATION:

In fouled systems, UNICHEM 7424 should be started at 24-50 ppm (2-4 quarts/mmcf) with the dosage change based on performance. Usual treatment rate is 12 ppm (2 pints/mmcf).

PROPERTIES:

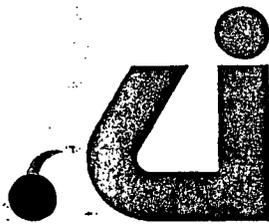
Appearance:	Light Brown Liquid
Density:	7.4 lbs/gal
Freeze Point:	<20°F

HANDLING:

UNICHEM 7424 is irritating to skin and eyes. If contact is made, wash with copious quantities of water for fifteen (15) minutes and consult a physician if irritation or redness persist. UNICHEM 7424 is considered a strong alkaline amine type compound. Keep out of the reach of children. Keep container closed when not in use. Flammable material. Do not store or use near open flame or heat.

PACKAGING:

UNICHEM 7424 is packaged in 55 gallon steel drums, or in bulk quantities.



UNICHEM
INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Undated

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 7424

Chemical Description Proprietary Antifoulant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Aromatic Solvent	100 ppm for 8 Hour Work Day (Recommended)
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	300°F Initial	Freezing Point	<-40°F
Specific Gravity (H ₂ O=1)	0.888	Solubility in Water	Soluble
Appearance and Odor Dark Brown Liquid; Slight Amine Odor			

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 106°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.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 Inhalation of high vapor concentrations may have results ranging from mild depression to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitis. Eye contact may cause burning and irritation. Aspiration can be hazard if material is ingested.

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) 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

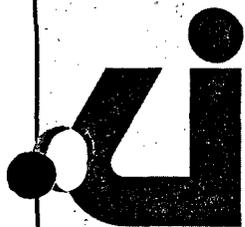
Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

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**

TECHNI-HIB 7450

PRODUCT BULLETIN

DESCRIPTION

TECHNI-HIB 7450 is a hydrocarbon soluble antifouling additive formulated for gas compressor fouling. This antifoulant is specially formulated to disperse solids formed from corrosion products, and to prevent accumulation and agglomeration of particulate matter when it is formed.

USES

TECHNI-HIB 7450 should be injected upstream of the problem area. Compressors fouling with elemental sulfur and corrosion products have shown excellent response to treatment.

APPLICATION

In fouled systems, TECHNI-HIB 7450 should be started at 24-50 ppm (2-4 quarts/mmcf) with the dosage change based on performance. Usual treatment rate is 12 ppm (2 pints/mmcf).

PROPERTIES

Form:	Liquid
Color:	Light Brown
Density:	7.4 lbs/gal
Freeze Point:	Less than 20°F.

HANDLING:

TECHNI-HIB 7450 is irritating to skin and eyes. If contact is made, wash with copious quantities of water for fifteen (15) minutes and consult a physician if irritation or redness persist. TECHNI-HIB 7450 is considered a strong alkaline amine type compound. Keep out of the reach of children. Keep container closed when not in use. Flammable material. Do not store or use near open flame or heat.

PACKAGING

TECHNI-HIB 7450 is packaged in 55 gallon steel drums, or in bulk quantities.



MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Undated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240
EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name TECHNIHIB 7450

Chemical Description Proprietary Antifoulant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Aromatic Solvent	100 ppm for 8 Hour Work Day (Recommended)
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	300°F Initial	Freezing Point	<-40°F
Specific Gravity (H ₂ O=1)	0.888	Solubility in Water	Soluble

Appearance and Odor Dark Brown Liquid; Slight Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 106°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.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or 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 Inhalation of high vapor concentrations may have results ranging from mild depression to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitis. Eye contact may cause burning and irritation. Aspiration can be hazard if material is ingested.

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) 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.

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

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COMM 8*235-4085



No. 53

CHLORINE

Date July 1979

SECTION I. MATERIAL IDENTIFICATION				
MATERIAL NAME: CHLORINE OTHER DESIGNATIONS: Cl ₂ , CAS # 007 782 505 DESCRIPTION: A gas shipped in steel cylinders as a liquid under its own vapor pressure. MANUFACTURER: Available from many suppliers.				
SECTION II. INGREDIENTS AND HAZARDS		%	HAZARD DATA	
Chlorine		> 99	8-hr TWA 1 ppm (C) or 3 mg/m ³ *	
*Current OSHA ceiling limit. ACGIH TLV (1978) is 1 ppm with a STEL of 3 ppm for up to 15 minutes exposure. NIOSH (1976) proposed a ceiling limit of 0.5 ppm (15 minute sampling time). (Controversy going on whether OSHA standard should include ceiling limit or not.)				
SECTION III. PHYSICAL DATA				
Boiling point at 1 atm, deg C ----- -34 Density at 0°C: Gas at 1 atm, g/liter ----- 3.214 Vapor pressure at 20 C, mm Hg ----- 4800 Liquid at 3.65 atm, g/cc -- 1.47 Vapor density (Air=1) ----- 2.49 Molecular weight ----- 70.91 Water solubility at 20 C, 1 atm, g/l -- 7.3				
Appearance & Odor: A greenish-yellow gas or clear, amber-colored liquid with a suffocating, pungent, irritating odor. The odor recognition threshold (100% of test panel, unfatigued) is reported at 0.314 ppm. The odor is easily noticed at 1.9-3.5 ppm and has been reported as intolerable at 2.6-41 ppm, depending on the observer.				
SECTION IV. FIRE AND EXPLOSION DATA			LOWER	UPPER
Flash Point and Method	Autoignition Temp.	Flammability Limits In Air		
Non-flammable				
Use extinguishing media that is appropriate for the surrounding fire. Use water spray to cool intact, fire-exposed containers (one ton tanks and cylinders will release chlorine when a fusible metal safety plug melts at 158-165F.) If possible, have specially trained personnel remove intact cylinders from fire area. Chlorine will support the burning of most combustible materials, just as oxygen does. Flammable gases and vapors can form explosive mixtures with chlorine. Firefighters must use self-contained breathing equipment, eye protection, and full protective clothing when fighting fires in which chlorine is involved.				
SECTION V. REACTIVITY DATA				
Chlorine is stable in steel containers at room temperature when dry. [Intense local heat (above 215°C) on steel walls can cause steel to ignite in chlorine.] It is a powerful oxidizing agent which reacts violently with reducing agents and combustible materials. Materials such as acetylene, turpentine, other hydrocarbons, ammonia, hydrogen, ether, powdered metals, etc. must be kept away from chlorine. It reacts with H ₂ S and H ₂ O forming HCl; it combines with CO and SO ₂ to form phosgene and sulfuryl chloride (toxic and corrosive materials). Wet chlorine (150 ppm water) corrosively attacks most common metals. Handling chlorine requires special materials technology.				

SECTION VI. HEALTH HAZARD INFORMATION

TLV 1 ppm or 3 mg/m³ (C)

Chlorine believed to damage the body by local corrosive effects only; no systemic effects. 5-8 ppm in air will be severely irritating to eyes, nose, and respiratory tract of most individuals in a few minutes (10 ppm intolerable for avg. person). Higher level exposures produce coughing, dyspnea, burns of the skin, conjunctivitis, pulmonary edema (may be delayed) and death, depending on concentration and time of exposure (35-51 ppm, lethal in an hour; a few deep breaths fatal at 1000 ppm). Reduced respiratory capacity (especially among smokers) and dental erosion can result from chronic low level exposure. Any contact with liquid chlorine causes burns, blistering and tissue destruction.

FIRST AID: Call physician IMMEDIATELY for any person overexposed to chlorine!

Eye Contact: Flush eyes with water for at least 15 minutes, holding eyelids open. If medical help is not readily available, continue flushing with water.

Skin Contact: (Treat for inhalation exposure first!) Remove contaminated clothing under a safety shower. Wash exposed skin areas thoroughly with water.

Inhalation: Remove to fresh air. Restore breathing when required. Have trained person administer oxygen until victim breathes easily on his own. Keep warm and at rest! In mild cases, give milk to relieve throat irritation.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Establish written emergency plans and special training of personnel where chlorine is used.

Notify safety personnel. Provide ventilation. Exclude from area all except specially trained, assigned personnel with approved self-contained breathing equipment and appropriate protective clothing. Find and stop leak. (Large uncontrollable leaks require environmental consideration and possible evacuation of surrounding area.)

Move leaking container to isolated area. Position to release gas not liquid.

When possible draw off chlorine to process or to disposal system.

DISPOSAL: Bubble through a large volume of 15% aqueous NaOH or other alkali. Suitably dispose of resulting solution. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation to meet TLV requirements. Provide suitable venting for low lying areas. Use enclosed, isolated processing and handling whenever possible. Full face-piece respirators must be available for non-routine and emergency use: canister gas mask below 5000 ppm in air and self-contained breathing equipment for other conditions.

Workers should be provided with chemical safety goggles and impervious gloves. Full protective clothing must be used when needed to prevent exposure to chlorine, liquid or gas. Daily change of work clothes and showering after work shift are recommended.

Eyewash stations and chemical safety showers must be available in areas of handling and storage of chlorine.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store chlorine containers in well-ventilated areas of low fire potential, away from incompatible materials (see Sec. V) and away from sources of heat and ignition. Protect containers from weather and physical damage; follow standard safety procedures for containers of compressed, corrosive gases. Provide special training to workers handling chlorine. Regularly inspect (and test) piping and containment used for chlorine service. Liquid levels should be less than 85% of tank or cylinder capacity.

Use preplacement and periodic medical exams; preclude from workplace exposure to chlorine those with cardiac, pulmonary or chronic respiratory problems.

Special Ref: "Chlorine and Hydrogen Chloride", Chapter 5, National Academy of Science, Washington, DC (1976).

DATA SOURCE(S) CODE: 2-12, 17, 19, 24, 26

APPROVALS: MIS, *J.M. Nelson*
CRD

Industrial Hygiene and Safety *O. White*

MEDICAL REVIEW: 12/79

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 extends 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.

MATERIAL SAFETY DATA SHEET PAGE:1
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 07 NOV 79

PRODUCT CODE: 15216

PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

MSD: 0101

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :

SODIUM HYDROXIDE : 50 :
WATER : BALANCE:

SECTION 1 PHYSICAL DATA

BOILING POINT: 293F, 145C APPROX.: SOL. IN WATER: WATER SOLUTION
VAP PRESS: 1.5 MMHG @ 20C : SP. GRAVITY: @ 20C (DENS.) 1.52 G/ML
VAP DENSITY (AIR=1): ---- : % VOLATILE BY VOL: LOW (WATER)
APPEARANCE AND ODOR: COLORLESS TO SLIGHTLY COLORED LIQUID, NO ODOR.

SECTION 2 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS (STP IN AIR)
METHOD USED: NOT APPLICABLE : LFL: NOT APPLIC. UFL: NOT APPLIC.
EXTINGUISHING MEDIA: NON-COMBUSTIBLE.
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: IN WATER SOLUTION
CAUSTIC CAN REACT WITH AMPHOTERIC METALS (SUCH AS ALUMINUM)
GENERATING HYDROGEN WHICH IS FLAMMABLE AND/OR EXPLOSIVE WHEN IGNITED.

SECTION 3 REACTIVITY DATA

STABILITY: PRODUCT ABSORBS CARBON DIOXIDE FROM THE AIR.
INCOMPATIBILITY: WATER AND ACID. PRODUCT IS STRONG CAUSTIC ALKALI.
MAY REACT VIOLENTLY OR EXPLOSIVELY WITH ACID, A NUMBER OF
ORGANIC COMPOUNDS, AMPHOTERIC METALS (SUCH AS ALUMINUM), AND HEATED
WATER.
HAZARDOUS DECOMPOSITION PRODUCTS: NONE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4 SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): ONLY TRAINED
AND PROPERLY PROTECTED PERSONNEL SHOULD UNDERTAKE SPILL CLEAN UP.
ACTING CAUTIOUSLY, DILUTE AND NEUTRALIZE WITH DILUTE ACID,
PREFERABLY ACETIC ACID.
DISPOSAL METHOD: DISPOSAL OF CAUSTIC SODA MUST MEET ALL FEDERAL,

(CONTINUED ON PAGE 2)

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 07 NOV 79 PRODUCT CODE: 15216
PRODUCT (CONT'D): CAUSTIC SODA SOLUTION 50% MSD: 0101

SECTION 4 SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)
DISPOSAL METHOD: (CONTINUED)
STATE AND LOCAL REGULATIONS. CONTACT THE DOW CHEMICAL COMPANY
FOR ADDITIONAL INFORMATION.

SECTION 5 HEALTH HAZARD DATA

INGESTION: MOST SERIOUS EFFECT IS CORROSION OF TISSUES. LOWEST
LETHAL DOSE IN RABBIT IS 500 MG/KG CAUSTIC.
EYE CONTACT: SEVERE BURN AND POSSIBLE BLINDNESS.
SKIN CONTACT: BURNS, FREQUENTLY DEEP ULCERATION AND ULTIMATE
SCARRING.
SKIN ABSORPTION: NOT LIKELY A PROBLEM.
INHALATION: ACGIH TLV AND OSHA GUIDE IS 2 MG/CU METER DUSTS AND
MISTS, BASED ON SODIUM HYDROXIDE.
EFFECTS OF OVEREXPOSURE: DUSTS OR CONCENTRATED MIST MAY CAUSE DAMAGE TO
UPPER RESPIRATORY TRACT & EVEN TO THE LUNGS PROPER, RANGES FROM MILD
IRRITATION TO SEVERE PNEUMONITIS. MAIN EFFECT-TISSUE DAMAGE.

SECTION 6 FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IMMEDIATE AND CONTINUOUS IRRIGATION WITH FLOWING WATER AT
LEAST 30 MINUTES IS IMPERATIVE. PROMPT MEDICAL CONSULTATION
ESSENTIAL.
SKIN: SKIN BURN LIKELY. IMMEDIATE AND CONTINUOUS AND THOROUGH
WASHING IN FLOWING WATER FOR 30 MINUTES IS INDICATED. REMOVE CLOTHING
IMMEDIATELY. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.
DESTROY CONTAMINATED SHOES. WASH CLOTHING BEFORE REUSE.
INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN
AND/OR TRANSPORT TO MEDICAL FACILITY.
INGESTION: CORROSIVE. DO NOT INDUCE VOMITING. GIVE LARGE
AMOUNTS OF WATER OR MILK IF IMMEDIATELY AVAILABLE AND TRANSPORT TO
MEDICAL FACILITY.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE SEVERE CORNEAL INJURY OR BURN. MAY CAUSE IMPAIR-
MENT OF VISION. STAIN FOR EVIDENCE OF CORNEAL INJURY. IF CORNEA IS
BURNED, INSTILL ANTIBIOTIC STEROID PREPARATION FREQUENTLY. CONSULT
OPHTHALMOLOGIST.
SKIN: MAY CAUSE SEVERE BURNS. IF BURN IS PRESENT, TREAT AS ANY
THERMAL BURN.
RESPIRATORY: MAY CAUSE SEVERE IRRITATION. ADMINISTER OXYGEN IF
AVAILABLE. BRONCHODILATORS, EXPECTORANTS, AND ANTITUSSIVES MAY BE

(CONTINUED ON PAGE 3)

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 07 NOV 79

PRODUCT CODE: 15216

PRODUCT (CONT'D): CAUSTIC SODA SOLUTION 50%

MSD: 0101

SECTION 6 FIRST AID--NOTE TO PHYSICIAN (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)
OF HELP.

ORAL: MAY CAUSE STRICTURE. IF LAVAGE IS PERFORMED, SUGGEST ENDO-
TRACHEAL AND/OR ESOPHAGOSCOPIC CONTROL.

GENERAL: CNSULT STANDARD LITERATURE. TREATMENT BASED ON THE SOUND
JUDGMENT OF THE PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE
PATIENT.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF MISTS TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NIOSH APPROVED RESPIRATORY PROTECTION REQUIRED
IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. IF REQUIRED USE AN
APPROVED DUST OR MIST RESPIRATOR.

PROTECTIVE CLOTHING: CLEAN, BODY-COVERING CLOTHING. IN ADDITION,
IMPERVIOUS GLOVES, BOOTS, APRON, GAUNTLETS, FACE SHIELD AND A WIDE-
HAT IN ADDITION TO RECOMMENDED EYE PROTECTION DEPENDING UPON THE
EXTENT AND SEVERITY OF EXPOSURE LIKELY.

EYE PROTECTION: CHEMICAL WORKERS GOGGLES. FULL FACE SHIELD TO PROTECT
FACE. MAINTAIN EYE WASH FOUNTAIN AND SAFETY SHOWER AT OR NEAR
STATION.

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PREVENT EYE AND SKIN
CONTACT. DO NOT BREATHE DUSTS OR MISTS. AVOID STORING NEXT TO
STRONG ACIDS. DISSOLVING IN WATER AND OTHER SUBSTANCES GENERATES
EXCESSIVE HEAT, SPATTERING, AND MISTS. SOLUTIONS OF GREATER THAN
45% ARE VISCOUS AND VERY SLIPPERY.

ADDITIONAL INFORMATION: REVISIONS 11/7/79 -- CONSISTENCY PROGRAM -
ALL SECTIONS CHANGED SLIGHTLY.

LAST PAGE

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,
EXPRESS OR IMPLIED, IS MADE.

EFFECTIVE DATE: 11 JUN 79

PRODUCT CODE: 07662

PRODUCT NAME: AMBITROL (R) CN ANTIFREEZE

MSD: 0026

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :
GLYCOLS : 95 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 325F, 163C : SOL. IN WATER: INFINITE
VAP PRESS: ---- : SP. GRAVITY: 1.130 @ 60/60F, 16C
VAP DENSITY (AIR=1): ---- : % VOLATILE BY VOL: 100
APPEARANCE AND ODOR: GREEN LIQUID.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 240F, 116C : FLAMMABLE LIMITS (STP IN AIR)
METHOD USED: CLEVELAND OPEN CUP. : LFL: NOT DETER. UFL: NOT DETER.
EXTINGUISHING MEDIA: WATER, FCG, FOAM, CO2, DRY CHEMICAL.
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: ----

SECTION 3

REACTIVITY DATA

STABILITY: ----
INCOMPATIBILITY: OXIDIZING MATERIAL.
HAZARDOUS DECOMPOSITION PRODUCTS: ----
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): FLUSH WITH
WATER OR SOAK UP WITH ABSORBENT MATERIAL.
DISPOSAL METHOD: SALVAGE, OR DISPOSE IN LANDFILL OR BY BURNING
CONSISTENT WITH LOCAL REGULATIONS.

SECTION 5

HEALTH HAZARD DATA

INGESTION: WHILE THE MAIN CONSTITUENT IN AMBITROL CN, ETHYLENE GLYCOL,
HAS BEEN SHOWN TO BE LOW IN SINGLE DOSE ORAL TOXICITY TO RATS,
HUMAN EXPERIENCE HAS INDICATED THAT IT MAY BE MODERATELY TOXIC TO
HUMANS.
EYE CONTACT: ESSENTIALLY NON-IRRITATING.

(CONTINUED ON PAGE 2)

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 79
PRODUCT (CONT'D): AMBITROL (R) CN ANTIFREEZE

PRODUCT CODE: 07662
MSD: 0026

SECTION 5 HEALTH HAZARD DATA (CONTINUED)

SKIN CONTACT: PROLONGED CONTACT: SLIGHT IRRITATION; REPEATED CONTACT:
MODERATE BURN AND IRRITATION.
SKIN ABSORPTION: NOT LIKELY TO BE ABSORBED IN TOXIC AMOUNTS; LD50 (RABBIT)
GREATER THAN 1000 MG/KG.
INHALATION: ACGIH TLV IS 100 PPM (1978) FOR ETHYLENE GLYCOL VAPOR,
10 MG/M3 FOR PARTICULATE.
EFFECTS OF OVEREXPOSURE: NOT KNOWN.

SECTION 6 FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES
IS GOOD SAFETY PRACTICE.
SKIN: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER
FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.
CALL A PHYSICIAN. WASH CLOTHING BEFORE REUSE. DESTROY CONTAMINATED
SHOES.
INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL
PERSONNEL.
INGESTION: IF SWALLOWED, INDUCE VOMITING IMMEDIATELY BY GIVING
TWO GLASSES OF WATER AND STICKING FINGER DOWN THROAT. CALL A
PHYSICIAN.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE MILD IRRITATION.
SKIN: MAY CAUSE MODERATE IRRITATION. WITH REPEATED CONTACT MAY CAUSE
BURN. IF RASH IS PRESENT, TREAT AS ANY CONTACT DERMATITIS. IF BURN
IS PRESENT, TREAT AS ANY THERMAL BURN.
RESPIRATORY: INJURY IS UNLIKELY.
ORAL: MODERATELY TOXIC.
SYSTEMIC: WITH ACUTE ETHYLENE GLYCOL OVEREXPOSURE (ORAL), EARLY
ADMINISTRATION OF ETHANOL MAY BE INDICATED (SEE TOX OF DRUGS AND
CHEMICALS - DEICHMANN AND GERARD, PAGE 258). KIDNEY MAY BE TARGET
ORGAN WITH OVEREXPOSURE. TREATMENT BASED ON THE SOUND JUDGMENT OF
THE PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS OR MISTS TO SUGGESTED GUIDE.
RESPIRATORY PROTECTION: NONE LIKELY TO BE NEEDED. NIOSH APPROVED RESPIRATORY
PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL.
PROTECTIVE CLOTHING: CLEAN, BODY - COVERING CLOTHING.
EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.
WASHING FACILITIES NEAR WORK AREA.

(CONTINUED ON PAGE 3)

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 79

PRODUCT CODE: 07662

PRODUCT (CONT'D): AMBITROL (R) CN ANTIFREEZE

MSD: 0026

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: AVOID SKIN CONTACT.
AVOID INGESTION. AVOID BREATHING SPRAY MISTS.

ADDITIONAL INFORMATION: REVISIONS 6/11/79 -- APPEARANCE AND ODOR,
SPECIFIC GRAVITY, LFL, UFL, INGESTION, EYE CONTACT, SKIN CONTACT
AND ABSORPTION, INHALATION, FIRST AID, NOTE TO PHYSICIAN, ADDED
CENTIGRADE TEMPS., VENTILATION, RESPIRATORY PROTECTION.

LAST PAGE

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,
EXPRESSED OR IMPLIED, IS MADE.

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 55895

Page: 1

PRODUCT NAME: MONOETHANOLAMINE LOW FREEZING GRADE

Effective Date: 03/20/88 Date Printed: 04/19/88

MSDS:000978

1. INGREDIENTS:

Monoethanolamine	CAS# 000141-43-5	85%
Water	CAS# 007732-18-5	15%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 266F, 130C
VAP PRESS: Low
VAP DENSITY: Not determined.
SOL. IN WATER: Complete
SP. GRAVITY: 1.0 @ 25/4C
APPEARANCE: Colorless liquid.
ODOR: Slight ammoniacal odor.
FREEZE POINT: 9F, -13C

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 208F, 98C
METHOD USED: COC*

*No flash point observed up to the boiling point via Setaflash closed tester.

FLAMMABLE LIMITS
LFL: Not deter.
UFL: Not deter.

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO2, dry chemical.

(Continued on Page 2)

(R) Indicates a Trademark of The Dow Chemical Company

* An Operating Unit of The Dow Chemical Company

M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 55895

Page: 2

PRODUCT NAME: MONOETHANOLAMINE LOW FREEZING GRADE

Effective Date: 03/20/88 Date Printed: 04/19/88

MSDS:000978

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE & EXPLOSION HAZARDS: Not available.

FIRE-FIGHTING EQUIPMENT: Wear self-contained, positive-pressure breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Stable at normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Strong acids; strong oxidizers. Corrosive to copper and brass.

HAZARDOUS DECOMPOSITION PRODUCTS: Possible nitrogen oxides. This product should not be heated above 60C in the presence of aluminum due to excessive corrosion and potential chemical reaction releasing flammable hydrogen gas.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Soak up with absorbent material or sand. Scoop into container for disposal.

DISPOSAL METHOD: Burn in approved incinerator. Follow all local, state, and federal requirements for disposal.

6. HEALTH HAZARD DATA:

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

(Continued on Page 3)

(R) Indicates a Trademark of The Dow Chemical Company

* An Operating Unit of The Dow Chemical Company

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 55895

Page: 3

PRODUCT NAME: MONOETHANOLAMINE LOW FREEZING GRADE

Effective Date: 03/20/88 Date Printed: 04/19/88

MSDS:000978

6. HEALTH HAZARD DATA: (CONTINUED)

SKIN CONTACT: Short single exposure may cause skin burns.
DOT classification: corrosive.

SKIN ABSORPTION: A single prolonged exposure may result in the material being absorbed in harmful amounts. The LD50 for skin absorption in rabbits is approximately 2000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is between 1000 - 2000 mg/kg. Ingestion may cause gastrointestinal irritation or ulceration and burns of mouth and throat.

INHALATION: A single prolonged (hours) excessive inhalation exposure may cause adverse effects. Excessive exposure may cause liver and kidney injury and irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposures may cause liver and kidney injury. Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus. In animal studies, monoethanolamine has been shown not to interfere with reproduction. Results of in vitro ("test tube") mutagenicity tests on monoethanolamine have been negative.

7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician if irritation persists. Wash contaminated clothing before reuse. Destroy contaminated shoes and other leather articles.

(Continued on Page 4)

(R) Indicates a Trademark of The Dow Chemical Company

* An Operating Unit of The Dow Chemical Company

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 55895

Page: 4

PRODUCT NAME: MONOETHANOLAMINE LOW FREEZING GRADE

Effective Date: 03/20/88 Date Printed: 04/19/88

MSDS:000978

7. FIRST AID: (CONTINUED)

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

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

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending physician. Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagosopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV is 3 ppm for Monoethanolamine; STEL is 6 ppm. OSHA PEL is 3 ppm for Monoethanolamine.

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area.

EYE PROTECTION: Use chemical goggles. Wear full-face respirator to prevent contact with vapors.

(Continued on Page 5)

(R) Indicates a Trademark of The Dow Chemical Company

* An Operating Unit of The Dow Chemical Company

M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 55895

Page: 5

PRODUCT NAME: MONOETHANOLAMINE LOW FREEZING GRADE

Effective Date: 03/20/88 Date Printed: 04/19/88

MSDS:000978

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

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

An immediate health hazard
A delayed health hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent eye and skin contact. Avoid breathing vapors. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zone of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29)

MSDS STATUS: Revised Section 9.

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

* An Operating Unit of The Dow Chemical Company

MATERIAL SAFETY DATA SHEET

(Essentially similar to U.S. Department of Labor Form OSHA-20)
 An explanation of the terms used herein may be found in OSHA
 publication 2265, available from OSHA regional or area offices.
 Do Not Duplicate This Form. Request an Original.

I. PRODUCT IDENTIFICATION

PRODUCT	UCAR [®] Amine Guard Inhibitor C		
CHEMICAL NAME	Sodium metavanadate	SYNONYMS	Monosodium salt of vanadic acid
FORMULA	NaVO ₃	CHEMICAL FAMILY	Inorganic salt
		MOLECULAR WEIGHT	121.93
TRADE NAME	UCAR [®] Amine Guard Inhibitor C		

II. HAZARDOUS INGREDIENTS

MATERIAL	Wt (%)	1982 ACGIH TLV-TWA (Units)
Sodium Metavanadate	82.5	None listed (See Section IX)
Sodium Carbonate	2.5	10 mg/m ³ (Nuisance dust)
Silica	0.05	Use quartz formula
Water	15	NA
CAS No. 13718-26-8 CAS NAME: Vanadic acid (HVO ₃), sodium salt		

III. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	NA	FREEZING POINT	630°C Approx.
SPECIFIC GRAVITY (H ₂ O = 1)	> 1	VAPOR PRESSURE AT 20°C.	Nil
VAPOR DENSITY (air = 1)	NA	SOLUBILITY IN WATER, % by wt.	Appreciable
PERCENT VOLATILES BY VOLUME	Nil	EVAPORATION RATE (Butyl Acetate = 1)	Nil

APPEARANCE AND ODOR Colorless, crystalline solid; odorless.

EMERGENCY PHONE NUMBER

IN CASE OF EMERGENCIES involving this material, further information is available at all times at: 304 - 744-3487
 For routine information contact your local supplier.

Union Carbide Corporation requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

UNION CARBIDE CORPORATION ENGINEERING PRODUCTS DIVISION
 Old Ridgebury Road, Danbury, CT 06817

IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Sections II and IX

EFFECTS OF OVEREXPOSURE AND EMERGENCY AND FIRST AID PROCEDURES

ACUTE EFFECTS OF OVEREXPOSURE –

SKIN – May be fatal if absorbed through the skin, irritation from dust or solutions.

INHALATION – May be fatal if inhaled. Irritation of mucous membranes of nose and throat, cough, chest pain, pneumonia.

EYE CONTACT – Severe irritation from dust or solutions.

CHRONIC EFFECTS – Not known. Bronchitis, weakness, anemia and kidney damage may occur.

EMERGENCY AND FIRST AID PROCEDURES –

EYES – Remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

SKIN – Immediately flush with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes.

Wash clothing before re-use; discard contaminated shoes.

INHALATION – Remove to fresh air. If breathing is difficult, give oxygen. Call a physician. If breathing has stopped administer CPR, preferably with simultaneous administration of oxygen. Call a physician.

SWALLOWING – Give 2 glasses of water and provoke vomiting.

NOTES TO PHYSICIAN – All vanadates are potent irritants of mucous membranes. Most symptoms of acute poisoning relate to this irritation. Treatment is directed at relief of irritation.

V. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	NA (Solid)	AUTOIGNITION TEMPERATURE	Not determined
FLAMMABLE LIMITS IN AIR, % by volume	LOWER NA	UPPER	NA
EXTINGUISHING MEDIA Use media appropriate for surrounding fire.			

SPECIAL FIRE FIGHTING PROCEDURES

Where sodium metavanadate is involved in a fire exposure, firemen should have self-contained breathing apparatus and full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Toxic fumes may be evolved, in event of exposure to a fire.

VI. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
UNSTABLE	STABLE	
	X	None currently known

INCOMPATIBILITY (materials to avoid) None currently known

HAZARDOUS DECOMPOSITION PRODUCTS

In a fire exposure, V₂O₅ may be formed. See Section IX.

HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID
May Occur	Will not Occur	
	X	None currently known

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Wear suitable protective equipment. Collect for disposal. Toxic to fish; avoid discharge to natural waters.

WASTE DISPOSAL METHOD — Discard any product, residue, container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations.

MATERIAL SAFETY DATA SHEET

EP&P-4817-A
November 1985



An explanation of the terms used herein may be found in OSHA 29 CFR 1910.1200,
available from OSHA regional or area offices.

(Essentially similar to U.S. Department of Labor Form OSHA-20
and generally accepted in Canada for information purposes)
Do Not Duplicate This Form. Request an Original.



PRODUCT Amine Guard Inhibitor D

CHEMICAL NAME p-Nitrobenzoic Acid

SYNONYMS 4-Nitrodracylic Acid
1-carboxy-4-nitrobenzene, PNBA

FORMULA NO₂C₆H₄COOH

CHEMICAL FAMILY Aromatic Nitro

MOLECULAR WEIGHT 167.12

TRADE NAME UCAR® Amine Guard Inhibitor D

HAZARDOUS INGREDIENTS

For mixture of this product request the respective component Material Safety Data Sheets.
See Section IX.

MATERIAL (CAS NO.)	Wt. (%)	1984-1985 ACGIH TLV-TWA (OSHA-PEL)
p-Nitrobenzoic Acid (62-23-7) CAS Name: Benzoic Acid, 4-nitro	99.5	None currently established (None currently established)

PHYSICAL DATA

BOILING POINT, 760 mm. Hg	Sublimes	MELTING POINT	242°C (468°F)
DENSITY	1.597 g/cc (1597 kg/m ³) at 25°C	VAPOR PRESSURE AT 20°C.	Not Applicable
VAPOR DENSITY (air = 1)	Not Applicable	SOLUBILITY IN WATER, % by wt.	0.024
PERCENT VOLATILES BY VOLUME	Nil	EVAPORATION RATE (Butyl Acetate = 1)	Not Applicable

APPEARANCE AND ODOR Light yellow odorless crystalline solid.

EMERGENCY PHONE NUMBER

IN CASE OF EMERGENCIES involving this material, further information is available at all times:
In the USA 304 — 744-3487 In Canada 514 — 645-5311
For routine information contact your local supplier

Union Carbide requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

UNION CARBIDE CORPORATION ENGINEERING PRODUCTS & PROCESSES
UNION CARBIDE CANADA LIMITED ENGINEERING PRODUCTS & PROCESSES

THRESHOLD LIMIT VALUE: None established by ACGIH or OSHA (1983-1984).

EFFECTS OF SINGLE (ACUTE) OVEREXPOSURE:

SWALLOWING — Moderately toxic. May cause nausea, vomiting, diarrhea and abdominal discomfort.

SKIN ABSORPTION — No evidence of adverse effects from available information.

INHALATION — Causes irritation of the nose and throat, experienced as discomfort and discharge from the nose.

SKIN CONTACT — Causes moderate skin irritation seen as marked local redness with swelling.

EYE CONTACT — Causes moderate eye irritation seen as marked local redness with swelling.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE: None currently known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Breathing of dust may aggravate asthma and inflammatory or fibrotic pulmonary disease.

Because of its irritating and defatting properties, this material may aggravate an existing dermatitis.

CARCINOGENIC ASSESSMENT: It has been selected by NTP for carcinogenesis studies (Oct. 1984). Suzuki et al 1983 stated that p-nitrobenzoic acid was weakly mutagenic in the presence of norharman.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING — Drink two glasses of water, induce vomiting if the patient is conscious. Obtain medical attention.

SKIN — Remove contaminated clothing, wash skin with soap and water.

INHALATION — Remove to fresh air. If breathing is difficult, administer oxygen. See a physician.

EYES — Flush eyes with water continuously for 15 minutes. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN: *There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.*

VI. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	Not Applicable	AUTOIGNITION TEMPERATURE	396°F. Setflash closed cup ASTM D 3278
------------------------------	----------------	-----------------------------	--

FLAMMABLE LIMITS IN AIR, % by volume	LOWER Not Applicable	UPPER Not Applicable
---	-------------------------	-------------------------

EXTINGUISHING MEDIA: Use water spray, carbon dioxide, dry chemical, alcohol-type, or universal-type foams applied by manufacturers recommended techniques.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate enclosed area. Stay up-wind. Use water spray to cool containers and wet down exposed product. If contact with smoke and fumes cannot be avoided, wear butyl-rubber chemical-proof suit with hood and supplied air.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May release NO_x gases when heated. Avoid dispersion of dust in air to reduce potential explosion hazard (for dusts only).

VI. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID: Avoid high temperatures.
UNSTABLE	STABLE	
	X	

INCOMPATIBILITY (materials to avoid): Cyanides.

HAZARDOUS DECOMPOSITION PRODUCTS: May release NO_x gases when heated.

HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID: None currently known.
May Occur	Will not Occur	
	X	

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Recover by vacuum, sweep or shovel. Avoid raising a dust cloud. Wear suitable protective equipment. Sweep up spillage and place in covered drum for disposal. Flush spill area with water. Do not drain into sewers.

WASTE DISPOSAL METHOD: Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, state and local regulations.

RESPIRATORY PROTECTION (specify type) — Select in accordance with OSHA 29 CFR 1910.134. Respirators shall be acceptable to MSHA and NIOSH.

VENTILATION	LOCAL EXHAUST — Special, local ventilation may be needed, to prevent dusting at points where containers are opened and discharged.
	MECHANICAL (general) Not Applicable.
	SPECIAL — Not Applicable.
	OTHER — Not Applicable.

PROTECTIVE GLOVES: Use gloves impermeable to dust where prolonged hand contact is possible.

EYE PROTECTION: Chemical goggles.

OTHER PROTECTIVE EQUIPMENT — Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. Eye bath and safety shower.

SPECIAL PRECAUTIONS

WARNING: Store in tightly closed containers. Do not breathe dust. Wash thoroughly after handling. Do not get in eyes, on skin or clothing. May cause lung, skin or eye irritation. Wash contaminated clothing before re-use. Discard contaminated shoes. Use with adequate ventilation.

This product is for industrial use only, as directed by Union Carbide.

The opinions expressed herein are those of qualified experts within Union Carbide. 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 these opinions and the conditions of use of the product are not within the control of Union Carbide, it is the user's obligation to determine the conditions of safe use of the product.



GENERAL OFFICES

IN THE USA:
Union Carbide Corporation
Linde Division
39 Old Ridgebury Road
Danbury, CT 06817-0091

IN CANADA:
Union Carbide Canada Limited
Linde Division
123 Eglinton Avenue East
Toronto, Ontario M4P 1J3

Other offices in principal cities all over the world.

MATERIAL SAFETY DATA SHEET

METHANOL

MSDS No.
HCR001423

Rev. Date
02/18/86

LYONDELL PETROCHEMICAL COMPANY
DIVISION OF ATLANTIC RICHFIELD COMPANY
1221 MCKINNEY AVENUE, SUITE 1600
P.O. BOX 3646
HOUSTON, TEXAS 77253-3646

IMPORTANT: Read this MSDS before handling and disposing of this product and pass this information on to employees, customers, and users of this product

This product is considered a hazardous substance under the OSHA Hazard Communication Rule.

I. General

Trade Name	METHANOL	Telephone Numbers	
Other Names	METHYL ALCOHOL, WOOD ALCOHOL	EMERGENCY	
		800/424-9300	CHEMTREC
		215/353-8300	C.E.R.S.
		CUSTOMER SERVICE	
		713/652-7200	INFO ONLY
Chemical Family	ALIPHATIC ALCOHOL	DOT Hazardous Materials Proper Shipping Name	
		METHYL ALCOHOL	
Generic Name	N/P	DOT Hazard Class	
		FLAMMABLE LIQUID	
CAS No.	SEE SECTION IX	Company ID No.	UN/NA ID No.
		E000142300	UN 1230

II. DANGER Summary of Hazards SEE SUPPLEMENT BEGINNING ON PAGE 7

PHYSICAL HAZARDS:	EXTREMELY FLAMMABLE-MAY BURN WITH INVISIBLE FLAME
ACUTE HEALTH EFFECTS: (SHORT-TERM)	MODERATE INHALATION HAZARD MODERATE EYE IRRITANT MODERATE SKIN ABSORPTION HAZARD MODERATE INGESTION HAZARD. SEE SUPPLEMENT SLIGHT SKIN IRRITANT
CHRONIC HEALTH EFFECTS: (LONG-TERM)	SWALLOWING AS LITTLE AS ONE TO FOUR OUNCES OF METHANOL HAS BEEN REPORTED TO CAUSE DEATH OR SERIOUS IRREVERSIBLE INJURY SUCH AS BLINDNESS. SEE SUPPLEMENT

III. Fire and Explosion

Flash Point (Method)	Autoignition Temperature (Method)	Flammable Limits (% Vol. in Air) At Normal Atmospheric Temperature and Pressure
AP 50° F (CC)	AP 725° F	Lower AP 6 Upper AP 36

Fire and Explosion Hazards: RELEASES FLAMMABLE VAPORS BELOW NORMAL AMBIENT TEMPERATURES. WHEN MIXED WITH AIR AND EXPOSED TO IGNITION SOURCE, CAN BURN IN OPEN OR EXPLODE IF CONFINED. MIXTURES WITH WATER AND AS LITTLE AS 21% (BY VOL) METHANOL ARE STILL FLAMMABLE (FLASH PT. <100 F). UNDER SOME CIRCUMSTANCES, MAY CORRODE CERTAIN METALS, INCLUDING ALUMINUM AND ZINC, AND GENERATE HYDROGEN GAS.

Extinguishing Media	DRY CHEMICAL CO2 WATERSPRAY FOAM FOR ALCOHOLS	WATER FOG
---------------------	--	-----------

Special Firefighting Procedures: A METHANOL FIRE MAY NOT BE VISIBLE TO THE NAKED EYE. DO NOT ENTER FIRE AREA W/O PROPER PROTECTION. SEE SECTION X - DECOMPOSITION PRODUCTS POSSIBLE. FIGHT FIRE FROM SAFE DISTANCE/PROTECTED LOCATION. HEAT MAY BUILD PRESSURE/ RUPTURE CLOSED CONTAINERS, SPREADING FIRE, INCREASING RISK OF BURNS/ INJURIES. APPLY AQUEOUS EXTINGUISHING MEDIA CAREFULLY TO AVOID FROTHING AND LIMIT EXPOSURE OF NEARBY EQUIPMENT. NOTIFY AUTHORITIES IF LIQUID ENTERS SEWER/PUBLIC WATERS.

IV. Health Hazards

SEE SUPPLEMENT
BEGINNING ON PAGE 7

Summary of Hazards MODERATE HEALTH HAZARD - SEE BELOW FOR ROUTE-SPECIFIC DETAILS.

ROUTE OF EXPOSURE	SIGNS AND SYMPTOMS	Primary Route(s)
Inhalation	OVEREXPOSURE MAY CAUSE COUGHING, SHORTNESS OF BREATH, DIZZINESS, INTOXICATION AND COLLAPSE.	<input checked="" type="checkbox"/>
Eye Contact	MAY CAUSE MODERATE IRRITATION, INCLUDING BURNING SENSATION, TEARING, REDNESS OR SWELLING.	<input checked="" type="checkbox"/>
Skin Absorption	EXPOSURE TO THIS MATERIAL CAN RESULT IN ABSORPTION THROUGH SKIN CAUSING HEALTH HAZARD.	<input checked="" type="checkbox"/>
Skin Irritation	MAY PRODUCE SKIN IRRITATION.	<input type="checkbox"/>
Ingestion	SEE SUPPLEMENT	<input checked="" type="checkbox"/>
Summary of Chronic Hazards and Special Health Effects	SEE SUPPLEMENT	
	SEE SUPPLEMENT	

V. Protective Equipment and Other Control Measures

Respiratory	DO NOT USE AIR-PURIFYING RESPIRATOR. ONLY NIOSH/MSHA APPROVED SUPPLIED AIR OR SELF-CONTAINED BREATHING APPARATUS OPERATED IN POSITIVE PRESSURE MODE ARE SATISFACTORY.
Eye	EYE PROTECTION SUCH AS CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD MUST BE WORN WHEN POSSIBILITY EXISTS FOR EYE CONTACT DUE TO SPLASHING OR SPRAYING LIQUID, AIRBORNE PARTICLES, OR VAPOR. CONTACT LENSES SHOULD NOT BE WORN.
Skin	WHEN SKIN CONTACT IS POSSIBLE, PROTECTIVE CLOTHING INCLUDING GLOVES, APRON, SLEEVES, BOOTS, HEAD AND FACE PROTECTION SHOULD BE WORN. THIS EQUIPMENT MUST BE CLEANED THOROUGHLY AFTER EACH USE.
Engineering Controls	GENERAL ROOM OR LOCAL EXHAUST VENTILATION IS USUALLY REQUIRED TO MEET EXPOSURE STANDARD(S).
Other Hygienic and Work Practices	EMERGENCY EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE IN THE IMMEDIATE VICINITY OF ANY POTENTIAL EXPOSURE. USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES. PROMPTLY REMOVE SOILED CLOTHING/WASH THOROUGHLY BEFORE REUSE. SHOWER AFTER WORK USING PLENTY OF SOAP AND WATER.

VI. Occupational Exposure Limits

Substance	Source	Date	Type	Value/Units	Time
METHYL ALCOHOL - SKIN	ACGIH	1984	TWA	200 PPM	8 HRS
			STEL	250 PPM	15 MIN
	OSHA	1971	TWA	200 PPM	8 HRS



METHANOL

MSDS No.
HCROO1423
Rev. Date
02/18/86

VII. Emergency and First Aid

Inhalation	IF OVERCOME BY EXPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE OXYGEN OR ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
Eye Contact	IN CASE OF EYE CONTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30 MINUTES. RETRACT EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION.
Skin Contact	IMMEDIATELY REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD SOAP/WATER. FLUSH W/LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATERLESS CLEANER FIRST. SEEK MEDICAL ATTENTION IF ILL EFFECT OR IRRITATION DEVELOPS.
Ingestion	IF SWALLOWED, GIVE LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ALERT. INDUCE VOMITING. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
Emergency Medical Treatment Procedures	METHANOL INGESTION IS LIFE-THREATENING. INDUCE VOMITING WITH SYRUP OF IPECAC. FOLLOW EMESIS WITH MODERATE AMOUNTS OF WATER ORALLY. SYMPTOM ONSET MAY BE DELAYED. ETHANOL THERAPY MAY BE INDICATED.

VIII. Spill and Disposal

Precautions if Material is Spilled or Released	EXTREMELY FLAMMABLE LIQUID. RELEASE CAUSES IMMEDIATE FIRE/EXPLOSION HAZARD. LIQUIDS/VAPORS MAY IGNITE. EVACUATE/LIMIT ACCESS. EQUIP RESPONDERS WITH PROPER PROTECTION (SEE SEC. V). KILL ALL IGNITION SOURCES. STOP RELEASE. PREVENT FLOW TO SEWERS/PUBLIC WATERS. RESTRICT WATER USE FOR CLEANUP. NOTIFY FIRE/ENVIRONMENTAL AUTHORITIES. IMPOUND/RECOVER LARGE LAND SPILL. BLANKET WITH FIREFIGHTING FOAM (SEE SEC. III). SOAK UP SMALL SPILL WITH INERT SOLIDS. USE SUITABLE DISPOSAL CONTAINERS. ON WATER, MATERIAL SOLUBLE/MAY FLOAT OR SINK. MAY BIODEGRADE. CONTAIN/MINIMIZE DISPERSION/COLLECT. DISPERSE RESIDUE TO REDUCE AQUATIC HARM. REPORT PER REGULATORY REQUIREMENTS.
Waste Disposal Methods	CONTAMINATED PRODUCT/SOIL/WATER MAY BE RCRA/OSHA HAZARDOUS WASTE (SEE 40 CFR 261 AND 29 CFR 1910). IF SPENT SOLVENT INTENDED FOR DISPOSAL, MAY BE DESIGNATED F005; IF SPILL CLEANUP RESIDUE, U154 UNDER RCRA LISTINGS. LAND-FILL SOLIDS AT PERMITTED SITES. USE REGISTERED TRANSPORTERS. BURN CONCENTRATED LIQUIDS IN SYSTEMS DESIGNED FOR LOW FLASH POINT MATERIAL. AVOID FLAMEOUTS. ASSURE EMISSIONS COMPLY WITH APPLICABLE REGULATIONS. DILUTE AQUEOUS WASTE MAY BIODEGRADE. AVOID OVERLOADING/POISONING PLANT BIOMASS. ASSURE EFFLUENT COMPLIES WITH APPLICABLE REGULATIONS.

