

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED

Form C-101
March 4, 2004

APR 28 2004 submit to appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

OCD-ARTESIA

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

¹ Operator Name and Address NADEL AND GUSSMAN PERMIAN, L.L.C 601 N. MARIENFELD, SUITE 508 MIDLAND, TEXAS 79701		² OGRID Number 155614
³ Property Code	⁴ Property Name ROMULUS FEE	⁵ Well No. 1

⁷ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	17	23-S	28-E		840'	NORTH	660'	WEST	EDDY

⁸ Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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⁹ Proposed Pool 1

LOVING MORROW (NORTH) (80695)

¹⁰ Proposed Pool 2

Drilling Pit Location and Other Information

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	17	23-S	28-E		840'	NORTH	660'	WEST	EDDY

Depth to ground water BETWEEN 100' TO 50'		Distance from nearest fresh water well MORE THAN 1000'		Distance from nearest surface water 200' OR MORE BUT LESS THAN 1000' FEET	
¹¹ Work Type Code N	¹² Well Type Code G	¹³ Cable/Rotary ROTARY	¹⁴ Lease Type Code P	¹⁵ Ground Level Elevation 3032'	
¹⁶ Multiple NO	¹⁷ Proposed Depth 13,000'	¹⁸ Formation MORROW	¹⁹ Contractor PATTERSON	²⁰ Spud Date +/- 05/01/04	

²¹ Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13-3/8"	42#	400'	450 SX	CIRC. TO SURFACE
12-1/4"	9-5/8"	40#	3000'	1200 SX	CIRC. TO SURFACE
8-3/4"	7"	26#	10,500'	1000 SX	+/-7,000'
6-1/8"	4 1/2"	13.5#	10,000' TO TD	500 SX	TOC @10,000'

22 Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

DRILL AND COMPLETE WELL IN THE MORROW WITH A PROJECTED TD OF 13,000'.

NO H2S IS EXPECTED, BUT AN H2S CONTINGENCY LETTER IS ATTACHED. THE 4 1/2" LINER WILL BE CEMENTED TO THE LINER TOP @ +/- 10,000'.

23 I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.

Signature:

Josh Fernau

Printed name: JOSH FERNAU

Title: STAFF ENGINEER

E-mail Address: joshf@naguss.com

Date: 04/26/04

Phone: (432) 682-4429

OIL CONSERVATION DIVISION

Approved by:

Jim M. Brown

Title:

District Supervisor

Approval Date:

MAY 13 2004

Expiration Date:

MAY 13 2005

Conditions of Approval:

Attached ☒

(Pit)

Cement to cover all oil, gas and water bearing zones.

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1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-144
March 12, 2004

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

For drilling and production facilities,
submit to appropriate NMOCD District
Office.
For downstream facilities, submit to Santa
Fe office

*Changes
As per Mr. Jernan J. R. phone 5-13-04*
Pit or Below-Grade Tank Registration or Closure */B*

Is pit or below-grade tank covered by a "general plan"? Yes ☒ No ☒

Type of action: Registration of a pit or below-grade tank ☒ Closure of a pit or below-grade tank ☐

Operator: NADEL AND GUSSMAN PERMIAN Telephone: (432) 682-4429 e-mail address: _____
Address: 601 N. Marienfeld, Suite 508 Midland, TX 79701
Facility or well name: Romulus Fee #1 API #: 30-015- U/L or Qtr/Qtr: D Sec: 17 T: 23 R: 28
County: Eddy Latitude: 32 18'36.45"N Longitude: 104 06'56.10"W NAD: 1927 ☐ 1983 ☐ Surface Owner Federal ☐ State ☐ Private ☒ Indian ☐

Pit

Type: Drilling ☒ Production ☐ Disposal ☐

Workover ☐ Emergency ☐

Lined ☒ Unlined ☐

Liner type: Synthetic ☒ Thickness *12* mil Clay ☐

Volume 20,000 bbl

Below-grade tank

Volume: _____ bbl Type of fluid: _____

Construction material: _____

Double-walled, with leak detection? Yes ☐ If not, explain why not. _____

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APR 28 2004

OCED-ARTESIA

Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.)

Less than 50 feet

(20 points)

50 feet or more, but less than 100 feet

(10 points)

10

100 feet or more

(0 points)

Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)

Yes

(20 points)

No

(0 points)

0

Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)

Less than 200 feet

(20 points)

200 feet or more, but less than 1000 feet

(10 points)

10

1000 feet or more

(0 points)

Ranking Score (Total Points)

20

If this is a pit closure: (1) attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location:

onsite ☐ offsite ☐ If offsite, name of facility _____

(3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☐ Yes ☐ If yes, show depth below ground surface _____ ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

