

Form 3160-3  
(March 2012)

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.  
NMNM-0557729; NMNM-63362 (BHL)

6. If Indian, Allottee or Tribe Name

1a. Type of work:  DRILL  REENTER

7. If Unit or CA Agreement, Name and No.  
NM-129425

1b. Type of Well:  Oil Well  Gas Well  Other  Single Zone  Multiple Zone

8. Lease Name and Well No.  
Rigel 20 Fed Com 6H 38797

2. Name of Operator Devon Energy Production Company, L.P.

9. API Well No.  
30-015-41513

3a. Address 333 W. Sheridan  
Oklahoma City, OK 73102

3b. Phone No. (include area code)  
405.235.3611

10. Field and Pool, or Exploratory  
Hackberry North; Bone Spring 97056

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

At surface 1699 FNL & 265 FWL, Unit E

At proposed prod. zone 1750 FNL & 340 FEL, Unit H; PP: 1750 FNL & 715 FWL

11. Sec., T. R. M. or Blk. and Survey or Area  
Sec 20, T19S, R31E

14. Distance in miles and direction from nearest town or post office\*  
12 miles SW of Maljamar, NM

12. County or Parish  
Eddy

13. State  
NM

15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) See attached map

16. No. of acres in lease  
320 ac (NMNM-0557729)  
120 ac (NMNM-63362)

17. Spacing Unit dedicated to this well  
160 ac

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft. See attached map

19. Proposed Depth  
8020' TVD  
12,459' MD

20. BLM/BIA Bond No. on file  
CO-1104; NBM-000801

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3415.7 GL

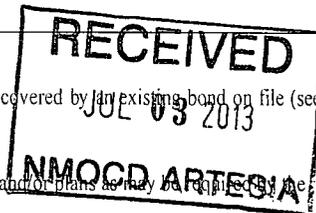
22. Approximate date work will start\*

23. Estimated duration  
45 Days

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



25. Signature

Name (Printed Typed)  
Ryan DeLong

Date  
05/13/2013

Title  
Regulatory Compliance Professional

Approved by (Signature) /s/George MacDonell

Name (Printed Typed) /s/George MacDonell

Date  
JUN 28 2013

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.  
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. 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.

(Continued on page 2)

\*(Instructions on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
511 S. First St., Artesia, NM 88210  
Phone: (575) 745-1283 Fax: (575) 745-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> APL Number <b>30-015-41513</b>	<sup>2</sup> Pool Code <b>29345 97056</b>	<sup>3</sup> Pool Name <b>Hackberry (North) Bone Spring</b>
<sup>4</sup> Property Code <b>38797</b>	<sup>5</sup> Property Name <b>RIGEL "20" FED COM</b>	
<sup>6</sup> OCRIID No. <b>6137</b>	<sup>7</sup> Operator Name <b>DEVON ENERGY PRODUCTION COMPANY, L.P.</b>	<sup>8</sup> Well Number <b>6H</b>
		<sup>9</sup> Elevation <b>3415.7</b>