IX. Components (This may not be a complete list of components.)

Component Name	CAS No.	Carcinogen##	Composition amount (Wt.) (See Qualification on Page 4)
METHANOL	67-56-1	N/AP GT	99 PERCENT

##Listed By: 1 = NTP, 2 = IARC, 3 = OSHA, 4 = Other

Compositions given are typical values, not specifications.

X. Physical and Chemical Data

Boiling Point (At 760.0 mm Hg) AP 147° F	Viscosity Units, Temp. (Method) N/AP	Dry Point N/AP
Freezing Point AP -144° F	Vapor Pressure (MM HG AT 68° F) AP 96	Volatile Characteristics MODERATE
Specific Gravity (H ₂ O = 1 at 39.2° F) AP 0.79	Vapor Sp.Gr. (Air = 1.0 at 60° - 90° F) AP 1.1	Solubility in Water COMPLETE
	pH N/AP	
Hazardous Polymerization NOT EXPECTED TO OCCUR	Other Chemical Reactivity N/P	Stability STABLE
Other Physical and Chemical Properties N/P		
Appearance and Odor	CLEAR, COLORLESS LIQUID; FAINT ALCOHOL ODOR; ODOR IS NOT A GOOD INDICATOR OF EXPOSURE LEVEL.	
Conditions to Avoid	HEAT, SPARKS, OPEN FLAME, OXIDIZING CONDITIONS	
Materials to Avoid	STRONG OXIDIZING AGENTS; ALUMINUM; ZINC; ANY REACTIVE METAL WHICH WILL DISPLACE HYDROGEN; CERTAIN FORMS OF PLASTICS, RUBBER AND COATINGS	
Hazardous Decomposition Products	INCOMPLETE COMBUSTION WILL GENERATE HIGHLY POISONOUS CARBON MONOXIDE AND PERHAPS OTHER TOXIC VAPORS SUCH AS FORMALDEHYDE.	

XI. Additional Precautions

Handling, Storage and Decontamination Procedures	<p>STORE ONLY IN TIGHTLY CLOSED/ PROPERLY VENTED CONTAINERS AWAY FROM HEAT/ SPARKS/OPEN FLAMES/STRONG OXIDIZING AGENTS. USE ONLY NON-SPARKING TOOLS. BLANKET STORAGE WITH DRY INERT GAS. STORE DRUMS WITH BUNG IN UP POSITION. CAREFULLY VENT INTERNAL PRESSURE BEFORE REMOVING CLOSURE. GROUND CONTAINERS BEFORE TRANSFER. WILL ABSORB ATMOSPHERIC MOISTURE. ELECTRICAL EQUIPMENT SHOULD CONFORM TO NATIONAL ELECTRIC CODE. CARBON STEEL IS SATISFACTORY MATERIAL OF CONSTRUCTION. DO NOT STORE IN ALUMINUM OR ZINC (GALVANIZED). HANDLE "EMPTY" DRUMS WITH CARE/VAPOR RESIDUE MAY BE FLAMMABLE/POISONOUS.</p> <p>ISOLATE, VENT, DRAIN, WASH AND PURGE SYSTEMS OR EQUIPMENT BEFORE MAINTENANCE OR REPAIR. REMOVE ALL IGNITION SOURCES. CHECK ATMOSPHERE FOR EXPLOSION-PRONENESS AND OXYGEN DEFICIENCIES. USE ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. OBSERVE PRECAUTIONS PERTAINING TO CONFINED SPACE ENTRY.</p>
--	---

SOME OF THE INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE MATERIAL ITSELF

General Comments

-- Note -- Qualifications: EQ = Equal AP = Approximately N/P = No Applicable Information Found
 LT = Less Than UK = Unknown N/AP = Not Applicable
 GT = Greater Than TR = Trace N/DA = No Data Available

Disclaimer of Liability

The information in this MSDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.



METHANOL

MSDS No
HCROO1423
Rev. Date
02/18/86

XII.

Component Health Hazards

Component Name	Component Health Hazards	
METHANOL	SLIGHT SKIN IRRITANT MODERATE HEALTH HAZARD	MODERATE EYE IRRITANT CNS DEPRESSANT



METHANOL

MSDS No.
HCR001423
Rev. Date
02/18/86

XIII.

Label Information

Manufacturer:	LYONDELL PETROCHEMICAL COMPANY DIVISION OF ATLANTIC RICHFIELD COMPANY 1221 MCKINNEY AVENUE, SUITE 1600 P.O. BOX 3646 HOUSTON, TEXAS 77253-3646	Telephone Numbers EMERGENCY 800/424-9300 CHEMTREC 215/353-8300 C.E.R.S. CUSTOMER SERVICE 713/652-7200 INFO ONLY
----------------------	--	---

Use Statement: FOR INDUSTRIAL USE ONLY
KEEP OUT OF REACH OF CHILDREN

Signal Word: DANGER

Physical Hazards:
EXTREMELY FLAMMABLE

Health Hazards: INHALATION HAZARD SKIN CONTACT HAZARD INGESTION HAZARD	EYE IRRITANT SKIN IRRITANT MAY CAUSE LONG-TERM ADVERSE HEALTH EFFECTS
--	---

Precautionary Measures: DO NOT HANDLE NEAR HEAT, SPARKS, OR OPEN FLAME.
KEEP CONTAINER CLOSED WHEN NOT IN USE.
DO NOT STORE NEAR COMBUSTIBLE MATERIALS.
AVOID CONTACT WITH EYES.
AVOID PROLONGED OR REPEATED BREATHING OF VAPOR.
AVOID PROLONGED OR REPEATED CONTACT WITH SKIN.
USE ONLY WITH ADEQUATE VENTILATION/PERSONAL PROTECTION.
PREVENT CONTACT WITH FOOD, CHEWING, OR SMOKING MATERIALS.
WASH THOROUGHLY AFTER HANDLING.
DO NOT TASTE/SWALLOW.

DOT Information: Hazard Class- Proper Shipping-	UN/NA ID Number- UN 1230 FLAMMABLE LIQUID METHYL ALCOHOL
--	--

Instructions: In case of fire, use-	DRY CHEMICAL CO2 WATERSPRAY	WATER FOG
---	-----------------------------------	-----------

First Aid	-Inhalation	IF OVERCOME BY EXPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE OXYGEN OR ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
	-Eye Contact	IN CASE OF EYE CONTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30 MINUTES. RETRACT EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION.
	-Skin Contact	IMMEDIATELY REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD SOAP/WATER. FLUSH W/LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATERLESS CLEANER FIRST. SEEK MEDICAL ATTENTION IF ILL EFFECT OR IRRITATION DEVELOPS.
	-Ingestion	IF SWALLOWED, GIVE LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ALERT. INDUCE VOMITING. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.
In case of spill,		EXTREMELY FLAMMABLE LIQUID. RELEASE CAUSES IMMEDIATE FIRE/EXPLOSION HAZARD. EXTINGUISH ALL IGNITION SOURCES. IMPOUND/RECOVER LARGE LAND SPILL; SOAK UP SMALL SPILL. ON WATER, MAY BIODEGRADE. CONTAIN/MINIMIZE DISPERSION/COLLECT. REPORT PER REGULATORY REQUIREMENTS.

Protective Equipment:	
-Respiratory	USE NIOSH/MSHA APPROVED SUPPLIED AIR OR SELF-CONTAINED BREATHING APPARATUS
-Eye	CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD.
-Skin	PROTECTIVE CLOTHING INCLUDING GLOVES, APRON, SLEEVES, BOOTS, AND FULL HEAD/FACE PROTECTION.



METHANOL

MSDS No.
HCRO01423
Rev. Date
02/18/86

XIV.

Supplement

ACUTE AND CHRONIC HEALTH EFFECTS

SWALLOWING AS LITTLE AS 1 TO 4 OUNCES OF METHANOL HAS BEEN REPORTED TO CAUSE DEATH OR SERIOUS IRREVERSIBLE INJURY SUCH AS BLINDNESS IN HUMANS. STUDIES IN EXPERIMENTAL ANIMALS INDICATE THAT THE METABOLISM OF METHANOL TO FORMIC ACID RESULTS IN METABOLIC ACIDOSIS AND REVERSIBLE OR IRREVERSIBLE DAMAGE TO THE OPTIC NERVE. SEE THE MEDICAL TREATMENT SECTION OF THIS DATA SHEET FOR INFORMATION ON TREATING METHANOL POISONING.

A RECENT ARTICLE HAS REPORTED EFFECTS OF EXPOSURE TO METHANOL VAPORS (AM. IND. HYG. ASSOC., J. 45(1): 57-55, 1984). IN THIS REPORT TEACHERS AIDES EXPOSED TO METHANOL VAPORS (365-3080 PPM) IN DIRECT-PROCESS SPIRIT DUPLICATING OPERATIONS REPORTED SIGNIFICANTLY MORE OF THE FOLLOWING COMPLAINTS THAN A COMPARISON GROUP: BLURRED VISION, HEADACHE, DIZZINESS, AND NAUSEA.

SPECIAL HEALTH EFFECTS

INGESTION OF THIS PRODUCT, EVEN IN SMALL AMOUNTS, CAN CAUSE BLINDNESS AND DEATH. ONSET OF SYMPTOMS MAY BE DELAYED FOR 18-24 HOURS; TREATMENT PRIOR TO ONSET OF OBVIOUS SYMPTOMS MAY BE LIFE-SAVING. METHANOL IS RAPIDLY ABSORBED AND EMESIS SHOULD BE INITIATED EARLY TO BE EFFECTIVE, WITHIN 30 MINUTES OF INGESTION, IF POSSIBLE. ADMINISTER SYRUP OF IPECAC. AFTER THE DOSE IS GIVEN, ENCOURAGE PATIENT TO TAKE 6-8 OUNCES OF CLEAR NON-CARBONATED FLUID. DOSE MAY BE REPEATED ONCE IF EMESIS DOES NOT OCCUR WITHIN 20-30 MINUTES. ADMINISTRATION OF AN AQUEOUS SLURRY OF ACTIVATED CHARCOAL WITH MAGNESIUM CIRTATE OR SORBITOL AS A CATHARTIC HAS BEEN REPORTED HELPFUL.

ETHANOL INHIBITS THE FORMATION OF TOXIC METABOLITES. IF ETHANOL THERAPY IS INDICATED, ADMINISTER A LOADING DOSE OF 7.6-10 ML/KG OF BODY WEIGHT OF 10% ETOH IN D5W OVER 30-60 MINUTES. MAINTENANCE DOSE IS 1.4 ML/KG/HR OF 10% ETOH, TO ACHIEVE A 100-130 MG/DL BLOOD ETOH LEVEL DURING ETHANOL THERAPY. (IF CHARCOAL IS ADMINISTERED, ETHANOL SHOULD BE ADMINISTERED INTRAVENOUSLY AND NOT ORALLY.)

MAINTAIN CONTACT WITH POISON CONTROL CENTER DURING ALL ASPECTS OF DIAGNOSIS AND TREATMENT.

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 25576

Page: 1

PRODUCT NAME: ~~DOWTHERM~~ (R) A HEAT TRANSFER FLUID

Effective Date: 06/06/85 Date Printed: 11/19/86

MSDS:000412

1. INGREDIENTS:

Diphenyl oxide (phenyl ether)	CAS# 000101-84-8	73%
Diphenyl (biphenyl)	CAS# 000092-52-4	27%

Substances listed in the Ingredients Section are those identified as being present at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens cited in OSHA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200 (I).

2. PHYSICAL DATA:

BOILING POINT: 495F, 257C
VAP PRESS: 0.022 mmHg @ 25C
VAP DENSITY: > 1

SOL. IN WATER: 13.8ppm @ 60F
SP. GRAVITY: 1.050-1.075 @ 25/25C
APPEARANCE: Straw-colored liquid.
ODOR: Aromatic odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 255F, 124C
METHOD USED: COC

FLAMMABLE LIMITS
LFL: 0.6% (250F)
UFL: 6.2% (320F)

EXTINGUISHING MEDIA: Water fog, foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Not available.

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company

PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 06/06/85 Date Printed: 11/19/86

MSDS:000412

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Positive pressure self-contained breathing apparatus may be needed in enclosed spaces.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Excellent thermal stability characteristics at typical use temperatures.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: As with all commercially available aromatic heat transfer fluids, the potential exists for trace amounts of benzene to form when used at elevated temperatures. Similarly, with this product, small amounts of phenol may form. Both components are likely to concentrate in the vent pipe header.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Dike to contain spill. Recover if possible. Small spills can be covered with absorbent material.

DISPOSAL METHOD: Incineration in approved equipment in accordance with applicable federal, state and local regulations.

6. HEALTH HAZARD DATA:

EYE: May cause pain. May cause slight transient eye irritation.

SKIN CONTACT: Short single exposure not likely to cause significant skin irritation. Prolonged or repeated exposure may cause skin irritation. Caution required when maintaining vent piping due to potential presence of phenol.

(Continued on Page 3)

(R) Indicates a trademark of The Dow Chemical Company

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 25576

Page: 3

PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 06/06/85 Date Printed: 11/19/86

MSDS:000412

6. HEALTH HAZARD DATA: (CONTINUED)

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. The LD50 for rats is >2000 mg/kg. Ingestion of large amounts may cause headache, vomiting, and diarrhea. (Also see systemic section)

INHALATION: Excessive exposure may cause irritation to upper respiratory tract and lungs, nausea and/or vomiting.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposures may cause liver and kidney effects, and central and peripheral nervous disorders. Available data are inadequate to evaluate carcinogenicity. No data on components other than biphenyl, which did not produce birth defects in laboratory animals, however, at excessive doses, did cause other toxic effects on the mother and fetus. Results of in vitro ("test tube") mutagenicity tests have been negative. Results of mutagenicity tests on biphenyl in animals have been negative.

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower. Wash contaminated clothing before reuse.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical.

INHALATION: Remove to fresh air if effects occur. Consult medical.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

(Continued on Page 4)

(R) Indicates a trademark of The Dow Chemical Company

PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 06/06/85 Date Printed: 11/19/86

MSDS:000412

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV is 0.2 ppm for biphenyl; 1 ppm for phenol ether vapor. OSHA PEL is 1 ppm for phenyl ether biphenyl mixture & vapor.

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

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur, such as during vent header maintenance.

EYE PROTECTION: Use safety glasses.

9. ADDITIONAL INFORMATION:**SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:**

Practice reasonable care and caution. Avoid breathing vapors if generated. Avoid direct contamination of water because of fish toxicity.

MSDS STATUS: Revised 1 and 4.

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

RECEIVED BY: DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOXICOLOGY
PRODUCT SAFETY AND COMPLIANCE
MOBIL CORPORATION
PO BOX 400000
NEW YORK, NEW YORK 10017

***** PROJECT IDENTIFICATION *****
MOBIL SORBEBAD W

MANUFACTURER:

(212) 883-4242

EMERGENCY TELEPHONE:

CHEMICAL NAMES AND SYNONYMS:
MINERALS

OTHER DESIGNATION:
(TRN 875021)

USE OR DESCRIPTION:
DESICCANTS

DESCRIPTIVE FORMULA:
SEE INGREDIENTS BELOW

***** TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE:

HARD BEADS SOLID

VISCOSITY: AT 100 F, SUS

N/A

AT 40 C, CS

N/A

ODOR:

MILD

VISCOSITY: AT 210 F, SUS

N/A

AT 100 C, CS

N/A

RELATIVE DENSITY: 15/4 C

N/A

SOLUBILITY IN WATER:

NEGLECTIBLE

PH:

N/A

MELTING POINT: F(C)

N/A

POUR POINT: F(C)

N/A

BOILING POINT: F(C)

N/A

FLASH: F(C)

N/A

VAPOR PRESSURE: MM HG 20C

N/A

***** INGREDIENTS *****

HAZARDOUS INGREDIENTS:

WT PCT

TLV(NOTES):

MG/M3

PPM

SILICA GEL

ALUMINA

~ 95

20 MPPCF

10.0

We believe all information given in this form is accurate and is offered in good faith, but without guarantee. Since conditions of use and suitability of the product covered herein for particular uses are beyond our control, all risks of use of the product covered herein are assumed by the user and we expressly disclaim all warranties of every kind and nature, including the warranties of MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT COVERED IN THIS FORM. Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending license under valid patents.

Where the information provided herein discloses a potential hazard or hazardous ingredient, adequate warning should be provided to employees and users and appropriate precautions taken including the practice of good industrial hygiene.

***** SPILL OR LEAK PROCEDURE *****

ENVIRONMENTAL IMPACT:

REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 300-424-8302.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:

SHOVEL UP AND DISPOSE OF IN APPROVED HAZARDOUS WASTE DISPOSAL FACILITY.

WASTE DISPOSAL METHODS:

DISPOSE OF WASTE IN APPROVED HAZARDOUS WASTE DISPOSAL FACILITY.

***** SPECIAL PROTECTION INFORMATION *****

EYE PROTECTION:

NORMAL INDUSTRIAL EYE PROTECTION PRACTICES SHOULD BE EMPLOYED.

SKIN PROTECTION:

NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

RESPIRATORY PROTECTION:

PROPER NIOSH/MESA APPROVED DUST RESPIRATORS MUST BE USED FOR DUSTY CONDITIONS.

VENTILATION:

OVERRIDE USE IN WELL VENTILATED AREA WITH LOCAL EXHAUST VENTILATION.

OTHER:

STORE IN A COOL AREA.

***** SPECIAL PRECAUTIONS *****

HANDLING AND STORING:

HANDLING: NO SPECIAL PRECAUTIONS REQUIRED.

FLASH POINT: (FCC) (METHOD) FLAMMABLE LIMITS: LEL UEL
N/A N/A N/A

EXTINGUISHING MEDIA:

SPECIAL FIRE FIGHTING PROCEDURES:
THE MATERIAL WILL NOT BURN.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE

***** HEALTH HAZARD DATA *****

THRESHOLD LIMIT VALUE: (NOT REQUIRED FOR MIXTURES)

EFFECTS OF OVEREXPOSURE:
SLIGHT EYE IRRITATION.

***** EMERGENCY AND FIRST AID PROCEDURES *****

EYE CONTACT:
FLUSH WITH WATER.

SKIN CONTACT:
WASH CONTACT AREAS WITH SOAP AND WATER.

INHALATION:
REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCURS, SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.

INGESTION:
NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE SEEK MEDICAL ASSISTANCE

***** REACTIVITY DATA *****

STABILITY: (THERMAL, LIGHT, ETC.) CONDITIONS TO AVOID:
STABLE STRONG OXIDATION

INCOMPATIBILITY: (MATERIALS TO AVOID)
STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS:
NONE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

***** TOXICOLOGICAL DATA *****

ACUTE

ORAL TOXICITY: (RATS)

LD50: > 15 G/KG NONTOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY: (RABBITS)

LD50: > 8 G/KG NONTOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY: (RATS)

SLIGHTLY TOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION: (RABBITS)

EXPECTED TO CAUSE SLIGHT IRRITATION. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION: (RABBITS)

EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SUBACUTE AND MUTAGENICITY (SUMMARY)

CHRONIC OR SPECIALIZED (SUMMARY)

OTHER DATA

FILE CODES: (MOBIL USE ONLY)

3-79

PREPARED BY:

DATE:

ISSUED BY
 DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOXICOLOGY
 PRODUCT SAFETY AND COMPLIANCE
 MOBIL CORPORATION
 100 EAST 42ND STREET
 NEW YORK, NEW YORK 10017

***** PRODUCT IDENTIFICATION *****
MOBIL SORBEAD R

MANUFACTURER: (212) 833-4242	EMERGENCY TELEPHONE:
CHEMICAL NAMES AND SYNONYMS: MINERALS	OTHER DESIGNATION: (IRN 875013)
USE OR DESCRIPTION: DESICCANTS	DESCRIPTIVE FORMULA: SEE INGREDIENTS BELOW

***** TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE: HARD BEADS SOLID	VISCOSITY: AT 100 F, SUS N/A	AT 40 C, CS N/A
ODOR: MILD	VISCOSITY: AT 210 F, SUS N/A	AT 100 C, CS N/A
RELATIVE DENSITY: 15/4 C N/A	SOLUBILITY IN WATER: NEGLECTIBLE	PH: N/A
MELTING POINT: F(C) N/A	POUR POINT: F(C) N/A	
BOILING POINT: F(C) N/A	FLASH: F(C) N/A	
VAPOR PRESSURE: MM HG 20C N/A		

***** INGREDIENTS *****

HAZARDOUS INGREDIENTS:	WT PCT	TLV (NOTES):	MG/M3	PPM
SILICA GEL	~ 95	20 MPPCF		
ALUMINA	~ 2		10.0	

We believe all information given in this form is accurate and is offered in good faith, but without guarantee. Since conditions of use and suitability of the product covered herein for particular uses are beyond our control, all risks of use of the product covered herein are assumed by the user and we EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT COVERED IN THIS FORM. Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending license under valid patents.

Where the information provided herein discloses a potential hazard or hazardous ingredient, adequate warning should be provided to employees and users, and appropriate precautions taken including the practice of good industrial hygiene.

***** FIRE AND EXPLOSION HAZARD DATA *****

FLASH POINT: F(C) (METHOD) N/A
EXTINGUISHING MEDIA: N/A

FLAMMABLE LIMITS: LEL N/A UEL N/A

SPECIAL FIRE-FIGHTING PROCEDURES:
THE MATERIAL WILL NOT BURN.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE

***** HEALTH HAZARD DATA *****
THRESHOLD LIMIT VALUE: (NOT REQUIRED FOR MIXTURES)

EFFECTS OF OVEREXPOSURE:
SLIGHT EYE IRRITATION.

***** EMERGENCY AND FIRST AID PROCEDURES *****

EYE CONTACT:
FLUSH WITH WATER.

SKIN CONTACT:
WASH CONTACT AREAS WITH SOAP AND WATER.

INHALATION:
REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCURS, SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.

INGESTION:
NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE SEEK MEDICAL ASSISTANCE

***** REACTIVITY DATA *****
STABILITY: (THERMAL, LIGHT, ETC.) CONDITIONS TO AVOID:
STABLE STRONG OXIDATION

INCOMPATIBILITY: (MATERIALS TO AVOID)
STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS:
NONE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID:

***** SPILL OR LEAK PROCEDURE *****

ENVIRONMENTAL IMPACT:

REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8302.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:

SHOVEL UP AND DISPOSE OF IN APPROVED HAZARDOUS WASTE DISPOSAL FACILITY.

WASTE DISPOSAL METHODS:

DISPOSE OF WASTE IN APPROVED HAZARDOUS WASTE DISPOSAL FACILITY.

***** SPECIAL PROTECTION INFORMATION *****

EYE PROTECTION:

NORMAL INDUSTRIAL EYE PROTECTION PRACTICES SHOULD BE EMPLOYED.

SKIN PROTECTION:

NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

RESPIRATORY PROTECTION:

PROPER NIOSH/MESA APPROVED DUST RESPIRATORS MUST BE USED FOR DUSTY CONDITIONS.

VENTILATION:

OVERRIDE USE IN WELL VENTILATED AREA WITH LOCAL EXHAUST VENTILATION.

OTHER:

STORE IN A COOL AREA.

***** SPECIAL PRECAUTIONS *****

HANDLING AND STORING:

HANDLING: NO SPECIAL PRECAUTIONS REQUIRED.

***** TOXICOLOGICAL DATA *****

ACUTE

ORAL TOXICITY: (RATS)

LD50: > 15 G/KG NONTOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY: (RABBITS)

LD50: > 8 G/KG NONTOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY: (RATS)

SLIGHTLY TOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION: (RABBITS)

EXPECTED TO CAUSE SLIGHT IRRITATION. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION: (RABBITS)

EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SUBACUTE AND MUTAGENICITY (SUMMARY)

CHRONIC OR SPECIALIZED (SUMMARY)

OTHER DATA

FILE CODES: (MOBIL USE ONLY)

11 3-79

PREPARED BY:

Andrew E. Barton

DATE:

MAY 7 1980

M A T E R I A L S A F E T Y D A T A S H E E T P A G E : 1
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 11 JUN 81

PRODUCT CODE: 87792

PRODUCT NAME: TRIETHYLENE GLYCOL - TECHNICAL

MSD: 0271

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : X :
TRIETHYLENE GLYCOL : 99 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 545.9F; 286C : SOL. IN WATER: COMPLETELY MISCIBLE
VAP PRESS: < 1.0 MMHG @ 20C : SP. GRAVITY: 1.1 @ 25/25C
VAP DENSITY (AIR=1): 5.18 : % VOLATILE BY VOL: NOT APPLICABLE
APPEARANCE AND ODOR: COLORLESS LIQUID, MILD ODOR.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 350F; 177C : FLAMMABLE LIMITS (STP IN AIR)
METHOD USED: PENSKY-MARTENS C.C. : LFL: 0.9% UFL: 9.2%
EXTINGUISHING MEDIA: WATER FOG, ALCOHOL FOAM, CO2, DRY CHEMICAL.
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: ----

SECTION 3

REACTIVITY DATA

STABILITY: WILL IGNITE IN AIR AT 700F.
INCOMPATIBILITY: OXIDIZING MATERIAL.
HAZARDOUS DECOMPOSITION PRODUCTS: ----
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): FOR LARGE
SPILLS, USE CONTAINMENT DIKE TO PREVENT WATER POLLUTION. RECOVER
WITH VACUUM TRUCK. SMALL AMOUNTS CAN BE SOAKED UP WITH ABSORBENT
MATERIAL AND SHOVELED INTO DRUMS. WASH DOWN REMAINING SMALL AMOUNT
WITH WATER.
DISPOSAL METHOD: RECOVER LARGE QUANTITIES BY REPROCESSING OR BURN
ACCORDING TO LOCAL LAWS.

SECTION 5

HEALTH HAZARD DATA

(CONTINUED ON PAGE 2)
(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 11 JUN 81
PRODUCT (CONT'D): TRIETHYLENE GLYCOL - TECHNICAL

PRODUCT CODE: 87792
MSD: 0271

SECTION 5 HEALTH HAZARD DATA (CONTINUED)

INGESTION: VERY LOW IN SINGLE DOSE ORAL TOXICITY.
EYE CONTACT: UP TO SLIGHT IRRITATION, NO CORNEAL INJURY LIKELY.
SKIN CONTACT: PROLONGED AND REPEATED CONTACT: SLIGHT IRRITATION.
SKIN ABSORPTION: NOT LIKELY TO BE ABSORBED IN TOXIC AMOUNTS.
INHALATION: NO GUIDE FOR CONTROL ESTABLISHED. LOW VOLATILITY AND HAZARD.
EFFECTS OF OVEREXPOSURE: ----

SECTION 6 FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.
SKIN: CONTACT WILL PROBABLY CAUSE NO MORE THAN IRRITATION. WASH OFF IN FLOWING WATER OR SHOWER.
INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.
INGESTION: LOW IN TOXICITY. INDUCE VOMITING IF LARGE AMOUNTS ARE INGESTED.
NOTE TO PHYSICIAN:
EYES: INJURY IS UNLIKELY. MAY CAUSE MILD IRRITATION.
SKIN: MAY CAUSE MILD IRRITATION. INJURY IS UNLIKELY. NOT LIKELY TO BE ABSORBED IN ACUTELY TOXIC AMOUNTS.
RESPIRATORY: LOW VOLATILITY.
ORAL: LOW IN TOXICITY.
SYSTEMIC: PROBABLY WOULD PRODUCE NO MORE THAN MILD ILLNESS WITH SPONTANEOUS RECOVERY. NO SPECIFIC ANTIDOTE. TREATMENT BASED ON SOUND JUDGMENT OF PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: GOOD ROOM VENTILATION USUALLY ADEQUATE FOR MOST OPERATIONS.
RESPIRATORY PROTECTION: NONE LIKELY TO BE REQUIRED.
PROTECTIVE CLOTHING: CLEAN CLOTHING.
EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PRACTICE REASONABLE CARE TO AVOID EXPOSURE.

(CONTINUED ON PAGE 3)

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L S A F E T Y D A T A S H E E T P A G E : 3
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 11 JUN 81

PRODUCT CODE: 67792

PRODUCT (CONT'D): TRIETHYLENE GLYCOL - TECHNICAL

MSD: 0271

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION (CONTINUED)

ADDITIONAL INFORMATION: 11 JUN 81 REVISIONS OF 31 MAY 78 --
SECTIONS 5 AND 6.

LAST PAGE

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,
EXPRESSED OR IMPLIED, IS MADE.

ASARCO

SULFURIC ACID

**MATERIAL SAFETY
DATA SHEET**

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM) Sulfuric Acid, Oil of Vitriol		ASARCO PRODUCT CODE # 1860		
CHEMICAL NAME Sulfuric Acid, Oil of Vitriol				
FORMULA H ₂ SO ₄		MOLECULAR WEIGHT 98.08		
ADDRESS (No., STREET, CITY, STATE AND ZIP CODE) ASARCO 180 Maiden Lane New York, New York 10038 Phone: 212-510-2000				
CONTACT		PHONE NUMBER	ISSUED DATE	REVISED DATE
General Information - Department of Environmental Sciences		DAY 801-262-2459 NIGHT 801-943-1754	1/ 7/83	5/ 5/87
First Aid Information - (Dr. C. H. Hine)		DAY 415-777-2213 NIGHT 415-777-2214		
Transportation Emergencies - CHEMTREC		800-424-9300		

B. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	C.A.S. #	WT. %	PERMISSIBLE AIR CONCENTRATION
Sulfuric acid	7664-93-9	93-99	1.0 mg/cu.m.

OSHA ACGIH
 OTHER

C. FIRST AID MEASURES

Inhalation: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing with difficulty, give oxygen.

Ingestion: Drink large amounts of water (or milk, if available) to dilute the acid. DO NOT INDUCE VOMITTING!

Skin or eye: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing.

GET PROMPT MEDICAL ATTENTION.

D. HAZARDS INFORMATION**HEALTH**

INHALATION of fumes or mists can cause irritation or corrosive burns to the upper respiratory system. Lung irritation and pulmonary edema can occur.

INGESTION can cause irritation and corrosive burns to throat, mouth, and stomach. Can be fatal if swallowed.

SKIN
Causes severe burns or irritation on skin contact.

EYES
Liquid contact can cause irritation, corneal burns, and conjunctivitis. Blindness may result, or severe or permanent injury. Mist contact may irritate or burn.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED
Acute and chronic respiratory diseases.

UNUSUAL CHRONIC TOXICITY
Long term exposure to high levels of acid fumes may cause erosion of teeth followed by jaw necrosis, bronchial irritation, coughing, and bronchial pneumonia, or gastrointestinal disturbances.

FIRE AND EXPLOSION

FLASH POINT NOT APPLICABLE <input type="checkbox"/> OPEN CUP <input type="checkbox"/> CLOSED CUP	°C	AUTO IGNITION TEMPERATURE NOT APPLICABLE	°C	FLAMMABLE LIMITS IN AIR (% BY VOL.) NOT APPLICABLE
---	-----------	--	-----------	--

UNUSUAL FIRE AND EXPLOSION HAZARDS
Flammable and potentially explosive hydrogen gas can be generated inside metal drums and storage tanks. Concentrated acid can ignite combustible materials on contact. Acid plus an active metal can also form explosive concentrations of hydrogen gas.

E. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED
If involved in a fire, use water spray; avoid spraying water into containers. If only a small amount of combustibles is present, smother fire with dry chemical.

FIRE EXTINGUISHING AGENTS TO AVOID
Direct stream of water; may cause spattering.

SPECIAL FIRE FIGHTING PRECAUTIONS
At high temperatures sulfuric acid or sulfur trioxide mists can be released from vented or ruptured containers. If water is added to concentrated sulfuric acid, violent spattering can occur, and considerable heat may be evolved.

ENGINEERING CONTROLS
Adequate ventilation to reduce acid mists below permissible exposure limits. Packaging, unloading areas, or open processing equipment may require mechanical ventilation.

DO NOT HANDLE eyes, on skin, or on clothing. Do not breathe vapor or mists. Use protective equipment as outlined in Section F. Do not add water to acid. When diluting always add acid to water cautiously and with agitation. Use with adequate ventilation.

STORAGE from physical damage. Store in cool, well-ventilated area away from combustibles and reactive chemicals. Keep out of sun and away from heat. Keep containers in upright position. No smoking in storage area.

SPILL OR LEAK
Dilute small spills or leaks cautiously with plenty of water. Neutralize with alkali such as soda ash or lime. Adequate ventilation is required for soda ash due to release of CO₂ gas. No smoking in spill area. Major spills must be handled by a predetermined plan. Diking with soda ash is recommended. Attempt to keep out of sewer.

SPECIAL PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS

Label signal word: **DANGER**

PERSONAL HYGIENE
Avoid inhalation, skin contact or ingestion. Practice good housekeeping and personal hygiene procedures.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION

OSHA/MSHA approved respirator for SO₂ and/or mist filters.

EYES AND FACE

Chemical goggles or face shield required.

HANDS, ARMS, AND BODY

Rubber gloves and aprons or equivalent required when handling sulfuric acid.

OTHER CLOTHING AND EQUIPMENT

Full protective clothing recommended when handling large quantities of sulfuric acid.

G. PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS): <input checked="" type="checkbox"/> LIQUID <input type="checkbox"/> SOLID <input type="checkbox"/> GAS <input type="checkbox"/> _____	APPEARANCE AND ODOR Oily, colorless to sl. yellow, clear to turbid liquid. Odor threshold for sulfuric acid is ~1 mg/cu.m.	
BOILING POINT 276 - 281 C	SPECIFIC GRAVITY (H ₂ O = 1) 1.835--1.844	VAPOR DENSITY (AIR = 1) NOT APPLICABLE
MELTING POINT 13.19% at -29 C, 98% at -1 C		
SOLUBILITY IN WATER (% by Weight) Complete	pH 1% solution: pH = 0.9	VAPOR PRESSURE (mm Hg at 20° C) <input type="checkbox"/> (PSIG) <input type="checkbox"/> 90%--0.005mm Hg at 20 C
EVAPORATION RATE (Butyl Acetate = 1) <input type="checkbox"/> (Ether = 1) <input type="checkbox"/> NOT APPLICABLE	% VOLATILES BY VOLUME (At 20° C) NOT APPLICABLE	VAPOR PRESSURE 95%--0.0015mm Hg at 35 C

H. REACTIVITY DATA

STABILITY <input type="checkbox"/> UNSTABLE <input checked="" type="checkbox"/> STABLE	CONDITIONS TO AVOID NOT APPLICABLE
INCOMPATIBILITY (MATERIALS TO AVOID) Active metal plus sulfuric acid generate hydrogen gas which may reach explosive limits. See Section K	
HAZARDOUS DECOMPOSITION PRODUCTS Sulfur trioxide mist.	
HAZARDOUS POLYMERIZATION <input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR	CONDITIONS TO AVOID NOT APPLICABLE

I. ENVIRONMENTAL

EPA HAZARDOUS SUBSTANCE? YES NO IF SO, REPORTABLE QUANTITY: 1000. #

40 CFR
116-117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS)

Disposal of Sulfuric Acid may be subject to Federal, state, and local regulations. (EPA corrosive waste). Users of this product should review their operations in terms of applicable laws and consult with appropriate regulatory agencies prior to disposal.

RCRA STATUS OF UNUSED MATERIAL:

EPA hazardous waste No. D002 (corrosive) if discarded.

40 CFR
261

J. REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES

OSHA regulations for airborne contaminants 29 CFR 1910.1000
ACGIH "Threshold Limit Values for Chemical Substances...", 1985-86

HAZARD INFORMATION REFERENCES

{ a) "Criteria for a Recommended Standard...Occupational Exposure to Sulfuric Acid"
{ b) Dreisbach, R.H., Handbook of Poisoning, 9th ed., 1977, Lange Medical Pubs., Los Altos.
{ c) NIOSH/OSHA "Pocket Guide to Chemical Hazards"
"Documentation of the Threshold Limit Values," 5th Ed., ACGIH
NFPA "Fire Protection Guide on Hazardous Materials," 8th Ed., 1984

GENERAL

None

K. ADDITIONAL INFORMATION

Information (hazards, precautions, first aid, etc.) is abbreviated. More detailed information is contained in references found in Section J.

Additional Information Contact: Sulfuric Acid Sales Department
P. O. Box 5747
Tucson, AZ 85703-0747

ACGIH Limits:

Sulfuric acid mist-----1.0 mg/cu.m.

Sulfuric acid is not flammable but highly reactive and capable of igniting finely divided combustible materials on contact. Reacts violently with water and organic materials with evolution of heat. Extremely hazardous in contact with many materials, particularly carbides, chlorates, fulminates, nitrates, picrates, powdered metals and other combustible materials. Attacks many metals, releasing hydrogen.

Examples of common inorganic chemicals that should be avoided include; sodium carbonate, sodium hydroxide, elemental sodium, potassium permanganate, ammonium hydroxide, and potassium chlorate. Common organic chemicals that have been reported as being incompatible with sulfuric acid include; ethylene glycol, aniline, and ethylene diamine.

THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

ASARCO INCORPORATED PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN.

H. W. DUDLEY
VICE-PRESIDENT
CHEMICALS SPECIALTIES MARKETING



TRIANGLE REFINERIES, Inc.

From: Brewer Unit
Bob Smith
1-29-67

HOUSTON
PHONE (713) 663-4900

POST OFFICE BOX 3367

HOUSTON, TEXAS

77253

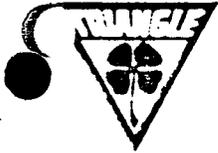
KERMAC Mineral Spirits (100W)

WYNNEWOOD REFINERY

TYPICAL SPECIFICATIONS

API GRAVITY @ 60 F.		49.0
SPECIFIC GRAVITY		.7839
FLASH POINT TCC		100 F. Min.
COLOR		+30
DISTILLATION		
	IBP	314
	10%	323
	50%	338
	90%	368
	DP	396
Aniline Point		138.7
Kauri Butanol		35.9
CHEMICAL COMPOSITION VOL %		
	Paraffins	45.2
	Olefins	Nil.
	Aromatics	11.3
	Naphthenes	43.5
CORROSION		1-A
SULFUR		NIL
DOCTOR		NEG.

RECEIVED JAN 15 1967



TRIANGLE REFINERIES, Inc.

SPECIALTY PRODUCTS DIVISION
100 NORTH STREET • SUITE 110 • MONROE, LOUISIANA 70109
TELEPHONE 337-334-4444 • FAX 337-334-4444

A SUBSIDIARY OF KERR-MCGEE REFINING CORPORATION

MATERIAL SAFETY DATA SHEET

MSDS NUMBER
W-1410

EMERGENCY TELEPHONE

COMPANY
405/270-2526

CHEMTREC
800/424-9300

I. PRODUCT IDENTIFICATION

PRODUCT KERMAC 100-W		CHEMICAL NAME Stoddard Solvent, White Spirits	
CHEMICAL FAMILY Petroleum Hydrocarbon Naphtha		FORMULA C₈-C₁₂	CAS NUMBER 64741-48-9
NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATING CODES Slight - 1 Moderate - 2 High - 3 Extreme - 4		HEALTH CODE 0	REACTIVITY CODE 0

II. HAZARDOUS COMPONENTS

INGREDIENT	%	OSHA LIMIT	TLV
Stoddard Solvent	100	TWA-500 ppm	TWA-100 ppm STEL-200 ppm
Xylene	Up to 1%	TWA-100 ppm	TWA-100 ppm STEL-150 ppm

III. PHYSICAL AND CHEMICAL PROPERTIES

PERCENT VOLATILE BY VOLUME (%) 100	MOLECULAR WEIGHT Approximately 140	APPEARANCE Clear Liquid
ODOR AND THRESHOLD Petroleum Naphtha/Approx 1 ppm	MELTING POINT Not Available	VAPOR DENSITY (AIR = 1) 4.8
REFRACTIVE INDEX (n _D 20)	VISCOSITY	SOLUBILITY (G/100G WATER AT 20 °C)

IV. FIRE PROTECTION INFORMATION

FLASH POINT AND METHOD	AUTOIGNITION TEMPERATURE	FLAMMABLE LIMITS % VOLUME IN AIR	LOWER	UPPER
Closed Cup 100°F minimum	Approx. 440°F		1	6

Carbon dioxide, dry chemical, or foam. Water stream may spread fire, use water spray only to cool containers exposed to fire. If leak or spill has not ignited, use water spray to disperse vapors.

HAZARDOUS DECOMPOSITION PRODUCTS

Incomplete combustion can yield carbon monoxide and various hydrocarbons.

FIRE AND EXPLOSION HAZARDS

Can form flammable mixtures with air and flash when heated to approximately 100°F. Explosion hazard in fire situation. Vapor heavier than air and may travel considerable distance to a source of ignition and flash back.

HAZARDOUS POLYMERIZATION

STABILITY

Will Not Occur May Occur Stable Instable

V. HEALTH INFORMATION

INHALATION

Visible effects include headache, nasal and respiratory irritation, nausea, drowsiness, fatigue, pneumonitis, pulmonary edema, central nervous system depression.

EYE CONTACT

Irritation

SKIN CONTACT

Irritation, may cause dermatitis due to defatting of keratin layer.

INGESTION

Visible effects include headache, drowsiness, nausea, fatigue, pneumonitis, pulmonary edema, central nervous system depression. Aspiration hazard.

REPORTED AS POTENTIAL CARCINOGEN
OR CARCINOGEN

Not Applicable
 International Agency for Research on Cancer

National Toxicology Program
 OSHA

VI. FIRST AID PROCEDURES

INHALATION

Move exposed person to fresh air. If breathing has stopped, perform artificial respiration. Get medical attention as soon as possible.

EYE CONTACT

Immediately flush eyes with water for a minimum of 15 minutes, occasionally lifting the lower and upper lids. Get medical attention as soon as possible.

SKIN CONTACT

If clothing soaked, immediately remove clothing and wash skin with soap and water. Launder clothing before wearing. Get medical attention promptly.

INGESTION

Do not induce vomiting. Get medical attention as soon as possible.

VII. EMPLOYEE PROTECTION

RESPIRATORY PROTECTION (UTILIZE NIOSH APPROVED RESPIRATORS. REFER TO MANUFACTURER'S PROTECTION FACTORS AND OSHA STANDARD 1910.134, AS A GUIDELINE.)

Up to 500 ppm, half-mask organic vapor respirator.
Up to 1000 ppm, full-face organic vapor respirator or full-face supplied air respirator.
Greater than 1000 ppm, fire fighting, or unknown concentration, self-contained breathing apparatus with positive pressure.

PROTECTIVE CLOTHING

EYE

Chemical goggles, face shield.

SKIN

Gloves: Nitrile, neoprene or other material resistant to naphtha solvent.

VENTILATION

Maintain local or dilution ventilation to keep air concentration below 100 ppm. Loading, loading, tank gauging, etc. remain upwind. Request assistance of safety and industrial hygiene personnel to determine air concentrations.

VIII. TRANSPORTATION AND STORAGE INFORMATION

DOT Hazardous Material Yes No
 DOT SHIPPING NAME AND NUMBER **Petroleum naphtha UN1255** DOT HAZARD CLASS **Combustible liquid**

STORAGE Do not store with strong oxidizers. Store as OSHA Class II combustible liquid.

IX. ENVIRONMENTAL PROTECTION

Notify emergency response personnel. Evacuate area and remove ignition sources. Build dike to contain flow. Remove free liquid, do not flush to sewer or open water. Pick up with inert absorbent and place in closed container for disposal. If flash point of residue is under 140°F, utilize hazardous waste manifest and permitted hazardous waste disposal site. If flash is above 140°F, utilize permitted industrial waste disposal site.

WASTE DISPOSAL

EPA Hazardous Waste Yes No EPA WASTE CODE NUMBER **D 001** WASTE CHARACTERISTIC OR HAZARD CODE **Ignitable**

Utilize licensed waste disposal company. Consider recycling or incineration. Based on flash point, utilize permitted hazardous waste disposal site and manifest or permitted industrial waste disposal site as appropriate.

MANAGER'S SIGNATURE (PRODUCT SAFETY AND COMPLIANCE)

Prepared by Kerr-McGee Refining Corporation for Triangle Refineries, Inc.

C. L. Russell

DATE PREPARED

5-15-85

DISCLAIMER

The information and recommendations contained in this publication have been compiled from sources believed to be reliable and to represent the best current opinion on the subject at the time of publication. Since we cannot anticipate or control the many different conditions under which this information or our products may be used, we make no guarantee that the recommendations will be adequate for all individuals or situations. Each user of the product described herein should determine the suitability of the described product for his particular purpose and should comply with all federal and state rules and regulations concerning the described product.

MATERIAL SAFETY DATA SHEET

MAXUS
Energy Corporation

MSDS NUMBER: M7786

MSDS DATE: 12-20-87

PRODUCT NAME: **NATURAL GAS**

24 HOUR EMERGENCY PHONE: (214) 953-2700

I. PRODUCT IDENTIFICATION

2 HEALTH, 4 FLAMMABILITY, 0 REACTIVITY & (Blank) INSTABILITY based on "Standard System for the Identification of the Fire Hazards of Materials, NFPA No. 704, 1985 Edition"

MANUFACTURER'S: Maxus Exploration Company
NAME AND : c/o Maxus Energy Corporation (Rm 2901)
ADDRESS : 717 North Harwood Street
: Dallas, Texas 75201

CHEMICAL NAME: Raw Natural Gas CAS NUMBER: 8006-14-2
64741-48-6

SYNONYMS/Common Names: Well Head Gas, Gas

CHEMICAL FORMULA: Primarily C₁ - C₈ Aliphatic Hydrocarbons

DOT PROPER SHIPPING NAME: Flammable Gas

DOT HAZARD CLASS: Flammable Gas

DOT I.D. NUMBER: UN1075

HAZARDOUS SUBSTANCE: NA

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	HAZARD DATA	CAS NUMBER	%
Mixture of naturally occurring Aliphatic Gases and vapors in Methane	PEL=N/A TLV=N/A The product may be considered as an asphyxiant similar to methane, ethane, ethylene, or propane, which represent 90+% and have	8006-14-2 and 64741-48-6	100
including compounds of C ₂ -C ₅			(75-85)
with traces of higher carbon chains and	PEL=1000 ppm 8hr TWA TLV=Appendix E (simple asphyxiant)		
Mercaptans (actual mercaptan may vary)	PEL=10 ppm ceiling TLV=0.5 ppm 8hr TWA (may be used for methyl or ethyl mercaptan exposure control)		Trace Varies
Nitrogen Compounds			(~1)
Water	(See HAZARDOUS INGREDIENTS continued and Section V.)		Varies

CAS = Chemical Abstract Service Number
PEL = OSHA Permissible Exposure Limit
TLV = TLV^C, ACGIH Threshold Limit Value, Current

N/A = No relevant information found or not available
NA = Not applicable

Maxus Energy Corporation

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 Maxus as to the effects of such use the results to be obtained or the safety and toxicity of the product nor does Maxus 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.

