

ATS-08-96

Form 3160-3
(April 2004)FEB 04 2008
OCD-ARTESIA

OCD-ARTESIA

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No 1004-0137
Expires March 31, 20075 Lease Serial No
LC-057798

6 If Indian, Allottee or Tribe Name

7 If Unit or CA Agreement, Name and No

8 Lease Name and Well No
Logan 35 Federal 1

9 API Well No

10 Field and Pool, or Exploratory
Red Lake; Glorieta-Yeso

11 Sec, T R M or Blk and Survey or Area

Sec. 35 17S 27E, Unit M

12 County or Parish
Eddy County13 State
NM1a. Type of work ☒ DRILL ☐ REENTER1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone2 Name of Operator
Devon Energy Production Company, LP3a Address 20 North Broadway
Oklahoma City, Oklahoma 73102-82603b. Phone No (include area code)
405-552-8198

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface NESE Lot 1 1520 FSL 1280 FEL

At proposed prod zone NESE Lot 1 1520 FSL 1280 FEL

14 Distance in miles and direction from nearest town or post office*
Approximately 7 miles southeast of Artesia, New Mexico15 Distance from proposed*
location to nearest
property or lease line, ft
(Also to nearest drg. unit line, if any) 1280' FEL16 No. of acres in lease
160 acres17 Spacing Unit dedicated to this well
40 acres18 Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft 361' - Logan 35 Fed 219 Proposed Depth
4000 MD20 BLM/BIA Bond No on file
CO-110421 Elevations (Show whether DF, KDB, RT, GL, etc)
3638' GL22 Approximate date work will start*
12/31/200723 Estimated duration
45 days

24 Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, shall be attached to this form

1. Well plat certified by a registered surveyor
2. A Drilling Plan
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer

25 Signature

Name (Printed/Typed)
Norvella AdamsDate
10/16/2007Title
Sr. Staff Eng. Tech

Approved by (Signature) /s/ James Stovall

Name (Printed/Typed)

Date JAN 26 2008

Title
FIELD MANAGEROffice
CARLSBAD FIELD OFFICEApplication approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 USC Section 1001 and Title 43 USC Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*(Instructions on page 2)

NSC - Required To Produce

Roswell Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVALAPPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

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

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised October 12, 2005

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code <u>51120</u>	Pool Name RedLake; Glorieta-Yeso
Property Code	Property Name LOGAN "35" FEDERAL	Well Number 1
OGRID No. 6137	Operator Name DEVON ENERGY PRODUCTION COMPANY LP	Elevation 3638'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	35	17 S	27 E		1520	SOUTH	1280	EAST	EDDY

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
Dedicated Acres 40	Joint or Infill	Consolidation Code	Order No.						

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

	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location pursuant to a contract with an owner of such a mineral or working interest, or is a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>[Signature]</i> 10/08/07 Signature Date</p> <p>Norvella Adams Printed Name</p>
	<p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>SEPTEMBER 28, 2007 Date Surveyed</p> <p><i>[Signature]</i> Signature of Professional Surveyor</p> <p><i>[Seal]</i> Professional Surveyor No. 18618</p>
	<p>Certificate No. Gary L. Jones 7977</p>
	<p>BASIN SURVEYS</p>

Additional Operator Remarks:

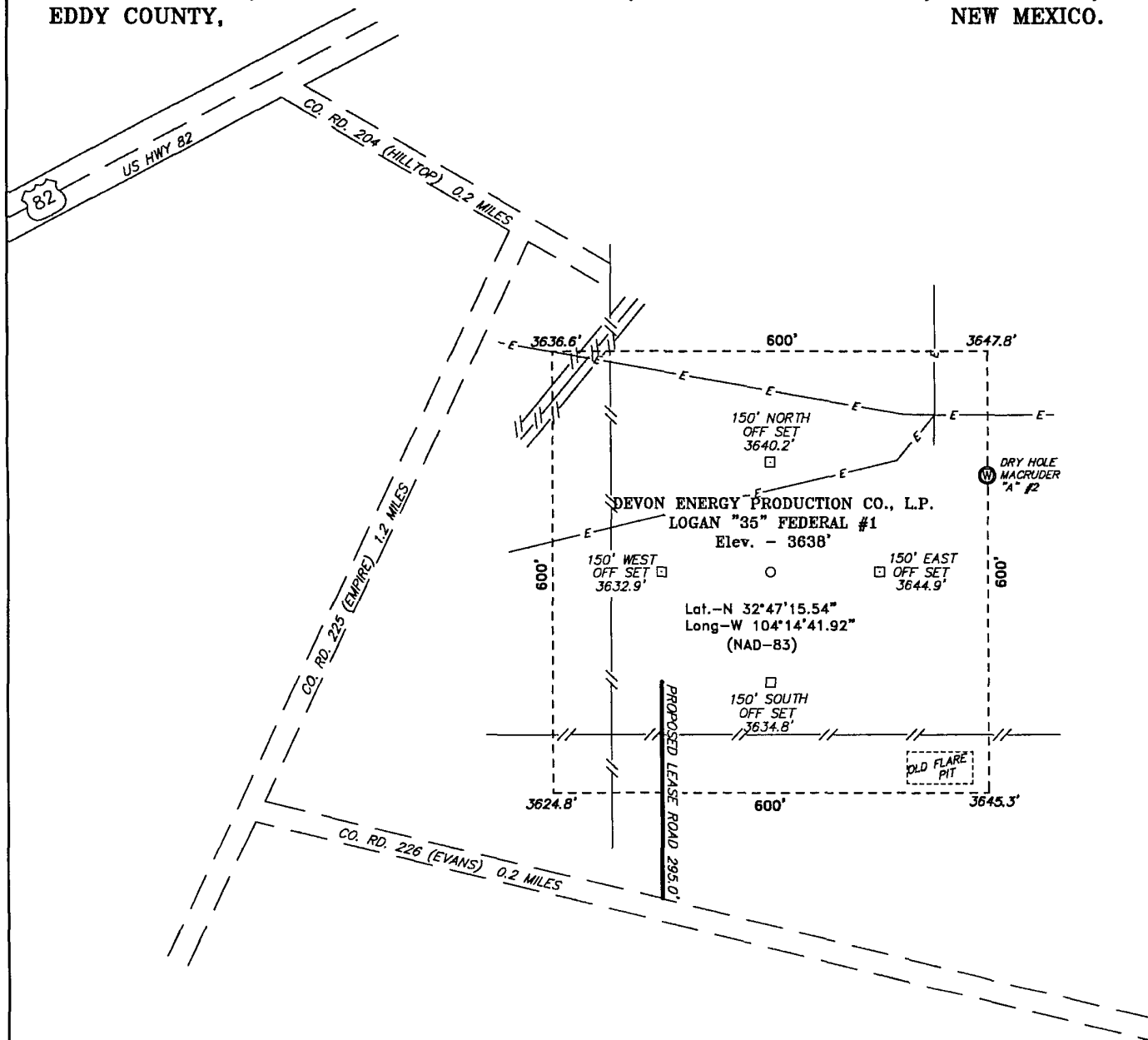
Devon Energy Production Company, LP proposes to drill a San Andres, Glorieta Yeso well per the approved Master Drilling and Surface Use Plan and Attachment A for the Red Lake Field Area to 4000' TD for commercial quantities of oil and gas. If the well is deemed noncommercial, the well bore will be plugged and abandoned per Federal regulations.

Directions: From the junction of US Hwy 82 and Co. Rd. 204 (Hilltop), go southeast on Co. Rd. 204 for 0.2 miles to Co. Rd. 225 (Empire), on Co. Rd 225 go southwest 1.2 miles to Co. Rd. 226 (Evans), on Co. Rd. 226 go southeast 0.2 miles to proposed lease road.

Please see attached MDSUP and Attachment A.

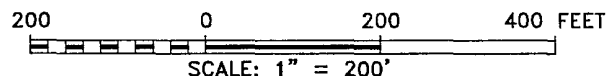
Devon intends to lay flowlines from the Logan 35 Federal 1 well to the existing Logan 35 Battery located in SE/SW of Section 35 T17S R27E.

SECTION 35, TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF US HWY 82 AND CO. RD. 204 (HILLTOP), GO SOUTHEAST ON CO. RD. 204 FOR 0.2 MILES TO CO. RD. 225 (EMPIRE), ON CO. RD. 225 GO SOUTHWEST 1.2 MILES TO CO. RD. 226 (EVANS), ON CO. RD. 226 GO SOUTHEAST 0.2 MILES TO PROPOSED LEASE ROAD.



DEVON ENERGY PROD. CO., L.P.

