

MAR 03 2009

FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

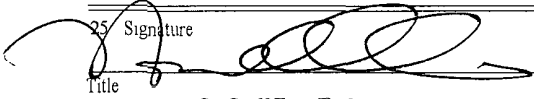
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work. <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. SL: NM103872 BHL: NM103873
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input 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 Devon Energy Production Company, LP		7. If Unit or CA Agreement, Name and No
3a. Address 20 North Broadway Oklahoma City, Oklahoma City 73102-8260	3b. Phone No (include area code) 405-552-8198	8. Lease Name and Well No. Shakespeare 20 Federal Com 4H
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 660 990 FNL & 750 FNL, NW/NW At proposed prod zone 990 FNL & 330 FEL, NE/NE		9. API Well No. 30-015-36984
10. Field and Pool, or Exploratory Wolfcamp Dog Canyon		11. Sec, T R M. or Blk and Survey or Area Sec 20, T16S R28E
14. Distance in miles and direction from nearest town or post office* Approximately 13 miles east of Artesia, NM		12. County or Parish Eddy County
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) 660'		13. State NM
16. No of acres in lease SL: 120 BHL: 40		17. Spacing Unit dedicated to this well 160 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft Surf: 1310' BHL: 1130'		20. BLM/BIA Bond No on file CO-1104
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 348' GL	22. Approximate date work will start* 02/01/2009	23. Estimated duration 50 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:

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

25. Signature 	Name (Printed/Typed) Norvella Adams	Date 12/22/2008
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Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) /s/ Don Peterson	Date FEB 27 2009
Title FOR 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.
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)

ROSWELL CONTROLLED WATER BASIN
SEE ATTACHED FOR
CONDITIONS OF APPROVALAPPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SUNDRY NOTICES AND REPORTS ON WELLS

OCD-ARTESIA

FORM APPROVED
OMB NO. 1004-0135
EXPIRES: NOVEMBER 30, 2000

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APL) for such proposals

SUBMIT IN TRIPLICATE

1a. Type of Well	<input checked="" type="checkbox"/> Oil Well	<input type="checkbox"/> Gas Well	<input type="checkbox"/> Other _____
2. Name of Operator	DEVON ENERGY PRODUCTION COMPANY, LP		
3. Address and Telephone No	20 North Broadway, Oklahoma City, OK 73102 405-552-8198		
4. Location of Well (Report location clearly and in accordance with Federal requirements)*	SL: 990 FNL & 750 FWL, NW/NW Section 20, T16S R28E Unit D BHL: 990 FNL & 330 FEL, NE/NE Section 20, T16S R28E Unit A		

5. Lease Serial No.	SL: NM103872 BHL: NM103873
6. If Indian, Allottee or Tribe Name	
7. Unit or CA Agreement Name and No.	
8. Well Name and No.	Shakespeare 20 Federal Com 4H
9. API Well No.	30-015
10. Field and Pool, or Exploratory	Wolfcamp
12. County or Parish	Eddy
13. State	NM

CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	


13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work and approximate duration thereof. If the proposal deepens directionally or recompletes horizontally, give subsurface location and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirement, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection)

Devon Energy Production Company, LP respectfully requests approval to change the surface location of this well to avoid archaeological sites.

Old Surface Location: 900 FNL & 750 FWL

New Surface Location: 660 FNL & 1050 FWL

14. I hereby certify that the foregoing is true and correct

Signed  Name Norvella Adams
Title Sr. Staff Engineering Technician Date 1/6/2009

(This space for Federal or State Office use)

Approved by /s/ Don Peterson FOR FIELD MANAGER Date FEB 27 2009
Conditions of approval, if any:

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 30-015-36984	Pool Code 17970	Pool Name Dog Canyon, Wolfcamp
Property Code 37207	Property Name SHAKESPEARE "20" FEDERAL	Well Number 4H
OGRID No. 6137	Operator Name DEVON ENERGY PRODUCTION COMPANY LP	Elevation 3566'

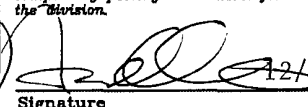

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	20	16 S	28 E		660	NORTH	1050	WEST	EDDY

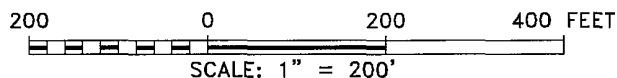
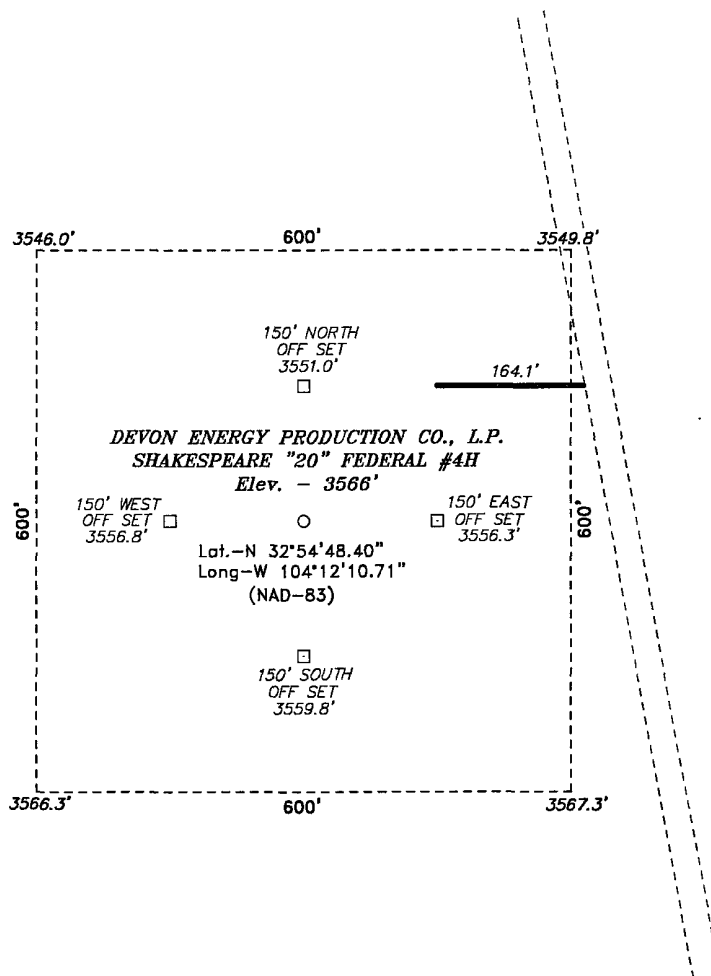
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	20	16 S	28 E		990	NORTH	330	EAST	EDDY
Dedicated Acres 160	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>GRID N: 696730.306 GRID E: 580295.995 LATITUDE: 32°54'54.944" LONGITUDE: -104°12'22.863"</p> <p>3546.0' 3549.8' 1050' 3566.3' 3567.3'</p> <p>SURFACE LOCATION Lat - N32°54'48.40" Long - W104°12'10.71" SPC- N.: 696069.98 E.: 581341.00 (NAD-83)</p> <p>GRID N: 694019.178 GRID E: 580286.293 LATITUDE: 32°54'28.117" LONGITUDE: -104°12'23.115"</p> <p>GRID N: 691306.950 GRID E: 580280.977 LATITUDE: 32°54'01.280" LONGITUDE: -104°12'23.216"</p>	<p>GRID N: 696739.243 GRID E: 582903.840 LATITUDE: 32°54'55.000" LONGITUDE: -104°11'52.370"</p> <p>3853.8'</p> <p>BOTTOM HOLE LOCATION Lat - N32°54'45.29" Long - W104°11'25.65" SPC- N.: 695760.805 E.: 585182.423 (NAD-83)</p> <p>GRID N: 691330.800 GRID E: 585496.220 LATITUDE: 32°54'01.450" LONGITUDE: -104°11'22.044"</p>	<p>GRID N: 696752.417 GRID E: 585516.053 LATITUDE: 32°54'55.098" LONGITUDE: -104°11'21.725"</p> <p>330'</p> <p>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.</p> <p> Signature Date 12/22/08</p> <p>Norvella Adams Printed Name</p> <p>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.</p> <p>MAY 13, 2008 Date Surveyed</p> <p> Signature & Seal of Professional Surveyor</p> <p>W.O. 197289</p> <p>Certificate No. Gary L. Jones 7977</p> <p>BASIN SURVEYS</p>
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SECTION 20, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF HWY 82 AND SOUTHERN UNION, GO NORTH ON SOUTHERN UNION FOR 3.5 MILES; THENCE GO NORTH ON LEASE ROAD FOR ANOTHER 2.0 MILES TO LEASE ROAD, ON LEASE ROAD GO WEST THENCE IMMEDIATELY NORTH 4.0 MILES TO LEASE ROAD ON LEASE ROAD GO WEST 1.0 MILES TO LEASE ROAD, ON LEASE ROAD GO SOUTH TO PROPOSED LEASE ROAD.