Date: 04/26/04

Printed Name/Title Josh Fernau, Staff Engineer

Signature *[Signature]*

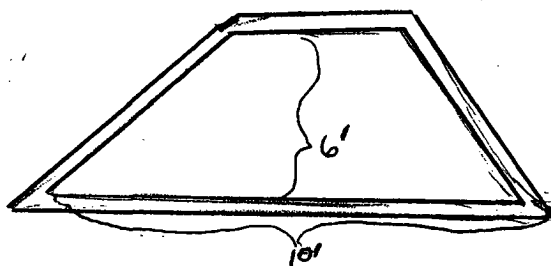
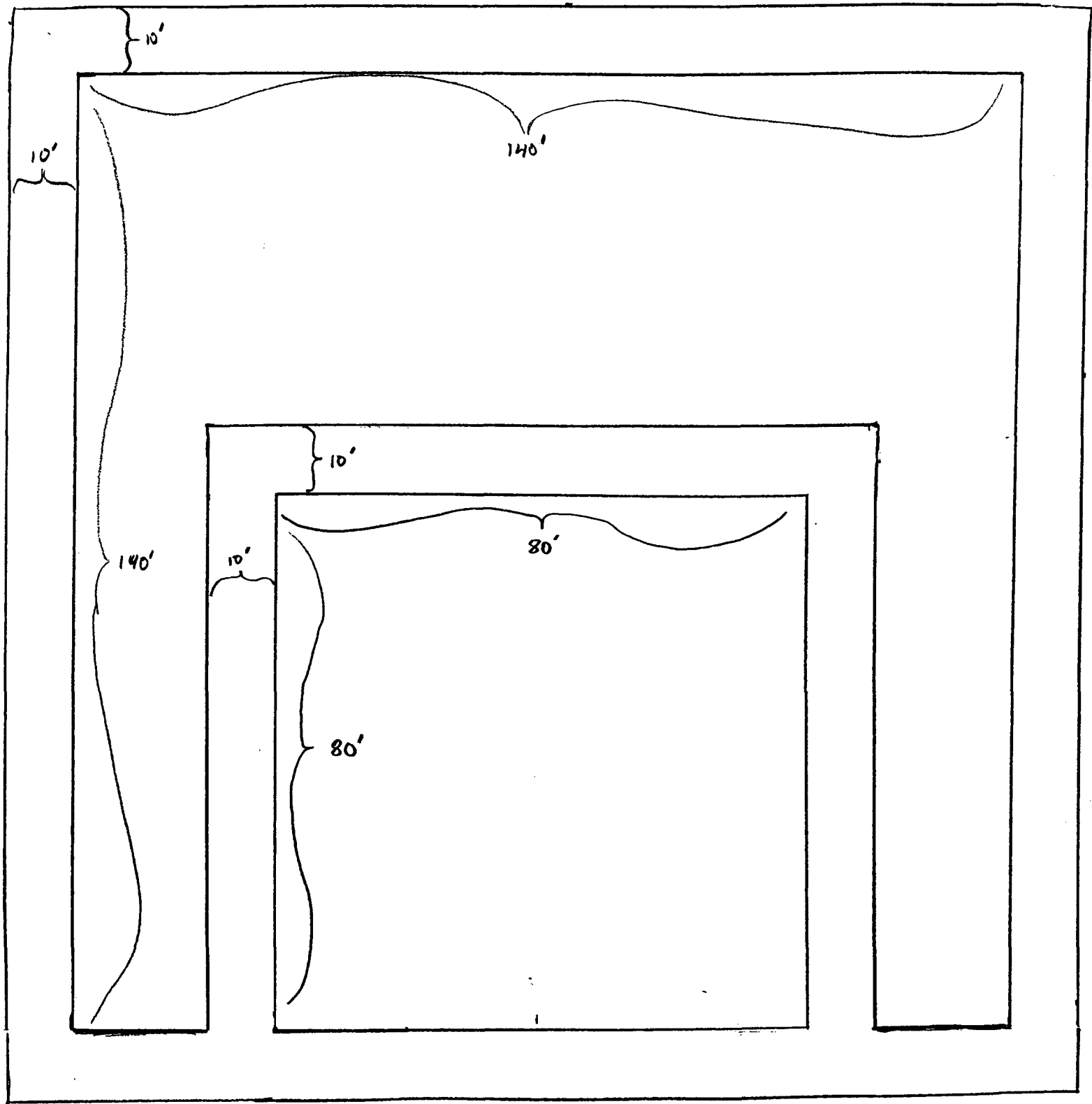
Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approved Date: **MAY 13 2004**

Printed Name/Title *[Signature]*

Signature *[Signature]*

Please see attached
stipulations and/or
requirements:



John F. ...

04/26/04

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
APR 06 2004 1007 20 04
Submitted to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

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

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

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
Property Code	Property Name ROMULUS FEE	Well Number 1
OGRID No.	Operator Name NADEL & GUSSMAN	Elevation 3032'

Surface Location

UL or lot No. D	Section 17	Township 23-S	Range 28-E	Lot Idn	Feet from the 840	North/South line NORTH	Feet from the 660	East/West line WEST	County EDDY
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Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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Dedicated Acres 320	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

840'	660'
GEODETIC COORDINATES NAD 27 NME Y = 476608.5 N X = 567273.0 E LAT. 32°18'36.45"N LONG. 104°06'56.10"W	
RECEIVED APR 28 2004 OCD-ARTESIA	

OPERATOR CERTIFICATION

I hereby certify the the information
contained herein is true and complete to the
best of my knowledge and belief.