II. HAZARDOUS INGREDIENTS

...continued

The product may have Hydrogen Sulfide as a component, depending on the source, and can be as high as 20% (See Section V).

The product may contain ^{222}Rn which is a naturally occurring radioactive nuclide in detectable but varying quantity (see attached notice).

The product may contain benzene; when in excess of 0.1% and not contained in a pipe or container the exposure is covered by OSHA 29 CFR 1910.1028 & .1000.

The materials in this product are listed in the TSCA Inventory. Not listed as carcinogenic by IARC, NTP, OSHA, ACGIH.

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: Gas VAPOR DENSITY (Air=1): >1
VAPOR PRESSURE: 125-208 psig @ 100°F EVAPORATION RATE (BuAc=1): N/A
DENSITY AT 20°C: N/A % VOLATILES BY VOL.: 100
SOLUBILITY IN H₂O % BY WT: Trace
APPEARANCE AND ODOR: Colorless gas with odor that may be sweet to extremely nauseating like rotten eggs (See Section V)

pH: NA

IV. FIRE AND EXPLOSION DATA

FLASH POINT: Approx. -148°F AUTOIGNITION TEMPERATURE: 650°F
as Methane

FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: ~15
LOWER: ~ 5

EXTINGUISHING MEDIA: SHUT OFF GAS SUPPLY. STOP LEAK before attempting to extinguish. Dry chemical or carbon dioxide may be used to extinguish. Water spray should be used to keep exposed equipment cool. If a leak or spill has not ignited, water may be used to help disperse the vapors and to protect persons attempting to stop a leak.

SPECIAL FIRE FIGHTING PROCEDURES: Pressure-demand, self-contained breathing apparatus should be provided for fire fighters in buildings or confined areas where this product is stored. Storage containers exposed to fire should be kept cool with water spray.

UNUSUAL FIRE AND EXPLOSION HAZARD: Vapor is heavier than air and may travel some distance to source of ignition and flash back. Vapor may explode if ignited in an enclosed area. Transfer to and from commonly grounded containers.

V. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA: Like straight chain hydrocarbons, narcosis is produced at high concentration. Drowsiness may be produced by a 10 minute exposure to 10,000ppm (1% V/V). Under intended use, no hazardous exposures are expected. Product may act as a simple asphyxiant when concentrations of the gas are permitted to build up in poorly ventilated spaces and oxygen is displaced. Oxygen concentration should not fall below 18% at sea level (pO₂ = 135mmHg). The trace concentration of ^{222}Rn in the gas presents no risk under normal conditions of pressure and temperature.

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE:
Conditions which have the same symptoms or effects as stated below.

MEDICAL LIMITATION: N/A

V. HEALTH HAZARD INFORMATION

...continued

ROUTES OF EXPOSURE

INHALATION: Exposure to high concentrations of the gas can cause central nervous system depression, loss of consciousness and possible asphyxiation. May irritate the respiratory tract. Natural Gas containing over 500 ppm of H₂S will act as a systemic poison, causing unconsciousness and death through respiratory paralysis. Because of olfactory fatigue, the absence of hydrogen sulfide odor is not indicative of the absence of the gas. The TLV is 10 ppm 8 hour TWA with an STEL of 15 ppm; the PEL is 20 ppm ceiling.

SKIN CONTACT: If the liquid or expanding gas comes into contact with the unprotected skin it can cause cold burns or frost bite.

SKIN ABSORPTION: None expected.

EYE CONTACT: Contact of the liquid or expanding gas with the eyes can produce cold burns. Hydrogen sulfide gas can irritate the eye at concentrations of > 20 ppm.

INGESTION: Ingestion is virtually impossible.

EFFECTS OF OVEREXPOSURE

ACUTE: Exposure to high concentrations can cause central nervous system depression, loss of consciousness and possible asphyxiation. See Routes Of Exposure above.

CHRONIC: No permanent effects are reported.

EMERGENCY AND FIRST AID PROCEDURES

EYES: In the event of cold burns, SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN: Thaw frozen clothing before removal. In the event of cold burns, SEEK MEDICAL ATTENTION. Do not rub frozen areas. Cover the wounds with sterile dressing only.

INHALATION: If symptoms develop, 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: NA

NOTES TO PHYSICIAN: None

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions this product is stable. Avoid sources of ignition such as flames, hot surfaces, electrical or frictional sparks, etc.

INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: The material may decompose at high temperatures to form CO & CO₂.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: If material is released to the atmosphere, steps should be taken to stop the loss of volatile materials to the atmosphere. Releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

VII. ENVIRONMENTAL PROCEDURES

...continued

DISPOSAL: If any question exists, the appropriate agencies should be contacted to assure proper action being taken. Waste product and contaminated material will be considered a hazardous waste if the flash point is less than 140°F requiring disposal at an approved hazardous waste facility.

STORAGE: Protect against physical damage. Outside or detached storage is preferred. Separate from oxidizing materials. Store in cool, well ventilated area of non-combustible construction away from possible sources of ignition.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: See attached for special instructions. Use engineering controls to minimize release. Work in well ventilated area, upwind from any possible leak source.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection is not required under normal use. Where engineering controls are not feasible, use positive pressure supplied air respiratory protection following manufacturer's recommendation. Where sour gas may be present, respiratory protection must be readily available.

EYE: No special protection required under normal use. Use face shield and goggles where liquids may be released under pressure. (See RESPIRATORY PROTECTION:)

GLOVES: No special protection required under normal conditions. Insulated gloves should be worn where liquids or expanding gas may be generated.

OTHER CLOTHING AND EQUIPMENT: Standard work clothing. Wash contaminated clothing in soap and water and dry before reuse. Shoes that can not be decontaminated should be discarded. Shower and eye wash facilities should be accessible.

MONITORING EXPOSURE

BIOLOGICAL: Breath analysis may be applicable for the hydrocarbons.

PERSONAL/AREA: Combustible gas analyzer or leak tester may be applicable for hydrocarbons. Hydrogen sulfide may be determined by electronic analyzers or direct reading color indicating systems.

THIS MSDS IS EQUIVALENT TO US DOL OSHA'S NON-MANDATORY FORM

ATTACHMENT TO M7786, NATURAL GAS

Naturally occurring Radon, predominately ^{222}Rn , is isolated with the product in the distillation process. The concentration of ^{222}Rn in the delivered product may be detectable depending on the source of the natural gas and the delivery and/or storage time prior to delivery.

Radon gas undergoes radioactive decay through a chain of radioactive nuclides to form a long lived nuclide of lead, ^{210}Pb , which is a beta emitter. This ^{210}Pb decays at about a 23 year half life by beta decay to form polonium, ^{210}Po , which is an alpha emitter.

Process lines, pumps, filters and reaction units may show a gamma reading during operation. The level of gamma radiation drops to background within 3 - 4 hours after cessation of operation. Occupancy should be kept to a minimum.

When such equipment must be opened for cleaning, a 4 hour delay after stopping the flow of gas is advisable prior to opening. Workers required to be in direct contact with internal parts should wear disposable/impervious gloves, coveralls, boot covers, and head covers and respiratory protection (one half face or full face piece or air line supply) approved by NIOSH/MSHA following NRC and manufacturer's recommendation.

MATERIAL SAFETY DATA SHEET

MAXUS
Exploration Company

MSDS NUMBER: M7785

MSDS DATE: 01-03-88

PRODUCT NAME: **GAS LIQUIDS**

24 HOUR EMERGENCY PHONE: (214) 953-2700

I. PRODUCT IDENTIFICATION

2 HEALTH, 4 FLAMMABILITY, 0 REACTIVITY & (Blank) INSTABILITY based on "Standard System for the Identification of the Fire Hazards of Materials, NFPA No. 704, 1985 Edition"

MANUFACTURER'S: Maxus Exploration Company
NAME AND : c/o Maxus Energy Corporation (Rm 2901)
ADDRESS : 717 North Harwood Street
: Dallas, Texas 75201

CHEMICAL NAME: Natural Gas (petroleum) CAS NUMBER: 64741-48-6
Raw Liquid Mix

SYNONYMS/Common Names: Well Head Gas, Liquids

CHEMICAL FORMULA: Primarily C₂ - C₈ Aliphatic Hydrocarbons

DOT PROPER SHIPPING NAME: Flammable Gas

DOT HAZARD CLASS: Flammable Gas

DOT I.D. NUMBER: UN1075

HAZARDOUS SUBSTANCE: NA

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	HAZARD DATA	CAS NUMBER	%
Mixture of naturally occurring aliphatic gases, normally liquified	PEL=N/A TLV=N/A The product may be considered as an asphyxiant similar to propane, butanes, and ethane.	64741-48-6	100
including compounds of C ₂ -C ₅ .			(80-95)
with traces of higher carbon chains and	PEL=1000 ppm 8hr TWA TLV=Appendix E (simple asphyxiant) See Section V.		

The product may contain ²²²Rn which is a naturally occurring radioactive nuclide in detectable but varying quantity (see attached notice).

This product may contain benzene; when in excess of 0.1% and not contained in a pipe or container, the exposure is covered by OSHA 29 CFR 1910.1028 & .1000.

The materials in this product are listed in the TSCA Inventory. Not listed as carcinogenic by IARC, NTP, OSHA, ACGIH.

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

Maxus Exploration Company

This Material Safety Data Sheet was prepared in accordance with 29 CFR 1010.1200. 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 Maxus Exploration Company as to the effects of such use the results to be obtained or the safety and toxicity of the product nor does Maxus Exploration 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.

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: Gas VAPOR DENSITY (Air=1): >1
VAPOR PRESSURE: 135-145 psia EVAPORATION RATE (BuAc=1): N/A
DENSITY AT 0°C: ~0.53 % VOLATILES BY VOL.: 100
SOLUBILITY IN H₂O % BY WT: Trace
AVERAGE MOLECULAR WEIGHT: 52-54 (53.0944)
APPEARANCE AND ODOR: Colorless gas with sweet odor
pH: NA

IV. FIRE AND EXPLOSION DATA

FLASH POINT: Atmospheric AUTOIGNITION TEMPERATURE: ~874°F
as propane
FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: ~9.5
(as explosive limits) LOWER: ~5

EXTINGUISHING MEDIA: SHUT OFF GAS SUPPLY. STOP LEAK before attempting to extinguish. Dry chemical or carbon dioxide may be used to extinguish. Water spray should be used to keep exposed equipment cool. If a leak or spill has not ignited, water may be used to help disperse the vapors and to protect persons attempting to stop a leak.

SPECIAL FIRE FIGHTING PROCEDURES: Pressure-demand, self-contained breathing apparatus should be provided for fire fighters in buildings or confined areas where this product is stored. Storage containers exposed to fire should be kept cool with water spray.

UNUSUAL FIRE AND EXPLOSION HAZARD: Vapor is heavier than air and may travel some distance to source of ignition and flash back. Vapor may explode if ignited in an enclosed area. Transfer to and from commonly grounded containers.

V. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA: Like straight chain hydrocarbons, narcosis is produced at high concentration. Drowsiness may be produced by a 10 minute exposure to 10,000ppm (1% V/V). Under intended use, no hazardous exposures are expected. Product may act as a simple asphyxiant when concentrations of the gas are permitted to build up in poorly ventilated spaces and oxygen is displaced. Oxygen concentration should not fall below 18% at sea level (pO₂ = 135mmHg). The trace concentration of ²²²Rn in the gas presents no risk under normal conditions of pressure and temperature.

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE:
Conditions which have the same symptoms or effects as stated below.

MEDICAL LIMITATION: N/A

V. HEALTH HAZARD INFORMATION

...continued

ROUTES OF EXPOSURE

INHALATION: Exposure to high concentrations of the gas can cause central nervous system depression, loss of consciousness and possible asphyxiation. May irritate the respiratory tract.

SKIN CONTACT: If the liquid or expanding gas comes into contact with the unprotected skin it can cause cold burns or frost bite.

SKIN ABSORPTION: None expected.

EYE CONTACT: Contact of the liquid or expanding gas with the eyes can produce cold burns.

INGESTION: Ingestion is not likely.

EFFECTS OF OVEREXPOSURE

ACUTE: Exposure to high concentrations can cause central nervous system depression, loss of consciousness and possible asphyxiation. See Routes Of Exposure above.

CHRONIC: No permanent effects are reported.

EMERGENCY AND FIRST AID PROCEDURES

EYES: In the event of cold burns, SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN: Thaw frozen clothing before removal. In the event of cold burns, Do not rub frozen areas. Cover the wounds with sterile dressing only. SEEK MEDICAL ATTENTION IMMEDIATELY.

INHALATION: If symptoms develop, 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: NA

NOTES TO PHYSICIAN: None

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions this product is stable. Avoid sources of ignition such as flames, hot surfaces, electrical or frictional sparks, etc.

INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: The material may decompose at high temperatures to form CO & CO₂.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:
Material is not known to polymerize.

VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: If material is released to the atmosphere, steps should be taken to stop the loss of volatile materials to the atmosphere. Releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

DISPOSAL: If any question exists, the appropriate agencies should be contacted to assure proper action being taken.

STORAGE: Protect against physical damage. Outside or detached storage is preferred. Separate from oxidizing materials. Store in cool, well ventilated area of non-combustible construction away from possible sources of ignition.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: See attached for special instructions. Use engineering controls to minimize release. Work in well ventilated area, upwind from any possible leak source.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection is not required under normal use. Where engineering controls have been breached or are not feasible, use positive pressure supplied air respiratory protection following manufacturer's recommendation.

EYE: No special protection required under normal use. Use face shield and goggles where liquids may be released under pressure. (See RESPIRATORY PROTECTION:)

GLOVES: No special protection required under normal conditions. Insulated gloves should be worn where liquids or expanding gas may be encountered.

OTHER CLOTHING AND EQUIPMENT: Standard work clothing.

MONITORING EXPOSURE

BIOLOGICAL: Breath analysis may be applicable for the hydrocarbons.

PERSONAL/AREA: Combustible gas analyzer or leak tester may be applicable for hydrocarbons.

FOR INDUSTRIAL USE ONLY

THIS MSDS IS EQUIVALENT TO US DOL OSHA'S NON-MANDATORY FORM

ATTACHMENT TO M7785, GAS LIQUIDS

Naturally occurring Radon, predominately ^{222}Rn , is isolated with the product in the distillation process. The concentration of ^{222}Rn in the delivered product may be detectable depending on the source of the natural gas and the delivery and/or storage time prior to delivery.

Radon gas undergoes radioactive decay through a chain of radioactive nuclides to form a long lived nuclide of lead, ^{210}Pb , which is a beta emitter. This ^{210}Pb decays at about a 23 year half life by beta decay to form polonium, ^{210}Po , which is an alpha emitter.

Process lines, pumps, filters and reaction units may show a gamma reading during operation. The level of gamma radiation drops to background within 3 - 4 hours after cession of operation. Occupancy should be kept to a minimum.

When such equipment must be opened for cleaning, a 4 hour delay after stopping the flow of gas is advisable prior to opening. Workers required to be in direct contact with internal parts should wear disposable/impervious gloves, coveralls, boot covers, and head covers and respiratory protection (one half face or full face piece or air line supply) approved by NIOSH/MSHA following NRC and manufacturer's recommendation.

MATERIAL SAFETY DATA SHEET

MAXUS
Exploration Company

MSDS NUMBER: M7747

MSDS DATE: 12-20-87

PRODUCT NAME: **NATURAL GAS CONDENSATE**

24 HOUR EMERGENCY PHONE: (214) 953-2700

I. PRODUCT IDENTIFICATION

2 HEALTH, 3 FLAMMABILITY, 0 REACTIVITY & (Blank) INSTABILITY based on "Standard System for the Identification of the Fire Hazards of Materials, NFPA No. 704, 1985 Edition"

MANUFACTURER'S: Maxus Exploration Company
NAME AND : c/o Maxus Energy Corporation (Rm 2901)
ADDRESS : 717 North Harwood Street
: Dallas, Texas 75201

CHEMICAL NAME: Raw Natural Gas Liquid CAS NUMBER: 64741-48-6
Mix (Petroleum)
Drip condensate, Gas Oil

SYNONYMS/Common Names: Natural Gasoline

CHEMICAL FORMULA: C₂-C₈ Hydrocarbons, Aliphatic

DOT PROPER SHIPPING NAME: Flashpoint <100°F Gasoline Flashpoint 100°F <200 Combustible Liquid NOS

DOT HAZARD CLASS: Flammable Liquid Combustible Liquid

DOT I.D. NUMBER: UN 1203 NA 1993

HAZARDOUS SUBSTANCE: NA NA

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	HAZARD DATA	CAS NUMBER	%
Drip Condensate *	PEL = None established TLV = None established	64741-48-6	100
May be similar to gasoline	PEL = None established TLV = 300 ppm 8 hr. TWA		

(See Section V)

The materials in this product are listed in the TSCA Inventory. Not listed as carcinogenic by IARC, NTP, OSHA, ACGIH; See Section V. The product may contain benzene; when in excess of 0.1% and not contained in a pipe of container, the exposure is covered by OSHA 29 CFR 1910.1028 & .1000.

* The composition and water content varies significantly with the geographic source of the product.

CAS = Chemical Abstract Service Number
PEL = OSHA Permissible Exposure Limit
TLV = TLV^o, ACGIH Threshold Limit Value, Current

N/A = No relevant information found or not available
NA = Not applicable

Maxus Exploration Company

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 Maxus Exploration Company as to the effects of such use the results to be obtained or the safety and toxicity of the product nor does Maxus Exploration 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.

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: Variable VAPOR DENSITY (Air=1): ~3.4
% VOLATILES BY VOL.: Essentially 100 MELTING POINT: NA
VAPOR PRESSURE: 15-25 psi EVAPORATION RATE (BuAc=1): N/A
SPECIFIC GRAVITY (H₂O=1): 0.5-0.6 @ 60°F
SOLUBILITY IN H₂O % BY WT: Negligible
APPEARANCE AND ODOR: Colored liquid with pungent odor; odor
threshold 0.1ppm and is not an index of
exposure
pH: NA

IV. FIRE AND EXPLOSION DATA

FLASH POINT: 78 to 105°F AUTOIGNITION TEMPERATURE: N/A
FLAMMABLE LIMITS IN AIR, % BY VOLUME-UPPER: ~8 varies slightly
LOWER: ~1 with exact specification
EXTINGUISHING MEDIA: Dry chemical, foam or carbon dioxide; water
spray may be ineffective on fighting fires of liquids with low
flash points, but water spray should be used to keep fire exposed
containers cool. If a leak has not ignited, use water spray to
disperse the vapors and to protect the persons attempting to stop a
leak.
UNUSUAL FIRE AND EXPLOSION HAZARD: Clothing, rags or similar organic
material contaminated with the product and stored in a closed space
may undergo spontaneous combustion. Transfer product to and from
commonly grounded containers. Product spreads easily and can flash
back along vapor trails.

V. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA:

The major effect of exposure to this product is central nervous
system depression.
Studies have shown that repeated exposure of laboratory animals to
high concentrations of whole refined gasoline vapors at 67, 262
and 2056 ppm has caused kidney damage and cancer of the kidney in
rats and liver cancer in mice.

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE:

Conditions which have the same symptoms or effects as stated below.

MEDICAL LIMITATION: N/A

ROUTES OF EXPOSURE

INHALATION: Irritation of the upper respiratory tract with central
nervous system stimulation, possibly followed by depression,
dizziness, headache, incoordination, anesthesia, coma and
respiratory arrest.

SKIN CONTACT: Defatting may occur with continued or prolonged
contact. Irritation and burning sensation may occur on exposure to
liquid or vapor phase.

SKIN ABSORPTION: Not significant.

V. HEALTH HAZARD INFORMATION

...continued

EYE CONTACT: Liquid will cause severe burning sensation with temporary irritation and swelling of lids.

INGESTION: Irritation of mucous membranes of throat, esophagus and stomach may result in nausea and vomiting. Depression may occur if absorbed. (See Inhalation above.)

EFFECTS OF OVEREXPOSURE

ACUTE: Central nervous system depression with extreme overexposure; effects may include anesthesia, coma, respiratory arrest, and irregular heart rate. Oxygen deprivation is possible if working in confined spaces.

CHRONIC: Experience has shown no major cumulative or latent effects to have resulted from exposure to this product. (See Health Hazard Data above.)

EMERGENCY AND FIRST AID PROCEDURES

EYES: Object is to flush material out 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 eye surface. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

SKIN: Wash contaminated areas with plenty of soap and water. A soothing ointment may be applied to irritated skin after thoroughly cleansing. Remove contaminated clothing and footwear. Seek medical attention if symptoms result.

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. If vomiting occurs spontaneously, keep airway clear. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

NOTES TO PHYSICIAN: Gastric lavage should be considered. Guard against aspiration into lungs which may result in chemical pneumonitis. Irregular heart beat may occur; use of adrenalin is not advisable. Treat symptomatically.

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, the material is stable. Avoid sources of ignition such as flames, hot surfaces, electrical or functional sparks, etc.

INCOMPATIBILITY: Avoid contact with oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: This material may decompose at high temperatures to form carbon monoxide and other organic compounds.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: If material is spilled or released to the atmosphere, steps should be taken to contain liquids and prevent discharges to streams or sewer systems; and control or stop the loss of volatile materials to the atmosphere. Spills or releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

VII. ENVIRONMENTAL PROCEDURES

...continued

DISPOSAL: Clean-up action should be carefully planned and executed. Shipment, storage, and/or disposal of waste materials are regulated and action to handle or dispose of spilled or released materials must meet all applicable local, state and federal rules and regulations. If any question exists, the appropriate agencies should be contacted to assure proper action being taken. Waste product and contaminated material will be considered a hazardous waste if the flash point is less than 140°F requiring disposal at an approved hazardous waste facility.

STORAGE: Protect against physical damage. Outside or detached storage is preferred. Separate from oxidizing materials. Store in cool, well ventilated area of non-combustible construction away from possible sources of ignition.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: Work in well ventilated areas. Special ventilation is not required under normal use. Use engineering controls to minimize exposure.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection is not required under normal use. Use NIOSH/MSHA approved respiratory protection following manufacturer's recommendations where spray, mists, or vapor may be generated. Supplied air respiratory protection is required for IDLH areas.

EYE: Face shield and goggles or chemical goggles should be worn where mists, or spray may be generated.

GLOVES: Impervious gloves should be worn during routine handling of this product.

OTHER CLOTHING AND EQUIPMENT: Standard work clothing. Shoes contaminated with this product that can not be decontaminated should be discarded. Clothing contaminated with this product should be removed, washed in soap and water and dried before reuse. Contaminated clothing should be stored in well ventilated areas. Shower and eyewash facilities should be accessible.

MONITORING EXPOSURE

BIOLOGICAL: No applicable procedure; breath analysis for hydrocarbons has been suggested.

PERSONAL/AREA: Both active and passive monitor employing charcoal absorption followed by gas chromatography-A molecular weight of 72.5 has been suggested as the most conservative average value to convert the determined weight of hydrocarbons to ppm. Direct reading indicating tubes are available to evaluate short term exposure.

THIS MSDS IS EQUIVALENT TO US DOL OSHA'S NON-MANDATORY FORM

MATERIAL SAFETY DATA SHEET

MAXUS
Exploration Company

MSDS NUMBER: M7750

MSDS DATE: 12-20-87

PRODUCT NAME: **RESIDUE GAS**

24 HOUR EMERGENCY PHONE: (214) 953-2700

I. PRODUCT IDENTIFICATION

1 HEALTH, 4 FLAMMABILITY, 0 REACTIVITY & (Blank) INSTABILITY based on "Standard System for the Identification of the Fire Hazards of Materials, NFPA No. 704, 1985 Edition"

MANUFACTURER'S: Maxus Exploration Company
NAME AND : c/o Maxus Energy Corporation (Rm 2901)
ADDRESS : 717 North Harwood Street
: Dallas, Texas 75201

CHEMICAL NAME: Methane

CAS NUMBER: 74-82-8

SYNONYMS/Common Names: Marsh gas.

CHEMICAL FORMULA: Primarily CH₄

DOT PROPER SHIPPING NAME: Flammable Gas

DOT HAZARD CLASS: Flammable Gas

DOT I.D. NUMBER: UN1971

HAZARDOUS SUBSTANCE: NA

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	HAZARD DATA	CAS NUMBER	%
Methane	PEL=None established TLV=Appendix E (Simple Asphyxiant)	74-82-8	90.7
Ethane	PEL=None established TLV=Appendix E (Simple Asphyxiant)	74-84-0	2
Helium	PEL=None established TLV=Appendix E (Simple Asphyxiant)	7440-59-7	0.3
Nitrogen	PEL=None established TLV=Appendix E (Simple Asphyxiant)	7727-37-9	7
C ₂ and C ₃ hydrocarbons	(See Section V)		Trace

NO ODORANT HAS BEEN ADDED

This product has been treated to remove H₂S, CO and CO₂.
The materials in these products are listed in the TSCA Inventory.
These products are not listed as carcinogenic by IARC, NTP, OSHA, ACGIH.

CAS - Chemical Abstract Service Number
PEL - OSHA Permissible Exposure Limit
TLV - TLV^C, ACGIH Threshold Limit Value, Current

N/A - No relevant information found or not available
NA - Not applicable

Maxus Exploration Company

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 Maxus as to the effects of such use the results to be obtained or the safety and toxicity of the product nor does Maxus 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.

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: -258°F MELTING POINT: -297°F
DENSITY AT 20°C: NA VAPOR DENSITY (Air=1): ~0.55
SOLUBILITY IN H₂O % BY WT: ~3% % VOLATILES BY VOL.: 100
EVAPORATION RATE (BuAc=1): NA SPECIFIC GRAVITY (H₂O=1): NA
VAPOR PRESSURE: Gas at normal temperature
APPEARANCE AND ODOR: Colorless gas with slight natural gas odor
pH: NA

IV. FIRE AND EXPLOSION DATA

FLASH POINT: Gas AUTOIGNITION TEMPERATURE: 1202°F
FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: 15 LOWER: 5.4
EXTINGUISHING MEDIA: SHUT OFF GAS SUPPLY. STOP LEAK before attempting to extinguish. Dry chemical or carbon dioxide may be used to extinguish. Water spray should be used to keep exposed equipment cool. If a leak or spill has not ignited, water spray may be used to help disperse the vapors and to protect persons attempting to stop a leak.
SPECIAL FIRE FIGHTING PROCEDURES: Pressure-demand, self-contained breathing apparatus should be provided for fire fighters in buildings or confined areas where this product is stored. Storage containers exposed to fire should be kept cool with water spray.
UNUSUAL FIRE AND EXPLOSION HAZARD: Vapor may explode if ignited in an enclosed area. Transfer to and from commonly grounded containers. Loudest explosions occur when one volume of gas is mixed with 10 volumes of air; air concentrations more than 14% methane burns without noise.

V. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA: Narcosis is produced at high concentration. Under intended use, no hazardous exposures are expected under atmospheric pressure. Product may act as a simple asphyxiant when concentrations of the gas are permitted to build up in poorly ventilated spaces and oxygen is displaced. Oxygen concentration should not fall below 18% at sea level (pO₂ = 135mmHg).

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE:
Conditions which have the same symptoms or effects as stated below.

MEDICAL LIMITATION: N/A

ROUTES OF EXPOSURE

INHALATION: Exposure to high concentrations of the gas can cause central nervous system depression, loss of consciousness and possible asphyxiation.

SKIN CONTACT: If expanding gas comes into contact with the unprotected skin it can cause cold burns.

SKIN ABSORPTION: None expected.

V. HEALTH HAZARD INFORMATION

...continued

EYE CONTACT: Contact of expanding gas with the eyes can produce cold burns.

INGESTION: Ingestion is virtually impossible.

EFFECTS OF OVEREXPOSURE

ACUTE: Exposure to high concentrations can cause central nervous system depression, loss of consciousness and possible asphyxiation.

CHRONIC: No permanent effects are reported.

EMERGENCY AND FIRST AID PROCEDURES

EYES: In the event of cold burns, SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN: In the event of cold burns, do not rub frosted areas. Cover the wounds with sterile dressing only, SEEK MEDICAL ATTENTION IMMEDIATELY.

INHALATION: If symptoms develop, 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: NA

NOTES TO PHYSICIAN: None.

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions this product is stable. Avoid sources of ignition such as flames, hot surfaces, electrical or frictional sparks, etc.

INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: The material may decompose at high temperatures to form CO & CO₂.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: If material is released to the atmosphere, steps should be taken to prevent discharges; and control or stop the loss of volatile materials to the atmosphere. Releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

DISPOSAL: Clean-up action should be carefully planned and executed. Shipment, storage, and/or disposal of waste materials are regulated and action to handle or dispose of spilled or released materials must meet all applicable local, state and federal rules and regulations. If any question exists, the appropriate agencies should be contacted to assure proper action being taken.

STORAGE: Protect against physical damage. Separate from oxidizing materials. Store in cool, well ventilated area of non-combustible construction away from possible sources of ignition.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: Use engineering controls to minimize release. Work in well ventilated area, upwind from any possible leak source.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection is not required under normal use. Where engineering controls have been breached or are not feasible, use positive pressure supplied air respiratory protection following manufacturer's recommendation.

EYE: No special protection required under normal use. Where liquids may be released under pressure, SEE RESPIRATORY PROTECTION!

GLOVES: No special protection required under normal conditions. Insulated gloves should be worn where expanding gas may be encountered.

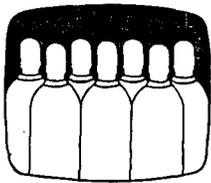
OTHER CLOTHING AND EQUIPMENT: Standard work clothing.

MONITORING EXPOSURE

BIOLOGICAL: Breath analysis may be applicable.

PERSONAL/AREA: Combustible gas analyzer for leak testing.

THIS MSDS IS EQUIVALENT TO US DOL OSHA'S NON-MANDATORY FORM



MATHESON GAS PRODUCTS

MATERIAL SAFETY DATA SHEET

058

PRODUCT IDENTIFICATION

MSDS058: METHANE

SYNONYM(S): Marsh Gas, Natural Gas

CHEMICAL FORMULA: CH₄

C.A.S. NUMBER: 74-82-8

D.O.T. SHIPPING NAME: Methane

D.O.T. I.D. NUMBER: UN1971

D.O.T. HAZARD CLASS: Flammable Gas

D.O.T. LABEL(S): Flammable Gas

PHYSICAL DATA

MOLECULAR WEIGHT: 16.043

BOILING POINT: -161.5°C; -258.7°F

SPECIFIC VOLUME @ 1 ATM, 21.1°C: 1.480 m³/kg; 23.7 ft³/lb

RELATIVE DENSITY, (AIR=1): 0.555 @ 1 atm, 0°C

SOLUBILITY IN WATER: Negligible

DESCRIPTION: Methane is a colorless, flammable, nontoxic gas. It is compressed and shipped in high pressure cylinders.

FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: 5.0 - 15.4% by volume.

AUTO-IGNITION TEMPERATURE: 537°C; 999°F

FIRE FIGHTING PROCEDURES: The only safe way to extinguish a methane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the cylinder and the surroundings using a water spray.

Personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout gear may be inadequate.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

1. Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from a safe distance.
2. Flammable gases may spread from a spill after the fire is extinguished and be subject to reignition.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: None established

ACGIH TWA: None established *

* ACGIH considers methane to be a simple asphyxiant.

ACUTE EFFECTS OF OVEREXPOSURE: Methane is nontoxic but can act as a simple asphyxiant by displacing air. Symptoms of asphyxia include rapid respirations, dizziness and fatigue.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

REACTIVITY DATA

STABILITY: (X) STABLE () UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide and carbon dioxide

HAZARDOUS POLYMERIZATION: (X) WILL NOT OCCUR () MAY OCCUR

SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling flows personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus.

PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well ventilated areas away from sources of heat.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Respiratory equipment is not needed unless the gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxiation.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

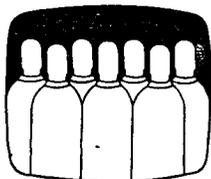
1. Secure the cylinder to prevent it from falling or being knocked over.
2. Leak check the lines and equipment.
3. Have an emergency plan covering steps to be taken in the event of an accidental release.

* * * * *
*** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no warranties, guarantees or representations of any kind or nature with respect to the product or to this data, either express or implied, and whether arising by law or otherwise, including but not limited to any implied warranty of merchantability or fitness for any particular purpose. Matheson shall in no event be liable for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Newark, CA (415) 793-2559, Morrow, GA (404) 961-7891,
Joliet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg,
OH (216) 425-4406, La Porte, TX (713) 471-2544



MATHESON GAS PRODUCTS

MATERIAL SAFETY DATA SHEET

031

PRODUCT IDENTIFICATION

MSDS031: ETHANE
SYNONYM(S): None
CHEMICAL FORMULA: C₂H₆
C.A.S. NUMBER: 74-84-0

D.O.T. SHIPPING NAME: Ethane
D.O.T. I.D. NUMBER: UN1035
D.O.T. HAZARD CLASS: Flammable Gas
D.O.T. LABEL(S): Flammable Gas

PHYSICAL DATA

MOLECULAR WEIGHT: 30.070
BOILING POINT: - 88.6°C; -127.5°F
VAPOR PRESSURE @ 21.1°C: 3,744 kPa (gauge); 543 psig
SPECIFIC VOLUME @ 1 ATM, 21.1°C: 0.799 m³/kg; 12.8 ft³/lb
RELATIVE DENSITY, (AIR=1): 1.048 @ 1 atm, 0°C

SOLUBILITY IN WATER @ 1 ATM, 20°C: 9.82 cm³/ Kg water

DESCRIPTION: At room temperature and atmospheric pressure ethane is a colorless, odorless, flammable, nontoxic gas. It is shipped as a liquefied gas under its own vapor pressure.

FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: 3.0 - 12.5% by volume.

AUTO-IGNITION TEMPERATURE: 472.2°C; 882°F

FIRE FIGHTING PROCEDURES: The only safe way to extinguish an ethane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the surroundings using a water spray.

Personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout gear may be inadequate.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

1. Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance.
2. Flammable gases may spread from a spill after the fire is extinguished and be subject to reignition.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS: OSHA TWA: None established

ACGIH TWA: None established *

* ACGIH considers ethane to be a simple asphyxiant.

ACUTE EFFECTS OF OVEREXPOSURE: Ethane is nontoxic but can act as a simple asphyxiant by displacing air. Symptoms of asphyxia include rapid respirations, dizziness and fatigue.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

REACTIVITY DATA

STABILITY: (X) STABLE () UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide and carbon dioxide.

POLYMERIZATION: (X) WILL NOT OCCUR () MAY OCCUR

SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus.

PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well ventilated areas away from sources of heat.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Respiratory equipment is not needed unless the gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxiation.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

1. Secure the cylinder to prevent it from falling or being knocked over.
2. Leak check the lines and equipment.
3. Have an emergency plan covering steps to be taken in the event of an accidental release.

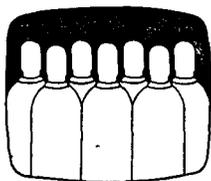
* * * *

*** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no warranties, guaranties or representations of any kind or nature with respect to the product or to this data, either express or implied, and whether arising by law or otherwise, including but not limited to any implied warranty of merchantability or fitness for any particular purpose. Matheson shall in no event be liable for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Newark, CA (415) 793-2559, Morrow, GA (404) 961-7891,
Joliet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg,
OH (216) 425-4406, La Porte, TX (713) 471-2544



MATHESON GAS PRODUCTS

MATERIAL SAFETY DATA SHEET 076

PRODUCT IDENTIFICATION

MSDS076: PROPANE

SYNONYM(S): Liquefied Petroleum Gas

CHEMICAL FORMULA: C_3H_8 or $CH_3CH_2CH_3$

C.A.S. NUMBER: 74-98-6

D.O.T. SHIPPING NAME: Propane

D.O.T. I.D. NUMBER: UN1075

D.O.T. HAZARD CLASS: Flammable Gas

D.O.T. LABEL(S): Flammable Gas

PHYSICAL DATA

MOLECULAR WEIGHT: 44.097

FREEZING POINT: $-187.7^{\circ}C$; $-305.9^{\circ}F$

BOILING POINT: $-42.1^{\circ}C$; $-43.7^{\circ}F$

VAPOR PRESSURE: 752 kPa (gauge); 109 psig

SPECIFIC VOLUME @ 1 ATM, $21.1^{\circ}C$: $0.531 m^3/kg$; $8.5 ft^3/lb$

RELATIVE DENSITY, (AIR=1): 1.55 @ 1 atm, $20^{\circ}C$

SOLUBILITY IN WATER @ 1 ATM, $18^{\circ}C$: $6.5 cm^3 / 0.1 kg$ water

DESCRIPTION: At room temperature and atmospheric pressure propane is a colorless, flammable, nontoxic gas, with a characteristic natural gas odor. It is shipped as a liquefied gas under its own vapor pressure.

FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: 2.2 - 9.5% by volume.

AUTO-IGNITION TEMPERATURE: $468^{\circ}C$; $874^{\circ}F$

FIRE FIGHTING PROCEDURES: The only safe way to extinguish a propane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the cylinder and the surroundings using a water spray.

Personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout gear may be inadequate.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

1. Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance.
2. Flammable gases may spread from a spill after the fire is extinguished and be subject to reignition.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: 1,000 ppm ($1,800 mg/m^3$)

ACGIH TWA: None established *

* ACGIH considers propane to be a simple asphyxiant.

ACUTE EFFECTS OF OVEREXPOSURE: Propane is nontoxic but can act as a simple asphyxiant by displacing air. Symptoms of asphyxia include rapid respirations, dizziness and fatigue.

Contact with the liquid phase or with the cold gas escaping from a cylinder may cause frostbite.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

CONTACT: Treat for frostbite.

REACTIVITY DATA

STABILITY: (X) STABLE () UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide, carbon dioxide

POLYMERIZATION: (X) WILL NOT OCCUR () MAY OCCUR

SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach-type protective suits and positive pressure self-contained breathing apparatus.

PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well-ventilated areas away from sources of heat or ignition. Do not store with oxidizers.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Approved respiratory equipment must be worn when airborne concentrations exceed safe levels.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

1. Secure the cylinder to prevent it from falling or being knocked over.
2. Leak check the lines and equipment.
3. Have an emergency plan covering steps to be taken in the event of an accidental release.

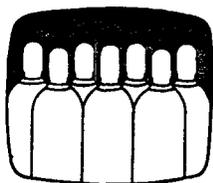
* * * *

*** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no warranties, guaranties or representations of any kind or nature with respect to the product or to this data, either express or implied, and whether arising by law or otherwise, including but not limited to any implied warranty of merchantability or fitness for any particular purpose. Matheson shall in no event be liable for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Newark, CA (415) 793-2559, Morrow, GA (404) 961-7891,
Joliet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg,
OH (216) 425-4406, La Porte, TX (713) 471-2544



MATHESON GAS PRODUCTS

MATERIAL SAFETY DATA SHEET

011

PRODUCT IDENTIFICATION

MSDS011: n-BUTANE

SYNONYM(S): Normal Butane, Butane

CHEMICAL FORMULA: $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$ or C_4H_{10}

C.A.S. NUMBER: 106-97-8

D.O.T. SHIPPING NAME: Butane

D.O.T. I.D. NUMBER: UN1075

D.O.T. HAZARD CLASS: Flammable Gas

D.O.T. LABEL(S): Flammable Gas

PHYSICAL DATA

MOLECULAR WEIGHT: 58.124

FREEZING POINT: -138.4°C ; -217.0°F

BOILING POINT: -0.6°C ; 31.1°F

VAPOR PRESSURE @ 21.1°C : 110 kPa (gauge); 16.3 psig

SPECIFIC VOLUME @ 1 ATM, 21.1°C : $0.400 \text{ m}^3/\text{kg}$; $6.4 \text{ ft}^3/\text{lb}$

RELATIVE DENSITY, (AIR=1): 2.11 @ 1 atm, 20°C

SOLUBILITY IN WATER @ 1 ATM, 0°C : $3.147 \text{ cm}^3/100 \text{ cm}^3$ water

DESCRIPTION: At room temperature and atmospheric pressure n-butane is a colorless, flammable, relatively nontoxic gas with a characteristic natural gas odor. It is shipped as a liquefied gas under its own vapor pressure.

FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: 1.8 - 8.4% by volume.

AUTO-IGNITION TEMPERATURE: 430°C ; 806°F

FIRE FIGHTING PROCEDURES: The only safe way to extinguish an n-butane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the cylinder and the surroundings using a water spray.

Personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout gear may be inadequate.

Small secondary fires may be brought under control by using carbon dioxide or dry chemical type fire extinguishers while stopping the flow.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

1. Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance.
2. Flammable gases may spread from a spill after the fire is extinguished and be subject to reignition.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: None established

ACGIH TWA: 800 ppm ($1,900 \text{ mg}/\text{m}^3$)

ACUTE EFFECTS OF OVEREXPOSURE: n-Butane is a simple asphyxiant. Inhalation of high concentrations may cause rapid respirations, dizziness, fatigue, and nausea. Massive exposures may cause unconsciousness and death.

Contact with the liquid phase may cause frostbite.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Call a physician.

CONTACT: Treat for Frostbite.

REACTIVITY DATA

STABILITY: (X) STABLE () UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide and carbon dioxide

POLYMERIZATION: (X) WILL NOT OCCUR () MAY OCCUR

SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach type protective suits and self-contained breathing apparatus.

PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well-ventilated areas away from sources of heat or ignition. Do not store with oxidizers.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Approved respiratory equipment must be worn when airborne concentrations exceed safe limits. Gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxiation.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

1. Secure the cylinder to prevent it from falling or being knocked over.
2. Install check valves or traps to prevent suckback to the cylinder.
3. Ground all lines and equipment
4. Leak check the lines and equipment.
5. Have an emergency plan covering steps to be taken in the event of an emergency release.

* * * *

*** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no warranties, guarantees or representations of any kind or nature with respect to the product or to this data, either express or implied, and whether arising by law or otherwise, including but not limited to any implied warranty of merchantability or fitness for any particular purpose. Matheson shall in no event be liable for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Newark, CA (415) 793-2559, Morrow, GA (404) 961-7891,
Joliet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg,
OH (216) 425-4406, La Porte, TX (713) 471-2544



SCIENTIFIC GAS PRODUCTS
 ASHLAND CHEMICAL COMPANY
 2330 Hamilton Boulevard, South Plainfield, New Jersey 07080

MATERIAL SAFETY DATA SHEET

Section I -- Product Identification

Emergency Phone Numbers

NJ (201) 754-7700 TX (713) 947-2222 CO (303) 442-4700 CA (415) 659-0162
 24-Hour Telephone: (606) 324-1133 (Located at Ashland, KY)

Product: Pentane, 99%	Synonyms: None
Chemical Name: Pentane	Chemical Family: Aliphatic hydrocarbon
Formula: C ₅ H ₁₂	Molecular Weight: 72.17
Issue Date: November 25, 1985	CAS Registry No.: 109-66-0

Section II -- Hazardous Ingredients

Refer to Section V for TLV information

For mixtures of this product request the respective component Material Safety Data Sheets.

Section III -- Physical Data

Boiling Point, 760 mm Hg: 95°F (35°C)	Freezing Point: -232°F (-130°C)
Specific Gravity (H₂O=1) .61 at 60°F	Vapor Pressure at 20°C: 425 mm Hg
Vapor Density (air=1) 2.4	Solubility in Water, @ 0°C insoluble
Per Cent Volatiles By Volume: 100%	Evaporation Rate (Butyl Acetate=1): 1.0 (ether=1)

Appearance and Odor:

Section IV -- Fire and Explosion Hazard Data

Flash Point (test method) -56°F	Autoignition Temperature unknown
Flammable Limits In Air, % by volume	Lower: 1-4 Upper: unknown

Extinguishing Media regular foam, alcohol foam, carbon dioxide, dry chemical

Special Fire Fighting Procedures:

See attached page.

Unusual Fire and Explosion Hazards:

See attached page.

Section V -- Health Hazard Data

Threshold Limit Value: 600 ppm See attached page.

Effects of Overexposure and Emergency and First Aid Procedures:

See attached page.

Section VI — Reactivity Data

Stability		Conditions to Avoid: High temperatures
Unstable	Stable	
	XXX	

Incompatibility (materials to avoid): strong oxidizing agents

Hazardous Decomposition Products: CO/CO₂ various hydrocarbons

Hazardous Polymerization		Conditions to Avoid: N/A
Will occur	Will not occur	
	XXX	

Section VII — Spill or Leak Procedures

Steps to be Taken if Material is Released or Spilled: See attached page.

Waste Disposal Method:

Destroy by incineration in accordance with applicable regulations.

Section VIII — Special Protection Information

Respiratory Protection: See attached page.

Ventilation	Local Exhaust	See attached page.	Special	None
	Mechanical	See above.	Other	None
Protective Gloves: nitrile rubber			Eye Protection	
Other Protective Equipment: Safety shoes. See attached page.			See attached page.	

Section IX — Special Precautions

Product is highly flammable and forms explosive mixtures with air, oxygen and all oxidizing agents. Use spark-proof tools, motors and fasteners. Electrically ground all equipment and lines, especially glassware and plastic tubing which are prone to static electricity build-up. See attached page.