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

W.O. Number: 19728

Drawn By: J. M. SMALL

Date: 05-16-2008

Disk: 19728W JMS

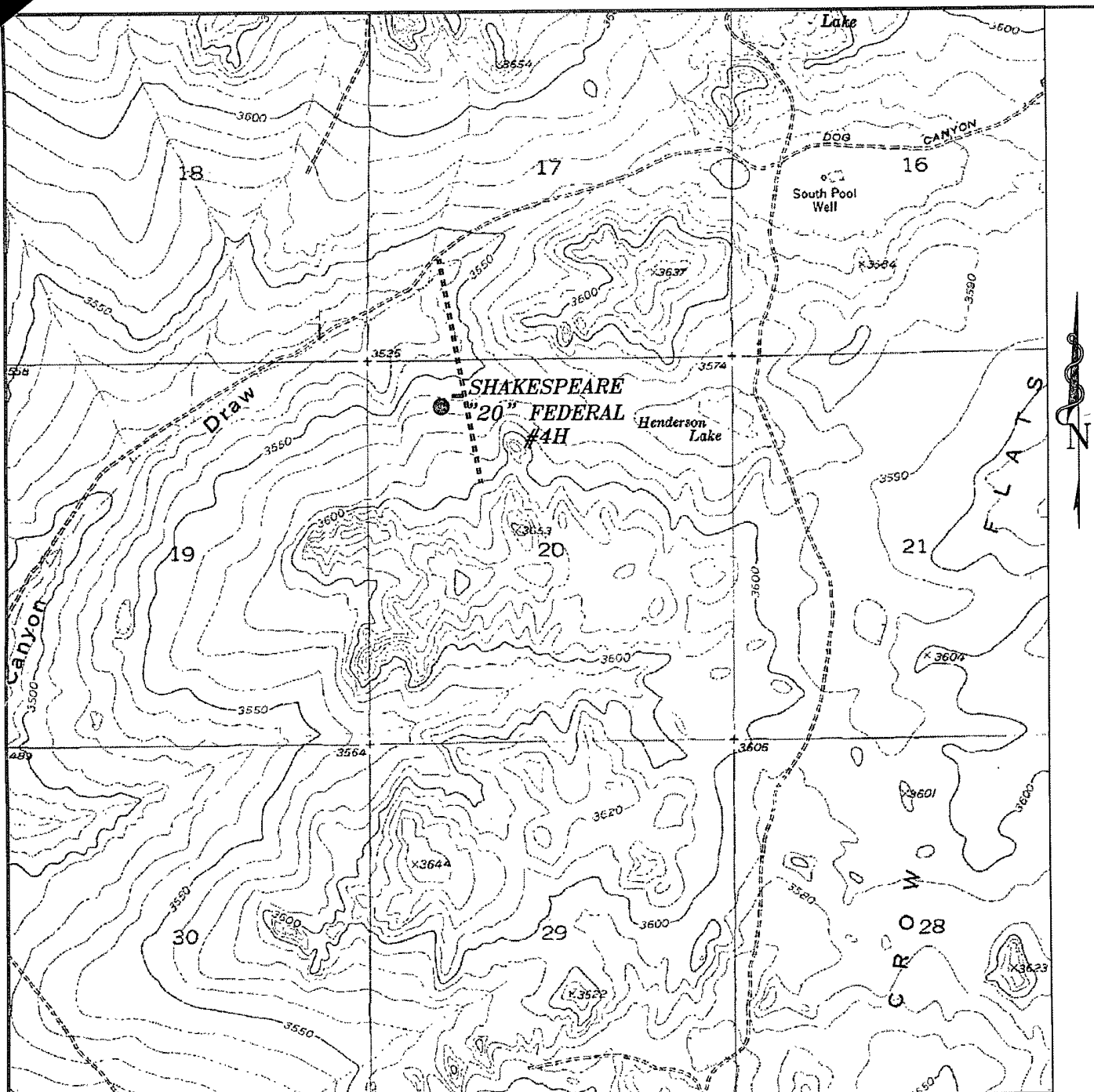
DEVON ENERGY PROD. CO., L.P.

REF: SHAKESPEARE "20" FEDERAL #4H / WELL PAD TOPO

THE SHAKESPEARE "20" FEDERAL #4H LOCATED 660' FROM
THE NORTH LINE AND 1050' FROM THE WEST LINE OF
SECTION 20, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 05-13-2008

Sheet 1 of 1 Sheets



SHAKESPEARE "20" FEDERAL #4H
 Located at 660' FNL AND 1050' FWL
 Section 20, Township 16 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
 (505) 393-7316 - Office
 (505) 392-3074 - Fax
 basin-surveys.com

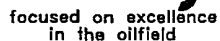
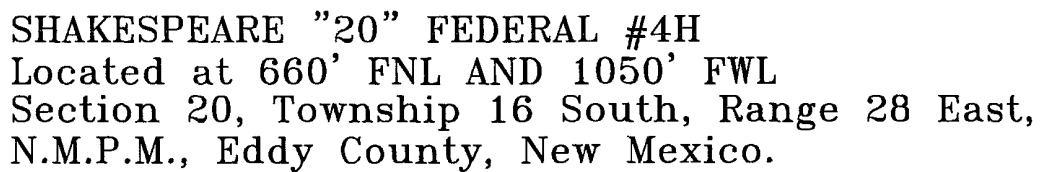
W.O. Number: JMS 19728T

Survey Date: 05-13-2008

Scale: 1" = 2000'