Josh Fernau
Signature

Josh Fernau
Printed Name

Staff Engineer
Title

04/16/04
Date

SURVEYOR CERTIFICATION

I hereby certify that the well location shown
on this plat was plotted from field notes of
actual surveys made by me or under my
supervision, and that the same is true and
correct to the best of my belief.

March 24, 2004

Date Surveyed
Signature & Seal of Professional Surveyor
A.W.B.

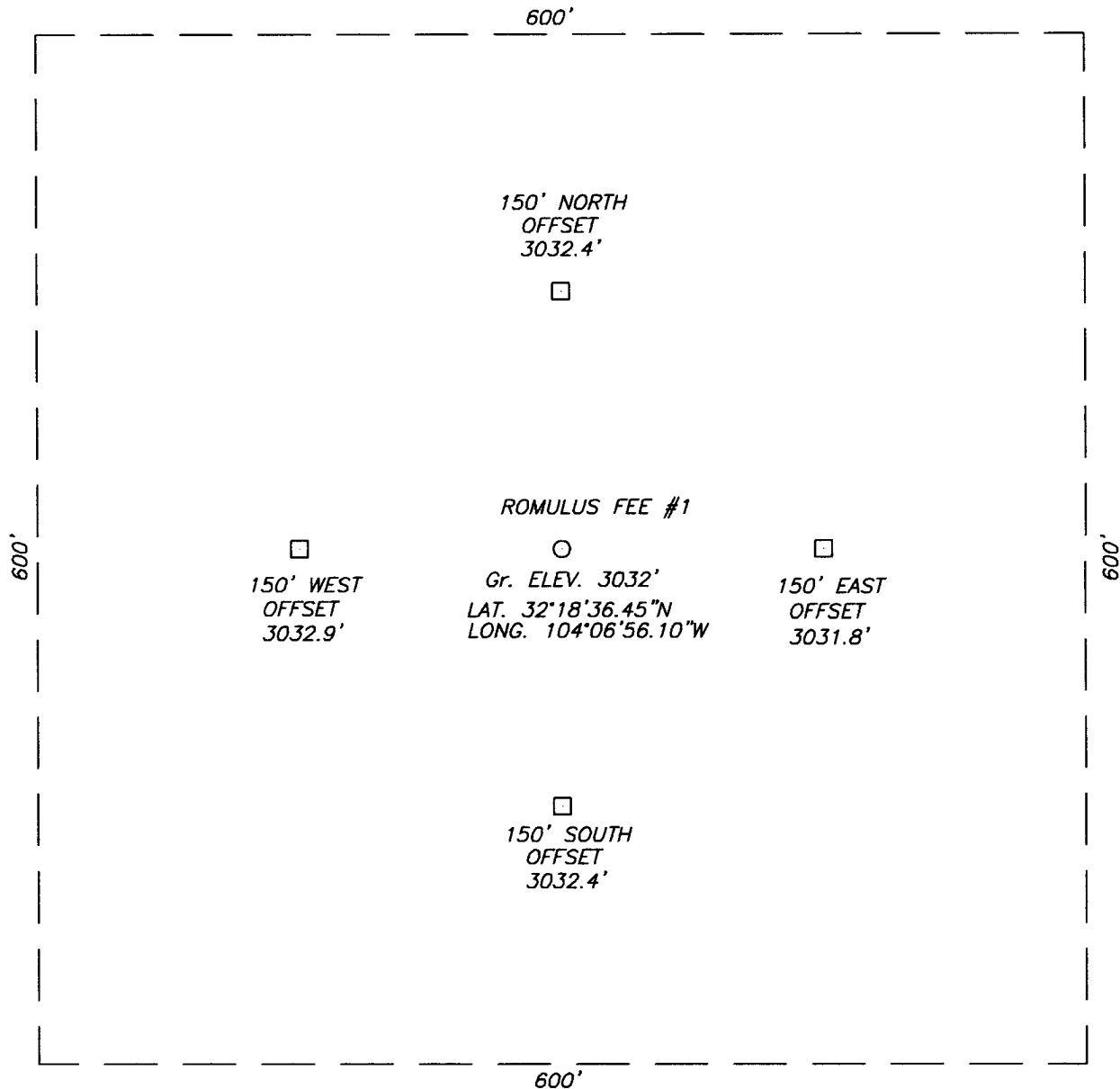
GARY EIDSON
NEW MEXICO
04.11.0341

Certificate No. GARY EIDSON 12641

SECTION 17, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.,

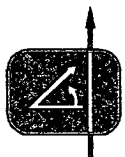
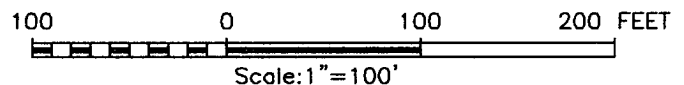
EDDY COUNTY,

NEW MEXICO.



DIRECTIONS TO LOCATION:

FROM THE INTERSECTION OF U.S. HWY. #285 (LOVING HWY.) AND STATE HWY. #31 (PECOS HWY.). GO EAST ALONG HWY #31 0.35 MILES. THIS LOCATION IS LOCATED APPROX. 800' SOUTH.