Section X — Transportation Data

Shipping Container—Compressed Gas Cylinder.

DOT Shipping Hazard Classification: Flammable liquid

DOT Shipping Name: Pentane

DOT Label: Flammable liquid

U.N. #: 1265

Disclaimer

Though Scientific Gas Products believes that the data contained herein are factual and the opinions expressed are those of qualified experts, the information is not to be taken as a guarantee to which Scientific Gas can be legally bound. This bulletin is offered as a service and is subject to the user's scrutiny and verification. Use of the information presented in this bulletin should be determined by the user to be in accordance with federal, state, and local laws and regulations.

PRODUCT: Pentane, 99%

Continuation Sheet
Page 1

Special Fire Fighting Procedures:

Wear self-contained breathing apparatus with a full facepiece operated in pressure demand or other positive pressure mode when fighting fires.

Unusual Fire and Explosion Hazards:

Material is highly volatile and readily gives off vapor which may travel along the ground or be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point.

Threshold Limit Value:

NIOSH recommends a limit of 120 ppm--8 hour Time weighted average, 610 ppm ceiling.

Effects of Overexposure:

EYES--Can cause severe irritation, redness, tearing, blurred vision.

SKIN--Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis.

BREATHING--Excessive inhalation of vapors can cause nasal irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation.

SWALLOWING--May cause gastrointestinal irritation and large amounts may cause serious harm.

Emergency and First Aid Procedures:

IF ON SKIN: Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use.

IF IN EYES: Flush with large amounts of water, lifting upper and lower lids occasionally. Get medical attention.

IF SWALLOWED: Due to the nature of the material, it is very unlikely that it could be taken internally.

PRODUCT: Pentane, 99%

Continuation Sheet
Page 2

Emergency and First Aid Procedures: (continued)

IF BREATHED: If affected, remove individual to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm, quiet, and get medical attention.

PRIMARY ROUTES OF ENTRY: Inhalation, skin contact.

Steps to be Taken If Material is Released or Spilled:

Eliminate all sources of ignition such as flares, flames (including pilot lights), and electrical sparks. Ventilate area. Evacuate area. Nonessential employees should be excluded from the exposure area. Persons involved in the control and repair of the leak should be provided with all necessary protective equipment and be properly trained for emergency situations involving this material.

Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

Respiratory Protection:

If TLV of the product or any component is exceeded, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions. (See your safety equipment supplier). Engineering or administrative controls should be implemented to reduce exposure.

Ventilation:

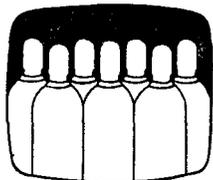
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Eye Protection:

Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your safety equipment supplier).

Other Protective Equipment:

To prevent repeated or prolonged skin contact, wear impervious clothing and boots.



MATHESON GAS PRODUCTS

MATERIAL SAFETY DATA SHEET

118

PRODUCT IDENTIFICATION

MSDS118: n-HEXANE (IN GAS CYLINDER)

D.O.T. SHIPPING NAME: Hexane

SYNONYM(S): Hexane

D.O.T. I.D. NUMBER: UN1208

CHEMICAL FORMULA: C_6H_{14} or $CH_3(CH_2)_4CH_3$

D.O.T. HAZARD CLASS: Flammable Liquid

C.A.S. NUMBER: 110-54-3

D.O.T. LABEL(S): Flammable Liquid

PHYSICAL DATA

MOLECULAR WEIGHT: 86.20

FREEZING POINT: $-95.6^{\circ}C$; $-140.1^{\circ}F$

BOILING POINT: $69.0^{\circ}C$; $156.2^{\circ}F$

VAPOR PRESSURE @ $15.6^{\circ}C$: 100 mm Hg ; 1.93 psia

RELATIVE DENSITY, (AIR=1): 2.97

SOLUBILITY IN WATER: Insoluble

DESCRIPTION: At room temperature and atmospheric pressure, n-hexane is a colorless volatile liquid.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: $-23^{\circ}C$; $-9.4^{\circ}F$

FLAMMABLE LIMITS IN AIR: 1.2 - 7.5% by volume

AUTO-IGNITION TEMPERATURE: $260^{\circ}C$; $501^{\circ}F$

FIRE FIGHTING PROCEDURES: The only safe way to extinguish a n-hexane fire is to stop the flow of material. If the flow cannot be stopped, let the fire burn itself out while cooling the cylinder and the surroundings using a water spray.

Personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus.

Small secondary fires may be brought under control by using carbon dioxide or dry chemical fire extinguishers while stopping flow.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

1. Containers that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance.
2. Vapors which are heavier than air can flow along surfaces and grade levels to reach distant ignition sources.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: 500 ppm ($1800 \text{ mg}/\text{m}^3$)

ACGIH TWA: 50 ppm ($180 \text{ mg}/\text{m}^3$)

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Chronic respiratory disease, liver disease, kidney disease, skin disease.

ACUTE EFFECTS OF OVEREXPOSURE: Overexposure to hexane may cause lightheadedness, giddiness, nausea and headache. It may also cause irritation of the eyes and nose. Greater exposure may cause unconsciousness and death.

CHRONIC EFFECTS OF OVEREXPOSURE: Prolonged overexposure to the liquid may cause irritation of the skin.

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

CONTACT: Immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes.

INGESTION: If ingested, do not induce vomiting. Call a physician.

REACTIVITY DATA

STABILITY: (X) STABLE () UNSTABLE

INCOMPATIBILITY: Oxidizing materials

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide, carbon dioxide

POLYMERIZATION: (X) WILL NOT OCCUR () MAY OCCUR

SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus.

PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Containers should be stored and used in dry, well ventilated areas away from sources of heat or ignition.

Do not store with oxidizers.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Approved respiratory equipment must be worn when airborne concentrations exceed safe levels.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE MATERIAL:

1. Secure the cylinder to prevent it from falling or being knocked over.
2. Install check valves or traps to prevent suckback to the cylinder.
3. Leak check the lines and equipment.
4. Ground all lines and equipment.
5. Have an emergency plan covering steps to be taken in the event of an accidental release.

* * * *

*** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no warranties, guarantees or representations of any kind or nature with respect to the product or to this data, either express or implied, and whether arising by law or otherwise, including but not limited to any implied warranty of merchantability or fitness for any particular purpose. Matheson shall in no event be liable for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Newark, CA (415) 793-2559, Morrow, GA (404) 961-7891,
Joliet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg,
OH (216) 425-4406, La Porte, TX (713) 471-2544

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
MATERIAL SAFETY DATA SHEET

SECTION I	
MANUFACTURER'S NAME THE PERMIAN CORPORATION	EMERGENCY TELEPHONE NO. (713) 787-2548
ADDRESS P. O. Box 1183, Houston, Texas 77251-1183	
CHEMICAL NAME AND SYNONYMS Crude Oil, Petroleum, Flammable Liquid	TRADE NAME AND SYNONYMS Crude Oil (Derived from various production fields)
CHEMICAL FAMILY Petroleum Hydrocarbon	FORMULA Complex mixture of petroleum hydrocarbons, along with sulfur- and nitrogen compounds.

SECTION II INGREDIENTS AND HAZARD INFORMATION		
	%	TLV — OEL
Petroleum Crude Oil, Flammable Liquid -- A naturally occurring mixture of hydrocarbons, along with gases and sulfur- and nitrogen compounds CAS No. 8002-05-9*	100	Not established. See below and Section V.

Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids and vapors of petroleum products should be minimized.

Crude oil may contain hydrogen sulfide gas which may accumulate in bulk transport compartments. Therefore, personnel should stand upwind, keep their faces at least two feet from compartment openings, and avoid breathing vapors when opening hatches and dome covers. 10 ppm is the ACGIH recommended TLV for H₂S gas. OSHA recommends a ceiling of 20 ppm and a peak of 50 ppm for 10 minute once per day. Sense of smell can be lost in 3 to 15 minutes exposure to low (100 ppm) concentration of hydrogen sulfide, or in 60 seconds or less to higher (200+ ppm) concentrations. Breathing may stop after a few seconds of exposure to hydrogen sulfide concentrations greater than 700 ppm, with immediate loss of consciousness and subsequent death. NIOSH-approved respiratory equipment should be used when permissible concentrations are exceeded.

Crude oils, and especially heavier crude oil fractions with high-boiling aromatics, have increased the incidence of skin cancer in laboratory tests where mice were painted over their lifespan without washing between applications. Contains light hydrocarbons which may include a low percentage of benzene. Light hydrocarbons have produced kidney damage in laboratory animals, and certain components may affect the nervous system. Benzene can cause leukemia and other blood diseases after repeated or prolonged exposures at high concentrations.

SECTION III PHYSICAL DATA			
BOILING RANGE Variable, depending on individual crude oils	Gas, to 550°C (1000°F)	SPECIFIC GRAVITY (H₂O=1) Varies	0.7 to 0.85
VAPOR PRESSURE (mm Hg.) Varies with individual crudes		PERCENT VOLATILE BY VOLUME (%) Varies	Up to 50%
VAPOR DENSITY (AIR = 1) Varies	Heavier than air	EVAPORATION RATE (n-BUTYL ACETATE = 1)	
SOLUBILITY IN WATER	Negligible		

APPEARANCE AND ODOR Appearance may range from clear, light color to dark, viscous liquid. Odor may range from mild, pleasant hydrocarbon odor to pungent, offensive, or strong sulfurous odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method Used) Below 38°C (100°F)	FLAMMABLE OR EXPLOSIVE LIMITS (APPROXIMATE PERCENT BY VOLUME IN AIR)	LOWER LIMIT 0.6%	UPPER LIMIT 15%

EXTINGUISHING MEDIA
 Foam; water mist or spray, dry chemical, or CO₂

SPECIAL FIRE FIGHTING PROCEDURES Use supplied-air breathing equipment for enclosed areas or high fume concentration. Cool exposed containers with water spray. Minimize skin contact; minimize breathing vapor or fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS Do not mix or store with strong oxidants such as liquid chlorine or concentrated oxygen. Sulfur compounds present may result in emission of hydrogen sulfide gas. Burning may result in SO₂ and SO₃ fumes.

FLAMMABLE LIQUID -- Vapor may ignite explosively.

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV) — OCCUPATIONAL EXPOSURE LIMIT (OEL)

The recommended occupational exposure limit for benzene is 5 ppm for an 8-hour period, or 250 ppm-minutes over a 5- to 30-minute period. H₂S gas may be present. See Section II.

EFFECTS OF OVEREXPOSURE

Inhalation of high vapor concentrations may have results ranging from eye and respiratory irritation, dizziness, and headaches to unconsciousness, depending on concentration and length of exposure. Prolonged or repeated liquid contact with the skin will dry and de-fat the skin leading to skin irritation, dermatitis, and an increased possibility of skin cancer. See Section II regarding H₂S gas and additional health-effects information.

EMERGENCY AND FIRST AID PROCEDURES

If overcome by vapor, remove from exposure immediately; call a Physician. If breathing is irregular or stopped, start resuscitation, administer oxygen. If ingested, DO NOT induce vomiting; call a Physician. In case of skin contact, remove any contaminated clothing, and wash skin with soap and warm water. If splashed into the eyes, flush eyes with clear water for 15 minutes or until irritation subsides; get medical attention if irritation persists.
CAUTION: Some crudes are hot. Protect against burns.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID -----
	STABLE	X	

INCOMPATIBILITY (Materials to avoid)

Strong oxidants such as liquid chlorine, concentrated oxygen, sodium- or calcium hypochlorite.

HAZARDOUS DECOMPOSITION PRODUCTS

Fumes, smoke and carbon monoxide, in the case of incomplete combustion. Also H₂S, SO₂, and SO₃.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all ignition sources. Keep people away. Recover free liquid. Add absorbent (sand, earth, sawdust, etc.) to spill area. Minimize breathing vapors. Ventilate confined spaces. Open all windows and doors. Keep petroleum products out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas.

WASTE DISPOSAL METHOD

Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved disposal site or facility. Continue to observe precautions for volatile, flammable vapors from absorbed material.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type)

Use supplied-air respiratory protection in confined or enclosed spaces if needed.

VENTILATION	LOCAL EXHAUST	Ventilate area to avoid accumulation of explosive vapors.	SPECIAL	No smoking or open lights
	MECHANICAL (GENERAL)	Use explosion-proof equipment and non-sparking tools in areas where explosive vapor concentrations may form.	OTHER	Keep people away.
PROTECTIVE GLOVES	Use chemical-resistant gloves to avoid skin contact.		EYE PROTECTION	Use splash goggles or face shield when eye contact may occur.
OTHER PROTECTIVE EQUIPMENT	Use chemical-resistant apron or other clothing, if needed, to avoid contaminating regular clothing.			

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING & STORAGE

Keep containers closed when not in use. Do not handle or store near heat, sparks, flame, or strong oxidants.

Ventilation must be sufficient to prevent build-up of toxic or explosive concentration of vapor in air.

OTHER PRECAUTIONS

Minimize breathing vapors. Avoid prolonged or repeated contact with skin. Remove contaminated clothing, launder before reuse. Remove contaminated shoes and thoroughly dry before reuse; discard oil-soaked shoes. Wash skin thoroughly with soap and water after contact.

FOR ADDITIONAL INFORMATION: CONTACT YOUR SUPERVISOR FIRST.

FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT:

During normal working hours:

Manager of Personnel & Safety

(713) 787-2548



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

52,320-2

PAGE 1

97367 (4-85)

24 HOUR EMERGENCY ASSISTANCE			GENERAL MSDS ASSISTANCE		
SHELL: 713-473-9461 CHEMTREC: 800-424-9300			SHELL: 713-241-4819		
ACUTE HEALTH + 2	FIRE 2	REACTIVITY 0	HAZARD RATING	LEAST - 0 HIGH - 3	SLIGHT - 1 EXTREME - 4
*For acute and chronic health effects refer to the discussion in Section III					



SECTION I	NAME
PRODUCT	SHELL DIESELINE
CHEMICAL NAME	DIESEL OIL
CHEMICAL FAMILY	PETROLEUM HYDROCARBON
SHELL CODE	31135

SECTION II-A	PRODUCT/INGREDIENT	CAS NUMBER	PERCENT
NO.	COMPOSITION		
P	SHELL DIESELINE	68334-30-5	100

SECTION II-B	ACUTE TOXICITY DATA		
NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	NOT AVAILABLE		

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT
BASED ON ESSENTIALLY SIMILAR PRODUCT TESTING LIQUID IS PRACTICALLY NONIRRITATING TO THE EYES.

SKIN CONTACT
BASED ON ESSENTIALLY SIMILAR PRODUCT TESTING LIQUID IS PRESUMED TO BE MODERATELY IRRITATING TO THE SKIN. PROLONGED OR REPEATED LIQUID CONTACT CAN RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SEVERE IRRITATION AND DERMATITIS. MAY CAUSE MILD SKIN SENSITIZATION. RELEASE DURING HIGH PRESSURE USAGE MAY RESULT IN INJECTION OF OIL INTO THE SKIN CAUSING LOCAL NECROSIS.

INHALATION
INHALATION OF VAPORS OR MIST MAY CAUSE MILD IRRITATION TO THE UPPER RESPIRATORY TRACT. HIGH CONCENTRATIONS MAY RESULT IN CENTRAL NERVOUS SYSTEM DEPRESSION. INHALATION OF HIGH LEVELS OF MIST MAY RESULT IN CHEMICAL PNEUMONITIS.

INGESTION
INGESTION OF PRODUCT MAY RESULT IN VOMITING; ASPIRATION (BREATHING) OF VOMITUS INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES MAY RESULT IN ASPIRATION PNEUMONITIS.

SIGNS AND SYMPTOMS
IRRITATION AS NOTED ABOVE. SKIN SENSITIZATION (ALLERGY) MAY BE EVIDENCED BY RASHES, ESPECIALLY HIVES. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS.

HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR. LOCAL NECROSIS IS EVIDENCED BY DELAYED ONSET OF PAIN AND TISSUE DAMAGE A FEW HOURS FOLLOWING INJECTION. ASPIRATION PNEUMONITIS MAY BE EVIDENCED BY COUGHING, LABORED BREATHING AND CYANOSIS (BLUISH SKIN); IN SEVERE CASES DEATH MAY OCCUR.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING SKIN AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. PREEXISTING SKIN OR LUNG ALLERGIES MAY INCREASE THE CHANCE OF DEVELOPING INCREASED ALLERGY SYMPTOMS FROM EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

KIDNEY DAMAGE MAY RESULT FOLLOWING ASPIRATION PNEUMONITIS. THE RESULTS OF ANIMAL BIOASSAYS ON MIDDLE DISTILLATE FUELS SHOW THAT PROLONGED DERMAL CONTACT PRODUCES A WEAK TO MODERATE CARCINOGENIC ACTIVITY.

SEE SECTION VI FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

NO.	OSHA		TLV/TWA	ACGIH	TLV/STEL	OTHER
	PEL/TWA	PEL/CEILING				

NO OSHA PEL OR ACGIH TLV HAS BEEN ESTABLISHED.

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT
FLUSH EYES WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

SKIN CONTACT
REMOVE CONTAMINATED CLOTHING/SHOES AND WIPE EXCESS FROM SKIN. FLUSH SKIN WITH WATER. FOLLOW BY WASHING WITH SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL CLEANED. IF MATERIAL IS INJECTED UNDER THE SKIN, GET MEDICAL ATTENTION PROMPTLY TO PREVENT SERIOUS DAMAGE; DO NOT WAIT FOR SYMPTOMS TO DEVELOP.

ASPHALATION
REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GET MEDICAL ATTENTION.

INGESTION
DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.

ROUTE TO PHYSICIAN
IF MORE THAN 2.0 ML PER KG HAS BEEN INGESTED AND VOMITING HAS NOT OCCURRED, EMESIS SHOULD BE INDUCED WITH SUPERVISION. KEEP VICTIM'S HEAD BELOW HIPS TO PREVENT ASPIRATION. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE USING A DIFFERENT ENDOTRACHEAL TUBE SHOULD BE CONSIDERED.

SECTION VI SUPPLEMENTAL INFORMATION

REPEATED DERMAL APPLICATION OF HIGH LEVELS OF MIDDLE DISTILLATE FUELS IN EXPERIMENTAL ANIMALS HAS PRODUCED EXTREMELY SEVERE IRRITATION TO CORROSIVE ACTION ON THE SKIN. VARYING DEGREES OF LIVER AND KIDNEY DAMAGE WERE NOTED IN THESE STUDIES, INCLUDING CONGESTION, ENLARGEMENT, MOTTLING, AND MULTIFOCAL NECROSIS.

MIDDLE DISTILLATE FUELS HAVE BEEN DEMONSTRATED TO CAUSE CHROMOSOME DAMAGE IN THE IN VIVO RAT BONE MARROW CYTOGENETICS ASSAY, AND MUTAGENIC IN THE L5178Y MOUSE LYMPHOMA ASSAY.

SECTION VII

PHYSICAL DATA

BOILING POINT: 325 (DEG F) SPECIFIC GRAVITY: 0.8762 (H2O=1) VAPOR PRESSURE: NOT AVAILABLE (MM HG)

MELTING POINT: NOT AVAILABLE (DEG F) SOLUBILITY: NEGLIGIBLE (IN WATER) VAPOR DENSITY: >1 (AIR=1)

EVAPORATION RATE (N-BUTYL ACETATE = 1): NOT AVAILABLE

APPEARANCE AND ODOR: YELLOW LIQUID; STRONG HYDROCARBON ODOR.

SECTION VIII

FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD: 130 DEG F (PMCC) MIN. FLAMMABLE LIMITS % VOLUME IN AIR
LOWER: N/AV UPPER: N/AV

EXTINGUISHING MEDIA

USE WATER FOG, FOAM, DRY CHEMICAL OR CO2. DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SURFACE OF WATER.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

CAUTION. COMBUSTIBLE. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER. IN THE CASE OF LARGE FIRES, ALSO COOL SURROUNDING EQUIPMENT AND STRUCTURES WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS

CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE.

SECTION IX

REACTIVITY

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:

AVOID HEAT, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS

THERMAL DECOMPOSITION PRODUCTS ARE HIGHLY DEPENDENT ON THE COMBUSTION CONDITIONS. A COMPLEX MIXTURE OF AIRBORNE SOLID, LIQUID, PARTICULATES AND GASES WILL EVOLVE WHEN THIS MATERIAL UNDERGOES PYROLYSIS OR COMBUSTION. CARBON MONOXIDE AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED UPON COMBUSTION.

SECTION X

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

USE A NIOSH-APPROVED RESPIRATOR AS REQUIRED TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134, USE EITHER A FULL-FACE, ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.

PROTECTIVE CLOTHING

NO SPECIAL EYE PROTECTION IS ROUTINELY NECESSARY. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR CHEMICAL RESISTANT GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES
USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS.

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

SECTION COMBUSTIBLE. *** LARGE SPILLS *** ELIMINATE POTENTIAL SOURCES OF IGNITION. WEAR APPROPRIATE RESPIRATOR AND OTHER PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND, OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS AND SEAL TIGHTLY FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTION AS ABOVE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL.

WASTE DISPOSAL

UNDER EPA - RCRA (40 CFR 261.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING WASTE DISPOSAL.

ENVIRONMENTAL HAZARDS

UNDER EPA-CWA, THIS PRODUCT IS CLASSIFIED AS AN OIL UNDER SECTION 311. SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

SECTION XII SPECIAL PRECAUTIONS

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM THE HANDLING SITE; FLASH-FIRE CAN RESULT. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE (ONLY) WITH ADEQUATE VENTILATION. CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: COMBUSTIBLE LIQUID
I.C.T. PROPER SHIPPING NAME: FUEL OIL, NA 1993

SECTION XIV OTHER REGULATORY CONTROLS

THIS PRODUCT IS LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: OCTOBER 16, 1985

BE SAFE

READ OUR PRODUCT
SAFETY INFORMATION ...AND PASS IT ON
(PRODUCT LIABILITY LAW
REQUIRES IT)

JOHN P. SEPEZI

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P. O. BOX 4320
HOUSTON, TX 77210

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

***** I. PRODUCT IDENTIFICATION *****
MOBIL PEGASUS 490

SUPPLIER: MOBIL OIL CORP. HEALTH EMERGENCY TELEPHONE: (212) 383-4411
CHEMICAL NAMES AND SYNONYMS: PET. HYDROCARBONS AND ADDITIVES TRANSPORT EMERGENCY TELEPHONE: (800) 424-9300 (CHEMTREC)
USE OR DESCRIPTION: GAS ENGINE OIL

***** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE: ASTM 4.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 670.0 AT 40 C, CS: 123.0
VISCOSITY AT 210 F, SUS: 72.0 AT 100 C, CS: 13.6
FLASH POINT F(C): >420(249) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 10(-12)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.879 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

***** III. INGREDIENTS *****

WT PCT (APPROX)	EXPOSURE LIMITS (MG/M3)	SOURCES (PPM AND NOTES)
-----------------	-------------------------	-------------------------

HAZARDOUS INGREDIENTS:
NONE

OTHER INGREDIENTS:

REFINED MINERAL OILS >95
ADDITIVES AND/OR OTHER INGREDIENTS < 5

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

***** IV. HEALTH HAZARD DATA *****

EFFECTS OF OVEREXPOSURE: NOT EXPECTED TO BE A PROBLEM.

***** V. EMERGENCY AND FIRST AID PROCEDURES *****

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER.
INHALATION: NOT EXPECTED TO BE A PROBLEM.
INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER (PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL A PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

***** VI. FIRE AND EXPLOSION HAZARD DATA *****
FLASH POINT F(C): > 480(249) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .5 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CONTAINED
BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

***** VII. REACTIVITY DATA *****
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: EXTREME HEAT
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

***** VIII. SPILL OR LEAK PROCEDURE *****
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE
AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE
REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING
INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE
NUMBER 800-424-3802.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT
TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF
AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH
CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT
CHARACTERISTICS AT TIME OF DISPOSAL.
WASTE MANAGEMENT: DISSOLVE WASTE IN A SOLVENT AND DISPOSE BY SUPERVISED
INCINERATION IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

***** IX. SPECIAL PROTECTION INFORMATION *****
EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED.
SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL
HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY
CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.
VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE
AND WITH ADEQUATE VENTILATION.

***** X. SPECIAL PRECAUTIONS *****
HANDLING: NO SPECIAL PRECAUTIONS REQUIRED.

***** XI. TOXICOLOGICAL DATA *****

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG 0/10 RATS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 0/10 RABBITS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.

EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. EYE IRRITATION SCORES: 0 AT 24 HOURS, 0 AT 48 HOURS, 0 AT 72 HOURS---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. PRIMARY IRRITATION SCORE: 0/2---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

***** XII. REGULATORY INFORMATION *****

TSCA INVENTORY STATUS: ALL COMPONENTS ARE REGISTERED.

EINECS INVENTORY STATUS: ALL COMPONENTS ARE REGISTERED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
*** NO INGREDIENT CITATIONS ***		

--- KEY TO LIST CITATIONS ---

- 1 = OSHA, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
- 6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
- 11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = NJ SHH,
- 16 = FL RTK, 17 = PA RTK.

FOR MOBIL USE ONLY: (FILL NO: RN6120A201) MHC: 1* 1* NA 3* 0* PPEC: US82-090 APPROVE REVISED: 10/26/82

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.



Date: 09/16/85

CITGO PETROLEUM CORPORATION
P. O. Box 3758
Tulsa, Oklahoma 74102

MATERIAL SAFETY DATA SHEET

Trade Name: CITGO Pacemaker Gas Engine Oil 1000

Commodity Code: 32-032

Synonyms: Lubricating Oil

CAS Reg. No.: Mixture
(Refer to Section I)

Citgo Index No. (CIN): 0208

Technical Contact: (918) 561-5165
Medical Emergency: (318) 491-6215

MATERIAL HAZARD EVALUATION
(Per OSHA's Hazard Communication
Standard [29 CFR Part 1910.1200])

Health: Non-Hazardous.

Precautionary Statement: Avoid prolonged skin contact with used motor oils.

I. GENERIC COMPOSITION/COMPONENTS

<u>Components</u>	<u>CAS #</u>	<u>%</u>	<u>Hazard Data</u>
Refined Petroleum Oil(s)	64742-65-0	90-98	Oral: LD50(rat): >15g/kg Eye: Practically Non-Irritating (0.7-1.7/110, Draize) Skin: Non-Irritating or Practically Non-Irritating (0-0.6/8, Draize) Ihln: LC50/4H(rat): >5,000mg/m ³
	-or-		
Other Refined Petroleum Oil(s)		90-98	Oral: LD50(rat): >5g/kg
Dispersant, anti-wear, anti-oxidant	Mixture	6-10	Minor eye and skin irritant

ND = No Data
NA = Not Applicable

*, SUBSIDIARY OF THE SOUTHLAND CORPORATION

LAS/32-032

II. PHYSICAL DATA

Physical Hazard Classification (Per 29 CFR Part 1910.1200)

<input type="checkbox"/> Combustible	<input type="checkbox"/> Oxidizer
<input type="checkbox"/> Compressed Gas	<input type="checkbox"/> Pyrophoric
<input type="checkbox"/> Explosive	<input type="checkbox"/> Reactivity
<input type="checkbox"/> Flammable	<input checked="" type="checkbox"/> Stable
<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Unstable

Boiling Point, 760 mmHg,
°C(°F): ~415(~780)

Melting Point, °C(°F): NA

Vapor Pressure, mmHg (25°C): ~<5x10⁻⁵

Specific Gravity
(H₂O=1): 0.88

Solubility in H₂O, % By Wt.: Negligible

Vapor Density (Air=1):>1

Evaporation Rate
(Butyl Acetate=1): <1

% Volatiles By Vol.: Negligible

pH of Undiluted Product: ND

Appearance and Odor: Amber liquid, mild odor.

III. FIRE AND EXPLOSION DATA

Flash Point, COC, °C(°F): 260(500)

NFPA*

Flash Point, PM, °C(°F): 230(446)

Health: 1

Fire Point, COC, °C(°F): 288(550)

Flammability: 1

Reactivity: 0

Flammable Limits in Air, % Vol.:

Lower: NA Upper: NA

Extinguishing Media: CO₂, dry chemical, foam or water fog.

Special Fire Fighting Procedure: None.

Unusual Fire or Explosion Hazard: Water may cause frothing.

*Citgo assignment based on our evaluation per NFPA guidelines.
Hazard Rating least-0; slight-1; moderate-2; high-3; extreme-4.



IV. REACTIVITY DATA

Stability: X Stable ___ Unstable

Conditions Contributing to Instability: None.

Incompatibility: Strong oxidants.

Hazardous Decomposition Products (thermal, unless otherwise specified):
CO, CO₂.

Conditions Contributing to Hazardous Polymerization: None.

V. SPILL OR LEAK PROCEDURES

Procedures if Material is spilled:

Remove sources of heat or ignition, provide adequate ventilation, contain leak. Absorb small spills with suitable material such as rags, straw or sand. Report spills as required to appropriate authorities.

Waste Disposal:

It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal.
Check before disposing to be sure you are in compliance with all applicable laws and regulations.

Protective measures during repair and maintenance of contaminated equipment:

Refer to Section VII - Special Protection Information.
Avoid prolonged contact with used oil, wash skin thoroughly with soap and water.

ND = No Data

NA = Not Applicable

SUBSIDIARY OF THE SOUTHLAND CORPORATION

LAS/32-032

VI. HEALTH HAZARD DATA

Health Hazard Classification (Per 29 CFR Part 1910.1200)

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Carcinogen | <input type="checkbox"/> Corrosive |
| <input type="checkbox"/> Animal Carcinogen | <input type="checkbox"/> Irritant |
| <input type="checkbox"/> Suspect Carcinogen | <input type="checkbox"/> Sensitizer |
| <input type="checkbox"/> Mutagen | <input type="checkbox"/> Teratogen |
| <input type="checkbox"/> Highly Toxic | <input type="checkbox"/> Target Organ |
| <input type="checkbox"/> Toxic | |

Toxicity Summary: Slightly toxic, 1 pt. to 1 qt. is approximate lethal oral dose for 150 lb. human adult.

Acute Exposure Symptoms:

Inhalation: Low risk of inhalation. In enclosed spaces or when hot, vapors may reach concentrations sufficient to cause drowsiness, dizziness, headache, nausea, or lung irritation. Mists above TLV may cause chemical pneumonitis.

Dermal Contact: Low irritant.

Absorption: No probable acute hazard.

Eye Contact: May be mildly irritating.

Ingestion: Generally low toxicity. Very large amounts may cause generalized depression, headache, drowsiness, nausea, vomiting or diarrhea. Small doses may produce irritation and diarrhea.

Chronic Exposure: Prolonged and/or frequent contact may cause drying, cracking (dermatitis) or folliculitis.

Other Special

Effects: None expected.

First Aid and Emergency Procedures for Acute Effect

Inhalation: Remove to fresh air. Respiratory support if necessary. Seek medical aid.

Dermal: Wash with soap and water. Do not wear heavily contaminated clothing before laundering.

Eyes: Flush with large volumes of water. See physician if any complications arise.

Ingestion: Do not induce vomiting. Seek medical aid.

Injection: Subcutaneous injection is a medical emergency . . seek medical aid immediately.

Notes to Physician: If viscosity is less than 100 SUS at 100°F careful gastric lavage with tight fitting or cuffed tube is to be preferred over emesis. If viscosity is greater than 100 SUS at 100°F, emesis may be induced for large quantities.

Aspiration may cause chemical pneumonitis or lipoid pneumonia. Subcutaneous injection requires prompt surgical debridement. If not familiar with technique, seek skilled advice. SUS viscosity at 100°F = 605.



VII. SPECIAL PROTECTION INFORMATION

Ventilation Requirements: Ventilation is required when work place exposures exceed TLV. Very high mist concentrations can result in a fire and explosion hazard.

TLV: 5 mg/cu m as oil mist. (ACGIH 1984-85; OSHA 1972)

Specific Personal Protective Equipment:

Respiratory: Normally none required. If high vapor or mist concentrations expected - use respirator approved for organic vapors and mists.

Eyes: Safety goggles, or chemical splash goggles if splashing is anticipated.

Dermal: Oil impervious gloves if frequent or prolonged contact is expected.

Other Clothing or Equipment: Wear body-covering work clothes to avoid prolonged or repeated exposure. Launder soiled work clothes before reuse.

VIII. TRANSPORTATION AND SPECIAL PRECAUTIONS

Hazardous Material Placard/Label:

Caution: Avoid prolonged skin contact with used motor oils. Continuous contact with used oil has caused skin cancer in laboratory animals. After draining oil, wash skin thoroughly with soap and water.

Storage: Store below 120°F. DOT Hazard label not required. Do not apply high heat or flame to container. Keep separate from strong oxidizing agents.

DOT Information:

DOT/UN Shipping Name: Petroleum Lubricating Oil.
DOT Hazard Class: Non-Hazardous.
DOT/UN Hazard Identification Number: None assigned.
DOT Shipping Container Restrictions: None.

Caution: Empty containers may contain product residue which could include flammable or explosive vapors.

Consult appropriate Federal, State and Local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.

All statements, information, and data provided in this material safety data sheet are believed to be accurate and reliable, but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied, on our part. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

ND = No Data

NA = Not Applicable

G

O.C.D. INSPECTION OF JUNE 5, 1989
SECTION II - ITEM A.
SPILL CONTAINMENT













O.C.D INSPECTION OF JUNE 5, 1989
SECTION II - ITEM B.

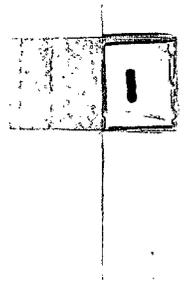
TANK BERMING

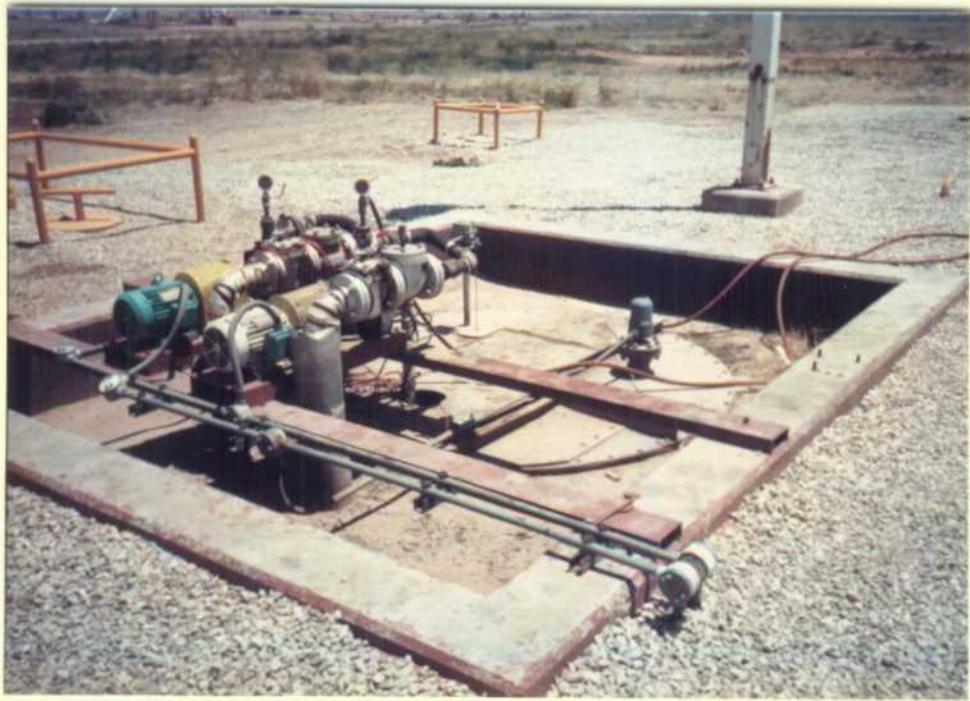
*VARIOUS TANKS THAT WILL REQUIRE
BERMING





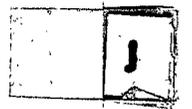






O.C.D. INSPECTION OF JUNE 5, 1989
SECTION II - ITEM C.
CLEAN AND OILY WATER SUMPS







O.C.D. INSPECTION OF JUNE 5,
1989

O.C.D. LETTER
SECTION II - ITEM F.
NO. I COOLING TOWER - SOUTH WALL

K



O.C.D. INSPECTION OF JUNE 5, 1989
SECTION II - ITEM I
DRUMS EMPTY



ENRON OIL CONSERVATION DIVISION
Northern Natural Gas Company RECEIVED
'89 OCT 21 AM 9 22

October 17, 1989
EDB: E38-89

Mr. David Baker
State of New Mexico
Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87503

Subject: HOBBS PROCESSING PLANT WATER LEAK

As we discussed on the telephone, attached is a brief chronology of the events surrounding a water leak that occurred at Hobbs.

Since we will be out your way on other business, I will stop by your office on October 18 to discuss the water leak and introduce Bill Janacek, Director of Environmental Affairs.



E. D. Berdine
Vice President, Environmental Affairs
and Administration
Agent and Attorney-in-Fact for
Northern Natural Gas Company

EDB/jc

RECEIVED

OCT 18 1989

GROUND WATER BUREAU

NORTHERN NATURAL GAS COMPANY

HOBBS PROCESSING PLANT

SUBJECT: Chromate Water Leak

Northern Natural Gas Company operates a natural gas processing and compression plant near Hobbs, Lea County, New Mexico. The following sequence of events describes a water leak that occurred at the plant and the actions taken to locate and eliminate the leak.

- May 12, 1989 OCD notified of use of chromates at Hobbs Plant (via Discharge Plan renewal application).
- May 19 Annual plant shutdown and major maintenance program (turnaround) begun.
- June 4 Engine jacket water and lubricating oil cooling systems drained.
- June 5 OCD inspection of entire plant facility.
- June 9 Completed draining and flushing the water systems. The total volume of water (90,300 gallons) was transferred to frac tanks for disposal.
- June 12-16 Cleaned, hydroblasted, dried and inspected internals of below ground concrete storage cell (cold wells).
- June 16 Letter to OCD providing status of cleaning and inspection of the cooling systems. No leaks were found.
- June 18-24 Sandblasted and flakelined the cold wells.
- June 25 Filled jacket water and lube oil cooling systems, chromate concentration in the lube oil system was 15ppm. During the evening shift a Maintenance Job Ticket (MJT) was written noting that the lube oil cooling system was losing water.
- June 26 Chromate concentration in the lube oil cooling system was 8 ppm. Initiated action to determine reason for water loss.
- June 27 Continued checking for cause of water loss. Chromate concentration 3.9 ppm.
- June 28 Continued checking for cause of water loss. Chromate concentration 1.94 ppm.
- June 29 Continued checking for cause of water loss. Chromate concentration 2.32 ppm.

June 30 Continued checking for cause of water loss. Chromate concentration 3.87 ppm.

July 1-17 Tested individual segments of the system for leak. No leaks found. Analyses of water during this period showed chromate concentrations as follows:
 July 5 1.55 ppm
 July 6 .77 ppm
 July 7 .77 ppm

July 18 Drained 2100 gallons of water to frac tank.

July 19-31 Cleaned and inspected cold well again. Discovered crack in sump behind forming lumber left during construction years ago. Filled sump with grout. During July 19-31 period there was no water in cold well.

August 1 Refilled cold well to 4 feet, blocked in all coolers and tested 16" line to 28 psig. Lost approximately one foot (1,077 gallons) of water. Concluded crack in sump was not responsible for water loss.

August 3 Dyed water in effort to find the leak. Opened the entire system. No leak was found.

August 4-9 Began excavating buried water lines in further effort to find leak. On August 9, a 2" line that tees into the 16" discharge line near the cold well was uncovered. The leak was discovered near the point of connection. The 2" line was cut and capped. System was filled with water.

August 10 to Present No water lost.

September 19 Remaining 2" line was successfully tested to assure that no other leaks existed.

Summary: On October 10, 1989, a meeting was held in Hobbs with plant personnel to review all of the foregoing events. The following conclusions were drawn as a result of the meeting:

- o There was no evidence of water loss prior to June 25, 1989.
- o Total water loss, based on water levels in the cold well during the period was approximately 15,400 gallons.
- o Total chromium loss, based on periodic analyses of the water to determine chromate concentrations and the volumes of water lost, was calculated at .5649 lbs. See attached Table I.

Based on the above, the leak was judged insignificant, with no endangerment to human health or the environment because of the small quantity involved.

TABLE 1

HOBBS PROCESSING PLANT

Chromate Water Leak

<u>Date</u>	<u>Water Volume (Gallons)</u>	<u>Chromium Concentration (PPM)</u>	<u>Pounds Of Chromium</u>
6/26/89	3231	15.00	.4037
6/27	504	3.90	.0164
6/28	504	1.94	.0042
6/29	504	2.32	.0097
6/30-7/4	2520	3.87	.0810
7/5	504	1.55	.0042
7/6-7/17	6048	.77	.0388
8/1	<u>1077</u>	.77	<u>.0069</u>
Total	<u>15,396</u>		<u>.5649</u>

Notes:

1. Water volumes are based on level changes in the cold well which is 12'x12'x10'6" deep or 1077 gallons per foot.
2. The daily volume from 6/26 to 7/17 is based on a leak rate of 63 gallons per hour for 8 hours each day. The 63 GPH is computed from the one foot level drop (1077 gallons) in 17 hours on 8/1 and 8/2. The duration of the leak each day is conservatively overstated. The leak only occurred while the pump was in operation. The pump was operated only to provide pressure to locate the leak, which was not continuous each day during the period.
3. Chromium concentrations are based on actual laboratory analysis from 6/26 to 6/30 and from 7/5 to 7/7. Concentrations on other dates are assumed to be the same as the latest previous laboratory analysis.

OCD - Santa Fe

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

OIL CONSERVATION DIVISION

P.O. Box 2088 Santa Fe, New Mexico 87504-2088 AUG 21 1989

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

Permit No. 14-5 (For Division Use Only)

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

OIL CONSERVATION DIV. SANTA FE

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: ENRON GAS PIPELINE OPERATING CO.

Operator Address: 11525 WEST CARLSBAD HIGHWAY LEA COUNTY, NEW MEXICO

Lease or Facility Name HOBBS N.M. PLANT Location SW/4 NE/4 SEC. 19-T19S- Ut. Ltr. Sec. Twp. Rger 37

Size of pit or tank: 420' X 210'

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

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

THE ABOVE MENTIONED PIT TAKES ITS WATER SUPPLY SOURCE FROM (3) COOLING TOWER BLOWDOWNS, AS WELL AS 5 STEAM BOILER BLOWDOWNS. THESE SYSTEMS ARE ANALYZED WEEKLY AND SHOW NO SIGNS OF HAZARDOUS MATERIAL. (ANALYSIS ATTAC

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

RESPONSE TO ANY SIGNS OF HYDROCARBONS WOULD BE IMMEDIATE. VACUUM TRUCKS WOULD BE USED TO SKIM THE HYDROCARBONS OFF THE SURFACE. SURFACTANT TYPE DISSPERSANTS WOULD THEN BE USED IF NECESSARY.

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.

2 Operator proposes the following alternate protective measures: THIS LINED POND IS AT A 24 HOUR MANNED STATION. IT IS PATROLED AT LEAST 3 TIMES DAILY TO CHECK FOR UNUSUAL ODOR OR HYDROCARBON FILM. THE WATER SOURCES TO THIS POND ARE ANALYZED WEEKLY AND KEPT ON RECORD, TO INSURE THAT NO HYDROCARBONS OR HEAVY METALS ARE ESCAPING TO THE POND.

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

Signature Robert H. Martin Title O & M SUPERVISOR Date 8-9-89

Printed Name ROBERT H. MARTIN Telephone No. 505-393-5109

FOR OIL CONSERVATION DIVISION USE

Date Facility Inspected 8-14-89

Inspected by Eddie W. Seay Oil & Gas Inspector

Approved by ORIGINAL SIGNED BY JERRY SEXTON DISTRICT I SUPERVISOR

Title

Date AUG 17 1989



Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

WATER ANALYSIS

CLIENT NAME: ENRON
FACILITY: HOBBS FRAC PLANT
LOCATION: HOBBS, NM

DATE: 06/05/89
SAMPLE DATE: 05/25/89
DATE ANALYZED: 05/26/89

SAMPLE IDENTIFICATION - WASTE WATER

IRON	0.09	PPM	AS	Fe
COPPER	0.29	PPM	AS	Cu
MANGANESE	0.112	PPM	AS	Mn
CHROMIUM	0.01	PPM	AS	Cr
LEAD	0.02	PPM	AS	Pb
NICKEL	0.03	PPM	AS	Ni
ZINC	0.01	PPM	AS	Zn
VANADIUM	0.70	PPM	AS	V

ANALYZED BY: Joanna Bonds
(HOBBS LAB)

APPROVED BY: [Signature]

*** INDICATES THAT THIS TEST WAS NOT RUN



Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

WATER ANALYSIS

ALL RESULTS EXPRESSED IN PPM UNLESS OTHERWISE NOTED

CLIENT NAME: ENRON GAS PIPELINE
FACILITY: HOBBS COMPLEX
LOCATION: HOBBS, NM

DATE: 06/12/89
SAMPLE DATE: 06/01/89
DATE ANALYZED: 06/09/89

SAMPLE IDENTIFICATION :

WASTE WATER

Table with 3 columns: Parameter, Unit, and Value. Includes rows for pH, PHENO ALKALINITY, TOTAL ALKALINITY, BICARBONATE, CARBONATE, HYDROXIDE, TOTAL HARDNESS, CALCIUM, MAGNESIUM, CHLORIDE, SULFATE, TOTAL PHOSPHATE, ORTHO PHOSPHATE, POLY PHOSPHATE, SILICA, SPECIFIC CONDUCTANCE, IRON, COPPER, and CALCULATED values for TOTAL DISSOLVED SOLIDS and SODIUM.