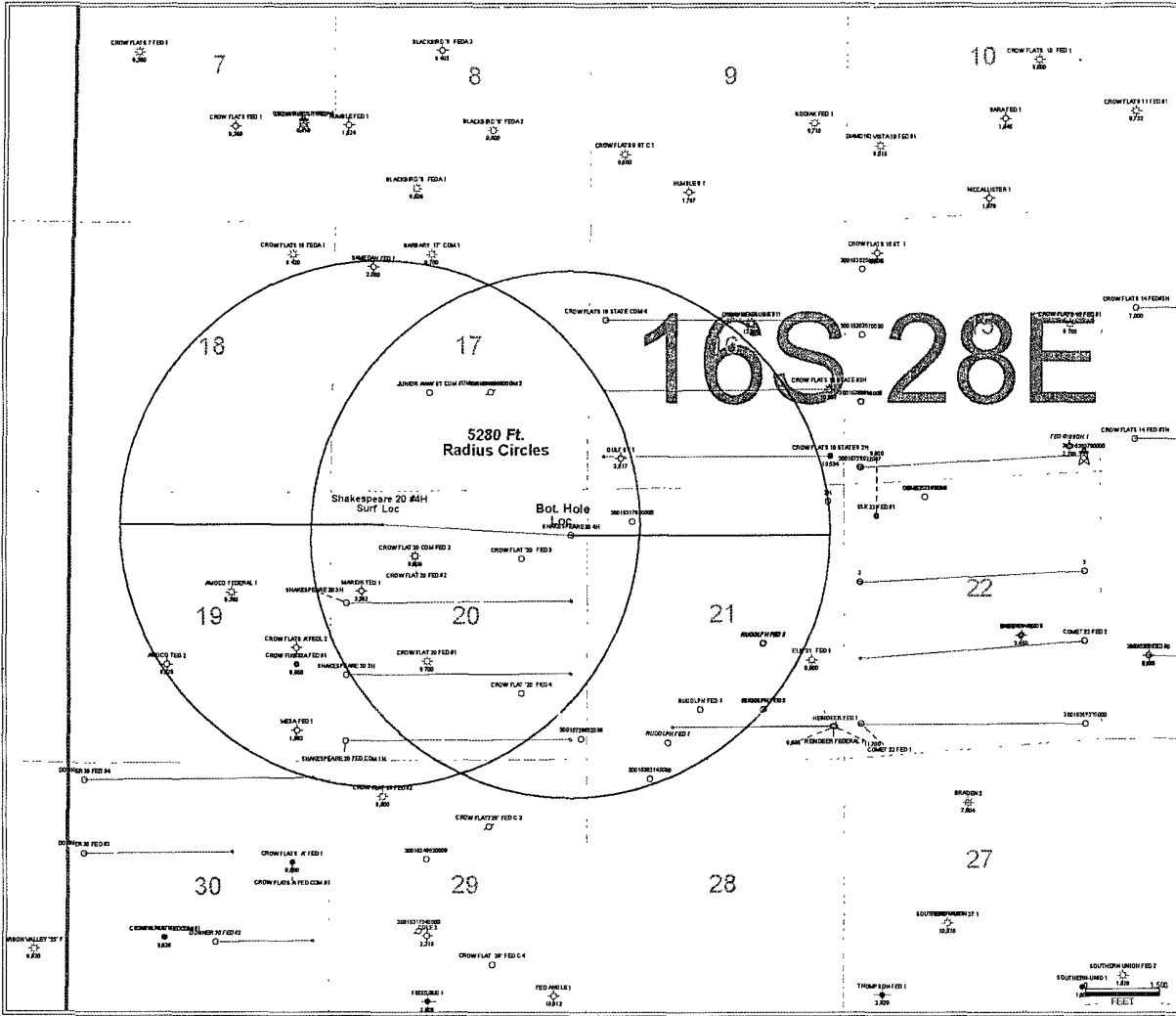
Date: 05-16-2008

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



Date: 05-16-2008

DEVON ENERGY
PROD. CO., L.P.



DRILLING PROGRAM

Devon Energy Production Company, LP

Shakespeare 20 Federal Com 4H

Surface Location: 990' FNL & 750' FWL, Unit D, Sec 20 T16S R28E, Eddy, NM

Bottom Hole Location: 990' FNL & 330' FEL, Unit A, Sec 20 T16S 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. Queen | 1,009' | |
| b. San Andres | 1,794' | |
| c. Glorieta | 3,289' | |
| d. Abo | 5,284' | |
| e. Wolfcamp | 6,329' | 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 9 5/8" casing at 1900' and circulating cement back to surface. Potash / fresh water sands will be protected by setting 7" casing at 6980' and cemented to 1400'. The Wolfcamp intervals will be isolated by setting a 4 1/2" production liner from 100' into the 2nd intermediate string to total measured depth. The 4 1/2" production liner will not be cemented.

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'-300'	13 3/8"	0-300'	48#	ST&C	H-40
12 1/4"	300'-1,900'	9 5/8"	0'-1900'	36#	LT&C	J-55
8 1/2" ^{3/4"}	1900'-6980'	7"	0-6980'	26#	BT&C	P-110
6 1/8"	6980'-10,220'	4 1/2"	6880'-10,220'	11.6#	BT&C	P-110

*Per Operator
1-21-09
RBH*

The liner will be comprised of 4 1/2" P-110, 11.6#, BT&C casing to be hung off +/- 100' inside the 7" at +/- 6,880'. The liner will consist of a 5 stage open hole isolation tool (Peak) and will not be cemented. It will be TD'd at 10,220' (6550' TVD). The length of the liner will be +/- 4,045'. This liner will be run in a 6 1/8" hole.

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"	11.33	1.68	2.47
9 5/8"	2.34	2.97	2.83
7"	2.06	1.88	2.40
4 1/2"	2.49	2.07	2.50

Note: 4 1/2" and 7" casing strings use injection pressure for burst.

3. Cement Program:

← See COA

- a. 13 3/8" Surface Cement to surface. Lead with 100 sx 35:65 Poz: Premium Plus C Cement + 5% NaCl + .0125 lbs/sx Cello Flake + 4% Bentonite + 5% MPA-5 + 0.8% Sodium Metasilicate + 101.1% Fresh Water. Yield: 1.96 cf/sx. Tail with 200 sacks Premium Plus C Cement + .0125 lbs/sx Cello Flake + 2% CaCl₂ + 56.3% Fresh Water. Yield: 1.35 cf/sx
- b. 9 5/8" 1st Intermediate Cement to surface. Lead with 405 sx 35:65 Poz: Premium Plus C Cement + 5% NaCl + 0.125 lbs/sx Celloflake + 3 #/sx LCM-1 + 4% Bentonite + 0.8% Sodium Metasilicate + 5% MPA-5 + 98.2% Fresh Water. Yield: 1.97 cf/sx. Tail with 250 sx Premium Plus C Cement + 2% CaCl₂ + 56.4% Fresh Water. Yield: 1.34 cf/sx
- c. 7" 2nd Intermediate Cement to 500' into 1st Intermediate. Lead with 560 sx 35:65 Poz: Premium Plus C Cement + 1% NaCl + .0125 lbs/sx Celloflake + 6% Bentonite + 0.4 % FL-52A + 103.2% Fresh Water. Yield: 1.96 cf/sx. Tail with 200 sx 60:40 Premium Plus C Cement + 1% NaCl + 0.125 lbs/sx Celloflake + 0.75% BA-10A + 0.2% FL-52A + 4% MPA-5 + 63.1% Fresh Water. Yield: 1.34 cf/sx. TOC = 1400'

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

4. Pressure Control Equipment:

The blow out prevention system will consist of a bag type (hydril) preventor, a double ram preventer stack, and a rotating head. Both the hydril and ram stack will be hydraulically operated. Before drilling out the 9 5/8" shoe a 3000 psi hydril will be NU and tested to 1000 psi with the rig pumps. Prior to drilling out the 7" shoe the 5000 psi stack and 3000 psi hydril will be installed and tested. While drilling the 6 1/8" hole, 3.5" pipe rams will be used in the BOP. **The 3000 psi hydril will be tested to 1000 psi (high) and 250 psi (low). Tests on the 5000 psi BOPE will be conducted per the BLM Drilling Operations Order #2.**

See COA

The ram system will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and hydril, other BOP accessories will include a Kelly cock, floor safety valve, choke lines, and choke manifold rated at 5000 psi WP.

5. **Proposed Mud Circulation System** ← *SuCOA*

<u>Depth</u>	<u>Mud</u> <u>Wt.</u>	<u>Visc</u>	<u>Fluid Loss</u>	<u>Type System</u>
0' – 300'	8.5-8.9	32-34	N/C	Fresh Water
300'-1900'	10.0	28	N/C	Brine
1900' - 6980'	8.5-8.7	29-30	N/C	FW / Cut Brine
6980' – 10220'	8.7-8.9	29-34	N/C - 12cc	FW / 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. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 9 5/8" casing shoe until the 7" casing is cemented. Breathing equipment will be on location upon drilling the 9 5/8" shoe until total depth is reached.