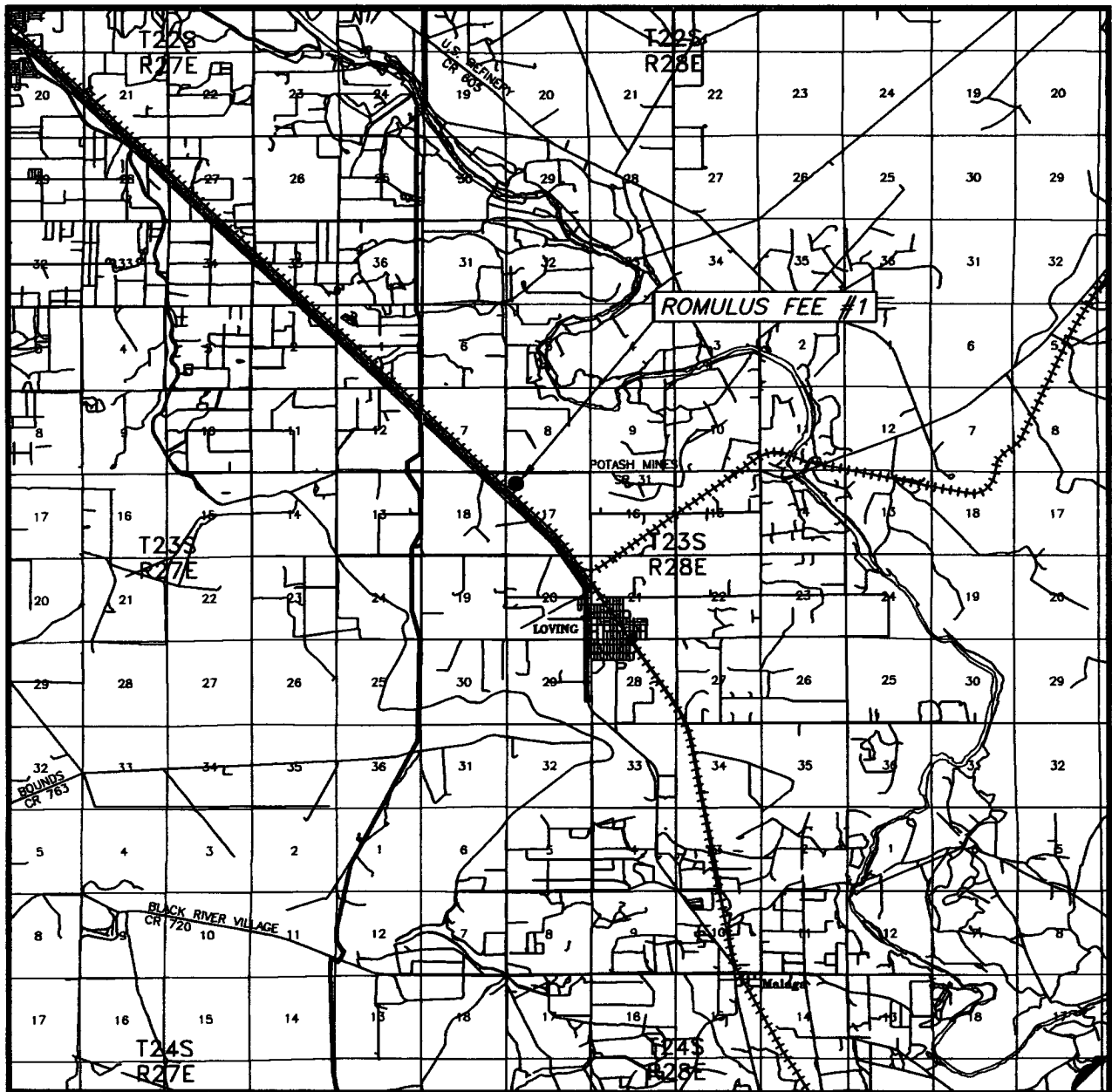
PROVIDING SURVEYING SERVICES
SINCE 1948
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

NADEL & GUSSMAN

THE ROMULUS FEE #1 LOCATED 840' FROM
THE NORTH LINE AND 660' FROM THE WEST LINE
OF SECTION 17, TOWNSHIP 23 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 03/24/04	Sheet 1 of 1 Sheets
W.O. Number: 04.11.0341	DRAWN BY: A.W.B
Date: 04/02/04	DISK: CD#10
04.11.0341	Scale: 1"=100'

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 17 TWP. 23-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 840' FNL & 660' FWL