REF: LOGAN "35" FEDERAL #1 / WELL PAD TOPO

THE LOGAN "35" FEDERAL No. 1 LOCATED 1520'
FROM THE SOUTH LINE AND 1280' FROM THE EAST LINE OF
SECTION 35, TOWNSHIP 17 SOUTH, RANGE 27 EAST,

N.M.P.M., EDDY COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786—HOBBS, NEW MEXICO

W.O. Number: 18618

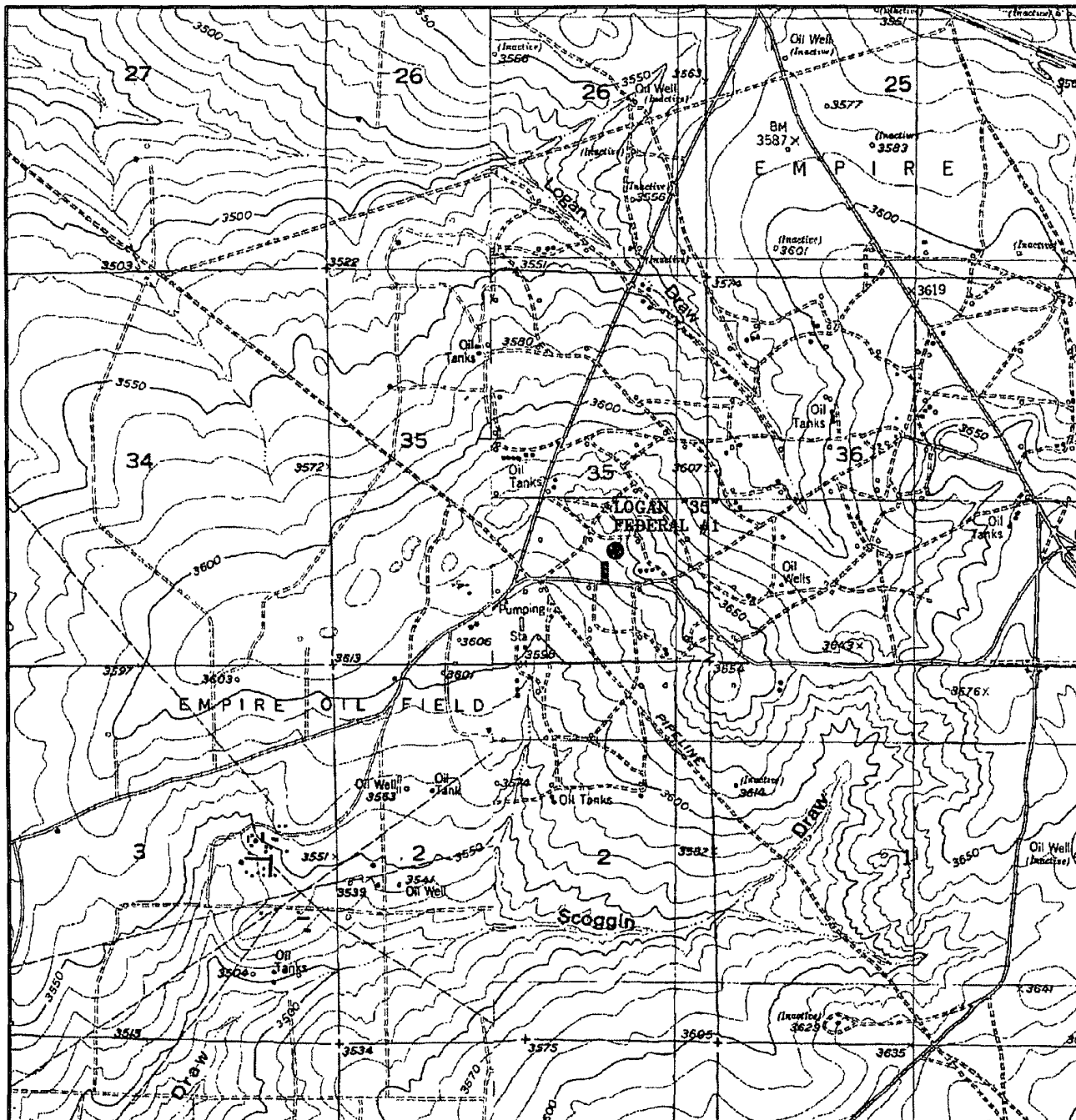
Drawn By: J. M. SMALL

Date: 10-02-2007

Disk: 18618W JMS

Survey Date: 09-28-2007

Sheet 1 of 1 Sheets

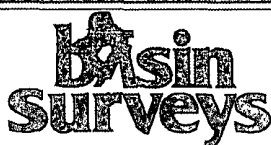


LOGAN "35" FEDERAL #1

Located at 1520' FSL AND 1280' FEL

Section 35, Township 17 South, Range 27 East,

N.M.P.M., Eddy County, New Mexico.



focused on excellence
in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

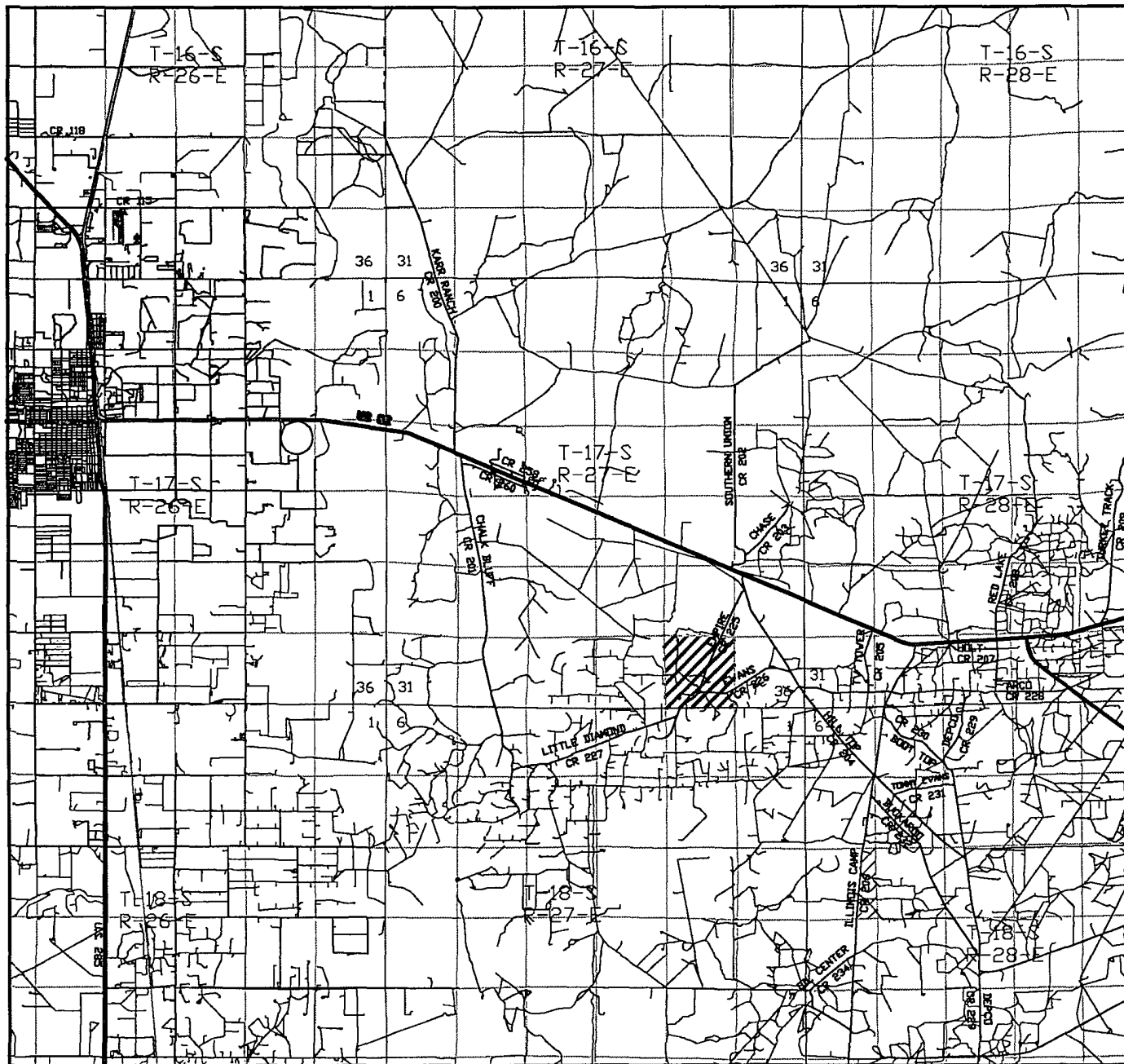
W.O. Number: JMS 18618T

Survey Date: 09-28-2007

Scale: 1" = 2000'

Date: 10-02-2007

DEVON ENERGY
PROD. CO., L.P.