7. **Logging, Coring, and Testing Program:**

- a. Drill stem tests will be based on geological sample shows.
- b. 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.
- c. The open hole electrical logging program will be:
 - i. Total Depth to Intermediate Casing Dual Laterolog-Micro Laterolog with SP and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
 - ii. Total Depth to Surface Compensated Neutron with Gamma Ray
 - iii. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 4 1/2" liner. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.
 - v.

8. **Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. 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 2800 psi and Estimated BHT 111°. No H₂S is anticipated to be encountered.

9. Anticipated Starting Date and Duration of Operations:

- a. 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 30 days. If production casing is run then an additional 45 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

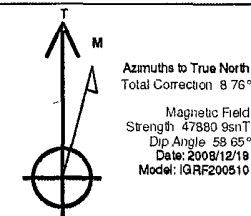


Devon Energy

Project: Eddy County (NM27E)
 Site: Sec 20-T16S-R28E
 Well: Shakespeare 20 Fed Com #4
 Wellbore: Wellbore #1
 Design: Plan #1
 Plan Version

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Shakespeare 20 Fed Com #4, True North
 Vertical (TVD) Reference: WELL @ 0.00ft (Original Well Elev)
 Section (VS) Reference: Slot - (0.51N, -0.08E)
 Measured Depth Reference: WELL @ 0.00ft (Original Well Elev)
 Calculation Method: Minimum Curvature



PLAN DETAILS

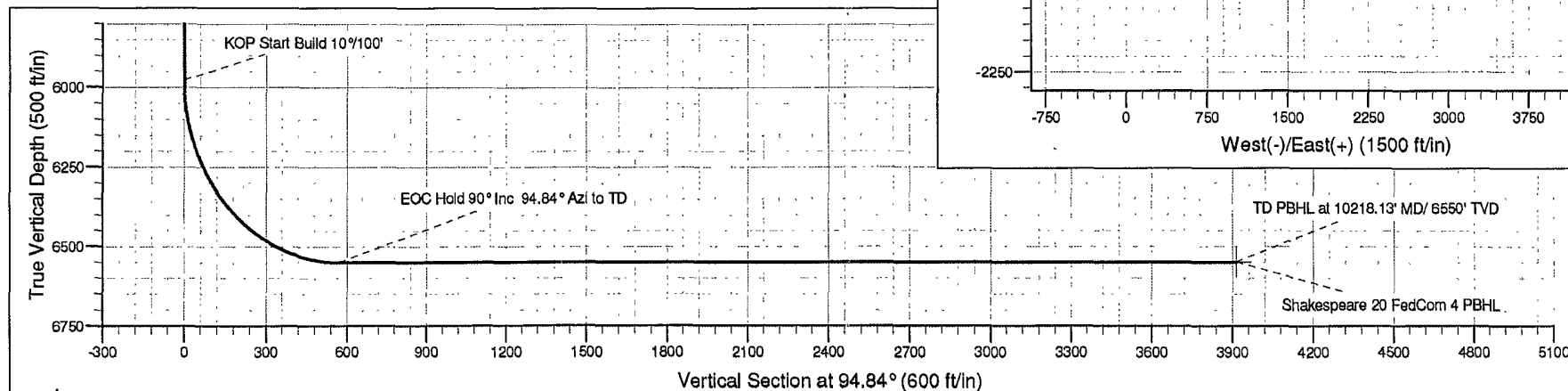
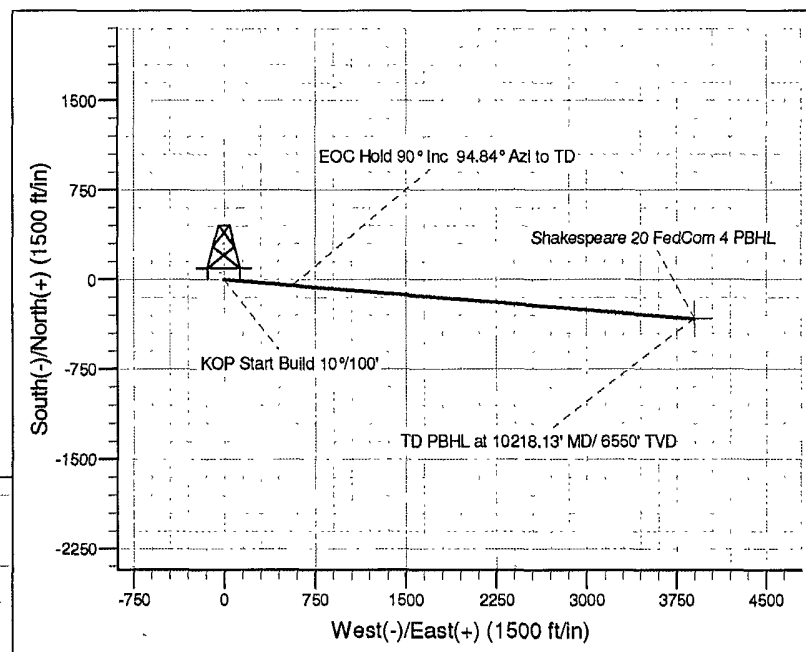
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.51	-0.08	0.00	0.00	0.00	
2	5977.00	0.00	94.84	5977.00	0.51	-0.08	0.00	94.84	0.00	
3	6877.03	90.00	94.84	6549.97	-47.87	570.84	10.00	94.84	572.97	
4	10218.13	90.00	94.84	6550.00	-330.00	3900.00	0.00	0.00	3914.06	Shakespeare 20 FedCom 4 PBHL

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Shakespeare 20 FedCom 4 PBHL	6550.00	-330.00	3900.00	213.833	8133.943	Point

WELL DETAILS: Shakespeare 20 Fed Com #4

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.51	-0.08	599.775	0.00	4238.959	30° 59' 31.045 N	105° 54' 55.553 W	



Devon Energy

Eddy County (NM27E)

Sec 20-T16S-R28E

Shakespeare 20 Fed Com #4

Wellbore #1

Plan: Plan #1

Standard Planning Report

19 December, 2008

The logo for Devon Energy, featuring the word "devon" in a stylized, lowercase, serif font. The letters are closely spaced and have a slightly italicized appearance. The logo is positioned in the bottom right corner of the page, partially overlapping a vertical grey textured bar.

Quantum
Planning Report

devon

Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well Shakespeare 20 Fed Com #4
Company:	Devon Energy	TVD Reference:	WELL @ 0.00ft (Original Well Elev)
Project:	Eddy County (NM27E)	MD Reference:	WELL @ 0.00ft (Original Well Elev)
Site:	Sec 20-T16S-R28E	North Reference:	True
Well:	Shakespeare 20 Fed Com #4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project:	Eddy County (NM27E)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Sec 20-T16S-R28E		
Site Position:		Northing:	ft
From:	None	Easting:	ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	
		Longitude:	
		Grid Convergence:	0.00 °

Well:	Shakespeare 20 Fed Com #4		
Well Position	+N/-S	0.51 ft	Northing: 599.775 ft
	+E/-W	-0.08 ft	Easting: 4,238.959 ft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	30° 59' 31.045 N
		Longitude:	105° 54' 55.553 W
		Ground Level:	0.00 ft

Wellbore:	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	2008/12/19	3.76
			(°)
			58.65
			47.881

Design:	Plan #1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.51	-0.08
			94.84

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.00	0.00	0.00	0.00	0.51	-0.08	0.00	0.00	0.00	0.00	
5,977.00	0.00	94.84	5,977.00	0.51	-0.08	0.00	0.00	0.00	94.84	
6,877.03	90.00	94.84	6,549.97	-47.87	570.84	10.00	10.00	0.00	94.84	
10,218.13	90.00	94.84	6,550.00	-330.00	3,900.00	0.00	0.00	0.00	0.00 Shakespeare 20 Fe	