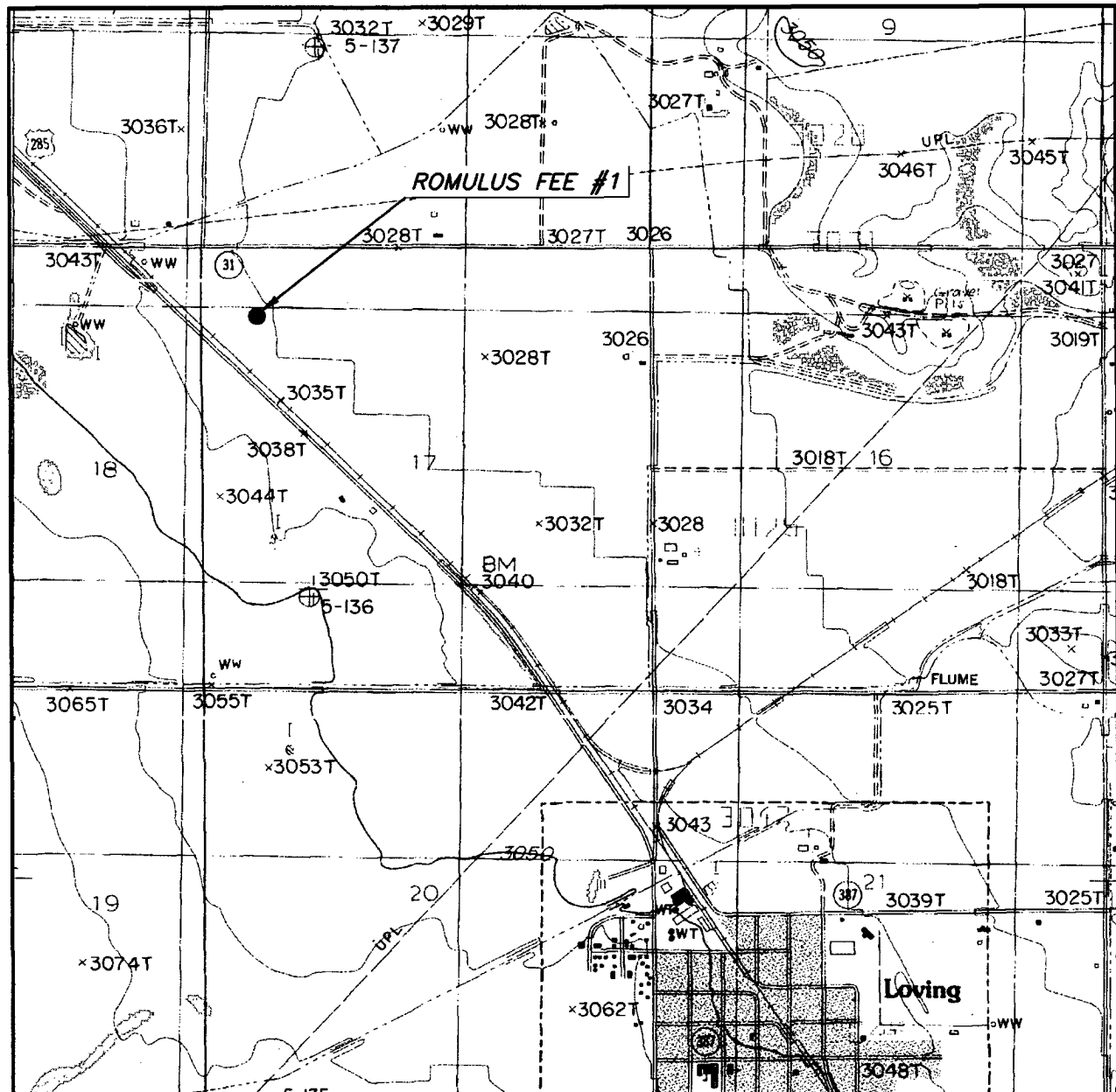
ELEVATION 3032'

OPERATOR NADEL & GUSSMAN

LEASE ROMULUS FEE

JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505) 393-3117

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

LOVING, N.M.

SUP, 5'

SEC. 17 TWP. 23-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 840' FNL & 660' FWL

ELEVATION 3032'

OPERATOR NADEL & GUSSMAN

LEASE ROMULUS FEE

U.S.G.S. TOPOGRAPHIC MAP

LOVING, N.M.

JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505) 393-3117



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor

Joanna Prukop
Cabinet Secretary
Acting Director
Oil Conservation Division

13 May 2004

Nadel & Gussman Permian
601 N Marienfeld Ste 508
Midland, TX 79701

RE: Permit Stipulations - Romulus Fee # 1 840'FNL & 660'FEL Unit D SEC-17 T-23S R-28E

The Oil Conservation Division of Artesia is in receipt of your application to construct a pit for the purpose of drilling. The request is hereby accepted and approved with the following provisions:

1. Construction and closing of pit(s) must meet the criteria of Rule 19.15.2.50 and the Pit Guidelines.
2. The pit is not located in any watercourse, lakebed, sinkhole, playa lake, or wetland.
3. Notice is to be given to the OCD prior to construction of the pit(s).
4. Upon cessation of drilling the freestanding fluid will be removed and disposed of in an OCD approved facility.
5. Due to liner choice, the pit's contents and the liner shall be removed and disposed of in a manner approved by the Division.
6. The pit will not be used for any additional storage of fluids.
7. The Division may attach additional conditions to any permit upon a finding that such conditions are necessary to prevent the contamination of fresh water, or to protect public health or the environment. (19.15.2.50.C.3.G.1.)
8. Re-seeding mixture will must be approved or authorized by surface owner.

Please note that the original C-144 was altered. This was done under the authority of, and with the permission of, Josh Fernau via phone on 5-13-04.