LOGAN "35" FEDERAL #1
 Located at 1520' FSL AND 1280' FEL
 Section 35, Township 17 South, Range 27 East,
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786
 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (505) 393-7316 - Office
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basinsurveys.com

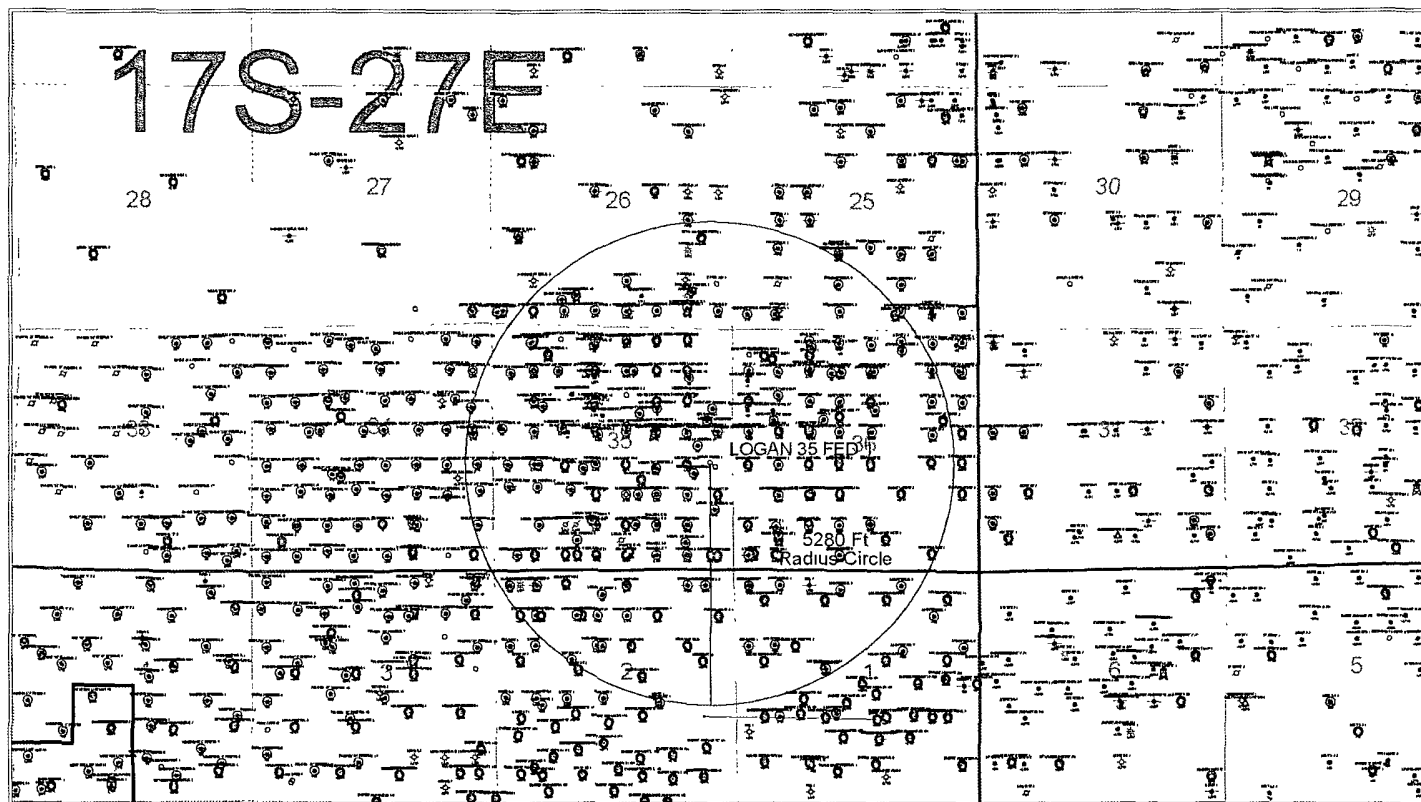
W.O. Number: JMS 18618TR

Survey Date: 09-28-2007

Scale: 1" = 2 MILES

Date: 10-02-2007

DEVON ENERGY
 PROD. CO., L.P.



devon.
Devon Energy

Red Lake Field

Production Map

Proposed Logan 35 Fed 1



POSTED WELL DATA



ATTRIBUTE MAP

- ☒ YATES_PRODUCTION
- ☒ QUEEN_PRODUCTION
- ☒ GRAYBURG_PRODUCTION
- ☒ SAN_ANDRES_PRODUCTION
- ☒ YESO_PRODUCTION
- ☒ ABO_PRODUCTION
- ☒ WOLF CAMP_PRODUCTION
- ☒ CISCO_PRODUCTION
- ☒ STRAWN_PRODUCTION
- ☒ ATOKA_PRODUCTION
- ☒ MORROW_PRODUCTION
- ☒ L_ABO_WOLF_CAMP_PRODUCTION
- ☒ BONE_SPRING_PRODUCTION

By: Rebecca Lewis

October 9 2007



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201

IN REPLY REFER TO

JUN 05 2003

Devon Energy Production Company, L.P.
Attn. Ms Karen Cottom
20 North Broadway, Suite 1500
Oklahoma City, Oklahoma 73102-8260

Re: Red Lake Field Area
Master Drilling and Surface Use Plan
Eddy County, New Mexico

The master drilling and surface use plan, dated May 6, 2003, for the Red Lake Field Area in Townships 17 and 18 South, Range 27 East, Eddy County, New Mexico, is now approved. Several corrections have been made to the attached list describing the field area. An approved copy is attached for your records.

Please note that the surface casing setting depth may change in individual APD (Form 3160-4) submittals because the depth of the expected fresh water varies across this area.

If you have any questions, please contact Alexis C. Swoboda, P.E. at 505-627-0228.

Sincerely,

Larry D. Bray
Assistant Field Manager
Lands and Minerals

MASTER DRILLING PROGRAM
RED LAKE FIELD
Devon Energy Production Company, LP
Revised 8/02/07

1. Geologic Name of Surface Formation

a. Permian

2. Estimated Tops of Geological Markers & Depths of Anticipated Fresh Water, Oil or Gas:

a. Queen	879'	Water
b. Grayburg	1330'	Oil
c. San Andres	1610'	Oil
d. Glorieta-Yeso	2960'	Oil

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 8 5/8" casing at approximately 1150' and circulating cement back to surface. A shallower setting depth may be required to prevent the surface casing from being set through the Premier Sand. The Grayburg and San Andres intervals will be isolated by setting 5 1/2" casing to total depth (4000'+/-) and circulating cement to surface.

Casing Program:

<u>Hole</u> <u>Size</u>	<u>Hole</u> <u>Interval</u>	<u>OD Csg</u>	<u>Casing</u> <u>Interval</u>	<u>Weight</u>	<u>Collar</u>	<u>Grade</u>
12 1/4"	0'- 1150'	8 5/8"	0'- 1150'	24#	ST&C	J-55
7 7/8"	0'- 4000'	5 1/2"	0'- 4000'	15.5#	ST&C	J-55

Design Parameter Factors:

<u>Casing Size</u>	<u>Collapse Design</u> <u>Factor</u>	<u>Burst Design</u> <u>Factor</u>	<u>Tension Design</u> <u>Factor</u>
8 5/8"	2.61	2.57	8.84
5 1/2"	2.05	2.44	3.26

3. Cement Program:

a. 8 5/8"	Surface	Cement to surface with Lead; 475 sx (35:65) Poz Class C cement + 2% bwoc CaCl ₂ + 0.125 lbs/sx Cello Flake + 6% bwoc Bentonite; 12.80 ppg, 1.83 cf/sx, 9.76 gps. Tail with 250 sx Class C cement + 2% bwoc CaCl ₂ + 0.125 lbs/sx Cello Flake; 14.8 ppg, 1.35 cf/sx, 6.35 gps.
b. 5 1/2"	Production	Cement to surface with Lead; 180 sx (35:65) Poz Class C cement + 5% bwow NaCl + 0.125 lbs/sx Cello Flake + 6% bwoc Bentonite; 12.7 ppg, 1.94 cf/sx, 10.51 gps. Tail with 510 sx (60:40) Poz Class C cement + 5% bwow Sodium Chloride + 0.75% bwoc BA-

10 + 0.125 lbs/sx Cello Flake + 0.4% bwoc Sodium Metasilicate +
4% bwoc MPA-1. 13.8 ppg, 1.37 cf/sx, 6.33 gps.

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach to surface. All casing is new and API approved.

4. Pressure Control Equipment:

The blowout preventor equipment (BOP) shown in Exhibit #1 will consist of either a single annular preventor or a double ram type preventor (2000 psi WP). The unit will be hydraulically operated and will be equipped with either a single annular preventor or a set of double rams (blind rams and 4 1/2" drill pipe ram). The BOP will be installed on the 8 5/8" surface casing and utilized continuously until total depth is reached. Prior to drilling out the 8 5/8" casing shoe, the BOP's and Hydril will be tested with the rig pump to 1000 psi. *← see COA*

The BOP system will be function tested and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines and choke manifold.