Quantum
Planning Report

devon

Database: EDM 2003.16 Single User Db
Company: Devon Energy
Project: Eddy County (NM27E)
Site: Sec 20-T16S-R28E
Well: Shakespeare 20 Fed Com #4
Wellbore: Wellbore #1
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Shakespeare 20 Fed Com #4
WELL @ 0.00ft (Original Well Elev)
WELL @ 0.00ft (Original Well Elev)
True
Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.51	-0.08	0.00	0.00	0.00	0.00
5,977.00	0.00	94.84	5,977.00	0.51	-0.08	0.00	0.00	0.00	0.00
KOP Start Build 10°/100'									
6,877.03	90.00	94.84	6,549.97	-47.87	570.84	572.97	10.00	10.00	0.00
EOC Hold 90° Inc 94.84° Azi to TD									
10,218.13	90.00	94.84	6,550.00	-330.00	3,900.00	3,914.06	0.00	0.00	0.00
TD PBHL at 10218.13' MD/ 6550' TVD - Shakespeare 20 FedCom 4 PBHL									

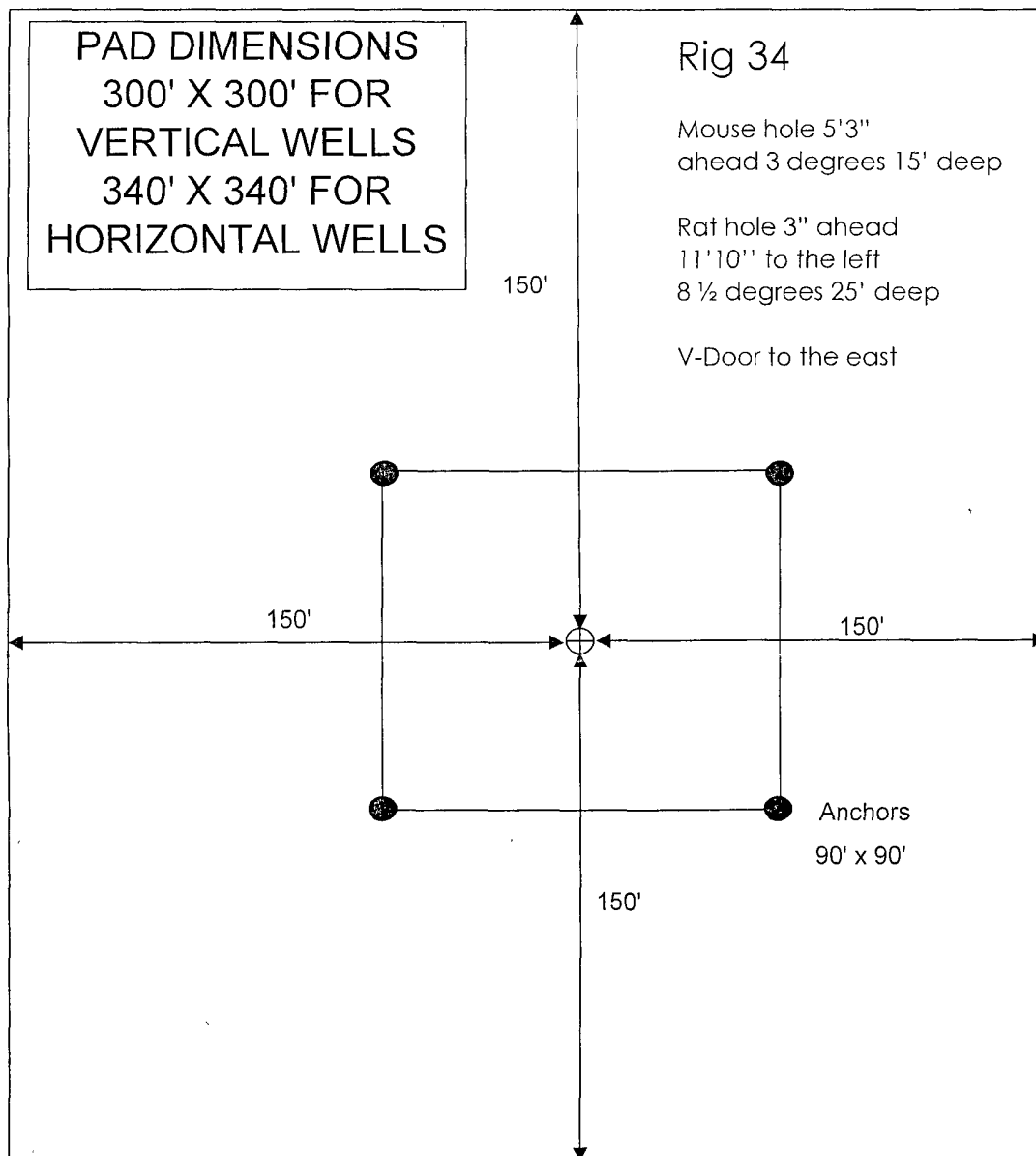
Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Shakespeare 20 FedC	0.00	0.00	6,550.00	-330.00	3,900.00	213.833	8,133.943	30° 59' 27.772 N	105° 54' 10.757 W
- plan hits target									
- Point									

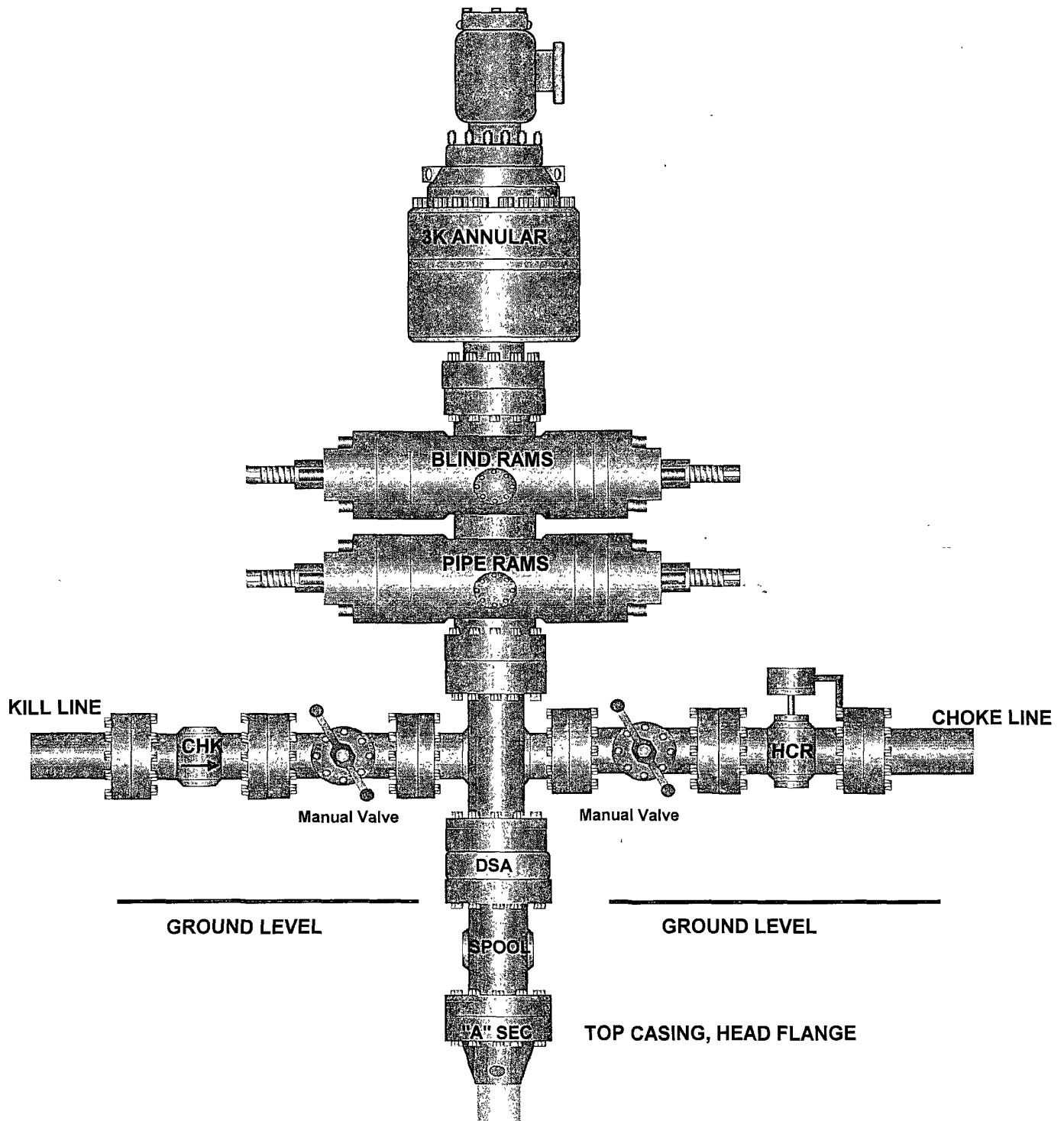
Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
5,977.00	5,977.00	0.51	-0.08	KOP Start Build 10°/100'
6,877.03	6,549.97	-47.87	570.84	EOC Hold 90° Inc 94.84° Azi to TD
10,218.13	6,550.00	-330.00	3,900.00	TD PBHL at 10218.13' MD/ 6550' TVD