If I can be of any further assistance, please feel free to call (505) 748-1283 ext. 109.

Sincerely,

A handwritten signature in black ink, appearing to be "VB" or "Van Barton".

Van Barton

NADEL AND GUSSMAN PERMIAN, L.L.C.
601 N. Marienfeld, Suite 508
Midland, TX 79701
(432) 682-4429 (Office)
(432) 682-4325 (Fax)

04/26/04

Mr. Bryan Arrant
District 2 Geologist
New Mexico Oil and Gas Division
1301 West Grand
Artesia, NM 88210

Re: Romulus Fee #1
840' FNL, 660' FWL
Unit Letter D, Sec. 17-T23S-R28E
Eddy, NM

RECEIVED

APR 28 2004

OCD-ARTESIA

Application for Permit to Drill

Dear Mr. Arrant,

Attached you will find an original and 6 copies of a C-101, C-102, C-144 and H2S contingency letter for the referenced well. Drilling operations are scheduled to begin approximately on 05/01/04.

Please contact me if you have any additional questions.

Sincerely,



Josh Fernau
Staff Engineer

NADEL AND GUSSMAN PERMIAN, L.L.C.
601 N. Marienfeld, Suite 508
Midland, TX 79701
(432) 682-4429 (Office)
(432) 682-4325 (Fax)

04/26/04

Mr. Bryan Arrant
District 2 Geologist
New Mexico Oil and Gas Division
1301 West Grand
Artesia, NM 88210

Re: Romulus Fee #1
840' FNL, 660' FWL
Unit Letter D, Sec. 17-T23S-R28E
Eddy, NM
Rule 118 H2S Exposure

RECEIVED

APR 28 2004

OGD-ARTESIA

Dear Mr. Arrant,

Nadel and Gussman Permian have evaluated this well and we do not expect to encounter hydrogen sulfide. However, we will employ a third party monitoring system. We will begin monitoring prior to drilling out the intermediate casing and will continue monitoring the remainder of the well.

Please contact me if you have any additional questions.

Sincerely,



Josh Fernau
Staff Engineer

NADEL AND GUSSMAN PERMIAN, L.L.C.
601 N. Marienfeld, Suite 508
Midland, TX 79701
(432) 682-4429 (Office)
(432) 682-4325 (Fax)

05/13/04

Mr. Bryan Arrant
District 2 Geologist
New Mexico Oil and Gas Division
1301 West Grand
Artesia, NM 88210

Re: Romulus Fee #1
840' FNL, 660' FWL
Unit Letter D, Sec. 17-T23S-R28E
Eddy, NM

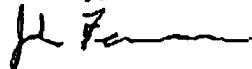
Application for Permit to Drill

Dear Mr. Arrant,

I have faxed two copies of the BOP and mud program designed for the Romulus Fee #1.

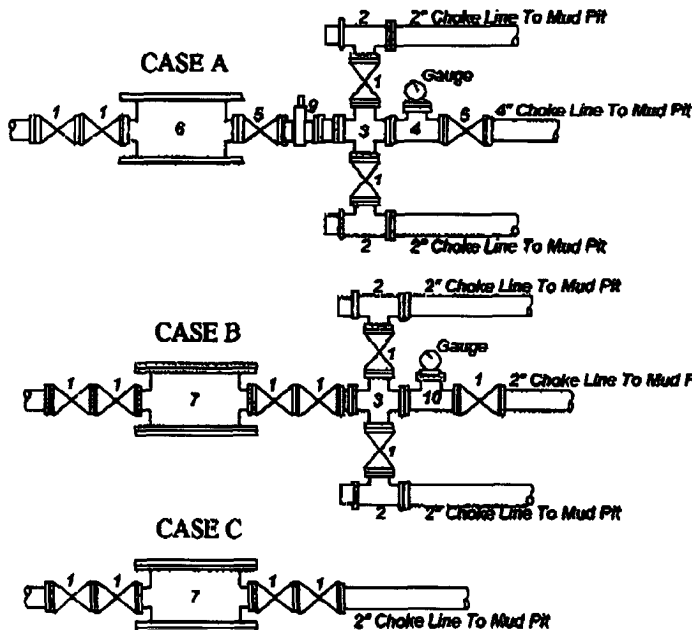
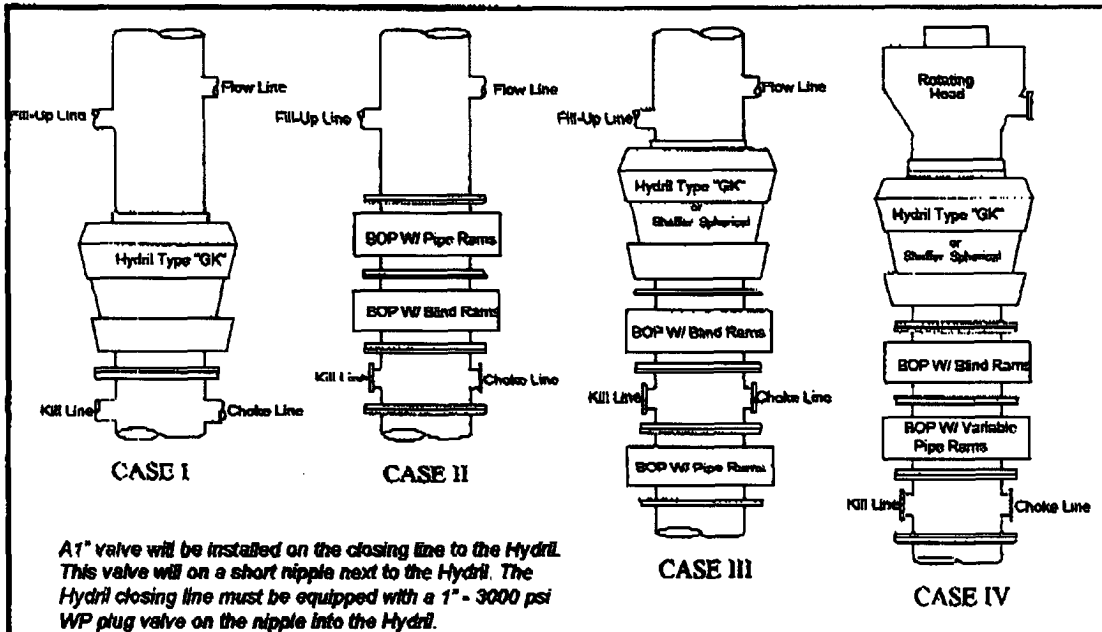
Please contact me if you have any additional questions.

