

7015  
OCD-ARTESIA

OCT 01 2008

ATS-08-1016

OCD-ARTESIA

Form 3160-3  
(February 2005)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFORM APPROVED  
OMB No 1004-0137  
Expires March 31, 2007

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NM-004986</b>
1b. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator <b>Devon Energy Production Co., LP</b>		7. If Unit or CA Agreement, Name and No
3a. Address <b>20 North Broadway OKC, OK 73102</b>		8. Lease Name and Well No. <b>Pacheco 31 Fed Com 9</b>
3b. Phone No. (include area code) <b>(405)-552-7802</b>		9. API Well No. <b>30.015.36676</b>
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface <b>NENW 660' FNL &amp; 1650' FWL</b> At proposed prod zone <b>NENW 660' FNL &amp; 1650' FWL</b> <b>Capitan Controlled Water Basin</b>		10. Field and Pool, or Exploratory <b>Angel Ranch; Atoka - Morrow</b>
11. Sec, T, R, M or Blk and Survey or Area <b>Sec 31 T19S-R28E</b>		12. County or Parish <b>Eddy</b>
13. State <b>NM</b>		14. Distance in miles and direction from nearest town or post office* <b>Approximately 15 miles north of Carlsbad, NM.</b>
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) <b>660'</b>	16. No. of acres in lease <b>331.60</b>	17. Spacing Unit dedicated to this well <b>331.60</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft <b>661'</b>	19. Proposed Depth <b>11,100'</b>	20. BLM/BIA Bond No. on file <b>CO-1104</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc) <b>3409' GL</b>	22. Approximate date work will start* <b>09/15/2008</b>	23. Estimated duration <b>45 days</b>

## 24. Attachments

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

- |  |   |
|--|---|
| 1 Well plat certified by a registered surveyor   | 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2 A Drilling Plan  | 5 Operator certification  |
| 3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the BLM            |

25. Signature 	Name (Printed/Typed) <b>Stephanie A. Ysasaga</b>	Date <b>08/28/2008</b>
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Title  
**Sr. Staff Engineering Technician**

Approved by (Signature) <b>/s/ Don Peterson</b>	Name (Printed/Typed) <b>/s/ Don Peterson</b>	Date <b>SEP 29 2008</b>
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Title  
**FIELD MANAGER**Office  
**CARLSBAD FIELD OFFICE**

Application 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

APPROVAL FOR TWO YEARS

Title  
Stat  
\* (1) Pits must be registered, operated, maintained and closed per 19.15.17 [NMAC]

crime for any person knowingly and willfully to make to any department or agency of the United States to any matter within its jurisdiction

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number <b>30.015.36676</b>	Pool Code <b>70310</b>	Pool Name <b>ANGELL RANCH; ATOKA - MORROW</b>
Property Code <b>36704</b>	Property Name <b>PACHECO "31" FED' COM</b>	Well Number <b>9</b>
OGRID No. <b>6137</b>	Operator Name <b>DEVON ENERGY PRODUCTION COMPANY LP</b>	Elevation <b>3409'</b>

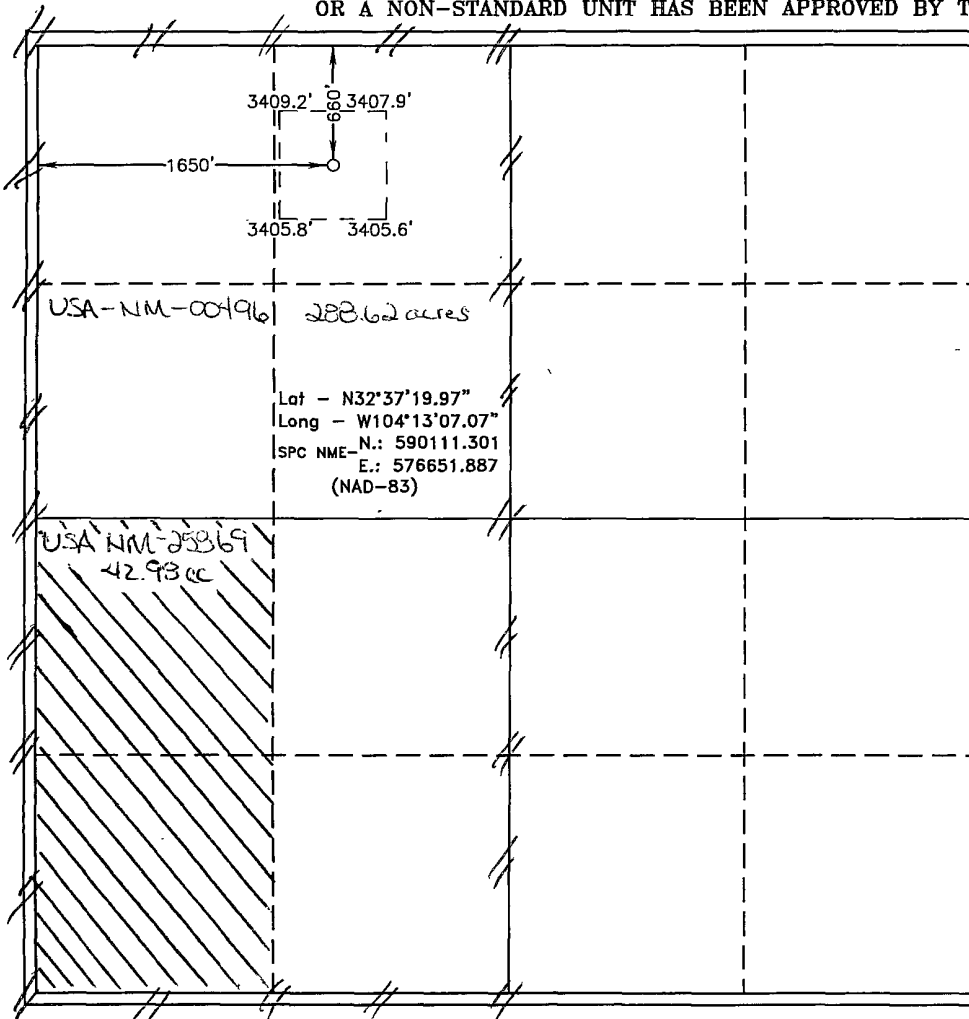
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	31	19 S	28 E		660	NORTH	1650	WEST	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 <b>331.60</b>	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



OPERATOR CERTIFICATION

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 to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

*[Signature]* 08/27/08  
Signature Date  
**STEPHANIE A. YSASAGA**  
Printed Name

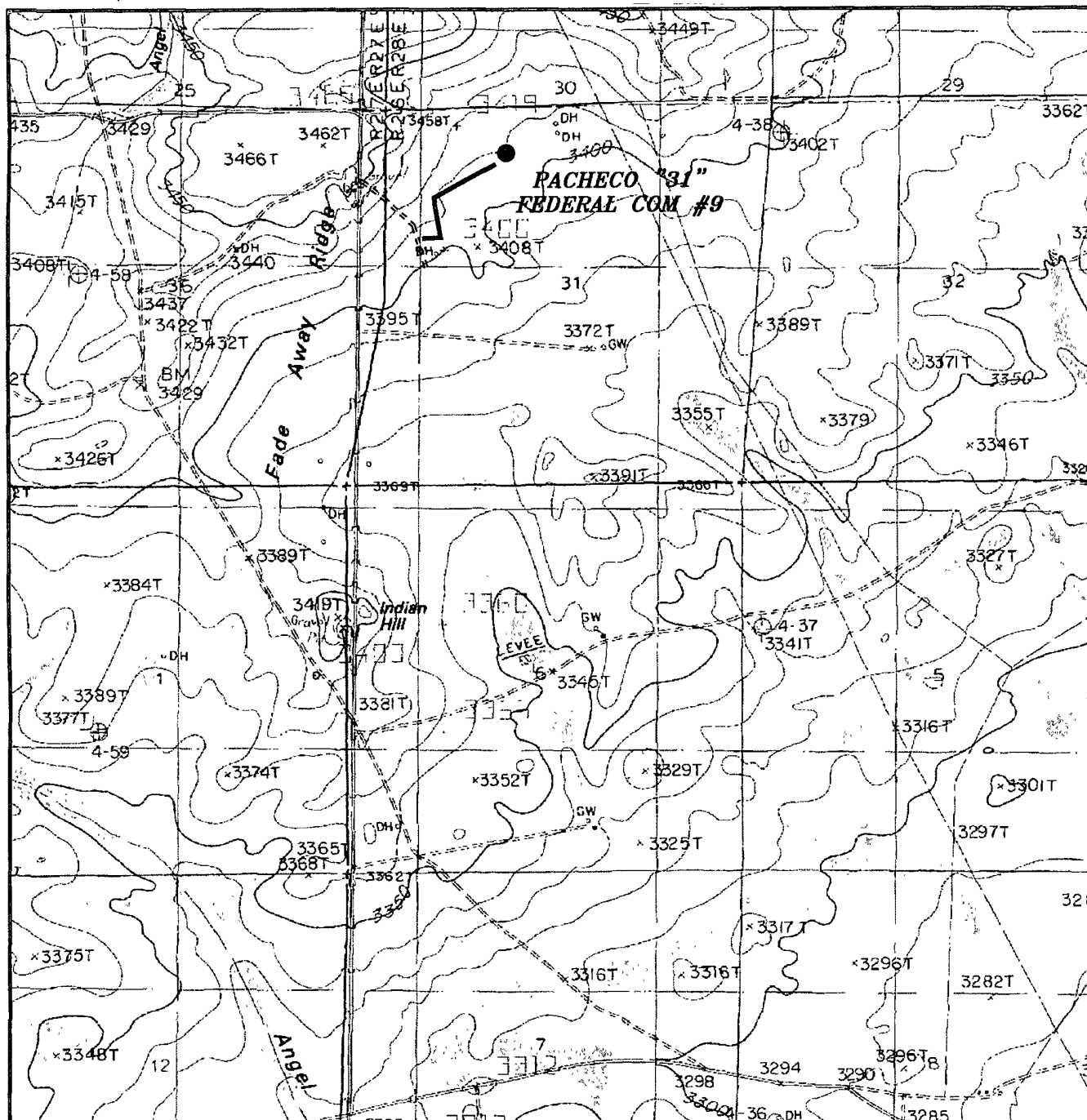
SURVEYOR CERTIFICATION

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.