<sup>10</sup> Surface Location

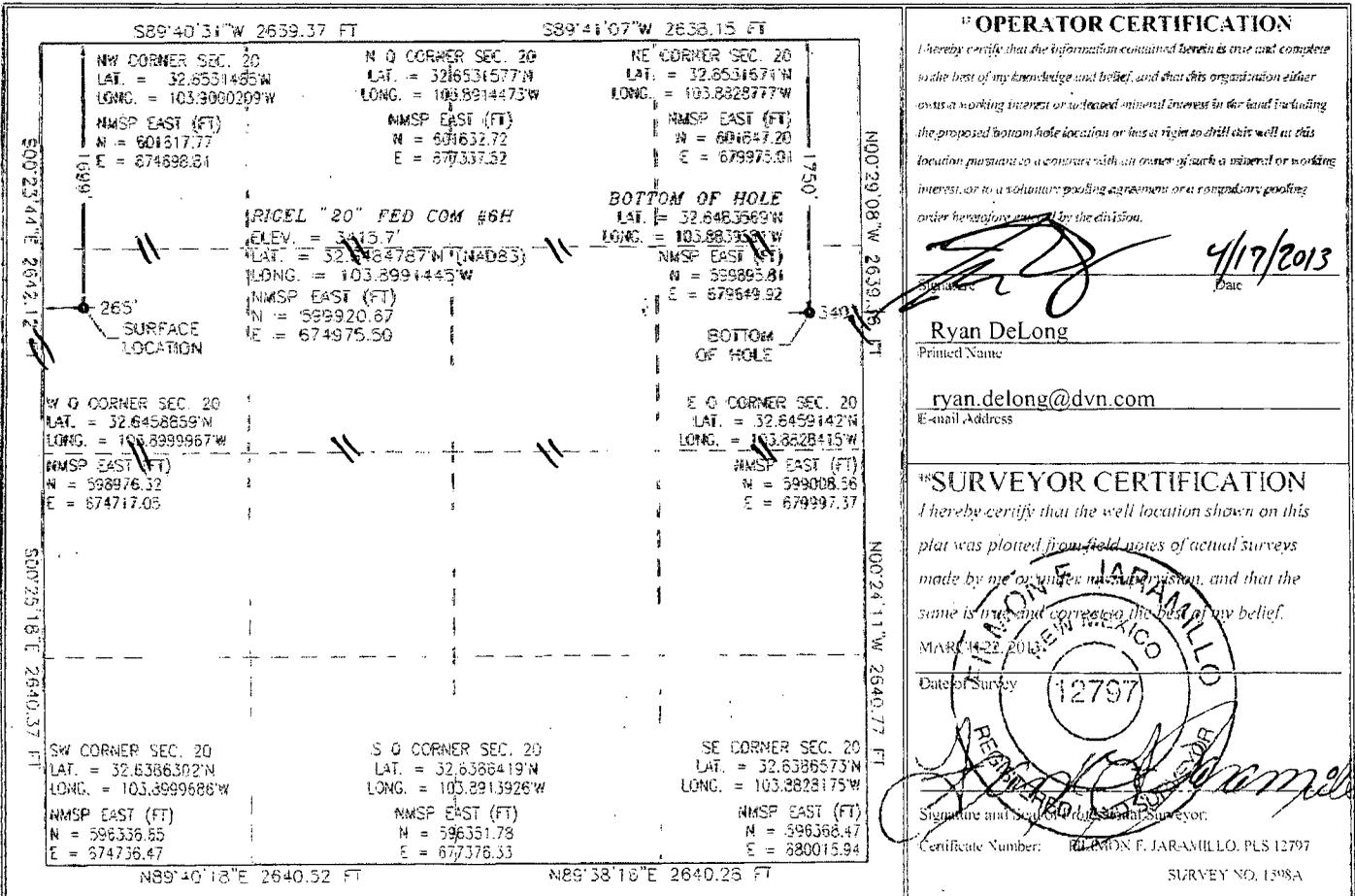
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	20	19 S	31 E		1699	NORTH	265	WEST	EDDY

<sup>11</sup> 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
H	20	19 S	31 E		1750	NORTH	340	EAST	EDDY

<sup>12</sup> Dedicated Acres 160 ac	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



## Operators Representative:

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

Justin Lazzari - Operations Engineer Advisor  
Devon Energy Production Company, L.P.  
333 W. Sheridan  
Oklahoma City, OK 73102-8260  
(405) 228-8466 (office)  
(405) 464-9261 (Cellular)

Jerry Mathews - Superintendent  
Devon Energy Production Company, L.P.  
Post Office Box 250  
Artesia, NM 88211-0250  
(575) 748-0161 (office)  
(575) 748-5234 (home)

## 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 17th day of April, 2013.

Printed Name: Ryan DeLong

Signed Name: 