5. Proposed Mud Circulation System

<u>Depth</u>	<u>Mud Wt.</u>	<u>Visc</u>	<u>Fluid Loss</u>	<u>Type System</u>
0' - 1150'	8.5 - 9.4	32-34	NC	Fresh Water
1150' - TD	10.0-10.2	28-32	NC	Fresh Water/Cut Brine

The necessary mud products for weight addition and fluid loss control will be on location at all times.

6. Auxiliary Well Control and Monitoring Equipment:

- A Kelly cock will be in the drill string at all times.
- A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- Hydrogen Sulfide detection equipment will be in operation after drilling out the 8 5/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 8 5/8" shoe until total depth is reached.

7. Logging, Coring, and Testing Program:

- Drill stem tests will be based on geological sample shows.
- If a drill stem test is anticipated; a procedure, equipment to be used and safety measures will be provided via sundry notice to the BLM.
- The open hole electrical logging program will be:
 - Total Depth to Intermediate Casing
and Gamma Ray. Compensated Neutron - Z Density log with Gamma Ray and Caliper.
 - Total Depth to Surface
Compensated Neutron with Gamma Ray
 - No coring program is planned

- iv. Additional testing will be initiated subsequent to setting the 5 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

8. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 800 psi and Estimated BHT 90° F.

9. Anticipated Starting Date and Duration of Operations:

Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 10-15 days. If the well is deemed productive, completion operations will require, at minimum, an additional 30 days of testing to ascertain whether the well will be connected to an existing or new production facility.

MASTER DRILLING PROGRAM
RED LAKE FIELD
Attachment A

To be attached to Form 3160-3

UNIT AREA: Leases in the following Sections located in Township 18 South, Range 27 East, Eddy County, New Mexico operated by Devon Energy Production Company, L. P.

Township 18 South, Range 27 East	Federal Leases	Description
Section 5	USA NM-7714 USA LC-055383-A USA LC-064384 USA LC-049648-A	S/2 SW; SE SE S/2 SW; SE SE; NE SE Lots 1 & 2; S/2 NE NW SW; SW NW
Section 6	USA NM-7711 USA LC-026874-A USA LC-060894 USA LC-049648-B USA LC-069274 USA LC-026874-B USA LC-026874-F	SE SE SE SE; SW SW E/2 SW; SE NW NE SE; SW SE Lots 3, 4, 5, & 6 Lot 2; SW NE Lot 1; SE NE
Section 7	USA LC-067981-A USA NM-7718 USA NM-7715 USA NM-7719	SW NE; NE SE NW NE SW NE; NE SE E/2 NE
Section 8	USA NM-29275 USA LC-070678-A USA LC-043894 USA LC-054205 USA NM-7712 USA NM-7713 USA NM-7716 USA NM-29268 USA NM-29273 USA NM-89156 USA NM-7718	NE SE SE NW; W/2 NW; N/2 SW; SW SE SW NE N/2 NE; NE NW; SE NE SW NE N/2 NE; NE NW; SE NE SE NW; W/2 NW SE NE SE SE NW SE; SE SW NE SE
Section 9	USA NM-031186 USA NM-7721 USA NM-025604 USA LC-065478-B	N/2 NW; S/2 NW N/2 NW NE; N/2 SE S/2 SE
Section 10	USA NM-025604 USA LC-065478-B	NW; SW N/2 NE; S/2 NE
Section 17	USA NM-0758	NE NW; SW SE
Section 20	USA NM-0758	SE NE; W/2 NE; NW NW;

Master Drilling Program
Red Lake Field

To be attached to Form 3160-3

UNIT AREA: Leases in the following sections, Townships and Ranges that are operated by Devon Energy Production Company, LP.

Lease Numbers as follows but not limited to:

Section 2	NMNM 2029-634 NMNM-B-1483	NE4/NW4, NW4/NE4	T18S-R27E
Section 3	NMLC 065478-B NMNM 015605 NMLC 061783-B	All of Section 3 except S2/N2 4 W4	T18S-R27E
Section 4	NMNM 033825 NMLC 055465-A NMNM 29278 NMNM 025530 NMLC 070937 NMLC 061783-A NMNM 7720	All of Section 4 except N2/NW4 and NW4/SW4	T18S-R27E
Section 25	NMNM 0558679	W2NW4	T17S-27E
Section 26	NMNM 0557370	E2 NE/4, E2SE/4, S/2 SW/4	T17S-R27E
	NMNM 0558679	SW4NW4, NW4SW4	
Section 27	NMLC 067849	N2, N2/S2	T17S-R27E
	NMNM 0557370	S/2S/2,	
Section 28	NMLC 067849	NE4/NE4	
Section 33	NMLC 026874-F	NW4, NW4SW4	T17S-R27E
	NMLC 026874-B	SE4SW4	
	NMLC 049648-B	NE4SW4	
	NMNM 025528	N2NE4, SW4NE4	
	NMNM 056122	SE4NE4	
	NMNM 033865	N2SE4	
	NMNM 025528	S2SE4	
Section 34	NMLC 064050-A	E2 NW4, NE/4 SE/4	T17S-R27E
	NMLC 067849	W2 NW4, SW4	
	NMNM 0557370	NE/4, NW/4SE/4,	
Section 35	NMLC 064050-A	NW4SW4	T17S-R27E
	NMLC 067849	NW/4NW/4	
	NMLC 057798	SW4SW4, N/2SE4 NE/4SW/4, SE/4,SE/4	
	NMLC 028755-A	SE/4SW/4, SW/4SE/4	
	NMNM 0557370	SW/4NW/4	
	NMLC050158	E/2NE/4, E/2NW/4	

If drilling is proposed on additional leases, the BLM will be advised when they are proposed.

NM 29270

SESE

Well name:	West Red Lake Area
Operator:	Devon Energy Corporation
String type:	Surface
Location:	Eddy County, NM

Design parameters:
Collapse

Mud weight: 9.630 ppg
Design is based on evacuated pipe.

Minimum design factors:
Collapse:

Design factor 1.125

Burst:

Design factor 1.00

Environment:

H2S considered? No
Surface temperature: 75 °F
Bottom hole temperature: 77 °F
Temperature gradient: 0.20 °F/100ft
Minimum section length: 1,150 ft

Burst

Max anticipated surface pressure: 717 psi
Internal gradient: 0.000 psi/ft
Calculated BHP 717 psi

No backup mud specified.

Tension:

8 Round STC: 1.80 (J)
8 Round LTC: 1.80 (J)
Buttress: 1.60 (J)
Premium: 1.50 (J)
Body yield: 1.50 (B)

Tension is based on buoyed weight.
Neutral point: 984 ft

Non-directional string.

Re subsequent strings:

Next setting depth: 4,000 ft
Next mud weight: 9.630 ppg
Next setting BHP: 2,001 psi
Fracture mud wt: 12.000 ppg
Fracture depth: 1,150 ft
Injection pressure 717 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	1150	8.625	24.00	J-55	ST&C	1150	1150	7.972	55.4
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	575	1370	2.38	717	2950	4.12	24	244	10.33 J

Prepared by: Jim Linville
Devon Energy

Phone: (405) 228-4621
FAX: (405) 552-4621

Date: March 12, 2001
Oklahoma City, Oklahoma

Remarks:

Collapse is based on a vertical depth of 1150 ft, a mud weight of 9.63 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.

Well name:

West Red Lake AreaOperator: **Devon Energy Corporation**String type: **Production**Location: **Eddy County, NM****Design parameters:****Collapse**Mud weight: 9.630 ppg
Design is based on evacuated pipe.**Minimum design factors:****Collapse:**

Design factor 1.125

Burst:

Design factor 1.00

Environment:H2S considered? No
Surface temperature: 75 °F
Bottom hole temperature: 95 °F
Temperature gradient: 0.50 °F/100ft
Minimum section length: 1,500 ft**Burst**Max anticipated surface
pressure: 2,001 psi
Internal gradient: 0.000 psi/ft
Calculated BHP 2,001 psi

No backup mud specified.

Tension:8 Round STC: 1.80 (J)
8 Round LTC: 1.80 (J)
Buttress: 1.60 (J)
Premium: 1.50 (J)
Body yield: 1.50 (B)

Non-directional string.