AUGUST 11, 2008

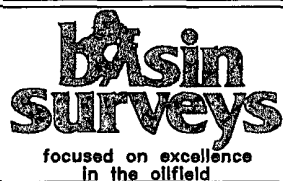
Date Surveyed  
Signature *[Signature]*  
Professional Surveyor  
No. 26235  
Certificate No. Gary L. Jones 7977

BASIN SURVEYS



# **PACHECO "31" FEDERAL COM #9**

Located at 660' FNL AND 1650' FWL  
 Section 31, Township 19 South, Range 28 East,  
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
[basinsurveys.com](http://basinsurveys.com)

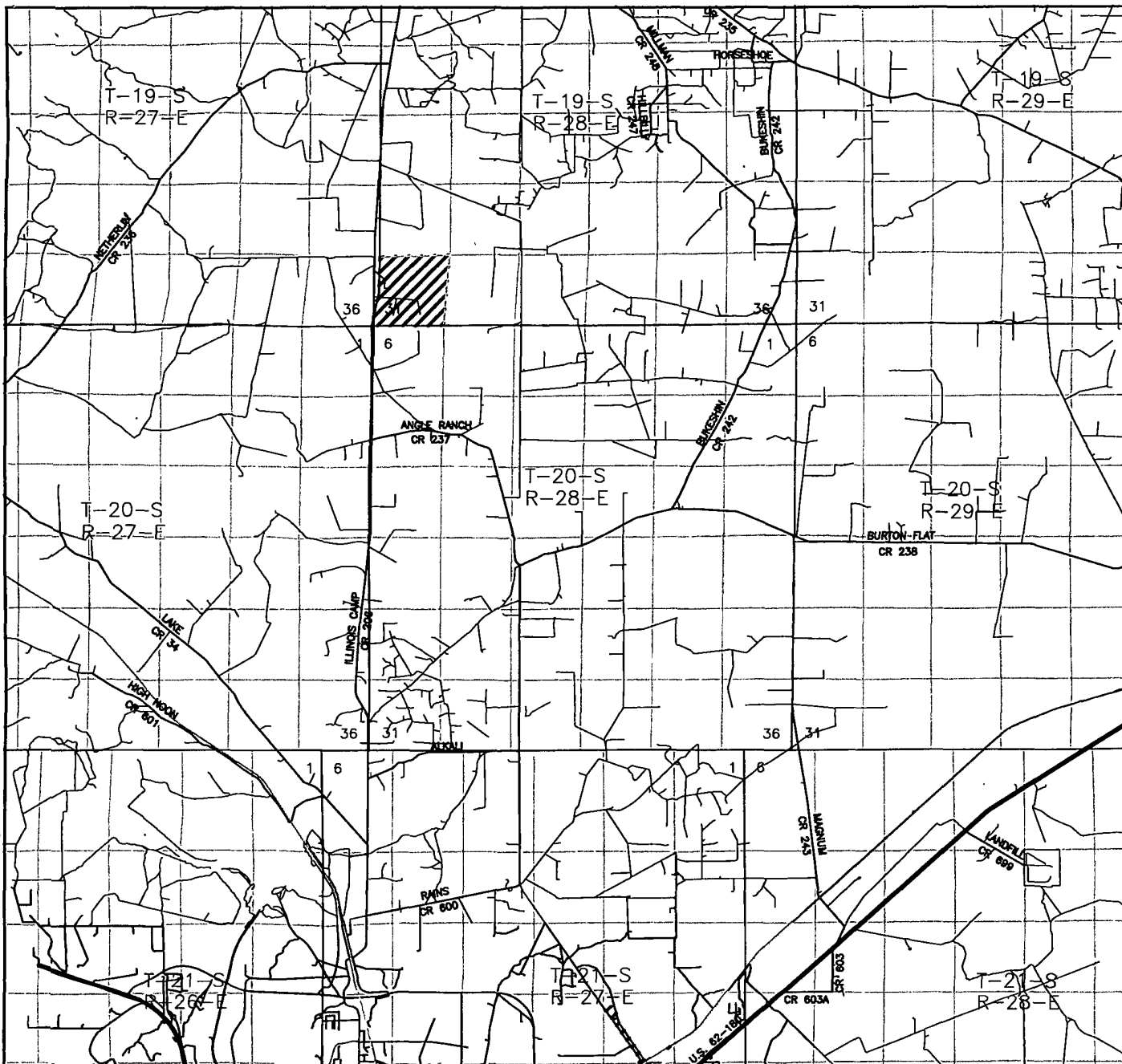
W.O. Number: JMS 20265

Survey Date: 08-11-2008

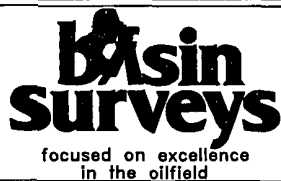
Scale: 1" = 2000'

Date: 08-13-2008

**DEVON ENERGY  
 PROD. CO., L.P.**



PACHECO "31" FEDERAL COM #9  
 Located at 660' FNL AND 1650' FWL  
 Section 31, Township 19 South, Range 28 East,  
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
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 basinsurveys.com

W.O. Number: JMS 20265

Survey Date: 08-11-2008

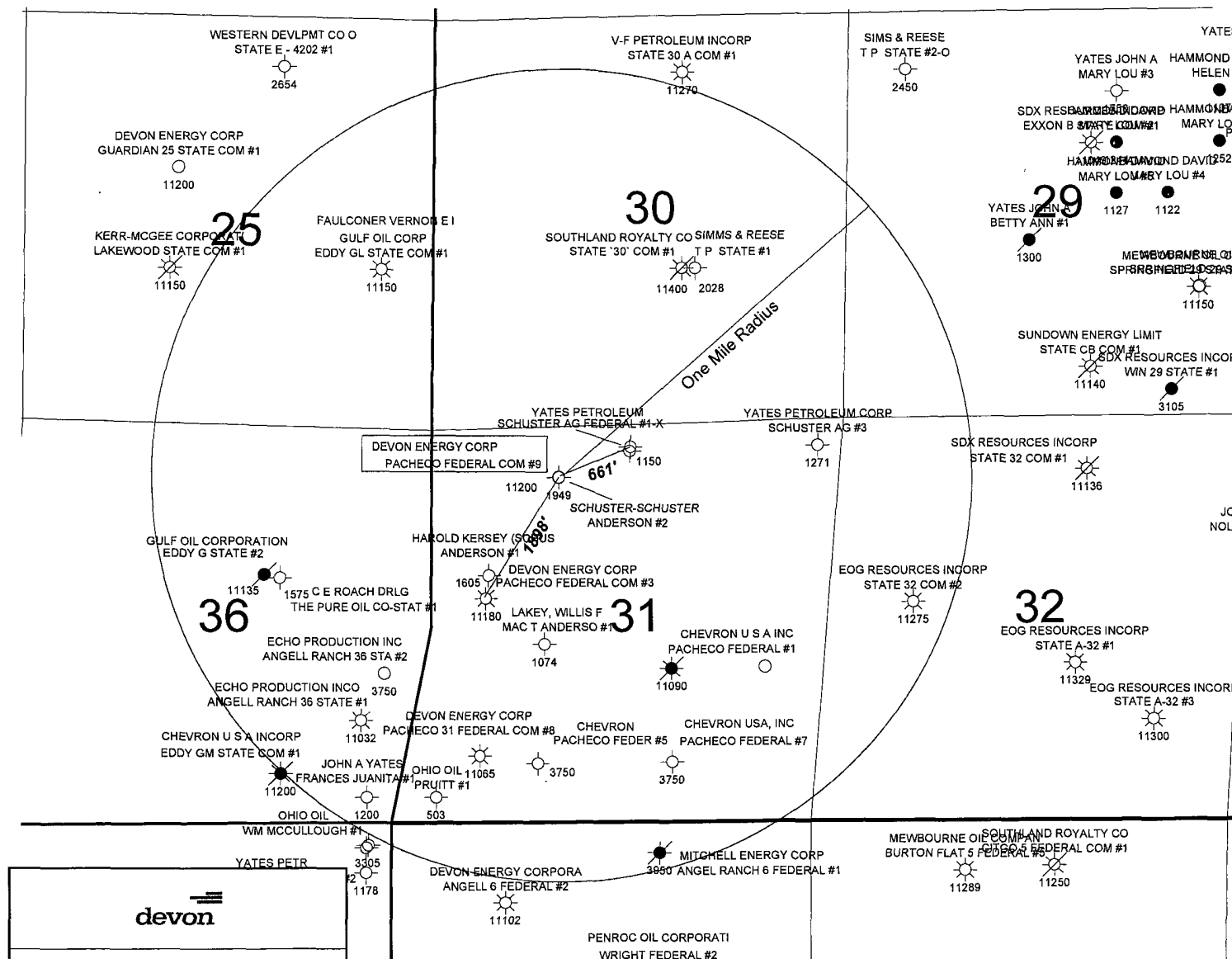
Scale: 1" = 2 MILES

Date: 08-13-2008

DEVON ENERGY  
 PROD. CO., L.P.