Position Title: Regulatory Compliance Professional

Address: 333 W. Sheridan, OKC OK 73102

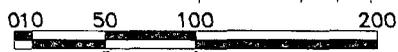
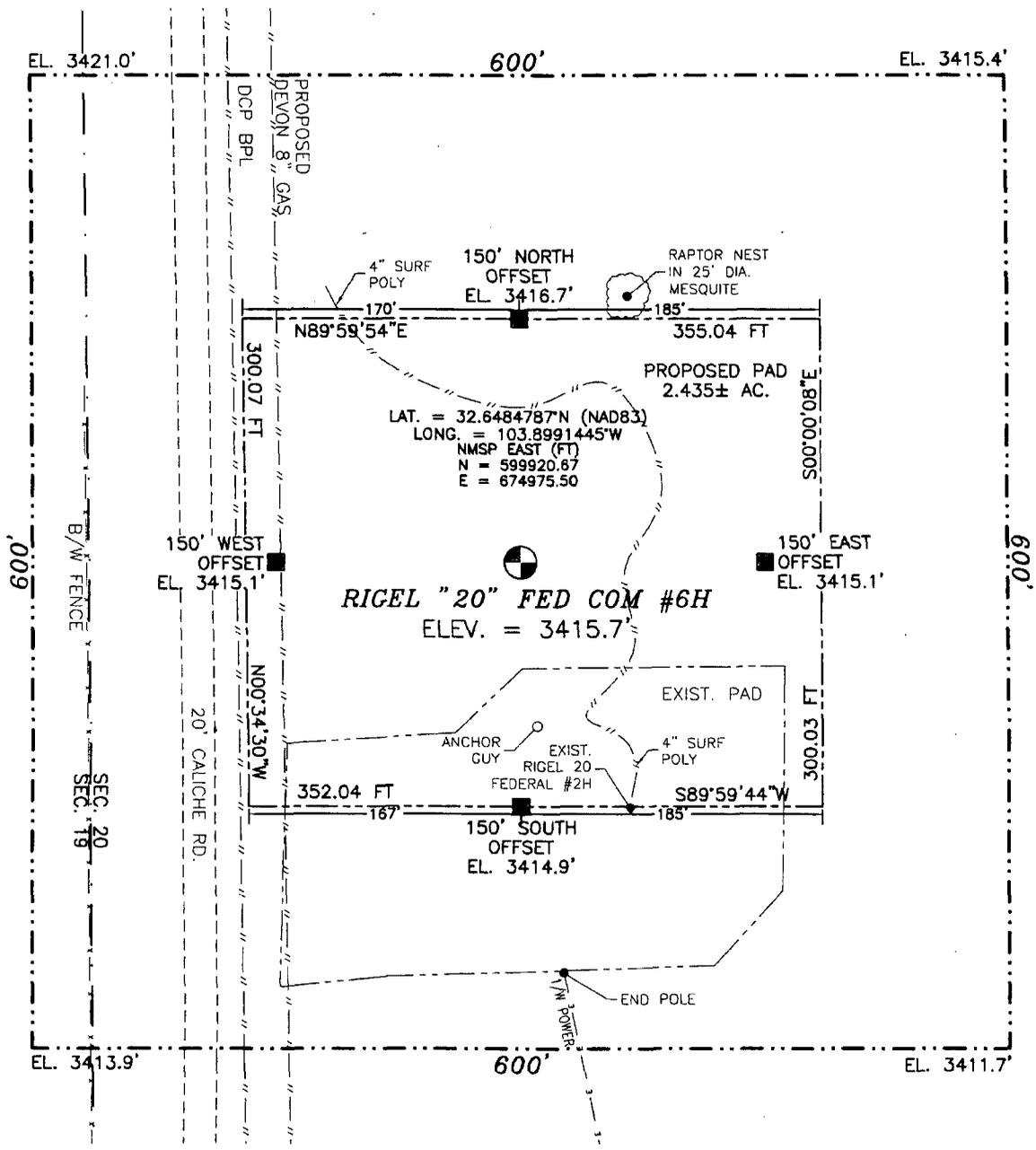
Telephone: (405)-228-8699