ANALYZED BY: Mitchell Irvin (HOBBS LAB)

APPROVED BY: [Signature]

*** INDICATES THAT THIS TEST WAS NOT RUN



Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

SLUDGE ANALYSIS

CLIENT NAME: ENRON
FACILITY: HOBBS PLANT
LOCATION: HOBBS, NM

DATE: 06/07/89
SAMPLE DATE: 06/05/89
DATE ANALYZED: 06/06/89

SAMPLE IDENTIFICATION - **LINED WASTE WATER P.I.T.**

pH	7.29			
CHLORIDE	3792	PPM	AS	Cl
IRON	0.31	PPM	AS	Fe
COPPER	0.2	PPM	AS	Cu
CHROMIUM	0.2	PPM	AS	Cr
LEAD	0.02	PPM	AS	Pb
NICKEL	0.14	PPM	AS	Ni
ZINC	0.07	PPM	AS	Zn
TOTAL IRON	5.45	PPM	AS	Fe
TOTAL COPPER	0.5	PPM	AS	Cu
TOTAL CHROMIUM	1.5	PPM	AS	Cr
TOTAL LEAD	0.3	PPM	AS	Pb
TOTAL NICKEL	0.55	PPM	AS	Ni
TOTAL ZINC	0.55	PPM	AS	Zn

ANALYZED BY: Mitchell Jovin
(HOBBS LAB)

APPROVED BY: Jimmy Raudick

*** INDICATES THAT THIS TEST WAS NOT RUN

ENRON
Northern Natural Gas Company

October 17, 1989
EDB: E38-89

Mr. David Baker
State of New Mexico
Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87503

Subject: HOBBS PROCESSING PLANT WATER LEAK

As we discussed on the telephone, attached is a brief chronology of the events surrounding a water leak that occurred at Hobbs.

Since we will be out your way on other business, I will stop by your office on October 18 to discuss the water leak and introduce Bill Janacek, Director of Environmental Affairs.



E. D. Berdine
Vice President, Environmental Affairs
and Administration
Agent and Attorney-in-Fact for
Northern Natural Gas Company

EDB/jc

NORTHERN NATURAL GAS COMPANY

HOBBS PROCESSING PLANT

SUBJECT: Chromate Water Leak

Northern Natural Gas Company operates a natural gas processing and compression plant near Hobbs, Lea County, New Mexico. The following sequence of events describes a water leak that occurred at the plant and the actions taken to locate and eliminate the leak.

May 12, 1989	OCD notified of use of chromates at Hobbs Plant (via Discharge Plan renewal application).
May 19	Annual plant shutdown and major maintenance program (turnaround) begun.
June 4	Engine jacket water and lubricating oil cooling systems drained.
June 5	OCD inspection of entire plant facility.
June 9	Completed draining and flushing the water systems. The total volume of water (90,300 gallons) was transferred to frac tanks for disposal.
June 12-16	Cleaned, hydroblasted, dried and inspected internals of below ground concrete storage cell (cold wells).
June 16	Letter to OCD providing status of cleaning and inspection of the cooling systems. No leaks were found.
June 18-24	Sandblasted and flakelined the cold wells.
June 25	Filled jacket water and lube oil cooling systems, chromate concentration in the lube oil system was 15ppm. During the evening shift a Maintenance Job Ticket (MJT) was written noting that the lube oil cooling system was losing water.
June 26	Chromate concentration in the lube oil cooling system was 8 ppm. Initiated action to determine reason for water loss.
June 27	Continued checking for cause of water loss. Chromate concentration 3.9 ppm.
June 28	Continued checking for cause of water loss. Chromate concentration 1.94 ppm.
June 29	Continued checking for cause of water loss. Chromate concentration 2.32 ppm.

June 30 Continued checking for cause of water loss. Chromate concentration 3.87 ppm.

July 1-17 Tested individual segments of the system for leak. No leaks found. Analyses of water during this period showed chromate concentrations as follows:
 July 5 1.55 ppm
 July 6 .77 ppm
 July 7 .77 ppm

July 18 Drained 2100 gallons of water to frac tank.

July 19-31 Cleaned and inspected cold well again. Discovered crack in sump behind forming lumber left during construction years ago. Filled sump with grout. During July 19-31 period there was no water in cold well.

August 1 Refilled cold well to 4 feet, blocked in all coolers and tested 16" line to 28 psig. Lost approximately one foot (1,077 gallons) of water. Concluded crack in sump was not responsible for water loss.

August 3 Dyed water in effort to find the leak. Opened the entire system. No leak was found.

August 4-9 Began excavating buried water lines in further effort to find leak. On August 9, a 2" line that tees into the 16" discharge line near the cold well was uncovered. The leak was discovered near the point of connection. The 2" line was cut and capped. System was filled with water.

August 10 to Present No water lost.

September 19 Remaining 2" line was successfully tested to assure that no other leaks existed.

Summary: On October 10, 1989, a meeting was held in Hobbs with plant personnel to review all of the foregoing events. The following conclusions were drawn as a result of the meeting:

- o There was no evidence of water loss prior to June 25, 1989.
- o Total water loss, based on water levels in the cold well during the period was approximately 15,400 gallons.
- o Total chromium loss, based on periodic analyses of the water to determine chromate concentrations and the volumes of water lost, was calculated at .5649 lbs. See attached Table I.

Based on the above, the leak was judged insignificant, with no endangerment to human health or the environment because of the small quantity involved.

TABLE 1

HOBBS PROCESSING PLANT

Chromate Water Leak

<u>Date</u>	<u>Water Volume (Gallons)</u>	<u>Chromium Concentration (PPM)</u>	<u>Pounds Of Chromium</u>
6/26/89	3231	15.00	.4037
6/27	504	3.90	.0164
6/28	504	1.94	.0042
6/29	504	2.32	.0097
6/30-7/4	2520	3.87	.0810
7/5	504	1.55	.0042
7/6-7/17	6048	.77	.0388
8/1	<u>1077</u>	.77	<u>.0069</u>
Total	15,396		.5649

Notes:

1. Water volumes are based on level changes in the cold well which is 12'x12'x10'6" deep or 1077 gallons per foot.
2. The daily volume from 6/26 to 7/17 is based on a leak rate of 63 gallons per hour for 8 hours each day. The 63 GPH is computed from the one foot level drop (1077 gallons) in 17 hours on 8/1 and 8/2. The duration of the leak each day is conservatively overstated. The leak only occurred while the pump was in operation. The pump was operated only to provide pressure to locate the leak, which was not continuous each day during the period.
3. Chromium concentrations are based on actual laboratory analysis from 6/26 to 6/30 and from 7/5 to 7/7. Concentrations on other dates are assumed to be the same as the latest previous laboratory analysis.

ENRON
Northern Natural Gas Company

P. O. Box 1188 Houston, Texas 77251-1188 (713) 853-6161

RECEIVED

JUN 29 1989

OIL CONSERVATION DIV.
SANTA FE

June 28, 1989
EDB: E24-87

State of New Mexico
Energy, Minerals, and Natural Resources Dept.
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attn: Mr. Roger Anderson

RE: Northern Natural Gas Company, a Division of Enron Corp.
Discharge Plan GW-15
Hobbs Gasoline Plant
Lea County, New Mexico

Dear Mr. Anderson:

On June 12, 1989 we received your letter which asks several questions about the Northern Natural Gas Co. Hobbs Plant Discharge Plan, identified above. For ease of reference, the responses to your questions are numbered according to your letter. A copy of your correspondence is enclosed under tab "A" in the attachments.

I. Discharge Plan Renewal Application

A. Section II.B.3. of the Discharge Plan indicated that the cooling system is to be changed to a non-chromate corrosion inhibitor. The cooling water has been drained from the engine jacket water system and is currently stored in on site portable tanks until a waste disposal contract is executed. The waste water will be transported to an EPA permitted hazardous waste disposal well, and the solid portion will be shipped to a hazardous waste landfill. Documentation of the transport and disposal will be forwarded when the waste has been received by the disposal facility. Analysis results of the waste removed from the system, and of the cooling water currently in use are attached under tab "B".

Also under tab "B" is a memo from Mr. Bob Anderson discussing the cleaning, inspection, and Celcote Flakeline coating of the cooling system sumps. All the work mentioned in the memo has now been completed, and the system has been restored to service.

Mr. Roger Anderson
June 28, 1989
page 2

5/2
B. The proposed plan and schedule for testing the buried drain system, and the sumps identified in question II.H is attached under tab "C".

3/2
C. Section III.A.5 of the Discharge Plan indicated that all solid waste is removed for off site disposal. The various filter media referred to in question I.C are described as follows:

1.1 Gas sweetening plant and lube oil filters - these are "sock" type filters with steel cores. Prior to disposal they are drained of all liquids, and then moved by Waste Control of New Mexico to the Hobbs municipal landfill. There are approximately six (6) cubic yards of these filters on site. They are not changed on any set schedule.

1.2 Activated Alumina - this solid catalyst is used in the sulfur recovery plant. This catalyst is not changed on a scheduled basis, but rather at any time the sulfur plant recovery efficiency drops below 88%. There are approximately 130 cubic yards of this material stored on site. Plant records indicate that none of the spent Alumina has been shipped off site for disposal. Disposal arrangements are being negotiated for this material.

1.3 Mobil Sor-Bead - this is Mobil's trade name for silica gel desiccant. There are approximately 150 cubic yards of this spent absorbent stored on site. Plant records indicate that none of the spent Sor-Bead has been shipped off site for disposal. Disposal arrangements are being negotiated for this material.

2. The list of solid waste disposed of off site is attached under tab "D". These wastes listed under tab "D" are transported by Waste Control of New Mexico to the Hobbs municipal landfill.

0/2
D. The information on completion and operation of water well number six is attached under tab "E". A sample to determine water quality has been submitted to the laboratory, and test results will be forwarded as soon as they are available.

0/2
E. Material Safety Data Sheets for chemicals used at the Hobbs facility are attached under tab "F".

Mr. Roger Anderson
June 28, 1989
page 3

II. Site Inspection

- Check for...
contaminants*
- A. During the inspection, several chronic spill areas were identified in the Plant. Photographs of a number of those spill areas are attached under tab "G". The Oil Conservation Division (OCD) recommended curbing and paving in those areas prone to continuing leaks and spill.

As an alternative to an extensive curbing and paving project, Northern Natural Gas proposes development and implementation of an aggressive spill response and remediation program. The program will include:

- a written spill response plan
- training in emergency spill response
- prevention of chronic spills through improved housekeeping and maintenance programs
- thorough training in waste clean up, storage, and disposal
- establishment of readily available avenues for disposal of all waste, whether hazardous or not

Upon receipt of OCD approval of the use of a spill response and remediation program in lieu of other spill prevention methods, development of the program will begin during August, 1989.

- 20*
- B. A number of tank storage areas were identified as requiring containment berms. Photographs of those tank areas are attached under tab "H". The following schedule will be followed in constructing the required berms:

Third Calendar Quarter, 1989

Diesel fuel tank
Antifreeze storage tank
Gas recycle oil tank

Fourth Calendar Quarter, 1989

Brine water tank
Rice waste water tank
Sulfuric acid tank number 1
Sulfuric acid tank number 2

*Discard - Still
need some contain.*

Mr. Roger Anderson
June 28, 1989
page 4

First Calendar Quarter, 1990

Clark engine oil tank
Cooper engine oil tank
Methanol storage tank
Lean oil tank

Second Calendar Quarter, 1990

MEA storage tanks
Cooling tower treatment chemical tanks
Boiler treatment chemical tanks

Third Calendar Quarter, 1990

Berm areas for storage of several small portable storage tanks and drums areas throughout the Plant

- C. The clean water and oily water sumps were identified as requiring berms to prevent overflow of the sumps. Photographs of these two sumps and the related oily waste tank are attached under tab "I".

By the end of the fourth calendar quarter of 1989 the contaminated soils in both sump berm areas will be removed. At a depth of three feet a concrete pad will be poured in the bermed area to prevent percolation of water and oil into the soil. The sumps and the tank will then be drained, cleaned, and internally inspected to determine their integrity. A berm will be constructed around the oily waste tank, and a completion report, including results of the sump integrity test will be forwarded to the OCD.

- D. The sink drain was draining onto the ground at the time of OCD's site inspection. This drain has been reconnected to the drain line, and operations and maintenance personnel will routinely check to ensure that the drain remains in proper working order.

- E. The packing vent blowdown at the compressor building has been emitting oil or oily mist. This oil staining will be included as part of the spill response plan discussed in the response to question II.A.

*Dr. 10/10/89 Sumps & Oil Tank
to Paul for at home?*

*2/10/89 Sump Tank
7' diameter pad
imp. and seal
for oil tank
leak detected*

OK

OK

Mr. Roger Anderson
June 28, 1989
page 5

7
(OK)
F. The concrete on the south sump wall of the west cooling tower has deteriorated. Photographs of this damaged sump wall are attached under tab "J". This tower is a vital part of the Plant operating equipment, and was returned to service following the routine annual maintenance shut down. The necessary repairs to the cooling tower will be made during the 1990 shut down. Until the repairs can be made, the following operations procedures will be followed:

1. Each shift will inspect the tower twice per shift to check for water spillage.
2. Each shift will check the water level control float twice per shift to ensure free and proper operation.
3. The water level will be maintained at the lowest possible safe operating level, and an additional inspection made daily by the laboratory personnel.

OK
G. The cooling water pumps on the east side of the south cooling tower appeared to be leaking onto the ground occasionally. During the third calendar quarter of 1989 curbing is to be installed around these pumps to ensure that all water leakage drains back into the cooling tower basin.

OK
H. There are several below grade sumps throughout the Plant which do not have leak detection systems. These sumps will be tested as part of the program discussed in response to question I.B. The schedule for conducting these tests is attached under tab "C".

OK
I. There were numerous empty drums stored in various areas of the Plant at the time of the OCD inspection. The ends are removed from these drums, and the drums are crushed. After crushing the drums are being tied to pallets for disposal as scrap metal. Photographs of the drums being prepared for disposal are attached under tab "K".

OK
J. Samples of the cooling tower sludge have been collected and sent to AnalySys, Inc. for testing. The results of these tests will be forwarded as soon as they are available. If the sludge tests to be hazardous, it will be disposed of at an EPA permitted hazardous waste landfill.

Mr. Roger Anderson
June 28, 1989
page 6

For whatever additional information you may require concerning this discharge plant, please call me at (713) 853-7179.



E. D. Berdine
Vice President, Environmental Affairs
and Administration
Agent and Attorney in Fact
for Northern Natural Gas Company

cc: w/attachments
Bob Anderson
Bill Janacek
Chris Kaitson
file

ENRON
Northern Natural Gas Company

P. O. Box 1188 Houston, Texas 77251-1188 (713) 853-6161

June 26, 1989

VIA FAX

Robert G. Stoval
State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe New Mexico 87504

Re: Discharge Plan GW-15
Hobbs Gasoline Plant
Lea County, New Mexico
Roger Anderson's letter dated June 9, 1989

Dear Bob:

Confirming our telephone conversation of this day wherein I requested a two day extension to respond to Mr. Anderson's letter dated June 9, 1989 which was received June 13, 1989. I understand there is no objection to the extension and no assurance of discontinuance will be necessary if we respond by June 29, 1989.

Very truly yours,


E. Chris Kaitson

ECK/nc
CK\4

cc: Bill Janacek
David Bays

*David & Roger - I did agree
to this extension*

Bob

ENRON
Gas Pipeline Operating Company

P. O. Box 1188 Houston, Texas 77251-1188

RECEIVED

JUN 22 1989

OIL CONSERVATION DIV.
SANTA FE

June 16, 1989

Mr. David Boyer, Chief
Environmental Bureau
New Mexico Oil Conservation Division
P. O. Box 2088
Land Office Building
Santa Fe, New Mexico 87504-2088

Re: NNG Hobbs Plant - Engine Cooling Water Sump Inspection/Cleanup

Dear Mr. Boyer:

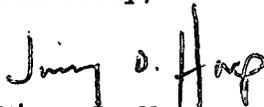
I am responding on behalf of Northern Natural Gas Company with the report on inspection and cleanup of the Hobbs Plant closed system cooling water sumps.

Attached is our field report. You will note that the sumps have been flushed one time since waterblast cleaning and the chromate level dropped to 60-80 PPM in the water. The next step is to sandblast the internal surface of the sumps and coat them with an epoxy material. This should remove or bind (mechanically and chemically) the chromate remaining on the surface. Following this action, the closed system will again be flushed. We expect that the chromate levels in the flush water will be less than 15 PPM (based on the decrease during original flushing). We then plan to return the closed cooling system to service without further flushing. However, in the future when this liquid must be removed, it will be tested and disposed of in the same manner as a hazardous waste if it contains more than 5 PPM chromate.

The water that was used for flushing is currently being stored and will be disposed of in the same manner as the original liquid in the sumps.

Please let me know if you have any questions or desire further information.

Sincerely,



Jimmy D. Harp
Sr. Environmental Project Engineer

cc: Bill Janacek
Jimmy Carter
Bob Anderson
David Bays

ENRON
HOBBS DISTRICT
11525 W CARLSBAD HIGHWAY
HOBBS NM 88240

TO: Jim Harp
FROM: Bob Anderson
DATE: June 15, 1989
SUBJECT: CHROMATE DISPOSAL - HOBBS PLANT COOLING SYSTEM

Scope of Work:

1. REMOVE AND TEMPORARILY STORE COOLANT FROM COOLING SYSTEM:

The coolant in the two systems was analyzed to determine the amount of CHROMATE in each system and were found to be as follows:

Jacket water system	257 PPM CHROMATE
Oil Cooling water system	310 PPM CHROMATE

The coolant was removed from the system and temporarily stored in leased, portable tanks until disposal arrangements can be made. A disposal well licensed to receive CHROMATE was located in Odessa, Texas and samples submitted for verification. Transportation bids have been gathered, and contracts will be written forthwith.

2. RECHARGE AND FLUSH SYSTEM WITH WATER:

The systems were recharged with clean soft water and circulated through out the cooling system for 27 hours.

3. ANALYZE FLUSHED WATER:

Samples of this flushed water were taken and found to contain as follows:

Jacket water system	62 PPM CHROMATE
Oil Cooling water system	63 PPM CHROMATE

4. REMOVE AND TEMPORARILY STORE FLUSHED WATER:

This flushed water has been removed and placed in temporary storage beside the original coolant.

TO: Jim Harp
PAGE: 2
SUBJECT: CHROMATE DISPOSAL - HOBBS PLANT COOLING SYSTEM

5. HYDRO-BLAST CLEAN SUMP WALLS AND FLOOR:

The interior walls of both sumps were hydro-blasted clean with 7000 PSI water pressure to remove residue. Self-contained breathing apparatus, disposable coveralls, rubber gloves & footwear and rainsuits were used for personnel protection. Air removers were implemented to draw fresh air through the man ways and exhausted outside the structure by means of existing sump vents. A portable air monitor was in service at all times to insure no explosive gases or H₂S were collecting and that the oxygen level remained at 21.5% or above.

6. REMOVE SLUDGE AND CLEANING RESIDUE:

As per 2
While using the same personnel safety precautions, the sludge and hydro-blast water were removed and decanted to separate solids and liquids. This sludge contains no more than 13000 PPM CHROMATES and a large amount of dirt and pipe scale. 1/2 barrel solids were removed from the oil cooling water sump pit and 1 1/2 barrels from the jacket water sump pit.

7. INSPECT AND EVALUATE PUMP SUMP INTERIOR WALLS FOR CRACKS AND DETERIORATION:

Surprisingly, the wall and floor concrete was in excellent condition. A few hairline cracks were found. No separation or stress cracks that might have allowed leakage into surrounding soil were found. We are trying to locate a construction AS-Built drawings to determine wall thicknesses, concrete mixture formulas, and reinforcement placements. Based on the integrity of concrete sump structure, I do not believe any structural corrective action will need to be taken.

8. SAND BLAST AND SEAL WALLS:

All interior walls and floors of the two sumps will be sandblasted with #2 sandblast media down to bare-tooth concrete. They will be spray coated with a polyester-resin-epoxy type coating to a 40-mil wet gage thickness.

This Celcote Flakeline material #251 - has a wet immersion temperature factor of 160 degrees Fahrenheit and is impervious to any of the additives we plan to use in the future.

TO: Jim Harp
PAGE: 3
SUBJECT: CHROMATE DISPOSAL - HOBBS PLANT COOLING SYSTEM

9. RECHARGE AND PLACE IN-SERVICE:

The present plan is to recharge the systems with clear water and circulate in service for a two-week period. Samples will be taken daily to determine what the CHROMATE content is and if it is increasing. This will indicate that the CHROMATE is being removed from the cooling jackets and piping.

10. ANALYZE COOLANT AND EVALUATE:

If the CHROMATE PPM remains stable and below legal limits, no further action will be necessary.

11. FURTHER ACTION AS NECESSARY:

If the CHROMATE PPM is above legal limits, we will notify you and go back to step #10. Hopefully, we will not have to do this.

Presently, we have in temporary storage:

94,500 gallons of CHROMATE contaminated coolant and flush water,
two full barrels of solid CHROMATE waste

Storage and sample records are being kept on a daily basis. After use, all temporary tanks and equipment used in this process will be decontaminated.

cc Jim Carter



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

754
WPU

OR89-0796-C

REPORT TO: DAVID BOYER
N.M. OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87504-2088

S.L.D. No. OR-
 DATE REC. 6-12-89
 PRIORITY 3
 PHONE(S): 827-5812

COLLECTION CITY: Hobbs; COUNTY: Lea

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 09|06|05|14|25

LOCATION CODE: (Township-Range-Section-Tracts) 19|5+37|E+06+2|- (10N06E24342)

USER CODE: 8|2|2|3|5 SUBMITTER: David Boyer CODE: 2|6|0

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

EXTRACTABLE 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 _____
- _____
- _____

- (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= 8; Conductivity= _____ umho/cm at _____ °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.)
Hobbs ENRON Wastewater pond, Southwest Corner

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

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: _____ Phone or Letter? Initials _____

SCIENTIFIC LABORATORY DIVISION

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

June 27, 1989

ANALYTICAL REPORT
SLD Accession No. OR-89-0796

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 12, 1989

User:

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

DEMOGRAPHIC DATA

COLLECTION		LOCATION	
On: 5-Jun-89	By: Boy . . .	Township: 19S	Section: 06
At: 14:25 hrs.	In/Near: Hobbs	Range: 37E	Tract: 2

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
Aromatic Purgeables (6)	0.00	N	0.50	ppb
Halogenated Purgeables (33)	0.00	N	0.50	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: Evron Waste Water Pond

Analyst: Gary C. Eden 6/15/89 Analysis Date
 Gary C. Eden
 Analyst, Organic Chemistry

Reviewed By: Richard F. Meyerhein 06/23/89
 Richard F. Meyerhein
 Supervisor, Organic Chemistry Section

RECEIVED

JUN 30 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>06/21/89</u>	LAB NO. <u>NO 2135</u>	USER CODE <input type="checkbox"/> 59300 <input type="checkbox"/> 59600 <input checked="" type="checkbox"/> OTHER: 82235
Collection DATE <u>06/05</u>	SITE INFORMATION	Sample location <u>Hobbs ENRON Wastewater Pond</u>
Collection TIME <u>1425</u>		Collection site description <u>Southwest corner</u>
Collected by — Person/Agency <u>Boyer/England/OCD</u>		

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

RECEIVED

JUL 26 1989

Attn: David Boyer

Phone: 827-5812

OIL CONSERVATION DIV
SANTA FE

Station/well code 195-37 E-06.2

Owner _____

SAMPLING CONDITIONS

<input type="checkbox"/> Bailed	<input type="checkbox"/> Pump	Water level	Discharge	Sample type <u>Grab</u>
<input checked="" type="checkbox"/> Dipped	<input type="checkbox"/> Tap			
pH (00400) <u>8</u>	Conductivity (Uncorrected) _____ μ mho	Water Temp (00010) _____ °C	Conductivity at 25°C (00094) _____ μ mho	
Field comments				

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: _____	<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>WF</u> , NA Sample:	Date Analyzed
<input checked="" type="checkbox"/> Conductivity (Corrected) 25°C (00095)	<u>20802</u> μ mho	<u>6/16</u>	<input checked="" type="checkbox"/> Calcium	<u>468</u> mg/l <u>7/21</u>
<input type="checkbox"/> Total non-filterable residue (suspended) (00530)	_____ mg/l	_____	<input checked="" type="checkbox"/> Potassium	<u>218</u> mg/l <u>6/15</u>
<input checked="" type="checkbox"/> Other: <u>lab pH</u>	<u>7.11</u>	<u>6/15</u>	<input checked="" type="checkbox"/> Magnesium	<u>242</u> mg/l <u>7/21</u>
<input type="checkbox"/> Other: _____	_____	_____	<input checked="" type="checkbox"/> Sodium	<u>4600</u> mg/l <u>6/26</u>
<input type="checkbox"/> Other: _____	_____	_____	<input checked="" type="checkbox"/> Bicarbonate	<u>444</u> mg/l <u>6/15</u>
A-H₂SO₄			<input checked="" type="checkbox"/> Chloride	<u>6765</u> mg/l <u>6/26</u>
<input type="checkbox"/> Nitrate-N +, Nitrate-N total (00630)	_____ mg/l	_____	<input checked="" type="checkbox"/> Sulfate	<u>2059</u> mg/l <u>7/20</u>
<input type="checkbox"/> Ammonia-N total (00610)	_____ mg/l	_____	<input checked="" type="checkbox"/> Total Solids	<u>15,552</u> mg/l <u>6/14</u>
<input type="checkbox"/> Total Kjeldahl-N ()	_____ mg/l	_____	<input checked="" type="checkbox"/> CO ₂	<u>0</u> <u>6/15</u>
<input type="checkbox"/> Chemical oxygen demand (00340)	_____ mg/l	_____	<input checked="" type="checkbox"/> <u>BP</u>	<u>12.84</u> <u>7/11</u>
<input type="checkbox"/> Total organic carbon ()	_____ mg/l	_____	<input checked="" type="checkbox"/> Cation/Anion Balance	_____
<input type="checkbox"/> Other: _____	_____	_____	Analyst	Date Reported <u>7/21/89</u>
<input type="checkbox"/> Other: _____	_____	_____		Reviewed by <u>CDM</u>

Laboratory remarks

CATIONS

ANIONS

ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	23.35	468.00	<3.0
Mg	19.88	242.00	<0.3
Na	200.09	4600.00	<10.0
K	5.58	218.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	

ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	7.28	444.00	<1.0
SO4	42.90	2059.00	<10.0
CL	190.83	6765.00	<5.0
NO3	0.00	0.00	< 0.
C03	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.

SUMS 248.89 5528.00

241.00 9268.00

Total Dissolved Solids= 15552
 Ion Balance = 103.27%

WC No. = 8902135
 Date out/By CD 7/24/89

RECEIVED

JUL 26 1989

OIL CONSERVATION DIV.
 SANTA FE

Contract Lab SLD
 Contract No. 82255

HEAVY METAL ANALYSIS FORM

Date Received 06/12/89 Lab No. ICP 303 Sample No.

COLLECTION DATE & TIME: yy mm dd hh mm
89 06 05 14 25

COLLECTION SITE DESCRIPTION
Hobbs Brown Waste -
Water Park

COLLECTED BY: Boyer/Engelert oct

OWNER: _____

TO: _____

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

SITE LOCATION:
 County: Lea

Township, Range, Section, Tract: (10N06E24342)
19S+37E+06+2

ATTN: D. Boyer
 TELEPHONE: 827-5812

STATION/ WELL CODE: _____

LATITUDE, LONGITUDE: _____

SAMPLING CONDITIONS:

<input type="checkbox"/> Bailed	<input type="checkbox"/> Pump	Water Level:	Discharge:	Sample Type:
<input checked="" type="checkbox"/> Dipped	<input type="checkbox"/> Tap			<u>6726</u>
pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)	
<u>8</u>	<u> </u> μmho	<u> </u> °C	<u> </u> 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	<input type="checkbox"/> <0.1	<input type="checkbox"/>	Silicon	<input type="checkbox"/> 2.3	<input type="checkbox"/>
Barium	<input type="checkbox"/> 0.3	<input type="checkbox"/>	Silver	<input type="checkbox"/> <0.1	<input type="checkbox"/>
Beryllium	<input type="checkbox"/> <0.1	<input type="checkbox"/>	Strontium	<input type="checkbox"/> 4.8	<input type="checkbox"/>
Boron	<input type="checkbox"/> 1.8	<input type="checkbox"/>	Tin	<input type="checkbox"/> <0.1	<input type="checkbox"/>
Cadmium	<input type="checkbox"/> <0.1	<input type="checkbox"/>	Vanadium	<input type="checkbox"/> 0.3	<input type="checkbox"/>
Calcium	<input type="checkbox"/> 480.	<input type="checkbox"/>	Zinc	<input type="checkbox"/> <0.1	<input type="checkbox"/>
Chromium	<input type="checkbox"/> <0.1	<input checked="" type="checkbox"/> 0.011	Arsenic	<input type="checkbox"/>	<input checked="" type="checkbox"/> 0.026
Cobalt	<input type="checkbox"/> <0.05	<input type="checkbox"/>	Selenium	<input type="checkbox"/>	<input type="checkbox"/>
Copper	<input type="checkbox"/> <0.1	<input type="checkbox"/>	Mercury	<input type="checkbox"/>	<input type="checkbox"/>
Iron	<input type="checkbox"/> 0.3	<input type="checkbox"/>	RECEIVED		
Lead	<input type="checkbox"/> <0.1	<input checked="" type="checkbox"/> <0.005	OCT 10 1989		
Magnesium	<input type="checkbox"/> 200.	<input type="checkbox"/>	OIL CONSERVATION DIV.		
Manganese	<input type="checkbox"/> 0.09	<input type="checkbox"/>	SANTA FE		
Molybdenum	<input type="checkbox"/> <0.1	<input type="checkbox"/>			
Nickel	<input type="checkbox"/> <0.1	<input type="checkbox"/>			

LAB COMMENTS: 5.0ml HNO₃ added @ field. 6/15/89 LMK August

For OCD Use:
 Date Owner Notified: _____
 Phone or Letter? _____
 Initials: _____

ICAP Analyst JFA Reviewer Jim Babby
 Date Analyzed 7/31/89 Date Received 10/2/89

No HNO₃ added please check pH

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

August 2, 1989

Mr. Jimmy D. Harp
NORTHERN NATURAL GAS COMPANY
P. O. Box 1188
Houston, Texas 77251-1188

RE: Discharge Plan GW-15
Hobbs Gasoline Plant
Lea County, New Mexico

Dear Mr. Harp:

Enclosed are copies of the results of the chemical analyses from samples taken during our last sampling trip at your facility.

If you have any questions regarding the results, please contact me at (505) 827-5884.

Sincerely,

A handwritten signature in cursive script that reads "Roger C. Anderson".

Roger C. Anderson
Environmental Engineer

RCA/sl



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

754
WPU

OR89-0798-C

REPORT TO: DAVID BOYER
N.M. OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87504-2088

S.L.D. No. OR- _____
 DATE REC. 6-12-89
 PRIORITY 3
 PHONE(S): 827-5812

COLLECTION CITY: Hobbs; COUNTY: Lea

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8|9|0|6|0|5|1|3|4|6

LOCATION CODE: (Township-Range-Section-Tracts) 1|9|5|+|3|7|E|+|0|6|+|2| (10N06E24342)

USER CODE: 8|2|2|3|5 SUBMITTER: David Boyer CODE: 2|6|0

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

EXTRACTABLE 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 _____
- _____
- _____

- (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= 2500 umho/cm at 36 °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.)
Engine Cooling Jacket (Tank #67), Hobbs ENRON
Reported High Chromates (200-300 mg/l)

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

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: _____ Phone or Letter? Initials _____

SCIENTIFIC LABORATORY DIVISION

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

June 27, 1989

ANALYTICAL REPORT
SLD Accession No. OR-89-0798

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 12, 1989

User:

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

DEMOGRAPHIC DATA

COLLECTION		LOCATION	
On: 5-Jun-89	By: Boy . . .	Township: 19S	Section: 06
At: 13:46 hrs.	In/Near: Hobbs	Range: 37E	Tract: 2

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
Benzene	17.00		2.50	ppb
Toluene	135.00		2.50	ppb
Ethylbenzene	25.00		2.50	ppb
p- & m-Xylene	77.00		2.50	ppb
1,2-Dimethylbenzene	25.00		2.50	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: Engine Cooling Jacket

4 late eluting compounds in the C3 substituted benzene region at 2-5ppb detected by the photoionization detector but not identified.

Analyst: Gary C. Eden 6/15/89
 Gary C. Eden Analysis Date
 Analyst, Organic Chemistry

Reviewed By: Richard F. Meyerhein 06/23/89
 Richard F. Meyerhein
 Supervisor, Organic Chemistry Section

RECEIVED

JUN 30 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>06/12/89</u>	LAB NO. <u>MC 2136</u>	USER CODE <input type="checkbox"/> 59300 <input type="checkbox"/> 59600 <input checked="" type="checkbox"/> OTHER: <u>82235</u>
Collection DATE <u>06/12/89</u>	SITE INFORMATION	Sample location <u>Hobbs ENRON Cooling Tower (Tank 67)</u>
Collection TIME <u>1346</u>		Collection site description <u>Sample from Tank used</u>
Collected by — Person/Agency <u>Boyer, Kenneth / 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

as storage while awaiting disposition of water after testing

Station/well code 195-37E-06.2
 Owner

SAMPLING CONDITIONS

<input type="checkbox"/> Bailed	<input type="checkbox"/> Pump	Water level	Discharge	Sample type <u>Gravel</u>
<input checked="" type="checkbox"/> Dipped	<input type="checkbox"/> Tap			
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>2500</u> μ mho	Water Temp. (00010) <u>36</u> °C	Conductivity at 25°C (00094)	μ mho
Field comments <u>Dipped from Tank - Greenish color. Reported to be 200-300 ppm Chromate</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:	<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>NF</u> , NA Sample:	Date Analyzed
<input checked="" type="checkbox"/> Conductivity (Corrected) 25°C (00095)	<u>2248</u> μ mho	<u>6-16</u>	<input checked="" type="checkbox"/> Calcium <u>16</u> mg/l	<u>7/21</u>
<input type="checkbox"/> Total non-filterable residue (suspended) (00530)			<input checked="" type="checkbox"/> Potassium <u>52</u> mg/l	<u>6/15</u>
<input checked="" type="checkbox"/> Other: <u>ph</u>	<u>7.74</u>	<u>6/15</u>	<input checked="" type="checkbox"/> Magnesium <u>7.32</u> mg/l	<u>7/21</u>
<input type="checkbox"/> Other:			<input checked="" type="checkbox"/> Sodium <u>495</u> mg/l	<u>6/15</u>
<input type="checkbox"/> Other:			<input checked="" type="checkbox"/> Bicarbonate <u>733</u> mg/l	<u>6/15</u>
A-H₂SO₄			<input checked="" type="checkbox"/> Chloride <u>120</u> mg/l	<u>6/15</u>
<input type="checkbox"/> Nitrate-N + Nitrate-N total (00630)	mg/l		<input checked="" type="checkbox"/> Sulfate <u>216</u> mg/l	<u>7/20</u>
<input type="checkbox"/> Ammonia-N total (00610)	mg/l		<input checked="" type="checkbox"/> Total Solids <u>1680</u> mg/l	<u>6/14</u>
<input type="checkbox"/> Total Kjeldahl-N ()	mg/l		<input checked="" type="checkbox"/> CO ₂ <u>0</u>	<u>6/15</u>
<input type="checkbox"/> Chemical oxygen demand (00340)	mg/l		<input checked="" type="checkbox"/> B ₅ <u><0.20</u>	<u>7/11</u>
<input type="checkbox"/> Total organic carbon ()	mg/l		<input type="checkbox"/> Cation/Anion Balance	
<input type="checkbox"/> Other:			Analyst	Date Reported <u>7/21/89</u>
<input type="checkbox"/> Other:			Reviewed by <u>C. Dean</u>	

RECEIVED
 JUL 26 1989
 OIL CONSERVATION DIV.
 SANTA FE

Laboratory remarks

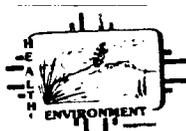
FOR OCD USE -- Date Owner Notified 8/3/89 Phone of Letter? RCS Initials RCS

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	0.80	16.00	<3.0
Mg	0.60	7.30	<0.3
Na	21.53	495.00	<10.0
K	1.33	52.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	24.26	570.30	
Total Dissolved Solids=			1680
Ion Balance =			121.92%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	12.01	733.00	<1.0
SO4	4.50	216.00	<10.0
CL	3.39	120.00	<5.0
NO3	0.00	0.00	< 0.
C03	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	19.90	1069.00	

WC No. = 8902136
 Date out/By CO 7/24/89

RECEIVED
 JUL 26 1989
 OIL CONSERVATION DIV.
 SANTA FE



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

154
WPU

OR89-0797-C

REPORT TO: DAVID BOYER S.L.D. No. OR-
N.M. OIL CONSERVATION DIVISION DATE REC. 6-12-89
P.O. Box 2088 PRIORITY 3
Santa Fe, NM 87504-2088 PHONE(S): 827-5812

COLLECTION CITY: Hobbs; COUNTY: Lea

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8906051490

LOCATION CODE: (Township-Range-Section-Tracts) 19S+37E+06+2-7- (10N06E24342)

USER CODE: 82235 SUBMITTER: David Boyer CODE: 21610

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

EXTRACTABLE 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

- (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= 10; Conductivity= 3100 umho/cm at 27.5°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.)

ENRON Hobbs - Wastewater Tank, Storage Gas Plant
Oily Water prior to injection well line

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

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: _____ Phone or Letter? Initials _____

SCIENTIFIC LABORATORY DIVISION

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

June 27, 1989

ANALYTICAL REPORT
SLD Accession No. OR-89-0797

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 12, 1989

User:

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

RECEIVED

JUN 30 1989

OIL CONSERVATION DIV,
 SANTA FE

DEMOGRAPHIC DATA

COLLECTION		LOCATION	
On: 5-Jun-89	By: Boy . . .	Township: 19S	Section: 06
At: 14:40 hrs.	In/Near: Hobbs	Range: 37E	Tract: 2

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
Benzene	230.00		50.00	ppb
Toluene	520.00		50.00	ppb
Ethylbenzene	90.00		50.00	ppb
p- & m-Xylene	160.00		50.00	ppb
1,2-Dimethylbenzene	90.00		50.00	ppb
Halogenated Purgeables (33)	0.00	N	50.00	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: Evron Hobbs Waste Water Tank

Analyst: Gary C. Eden 6/15/89 Analysis Date
 Gary C. Eden
 Analyst, Organic Chemistry

Reviewed By: Gary C. Eden for RM
 Richard F. Meyerheip 06/23/89
 Supervisor, Organic Chemistry Section



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	06/12/89	LAB NO.	WC 2134	USER CODE	<input type="checkbox"/> 59300 <input type="checkbox"/> 59600 <input checked="" type="checkbox"/> OTHER: 82235
Collection DATE	09/06/05	SITE INFORMATION	Sample location		
Collection TIME	1440		ENRON Hobbs Waste Water Tank		
Collected by	Person/Agency		Collection site description		
Boyer/Engler/OCD		Sample from drain line to pond			

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

SEND FINAL REPORT TO

Attn: David Boyer

Phone: 827-5812

Station/well code 195,37E 06.2
 Owner

SAMPLING CONDITIONS

<input checked="" type="checkbox"/> Bailed <input type="checkbox"/> Dipped	<input type="checkbox"/> Pump <input checked="" type="checkbox"/> Tap	Water level	Discharge	Sample type
				Grab
pH (00400)	10	Conductivity (Uncorrected)	3100 µmho	Water Temp. (00010)
				20.5 °C
Conductivity at 25°C (00094) µmho				
Field comments				
Wastewater Tank prior to injection well line				

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 <u>NS</u> , NA Sample:		Date Analyzed
<input checked="" type="checkbox"/> Conductivity (Corrected) 25°C (00095)	µmho	6-16	<input checked="" type="checkbox"/> Calcium	74 mg/l	7/21
<input type="checkbox"/> Total non-filterable residue (suspended) (00530)	mg/l		<input checked="" type="checkbox"/> Potassium	29 mg/l	6/15
<input checked="" type="checkbox"/> Other: Lab pH		6/13	<input checked="" type="checkbox"/> Magnesium	17.1 mg/l	7/21
<input type="checkbox"/> Other:			<input checked="" type="checkbox"/> Sodium	114 mg/l	6/15
<input type="checkbox"/> Other:			<input checked="" type="checkbox"/> Bicarbonate	207 mg/l	6/13
A-H₂SO₄			<input checked="" type="checkbox"/> Chloride	369 mg/l	6/15
<input type="checkbox"/> Nitrate-N +, Nitrate-N total (00630)	mg/l		<input checked="" type="checkbox"/> Sulfate	263 mg/l	7/20
<input type="checkbox"/> Ammonia-N total (00610)	mg/l		<input checked="" type="checkbox"/> Total Solids	880 mg/l	6/14
<input type="checkbox"/> Total Kjeldahl-N ()	mg/l		<input checked="" type="checkbox"/> CO ₂	1408	6/13
<input type="checkbox"/> Chemical oxygen demand (00340)	mg/l		<input checked="" type="checkbox"/> B ₅	0.45	7/11
<input type="checkbox"/> Total organic carbon ()	mg/l		<input checked="" type="checkbox"/> Cation/Anion Balance		pH 9.3
<input type="checkbox"/> Other:			Analyst	Date Reported	Reviewed by
<input type="checkbox"/> Other:				7/21/89	Edman

RECEIVED

JUL 26 1989

OIL CONSERVATION DIV.
SANTA FE

Laboratory remarks: Hydrochloric Ion present - No balance sheet

RECEIVED
JUN 20 1989
OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO } ss
County of Bernalillo }
THOMAS J. SMITHSON

..... being duly sworn declares and

says that he is **NAT'L ADV. MGR.** 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 198....., and the subsequent consecutive publications on 198.....

OFFICIAL SEAL
Signature: *Angela M. Archibeque*
ANGELA M. ARCHIBEQUE
NOTARY PUBLIC NEW MEXICO
Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this day of 198.....

and Filed with secretary of State
Commission Expires *6/30/92*
PRICE \$ *28.99*

EDJ-15 (R-2/86)

Statement to come at end of month.

ACCOUNT NUMBER *C 80932*

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES DEPT
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-16) Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Perbrook, Odessa, Texas 79782, has submitted an application for renewal of its previously approved discharge plan for its Eunice Gas Plant located in the SE/4 NE/4, Section 5, Township 21 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 15,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. The total dissolved solids content of the wastewater is approximately 1750 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 80 to 150 feet with a total dissolved solids concentration from 1000 to 1700 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.
(GW-15) Northern Natural Gas Company, a Division of ENRON Corp., Jimmy D. Harp, Sr., Environmental Project Engineer, P. O. Box 1188, Houston, Texas 77251-1188, has submitted an application for renewal of its previously approved discharge plan for its Hobbs Gas Plant located in the NE/4, Section 8, Township 19 South, Range 39 East, NMPM, Lea County, New Mexico. Approximately 60,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. There is a 1/2 acre lined evaporation pond with leak detection on site for emergency storage. The total dissolved solids content of the wastewater is approximately 1200 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 120 to 145 feet with a total dissolved solids content from 400 to 850 mg/l. 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 8th day of June, 1989. To be published on or before June 16, 1989.
STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
William J. LaMay, Director
S E A L
Journal, June 16, 1989

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, George W. Moore

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of _____

One weeks.
Beginning with the issue dated

June 15, 1989
and ending with the issue dated

June 15, 1989

George W. Moore
Publisher.

Sworn and subscribed to before

me this 21st day of

June, 1989

Yvonne Norris
Notary Public.

My Commission expires _____

September 30, 1989
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.



156

LEGAL NOTICE

June 15, 1989

NOTICE OF

PUBLICATION

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-16) Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Eunice Gas Plant located in the SE/4 NE/4, Section 5, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 15,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. The total dissolved solids content of the wastewater is approximately 1750 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 80 to 150 feet with a total dissolved solids concentration from 1000 to 1700 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

(GW-15) Northern Natural Gas Company, a Division of ENRON Corp., Jimmy D. Harp, Sr. Environmental Project Engineer, P.O. Box 1188, Houston, Texas 77251-1188, has submitted an application for renewal of its previously approved discharge plan for its Hobbs Gas Plant located in the NE/4, Section 6, Township 19 South, Range 39 East, NMPM, Lea County New Mexico. Approximately 60,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. There is a 2 1/2 acre lined evaporation pond with leak detection on site for emergency storage. The total dissolved solids content of the wastewater is approximately 1200 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 120 to 145 feet with a total dissolved solids content from 400 to 850 mg/l. 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 8th day of June, 1989. To be published on or before June 16, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
William J. LeMay,
Director
(Seal)



UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
Ecological Services

Cons. #2-22-89-I-136

Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

July 12, 1989

RECEIVED

JUL 17 1989

OIL CONSERVATION DIV.
SANTA FE

Mr. William J. Lemay, Director
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Lemay:

This responds to your notice received June 13, 1989 for comments on the proposed renewal of discharge plans.

(6W-16), Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Penbrook, Odessa, Texas 79762.

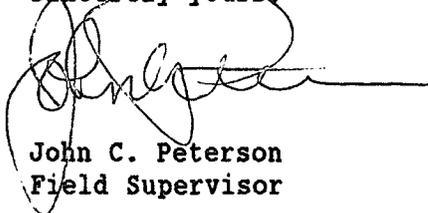
Our data indicate no listed species would be affected by the proposed action. There are no wetlands or other environmentally sensitive habitat that will be adversely affected by the discharge.

(6W-15), Northern Natural Gas Company, A Division of ENRON Corp., Jimmy D. Harp. Sr., Environmental Project Engineer, P. O. Box 11888, Houston, Texas 77251-1188.

The U.S. Fish and Wildlife Service is concerned about films of oil becoming established on the 2 1/2 acre evaporation pond. If migratory birds were to land on the pond and come in contact with the oil, the birds would perish. The Migratory Bird Treaty Act (MBTA) prohibits the taking, except by permit, of individual migratory birds. Unintentional take has been considered a violation of the MBTA by U.S. Courts. Fines of up to \$10,000 have been levied against violators.

If you have any questions concerning our comments please contact Richard Roy at (505) 883-7877 or FTS 474-7877.