# Well Status

- 2GAS
- D&A
- D&A-G
- D&A-O
- D&A-OG
- D&AW
- D&AWG
- D&AWO
- J&A
- P&A
- D&AWOG
- SERVICE
- SERW
- W-INJ
- W-INJW
- GAS
- GAS-WO
- INA-GAS
- INA-OIL
- INJ
- J&AW
- LOC
- OIL
- OIL-WO
- SUS
- TA
- TAW
- TA-G
- TA-O
- TA-OG

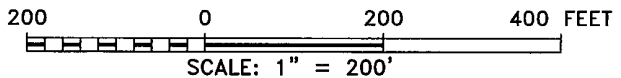
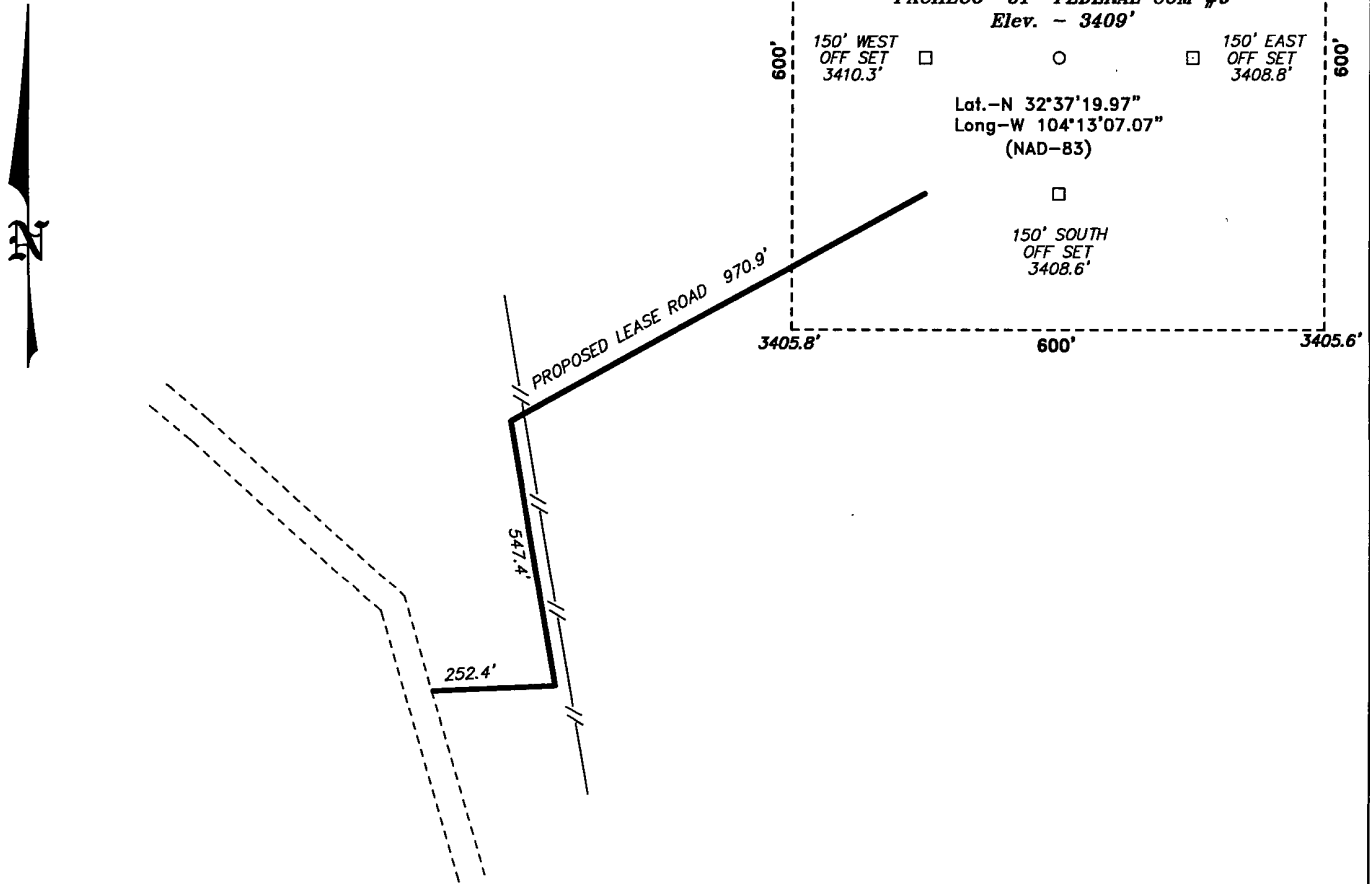


devon

SENM Morrow/Strawn Project  
Angell Ranch Prospect  
Devon Pacheco 31 Fed Com 9

Author CDM	Date 24 August 2008
Pacheco 31 Fed Com 9 One Mile Radius map	Scale 1" = 4000'

SECTION 31, TOWNSHIP 19 SOUTH, RANGE 28 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF ANGLE RANCH ROAD (237)  
AND ILLINOIS CAMP (206), GO NORTH 2.3 MILES TO  
LEASE ROAD, ON LEASE ROAD GO SOUTHEAST 0.2  
MILES TO PROPOSED LEASE ROAD.

**BASIN SURVEYS** P.O. BOX 1786-HOBBS, NEW MEXICO

W.O. Number: 20265 Drawn By: J. M. SMALL

Date: 08-13-2008 Disk: 20265 JMS

**DEVON ENERGY PROD. CO., L.P.**

REF: PACHECO "31" FEDERAL COM #9 / WELL PAD TOPO

THE PACHECO "31" FEDERAL COM #9 LOCATED 660'  
FROM THE NORTH LINE AND 1650' FROM THE WEST LINE OF  
SECTION 31, TOWNSHIP 19 SOUTH, RANGE 28 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 08-11-2008 Sheet 1 of 1 Sheets

## DRILLING PROGRAM

Devon Energy Production Company, LP

### **Pacheco 31 Fed Com 9**

Surface Location: 660' FNL & 1650' FWL, Unit C, Sec 31 T19S R28E, Eddy, NM

Bottom hole Location: 660' FNL & 1650' FWL, Unit C, Sec 31 T19S R28E, Eddy, NM

#### **1. Geologic Name of Surface Formation**

a. Quaternary

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

a. Yates/Seven Rivers	1050'	Oil
b. Queen	1550'	
c. San Andres	1650'	
d. Delaware	2725'	Oil
e. Bone Spring Lime	3880'	Oil
f. 3 <sup>rd</sup> Bone Spring Lime	7100'	Oil
g. 3 <sup>rd</sup> Bone Spring Ss	8050'	Oil
h. Wolfcamp	8540'	Oil
i. Upper Penn	9050'	Oil
j. Canyon	9250'	Gas/Oil
k. Strawn	9775'	Gas/Oil
l. Atoka	10200'	Gas
m. Morrow	10525'	Gas
n. Middle Morrow Lime	10650'	Gas
o. Lower Morrow	10800'	Gas
p. Barnett Shale	10980'	
q. Total Depth	11100'	

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 13 3/8" casing at 400' and circulating cement back to surface. Fresh water sands will be protected by setting 9 5/8" casing at 2850' and circulating cement to surface. The Morrow intervals will be isolated by setting 5 1/2" casing to total depth and circulating cement above the base of the 9 5/8" casing.

#### **3. Casing Program:**

<u>Hole Size</u>	<u>Hole Interval</u>	<u>OD Csg</u>	<u>Casing Interval</u>	<u>Weight</u>	<u>Collar</u>	<u>Grade</u>
17 1/2"	0' - 400'	13 3/8"	0'-400'	48#/ft	ST&C	H-40
12 1/4"	400'-2850'	9 5/8"	0-2850'	40#/ft	LT&C	J-55
8 3/4"	2850'- 11100'	5 1/2"	0'-11100'	17#/ft	LT&C	HCP-110

**Design Parameter Factors:**

<u>Casing Size</u>	<u>Collapse Design</u>	<u>Burst Design</u>	<u>Tension Design</u>
	<u>Factor</u>	<u>Factor</u>	<u>Factor</u>
13 3/8"	3.56	4.33	16.78
9 5/8"	1.74	1.39	4.56
5 1/2"	1.35	1.68	2.36

**4. Cement Program:**

a. 13 3/8" Surface

← see COA (Lead Slurry)  
**Cement Lead Slurry:** 345 sacks Premium Plus C Cement + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 4% bwoc Bentonite + 81.4% Fresh Water; **Yield:** 1.75 cf/sack. **Tail Slurry:** 200 sacks Class C Cement + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 56.3% Fresh Water; **Yield:** 1.35 cf/sack. **Displacement:** 56.9 bbls Mud @ 9.0 ppg. TOC to surface.

b. 9 5/8" Intermediate

**Cement Lead Slurry:** 700 sacks (35:65) Poz (Fly Ash): Premium Plus C Cement + 5% bwow Sodium chloride + 0.125 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 6% bwoc bentonite + 95.8% Fresh Water; **Yield:** 1.95 cf/sack. **Tail Slurry:** 250 sacks (60:40) Poz (Fly Ash): Premium Plus C Cement + 5% bwow Sodium chloride + 0.5% bwoc sodium Metasilicate + 4% bwoc MPA-5 + 64.8% Fresh Water; **Yield:** 1.37 cf/sack. **Displacement:** 204.04 bbls Mud @ 9.5 ppg. TOC to surface.

c. 5 1/2" Production

**Cement with Stage 1:**

**Cement Slurry:** 1000 sacks (15:61:11) Poz (Fly Ash): Premium Plus C Cement: CSE-2 + 0.3% bwoc R-3 + 1% bwow Potassium Chloride + 0.75% bwoc EC-1 + 0.125 lbs/sack Cello Flake + 0.4% bwoc CD-32 + 3 lbs/sack LCM-1 + 0.6% bwoc FL-25 + 0.6 bwoc FL-52A + 72.3% Fresh Water; **Yield:** 1.57 cf/sack. **Displacement:** 256.2 bbls Displacement Fluid.