Field Representative (if not above signatory):

Address (if different from above):

Telephone (if different from above):

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO



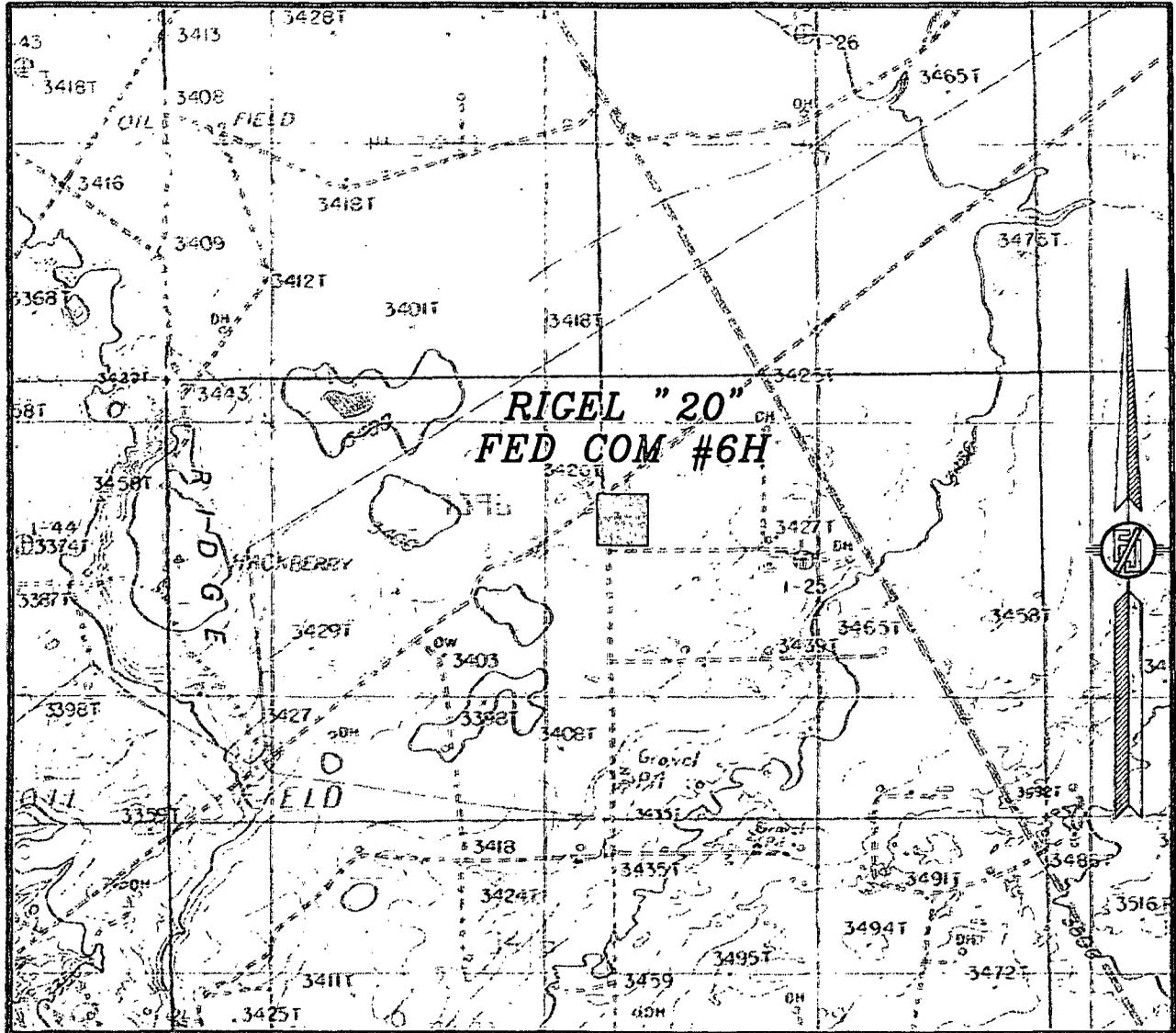
SCALE 1" = 100'  
 DIRECTIONS TO LOCATION  
 FROM CR. #222 AND CR. #248 GO SOUTH-SOUTHWEST ON CR. 222  
 4.7 MILES, TURN RIGHT ON CALICHE ROAD AND GO NORTH 1.75  
 MILES AND LOCATION IS ON THE RIGHT (EAST) 195'.