Sincerely yours,



John C. Peterson
Field Supervisor

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Health and Environment Department, Environmental Improvement Division, Santa Fe, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
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

GARREY CARRUTHERS
GOVERNOR

June 13, 1989

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

CERTIFIED - RETURN
RECEIPT REQUESTED

Mr. E. Chris Kaitson
Attorney
Enron Interstate Pipeline
P. O. Box 1188
Houston, Texas 77251-1188

Re: Discharge Plan GW-15
Hobbs Gasoline Plant,
Lea County, New Mexico

Dear Chris:

Enclosed please find a letter dated June 9, 1989, from Roger Anderson addressed to Mr. Jimmy D. Harp regarding the discharge plan for the Hobbs Gasoline Plant.

Pursuant to our conversations of June 6th in the OCD offices, your company will respond to Mr. Anderson's letter within fourteen days of its receipt. If you fail to respond within that timeframe, an assurance of discontinuance will be necessary.

Sincerely,


ROBERT G. STOVALL,
General Counsel

RGS/dr

enclosure

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 9, 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 June 16, 1989.

Sincerely,

William J. LeMay
Director

WJL:sl

Attachment

NOTICE OF PUBLICATION

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 2038, Santa Fe, New Mexico 87504-2083, Telephone (505) 827-5800:

(GW-16) Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Eunice Gas Plant located in the SE/4 NE/4, Section 5, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 15,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. The total dissolved solids content of the wastewater is approximately 1750 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 30 to 150 feet with a total dissolved solids concentration from 1000 to 1700 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

(GW-15) Northern Natural Gas Company, a Division of ENRON Corp., Jimmy D. Harp, Sr. Environmental Project Engineer, P. O. Box 1188, Houston, Texas 77251-1188, has submitted an application for renewal of its previously approved discharge plan for its Hobbs Gas Plant located in the NE/4, Section 6, Township 19 South, Range 39 East, NMPM, Lea County, New Mexico. Approximately 60,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. There is a 2 1/2 acre lined evaporation pond with leak detection on site for emergency storage. The total dissolved solids content of the wastewater is approximately 1200 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 120 to 145 feet with a total dissolved solids content from 400 to 850 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

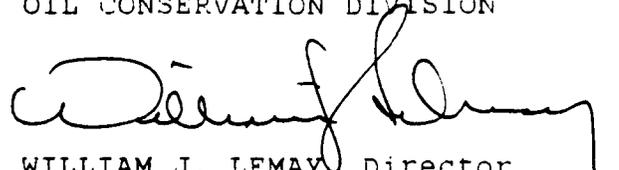
Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation 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 8th day of June, 1989. To be published on or before June 16, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY, Director

S E A L

ENERGY MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



GARREY CARRUTHERS
GOVERNOR

June 9, 1989

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

RE: NOTICE OF PUBLICATION

Advertising Manager
HOBBS DAILY NEWS SUN
P. O. Box 860
Hobbs, New Mexico 88240

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 June 16, 1989.

Sincerely,

William J. LeMay
Director

WJL:sl

Attachment

NOTICE OF PUBLICATION

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 2038, Santa Fe, New Mexico 87504-2083, Telephone (505) 827-5800:

(GW-16) Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Eunice Gas Plant located in the SE/4 NE/4, Section 5, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 15,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. The total dissolved solids content of the wastewater is approximately 1750 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 90 to 150 feet with a total dissolved solids concentration from 1000 to 1700 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

(GW-15) Northern Natural Gas Company, a Division of ENRON Corp., Jimmy D. Harp, Sr. Environmental Project Engineer, P. O. Box 1188, Houston, Texas 77251-1188, has submitted an application for renewal of its previously approved discharge plan for its Hobbs Gas Plant located in the NE/4, Section 6, Township 19 South, Range 39 East, NMPM, Lea County, New Mexico. Approximately 60,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. There is a 2 1/2 acre lined evaporation pond with leak detection on site for emergency storage. The total dissolved solids content of the wastewater is approximately 1200 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 120 to 145 feet with a total dissolved solids content from 400 to 850 mg/l. 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 8th day of June, 1989. To be published on or before June 16, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY, Director

S E A L

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 9, 1989

CERTIFIED MAIL
RETURN RECEIPT NO. P-106-675-174

Mr. Jimmy D. Harp
NORTHERN NATURAL GAS COMPANY
P. O. Box 1188
Houston, Texas 77251-1188

RE: Discharge Plan GW-15
Hobbs Gasoline Plant
Lea County, New Mexico

Dear Mr. Harp:

The Oil Conservation Division (OCD) has received the discharge plan renewal application dated May 12, 1989 for the above referenced facility. The following requests for clarification, additional information and commitments are based on a review of the application, the previously approved discharge plan and observations during the June 5, 1989 OCD inspection of the facility;

I. Discharge Plan Renewal Application

- A. Section II.B.3, Engine Cooling Waters, states NNG plans to switch to non-chromate coolant. During the inspection NNG representatives stated they are in the process of removing the chromate coolant for disposal and will physically inspect the underground storage vessels. Submit the results of the vessel inspection and any corrective actions required to ensure their integrity. Submit the analysis results on the chromate water and the proposed method of disposal. Identify the transporters and disposers and the location of the disposal facility. Submit documentation for the proper disposal of the waste for inclusion in the files.
- B. Section II.C.3., Underground Process or Wastewater pipelines. It is a discharge plan requirement that all underground piping be tested in plants in excess of 25 years of age. Submit a plan and schedule for the positive pressure testing of all underground piping that is greater than 25 years old. The testing results must be completed within the five year period of the plan renewal.

- C. Section III. A.5., Other Onsite Disposal, states all solid waste is removed by a commercial waste disposal company. During the site inspection, we observed that various filter media were disposed on the ground at the south side of the plant.
1. Describe the types, composition, approximate volumes, frequency of disposal and final disposal location of this material.
 2. For offsite wastes, what is the final disposal site? List all solid wastes (other than office trash) that is disposed of off-site.

All solid wastes must be dewatered prior to on or off-site disposal.

- D. Section III. B., states information on water formations was submitted with the original permit application in 1984. Water well #6 was placed in service subsequent to discharge plan approval. Submit the logs and water level data, water quality data and location on this water supply well.
- E. Provide MSD sheets for all chemicals used at the facility.

II. Site Inspection

- A. There were numerous areas observed where pumps, valves, flanges, sight glasses and drums were leaking or have leaked in the past. 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 soils, ground water, or other areas of the environment. Submit a completion schedule for paving and curbing any areas where leaks or spills can occur. This schedule must include all drum storage areas.
- B. 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 larger than the total volume of all interconnected vessels contained without the berm.

- C. The clean (non-contact) water and oily water sumps are below grade tanks without leak detection. Both tanks have above ground concrete berms surrounding them to contain spills but do not prevent infiltration of spills within the berms. Oily water was observed ponding on the ground outside of the oily water tank but within the berm. Submit plans and completion schedule for containment of any spills, leaks or overflow from these tanks to prevent infiltration of the waste. Submit a method and schedule for testing the integrity of these tanks. If replacement or major repairs of these tanks becomes necessary, the installation of leak detection will be required.
- D. The sink drain at the treater building was draining directly to the ground. Submit plans and completion schedule to prevent the accidental or intentional diversion of this waste stream to the ground surface.
- E. The blowdown from the packing vent at the compressor building has been emitting oil or oil mist. Submit a plan and completion schedule for containment of oily wastes from this blowdown.
- F. The south sump wall of the west cooling tower had large areas on the top of the wall that could allow for spillage of the cooling tower water to the ground surface. Submit a schedule for repair of this wall.
- G. The cooling tower pumps on the east side of the south cooling tower showed evidence of leaks. Submit a plan and completion schedule to contain and leaks or spills from these pumps to prevent migration and/or infiltration.
- H. Numerous below grade sumps were observed at the facility that were not equipped with leak detection. Submit a method and schedule for testing the integrity

Mr. Jimmy D. Harp
June 9, 1989
Page -4-

of these sumps. If any of these sumps requires replacement in the future or if new sumps are constructed, leak detection is required to be integrated in the design.

- I. Numerous empty drums were seen at various locations. Submit a plan for proper storage or disposal of all empty drums.
- J. During the meeting prior to the plant inspection the disposition of cooling tower sludges was discussed. Since this waste is not exempt from RCRA, you must determine if the waste exhibits any hazardous waste characteristics prior to disposal. Submit the results of these tests with your proposed method of disposal.

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

Sincerely,



Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Hobbs Office

NOTICE OF PUBLICATION

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-16) Phillips 66 Natural Gas Company, Michael D. Ford, Environmental Analyst, 4001 Penbrook, Odessa, Texas 79762, has submitted an application for renewal of its previously approved discharge plan for its Eunice Gas Plant located in the SE/4 NE/4, Section 5, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 15,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. The total dissolved solids content of the wastewater is approximately 1750 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 80 to 150 feet with a total dissolved solids concentration from 1000 to 1700 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

(GW-15) Northern Natural Gas Company, a Division of ENRON Corp., Jimmy D. Harp, Sr. Environmental Project Engineer, P. O. Box 1188, Houston, Texas 77251-1188, has submitted an application for renewal of its previously approved discharge plan for its Hobbs Gas Plant located in the NE/4, Section 6, Township 19 South, Range 39 East, NMPM, Lea County, New Mexico. Approximately 60,000 gallons per day of process wastewater is disposed of in an OCD approved contract disposal well. There is a 2 1/2 acre lined evaporation pond with leak detection on site for emergency storage. The total dissolved solids content of the wastewater is approximately 1200 mg/l. Ground water most likely to be affected by discharges at the surface is at a depth from 120 to 145 feet with a total dissolved solids content from 400 to 850 mg/l. The discharge plan addresses how spills, leaks and other discharges to the ground will be handled.

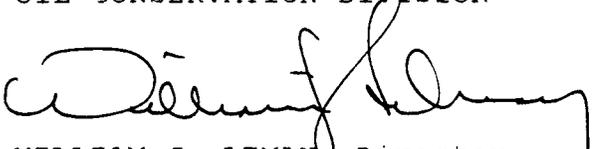
Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation 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 8th day of June, 1989. To be published on or before June 16, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY, Director

S E A L

Dave Englert OCD S.F. N.M.

JOHN F. ZEMBAS ENRON HOBBS N.M.

Robert L. Anderson ENRON Hobbs

ROGER C. ANDERSON OCD S.F.

EARL CHANLEY ENRON HOBBS

BOB MARTIN ENRON Hobbs

Jimmy D. HARP ENRON Houston 713 853-7303

DAVID B. Boyer NM OCD Santa Fe (SO.) 827-5812

Meeting of OCD & ENRON, June 5, 1989
Hobbs, NM

(Notes of Englert & Boyer)

June 5, 1989

Hobbs, N.M.

Sunny weather,

EURON

✓ waste pond 12-18" water in pond - shallow pond 12-18" freshwater

✓ ~~new berm needed around pile of sludge~~

✓ - berming needed 1/3 containment

✓ - leak detection sump checked out? in good condition

✓ wash down water (airly ^{water} waste)

✓ - water stream; fluid on ground - curbed but no pad!!

✓ - ramps ✓

✓ - tank on pad, needs berm

✓ - cooling blow-down - curbed but no pad (underground tank) (cooling tower sludge)

✓ - support MW for integrity test yearly clean out? visual inspection

✓ - 5 side of plant stacked barrels ~~underground~~ mud, new

✓ - sample cooling tower sludge

✓ - slurry on concrete pad in process of retrofit

✓ - sulfonic acid tank needs curb; pad

✓ - oily stain on ground outside of pump pads around drains

✓ - pumps E of central ~~west~~ (custom blowdown tubes)

✓ - steel charge tank, oil retaining under valves; flanges (hot oil)

✓ - all valves, flanges, sight glasses that tend to leak need pad; curb

✓ - housecleaning around scrubbers

✓ - fin fan heat exchangers have leakage onto pads, no curbing

✓ - Drum storage spillage at creater belly drains at S of bldg onto ground

✓ - pumps in water area

Fabrication of tank at product storage tank needs berming

2 gas product pumps, curb & pad 309 gal

2 waste oil tanks bermed curbed & pad #14

2 staining around reflect tank

2 bleeddown from packing vent at compressor bldg

2 cooling jacket compartment 1,400 40,000

1 1/2 month Chromite 300 ppm 220 ppm changed out by 6/15 if possible document change out & tank condition

2 8' hub oil tank W of above needs berming drum storage area curb & guttering padding

1 berm brine tank

1 Boiler room - only waste water - concrete sumps

1 Methanol tank E of cooling tower needs berming

Cooper
- cooling tower pumps need curbing

1 berm sulfonic acid tank W of Cober cooling tower

1 Sp 5 put wall on #1 cooling tower
- W of Cober cool tower sump shows evidence of packing around inlets

1 above ground storage E of fuel tanks
gleol & chert needs berming

Engine cooling, acetab fluid tank #67
- 8906051346 -
Cat Am Organics Heavy Metals
* high chromates 200-300 ppm?

2500 uwh's 36°C pH 7
containment area - dispose of empty barrels

West Water Pond - greenish color - no oil sheen
890605 142.5 - birds, shimmering surface
Cat Am, organics, Heavy Metals

8926051470 Waste Water Tank
from pipe into pond

sp. cond 3100 Temp 27.5°C pH 10

can

15-
F#

77-

00

25-

1000

—

—

—

—

PROJECT _____ PROJECT NUMBER _____
 SUBJECT _____ BY _____ DATE _____
 PAGE _____ OF _____

Notes from meeting at Hobbs ~~ERSON~~

6/5/89

1. 6" water in lined pond - liner protection

- 2-3 gpm evaporation
- 2-3 acres
- commingled waste water / storage interrupt to Rice
- single lines w/ leak detection / tile laterals
- w/ly inspection / ~~EID~~ CCD w/ly inspection
- M&T (records kept indefinitely)

Samples

1. final Rice effluent

2. pond sample

boiler blow down 3. cooling towers (3) shut down for turnaround 5/31/6/15

4. cooling jackets (for tanks) - a drawing & flush to free the
 b keep good manifest
 c. to waste Disposal
 class I disposal well in Okla

5

- commingled sewage / EID unless commingled then CCD jurisdiction

- Rice / class II disposal well

- water table static water 1955 - ~~22~~ 55'
 1981 ~~present~~ - ~~85~~? / 22-135?
 present - 122-135?

- wells 3, 4, 5, 6 in use for water supply

* - #6 installed late 70 early 80

- 6-7 miles N.E.

- 40 gpm pumped continuous

- wells 1, & 2 pumped sand discontinued yrs ago

- 1981 diked channels - fresh borrow dirt - lines capped

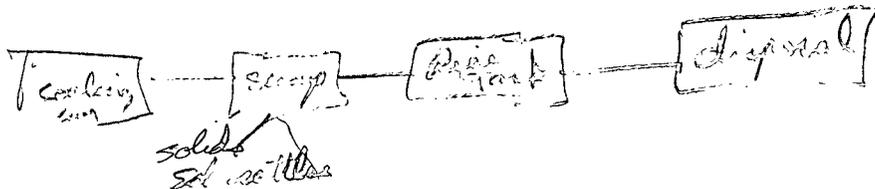
- no flare pit

3 flares: gasoline, E.S.D. ^{shut down}, treater plant flare



PROJECT _____ PROJECT NUMBER _____
 SUBJECT _____ BY _____ DATE _____
 PAGE _____ OF _____

- cooling towers clean out / what is done w/ sludges
 - not exempt from EPA. (EPA RCRA test to determine whether hazardous)
 - suggest agitate making cooling water blowdown (not exempt)



- solids from sumps (cooling tower) returned to yard
ENRON collected sample & send analysis to OGD
(cooling water blowdown)
- Oily water separator - sump materials returned to yard
1-2" sludge on bottom *(where)
- Sulfur plant operational
 - Sulfur / Alumina catalyst
 - kept on site
 - change out often (yearly)
 - any other solid wastes - goes thru ETD air
 - market sulfur
- filtering media - screen type - cleaned into oily waste
- other filters drained into sumps then sent to land fill
- drum chemicals / MSD /
suggest recycle &/or return to suppliers
* in process of discontinues halogenated hydrocarbons
(solvents)
- Waste piping (underground) plant built in 1953
hydrostatic (positive pressure) testing
- condition of approval

59
53
30



PROJECT _____ PROJECT NUMBER _____
 SUBJECT _____ BY _____ DATE _____
 PAGE _____ OF _____

Pond has commingled wastewaters

Chromate

Sample pond

Well #6 - 7 miles North

- RICESS
- Cooling tower
- Cooling Sack

Cooling tower sludges - where

Oil/water sump sludges - where disposed

Sulfur Plant - Alumina catalyst
spread on ground

— Main Engine Room - Reusable filters
 - Changeable ones drained
 2 weeks

— Drums - cut & crush after rinsing

— Sumps/Piping - 25 yrs testing.

MLB 6/5/89

ENRON
Gas Pipeline Operating Company

P. O. Box 1188 Houston, Texas 77251-1188

12 May 1989

RECEIVED

MAY 17 1989

**OIL CONSERVATION DIV.
SANTA FE**

Mr. Roger Anderson
Environmental Engineer
New Mexico Oil Conservation Division
P. O. Box 2088
Land Office Building
Santa Fe, New Mexico 87504-2088

Re: Discharge Plan GW-15 - Enron
Hobbs Gasoline Plant
Lea County, New Mexico

Dear Mr. Anderson:

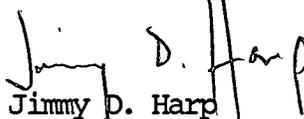
I am filing the attached application for renewal of OCD Discharge Plan GW-15 on behalf of Northern Natural Gas Company.

There have been no changes in the plant's physical facilities since 1984 when the original plan was approved. The flow through the plant is less at this time and there is an associated slight decrease in some of the wast streams.

Since there have been some changes in the OCD requirements, we have addressed each item in the current Discharge Plan Guidelines For Natural Gas Plants in order to assure complete coverage.

Your cooperation and assistance with renewal of this discharge plan will be greatly appreciated. Please let me know should you have any questions or comments.

Sincerely,



Jimmy D. Harp
Sr. Environmental Project Engineer

cc: Bill Janacek

File Copy

Northern Natural Gas Company
Hobbs Plant
New Mexico OCD Discharge Plan
Application

1. GENERAL INFORMATION

A. Discharger/Legally Responsible Party

Northern Natural Gas Company
Hobbs Plant
Lea County, New Mexico
Star Route A, Box 338
Hobbs, New Mexico 88240
505-393-5109
Mr. Bob Anderson - District Manager

RECEIVED

B. Local Representative or Contact Person.

Same as above.

MAY 17 1989

OIL CONSERVATION DIV.
SANTA FE

C. Location of Discharge

NE 1/4 Section 6, Township 19 S, Range 37 E, NMPM
Lea County, New Mexico

D. Type of Natural Gas Operation

This plant processes approximately 40 - 220 M²SCFD of natural gas from fields in Southeast New Mexico, removing H₂S and providing compression for transportation in the NNG system.

E. Copies

Three copies of the discharge plan application are enclosed.

F. 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.

Jimmy D. Harp

Date 15th May 89

Jimmy D. Harp

Sr Environmental Project Engineer

II. PLANT PROCESSES

A. Sources and Quantities of Effluent and Process Fluids

1. Inlet Drip and Saddle Scrubbers

Approximately 100,000 gallons of P/L liquids are removed annually from these facilities and collected in two on site above ground tanks (capacities: 210 Bbls and 1000 Bbls). These liquids are picked up by EOTT. The hydrocarbon phase is then taken to market. The produced water phase is disposed of via OCD approved injection wells in New Mexico.

2. Boilers

An estimated volume of 10,000 GPD is discharged on a sporadic basis to the waste water handling system. The bulk of this water goes to Rice Engineering for transport to and disposal in the Eunice Monument Eumont Salt Water Disposal System. There is a small 2.5 acre lined pond at the Hobbs Plant site that is used to evaporate as much of the flow stream as possible.

A copy of our latest lab analysis on this waste stream is attached as Exhibit A (dated 20 April 89).

3. Engine Cooling Waters

This is a closed loop system. Any water removed for maintenance/repairs is stored and returned to the units. In the event that these liquids are changed out. The waste materials will be disposed of by an approved disposal company (third party).

4. Cooling Towers

Approximately 40,000 GPD continuous blowdown from these units are discharged to the waste water handling system and leaves the plant site along with the boiler waste water as described in #2 above. The lab analysis for this waste water stream is also covered in Exhibit A.

5. Sewage

This is completely separate from the other effluents and there is no comingling.

6. There are no truck washing facilities at this location. Engine room floor drains discharge into the waste handling system. However, this flow stream goes into an oil/water separation tank in which the oil phase is removed. The water phase is then discharged into the waste water stream with the other sources at the plant.

Waste engine oils are collected in a below ground tank and disposed of via commercial waste oil company (EOTT).

B. Quality Characteristics

Characteristics of the individual waste streams are as follows:

1. Pipeline Liquids From Inlet Drip and Saddle Pack Scrubbers.

This material is produced with the gas stream. The hydrocarbon phase contains the liquifiable hydrocarbons. The water phase is typical of the produced waters that are exempt from the Hazardous Waste regulations (may contain suspended solids).

2. Boiler Blowdown Water

See Exhibit A for characteristics of this water.

3. Engine Cooling Waters

These waters currently contain chromates for water treatment. NNG plans to switch to a non chromate coolant in the very near future. At this time we are looking for a proper disposal facility for the coolant to be displaced.

4. Cooling Tower Blowdown

See Exhibit A for a typical analysis of this water.

5. Sewage - Non jurisdictional

6. Others

Engine Room Floor Drains - This material is primarily water that has been used for washing purposes. It will contain engine oil that has been washed from engines/compressors and other parts of the facility. NNG has switched completely to non hazardous solvents. Engine oil is analyzed frequently, for the primary purpose of determining when it must be changed out. See Exhibit B for a typical analysis.

C. Transfer and Storage of Produced Fluids and Effluents

1. Schematics

These were submitted in conjunction with the original permit application. However, drawings of the waste water plot plan (Exhibit C) and waste water flow diagram (Exhibit D) are attached for convenient reference. There have been no changes in this system since that time.

2. Transfer and Storage Collection Units - Present or Potential Discharges

The pipeline liquids are discharged into two tanks for storage until removed by the purchasing company (EOTT). These tanks have an adequate capacity to store 120 days of expected liquids production. They are inspected a minimum of twice a week. No overflows have been noted. At the present time, the tanks are not bermed.

Water from the boilers and cooling towers is collected into a clean water sump from which they are pumped into a holding tank for the waste water system and then into the waste water handling system itself. This system has a 1500 BBL accumulator tank located in the system just upstream of the delivery to Rice for disposal. The pumps have an alarm system to signal inoperation so that corrective action can be taken to prevent spills. We have no record of failure/spill. Waste oil is drained manually into the storage tank such that it is always under surveillance during transfer operations.

Engine room floor drains empty into various adjacent sumps from which the liquid is pumped to the oil/water separator tank. The oil phase is then removed and the remaining water is discharged into the waste water handling system for transport to the accumulator tank at point of delivery to Rice. This accumulator tank is inspected on a weekly basis. The water level in the lined pond is kept at about 6" in which case there is room for approximately 2,000,000 gallons additional water for use in the event that it is needed.

3. Underground Process or Waste Water Pipelines

Most of these transportation pipelines are below ground. They have been designed and constructed in the same fashion as our natural gas pipelines. The lines are coated steel and are tied into the plant rectifier system for corrosion control. We have no record of leaks.

D. Spill/Leak Prevention and Housekeeping Procedures

1. The SPCC Plan for this facility will be submitted by June 1.

2. Housekeeping Procedures

The waste stream sumps and other collection points are protected from rainwater addition. Rain water is diverted away from potential spill contamination areas.

3. Leak Detection Systems

None are installed

4. Injection Wells

The waste stream is delivered to Rice Engineering who handles injection/disposal.

III. Effluent Disposal

A. Existing Operations

1. On Site Effluent Disposal

The only on site effluent disposal facility is the 2.5 acre lined evaporation pond. Only a small portion of the waste water stream goes into this pond from the accumulator tank just upstream of the delivery point to Rice Engineering. There is a monitoring well for the pond that is checked weekly in accordance with the existing OCD permit. There have been no leaks detected in this pond since installation in 1982.

2. Leach Fields

There are no leach fields associated with the waste handling system.

3. Injection Wells

The waste water stream is delivered to Rice Engineering who in turn handles disposal into the Eunice Monument Eumont Salt Water Disposal System along with streams from other companies.

4. Drying Beds or Other Pits

There are none. The original unlined pit at this location was closed in accordance with OCD requirements in 1982.

5. Other On Site Disposal

There are none. All solid waste is removed by a commercial waste disposal company (Waste Management, Inc.).

B. Existing or Proposed Measures to Prevent or Retard Seepage to Protect Groundwater Quality.

Information on water formations was submitted with the original permit application in 1984.

Sampling/Measurement/Calculator of Flow

Waste water can be sampled at various points in the system from use storage to sumps to tanks and at the point of discharge. Measurement of the total waste water stream is through an orifice at the delivery point. Liquid movement through the system might be estimatee via measurement of the pump on/off times and associated changes in sump levels. Produced liquids are commercial products and are measured via tank gauging and metering in/out of transport trucks

3. Monitoring Systems

No additional monitoring systems are proposed.

4. Periodic Reporting - Monitoring Results

This has been reported in accordance with the OCD permit requirements for the lined pond.

5. Proposed Actions in the Event Of a Leak Or Failure.

In the event of a leak or failure in the pond liner, the material will be pumped out into the waste water accumulator tank and delivered to Rice with the continuous discharge. Only a minimal quantity of liquid is kept in the pond at any time (only 6" depth).

6. There are no plans to discontinue this discharge at any time during the period of this discharge plan.

X Off site Disposal

As set out above, waste waters are delivered to Rice Engineering for disposal in injection wells. Waste oils are picked up by EOTT and are recycled or used as fuel in an approved boiler.

B. Proposed Modifications

We feel the ground water quality standards are being protected and there are no plans for modifications.

IV. Site Characteristics

A. Hydrogeologic Features

This material was filed with the original permit application in 1982. There have been no changes.

B. Geological Description of Discharge Site.

There has been no change in the information as submitted in the original permit application.

C. Flood Protection

1. Flooding Potential

The collection areas are adequately protected by berms or concrete curbing to minimize potential impact by flooding. Also, meteorologically, there is little potential for flooding and this been born out by the fact that we havenot observed any flooding over th past 10 years.

V. Additional Information

There is very little potential for the waste streams being handled to discharge directly into a water body. Contaminant concentrations are low. Spills/leaks will be detected early and contained and cleaned up such that there is little potential for contamination.

Due to soil types and depths of water, there is little potential for significant quantities of any of the waste streams being handled to get into state or Federal waters.



UNICHEM INTERNATIONAL INC.

EXHIBIT A

707 NORTH LEECH
 P. O. BOX 1499
 HOBBS, NEW MEXICO 88240

PHONE - (505) 393-7751
 TX-910-986-0010

FIELD SERVICE REPORT

CLIENT: Enron Gas Pipeline Operation Company
 LOCATION: Hobbs Complex
 ADDRESS: Hobbs, New Mexico
 CONSULTED: _____

DATE: 20 APR 89
 ROUTING: Bob Martin
John Zembas
Melvin Pyeatt

Sample:	Make Up Water	EAST TOWER	SOUTH TOWER	WEST TOWER	LIMITS	LUBE OIL	WAST WATER	LIMITS
Total Alk. (PPM)		8	8	40				
"P" Alk. (PPM)		0	0	0				
Hardness (PPM)								
Conc. (T.H.)								
Chloride (PPM)	30	100	100	100				
Conc. (Cl)		3.00	2.78	2.78	4.0 MAX			
Phos. (PPM)		13	13	10	10-15			
Chromate (PPM)						2.11	2.11	150-300
pH	7.0	5.82	6.24	7.02	6.8-7.2	9.18	7.15	
CONDENSIVITY	500	1300	1200	1200		1800	2200	
COND CONCS		2.50	2.26	2.26				

RECOMMENDED CONTROLS	COOLING TOWERS	STEAM GENERATORS	CLOSED SYSTEMS

Recd. By: _____
 Rept. By: [Signature]
 Approved: _____

REMARKS: All parameters are within desired control limits and require no action at this time. Please check local controller for proper operation.

THANKS
[Signature]



UNICHEM INTERNATIONAL INC.

EXHIBIT A

(2)

707 NORTH LEECH
P. O. BOX 1499
HOBBS, NEW MEXICO 88240

PHONE - (505) 393-7751
TX-910-986-0010

FIELD SERVICE REPORT

CLIENT: Enron Gas Pipeline Operation Company
LOCATION: Hobbs Complex
ADDRESS: Hobbs, New Mexico
CONSULTED: _____

DATE: 10/28/89
ROUTING: Bob Martin
John Zembas
Melvin Pyeatt

Sample:	Make Up Water	B2	B5	CEND	LIMITS			
Total Alk. (PPM)		230	200					
"P" Alk. (PPM)		200	244					
Hardness (PPM)		NIL	NIL					
Conc. (T.H.)								
Chloride (PPM)								
Conc. (Cl)								
Phos. (PPM)		35	35		10-40			
Chromate (PPM)								
pH		11.12	11.09	8.79				
SULFITE		40	40		20-40			
CENTRIFUGITY		2000	1900	110	2200 MAX			
ZP-M		192	180		> 150			
IBENT		0.40	0.20	NIL	< 1.0			

RECOMMENDED CONTROLS	COOLING TOWERS	STEAM GENERATORS	CLOSED SYSTEMS	

Recd. By: _____
Rept. By: [Signature]
Approved: _____

REMARKS: All parameters are within desired control limits and require no action at this time

THANKS
[Signature]



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 16, 1989

CERTIFIED MAIL
RETURN RECEIPT NO.: P-106 675 006

Mr. David Bays
Environmental Affairs Specialist
ENRON GAS PIPELINE GROUP
P. O. Box 1188
Houston, Texas 77251-1188

RE: Discharge Plan GW-15
Hobbs Gasoline Plant
Lea County, New Mexico

Dear Mr. Bays:

On October 4, 1988, the Oil Conservation Division notified the office of Northern Natural Gas Company, by certified mail, of the pending expiration of the ground water discharge permit for the Hobbs Gasoline Plant located in Section 6, Township 19 South, Range 37 East, NMPM, Lea County, New Mexico. A copy of this letter with the return receipt is enclosed.

The discharge plan, GW-15, under which the facility was permitted to operated expired on April 25, 1989. There has been no correspondence in the OCD files from either Northern Natural Gas Company or ENRON, its successor, concerning the expiration of the discharge plan. As of this date, a renewal application has not been received.

If a previously approved discharge plan is allowed to expire without being renewed, all waste discharges from the facility processes must cease. There are no regulatory or legal provisions that allow for the extension of the expiration date of an approved discharge plan. Discharging without an approved discharge plan is a violation of the New Mexico Water Quality Act. Pursuant to Section 74-6-5.0 and 74-6-5.P penalties can be levied against the violator.

If a facility wishes to continue to have effluent discharges, the discharge plan must be renewed before the expiration date. If the discharge plan is allowed to expire and the facility wishes to continue effluent or leachate discharges, the facility's owners/operators must appear before the Water Quality Control Commission (WQCC) with an assurance of discontinuance and petition for authority to continue discharging while a discharge plan renewal application is being processed.

*Received
17 May 89
Jim D. Ho*

May 16, 1989

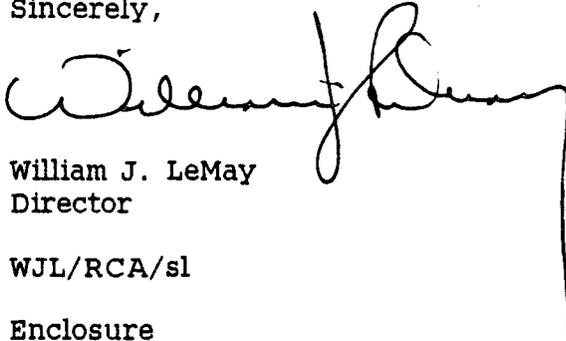
Page 2

Additionally, OCD was not notified of the transfer of ownership from Northern Natural Gas Company to ENRON as required by Section 3-111 of the WQCC regulations. This is also a violation of the Water Quality Act.

Before a decision is made on whether to initiate enforcement action, OCD requests that you and your attorney meet with us in Santa Fe within 30 days from the date of this letter to discuss the issues presented above.

Please contact David Boyer at the address listed above or at (505) 827-5812 to schedule the meeting or if you have any questions regarding this letter.

Sincerely,

A handwritten signature in cursive script, appearing to read "William J. LeMay". The signature is written in black ink and is positioned to the right of the typed name and title.

William J. LeMay
Director

WJL/RCA/sl

Enclosure

cc: OCD Hobbs Office



MEMORANDUM OF MEETING OR CONVERSATION

Telephone Personal

Time 9:15 AM

Date 5/10/89

Originating Party

Other Parties

David Bays - ENRON
(Called from Laguna)

DAVID BOYER, OCT

Subject Discharge Plan for Northern Natural Gas,
Hobbs Gasoline Plant GW-15

Discussion

Bays returned our phone call regarding expiration of the above discharge plan on April 25, 1989. He said he had received the October 4, 1988, notification letter telling of the expiration, and referred it to a staff person for action. I explained that WQCC ^{RULES} have no provisions for expiring permits and that ENRON is out of compliance and subject to enforcement action. The only alternative is appearance before the WQCC for an "Assurance"

Conclusions or Agreements

Bays will call by Friday 5/12 to explain status of renewal application. I told him to expect to be called to meet with us to explain situation, including discussion/negotiation of "Assurance of Discontinuance" for presentation to Comm.

Distribution

- Northern Natural Gas Plant File
- Bob Stovall

Signed



Accu-Labs Research, Inc.

11485 W. 48th Avenue Wheat Ridge, Colorado 80033 (303) 423-2766

February 7, 1989
Page 1 of 2

Mr. David Boyer
NM Oil Conservation Division
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088



RE: 9649-29142-3
Date Samples Rec'd: 1-20-89
P.O. No. 77-521.07-123

REPORT OF ANALYSIS

ALR Designation	9649-29142-3-1	9649-29142-3-2	9649-29142-3-3
Sponsor Designation	8901121115 1-12-89	8901121645 1-12-89	8901131205 1-13-89
Determination: mg/L			
Aluminum, total	<1.0*	<1.0*	<1.0*
Barium, total	3.0	10	0.6
Boron, total	190	38	8.2
Cadmium, total	<0.05*	<0.05*	<0.05*
Calcium, total	64,000	--	8900
Chromium, total	<0.05*	<0.05*	<0.05*
Iron, total	<0.1*	7.4	210
Lead, total	<0.5*	<0.5*	<0.5*
Magnesium, total	21,000	--	1400
Manganese, total	4.3	3.8	5.2
Mercury, total	0.0072	0.0060	0.0060
Potassium, total	12,000	--	1100
Sodium, total	34,000	--	47,000
Total Alkalinity, (as CaCO ₃ to pH 4.5)	280	--	170
Carbonate (as CO ₃)	<5	--	<5
Bicarbonate (as HCO ₃)	340	--	210
pH	5.5	--	7.0
Specific Conductance, µmhos/cm	900,000	--	340,000
Arsenic, total	0.24	0.13	2.4
Selenium, total	<0.25*	<0.25*	--
Total Solids	540,000	--	200,000
Bromide	2000	--	310

ENRON
Butler Lakes
Compressor
Station

February 7, 1989
Page 2 of 2

Mr. David Boyer
NM Oil Conservation Division

RE: 9649-29142-3
Date Samples Rec'd: 1-20-89
P.O. No. 77-521.07-123

REPORT OF ANALYSIS

ALR Designation	9649-29142-3-1	9649-29142-3-2	9649-29142-3-3
Sponsor Designation	8901121115	8901121645	8901131205
	<u>1-12-89</u>	<u>1-12-89</u>	<u>1-13-89</u>
Determination: mg/L			
Chloride	230,000	--	110,000
Sulfate (as SO ₄)	240	--	770
Ion Balance	103	--	85

* Higher detection limit due to sample matrix interference.

These samples are scheduled to be discarded 30 days after the date of this report.

Mary Fabisiak
Mary Fabisiak
Water Laboratory
Supervisor

MF/dh *dh*



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

754
WPU

89-39 C

REPORT TO: DAVID BOYER S.L.D. No. OR-
N.M. OIL CONSERVATION DIVISION DATE REC. 1-19-89
P.O. Box 2088 PRIORITY 3
Santa Fe, NM 87504-2088 PHONE(S): 827-5812
 COLLECTION CITY: NE of Roswell; COUNTY: Chaves
 COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8|9|0|1|1|2|1|6|4|5
 LOCATION CODE: (Township-Range-Section-Tracts) 10|9|5+2|5|E+1|D+1|2|- (10N06E24342)
 USER CODE: 8|2|2|3|5 SUBMITTER: David Boyer CODE: 2|6|0
 SAMPLE TYPE: WATER , SOIL , FOOD , OTHER: _____

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

RECEIVED

- 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)

APR 27 1989

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

OIL CONSERVATION DIV.
SANTA FE

PURGEABLE SCREENS

EXTRACTABLE SCREENS

- | | |
|---|--|
| <input type="checkbox"/> (753) Aliphatic Headspace (1-5 Carbons) | <input type="checkbox"/> (751) Aliphatic Hydrocarbons |
| <input checked="" type="checkbox"/> (754) Aromatic & Halogenated Purgeables | <input type="checkbox"/> (755) Base/Neutral Extractables |
| <input type="checkbox"/> (765) Mass Spectrometer Purgeables | <input type="checkbox"/> (758) Herbicides, Chlorophenoxy acid |
| <input type="checkbox"/> (766) Trihalomethanes | <input type="checkbox"/> (759) Herbicides, Triazines |
| <input type="checkbox"/> (774) SDWA VOC's I (8 Regulated +) | <input type="checkbox"/> (760) Organochlorine Pesticides |
| <input type="checkbox"/> (775) SDWA VOC's II (EDB & DBCP) | <input type="checkbox"/> (761) Organophosphate Pesticides |
| <input type="checkbox"/> Other Specific Compounds or Classes | <input type="checkbox"/> (767) Polychlorinated Biphenyls (PCB's) |
| <input type="checkbox"/> | <input type="checkbox"/> (764) Polynuclear Aromatic Hydrocarbons |
| <input type="checkbox"/> | <input type="checkbox"/> (762) SDWA Pesticides & Herbicides |

Remarks: Halogenated 10PPB or less if possible

FIELD DATA: 39,000 @ 4.5°C
 pH= 7; Conductivity= _____ umho/cm at _____ °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.)
ENRON - Bitter Lakes Compressor Station brine storage tank

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

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 _____

SCIENTIFIC LABORATORY DIVISION

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

February 1, 1989

ANALYTICAL REPORT
SLD Accession No. OR-89-0039

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 January 19, 1989

User:

STATE PARKS & RECREATION

DEMOGRAPHIC DATA

COLLECTION		LOCATION	
On: 12-Jan-89	By: Boy . . .	Township: 09S	Section: 10
At: 16:45 hrs.	In/Near: Roswell	Range: 25E	Tract: 12

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
Halogenated Purgeables (33)	0.00	N	50.00	ppb
Benzene	3500.00		50.00	ppb
Toluene	2000.00		50.00	ppb
Ethylbenzene	150.00		50.00	ppb
p- & m-Xylene	860.00		50.00	ppb
1,2-Dimethylbenzene	220.00		50.00	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.

Seals: Not Sealed , Intact: No , Yes & Broken By: _____ Date: _____Laboratory Remarks: Bitter Lakes

Analyst: _____

Gary C. Eden
 Analyst, Organic Chemistry

2/12/89
 Analysis
 Date

Reviewed By: _____

Richard F. Meyerhein 02/01/89
 Supervisor, Organic Chemistry Section



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

859
WMM

**GENERAL WATER CHEMISTRY
 and NITROGEN ANALYSIS**

DATE RECEIVED 1/19/89	LAB NO. WC-95	USER CODE <input type="checkbox"/> 59300 <input type="checkbox"/> 59600 <input checked="" type="checkbox"/> OTHER: 82235
Collection DATE 8/10/12	SITE INFORMATION	Sample location ENRON - Bitter Lakes Compressor Station
Collection TIME 1645		Collection site description Sample from brine storage tank
Collected by Person/Agency Boyer/Anderson/OCD		

FEB 23 1989
 OIL CONSERVATION DIVISION
 SANTA FE

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

SEND FINAL REPORT TO

Attn: David Boyer

Phone: 827-5812

Station/well code
095-25E-10.12
 Owner

SAMPLING CONDITIONS

<input type="checkbox"/> Bailed <input type="checkbox"/> Dipped	<input type="checkbox"/> Pump <input checked="" type="checkbox"/> Tap	Water level	Discharge	Sample type Grab
pH (00400) 7	Conductivity (Uncorrected) 39,000 µmho	Water Temp. (00010) 4.5 °C	Conductivity at 25°C (00094) µmho	

Field comments

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 NF, NA Sample:	Date Analyzed
<input checked="" type="checkbox"/> Conductivity (Corrected) 25°C (00095)	µmho	1/27	<input checked="" type="checkbox"/> Calcium	1/26/89
<input type="checkbox"/> Total non-filterable residue (suspended) (00530)	mg/l		<input checked="" type="checkbox"/> Potassium	1/4
<input checked="" type="checkbox"/> Other: Lab pH	5.43	1/23	<input checked="" type="checkbox"/> Magnesium	1/26/89
<input type="checkbox"/> Other:			<input checked="" type="checkbox"/> Sodium	1/24
<input type="checkbox"/> Other:			<input checked="" type="checkbox"/> Bicarbonate	1/23
A-H₂SO₄			<input checked="" type="checkbox"/> Chloride	2/2
<input type="checkbox"/> Nitrate-N +, Nitrate-N total (00630)	mg/l		<input checked="" type="checkbox"/> Sulfate	2/2
<input type="checkbox"/> Ammonia-N total (00610)	mg/l		<input checked="" type="checkbox"/> Total Solids	2/9
<input type="checkbox"/> Total Kjeldahl-N ()	mg/l		<input checked="" type="checkbox"/> CO ₂	1/23
<input type="checkbox"/> Chemical oxygen demand (00340)	mg/l		<input checked="" type="checkbox"/> B ₅	2/07
<input type="checkbox"/> Total organic carbon ()	mg/l		<input checked="" type="checkbox"/> Cation/Anion Balance	
<input type="checkbox"/> Other:			Analyst	Date Reported
<input type="checkbox"/> Other:				2/15/89

Laboratory remarks
 82850

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	391.72	7850.00	<3.0
Mg	111.70	1360.00	<0.3
Na	1839.93	42300.00	<10.0
K	26.29	1028.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	2369.64	52538.00	
Total Dissolved Solids = > 100000			
Ion Balance = 114.38%			

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HCO3	0.82	50.30	<1.0
SO4	39.94	1917.00	<10.0
CL	2031.03	72000.00	<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.
	2071.79	73967.30	

WC No. = 8800095
 Date out/By Dean 2/16/89

RECEIVED
 FEB 23 1989
 OIL CONSERVATION DIVISION
 SANTA FE

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 4, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Northern Natural Gas Company
Star Route A
Box 338
Hobbs, New Mexico 88240

RE: Discharge Plan GW-15
Hobbs Gasoline Plant
Lea County, New Mexico

Gentlemen:

On April 25, 1984, the ground water discharge plan, GW-15, for the Hobbs Gasoline Plant located in Section 6, Township 19 South, Range 37 East, NMPM, Lea County, New Mexico 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 April 25, 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 as quickly as possible. 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 renewal application.

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

Mr. L. L. Frantz
October 4, 1988
Page 2

If you have any questions, please do not hesitate to contact
Roger Anderson at (505) 827-5885.

Sincerely,



David G. Boyer, Chief
Environmental Bureau

DGB:RA:sl

Enclosure

cc: OCD-Hobbs Office



OIL CONSERVATION DIVISION

SEP 14 1984

RECEIVED

August 31, 1984

State of New Mexico
Energy and Minerals Department
Oil Conservation Division

Attn: Joe D. Ramey/Director

Re: GWR-15 Discharge Plan

The discharge plan submitted to the Water Quality Control Commission Regulations for the controlled discharge of waste water from the Hobbs Gasoline Plant located in Section 6, Township 19 South, Range 37 East, NMPM, Lea County, New Mexico, has been completed.

The requirements in your letter of April 25, 1984 have been met. Eddie W. Seay, field representative, visited the above location on August 27, 1984 to check on the requirements and was satisfied that they met the expectations.


Earl Chanley
Maintenance Supervisor

cc: Eddie Seay
file

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

Notice Dates:
3/17/84 (ALB.)
3/9/84 (HOBBS)

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) 827-5803.

NORTHERN NATURAL GAS COMPANY, Hobbs Plant (NE/4, Section 6, Township 19 South, Range 37 East, NMPM, Lea County, New Mexico) Star Route A, Box 338, Hobbs, New Mexico 88240, proposes to discharge 1400 barrels of waste water per day into a lined evaporation pond and into a salt water disposal system operated by Rice Engineering for deep well disposal. The waste water is derived from the plant process and has a total dissolved solid content of up to 3050 mg/L.

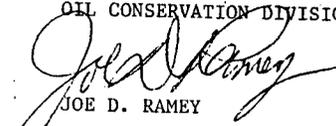
Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation 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 any interested person. Requests for a 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 9th day of March, 1984.