**Stage 2**

**Lead Slurry:** 715 sacks (35:65) Poz (Fly Ash): Class H Cement + 0.125 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 6% bwoc bentonite + 0.4% bwoc FL-52A + 99.3% Fresh water; **Yield:** 1.95 cf/sack. **Tail Slurry:** 515 sacks (60:40) Poz (Fly Ash): Class H Cement + 1% bwow Sodium Chloride + 0.75% bwoc BA-10 + 0.1% woc R-3 + 2 lbs/sack Kol Seal + 4% bwoc MPA-1 + 0.125 lbs/sack Cello Flake + 61.3% Fresh Water; **Yield:** 1.34 cf/sack. **Displacement:** 197.6 bbls Displacement Fluid . DV tool @ 8000'. TOC @ 2350'.

← see COA



The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately 500' above the 9 5/8" casing shoe. All casing is new and API approved.

5. **Pressure Control Equipment:**

The blowout preventor equipment (BOP) shown in Exhibit #1 will consist of a (5M system) double ram type (5000 psi WP) preventor and a bag-type (Hydril) preventor (5000 psi WP) and rotating head. Both units will be hydraulically operated and the ram type preventor will be equipped with blind rams on top and 4 1/2" drill pipe rams on bottom. An annular and rotating head will be installed on the 13 3/8" surface casing and utilized to setting depth of the 9 5/8" intermediate casing. The annular and associated equipment will be tested to **1000 psi with the rig pump before drilling out the 13-3/8" casing shoe.** The BOPE will be installed on the 9 5/8" intermediate casing and utilized continuously until total depth is reached. Prior to drilling out the 9-5/8" casing shoe, the BOP's and Hydril will be tested as per BLM Drilling Operations Order #2.

Pipe rams will be operated 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 drillers log. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines and choke manifold having 5000 psi WP rating.

6. **Proposed Mud Circulation System**

<u>Depth</u>	<u>Mud Wt.</u>	<u>Visc</u>	<u>Fluid Loss</u>	<u>Type System</u>
0' – 400'	8.6-9.4	32-34	NC	Fresh Water-Gel/Lime
400' – 2850'	10	28	NC	Fresh Water
2850' – 9600'	8.6–10	28	NC	Cut Brine
9600' -11100'	9.4-10.8	32-40	6-10cc	Brine/Brine/Polymer

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

7. **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 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

8. **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      Dual Laterolog-Micro Laterolog with SP and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.



Well name:

**Pacheco Fed Com #9**Operator: **Devon Energy**String type: **Surface**Location: **Section 31-19S-28E Eddy Co., NM****Design parameters:****Collapse**Mud weight: 10.000 ppg  
Design is based on evacuated pipe.**Minimum design factors:****Collapse:**

Design factor 1.100

**Burst:**

Design factor 1.25

**Environment:**H2S considered? No  
Surface temperature: 75 °F  
Bottom hole temperature: 79 °F  
Temperature gradient: 0.90 °F/100ft  
Minimum section length: 350 ft  
Minimum Drift: 1.000 in**Burst**Max anticipated surface  
pressure: 352 psi  
Internal gradient: 0.120 psi/ft  
Calculated BHP 400 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: 1.60 (B)Tension is based on air weight.  
Neutral point: 341 ft

Non-directional string.

**Re subsequent strings:**Next setting depth: 2,850 ft  
Next mud weight: 10.000 ppg  
Next setting BHP: 1,481 psi  
Fracture mud wt: 19.250 ppg  
Fracture depth: 400 ft  
Injection pressure 400 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)	Est. Cost (\$)
1	400	13.375	48.00	H-40	ST&C	400	400	12.59	13071
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	208	740	3.56	400	1730	4.33	19.2	322	16.78 J

Prepared Don Jennings  
by: Devon EnergyDate: July 29, 2008  
Oklahoma City, Oklahoma**Remarks:**Collapse is based on a vertical depth of 400 ft, a mud weight of 10 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:	<b>Pacheco Fed Com #9</b>
Operator:	<b>Devon Energy</b>
String type:	<b>Intermediate</b>
Location:	<b>Section 31-19S-28E Eddy Co., NM</b>

**Design parameters:**
**Collapse**

Mud weight: 10.000 ppg  
Design is based on evacuated pipe.

**Minimum design factors:**
**Collapse:**

Design factor 1.100

**Burst:**

Design factor 1.25

**Environment:**

H2S considered? No  
Surface temperature: 75 °F  
Bottom hole temperature: 101 °F  
Temperature gradient: 0.90 °F/100ft  
Minimum section length: 350 ft  
Minimum Drift: 7.875 in

**Burst**

Max anticipated surface pressure: 2,508 psi  
Internal gradient: 0.120 psi/ft  
Calculated BHP 2,850 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: 1.60 (B)

Tension is based on air weight.  
Neutral point: 2,426 ft

Non-directional string.

**Re subsequent strings:**

Next setting depth: 11,100 ft  
Next mud weight: 11.000 ppg  
Next setting BHP: 6,343 psi  
Fracture mud wt: 19.250 ppg  
Fracture depth: 2,850 ft  
Injection pressure 2,850 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)	Est. Cost (\$)
1	2850	9.625	40.00	J-55	LT&C	2850	2850	8.75	68186

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	1481	2570	1.74	2850	3950	1.39	114	520	4.56 J

Prepared Don Jennings  
by: Devon Energy

Date: July 29,2008  
Oklahoma City, Oklahoma

**Remarks:**

Collapse is based on a vertical depth of 2850 ft, a mud weight of 10 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:

**Pacheco Fed Com #9**Operator: **Devon Energy**String type: **Production**Location: **Section 31-19S-28E Eddy Co., NM****Design parameters:****Collapse**Mud weight: 11.000 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: 180 °F  
Temperature gradient: 0.95 °F/100ft  
Minimum section length: 350 ft**Burst**Max anticipated surface  
pressure: 5,011 psi  
Internal gradient: 0.120 psi/ft  
Calculated BHP 6,343 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: 1.60 (B)

Non-directional string.

Tension is based on air weight.

Neutral point: 9,248 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)	Est. Cost (\$)
1	11100	5.5	17.00	HCP-110	LT&C	11100	11100	4.767	192747
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	6343	8580	1.35	6343	10640	1.68	188.7	445	2.36 J

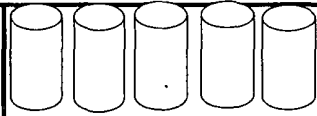
Prepared Don Jennings  
by: Devon EnergyDate: July 29, 2008  
Oklahoma City, Oklahoma**Remarks:**

Collapse is based on a vertical depth of 11100 ft, a mud weight of 11 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop &amp; Kemler method of biaxial correction for tension.

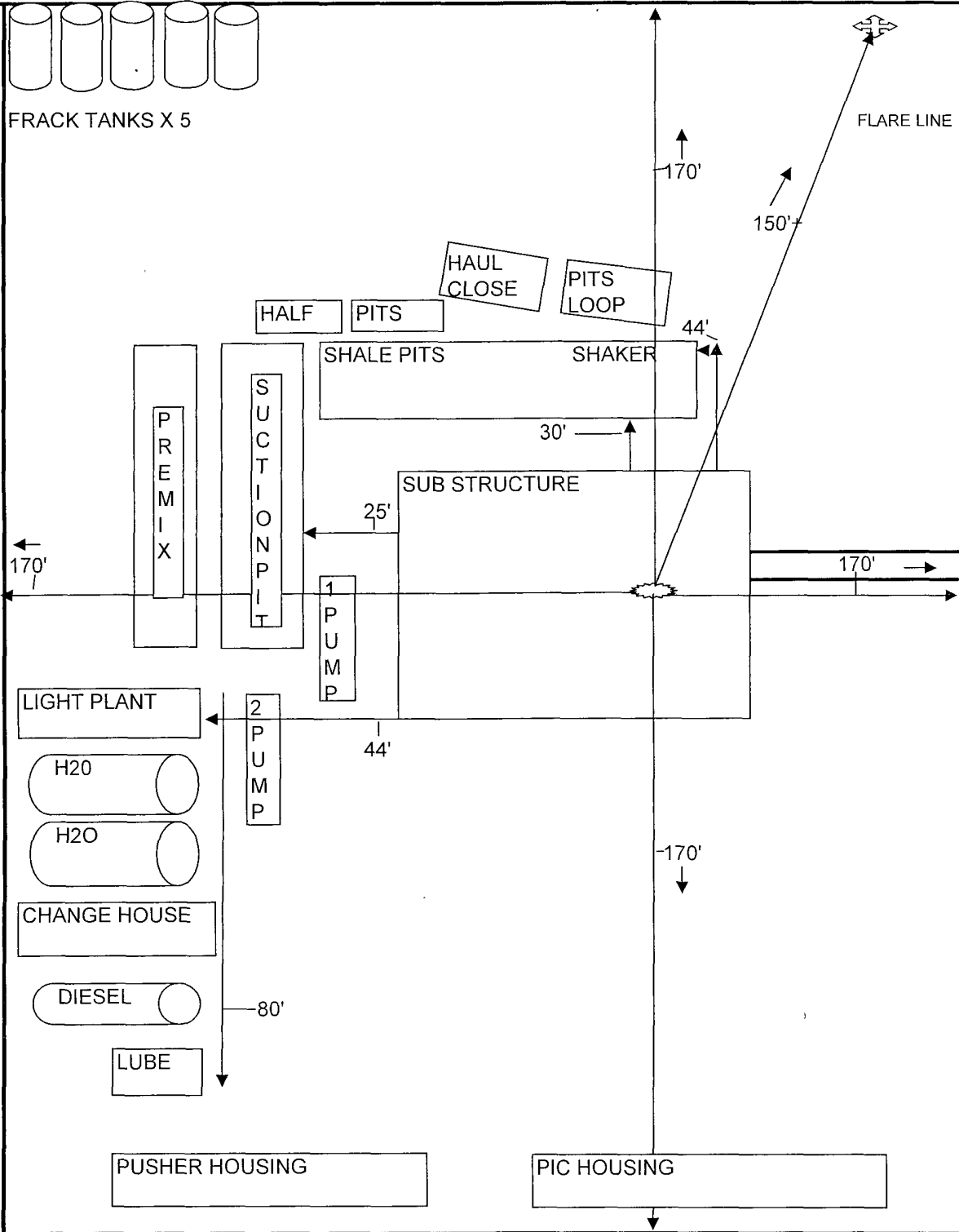
Burst strength is not adjusted for tension.