Sincerely,



Josh Fernau
Staff Engineer

Nadel and Gussman Permian Ramulus FEE # 1 MINIMUM BLOWOUT PREVENTER REQUIREMENTS



BOP SIZE	BOP CASE	WORKING PRESSURE	CHOKE CASE
13 3/4"	III	50,000#	A
11"	IV	10,000#	A

***Rotating head required**

Workhead:

Mfr: _____

Size: _____ Type: _____

Legend

1. 2" flanged all steel valve must be either Cameron "F", Halliburton Low Torque or Shaffer Flo-Seal.
2. 2" flanged adjustable chokes, min. 1" full opening & equipped with hard trim.
3. 4" x 2" flanged steel cross.
4. 4" flanged steel tee.
5. 4" flanged all steel valve (Type as in no. 1).
6. Drilling Spool with 2" x 4" flanged outlet.
7. Drilling Spool with 2" x 2" flanged outlet.
8. 2" x 2" flanged steel cross.
9. 4" pressure operated gate valve.
10. 2" flanged steel tee.

Notes

Choke manifold may be located in any convenient position. Use all steel fittings throughout. Make 90° turns with bull plugged tees only. No field welding will be permitted on any of the components of the choke manifold and related equipment upstream of the chokes. The choke spool and all lines and fittings must be at least equivalent to the test pressure of the preventers required. Independent closing control unit with clearly marked controls to be located on derrick floor near driller's position.

(10-31-88) WTXBOPS.PPT

PROPOSED MUD PROGRAM

CASING DESIGN

13 3/8"	Surface Casing	at	400'
9 5/8"	Intermediate Casing	at	3,000'
7"	Intermediate Casing	at	10,500'
6 1/4"	Open Hole	to	13,000'

RECOMMENDED MUD PROPERTIES

<u>DEPTH</u>	<u>MUD WEIGHT</u>	<u>VISCOSITY</u>	<u>FLUID LOSS</u>
Spud	8.6- 8.7	32-36	No Control
400'	8.8- 9.0	32-36	No Control
Set 13 3/8" Surface Casing at 500'. Drill out with Brine water.			
500'	10.0-10.1	28-30	No Control
1,000'	10.0-10.1	28-30	No Control
2,000'	10.0-10.1	28-30	No Control
3,000'	10.0-10.1	28-30	No Control
Set 9 5/8" Intermediate Casing at 3,000'. Drill out with a Fresh Water.			
3,100'	8.4- 8.5	28-29	No Control
4,000'	8.4- 8.5	28-29	No Control
5,000'	8.4- 8.5	28-29	No Control
7,000'	8.4- 8.5	28-29	No Control
8,500'	8.4- 8.5	28-29	No Control
9,200'	9.0- 9.2	28-29	No Control
10,500'	9.0- 9.2	28-29	No Control

Set 7" Intermediate Casing at 10,500'. Drill out with Brine Water.

10,500'	10.0-10.1	34-36	<12
10,900'	10.1-10.2	34-36	< 12
11,300'	10.3-12.0	36-40	< 12
12,000'	10.3-12.0	45-48	<12
13,000'	10.3-12.0	45-48	<12

RECOMMENDED MUD PROGRAM BY CASING INTERVAL**Surface Hole 0-400'**

Spud with a **Horizon Gel/Lime** slurry, mixing one **Lime** per ten **Gel** for a 32-36 viscosity. This fluid should be sufficient to clean the shallow, poorly consolidated surface formations and provided good conditions for smooth casing operations. If lost circulation occurs and cannot be regained with one or two LCM pills, we recommended blind drilling to total depth.