DEVON ENERGY PRODUCTION COMPANY, L.P.  
**RIGEL "20" FED COM #6H**  
 LOCATED 1699 FT. FROM THE NORTH LINE  
 AND 265 FT. FROM THE WEST LINE OF  
 SECTION 20, TOWNSHIP 19 SOUTH,  
 RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 22, 2013

SURVEY NO. 1598A

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 LOCATION VERIFICATION MAP



USGS QUAD MAP:  
 HACKBERRY LAKE

NOT TO SCALE

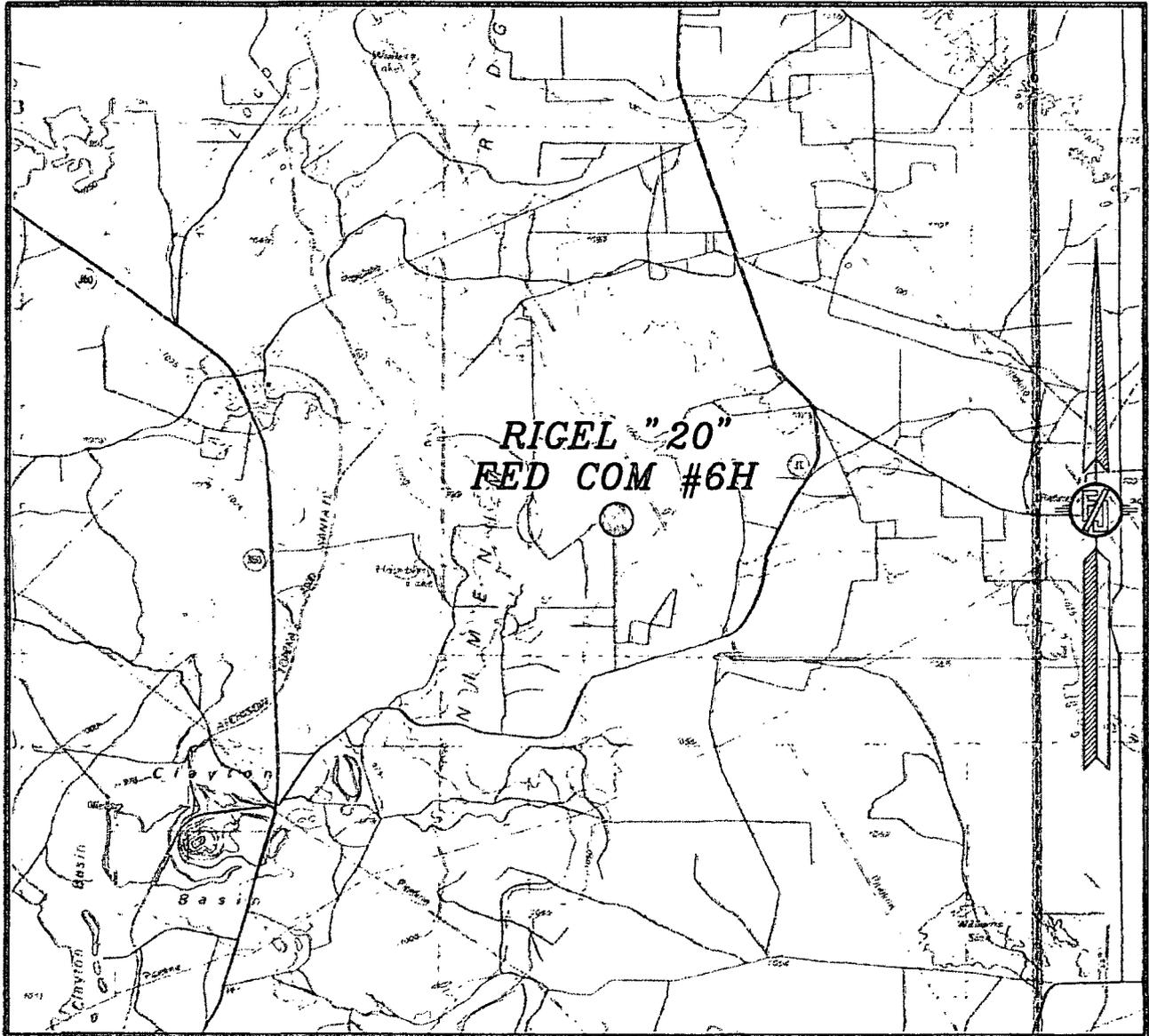
DEVON ENERGY PRODUCTION COMPANY, L.P.  
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 SECTION 20, TOWNSHIP 19 SOUTH,  
 RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 22, 2013