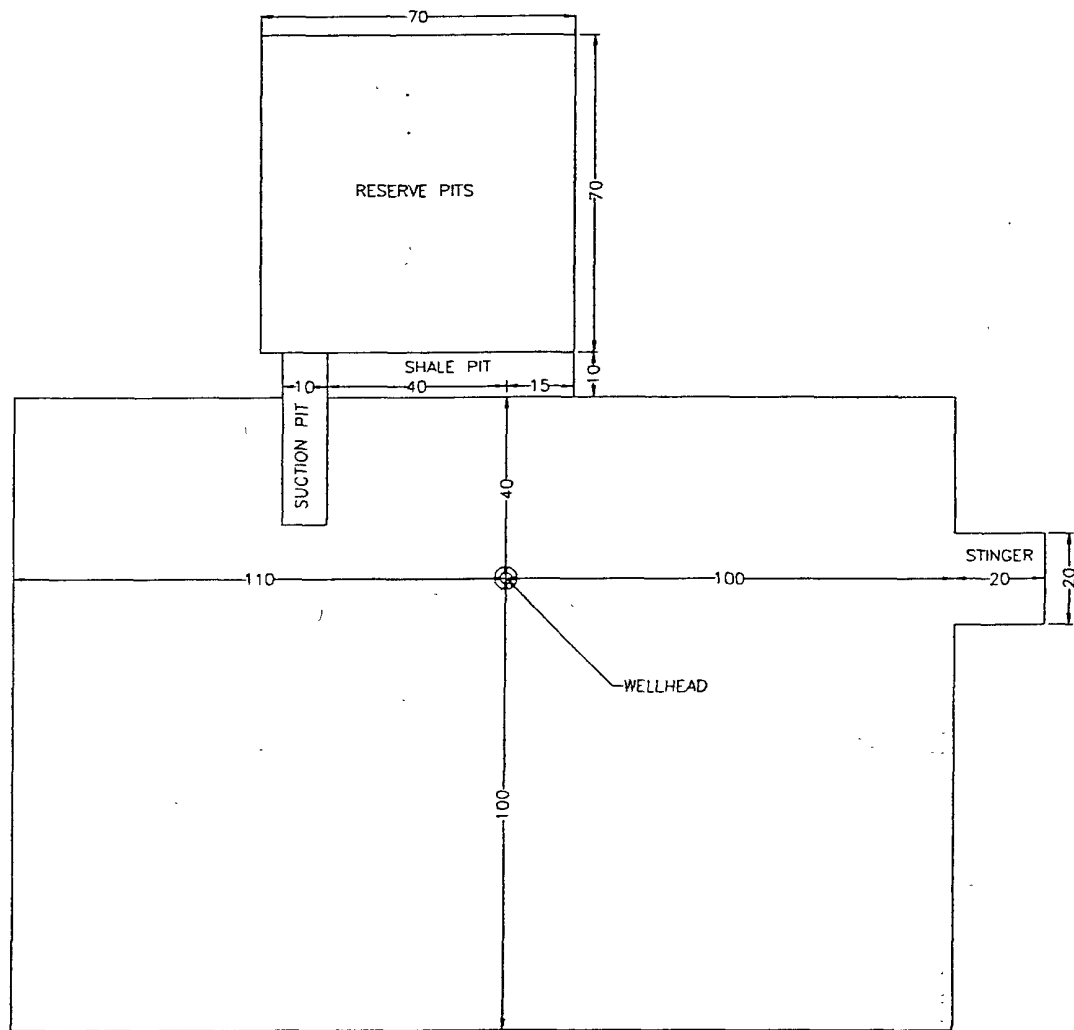
Tension is based on buoyed weight.
Neutral point: 3,417 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	4000	5.5	15.50	J-55	LT&C	4000	4000	4.825	125.4
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	2001	4040	2.02	2001	4810	2.40	53	217	4.10 J

Prepared **Jim Linville**
by: **Devon Energy**Phone: (405) 228-4621
FAX: (405) 552-4621Date: **March 12, 2001**
Oklahoma City, Oklahoma**Remarks:**Collapse is based on a vertical depth of 4000 ft, a mud weight of 9.63 ppg. The casing is considered to be evacuated for collapse purposes.
Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.



SEE ATTACHED FOR
CONDITIONS OF APPROVAL

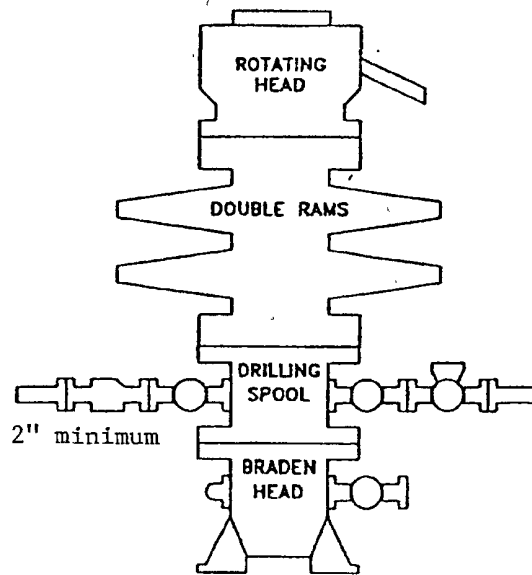


FILE:

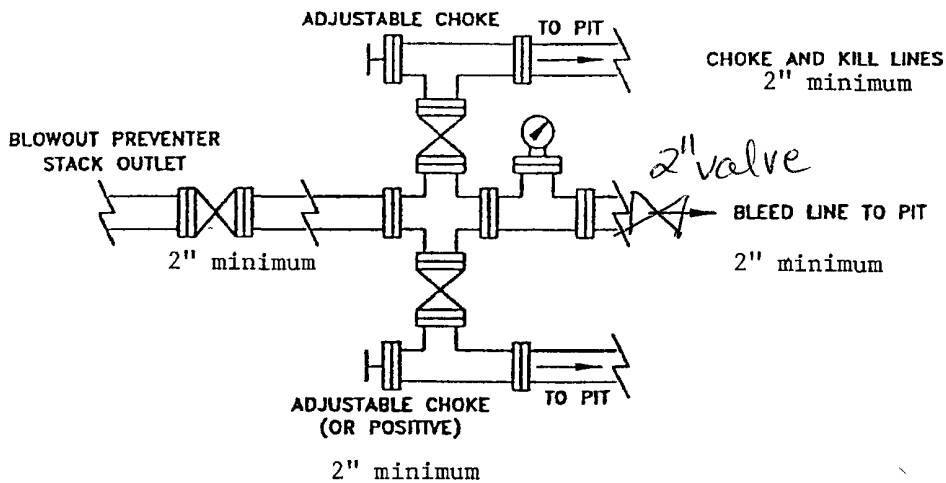
<p align="center">WEST RED LAKE AREA EDDY COUNTY, NEW MEXICO</p>	
<p align="center">DRILLING PAD</p> <p align="center">EXHIBIT 5</p>	
<p align="center">Scale in Feet</p> <p align="center">25 0 25 50 75 100</p>	
EB	6/96

Attachment to Exhibit #1
NOTES REGARDING BLOWOUT PREVENTORS
West Red Lake Area
Eddy County, New Mexico

1. Drilling nipple will be constructed so it can be removed mechanically without the aid of a welder. The minimum internal diameter will equal BOP bore.
2. Wear ring will be properly installed in head.
3. Blowout preventor and all associated fittings will be in operable condition and tested to 1000 psi with the rig pump.
4. All fittings will be flanged.
5. A full bore safety valve with proper thread connections will be available on the rotary rig floor at all times.
6. All choke lines will be anchored to prevent movement.
7. All BOP equipment will be equal to or larger in bore than the internal diameter of the last casing string.
8. Will maintain a Kelly cock attached to the Kelly.
9. Hand wheels and wrenches will be properly installed and tested for safe operation.
10. All BOP equipment will meet API standards and include a minimum 40 gallon accumulator having two independent means of power to initiate closing operation.
11. **BOP will consist of either a single annular preventor or a set of double rams as shown in Exhibit #1.**



CHOKE MANIFOLD REQUIREMENT (2000 psi WP)



devon

WEST RED LAKE AREA
EDDY COUNTY, NEW MEXICO

SCHEMATIC
BLOWOUT PREVENTOR
(2000 PSI WORKING WP)

G:\PROJECTS\EXPANDED
WRLBOP

CB

8/98

DEVON ENERGY CORPORATION

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

A. Hydrogen Sulfide Training

All rig crews and company personnel will receive training from a qualified instructor in the following areas prior to penetrating any hydrogen sulfide bearing formations during drilling operations:

1. The hazards and characteristics of hydrogen sulfide (H₂S).
2. The proper use and maintenance of the H₂S safety equipment and of personal protective equipment to be utilized at the location such as H₂S detection monitors, alarms and warning systems, and breathing equipment. Briefing areas and evacuation procedures will also be discussed and established.
3. Proper rescue techniques and procedures will be discussed and established.