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

MCVAY RIG #7  
GENERAL RIG LAY OUT

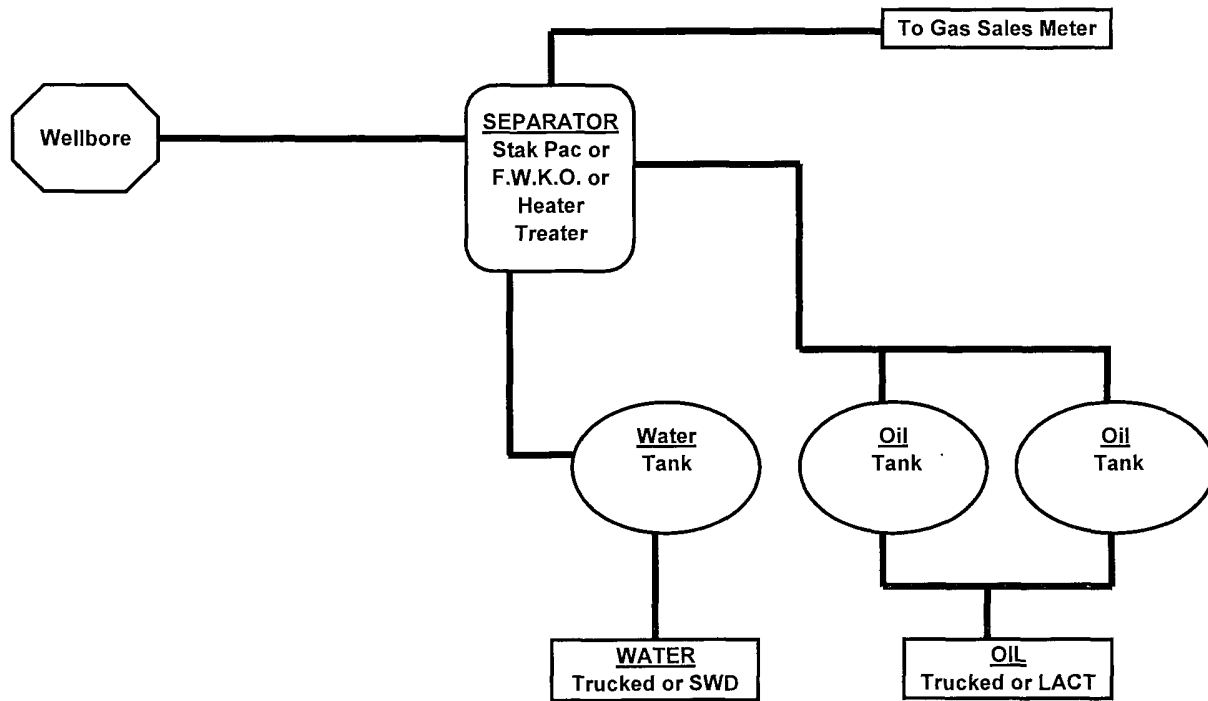


FRACK TANKS X 5

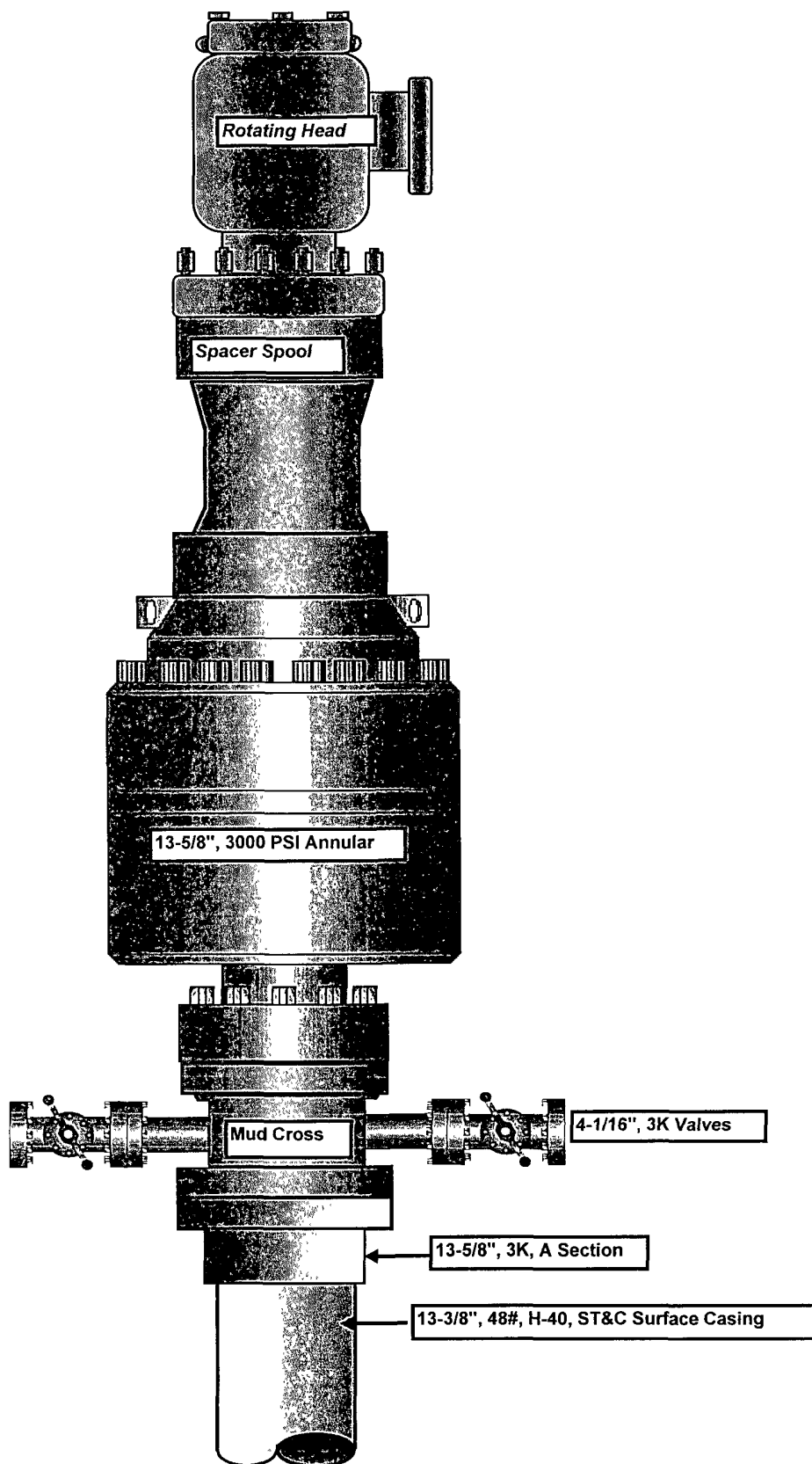


DEVON ENERGY PRODUCTION COMPANY LP

General Production Facilities Diagram

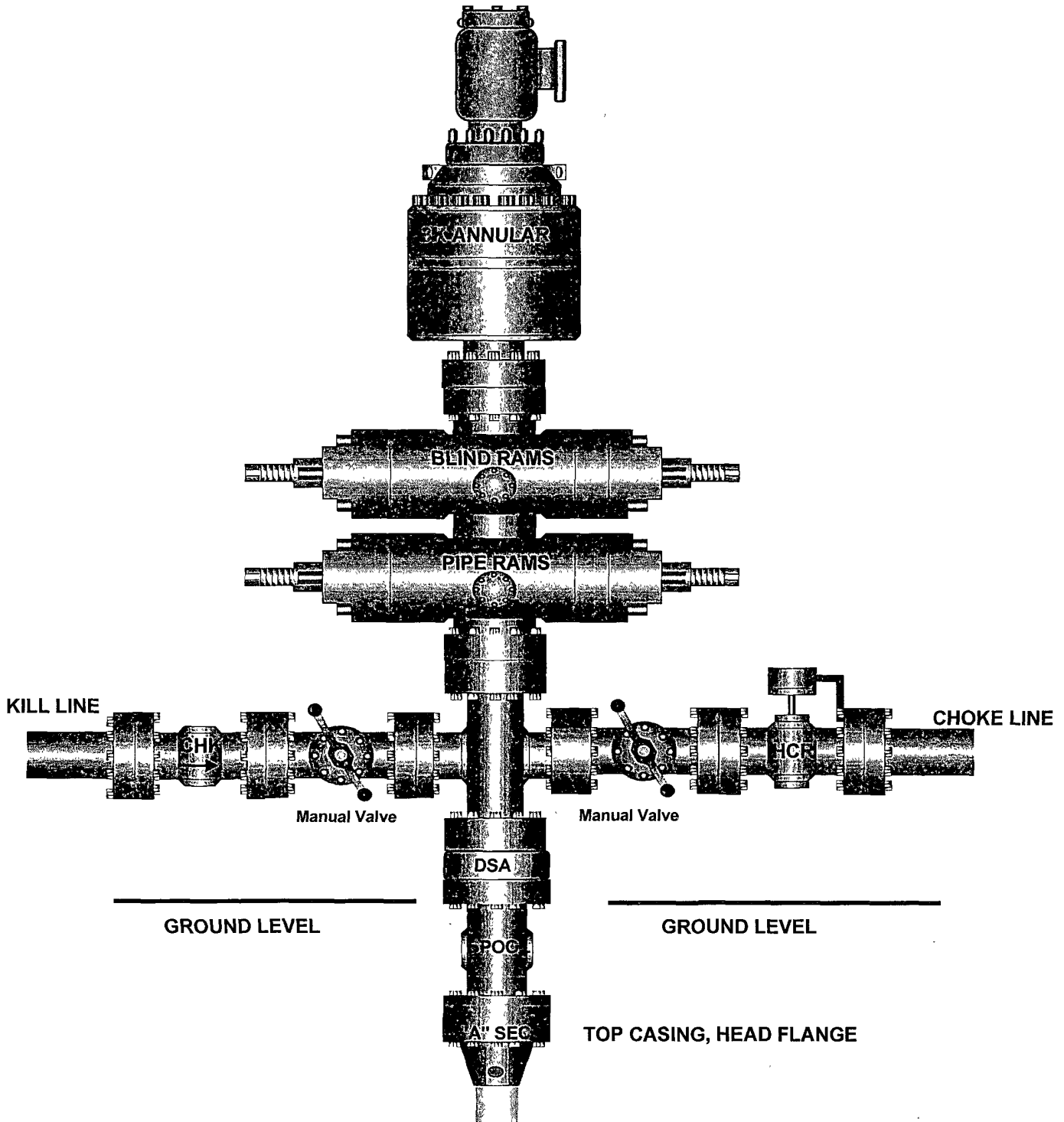


13-5/8" 3K Annular