SURVEY NO. 1598A

MADRON SURVEYING, INC. 301 SOUTH CANAL (375) 234-3341 CARLSBAD, NEW MEXICO

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
VICINITY MAP



NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

**RIGEL "20" FED COM #6H**

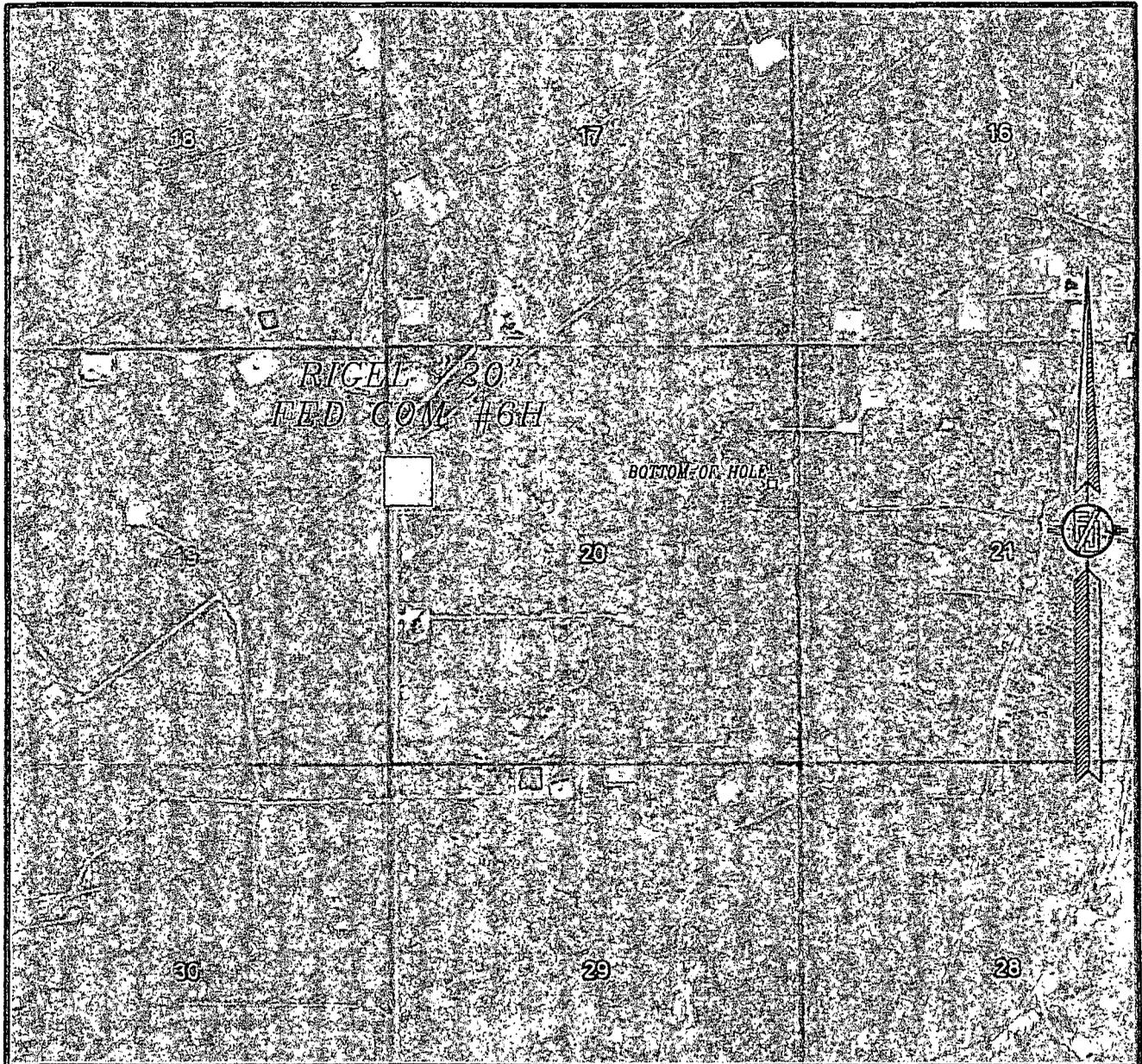
LOCATED 1699 FT. FROM THE NORTH LINE  
AND 265 FT. FROM THE WEST LINE OF  
SECTION 20, TOWNSHIP 19 SOUTH,  
RANGE 31 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 22, 2013