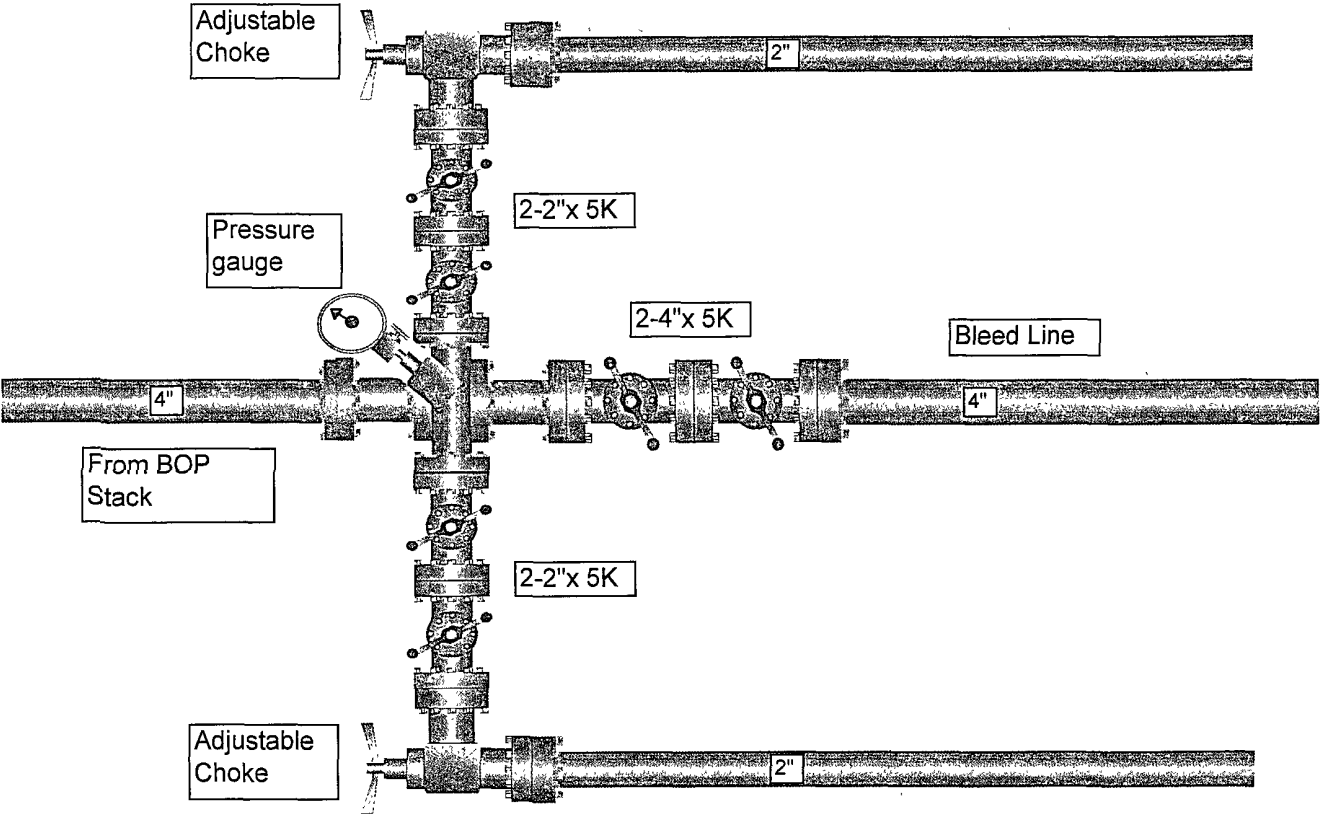
BASIC ENERGY SERVICES - RIGS 31, 32 & 34



11" x 5,000 psi BOP Stack



5,000 PSI CHOKE MANIFOLD



SURFACE USE PLAN

Devon Energy Production Company, LP

Shakespeare 20 Federal Com 4H

Surface Location: 990' FNL & 750' FWL, Unit D, Sec 20 T16S R28E, Eddy, NM

Bottom Hole Location: 990' FNL & 330' FEL, Unit A, Sec 20 T16S 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 US Hwy 82 and Southern Union, go north on Southern Union for 3.5 miles to lease road, on lease road go north 2.0 miles to lease road, go west on lease road then immediately north for approximately 4 miles to lease road, on lease road go east 1.0 mile to lease road, on lease road go south to proposed lease road.

2. New or Reconstructed Access Roads:

- a. The well site layout, Form C-102 shows the existing County Road. The proposed access road, 677.6', comes in from the east off an existing lease road to the northwest corner of the proposed well pad. Attached is a plat of the proposed lease.
- 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 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, a new battery will be constructed on location 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 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 a closed loop system.
- 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. We will use a closed loop system and haul contents off by transports to a state approved disposal site. Water produced during completion will be put in the closed loop system. 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. We will use a closed loop system.

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.
- b. The location and road will be rehabilitated as recommended by the BLM.
- c. 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:

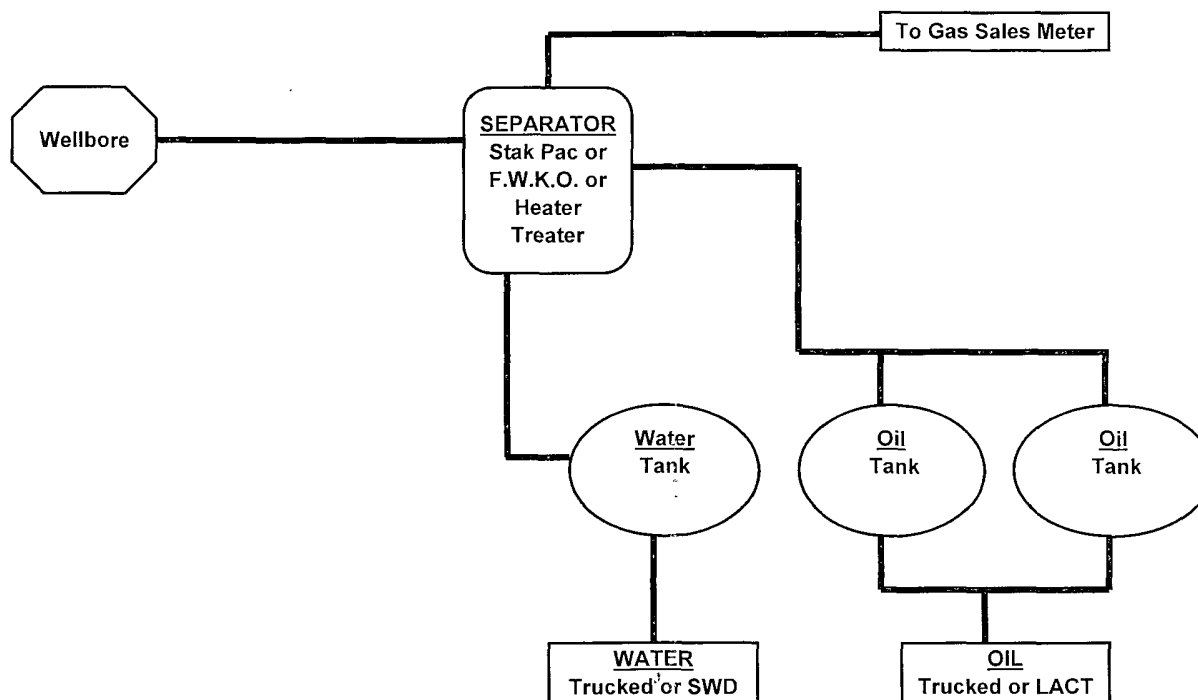
- a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. The vegetation is moderately sparse with native prairie grass, sagebrush, yucca and miscellaneous weeds. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area.
- b. 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