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION


JOE D. RAMEY

Director

S E A L



February 28, 1984

Mr. Joe Ramey
State of New Mexico
Energy and Mineral Dept.
P.O. Box 2083
Santa Fe, NM 87501

Dear Mr. Ramey:

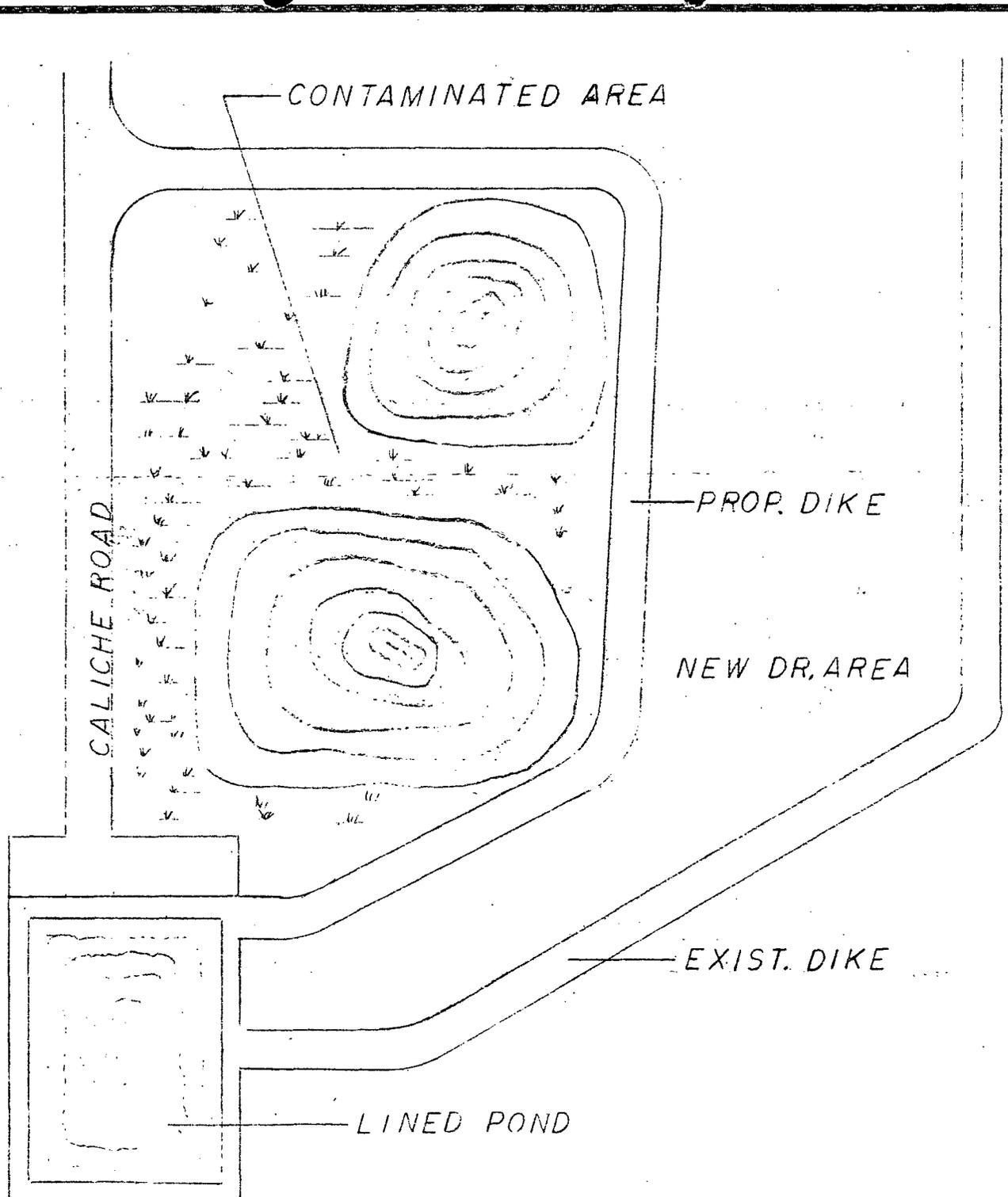
As per our discussion during the meeting at the Hobbs Plant on February 28, 1984, Northern Natural Gas Company submits the following proposal in an attempt to secure approval for the Hobbs Plant Discharge Plan:

Prior to August 1, 1984, Northern Natural Gas Company, at its own expense, will isolate the existing natural depression located on the plant property in N.E. $\frac{1}{4}$ of Section 6, Township 19, Range 37. This is to be accomplished by placing an earthen dam around the natural depression, covering depression with approximately three ft. of good soil, and making another lagoon east and north of the depression in an uncontaminated area (see attached sketch). The purpose of this project is to eliminate the possibility of run off rain water from collecting in the natural depression and forcing contaminants collected in years past, down into the water table.

We have initiated this project and will continue to complete same by August 1, 1984, unless we receive word from you that objections have been raised. Should you have any questions, please contact me.

Daniel L. Junk
Director Processing Plant O&M

cc: R.D. Cline
R.D. Lloyd - Midland
J.C. Rauch - Midland
E.E. Chanley



		Scale	NONE		Dr. by	M.R.		Date	2-28-84		Operating Division Midland Area						
		Drawing Status	Checked		Approved						N.E. 4 SEC. 6 T 19 S - R 37 E LEA CO. N. M.						
			By	Date	By	Date	By	Date	By	Date							
		Prel'y															
		Bid															
Revised	By	Apd.	Constr.								P.O.	W.O.	19	Construction	Drawing No.		
Microfilm File Number			Design File Number			P.L. or Sta Number											





STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONY ANAYA
GOVERNOR

February 17, 1984

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

Mr. Dick Cline
Northern Natural Gas Company
Carlsbad Highway
Hobbs, New Mexico 88240

Dear Mr. Cline:

Before I can approve the discharge plan for your Hobbs Plant, it will be necessary for you to address the problem of the old disposal pit area.

As you know the drainage area for this natural depression is quite large. In addition all surface drainage from the plant area is diverted by ditch to the depression. So, with a rain of any magnitude, large volumes of water will reach the depression. This, in my opinion, will cause wastes present in the depression to leach out and continue to be a threat to the ground water in the area.

An obvious solution would be to fill in the area. However, the size and drainage area probably makes this impractical. The only other solution would be to divert runoff, from the plant site and the area to the west of the depression, into a low area to the south of the depression. Please investigate this possibility.

Another solution would be to grade the depression toward a sump and then pump any waters which collect in the sump to your lined pit and disposal system.

These are my suggestions and should not be construed as the only solution. However, something must be done to alleviate this potential hazard to ground water.

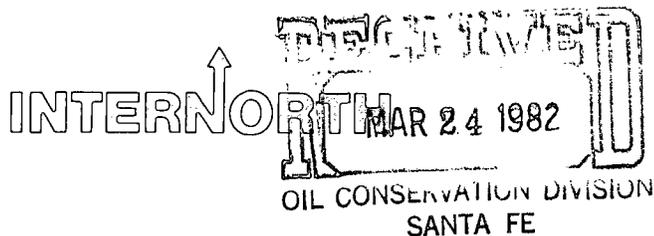
Please report your plans on this to me by April 1, 1984.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Post Office Box 4420
Houston, Texas 77210
Telephone 713-940-5000



Corporate Engineering, Houston
Process Design
March 16, 1982
JBB: 07-82

Energy and Minerals Department
State of New Mexico
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Oscar A. Simpson III
Water Resource Specialist

RE: Discharge Plan and Project for Hobbs Plant

Dear Sir:

Following the meeting held with your participation in our plant in Hobbs, New Mexico on February 11, 1982 action was taken for fast implementation of the proposed additions and modifications in the industrial water disposal system. Please see Attachment 1 = "Hobbs Water Management: Project Scoping" and the process flow diagram MO-901 for a detailed presentation.

A project team is currently working in detail design, equipment and components purchasing so that a construction bid package could be issued on or before June 1, 1982. Following your recommendation, high priority was given to the installation of the FRP tank at the edge of the existing lined pond and to repiping the plant water disposal lines so that we can take maximum advantage of the evaporating capability during summer months; this will reduce to a minimum the disposal into the unlined pond, even before the pipe connection to the Eunice-Monument-Eumont Salt Water Disposal System is in operation. Also on the high priority list are foundation curbs and drain provisions for all cooling water recycle pumps, and proper waste oil disposal from the existing oil separation tank, as established during your inspection tour of the plant.

Our application to join the E-M-E Salt Water Disposal System is being processed through Rice Engineering & Operating Inc. in Hobbs, New Mexico - the operator of the disposal system.

Upon acceptance to join the System, Rice Engineering will be awarded the contract to build the connecting pipe from the Northern Natural Gas Company Hobbs Plant to the Eunice-Monument-Eumont Salt Water Disposal System (approx. 16,500 ft. of 6" C1/100 asbestos-cement pipe.) The schedule for estimated completion dates for the yard modifications proposed in this project remains September 20, 1982 with the priority items to be in place tentatively before August 15, 1982.

March 16, 1982
JBB: 07-82
Page 2

We will let you know the schedule for the construction of the water disposal line to the E-M-E System as soon as we get it from Rice Engineering. Please remain assured that our legal and contracts departments and our management give a high priority to the contractual aspects of the project so that the water disposal system will be operational in the shortest possible time.

The following documents which you required are attached to this letter:

Attachment 2: Product Bulletins and Material Safety Data Sheets for the chemical products used in the treatment of the cooling tower water and in the steam boilers system, as well as the water analysis report.

Attachment 3: Map showing depths to water table and overall depths to base of Ogallala formation, with the location of the NNG Hobbs Plant shown.

Attachment 4: Sections through the Ogallala formation in the vicinity of the Hobbs Plant.

Attachment 5: Aerial photo of 1" to 100' scale, with markings for major plant facilities including (highlighted) items presented in the schematic diagram MO-901 and in the scope of work for the water management project.

Attachment 6: A 15 minute series topographic map - from U.S.D.I. geological survey showing plant and water well locations..

Attachment 7: Copy of the journal of the Cooling Tower Institute, Winter 1982 for reference on Zero Discharge Approach - success rate (see page 5).

If you have any other questions regarding this matter, please call me at (713) 940-5329.

Sincerely,


Jacob Bardov
Senior Engineer

/gjs

attachments

D I S T R I B U T I O N L I S T

Mike Howard - T.O.D. - Omaha
John Stroder - T.O.D. - Omaha
M.H. (Shorty) Raven - Midland Office
Laura Kruse - Midland Office
Dick Cline - Hobbs Plant
Marvin Coker - Hobbs Plant
Andy Unverzagt - Midland Design Office

Houston Office:

Gerry Duffy
Howard Rickel
Lee-Ken Choo
Tom Beasley
Lew May
Susan Bajek
Oscar Johnson
Dan Loh
Larry Leggett

File: 994.01

1311 W. Florida Avenue
Midland, Texas 79701
Phone (915) 682-7964



October 14, 1981
Midland, Texas

Mr. Oscar A. Simpson III
State of New Mexico
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Re: Info for Discharge Plan - Hobbs

Dear Mr. Simpson:

Additional information for the discharge plan that was requested is enclosed herein. The information requested has been addressed by item number. If you have any questions on this or the project in general, please feel free to call me at 915/682-7964 Ext. 6220.

Sincerely,

L. J. Kruse
L. J. Kruse

Environmental/Codes Engineer

IN BLACK FOLDER
P.S.

Attachment

LJK/1e

cc: M. L. Hamilton w/attach
File w/attach

March 1982

HOBBS WATER MANAGEMENT

PROJECT SCOPING1.0 Introduction

The scope of this project is to solve the problems associated with industrial waste water disposal at the Northern Natural Gas - Hobbs, New Mexico Plant, in the shortest possible time. All the items contained in this scoping have been discussed at the meeting held on February 11, 1982, at the Hobbs plant site, following the site inspection by Mr. Oscar Simpson from the Oil Conservation Division of the State of New Mexico in Santa Fe and have been required and/or agreed upon by all the participants representing the Plant Management, the Midland and Omaha offices of the Transmission Operating Division of Northern Natural Gas, and Corporate Engineering - Houston Office.

2.0 Salt Water Disposal System

It is recommended that the Northern Natural Gas Company shall utilize the facilities of the Eunice-Monument-Eumont Salt Water Disposal System which gathers produced water from producing oil and gas wells in an area south of our plant.

A letter of application to join the System on a 45 well basis (equivalent to 1400 barrels per day of waste water from the Hobbs plant) has been submitted to Rice Engineering and Operating, Inc., in Hobbs, N.M. - The operator of the disposal system.

Upon acceptance of this application by the members/owners of the E-M-E SWD System that Northern Natural Gas Company be allowed to join the system, Rice Engineering will be awarded the contract to build the connecting drain pipe from the Hobbs Plant Yard to the existing system facilities located in the SW/4 NE/4 of Section 19, T19S, R 37E, Lea County, New Mexico.

3.0 Hobbs Plant Yard Work

Refer to attached drawing MO-901.

Corporate Engineering/Houston will design, purchase, and install the equipment and the piping connections associated with the wastewater disposal, as follows:

3.1 Water Disposal Surge Tank (T-W01)

A 500 BBL capacity fiberglass tank will be installed on a concrete foundation next to the existing lined evaporating pond. The tank will receive the blowdown water from the three cooling towers as well as the process and salty drain waters collected in the plant from the existing oil separation system.

The tank overflow line as well as the bottom drain line will be piped back to the lined evaporating pond.

NOTE: The installation of this tank and piping connections to and from it, will receive first priority handling in order to allow the plant operator to by-pass as much as possible the unlined pond and make maximum use of the increased evaporating rates during summer months 1982 in the lined pond.

3.2 Pond Pumpout Self Priming Pumps - P-W01 A & B

The existing lined evaporating pond with a nominal evaporating area of 2.2 acres will be used in the future to receive the backwash waters from the cooling tower water filter systems as well as a surge capacity for the salt water disposal system when and if the E-M-E salt water disposal system is temporarily overloaded.

In order to evacuate the water from the lined pond, 2 (two) lift pumps with 1 HP motors, 35 GPM, 40 ft TDH, self priming construction, freeze protected, will be installed next to the lined pond with the discharge connected to the water disposal surge tank T-W01.

3.3 Waste Water Piping Rerouting:

3.3.1 Cooling Towers Blowdown Line

Junction Point: From unlined pond disposal system - To tank T-W01 inlet nozzle size: 2" SCH 40 C.S. pipe, burried.

Fittings: 2 block (gate) valves, 1 in-line strainer, 1 in-line positive displacement flow totalizing indicator;
approx. length: 1,200 ft.

3.3.2 Oily Water Line

Tie-in from existing disposal line to the lined evaporating pond to the previous line (see 3.3.1) before the meter.

Size: 1 1/2" SCH 40, Fittings: check valve, 2 gate valves.
Approximate length: 300 ft. burried.

3.3.3 Boilers Blowdown Line

The re-use of the boiler blowdown water as make up to the West cooling tower was recommended.

The boiler blowdown line will be rerouted from the junction point in the boiler house to the new blowdown separators.

Line size: 3" SCH. 80, burried, approximate length: 280 ft.

Fittings - 1 block (gate) valve.

3.3.4 Cooling Tower Water Filters: Backwash Collector and Disposal Line

Tie-in: From the 3 new skid mounted filters to the lined evaporating pond. Line size: 10"

Collector: PVC - burried

Approx. length: 700 ft.

Drain line: Asbo-cement 10"-1500 ft. burried.

Fittings: 3 matching flanges for skid connections,

3 check valves - PVC or wafer type C.S.

3 block valves (butterfly).

4.0 New Blowdown Separator-F-W01

The existing blowdown separator and connecting pipes are badly corroded. A new blowdown separator sized for a 4" inlet will be installed next to the West cooling tower,

Connections: - The new blowdown line

- Condensate drain into the cooling tower basin through a pipe distributor (6" drain, 30 ft pipe length with T-distributor and end caps, drilled holes.)

- 30 ft high vent pipe 6" - SCH 80 and supports.

The provision for quench water - not to be connected.

5.0 Suspended Solids Control in the 3 (three) Recirculating Cooling Systems
M-W01,2,3

Designed for 24 times/day basin water turnover rate. Each one of the three cooling towers will be equipped with an independent high rate, permanent media (sand) filter system.

The filter systems will be purchased as complete packages to include the following:

- Skid mounted multimedia filter with automatic air relief, recirculating pump with TEFC motor (30 HP), designed for 1000 GPM recycle rate, complete with gage and control panels, filter effluent flow control valve, backwash flow control valve, pump suction strainer, electric power junction box, and door interlock on-off switch motor starter/relay, thermal overload protection, fuse protection, stepdown transformer to 110 volt control.
- Cooling tower basin cleaning collector and return system with fluid-jet heads, suction manifold, solenoid actuated diaphragm valves, and switching control box.

6.0 Concrete Curbs and Water Drain Provisions for the Existing Water
Recirculating Pumps

Each cooling tower is serviced by a group of water recycle pumps installed on concrete foundations.

All these foundations will be retro-fitted with curbs and drain connections back into the tower water basin.

Drain line lengths: approx. 20 ft. each, 3" dia.

7.0 Summary of Electrical and Instrumentation Work

7.1 Electrical

- a. Install 480v, 3 phase power and alternating controls for "pond pump-out" pumps.
- b. Install high and low tank level switches for pump controls.
- c. Install power and controls for cooling tower filter systems.
- d. Conduct required studies and develop the design required to tie in new equipment with existing power system.

7.2 Instrumentation

- a. Install a positive displacement flow meter with local readout only.
- b. Integrate new backwash filter system instrumentation and control system with existing plant systems and make required modifications.

8.0 Earth Work

An oil accidental spill in the immediate vicinity of the oily water separator tank has to be handled within the scope of this project: The contaminated top soil layer will be removed and disposed off in an approved dump site.

Fill dirt available in the area will be used to level the site. On site estimating of the volume of work will be required.

9.0 Miscellaneous

The plant maintenance encounters difficulties with the repair of the seals for the vertical (hollow shaft) cooling tower water recycle pumps. Corporate Engineering will provide technical assistance in finding a technical solution to eliminate the water loss through the pump seals.

Jacob Bardov

0188C/ss

SECTION I

BOILER TREATMENT (INTERNAL TREATMENT)

A. KE-TONE WO is a liquid phosphate-organic internal boiler treatment.

<u>Date Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
04/01/81	4 - 55 gal. drums	\$ 1,705.44
07/21/81	2 - 55 gal. drums	852.72
10/21/81	2 - 55 gal. drums	927.96
10/22/81	2 - 55 gal. drums	<u>881.56</u>
Total cost:		\$ 4,367.68

B. BOILER-HIB 310 is a catalyzed sodium sulfite compound for removal of dissolved oxygen.

<u>Date Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
04/06/81	1200 lbs.	\$ 780.00
07/21/81	1200 lbs.	780.00
10/22/81	1200 lbs.	<u>741.00</u>
Total cost:		\$ 2,301.00

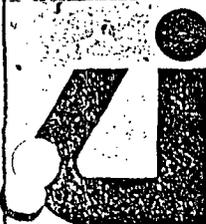
C. BOILER-HIB 400 is a stabilized ammonium based corrosion inhibitor for neutralization of carbon dioxide for prevention of corrosion of condensate return lines.

<u>Date Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
04/06/81	Bulk - 300 gallons	\$ 950.40
08/24/81	Bulk - 400 gallons	<u>1,077.12</u>
Total cost:		\$ 2,027.52

BOILER TREATMENT (EXTERNAL TREATMENT)

ZEO-PLEX is a liquid ion exchange resin cleaner.

<u>Date Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
03/30/81	1 - 55 gal. drum	\$ 278.30
10/22/81	1 - 55 gal. drum	<u>264.38</u>
Total cost:		\$ 542.68

**UNICHEM
INTERNATIONAL****DESCRIPTION**

KE-TONE WO is a phosphate-organic internal boiler treatment which contains colloids, sludge conditioning agents, embrittlement inhibitors, synthetic organic polymers, organic chelating agents and other active ingredients.

USES

The use of KE-TONE WO 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.

APPLICATION

KE-TONE WO should be fed continuously to the boiler to achieve the best results. Normally a phosphate residual of 20-40 ppm is maintained in the boiler.

PROPERTIES

Color	Water White
Form	Liquid
Density	11.4 lbs/gallon
Pour Point	18° F.
Flash Point	None
Viscosity @ 100° F.	53.0 S.U.
pH	7.4

HANDLING

KE-TONE WO is non-toxic; however, ordinary care should be given to the handling of this compound.

PACKAGING

KE-TONE WO is available in 55 gallon drums or in bulk quantities.



UNICHEM
INTERNATIONAL

BOILER-HIB 310

PRODUCT BULLETIN

DESCRIPTION

BOILER-HIB 310 is a catalyzed sodium sulfite compound and is much more effective than commercial grade sodium sulfite.

USES

BOILER-HIB 310 is recommended for removal of dissolved oxygen in boilers and closed system water heaters. This product effectively removes oxygen at lower temperatures than commercial grade sodium sulfite and may be used at lower concentrations at all temperatures. When used properly, it also aids in preventing oxygen corrosion in steam condensate systems.

APPLICATION

BOILER-HIB 310 should be fed continuously to boiler systems in proportion to the quantity of makeup. Normally a residual of 20-40 ppm sulfite is maintained in the boiler water.

PROPERTIES

Form
Solubility

White Powder
Completely soluble
in warm water

HANDLING

No special precautions are needed when handling BOILER-HIB 310. This product is deliquescent, therefore the container should be kept tightly sealed.

PACKAGING

BOILER-HIB 310 is normally sold in 55 gallon open top drums, weighing approximately 600 pounds.



UNICHEM
INTERNATIONAL

BOILER-HIB 400

PRODUCT BULLETIN

DESCRIPTION

BOILER-HIB 400 is a stabilized ammonium based corrosion inhibitor.

USES

BOILER-HIB 400 is used in steam generating systems to neutralize carbon dioxide in the condensate return lines at the point of condensation.

APPLICATION

BOILER-HIB 400 should be continuously fed in proportion to the quantity of makeup. The pH of the condensate should be maintained between 7.0 to 8.0.

PROPERTIES

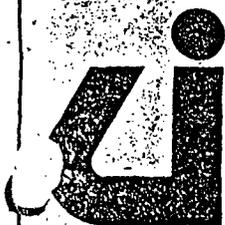
Color	Yellow
Form	Liquid
pH	4.0
Pour Point	0° F.
Density	8.8 lbs. gallon
Flash Point	None
Viscosity @ 100° F.	34.3 S. U.

HANDLING

No special precautions are needed when handling BOILER-HIB 400.

PACKAGING

BOILER-HIB 400 is normally sold in 55 gallon drums, or in accordance with our bulk treatment program.



UNICHEM
INTERNATIONAL

ZEO-PLEX

PRODUCT BULLETIN

ION EXCHANGE RESIN CLEANER

The use of both natural and synthetic ion exchange resins has solved many of the problems associated with the use of hard water. Ion exchange resins offer the most economical means of removing calcium and magnesium ions from hard water.

These resins function by a mass action mechanism. When the concentration of sodium ions is low, the resins prefer to pick up calcium, magnesium and other polyvalent metal ions. When the sodium ion concentration is high, the resin prefers the sodium ions to the calcium and magnesium and these polyvalent metals are released.

This latter mass action effect is in operation when brine is used to regenerate the resin after it is saturated with polyvalent metal ions such as calcium and magnesium. The difficulty, however, is that while practically all polyvalent metals are absorbed, only the alkaline earth metals are removed during regeneration of synthetic exchange resins. This means that other metal ions such as copper, iron, zinc, etc., gradually accumulate in the resin and will eventually reduce its overall effectiveness.

In order to reduce the tendency of heavy metals to accumulate in the bed, higher concentrations of salt than are actually necessary to remove calcium and magnesium are used in an attempt to force more sodium ions into the resin, thereby taking advantage of mass action to remove some of the heavy metals.

This procedure, while theoretically sound, does not completely remove the heavy metals because of their very strong tendency to "stick" on the resin.

Fortunately, in most areas the rate of accumulation of these polyvalent metal ions is slow, but it is, nevertheless, an important factor which has much to do with the length of the effective life of a resin bed.

Aside from ordinary mechanical degradation of the resin, it is this saturating effect and the chemical oxidation of the synthetic resins by dissolved chlorine and other oxidizing agents that primarily accounts for loss of resin effectiveness. Of this loss of effectiveness, about 80% can be attributed to gradual accumulation of heavy metals other than calcium and magnesium.

Any treatment which will remove heavy metals from the resin during regeneration will be a great factor in extending the expected life of a given resin bed. Research and experimentation have resulted in the development of ZEO-PLEX a product that will remove heavy metals from ion exchange resins.

How ZEO-PLEX Works:

ZEO-PLEX is a finely balanced compound which washes and removes surface dirt and slime from the resin particles while at the same time removes the heavy metals which are tightly bound to the resin. The heavy metals are removed from the resin because they have a much greater tendency to react with the balanced blend of chelating agents that are a part of ZEO-PLEX.

These water soluble chelating agents are capable of binding heavy metal ions much more strongly than the resin. The heavy metals ions come free of the resin and form very soluble metal chelate compounds which are flushed away with the brine and rinse water. Once the heavy metals are gone the efficiency of the resin bed is increased.

Since ZEO-PLEX is able to remove the absorbed heavy metals rapidly, the excess salt that is presently used, the concentration of the regenerating brine solution may be reduced by about 25%. This saving alone represents more than the cost of the ZEO-PLEX used in the regeneration.

During regeneration, the surface active characteristic of the ZEO-PLEX treatment lift off and suspend as very fine particles, any dirt or slime that has accumulated in the bed. This foreign material is flushed away with the spent brine and rinse water. This cleaning treatment maintains high flow rates and minimizes any tendency towards channeling.

How to Use ZEO-PLEX:

One pint of ZEO-PLEX should be used for every 100 pounds of salt that is used in preparing the regenerating brine solution. The ZEO-PLEX should be added to the brine after the salt has dissolved.

The brine solution is used in the conventional way and should be circulated so as to agitate the bed as much as possible to aid in eliminating dirt and slime. Mere contact between the chelating agents and the heavy metal contaminated resin is all that is required to remove the heavy metals. The brine solution should be allowed to remain in contact with the spent resin for 15 to 45 minutes so as to allow complete regeneration of the resin.

Backwashing of the resin bed should be thorough so as to ensure complete removal of the suspended dirt and slime and to fully expand the volume of the resin.

After the first treatment, the amount of salt used for subsequent regeneration may be reduced by about 20% since the ZEO-PLEX is doing the work intended for the excess salt, far more efficiently than the salt alone.

Since ZEO-PLEX is non-toxic and non-sensitive in the resin bed it may be used in the regeneration of any ion exchange system.

Conclusions:

When ZEO-PLEX is used in the salt regenerating solution it is found that instead of the normal 5% resin loss for every 1,000,000 gallons that pass through a cubic foot of resin, we have instead only a 1% or 2% loss which is due almost entirely to uncontrollable mechanical abrasion or to chemical oxidation of the organic resin.

ZEO-PLEX maintains a high flow rate by preventing a loss of porosity due to slime and dirt accumulations. Once this condition is controlled, channeling is virtually eliminated.

ZEO-PLEX reduces the cost of regeneration and at the same time reduces resin loss and increases ion exchange efficiency.

Color	Water White
Form	Liquid
Density	9.2
Pour Point	26°F
Flash Point	None
Viscosity @ 100°F	35.3 S.U.
pH	11.3

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME United Chemical Corporation		EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 1499, 707 North Leech Street, Hobbs, New Mexico 88240		
CHEMICAL NAME AND SYNONYMS Proprietary Boiler Water Treatment	TRADE NAME AND SYNONYMS KETONE WO	
CHEMICAL FAMILY Phosphates - Synthetic Polymers	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212	SPECIFIC GRAVITY (H ₂ O=1)	1.367
VAPOR PRESSURE (mm Hg.)	---	PERCENT, VOLATILE BY VOLUME (%)	---
VAPOR DENSITY (AIR=1)	---	EVAPORATION RATE (_____ = 1)	---
SOLUBILITY IN WATER	Infinite		
APPEARANCE AND ODOR	Light tan color; CO ₂ ; Foam		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	LeL	UeL
EXTINGUISHING MEDIA	Water; CO ₂ ; Foam			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Unknown

EFFECTS OF OVEREXPOSURE

May cause severe eye damage or skin damage if overexposed. May be harmful if ingested.

EMERGENCY AND FIRST AID PROCEDURES

Wash skin or eyes for 15 minutes with fresh water. Consult a physician if irritation persists.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

Strong Acids

INCOMPATIBILITY (Materials to avoid)

None

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

Wash down effected area with water or soak up on absorbant material.
Do not allow water runoff to drain into important water sources.

WASTE DISPOSAL METHOD

Contact United Chemical Corporation for assistance in disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

None required in normal use.

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Face Shield or goggles

OTHER PROTECTIVE EQUIPMENT

Rubber boots and apron if possibility of contact exists.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store away from children. Store away from heat.

OTHER PRECAUTIONS

Do not allow transference to improperly marked container.

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME United Chemical Corporation	EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 1499, 707 North Leech Street, Hobbs, New Mexico, 88240	
CHEMICAL NAME AND SYNONYMS Catalyzed Oxygen Scavenger	TRADE NAME AND SYNONYMS BOILER-HIB 310
CHEMICAL FAMILY Inorganic Sulfite	FORMULA

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	Powder	SPECIFIC GRAVITY (H ₂ O=1)	Powder
VAPOR PRESSURE (mm Hg.)	Powder	PERCENT VOLATILE BY VOLUME (%)	----
VAPOR DENSITY (AIR=1)	Powder	EVAPORATION RATE (_____ =1)	----
SOLUBILITY IN WATER	15 %		
APPEARANCE AND ODOR	Light tan to white powder		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	NA	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	NA			
SPECIAL FIRE FIGHTING PROCEDURES	NA			
UNUSUAL FIRE AND EXPLOSION HAZARDS	NA			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE LD50 (MICE) = 175 mg/kg

EFFECTS OF OVEREXPOSURE Not considered a hazardous material.

EMERGENCY AND FIRST AID PROCEDURES
Wash effected area with water. If irritation persists, consult a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (<i>Materials to avoid</i>) None			
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

Wash down area with large amounts of water.

WASTE DISPOSAL METHOD

Bury in an approved industrial chemical waste disposal area.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (<i>Specify type</i>) None required in normal use.		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (<i>General</i>)	OTHER
PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Chemical workers' goggles	
OTHER PROTECTIVE EQUIPMENT None required.		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep out of reach of children. Do not store where product will be contaminated with water.

OTHER PRECAUTIONS

Do not transfer to improperly marked drums.

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME United Chemical Corporation of New Mexico		EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 1499, 701 North Leech Street, Hobbs, New Mexico 88240		
CHEMICAL NAME AND SYNONYMS Proprietary Corrosion Inhibitor Blend		TRADE NAME AND SYNONYMS BOILER-HIB 400
CHEMICAL FAMILY Neutralizing Amines	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212⁰	SPECIFIC GRAVITY (H ₂ O=1)	1.056
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Infinite		
APPEARANCE AND ODOR	Yellow liquid; strong ammonia odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Let	Uet
EXTINGUISHING MEDIA	Water spray; dry chemical; CO₂; fog			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Unknown

EFFECTS OF OVEREXPOSURE

Liquid is corrosive to eyes and skin if overexposed. Harmful or fatal if ingested or absorbed through skin in large quantities.

EMERGENCY AND FIRST AID PROCEDURES

Flush eyes or skin with water for fifteen minutes and consult a physician. If ingested, consult a physician immediately.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

Highly alkaline compounds

INCOMPATIBILITY (Materials to avoid)

None

HAZARDOUS DECOMPOSITION PRODUCTS

Ammonia produced when highly alkaline compounds are contacted.

HAZARDOUS POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

None

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash down area with water or soak up on sand and dispose of in an approved industrial waste landfill. Do not wash down with water where runoff will contaminate important water sources.

WASTE DISPOSAL METHOD

Incinerate in an approved incinerator or bury in an approved industrial waste disposal facility.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

None required in normal use

VENTILATION

LOCAL EXHAUST

Required

SPECIAL

Control to comfort

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Chemical Worker's goggles or face shield

OTHER PROTECTIVE EQUIPMENT

Rubber boots, apron and coveralls

SECTION 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. Keep out of reach of children.

OTHER PRECAUTIONS

Avoid contact with eyes, skin and clothing. Avoid breathing mists. Avoid highly alkaline compounds.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME United Chemical Corporation		EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 1499, 707 North Leech Street, Hobbs, New Mexico 88240		
CHEMICAL NAME AND SYNONYMS Proprietary Resin Cleaner		TRADE NAME AND SYNONYMS ZEO-PLEX
CHEMICAL FAMILY Neutralizers, Chelants, Surfactants	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212 ⁰	SPECIFIC GRAVITY (H ₂ O=1)	1.104
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Infinite		
APPEARANCE AND ODOR Light tan liquid; no odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) None	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA Water Spray; Dry Chemical; CO₂; Fog			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	Unknown
EFFECTS OF OVEREXPOSURE	ZEO-PLEX may be irritating to skin and eyes if overexposed. May be harmful if ingested.
EMERGENCY AND FIRST AID PROCEDURES	Flush skin and eyes with fresh water for fifteen minutes. Contact a physician if irritation persists. For ingestion, contact a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	X
INCOMPATIBILITY (Materials to avoid)			
None			
HAZARDOUS DECOMPOSITION PRODUCTS			
None			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	None

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Wash down area with fresh water or soak up on sand and dispose of in an approved industrial waste landfill. Do not allow rinse water to run off and contaminate important water sources.
WASTE DISPOSAL METHOD	Incinerate in an approved incinerator or dispose in an approved industrial waste landfill facility.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)		
None required in normal use.		
VENTILATION Control to comfort	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES	Rubber	EYE PROTECTION
		Face shield or goggles
OTHER PROTECTIVE EQUIPMENT		
Rubber boots, apron and coveralls.		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Do not transfer to improperly marked container. Keep container closed when not in use. Keep out of reach of children.
OTHER PRECAUTIONS	Avoid skin and eye contact.

SECTION II
COOLING TOWER TREATMENT

A. SCORHIB 1321 is a liquid combination scale and corrosion inhibitor.

<u>Date Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
08/24/81	Bulk - 550 gallons	\$ 4,430.03
10/22/81	Bulk - 700 gallons	7,054.98
Credit issued: 07/21/81	Bulk - 300 gallons	<u>(2,416.20)</u>
	Total cost:	\$ 9,068.81

B. TECHNI-SPERSE 250 is a scale inhibitor, antiprecipitant and dispersant.

<u>Date Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
04/13/81	Bulk - 550 gallons	\$ 4,178.95
05/27/81	Bulk - 500 gallons	3,799.05
08/24/81	Bulk - 250 gallons	<u>1,699.57</u>
	Total cost:	\$ 9,677.57

SCORHIB 1321

PRODUCT BULLETIN



UNICHEM
INTERNATIONAL

DESCRIPTION:

SCORHIB 1321 is a combination scale and corrosion inhibitor. This compound contains organic polymers, polymerized phosphates, copper inhibitors and other active ingredients. It does not contain any chromate or any other heavy metals.

USES:

SCORHIB 1321 is recommended for use in open recirculating cooling towers where a corrosion and/or scale problem exists and standard water treatment compounds containing chromate and/or zinc are undesirable. SCORHIB 1321 can also be used in a closed recirculating cooling water system. SCORHIB 1321 shows excellent inhibition of barium sulfate, calcium sulfate, and calcium carbonate scale.

APPLICATION:

SCORHIB 1321 should be continuously fed to the system. Normally, a residual of 50-100 ppm SCORHIB 1321 should be maintained, utilizing the total phosphate test procedure. This compound is effective over wide pH ranges and sometimes eliminates the need for sulfuric acid.

PROPERTIES:

Form	Golden Liquid
Density	10.3 lbs./gal.
Freeze Point	+3°F
pH	13.9
Flash Point	None

HANDLING:

SCORHIB 1321 is low in toxicity; however, due care should be exercised in the handling of any water treatment compound. In case of contact, wash thoroughly with water. Consult a physician if irritation persists. Keep out of reach of children. Keep container closed when not in use.

PACKAGING:

SCORHIB 1321 is available in 55 gallon drum quantities, or in accordance with our bulk treatment program.

**DESCRIPTION:**

TECHNI-SPERSE 250 is an extremely effective scale inhibitor, antiprecipitant, and dispersant. TECHNI-SPERSE 250 is a special blend of synthetic organic polymers, and organic phosphorous containing compounds.

USES:

TECHNI-SPERSE 250 is recommended for use in cooling water recirculating systems for the prevention and dispersion of all forms of iron deposits on heat exchanger and all other surfaces. In addition, TECHNI-SPERSE 250 prevents the deposition of tricalcium phosphate, calcium carbonate, calcium sulfate, iron and other organic deposits.

APPLICATION:

TECHNI-SPERSE 250 should be fed continuously to a system in proportion to the quantity of makeup water used. TECHNI-SPERSE 250 is normally used in concentrations of from 10-50 ppm for the dispersion of iron deposits and other scale forming materials.

PROPERTIES:

Color	Water White
Form	Liquid
Density	8.7 lbs./gal
pH	2.0
Flash Point	None
Freeze Point	+8°F

HANDLING:

TECHNI-SPERSE 250 is not hazardous to handle in normal use. However, it should be kept out of eyes and off of skin. In case of accidental contact, wash thoroughly with copious amounts of water and get medical attention if redness or irritation persists. Keep out of reach of children. Keep container closed when not in use.

PACKAGING:

TECHNI-SPERSE 250 is packaged in 55 gallon drums or in bulk quantities.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME Unichem International		EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) P.O. Box 1499, 707 North Leech Street, Hobbs, New Mexico 88240		
CHEMICAL NAME AND SYNONYMS Proprietary Corrosion Inhibitor		TRADE NAME AND SYNONYMS SCORHIB 1521
CHEMICAL FAMILY Polymers-Inorganic Phosphates	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212	SPECIFIC GRAVITY (H ₂ O=1)	1.21
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Infinite		
APPEARANCE AND ODOR Yellow Clear Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	Water, CO ₂ , Foam			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE Unknown

EFFECTS OF OVEREXPOSURE
Liquid is irritating to skin and eyes. May cause severe eye damage if contacted.

EMERGENCY AND FIRST AID PROCEDURES
Flush eyes for 15 minutes with water and get medical attention. Wash skin thoroughly with soap and water and consult a physician if irritation persists.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	Highly acidic materials

INCOMPATIBILITY (Materials to avoid) None

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
Wash down with water or soak up on sand and dispose of in an approved industrial landfill. Do not allow water to runoff and contaminate important water sources.

WASTE DISPOSAL METHOD
Contact Unichem International for assistance in disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) None required in normal use.

VENTILATION Control to comfort	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES Rubber EYE PROTECTION Face shield or goggles

OTHER PROTECTIVE EQUIPMENT
Rubber boots and apron if possibility of contact during use exists.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with eyes, skin, and clothing. Avoid breathing vapors. Store away from heat.

OTHER PRECAUTIONS
Do not transfer to improperly marked container. Keep container closed when not in use. Keep out of the reach of children.

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME Unichem International Inc.		EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) 707 N. Leech; P. O. Box 1499, Hobbs, New Mexico 88240		
CHEMICAL NAME AND SYNONYMS Proprietary Dispersant and Scale Inhibitor		TRADE NAME AND SYNONYMS TECHNI-SPERSE 250
CHEMICAL FAMILY Organic Polymers and phosphonates	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212°	SPECIFIC GRAVITY (H ₂ O=1)	1.068
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Infinite		
APPEARANCE AND ODOR	Clear liquid; slight pungent odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	Water spray; dry chemical; CO₂			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION 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.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

None

INCOMPATIBILITY (Materials to avoid)

Strongly alkaline compounds

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

None

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE 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.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

None likely to be required.

VENTILATION

LOCAL EXHAUST

SPECIAL

Control to comfort

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Face shield or goggles

OTHER PROTECTIVE EQUIPMENT

Rubber boots, apron and or coveralls

SECTION 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. Keep out of reach of children.

OTHER PRECAUTIONS

Do not allow concentrated material to contact skin or eyes.

SECTION III
ENGINE JACKETS

KE-TONE VSC is a liquid combination scale and corrosion inhibitor.

<u>Date</u> <u>Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
11/02/81	6 - 05 gallons	\$ 197.40
	Total cost:	\$ 197.40

SECTION IV
WASTE WATER TREATMENT

TECHNI-HIB 720-R is a specific blend of synthetic organic polymers to aid in the removal of residual oil from water before disposal.

<u>Date</u> <u>Shipped</u>	<u>Quantity</u>	<u>Pricing</u>
01/19/81	Bulk - 300 gallons	\$ 3,593.70
	Total cost:	\$ 3,593.70

**UNICHEM
INTERNATIONAL****DESCRIPTION**

KE-TONE VSC is a combination scale and corrosion inhibitor. This compound is a homogenous mixture of organic chelating agents, polymerized phosphate, chromates, dispersing agents and other active ingredients.

USES

KE-TONE VSC is recommended for use in closed recirculating cooling water systems for corrosion and scale prevention. This compound is normally used when raw water is used as makeup. The synergistic action of the organic components in chromate give corrosion protection at a much lower chromate residual than that normally required by conventional treatment methods. Scale and iron deposits, if present, are removed, dispersed or taken into solution through the surface adsorption affect which is peculiar to this group of compounds.

APPLICATION

KE-TONE VSC should be fed to the system in proportion to the quantity of makeup water. The amount of this compound normally used is 150-250 ppm as CrO_4 .

PROPERTIES

Form	Liquid
Color	Dark Brown
Density	9.4 lbs/gallon
Freeze Point	21° F.
Flash Point	None
Viscosity @ 100° F.	35.7 S.U.
pH	6.5

HANDLING

KE-TONE VSC contains hexavalent chromium and due caution should be used in handling the concentrate.

PACKAGING

KE-TONE VSC is normally packaged in 55 gallon drums, or in accordance with our bulk treatment program.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1337

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME United Chemical Corporation of New Mexico		EMERGENCY TELEPHONE NO. 505-393-7751
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 1499, 701 North Leech Street, Hobbs, New Mexico, 88240		
CHEMICAL NAME AND SYNONYMS Proprietary Corrosion and Scale Inhibitor Blend KE-TONE VSC		TRADE NAME AND SYNONYMS
CHEMICAL FAMILY Hexavalent Chromium Phosphate	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212 ⁰	SPECIFIC GRAVITY (H ₂ O=1)	1.128
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Infinite		
APPEARANCE AND ODOR Dark Yellow Liquid; no odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) None	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA Water Spray; Dry Chemical; CO ₂ ; Fog			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE **Unknown**

EFFECTS OF OVEREXPOSURE
 Compound is corrosive to skin and eyes if overexposed. May be harmful or fatal if ingested or absorbed in large quantities through skin.

EMERGENCY AND FIRST AID PROCEDURES
 Wash skin and eyes with large quantities of water for fifteen minutes and contact a physician. If ingested, contact a physician immediately.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	None

INCOMPATIBILITY (Materials to avoid)
 Avoid crude oil, organics and other reducing agents

HAZARDOUS DECOMPOSITION PRODUCTS
 None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	None

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Wash down with water or soak up on sand and dispose of in an approved industrial waste landfill. Do not allow rinse water to runoff and contaminate important water sources.

WASTE DISPOSAL METHOD
 Incinerate in an approved incinerator or bury in an approved waste disposal facility.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
 None required in normal use.

VENTILATION Control to comfort	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES Rubber EYE PROTECTION
 Face Shield or goggles

OTHER PROTECTIVE EQUIPMENT
 Rubber boots and apron if possibility of contact during use exists.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
 Do not transfer to improperly marked container. Keep container closed when not in use. Keep out of reach of children.

OTHER PRECAUTIONS
 Avoid contact with eyes, skin and clothing. Store away from heat.



P. O. BOX 1499

707 NORTH LEECH

HOBBS, NEW MEXICO 88240

PHO. (505) 393-7751

WATER ANALYSIS REPORT

(Expressed in ppm Unless Indicated Otherwise)

FOR: *Northern Natural Gas*

DATE SAMPLED: *8-26-81*

PLANT: *Hobbs*

DATE SUBMITTED: *8-26-81*

LOCATION: *Hobbs, New Mexico*

DATE ANALYZED: *8-26-81*

SAMPLE SOURCE:

	<u>MAKE-UP</u> <u>WATER</u>	<u>WEST</u> <u>COOLING</u> <u>TOWER</u>	<u>SOUTH</u> <u>COOLING</u> <u>TOWER</u>	<u>EAST</u> <u>COOLING</u> <u>TOWER</u>
pH	6.5	6.2	5.9	6.4
Pheno. Alkalinity (CaCO ₃)	- NIL	NIL	NIL	NIL
Total Alkalinity (CaCO ₃)	- 180	12	8	12
Bicarbonate (HCO ₃)				
Carbonate (CO ₃)				
Hydroxide (OH)				
Total Hardness (CaCO ₃)	- 288	1868	1990	1560
Calcium (CaCO ₃)	- 172	1508	1490	1310
Magnesium (CaCO ₃)	- 116	360	500	250
Chloride (CL)	- 96	612	548	488
Sulfate (SO ₄)	- 69	- 2120	- 2400	- 1950
Total Phosphate (PO ₄)		12.1	11.6	11.1
Orthophosphate (PO ₄)		9.4	11.6	11.4
Polyphosphate (PO ₄)		2.7	- NIL	- .7
Silica (SiO ₂)	- 44.5 ✓	- 2310	- 229.9	- 220.5
Iron (Fe)				
Chromate (CrO ₄)				
Specific Conductance (MMHOS)	668	3233	3129	2920
Chloride Concentrations		1.1	1.1	1.1
Hardness Concentrations		1.1	1.1	1.1



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: *Northern Natural Gas*

DATE SAMPLED: *8-26-81*

PLANT: *Hobbs*

DATE SUBMITTED: *8-26-81*

LOCATION: *Hobbs, New Mexico*

DATE ANALYZED: *8-26-81*

SAMPLE SOURCE:

*Boiler
 Composite*

2, 3, 4, 5

pH		<i>10.8</i>		
Pheno. Alkalinity	(CaCO ₃)	<i>308</i>		
Total Alkalinity	(CaCO ₃)	<i>382</i>		
Bicarbonate	(HCO ₃)			
Carbonate	(CO ₃)			
Hydroxide	(OH)			
Total Hardness	(CaCO ₃)	<i>NIL</i>		
Calcium	(CaCO ₃)	<i>NIL</i>		
Magnesium	(CaCO ₃)	<i>NIL</i>		
Chloride	(Cl)	<i>176</i>		
Sulfate	(SO ₄)	<i>192</i>		
Total Phosphate	(PO ₄)			
Orthophosphate	(PO ₄)	<i>37.5</i>		
Polyphosphate	(PO ₄)			
Silica	(SiO ₂)	<i>96.2</i>		
Iron	(Fe)			
Chromate	(CrO ₄)			
Specific Conductance	(MMHOS)	<i>2053</i>		
Chloride Concentrations				
Hardness Concentrations				

5.11.81

5

2231

2231

December 14, 1981
Midland, Texas 79703

M. L. Hamilton
OFFICE

RE: Hobbs Water Treating Costs

Last Friday, December 11, Marvin Coker and I talked with Mr. Felix Foster of Unichem at Hobbs, concerning operating costs for the proposed hot lime/soda/magnesium softener. The costs Mr. Foster gave me were based on a 60 gpm discharge rate even though he felt that the rate was on the high side. Foster thought the actual rate may be more like 30 gpm but the chemical rate will not vary linearly, so costs were based on a 60 gpm maximum rate.