SURVEY NO. 1598A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
AERIAL PHOTO



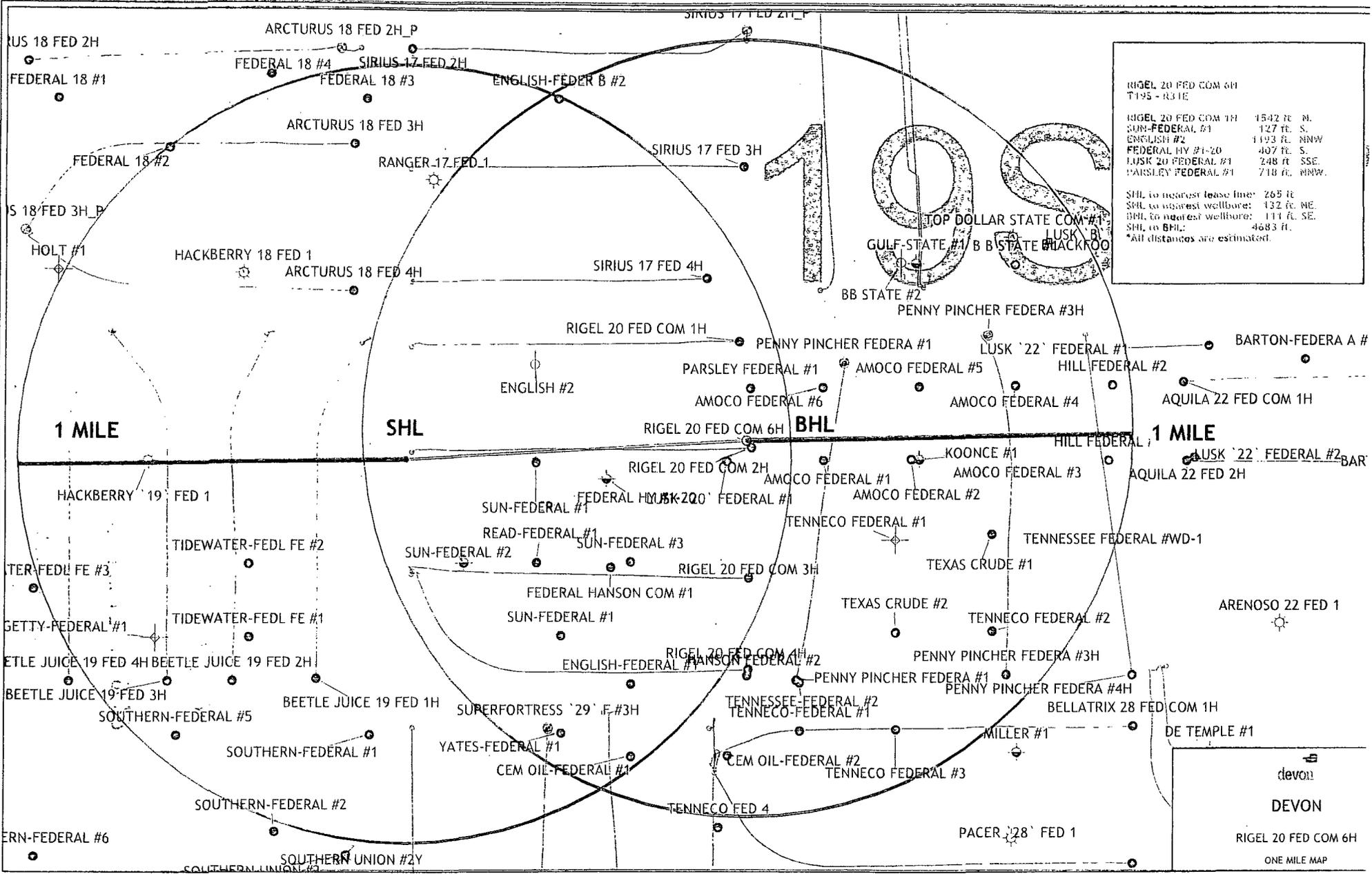
NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
MARCH 2012