In addition to the above, supervisory personnel will be trained in the prevention of oil and gas well blowouts in accordance with Minerals Management Service Standards Subpart - 0 - 250 - 212.

Prior to penetrating any known H₂S bearing formation, H₂S training will be required at the rig sight for all rig crews and company personnel that have not previously received such training. This instruction will be provided by a qualified instructor with each individual being required to pass a 20 question test regarding H₂S safety procedures. All contract personnel employed on an unscheduled basis will be required to have received appropriate H₂S training.

This Hydrogen Sulfide Drilling And Operations Plan shall be available at the wellsite during drilling operations.

B. H₂S Safety Equipment And Systems

All H₂S safety equipment and systems will be installed, tested, and operational when drilling operations reach a depth approximately 500' above any known or probable H₂S bearing formation. The safety systems to be utilized during drilling operations are as follows:

1. Well Control Equipment

- (a) Double ram BOP with a properly sized closing unit and pipe rams to accommodate all pipe sizes in use.
- (b) A choke manifold with a minimum of one remote choke.

2. H2S Detection And Monitoring Equipment

- (a) Three (3) H2S detection monitors will be placed in service at the location. One monitor will be placed near the bell nipple on the rig floor, one will be placed at the rig substructure; and, one will be at the working mud pits or shale shaker. This monitoring system will have warning lights and audible alarms that will alert personnel when H2S levels reach 10 ppm.
- (b) One (1) Sensidyne Pump with the appropriate detection tubes will also be available to perform spot checks for H2S concentrations in any remote or isolated areas.

3. Protective Equipment For Essential Personnel

Protective equipment will consist of the following:

- (a) Four (4) - five minute escape packs located at strategic points around the rig.
- (b) Two (2) - thirty minute rescue packs to be located at the designated briefing areas.

4. Visual Warning System

Visual warning system will consist of the following:

- (a) Two wind direction indicators.
- (b) One condition / warning sign which will be posted on the road - providing direct access to the location. The sign will contain lettering of sufficient size to be readable at a reasonable distance from the immediate location. The sign will inform the public that a hydrogen sulfide gas environment could be encountered at the location.

5. Mud Program

- (a) The mud program has been designed to minimize the volume of H₂S circulated to surface. Proper mud weight and safe drilling practices (for example, keeping the hole filled during trips) will minimize hazards when drilling in H₂S bearing formations.

6. Metallurgy

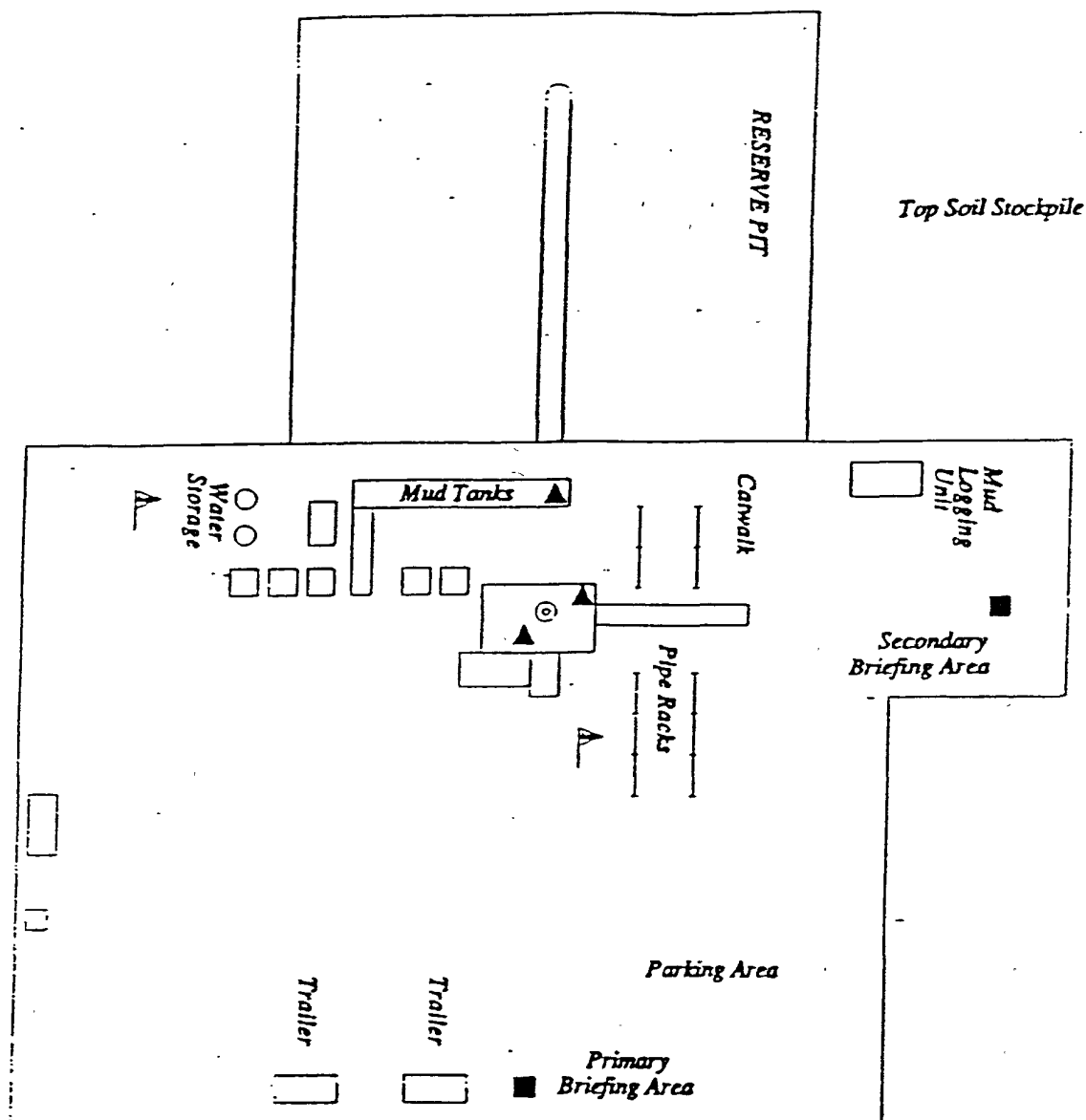
- (a) All drill strings, casings, tubing, wellhead, blowout preventers, drilling spools, kill lines, choke manifold and lines, and valves shall be suitable for H₂S service.

7. Communication

- (a) Two way radio and cellular telephone communication will be available in company vehicles.

C. Diagram of Drilling Location

- 1. Attached is a diagram representing a typical location layout as well as the location of H₂S monitors, briefing areas, and wind direction indicators.



- ▲ H2S MONITORS WITH ALARMS AT THE BELL NIPPLE, SUBSTRUCTURE, AND SHALE SHAKER
- ├ WIND DIRECTION INDICATORS
- SAFE BRIEFING AREAS WITH CAUTION SIGNS AND PROTECTIVE BREATHING EQUIPMENT



File 011004\H2S-PLAN 9/95

<i>devon</i>	
WEST RED LAKE AREA	
VEDDY COUNTY, NEW MEXICO	
H2S PLAN	
Scale in Feet 25 0 25 50 75 100	

MASTER SURFACE USE AND OPERATING PLAN
Red Lake Field

This plan will be submitted with Form 3160-3, Application for Permit to Drill. The purpose of this plan is to describe the location of the proposed wells, the proposed construction activities and operations plan, the magnitude of necessary surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations. This plan will allow a complete appraisal to be made of the environmental effects associated with the proposed operations.

UNIT AREA: Leases in the following Sections, Townships and Ranges that are Operated by Devon Energy Production Company, LP.