DEVON ENERGY PRODUCTION COMPANY LP

General Production Facilities Diagram



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

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

(575) 748-0164 (office)
(575) 748-5235 (cellular)

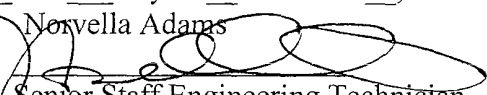
Certification

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 22th day of December, 2008.

Printed Name: Norvella Adams

Signed Name: 

Position Title: Senior Staff Engineering Technician

Address: 20 North Broadway, OKC OK 73102

Telephone: (405)-552-8198

Field Representative (if not above signatory): Robert Bell

Address (if different from above): Artesia, NM

Telephone (if different from above): 575-748-0178

E-mail: norvella.adams@dvn.com

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Prod Co
LEASE NO.:	NM103873
WELL NAME & NO.:	4H Shakespeare 20 Fed Com
SURFACE HOLE FOOTAGE:	660' FNL & 1050' FWL
BOTTOM HOLE FOOTAGE	990' FNL & 330' FEL
LOCATION:	Section 20, T. 16 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
 - Cultural
 - Communitization Agreement
- ☐ **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)

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales.

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.

No Blasting:

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:

The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad.

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, siting 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.

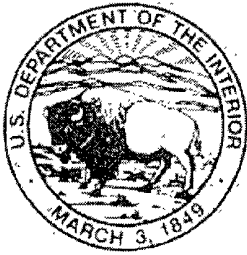


EXHIBIT NO. 1

Date of Issue:
2/23/2009

Bureau of Land Management, Carlsbad Field Office
620 E. Greene Street Carlsbad, NM 88220

Cultural and Archaeological Resources

BLM Report No.

09-NM-523-184

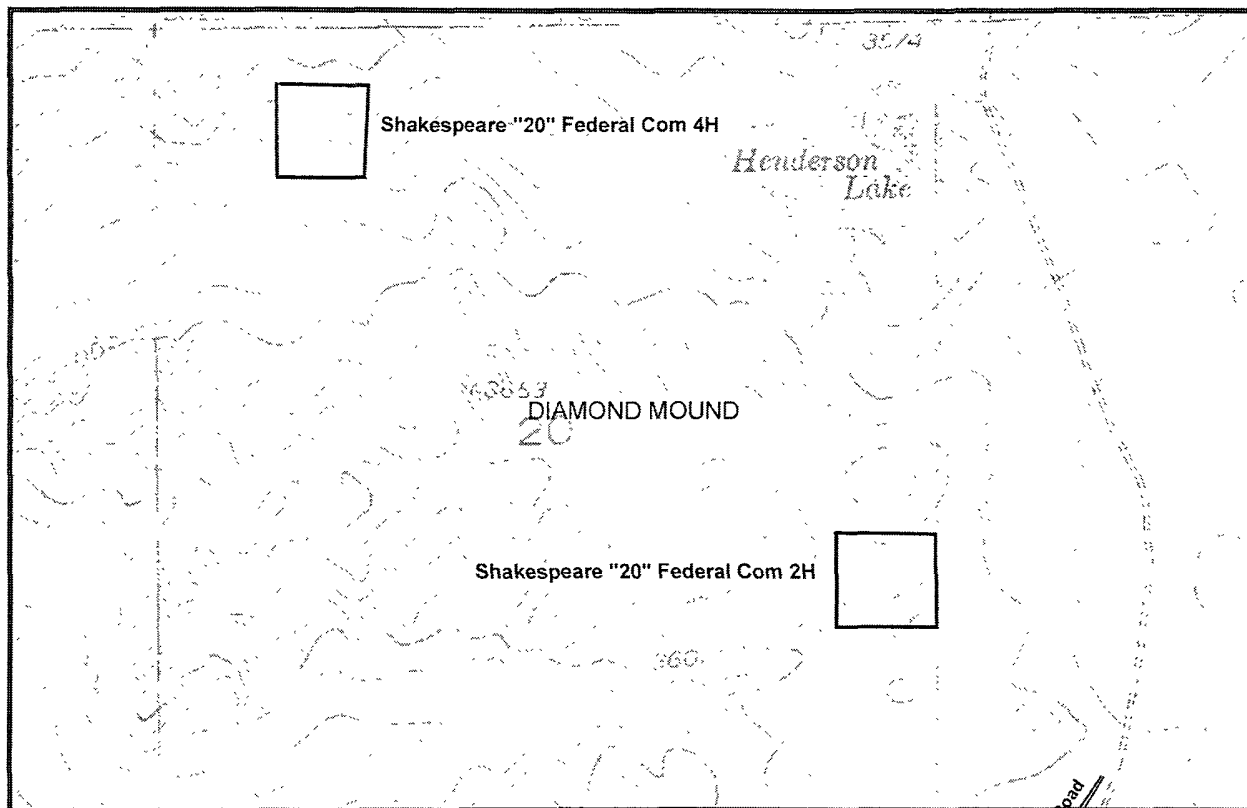
NOTICE OF STIPULATIONS

Historic properties in the vicinity of this project are protected by federal law. In order to ensure that they are not damaged or destroyed by construction activities, the project proponent and construction supervisors shall ensure that the following stipulations are implemented.

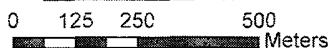
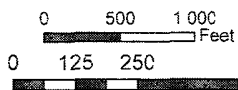
Project Name:	Shakespeare "20" Federal Number 4H Well
REQUIRED	1). A 3-day preconstruction call-in notification. Contact BLM Inspection and Enforcement at (505) 234-5909 to establish a construction start date.
REQUIRED	2. Professional archaeological monitoring. Contact your project archaeologist, or BLM's Cultural Resources Section at (505) 234-2228, 5917, 2236, or 5967, for assistance.
A.	<input checked="" type="checkbox"/> These stipulations must be given to your monitor at least 5 days prior to the start of construction.
B.	<input checked="" type="checkbox"/> No construction, including vegetation removal or other site prep may begin prior to the arrival of the monitor.
	3. Cultural site barrier fencing. (Your monitor will assist you).
A.	<input type="checkbox"/> A temporary site protection barrier(s) shall be erected prior to all ground-disturbing activities. The minimum barrier(s) shall consist of upright wooden survey lath spaced no more than ten (10) feet apart and marked with blue ribbon flagging or blue paint. There shall be no construction activities or vehicular traffic past the barrier(s) at any time.
B.	<input type="checkbox"/> A permanent, 4-strand barbed wire fence strung on standard "T-posts" shall be erected prior to all ground-disturbing activities. No construction activities or vehicle traffic are allowed past the fence.
	4. The archaeological monitor shall:
A.	<input type="checkbox"/> Ensure that all site protection barriers are located as indicated on the attached map(s).
B.	<input checked="" type="checkbox"/> Observe all ground-disturbing activities within 100 feet of cultural site no. (s) LA161579, as shown on the attached map(s).
C.	<input type="checkbox"/> Ensure that all reroutes are adhered to avoid cultural site no.(s) LA
D.	<input type="checkbox"/> Ensure the proposed is/are located as shown on the attached map(s).
E.	<input checked="" type="checkbox"/> Submit a brief monitoring report within 30 days of completion of monitoring.
Other:	Monitor the construction of the well pad at the Shakespeare "20" Federal Number 4H.