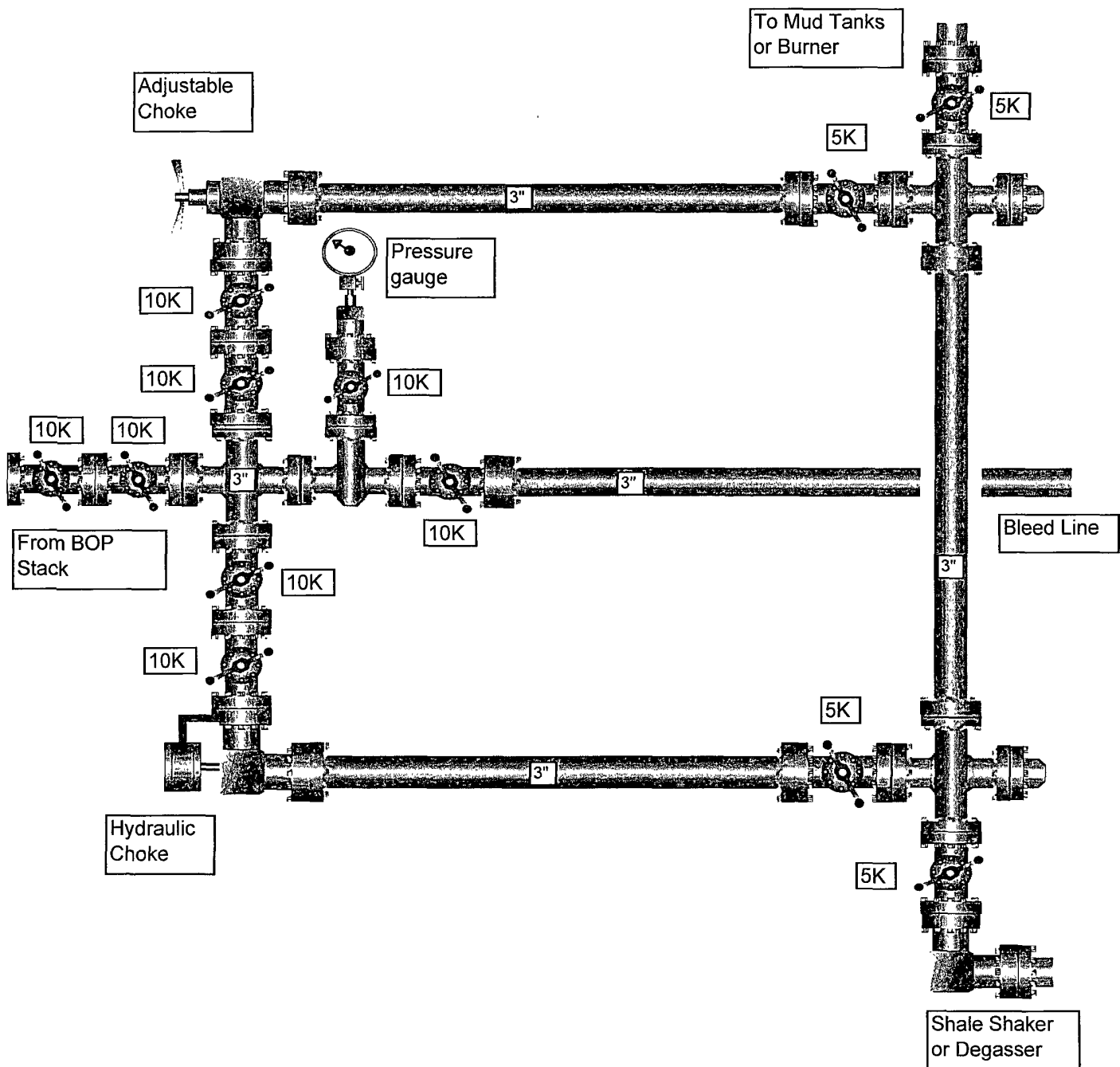




# 11" x 5,000 psi BOP Stack



# 10,000 PSI CHOKE MANIFOLD



Attachment to Exhibit #1  
NOTES REGARDING BLOWOUT PREVENTERS  
Devon Energy Production Company, LP

**Pacheco 31 Fed Com 9**

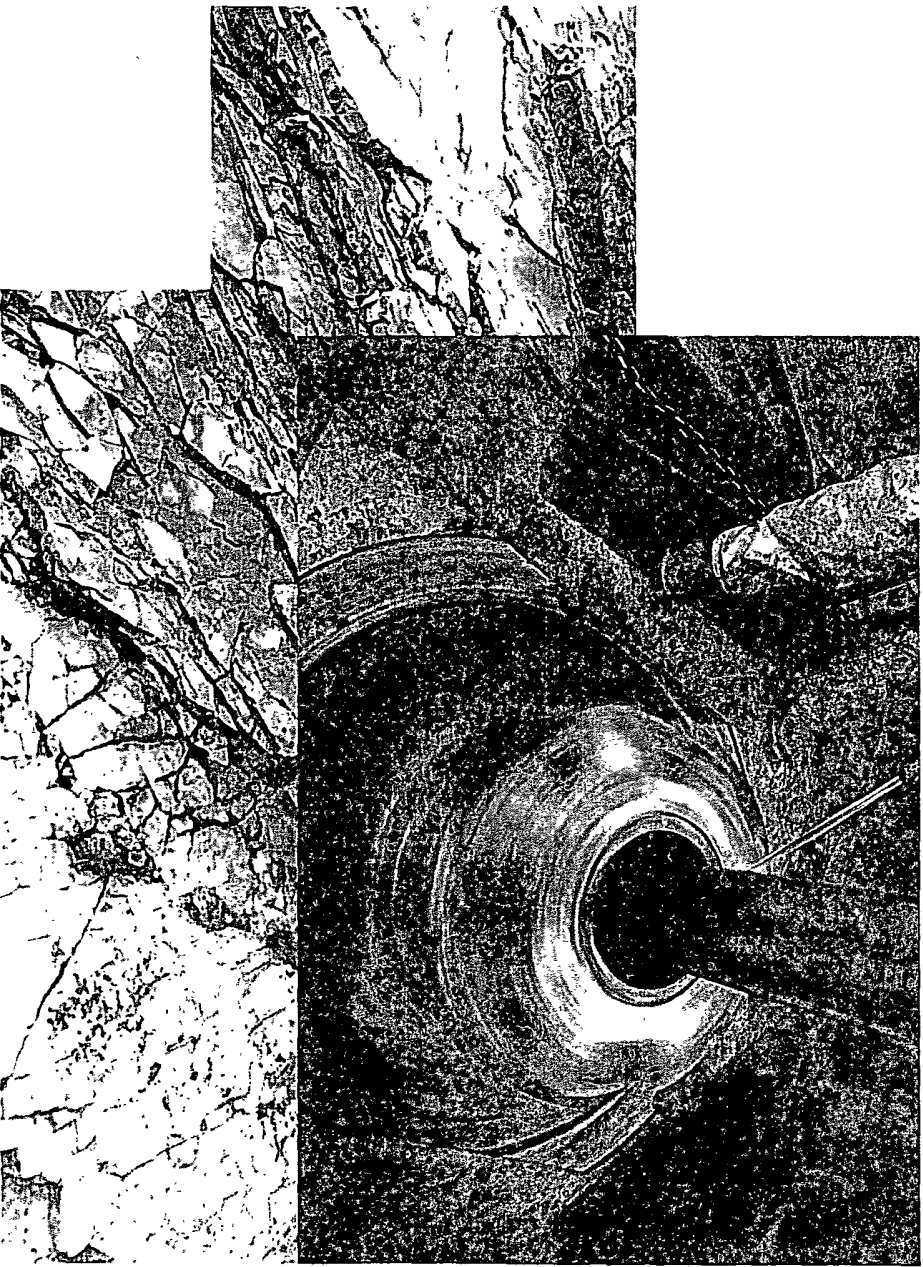
Surface Location: 660' FNL & 1650' FWL, Unit C, Sec 31 T19S R28E, Eddy, NM