Lease Numbers as follows but not limited to:

Section 2	NMNM 2029-634 NMNM-B-1483	NE4/NW4, NW4/NE4	T18S-R27E
Section 3	NMLC 065478-B NMNM 015605 NMLC 061783-B	All of Section 3 except S2/N24	T18S-R27E
Section 4	NMNM 033825 NMLC 055465-A NMNM 29278 NMNM 025530 NMLC 070937 NMLC 061783-A NMNM 7720	All of Section 4 except N2/NW4 and NW4/SW4	T18S-R27E
Section 25	NMNM 0558679	W2NW4	T17S-27E
Section 26	NMNM 0557370	E2 NE/4, E2SE/4, S/2 SW/4	T17S-R27E
	NMNM 0558679	SW4NW4, NW4SW4	
Section 27	NMLC 067849	N2, N2/S2	T17S-R27E
	NMNM 0557370	S/2S/2,	
Section 28	NMLC 067849	NE4/NE4	
Section 33	NMLC 026874-F	NW4, NW4SW4	T17S-R27E
	NMLC 026874-B	SE4SW4	
	NMLC 049648-B	NE4SW4	
	NMNM 025528	N2NE4, SW4NE4	
	NMNM 056122	SE4NE4	
	NMNM 033865	N2SE4	
	NMNM 025528	S2SE4	
Section 34*	NMLC 064050-A	E2, NW4, NE/4 SE/4	T17S-R27E
	NMLC 067849	W2 NW4, SW4	
	NMNM 0557370	NE/4, NW/4SE/4,	
Section 35	NMLC 064050-A	NW4SW4	T17S-R27E
	NMLC 067849	NW/4NW/4	
	NMLC 057798	SW4SW4, N/2SE4 NE/4SW/4, SE/4, SE/4	
	NMLC 028755-A	SE/4SW/4, SW/4SE/4	
	NMNM 0557370	SW/4NW/4	
	NMLC050158	E/2NE/4, E/2NW/4	

* NM 29270

SURFACE USE PLAN
RED LAKE FIELD
Devon Energy Production Company, LP
Revised 8/02/07

1. Existing Roads:

- a. The well site and elevation plat for the proposed well will be provided with the Form 3160-3 when proposed.
- b. All roads to the location are depicted on Exhibit 2 of each individual application. The existing roads will be illustrated and are adequate for travel during drilling and production operations. Upgrading of the roads prior to drilling will be done where necessary as determined during the onsite inspections.
- c. Directions to location will be provided with each application.

2. New or Reconstructed Access Roads:

- a. The well site layout, Form C-102 will show the existing and the proposed access roads.
- b. The maximum width of the road will be 15'. It will be crowned and made of 6" of rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.
- c. Surface material will be native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location. The average grade will be approximately 1%.
- d. No cattle guards, grates or fence cuts will be required. No turnouts are planned.

3. Location of Existing Wells:

One Mile Radius Plat showing all existing and proposed wells within a one-mile radius of the proposed location will be provided with each application.

4. Location of Existing and/or Proposed Production Facilities:

- a. In the event the well is found productive, the collection facilities will be noted on the Application to Permit. Existing facilities are listed below.

MALCO BATTERY NE/SW OF SEC 6
CARTER COLLIER NE/SW OF SEC 5
WRL BATT AND INJ. ST. 1 NE/NW OF SEC 7
JOHNSTON BATTERY SW/NW SEC 7
JACKSON BATTERY SW/SW SEC 7
KAISER B 6 BATTERY NW/SE OF SEC 18
KAISER BATTERY NE/SE OF SEC 18
HAWK 8 BATTERY IN SW/SE OF SEC 8
WRL SATTELITE BATTERY NE/NE OF SEC 8
WRL INJ. ST. 2 NW/NE OF SEC 9
HAWK 9 BATTERY NW/SE OF SEC 9
HONDO BATTERY NE/SW OF SEC 4
WINDFOHR BATTERY SE/NE OF SEC 4
FALCON BATTERY NE/SW OF SEC 3
COMPTON 33 BATTERY SW/NE OF SEC 33
EAGLE BATTERY SW/NE OF SEC 34
LOGAN ST. 2 BATTERY NW/NE OF SEC 2
LOGAN 35 BATTERY SE/SW OF SEC 35
EAGLE 27 BATTERY NW/SE OF SEC 27
ASAU SE/SE SEC 13

SIMPSON BATTERY NW/NW OF SEC 15
EVEREST BATTERY SE/SW OF SEC 14

- b. If necessary, the well will be operated by means of an electric prime mover. Electric power poles will be set along side of the access road.
- c. All flow lines will adhere to API standards.
- d. If the well is productive, rehabilitation plans are as follows:
 - i. The reserve pit will be back-filled after the contents of the pit are dry (within 120 days after completion, weather permitting).
 - ii. The original topsoil from the well site will be returned to the location. The drill site will then be contoured as close as possible to the original state.

5. Location and Types of Water Supply:

This location will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using the existing and proposed roads shown in the C-102. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, proper authorizations will be secured. If a poly pipeline is used, the size, distance, and map showing route will be provided to the BLM via sundry notice.

6. Construction Materials:

All caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM approved pit or from prevailing deposits found under the location. All roads will be constructed of 6" rolled and compacted caliche. Will use BLM recommended use of extra caliche from other locations close by for roads, if available.

7. Methods of Handling Waste Material:

- a. Drill cuttings will be disposed of in the reserve pits.
- b. All trash, junk and other waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary landfill.
- c. The supplier, including broken sacks, will pick up salts remaining after completion of well.
- d. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- e. Remaining drilling fluids will be allowed to evaporate in the reserve pits until the pits are dry enough to be broken out for further drying. If the drilling fluids do not evaporate in a reasonable time they will be hauled off by transports to a state approved disposal site. Later pits will be broken out to speed dry. Water produced during completion will be put in reserve pits. Oil and condensate produced will be put in a storage tank and sold.
- f. Disposal of fluids to be transported by the following companies:
 - i. American Production Service Inc, Odessa TX
 - ii. Gandy Corporation, Lovington NM
 - iii. I & W Inc, Loco Hill NM
 - iv. Jims Water Service of Co Inc, Denver CO

8. **Ancillary Facilities:** No campsite or other facilities will be constructed as a result of this well.
9. **Well Site Layout**
 - a. Exhibit 5 shows the proposed well site layout with dimensions of the pad layout.
 - b. This exhibit indicated proposed location of reserve and sump pits and living facilities.
 - c. Mud pits in the active circulating system will be steel pits & the reserve pit will be lined.
 - d. If needed, the reserve pit is to be lined with polyethylene. The pit liner will be 6 mils thick. Pit liner will extend a minimum 2'00" over the reserve pits dikes where the liner will be anchored down.
 - e. The reserve pit will be fenced on three sides with four strands of barbed wire during drilling and completion phases. The fourth side will be fenced after all drilling operations have ceased to preclude endangering wildlife.
10. **Plans for Surface Reclamation:**
 - a. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The reserve pit area will be broken out and leveled after drying to a condition where these efforts are feasible. The original top soil will again be returned to the pad and contoured, as close as possible, to the original topography. The pits will be closed per OCD compliance regulations.
 - b. The pit lining will be buried or hauled away in order to return the location and road to their pristine nature. All pits will be filled and location leveled, weather permitting, within 120 days after abandonment.
 - c. The location and road will be rehabilitated as recommended by the BLM.
 - d. If the well is a producer, the reserve pit fence will be torn down after the pit contents have dried. The reserve pit and those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.
 - e. If the well is deemed commercially productive, the reserve pit will be restored as described in 10(A) within 120 days subsequent to the completion date. Caliche from areas of the pad site not required for operations will be reclaimed. The original top soil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography.
11. **Surface Ownership**
 - a. The surface is owned by the US Government and is administered by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas.
 - b. The proposed road routes and the surface location will be restored as directed by the BLM.
12. **Other Information:**
 - a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. The vegetation is moderately sparse with native prairie grass, sagebrush, yucca, and miscellaneous weeds. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area.
 - b. There is no permanent or live water in the general proximity of the location.

- c. There are no dwellings within 2 miles of location.
- d. A Cultural Resources Examination will be completed by Southern New Mexico Archaeological Services, Inc. and forwarded to the BLM office in Carlsbad, New Mexico.

13. Bond Coverage:

Bond Coverage is Nationwide; Bond # is CO-1104

Operators Representative:

The Devon Energy Production Company, L.P. representatives responsible for ensuring compliance of the surface use plan are listed below.

Marcos Ortiz
Operations Engineer

Joe Johnston
Superintendent

Devon Energy Production Company, L.P.
20 North Broadway, Suite 1500
Oklahoma City, OK 73102-8260

Devon Energy Production Company, L.P.
Post Office Box 250
Artesia, NM 88211-0250

(405) 552-8152 (office)
(405) 317-0666 (cellular)

(505) 748-0630 (office)
(505) 513-0630 (cellular)

Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or Devon Energy Production Company, L.P. am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

I hereby also certify that I, or Devon Energy Production Company, L.P. have made a good faith effort to provide the surface owner with a copy of the Surface Use Plan of Operations and any Conditions of Approval that are attached to the APD.

Executed this 2nd day of August, 2007.

Printed Name: Norvella Adams

Signed Name: 

Position Title: Senior Staff Engineering Technician

Address: 20 North Broadway, OKC OK 73102

Telephone: (405) 552-8198

E-mail: norvella.adams@dvn.com

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Corporation, L.P.
LEASE NO.:	LC-057798
WELL NAME & NO.:	Logan 35 Fed. #1
SURFACE HOLE FOOTAGE:	1520' FSL & 1280' FEL
BOTTOM HOLE FOOTAGE	
LOCATION:	Section 35, T. 17 S., R 27 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Cave/Karst
- ☐ **Construction**
 - Notification
 - Topsoil
 - Reserve Pit
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
- ☐ **Reserve Pit Closure/Interim Reclamation**
- ☐ **Final Abandonment/Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Cave and Karst

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Berming:

Any tank batteries will be constructed and bermed large enough to contain any spills that may occur.