Lime Usage - 161 #/day @ 4¢ per pound	=	\$6.44
Soda Ash Usage - 1,235 #/day @ 10¢ per pound	=	\$123.50 - ?
*Magnesium Oxide Usage - 280 #/day @ 25¢ per pound	=	\$70.00
Total per day	=	\$199.94

*Cost for Magnesium Oxide was from Charlie Walker, McKesson Chemical Co. in Odessa at 23¢ per pound F.O.B. from Wichita, Kansas.

Mr. Foster said the chemicals need to be added as a slurry and for it to be a continuous operation - not a bag at a time! With this information and the amount of chemicals that are to be used, we are talking about a hopper and a highly automatic system so the chemicals can be added at the right time and in the proper amount.

Yet another cost Felix Foster mentioned was that for a vacuum truck to clean solids off the bottom of the pit and dispose of it in an underground injection well. This may need to be done as often as once a month. I do not have any cost figures for having something like this done, but again, the yearly cost would depend on the flow. Mr. Foster did feel like we would be money ahead to buy our own vacuum truck.

As you can see from above, it was a very enlightening meeting.

Laura
L. J. Kruse

LJK/le

cc: John Zieba
A. L. Unverzagt



Home Office 707 N. Leech, P. O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

September 17, 1981

Northern Natural Gas Company
1311 West Florida Street
Midland, Texas 79701

Attention: Ms. L. J. Kruse

Dear Laura:

Attached is the laboratory report on seven of the eight water samples which you requested for analysis regarding the Oil Commission of New Mexico.

As noted in the report, a sample was not obtained from the inlet scrubber. If you wish this scrubber sampled at some future date, please let us know.

All samples were collected, preserved, and analyzed in accordance with APHA standard methods.

We appreciate the opportunity to work with you on this project. If you have any questions or require any further information, please feel free to contact us at any time.

Sincerely,

UNICHEM INTERNATIONAL
Industrial Division

A handwritten signature in cursive script that reads 'Felix'.

Felix Foster
Division Manager

FF/sar

Enclosure

cc: Mr. Floyd Rollins

cc'd D.K. Judd

M.L. Hamilton

File: Hobbs Waste Water Management

UNICHEM INTERNATIONAL INC.



Home Office 707 N. Leech, P. O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

September 10, 1981

Northern Natural Gas Company
Hobbs Plant
Star Route A, Box 338
Hobbs, New Mexico 88240

Report to: Ms. L. J. Kruse

Dear Ms. Kruse:

Attached is our Water Analysis Report, sample date: August 24, 1981. The results of this report are expressed as part(s) per million of the element shown in parenthesis.

If you have any questions, please contact us at any time.

Sincerely,

UNICHEM INTERNATIONAL
Industrial Division

A handwritten signature in dark ink, appearing to read 'Jimmy Poindexter', is written over the typed name.

Jimmy Poindexter
Industrial Laboratory Manager

JP/sar

WATER ANALYSIS REPORT:

SAMPLE SOURCES

Element	Well Water #3	Well Water #4	Well Water #5	Composite Cooling Tower	Composite Boiler Blowdown	Dehydrator	Zeolite Backwash
Arsenic (As)	NIL	NIL	NIL	0.080	NIL	NIL	NIL
Barium (Ba)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Cadmium (Cd)	NIL	NIL	NIL	NIL	NIL	0.03	NIL
Chromium (Cr)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Cyanide (CN)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Fluoride (F)	0.86	0.84	0.88	6.60	3.15	0.08	0.90
Lead (Pb)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Mercury (Hg)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Nitrates (N)	NIL	3.02	2.91	7.90	6.48	NIL	3.02
Selenium (Se)	0.02	0.02	0.02	NIL	NIL	NIL	NIL
Silver (Ag)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Chloride (Cl)	60	120	30	640	210	20	90
Copper (Cu)	NIL	NIL	NIL	0.20	0.20	0.05	NIL
Iron (Fe)	5.0	0.30	0.95	1.10	3.0	35.0	0.15
Manganese (Mn)	0.60	0.040	0.090	0.18	0.10	0.20	0.10
Phenols	NIL	NIL	NIL	NIL	NIL	0.091	NIL
Sulfate (SO ₄)	51.9	72.2	45.1	1845	165.4	NIL	68.5
Zinc (Zn)	0.45	0.030	0.040	0.48	0.055	0.015	0.015
pH	6.9	6.8	6.9	6.4	11.0	4.1	7.6
Total Dissolved Solids	550	823	438	3471	2179	135	686

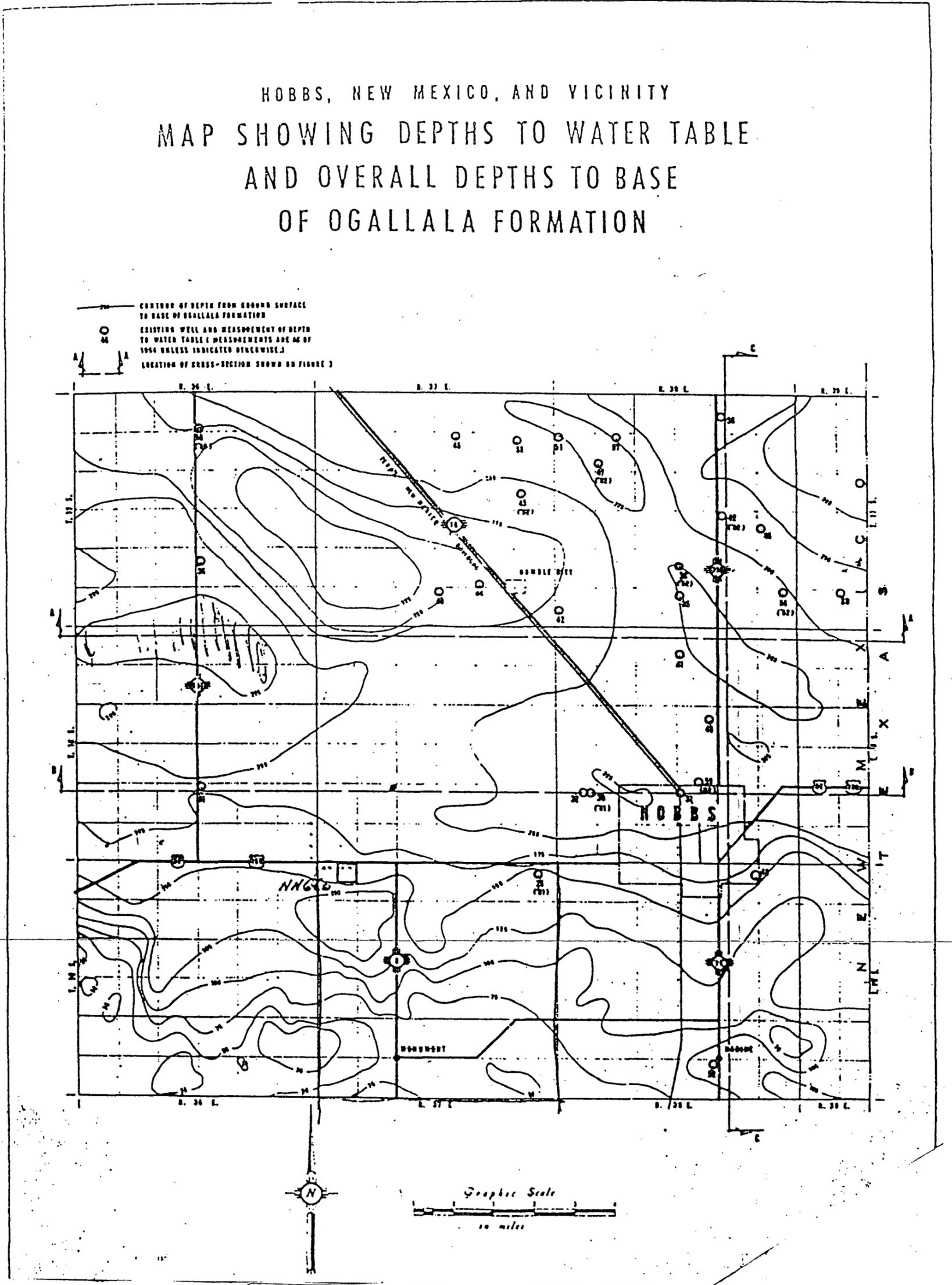
A sample was not obtained from the inlet scrubber. It is out of service at this time.

NOTE: "NIL" refers to the fact that the element was below the detection limit for that particular analysis. Following are the detection limits for each element (in ppm):

Arsenic as As	0.05	Mercury as Hg	0.002
Barium as Ba	0.02	Nitrate as N	0.01
Cadmium as Cd	0.01	Selenium as Se	0.01
Chromium as Cr	0.005	Silver as Ag	0.005
Cyanide as CN	0.001	Copper as Cu	0.002
Fluoride as F	0.04	Sulfate as SO ₄	4.3
Lead as Pb	0.02		

All samples were preserved in accordance with APHA Standard Methods.

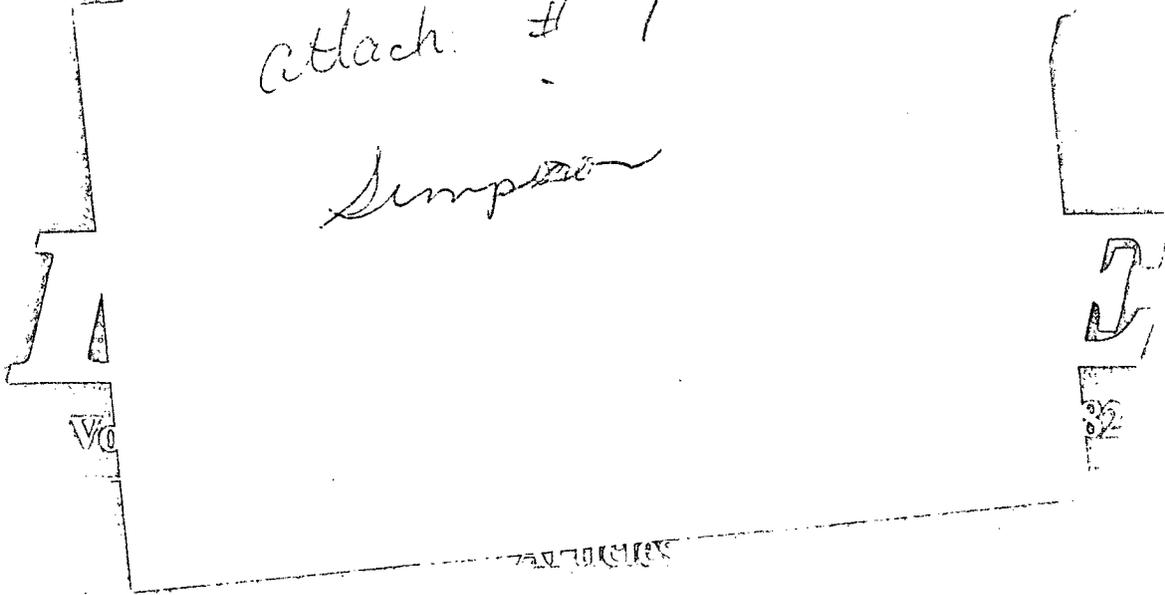
HOBBS, NEW MEXICO, AND VICINITY
 MAP SHOWING DEPTHS TO WATER TABLE
 AND OVERALL DEPTHS TO BASE
 OF OGALLALA FORMATION



Journal of the

attach # 7

Simpson



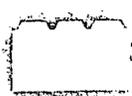
17 The effect of angularity on the strength of
protection of the steel reinforcement.
Warren, D. G.

27 Causes of the failure of steel reinforcement
Warren, D. G.

35 1981: Testing of a reinforced concrete
operating machine.
Warren, D. G.

45 A study of the effect of the
mechanical properties of the
Warren, D. G.

53 Use of a steel reinforcement in the design and
application of steel reinforcement.
Warren, D. G.



Views from the tower

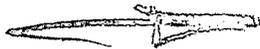
I attended a Zero Discharge Symposium sponsored by the Electric Power Research Institute (EPRI) in Denver in September 1981. Roughly 130 people participated.

The motivating force for the symposium was the fact that over 20 utility electric power generating plants are operating without discharging water. Another six plants are in the construction phase. The format was to have a speaker representing the group that designed a specific plant followed by a speaker who operated the plant, then a question and answer period.

The power plants are of great interest to us because 85-95% of the water used is for cooling purposes in cooling towers. More importantly, from the view point of the symposium attendees, the largest source of wastewater is the cooling tower blowdown. So cooling water problems are of paramount interest and importance to this industry segment.

And do they have problems! The plants that were designed and constructed in the early and mid-1970's were of the first generation. Nearly all the plants required significant modifications after startup. The major error was in the underestimation of the wastewater production. The firms that are currently designing zero discharge plants now are just beginning to learn from the early mistakes.

A typical zero discharge power plant is located in an arid section of the Western U.S. where water supply is limited and discharges of high salinity water is prohibited. Water treatment typically involves lime softening of the makeup water. Wastewater is classified and discharged into high and low quality water ponds. The high quality water such as boiler blowdown is reused. Lower quality water such as cooling tower blowdown is processed in a brine concentrator. The distillate is routed to the boiler feedwater system. The concentrate goes to evaporation ponds, usually several hundred acres in size. Plants with wet scrubbers for flue gas desulfurization can consume excess water in this process. Other options include reverse osmosis units and softeners integrated into the system schematic.


~~The problems are many. One plant, San Juan, N.M., has spent more than one hundred million dollars on the water treatment system and still does not have a workable zero discharge system.~~ The design firms have not followed up sufficiently to understand the operational problems. Operation of the zero discharge facilities generally has been of low priority in relation to power generation resulting in poor system performance.

The level of demonstrated technical expertise in design and operations was not impressive. In very few of the plants had mass balances of the chemical constituents been developed. Cooling water treatment strategies were largely left to the vendors. Cooling water operational parameters were generally unrealistically conservative, resulting in greater volumes of wastewater (blowdown) than necessary.

EPRI's function (and challenge) is to reduce the level of ignorance in this very important area. This conference was an excellent beginning. The question and answer periods were especially beneficial, yielding valuable dialog. I must say that I was one of those individuals who tended to play the "devil's advocate" role in harrassing the speakers. It certainly made for lively exchanges.

As a suggestion, we may want to program controversial subjects at the CTI Annual Meeting in which several points of view are presented in a formal manner followed by free discussion. Fortunately, we have no shortage of such topics from which to choose.

Jack V. Matson
Editor

1311 W. Florida Avenue
Midland, Texas 79701
Phone (915) 682-7964



October 14, 1981
Midland, Texas

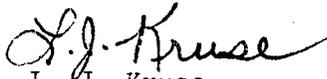
Mr. Oscar A. Simpson III
State of New Mexico
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Re: Info for Discharge Plan - Hobbs

Dear Mr. Simpson:

Additional information for the discharge plan that was requested is enclosed herein. The information requested has been addressed by item number. If you have any questions on this or the project in general, please feel free to call me at 915/682-7964 Ext. 6220.

Sincerely,


L. J. Kruse

Environmental/Codes Engineer

IN BLACK FOLDER
PB.

Attachment

LJK/le

cc: M. L. Hamilton w/attach
File w/attach



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

May 14, 1981

Northern Natural Gas Company
400 Commercial Bank Building
Midland, Texas 79701

Attention: L. J. Kruse

Re: Discharge Plan for Hobbs Plant

Gentlemen:

We have received your discharge plan for Hobbs Plant on April 28, 1981.

In reviewing your discharge plan we find that the following additional information is needed in order to evaluate the data submitted and the request for extension:

1. Submit a complete schematic diagram with accompanying text illustrating the flow of water and wastewater from the point(s) of collection to the point(s) of discharge. The schematic diagram and text should include:
 - A. the water well field
 - B. the Housing Area (if any)
 - C. the plant area (illustrate and name each part of the plant using water or emitting wastewater.
 - D. evaporation ponds (lined and unlined)
 - E. irrigation systems (sources of water) if any
2. Submit a complete chemical analysis for each of the sources of waste water as listed in your discharge plan. Also submit a complete chemical analysis for each of the four remaining water wells. The chemical analysis should include all

the elements listed in Section 3-103 (A, B, and C) of the Water Quality Control Commission Regulations and should be tested in accordance with Section 3-107 (B).

3. Submit a scaled diagram of the plant area illustrating: (preferably an areal photo of 1" to 100' scale).
 - A. All plant appurtenances with accompanying names and or a description of.
 - B. Property lines in relation to section, township, and range.
 - C. Contour elevations of the plant area.
 - D. Include all items listed for the schematic diagram.
4. Submit a topographic map of the area surrounding the plant for a distance of one mile.
5. Submit a map illustrating the altitude of the water table below the plant and, if available, for a radius of one mile.
6. Submit a detailed outline estimating dates for budgeting, engineering, construction, and completion of the zero liquid discharge system. Briefly describe why you chose this type system.
7. Describe what capacity or function the lined pond will be used for in the new system.
8. Submit a detailed diagram with accompanying text of the lined pond which entails the following information:
 - A. Dimensions and capacity
 - B. What material is the liner constructed of, its thickness, what it is resistant to, and any other pertinent information.

-3-

C. Illustrate and describe the leak detection system.

D. What is the OGD permit number.

If you have any questions regarding this matter, please call me or Joe Ramey (Division Director) at 505 (827-2534).

2533

Sincerely,



OSCAR A. SIMPSON III
Water Resource Specialist

OS/og

Item #1 - Flow Schematic Text

(1)

According to well records, wells 3, 4, and 5 are pumping an average of 190.5 gpm total. All other flows in the schematic diagram have been calculated using the best information that is available.⁽²⁾ Four water meters have been ordered and will be installed this fall so that accurate flows will be known.⁽³⁾ Equipment can then be sized accordingly.

The "Sanitary Water" shown in the flow schematic is water that is used for restrooms, lavatories and utility sinks in the office, personnel building, lab, old lab, meter shop, warehouses and control room. The 5 gpm also includes water that is used in the plant for washing down equipment and for watering the grass by the personnel building.

A 40' x 60' metal building is to be built to house one heat exchanger and the hot lime/soda/magnesium softener. The building will also have storage space for the chemicals and office space for an operator.

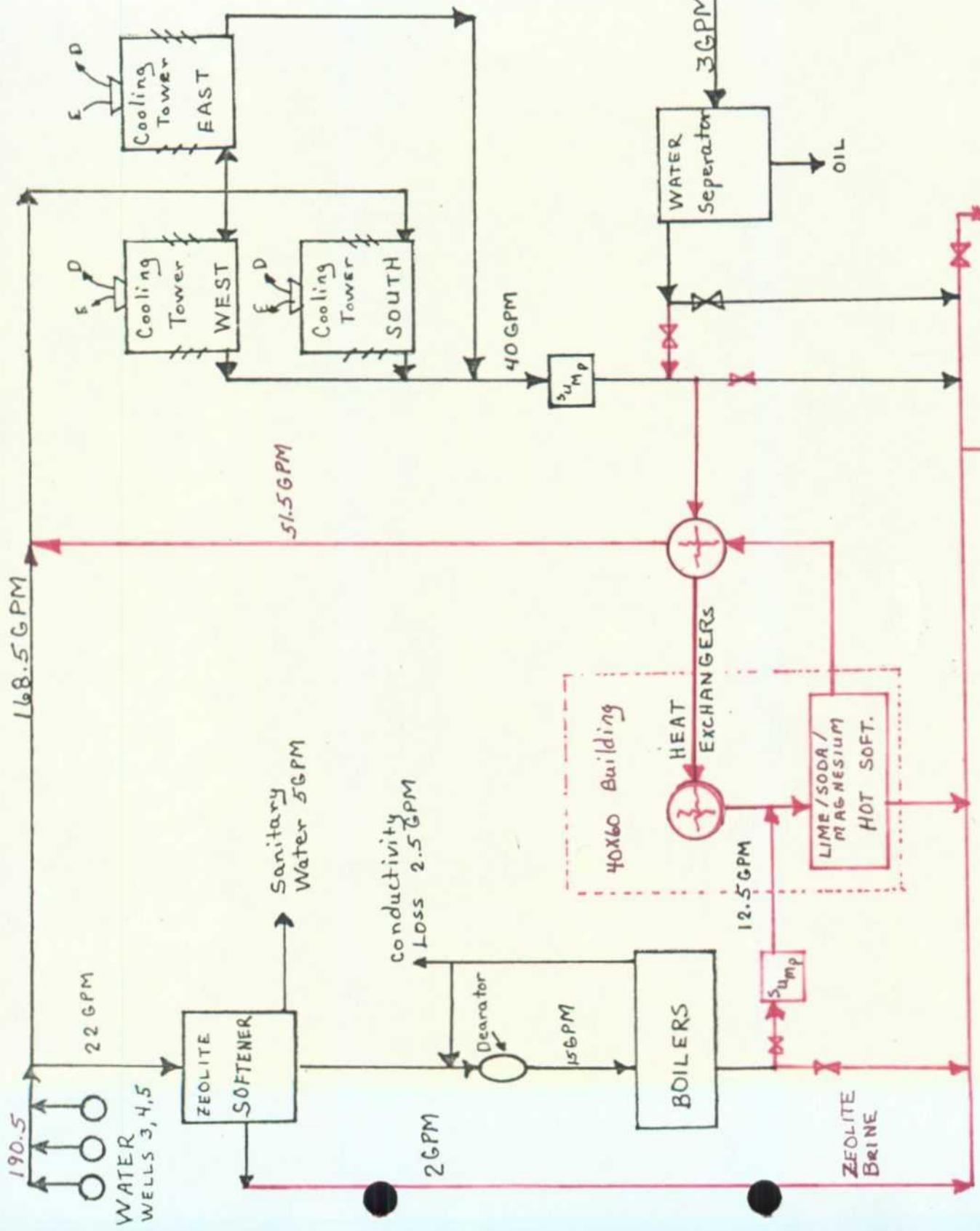
"Process Water" is the flow from equipment drains throughout the plant. The total process water flow is relatively low and the dehydrator generates most of the 3 gpm flow. Flow from other equipment, such as, scrubbers and contactors, is sporadic. (Process water is collected in a sump from where it is pumped to the water separator to separate the oil from the water. The water then will be sent to the pit or the softener.

Brine from the softeners is sent to the evaporation ponds. Waste-water piping from the cooling towers, boilers, and the process water will be arranged so that the water can be sent to the pit when the softener is down for maintenance.

168.5 GPM

190.5

C.T. Evap = 160 GPM
C.T. Drift = 20 GPM



LEGEND

Black ink - Existing
Red ink - Proposed
All flows are approximate.

Existing Ponds

New Ponds

NNG - Hobbs
Flow Schematic

Item #2 - Chemical Analysis

Unichem International in Hobbs, New Mexico ran an analysis: of water and waste water samples. Water samples were obtained from water wells 3, 4 and 5. Well #6 is not in use at this time and will not be used in the near future. The water from the well is too sandy to be used until modifications are made. An analysis of the fifth waste- ? water source listed in the discharge plan, the treater inlet scrubber, was not conducted due to the scrubber being out of service at the time of the tests. Since then, a valve has been installed so that the waste liquids from this scrubber will be sent to UPG's tanks. ?

Tests were not made for Uranium and Radioactivity, as per approval from the Oil Conservation Division Office in Santa Fe. The report of the water analyzes is on the following page.

WATER ANALYSIS REPORT:

SAMPLE SOURCES

Element	Well Water #3	Well Water #4	Well Water #5	Composite Cooling Tower	Composite Boiler Blowdown	Dehydrator	Zeolite Backwash
Arsenic (As)	NIL	NIL	NIL	0.080	NIL	NIL	NIL
Barium (Ba)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Cadmium (Cd)	NIL	NIL	NIL	NIL	NIL	0.05	NIL
Chromium (Cr)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Cyanide (CN)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Fluoride (F)	0.86	0.84	0.88	6.60	3.15	0.08	0.90
Lead (Pb)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Mercury (Hg)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Nitrates (N)	NIL	3.02	2.91	7.90	6.48	NIL	3.02
Selenium (Se)	0.02	0.02	0.02	NIL	NIL	NIL	NIL
Silver (Ag)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Chloride (Cl)	60	120	30	640	210	20	90
Copper (Cu)	NIL	NIL	NIL	0.20	0.20	0.05	NIL
Iron (Fe)	5.0	0.30	0.95	1.10	3.0	35.0	0.15
Manganese (Mn)	0.60	0.040	0.090	0.18	0.10	0.20	0.10
Phenols	NIL	NIL	NIL	NIL	NIL	0.091	NIL
Sulfate (SO ₄)	51.9	72.2	45.1	1845	165.4	NIL	68.5
Zinc (Zn)	0.45	0.030	0.040	0.48	0.055	0.015	0.015
pH	6.9	6.8	6.9	6.4	11.0	4.1	7.6
Total Dis-solved Solids	550	823	438	3471	2179	135	686

A sample was not obtained from the inlet scrubber. It is out of service at this time.

NOTE: "NIL" refers to the fact that the element was below the detection limit for that particular analysis. Following are the detection limits for each element (in ppm):

Arsenic as As	0.05	Mercury as Hg	0.002
Barium as Ba	0.02	Nitrate as N	0.01
Cadmium as Cd	0.01	Selenium as Se	0.01
Chromium as Cr	0.005	Silver as Ag	0.005
Cyanide as CN	0.001	Copper as Cu	0.002
Fluoride as F	0.04	Sulfate as SO ₄	4.3
Lead as Pb	0.02		

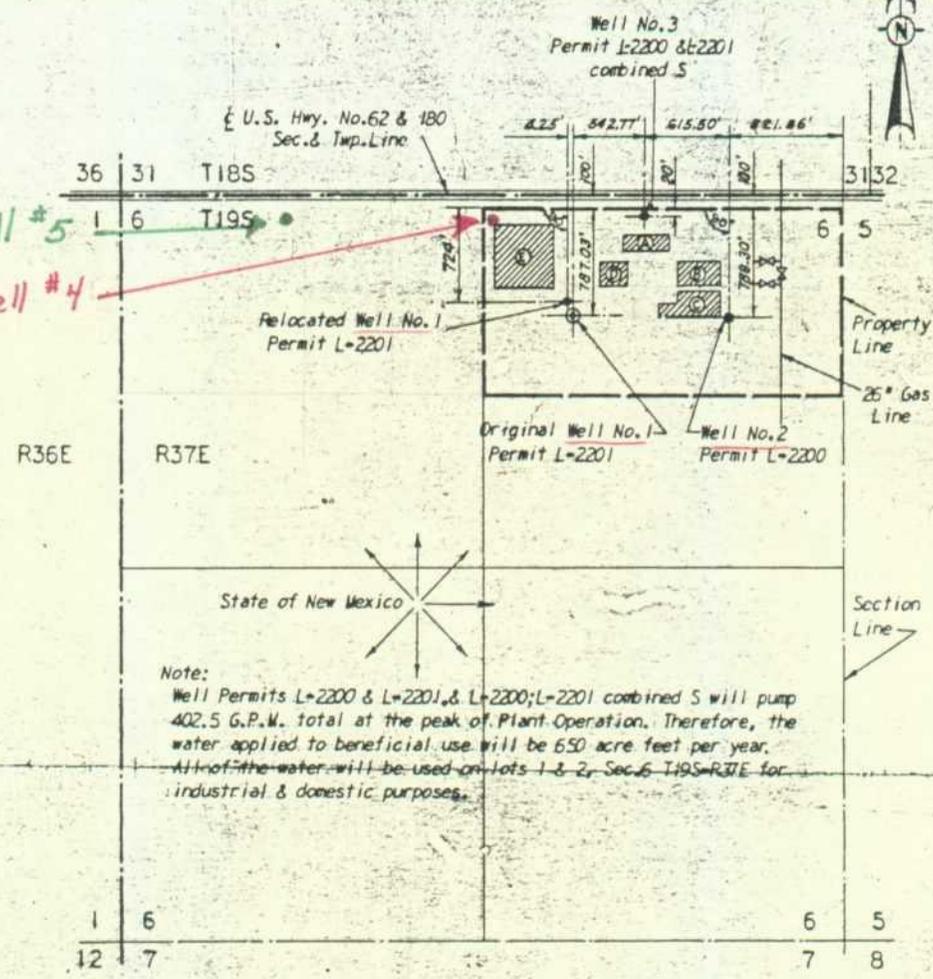
All samples were preserved in accordance with APHA Standard Methods.

Item #3 - Scaled Diagram

An aerial photograph of the Hobbs Plant was made in July with a 1" = 100' scale. A survey plat and a contour map of the plant yard is also attached.

WELL PERMITS L-2200 & L-2201, & L-2200; L-2201
 COMBINED-S
 PERMIAN BASIN PIPELINE CO., -APPLICANT

Water Well #5
 Water Well #4



Note:
 Well Permits L-2200 & L-2201, & L-2200; L-2201 combined S will pump 402.5 G.P.W. total at the peak of Plant Operation. Therefore, the water applied to beneficial use will be 650 acre feet per year. All of the water will be used on lots 1 & 2, Sec. 6 T19S R37E for industrial & domestic purposes.

I, John W. West, hereby certify that I am the Registered Professional Engineer and Land Surveyor who prepared the above map and statement from field notes of actual surveys made by me or under my direction, and that the same are true and correct to the best of my knowledge and belief.

LEGEND

- A • COMP. AREA
- B • TREATER AREA
- C • GAS PLANT AREA
- D • DEHY. AREA
- E • COTTAGE AREA
- WATER WELLS
- ▨ AREA LOCATIONS
- ⊙ ABANDONED WATER WELL

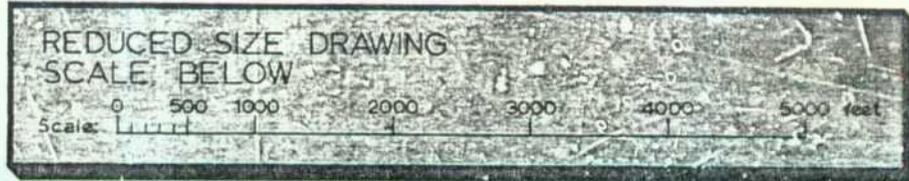
GENERAL NOTES

1. RELOCATED WELL NO. 1 - MEAN SEA LEVEL ELEVATION 3725.8 AT TOP OF WELL BLDG. CONCRETE FLOOR.
2. WELL NO. 2 - MEAN SEA LEVEL ELEVATION 3725.90 AT TOP OF WELL BUILDING CONCRETE FLOOR.
3. WELL NO. 3 - MEAN SEA LEVEL ELEVATION 3725.97 AT TOP OF WELL BUILDING CONCRETE FLOOR.

John W. West
 Registered Professional
 Engineering and Land Surveyor
 License No. 676

PERMIAN BASIN PIPELINE CO. -OMAHA		NEBRASKA	REVISED
HOBBS COMPRESSOR STATION WATER WELL LOCATIONS N ² -NE ⁴ -SEC. 6-T19S-R37E LEA COUNTY, NEW MEXICO.			
SCALE: 1" = 1000'		DATE: 3-22-55	
DR. BY G.H.	TR. BY	CHECKED [Signature]	APPROVED [Signature]

F-97



Item #4 - Topographic Map

A detailed topographic map of the area surrounding the Hobbs plant is not available. USGS has a topographic map of the area in 15" quads with the scale being 1" = 5208'. The map has not been included because it does not show enough detail to be of much value for this project.

Item #5 - Altitude of Water Table

A recent map of the water table below the Hobbs Plant could not be located. Information on the water table is available from well records and a study conducted by the Layne-Western Company. The Layne Report showed the static water levels of the wells to be as follows:

Water Well #3	-	135'
Water Well #4	-	130'
Water Well #5	-	122'

Records show that the static water levels were at approximately 55' at the time the wells were drilled. The total depth of the wells is approximately 180'.

Item #6 - The Schedule For Estimated Completion Dates Is As Follows:

Budeting: complete by December 30, 1981
Engineering: Complete by March 1, 1981
Drafting: complete by May 15, 1981
Construction: complete by September 20, 1981
In-Service Date: September 20, 1982

In order to obtain a zero-liquid discharge system the following processes were researched:

1. Softened Reverse Osmosis
2. Brine Concentrator
3. Seeded Reverse Osmosis
4. Lime/Soda Magnesium Hot Softener

After talking with several vendors, Northern decided to use the #4 process. There are several advantages to the Lime/Soda Magnesium Hot Softener process over the others. Considerable capital investment as well as operating expense will be saved with the Hot Softener process. The softener will be less trouble from the operations standpoint, and zero discharge has been obtained in prior cases with this process so it would not be a pilot plant.

Item #7 - Lined Ponds

The lined ponds will accept brine from the zeolite softener and from the lime/soda/magnesium hot softener. The piping from the cooling tower sump and the piping after the oil seperator will be arranged so the water can bypass the hot softener during maintenance.

Item #8 - Existing Lined Pond

The existing lined pond is 450' x 240', measured from the top inside berm on each side. Depth of the pond is 4' at the north side, sloping to 5' deep on the south side to allow the pond to be drained. Capacity of the pond when the water is 4' deep is 391,500 cubic feet or 8.99 acre-feet.

A Hypalon liner, manufactured by the B. F. Goodrich Co., was installed in the pond. The liner material is 30 mils thick and is reinforced with a 10 x 10 x 1000 Denier polyester fabric. The fabric does not need to be protected from direct sunlight; it is not resistant to hydrocarbons but it is rot-resistant and resistant to acids, alkalis, salts and fungus. Joints in the material were fabricated in the field using Hypalon Body Cement.

The leak detection system is made out of 4" perforated PVC pipe. A 4" center drain line connects the 40' laterals. The drain line extends to a manhole outside of the pit area so the system can be checked for leaks. Trenches approximately 24" wide and 16" deep were made for the laterals and sand was filled in over the pipe.

Drawings of the existing pond and the leak detection system have been included. The OCD permit for this pond is LP-H-104. The two new ponds are to be identical in size. A similar liner material and leak detection system is also planned for the new ponds. All ponds will have connecting piping and valves. Common berms may be used for the new design.

1311 W. Florida Avenue
Midland, Texas 79701
Phone (915) 682-7964



September 2, 1981

Mr. Oscar A. Simpson, III
State of New Mexico
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Simpson:

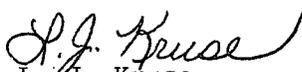
As per our conversation on the telephone this morning, I am hereby requesting a sixty day extension to the time we have to submit additional information on the Hobbs Water Discharge Plan. The extension is being requested for the following reasons:

1. A chemical analysis of the waste water streams has not yet been received. The analysis, being done by Unichem in Hobbs, took longer than I expected.
2. I am planning to be out of the office for two weeks in September.
3. A meeting with a different company was held last week to get another opinion. The second opinion is a little different so the actual flow schematic still needs to be decided.

Even though there has been a delay in getting the additional information to you, be assured that we are working on the engineering and budgeting phases of this project. The estimated completion date has not changed and our aim is still^a zero liquid discharge system.

Please grant an extension for getting this information to you. The new date would be October 15.

Sincerely yours,


L. J. Kruse
Environmental Engineer

Laura

LJK/rlg

cc: M. L. Hamilton
P. O. #622881



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

May 14, 1981

RESPONSE TO THIS
LETTER IN BLACK FOLDER.
R.B.

Northern Natural Gas Company
400 Commercial Bank Building
Midland, Texas 79701

Attention: L. J. Kruse

Re: Discharge Plan for Hobbs Plant

Gentlemen:

We have received your discharge plan for Hobbs Plant on April 28, 1981.

In reviewing your discharge plan we find that the following additional information is needed in order to evaluate the data submitted and the request for extension:

1. Submit a complete schematic diagram with accompanying text illustrating the flow of water and wastewater from the point(s) of collection to the point(s) of discharge. The schematic diagram and text should include:
 - A. the water well field
 - B. the Housing Area (if any)
 - C. the plant area (illustrate and name each part of the plant using water or emitting wastewater.
 - D. evaporation ponds (lined and unlined)
 - E. irrigation systems (sources of water) if any
2. Submit a complete chemical analysis for each of the sources of waste water as listed in your discharge plan. Also submit a complete chemical analysis for each of the four remaining water wells. The chemical analysis should include all

the elements listed in Section 3-103 (A,B, and C) of the Water Quality Control Commission Regulations and should be tested in accordance with Section 3-107 (B).

3. Submit a scaled diagram of the plant area illustrating: (preferably an areal photo of 1" to 100' scale).
 - A. All plant appurtenances with accompanying names and or a description of.
 - B. Property lines in relation to section, township, and range.
 - C. Contour elevations of the plant area.
 - D. Include all items listed for the schematic diagram.
4. Submit a topographic map of the area surrounding the plant for a distance of one mile.
5. Submit a map illustrating the altitude of the water table below the plant and, if available, for a radius of one mile.
6. Submit a detailed outline estimating dates for budgeting, engineering, construction, and completion of the zero liquid discharge system. Briefly describe why you chose this type system.
7. Describe what capacity or function the lined pond will be used for in the new system.
8. Submit a detailed diagram with accompanying text of the lined pond which entails the following information:
 - A. Dimensions and capacity
 - B. What material is the liner constructed of, its thickness, what it is resistant to, and any other pertinent information.

-3-

C. Illustrate and describe the leak detection system.

D. What is the OCD permit number.

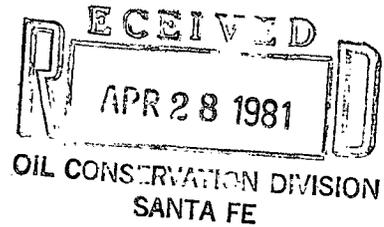
If you have any questions regarding this matter, please call me or Joe Ramey (Division Director) at 505 (827-2534).

Sincerely,

OSCAR A. SIMPSON III
Water Resource Specialist

OS/og

400 Commercial Bank Bldg.
Midland, Texas 79701
Phone (915) 682-7964



April 27, 1981

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

Mr. Ramey:

In accordance with the provisions of the regulations of the Water Control Commission, Section 3-106, and in response to your letter of December 29, 1980, I am submitting a discharge plan for the Hobbs Plant (Section 6, Township 19 South, Range 37 East, Lea County, New Mexico). Covered in this proposed plan are all known wastewater discharges from the Hobbs Process Plant; all applicable items of Section 3-106C have been addressed.

Currently, the wastewater system at Hobbs consists of unlined ponds and a polymeric lined, solar evaporative pond. The following table identifies the wastewater as to the source of the discharge, estimated volume, flow characteristics and the location of the final discharge from the present system:

<u>SOURCE</u>	<u>ESTIMATED VOLUME GPD</u>	<u>DISCHARGE TO:</u>	<u>FLOW CHARAC- TERISTICS</u>
Cooling tower blowdowns	180,500	Unlined pond	Continuous
Boilers	10,000	Unlined pond	Sporadic
Dehy	1,200	Lined pond	Sporadic
Zeolite treater	1,700	Lined pond	Sporadic
Treater inlet scrubber	100	Lined pond	Sporadic

An analysis of the waste waters was conducted according to the Standard Methods for the Examination of Water and Wastewater, American Health Association.

Page 2
April 27, 1981
Letter to Mr. Joe D. Ramey

The results of the analysis are:

	<u>Cooling Towers</u> <u>Boilers</u>	<u>Dehy Scrubbers</u> <u>Zeolite Brine & Rinse</u>
"P" ALK. as CaCO_3 PPM	66	0
MO ALK. as CaCO_3 PPM	28	238
Hardnes as CaCO_3 PPM	712	260
Chloride as CL PPM	410	834
Sulfate as SO_4 PPM	740	155
Orthophosphate PPM	3.25	0
Iron	0.16	0.83
Hydroxltion PPM	104	238
Total Dissolved Solids	2700	3050
pH	9.75	7.90

As stated in the opening paragraph, the Hobbs Plant is located in the NE $\frac{1}{4}$, Section 6, Township 19 South, Range 37 East, Lea County, New Mexico. The lined pond is near the south edge of the property; the unlined ponds are towards the north and east of the lined pond. There are no other bodies of water or watercourses within one mile of the Hobbs Plant.

Six water wells have been drilled on or near the property to provide the water for the process plant. Wells #1 and #2 have been plugged. Water Well #3 is 20' south of the north property line and 1200' east of the west property line. Water Well #4 is 138' south of the north section line and 35' east of the west property line. Wells #3 and #4 are both in the plant yard. Water Well #5 is in the NW $\frac{1}{4}$, NE $\frac{1}{4}$, NW $\frac{1}{4}$, of Section 6, or approximately 500 yards due west of Well #4. Since Wells #4 and #5 are the only ones being used at this time, these wells would be the ones to be monitored. Water Well #6 is in a fenced 20' x 30' yard in the NE $\frac{1}{4}$, NE $\frac{1}{4}$, NE $\frac{1}{4}$, of Section 29, Township 18 South, Range 37 East, Lea County, New Mexico.

An analysis of a mixture of water from Wells #4 and 5 gave a Total Dissolved Solids (TDS) concentration of 520 PPM. At the time the wells were drilled, the TDS of Well #4 was excessive - 623 PPM. Well #5 had a concentration of 434 PPM.

In the 28 year history of the plant, flooding has occurred only three times. Regardless of the large amount of rainfall last fall, the new, lined pond did not overflow.

Page 3
 April 27, 1981
 Letter to Mr. Joe D. Ramey

The following ground formation data taken from the Well Information Record of Well #1 should provide the information requested in item 6 on the "lithological description of rock at base of alluvium below the discharge":

<u>FEET</u>	<u>TO</u>	<u>FEET</u>	<u>FORMATION</u>
0	to	2	top soil
2	to	5	rock and boulder
5	to	17	hard caliche and sandrock
17	to	22	sandrock and caliche
22	to	26	Sand
26	to	50	sand and boulder
50	to	58	sandrock
58	to	74	Real fine sand with sandrock
74	to	78	sandrock with some sand
78	to	98	sandrock, limerock, granite
98	to	108	sandrock with some granite limerock, and showing of sand and gravel
108	to	113	limerock - sand and gravel
113	to	128	limerock - sand and gravel with traces of granity and sandrock
128	to	153	sandrock - sand and gravel
153	to	163	sand
163	to	205	red bed

Northern's ultimate goal is to have zero liquid discharge at the Hobbs Plant. One of the unlined ponds is a natural occurrence and will be left as it is, the other will be filled in and leveled. The lined pond will be used in the new wastewater system. It was built last year and a leak detection system was installed at the same time.

Resources Conservation Company, a consulting firm out of Seattle, Washington, has been employed by Northern to recommend a wastewater system for Hobbs. Engineers from Resources Conservation Company (RCC) have visited the Hobbs plant site and have carried out on-site investigations. On April 20, 1981, they completed a preliminary systems analysis and have predicted that a closed loop operation can be achieved with conventional technology. Several alternatives which will enable the achievement of a zero liquid discharge have been identified.

Two of the alternatives utilize a Reverse Osmosis Approach; one is called Softened Reverse Osmosis and the second is a new approach called Seeded Reverse Osmosis. RCC is studying these alternatives so as to make the best recommendation for the Hobbs Plant. Their study will include a technical risk comparison of the alternatives and cost estimates.

Page 4
April 27, 1981
Letter to Mr. Joe D. Ramey

The process of finding and installing the best method is not only very costly, but, also time consuming. The zero discharge system cannot possibly be operating in 120 days as stated in Section 3-106 of the regulations. The estimated completion date for this project is September 20, 1982. Therefore, a request is made that the time period for compliance with the New Mexico rules be extended to that date.

Please do not hesitate to call me (915-682-7964 XX220) if there are any questions or if more information is needed.

Respectfully yours,



L. J. Kruse
Environmental/Codes Engineer

cc: J. K. Freeman
R. H. Dawson
File: Hobbs Waste Water Management Phase II
R. D. Cline - Hobbs District



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

December 29, 1980

Miss Laura Kurse
Northern Natural Gas Company
Room 400
Commercial Bank Bldg.
Midland, Texas 79701

Dear Miss Kurse:

Under provisions of the regulations of the Water Quality Control Commission you are hereby notified that the filing of a discharge plan for Northern Natural Gas Company Plant, Hobbs plant (Section 6, Township 19 South, Range 37 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 discharges of effluent at the plant sites or adjacent to plant sites. Section 3-106 A of the regulations requires submittal of the discharge plans within 120 days of receipt of this notice unless an extension of this period is sought and approved.

The discharge plans 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 me or Thomas Parkhill at 827-3260. Mr Parkhill has been assigned responsibility for review of all discharge plans.

Yours very truly,

JOE D. RAMEY
Director

JDR/jc

cc: Oil Conservation Division - Hobbs

Northern Natural Gas Company
P. O. Box 2370
Hobbs, New Mexico 88240

W.O. _____

PRINT TRANSMITTAL

NORTHERN NATURAL GAS COMPANY

ISSUED TO: P.E. MOORE

DATE: Nov. 5, 1929

DEPARTMENT: ADMINISTRATION

PRINTS _____ OR SETS (1)

ATTENTION: _____

MIDLAND AREA

SUBJECT: LEA Co. Drip Map For New Mexico Oil Comm.
Filing

PROJECT	TYPE OF DRAWING
<input type="checkbox"/> BRANCH LINE	<input type="checkbox"/> BID
<input type="checkbox"/> COMPRESSOR STATION	<input type="checkbox"/> PERMIT
<input type="checkbox"/> GAS WELL	<input type="checkbox"/> CONSTRUCTION
<input type="checkbox"/> GATHERING LINE	<input type="checkbox"/> PRELIMINARY
<input type="checkbox"/> MAIN LINE	<input type="checkbox"/> RECORD
_____	<input type="checkbox"/> REFERENCE
_____	<input type="checkbox"/> STRIP MAPS
<input type="checkbox"/> PURIFICATION PLANT	<input type="checkbox"/> OPTION
<input type="checkbox"/> FACILITY CHANGE-OUT	<input type="checkbox"/> AGREEMENT
_____	<input type="checkbox"/> LINE LOCATION
	<input checked="" type="checkbox"/> <u>Drip Map</u>

REMARKS Updated thru 10/29

CC: _____ w/ _____
 _____ w/ _____

Ray Harrison