Bottom hole Location: 660' FNL & 1650' FWL, Unit C, Sec 31 T19S R28E, Eddy, NM

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 preventer and all associated fittings will be in operable condition to withstand a minimum 5000 psi working pressure.
4. All fittings will be flanged.
5. A full bore safety valve tested to a minimum 5000 psi WP 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. Hydraulic floor control for blowout preventer will be located as near in proximity to driller's controls as possible.
11. All BOP equipment will meet API standards and include a minimum 40 gallon accumulator having two independent means of power to initiate closing operation.



Commitment Runs Deep



Design Plan  
Operation and Maintenance Plan  
Closure Plan

SENM - Closed Loop Systems  
June 2008

## **I. Design Plan**

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

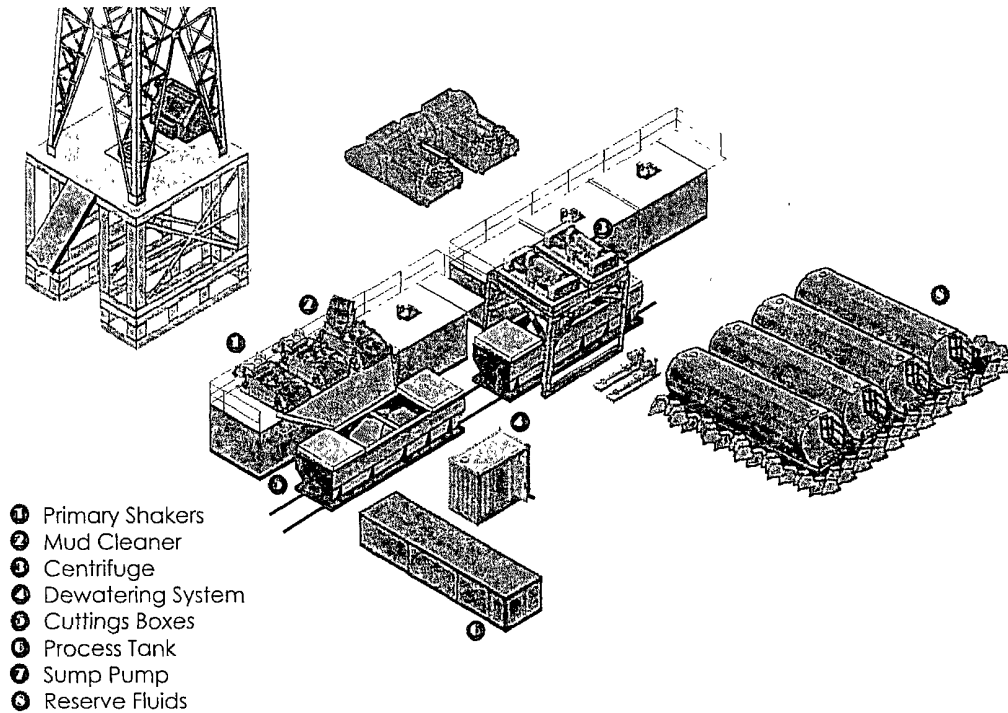
## **II. Operations and Maintenance Plan**

*Primary Shakers:* The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

**Mud Cleaner:** The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



## Closed Loop Schematic



**Centrifuges:** The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

**Dewatering System:** The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

*Cuttings Boxes:* Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

*Process Tank: (Optional)* The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

*Sump and Sump Pump:* The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

*Reserve Fluids (Tank Farm):* A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

### **III. Closure Plan**

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.



## **HYDROGEN SULFIDE DRILLING OPERATIONS PLAN**

1. All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:
  - a. Characteristics of H2S
  - b. Physical effects and hazards
  - c. Proper use of safety equipment and life support systems.
  - d. Principle and operation of H2S detectors, warning system and briefing areas
  - e. Evacuation procedures, routes and first aid.
  - f. Proper use of 30-minute pressure demand air pack.
2. H2S Detection and Alarm System
  - a. H2S detectors and audio alarm system to be located at bell nipple, end of blooie line (mud pit) and on derrick floor or doghouse.
3. Windsock and/or wind streamers
  - a. Windsock at mud pit area should be high enough to be visible
  - b. Windsock at briefing area should be high enough to be visible
  - c. There should be a windsock at entrance to location
4. Condition Flags and Signs
  - a. Warning Sign on access road to location
  - b. Flags to be displayed on sign at entrance to location. Green flag, normal safe condition. Yellow flag indicates potential pressure and danger. Red flag, danger, H2S present in dangerous concentration. Only emergency personnel admitted to location.
5. Well Control Equipment
  - a. See Exhibit "E" & "E-1"
6. Communication
  - a. While working under masks chalkboards will be used for communication.
  - b. Hand signals will be used where chalk board is inappropriate
  - c. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
7. Drill stem Testing
  - a. Exhausts will be watered
  - b. Flare line will be equipped with an electric igniter or a propane pilot light in case gas reaches the surface.
  - c. If the location is near to a dwelling a closed DST will be performed.
8. Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubular goods and other mechanical equipment.

If H2S is encountered, mud system will be altered if necessary to maintain control or formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

## Emergency Procedures

In the case of a release of gas containing H<sub>2</sub>S, the first responder(s) must isolate the area and prevent entry by other persons into the 100 ppm ROE. Additionally the first responder(s) must evacuate any public places encompassed by the 100 ppm ROE. First responder(s) must take care not to injure themselves during this operation. Company and/or local officials must be contacted to aid in this operation. Evacuation of the public should be beyond the 100 ppm ROE.

All responders must have training in the detection of H<sub>2</sub>S, measures for protection against the gas, equipment used for protection and emergency response. Additionally, responders must be equipped with H<sub>2</sub>S monitors and air packs in order to control the release. Use the "buddy system" to ensure no injuries during the response.

## Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

## Characteristics of H<sub>2</sub>S and SO<sub>2</sub>

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H <sub>2</sub> S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air = 1	2 ppm	N/A	1000 ppm

## Contacting Authorities

Devon Energy Corp. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Devon Energy Corp. Company response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

## Devon Energy Corp. Company Call List

<u>Artesia (575)</u>	<u>Cellular</u>	<u>Office</u>	<u>Home</u>
Foreman – BJ Cathey.....	390-5893 .....	748-0176 .....	887-6026
Asst. Foreman – Bobby Jones...	748-7447 .....	748-0176 .....	746-3194
Don Mayberry.....	748-7180 .....	748-5235 .....	746-4945
Montral Walker .....	(575) 390-5182 .	(575) 748-0193 .	
Linda Berryman.....	(575) 513-0534 .	(575) 748-0177 .	

### Agency Call List

<u>Lea</u>	<u>Hobbs</u>	
<u>County</u>	State Police.....	392-5588
<u>(505)</u>	City Police.....	397-9265
	Sheriff's Office.....	393-2515
	Ambulance.....	911
	Fire Department .....	397-9308
	LEPC (Local Emergency Planning Committee).....	393-2870
	NMOCD.....	393-6161
	US Bureau of Land Management.....	393-3612
<u>Eddy</u>	<u>Carlsbad</u>	
<u>County</u>	State Police .....	885-3137
<u>(505)</u>	City Police .....	885-2111
	Sheriff's Office .....	887-7551
	Ambulance.....	911
	Fire Department .....	885-2111
	LEPC (Local Emergency Planning Committee).....	887-3798
	US Bureau of Land Management .....	887-6544
	New Mexico Emergency Response Commission (Santa Fe)....	(575) 476-9600
	24 HR .....	(575) 827-9126
	National Emergency Response Center (Washington, DC) .....	(800) 424-8802

### Emergency Services

	Boots & Coots IWC .....	1-800-256-9688 or (281) 931-8884
	Cudd Pressure Control.....	(915) 699-0139 or (915) 563-3356
	Halliburton .....	(575) 746-2757
	B. J. Services.....	(575) 746-3569
<i>Give</i>	Flight For Life - Lubbock, TX .....	(806) 743-9911
<i>GPS</i>	Aerocare - Lubbock, TX .....	(806) 747-8923
<i>position:</i>	Med Flight Air Amb - Albuquerque, NM .....	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM .....	(575) 272-3115

**SURFACE USE PLAN**  
Devon Energy Production Company, LP  
**Pacheco 31 Fed Com 9**

Surface Location: 660' FNL & 1650' FWL, Unit C, Sec 31 T19S R28E, Eddy, NM  
Bottom hole Location: 660' FNL & 1650' FWL, Unit C, Sec 31 T19S R28E, Eddy, NM

**1. Existing Roads:**

- a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102. The well was staked by Basin Surveys.
- b. All roads into the location are depicted on Exhibit 3.
- c. Directions to Location: From the junction of angle ranch road (237) and Illinois Camp (206), go north 2.3 miles to lease road go southeast 0.2 miles to proposed lease road.