Bermed areas will be lined with rip-stop padding to prevent tears or punctures in liners and lined with a permanent 20 mil plastic liner.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:

Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. Use depth to the deepest expected fresh water as listed in the geologist report.

Casing:

All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run to American Petroleum Institute and BLM standards.

Lost Circulation:

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported.

Regardless of the type of drilling machinery used, if a void (bit drops) of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in any cave-bearing zone, drilling operations will immediately stop and the BLM will be notified by the operator. The BLM will assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

Abandonment Cementing:

Upon well abandonment the well bore will be cemented completely from 100 feet below the bottom of the cave bearing zone to the surface.

Record Keeping:

The Operator will track customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence of absence

of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (505) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

There is no measurable soil on this well pad to stockpile. No topsoil stockpile is required.

C. RESERVE PITS

The reserve pit shall be constructed and closed in accordance with the NMOCD rules.

The reserve pit shall be constructed 70' X 70' on the East side of the well pad.

The reserve pit shall be constructed, so that upon completion of drilling operations, the dried pit contents shall be buried a minimum depth of three feet below ground level. Should the pit content level not meet the three foot minimum depth requirement, the excess contents shall be removed until the required minimum depth of three feet below ground level has been met. The operator shall properly dispose of the excess contents at an authorized disposal site.

The reserve pit shall be constructed and maintained so that runoff water from outside the location is not allowed to enter the pit. The berms surrounding the entire perimeter of the pit shall extend a minimum of two (2) feet above ground level. At no time will standing fluids in the pit be allowed to rise above ground level.

The reserve pit shall be fenced on three (3) sides during drilling operations. The fourth side shall be fenced immediately upon rig release.

D. FEDERAL MINERAL MATERIALS PIT

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the Carlsbad Field Office at (505) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

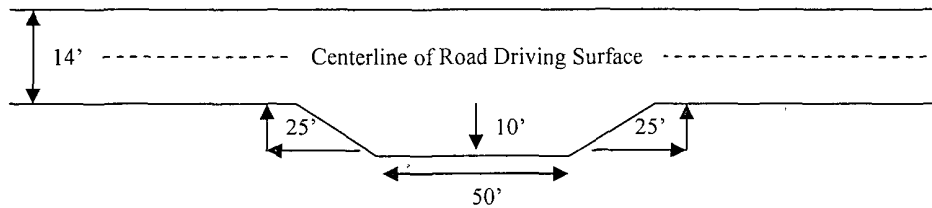
Ditching

Ditching shall be required on both sides of the road.

Turnouts

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

Standard Turnout – Plan View

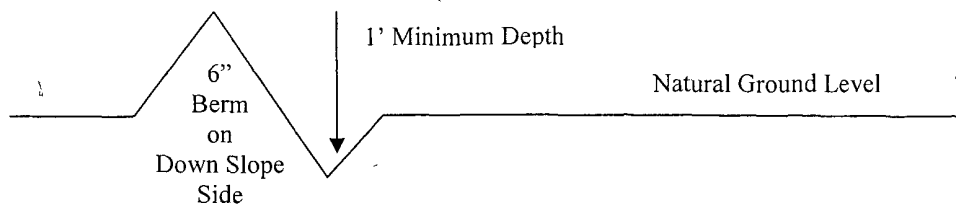


Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

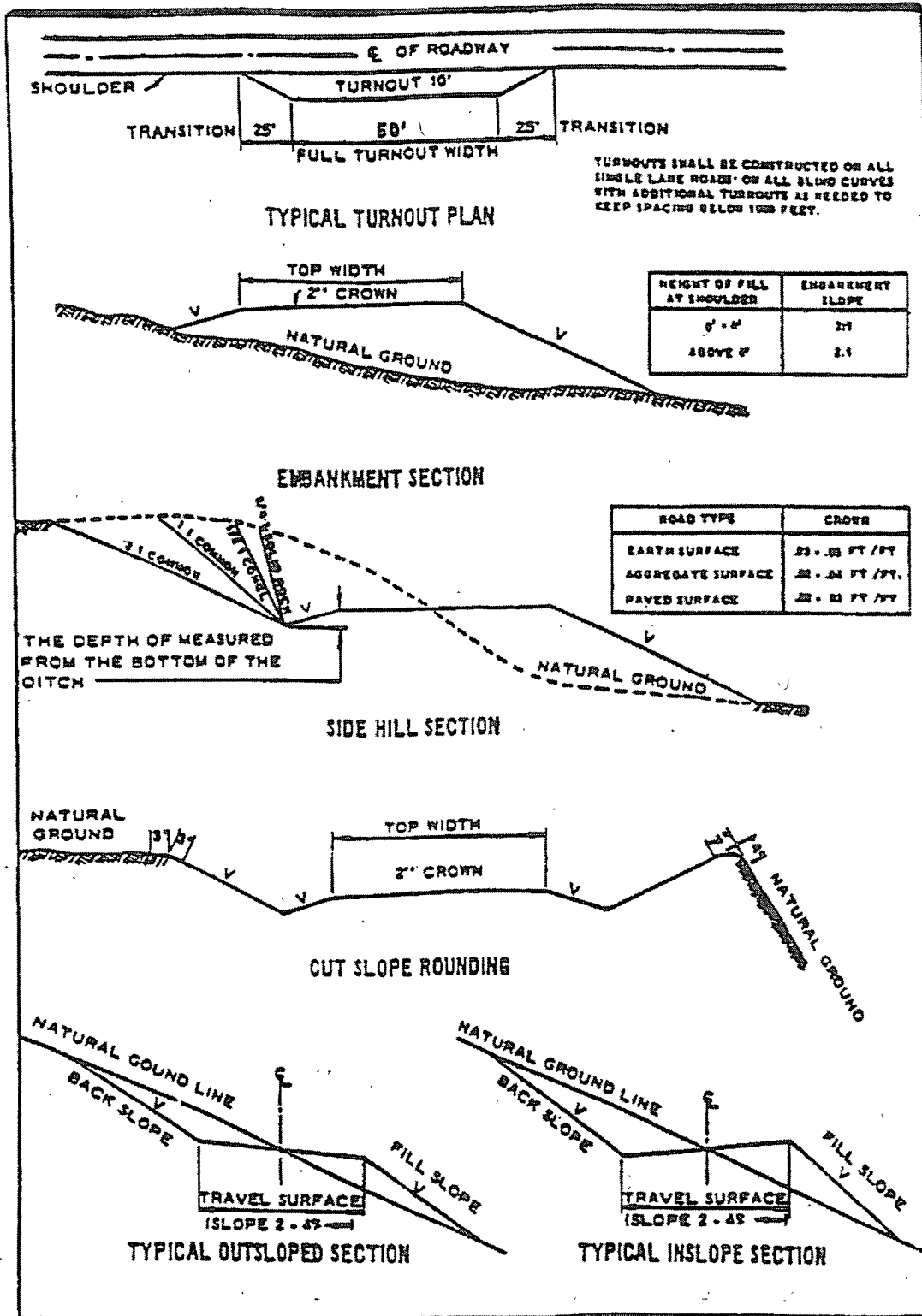
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 2 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

- 1. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. It has been reported in this township measuring 224-760 ppm in the gas stream and 4-20 ppm in STVs.**
- 2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

B. CASING

- 1. The **8-5/8** inch surface casing shall be set at **approximately 1150** feet and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement).
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial action will be done prior to drilling out that string.

High cave/karst.

Possible lost circulation in the Grayburg and San Andres.

2. The minimum required fill of cement behind the 5-1/2 inch production casing is:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Cement required to come to surface due to high cave/karst.**

3. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. The appropriate BLM office shall be notified a minimum of 2 hours in advance for a representative to witness the tests.
 - a. The tests shall be done by an independent service company.
 - b. The results of the test shall be reported to the appropriate BLM office.
 - c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
 - d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.
 - e. **No variance is given on BOP tests when two casing strings are used.**

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

Engineer on call phone (after hours): Carlsbad: (575) 706-2779

WWI 112007

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Containment Structures

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color
Shale Green, Munsell Soil Color Chart # 5Y 4/2

IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

At the time reserve pits are to be reclaimed, operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

B. RESERVE PIT CLOSURE

The reserve pit, when dried and closed, shall be recontoured, all trash removed, and reseeded as follows:

Seed Mixture 3, for Shallow Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorised officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass (<i>Setaria magrostachya</i>)	1.0
Green Spangletop (<i>Leptochloa dubia</i>)	2.0
Side oats Grama (<i>Bouteloua curtipendula</i>)	5.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

(Insert Seed Mixture Here)

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.