Site Protection and Employee Education: It is the responsibility of the project proponent and his construction supervisor to inform all employees and subcontractors that cultural and archaeological sites are to be avoided by all personnel, vehicles, and equipment; and that it is illegal to collect, damage, or disturb cultural resources on Public Lands.

For assistance, contact
BLM Cultural Resources: Martin Stein (575) 234-5967
George MacDonell (575) 234-2228
Bruce Boeke (575) 234-5917
Lynn Robinson (575) 234-2236



Scale 1:10,000



- = BLM
- = Private
- = State

Areas to Monitor

Section 20, T16S, R28E

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be up-dated without notice on Map created 1/22/2008



Exhibit 2 – Area to Monitor

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 (575) 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 6 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 (575) 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

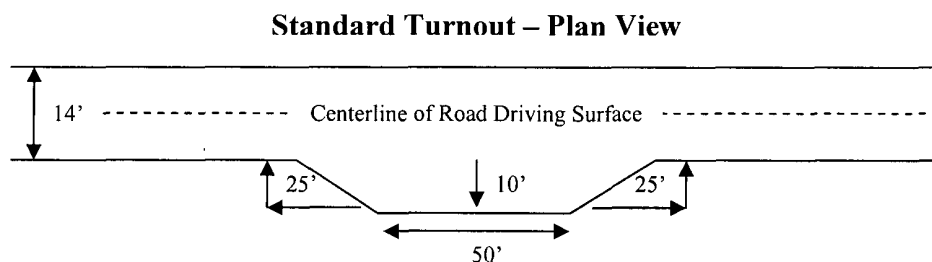
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

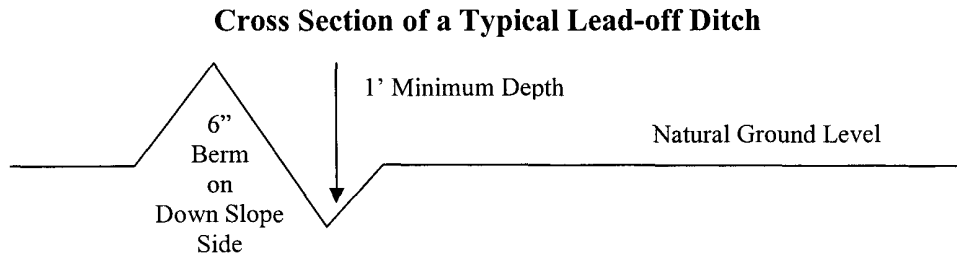
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage

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



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

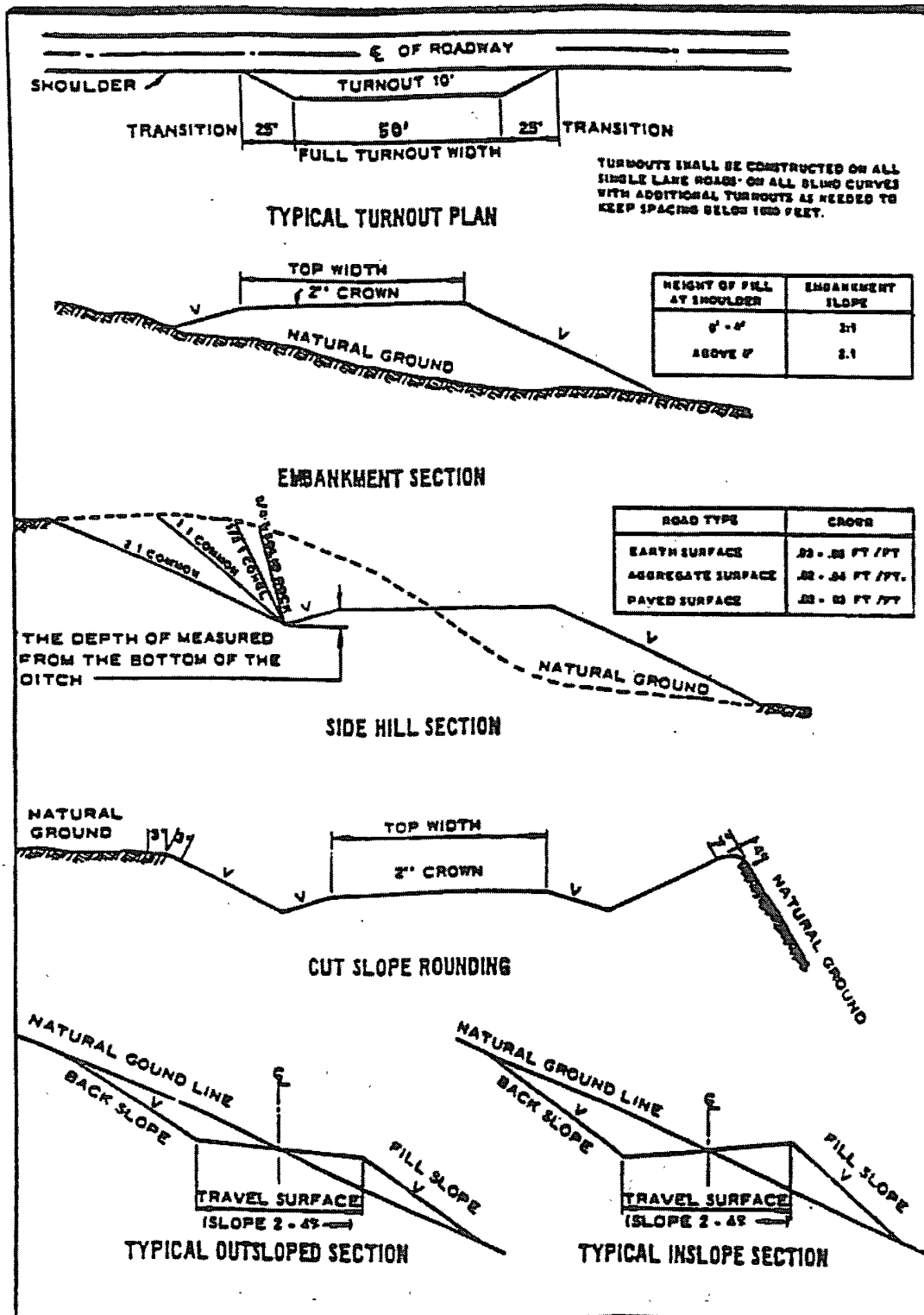
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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. **Although there are no measured amounts of Hydrogen Sulfide reported, it is always a potential hazard. 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 Grayburg and San Andres formations.

Possible high pressure gas bursts in the Wolfcamp.

1. The 13-3/8 inch surface casing shall be set at **approximately 300 feet** and cemented to the surface. **Onshore Order II requires casing to be set across a competent bed, which may be difficult to find in the Seven Rivers.**
 - 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 action 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 high cave/karst.

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to high cave/karst.

3. The minimum required fill of cement behind the 7 inch second intermediate casing is:
 - ☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.
4. The minimum required fill of cement behind the 4-1/2 inch production casing is:
 - ☒ Cement not required – operator using Peak System Iso-pack liner.

5. 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 surface casing shoe shall be **5000 (5M)** psi.
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. **Effective November 1, 2008, no variances will be granted on reduced pressure tests on the surface casing and BOP/BOPE. Onshore Order 2 requirements will be in effect.**

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.

NOTE: All potential hydrocarbon zones are to be listed, not just the target.

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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 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.