**2. New or Reconstructed Access Roads:**

- a. The well site layout, Form C-102 shows the existing County Road. Approximately 1770' of new access road will be constructed as follows:
- 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:**

1 Mile Radius Plat shows all existing and proposed wells within a one-mile radius of the proposed location. See attached plat.

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

- a. In the event the well is found productive, the Pacheco 31 Fed Com 9 tank battery would be utilized and the necessary production equipment will be installed at the well site. See Production Facilities Layout diagram.
- 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 D 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.
- f. If a pit or closed loop system is utilized Devon will comply with the NMOCD requirements 19.15.17 and submit form C-144 to the appropriate NMOCD District Office. Copy to be provided to the BLM; processing and approval by the OCD.

**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. Will close the pits 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, sagebush, 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.

Greg McGowen  
Operations Engineer Advisor

Don Mayberry  
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) 228-8965 (office)  
(405) 464-9769 (cell)

(505) 748-0164 (office)  
(505) 748-5235 (cell)

**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 28th day of August, 2008.

Printed Name: Stephanie A. Ysasaga

Signed Name: [Signature]

Position Title: Sr. Staff Engineering Technician

Address: 20 North Broadway, OKC OK 73102

Telephone: (405)-552-7802

Field Representative (if not above signatory): Don Mayberry (see above)

Address (if different from above):

Telephone (if different from above):

E-mail (optional):

# PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Co., LP
LEASE NO.:	NM4986
WELL NAME & NO.:	Pacheco 31 Fed Com #9
SURFACE HOLE FOOTAGE:	660' FNL & 1650' FWL
BOTTOM HOLE FOOTAGE:	Same
LOCATION:	Section 31, T. 19 S., R 28 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
- ☐ **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)**

### **Conditions of Approval Cave and Karst**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

#### **Cave/Karst Surface Mitigation**

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

##### **Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

##### **Closed Mud System Using Steel Tanks with All Fluids and Cuttings Hauled Off.**

A closed mud system using steel tanks for all cuttings and fluids is required. All fluids and cuttings will be hauled off site for disposal. No pits are allowed.

##### **Tank Battery Liners and Berms:**

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

##### **Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

##### **Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

#### **Cave/Karst Subsurface Mitigation**

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

##### **Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

##### **Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**

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

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

## **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**

The operator shall stockpile the topsoil of the well pad. The topsoil to be stripped is approximately 8 inches in depth. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

### **C. RESERVE PITS**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **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**

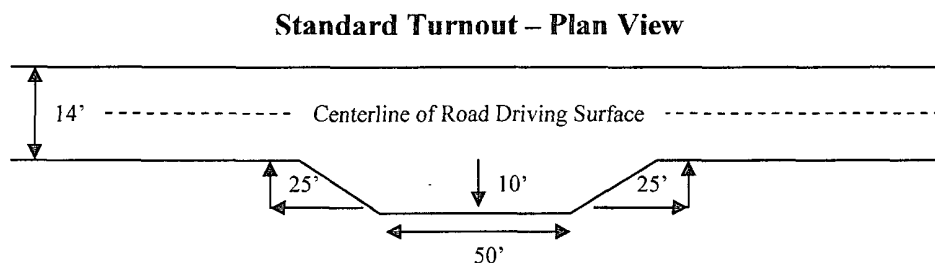
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

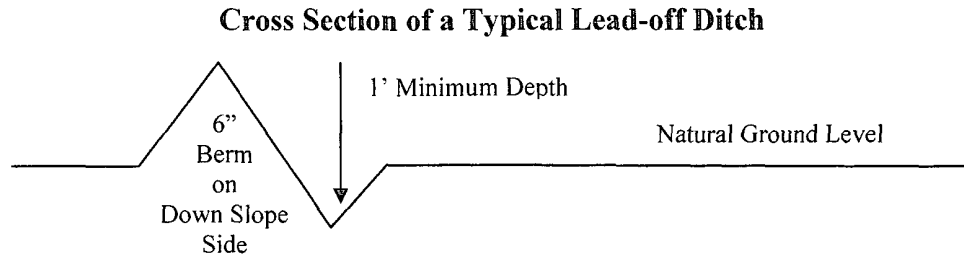
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



### **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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.



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**

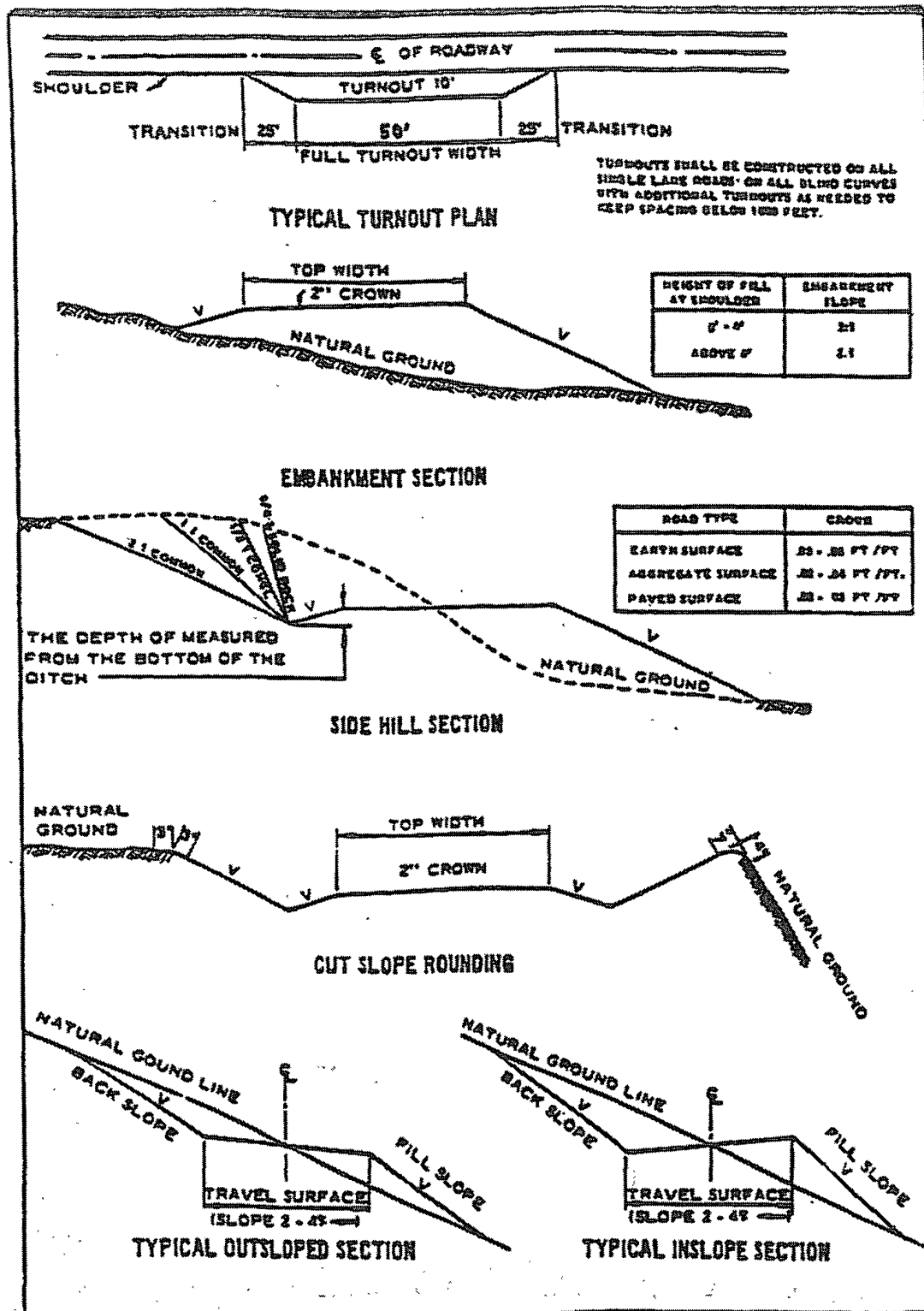
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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 4 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. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling into the **Yates** formation. **If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
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.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

### B. CASING

**Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**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 for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**High cave/karst.**

**Possible lost circulation in the Capitan Reef, Grayburg, San Andres, Delaware, and Bone Spring formations.**

**Possible high pressure gas bursts in the Wolfcamp formation and high pressure in the Pennsylvanian section.**

1. The 13-3/8 inch surface casing shall be set at approximately **400 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 is to include the lead cement slurry.**
  - 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 cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
  - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst concerns.**

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

**Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
  - a. First stage to DV tool, cement shall:
    - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office, before proceeding with second stage cement job.
  - b. Second stage above DV tool, cement shall:
    - ☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.
4. 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8"** intermediate casing shoe shall be **5000 (5M)** psi. **This to include the annular preventor.**
4. The appropriate BLM office shall be notified a minimum of 4 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. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.
- f. A variance to test the surface casing and BOP/BOPE (**entire system**) to the reduced pressure of **1000** psi with the rig pumps is approved.

#### **D. DRILLING MUD**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

#### **E. DRILL STEM TEST**

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

**WWI 092708**

## **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.

The 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.

## Seed Mixture 4, for Gypsum 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 authorized 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>
Alkali Sacaton ( <i>Sporobolus airoides</i> )	1.0
DWS <u>  </u> Four-wing saltbush ( <i>Atriplex canescens</i> )	5.0

  DWS: DeWinged Seed

\*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.