Intermediate Hole 400'-3,000'

Drill out from under the surface casing with brine water, circulating through the reserve pit to allow maximum time for settling drilled-solids. Lost circulation is possible while drilling this interval. Seepage can be controlled with additions of **Paper**. Should complete loss of returns occur while drilling, we recommend pulling up above the loss zone to avoid differential sticking and spotting a 100-200 barrel pill containing 15-25 lb/bbl lost circulation material. Spot the pill from above at a reduced pump rate before returning to bottom to commence drilling operations. Note: If partial returns are maintained, use only brine for volume to avoid severe washouts.

Consider, based on specific hole conditions and economic considerations, the possibility of mudding up the entire system with **Salt Gel** to combat losses and minimize the cost of hauling water.

Attention should be paid to the possibility of crooked hole problems in this general area.

Allow hole conditions to dictate the need for any additional viscosity or hole sweeps at total depth to clean the hole and insure smooth casing operations.

Open Hole 3,000'-10,500'

Drill out from under the intermediate casing with fresh water and circulate through the outer reserve pit to, once again, minimize solids build-up.

Utilize **DCS Surfactant** to increase the penetration rate. Discontinue if losses are severe.

Minor to severe lost circulation is possible in this general area to encounter losses in the **Delaware** and **Bone Springs** formations. Minor seepage should be able to be controlled with **Paper**. Should a complete loss of returns occur while drilling, we recommend following the same procedure described in the previous section. Severe seepage may require alternative methods of combating losses such as:

- ⇒ **Heavy bentonite pills**
- ⇒ **Diesel/LoLoss pills**
- ⇒ **Drill-out pills spotted or squeezed**

We recommend maintaining an 9.0-9.5 pH with **Caustic**.

Crooked hole can be a problem in this area past 8,000'.

We recommend that the surface pit system include the following:

- ⇒ **Pit Volume Totalizer**—This will monitor pit gains for kick control as well as pit losses for lost circulation control.
- ⇒ **Flo-Line Cleaner**—This will allow removal of a wider range of solids that will eliminate the need for a conventional shale shaker, and increase the efficiency of the de-sander and de-silter.
- ⇒ **Centrifuge**—This will allow for fine solids removal and barite recovery.
- ⇒ **100-200 barrel Slug Pit**—For mixing LCM pills and pre-hydrating Gel.
- ⇒ **Shale and Settling Pit By-Pass Canal**—To reduce volumes when conditioning mud for DST's or added hole cleaning at total depth.
- ⇒ **1-1000 sack Barite Bins**

By a depth of approximately 9,200', we recommend returning to the working pits and adding brine to increase the mud weight to 9.0-9.2 ppg for the **Wolfcamp**. Cut brine should be sufficient to drill to total depth.

Open Hole 10,500'-13,000'

Drill out from under casing with 10.0 ppg brine circulating through the working pits. By a depth of 10,900', or the top of the Strawn mud-up with a XCD Polymer/MF-55 system to achieve the following properties:

Mud Weight	10.1-10.2
Viscosity	34-36
Fluid Loss	<12

The superior "shear thinning" properties of the XCD Polymer system will provide maximum penetration rates as well as excellent Barite suspension should it be necessary.

MF-55 is a non-ionic emulsion polymer that will chemically tie-up water. This "taking-on of water" effect has proven to minimize the depth of fluid invasion. MF-55 is also a selective flocculent and will aid in maintaining a cleaner fluid.

XC-102 is a biocide that will be required to prevent biodegradation of the XCD Polymer.

As drilling progresses to 11,200', formation pressure from the Atoka or Morrow could require mud weights from 10.5-12.0 ppg to control.

Consideration should be given to drilling slightly under-balanced (approximately .5 ppg) to maximize penetration rates. When drilling under-balanced, always have a heavy pill mixed for spotting on bottom for trips.

REDUCED FORMATION DAMAGE WITH XCD POLYMER

At 12,000', we recommend increasing the concentration of XCD Polymer to 1 3/4 to 2 ppb to achieve low shear-rate viscosity (LSRV). This concentration of XCD Polymer is necessary to accomplish the networking effect of the polymers. It is this networking effect of the Zanthan Gum polymer that gives it its unique ability to increase the LSRV.

By achieving elevated viscosity in the low shear region of the flow profile, lateral penetration of fluid into the formation is reduced. This will minimize damage to the Morrow formation caused by the migration of clays once the kaolinite booklets have been broken. Also, an additional benefit of reaching this flow profile is that hole cleaning is maximized.

LSRV is monitored by measuring the gel strength and the relaxation time of the fluid. Minimum gel strength values of 40 - 60 (.2 spring) and a relaxation measurement of 3 to 4 minutes are essential to provide the proper flow profile. The "relaxation measurement" directly measures the LSRV of the fluid. The Brookfield Reometer is also used in the field to correlate with the relaxation measurement.

Again, pull a few stands off bottom to avoid differential sticking should lost returns occur while drilling. Acid-soluble LCM materials may be used in potential pay zones.

This fluid, adjusted as shown in the **"Recommended Mud Properties"** section, or as hole conditions dictate, should provide good hole conditions for any testing, logging and casing operations.