DEVON ENERGY PRODUCTION COMPANY, L.P.  
RIGEL "20" FED COM #6H  
LOCATED 1699 FT. FROM THE NORTH LINE  
AND 265 FT. FROM THE WEST LINE OF  
SECTION 20, TOWNSHIP 19 SOUTH,  
RANGE 31 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 22, 2013

SURVEY NO. 1598A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO



RIGEL 20 FED COM 6H	T195 - ROUTE
RIGEL 20 FED COM 1H	1542 ft. N.
SUN-FEDERAL #1	127 ft. S.
ENGLISH #2	1493 ft. NNW
FEDERAL HY #1-20	407 ft. S.
LUSK 20 FEDERAL #1	248 ft. SSE
PARSLEY FEDERAL #1	718 ft. NNW
SHL to nearest lease line*	265 ft.
SHL to nearest wellbore†	132 ft. NE
BHL to nearest wellbore†	111 ft. SE
SHL to BHL	468 ft.
*All distances are estimated.	

devon  
**DEVON**  
 RIGEL 20 FED COM 6H  
 ONE MILE MAP

## DRILLING PROGRAM

Devon Energy Production Company, LP  
Rigel 20 Fed Com 6H

Surface Location: 1699' FNL & 265' FWL, Unit E, Sec 20 T19S R31E, Eddy, NM  
Bottom Hole Location: 1750' FNL & 340' FEL, Unit H, Sec 20 T19S R31E, Eddy, NM

**1. Geologic Name of Surface Formation**

a. Quat Alluvium

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

a. Fresh Water	120'	
b. Rustler	435'	Barren
c. Salado	555'	Barren
d. Tansil Dolomite	1975'	Barren
e. Yates	2110'	Oil
f. Seven Rivers	2290'	Oil
g. Capitan	2390'	Barren
h. Queen	3245'	Barren
i. Delaware	4500'	Oil
j. Bone Spring	6520'	Oil
k. 1 <sup>st</sup> Bone Spring Ss	7850'	Oil
Total Depth	12,459'	

**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>
26"	0 - 520 350'	20"	0 - 520 350'	94#	BTC	J/K-55
17-1/2"	0 - 2190 2450'	13-3/8"	0 - 2190 2450'	61#	BTC	J-55
12-1/4"	2190 - 4450 3950'	9-5/8"	0 - 4450 3950'	40#	LTC	J-55
8-3/4"	4450 - 7300	5-1/2"	0 - 7300	17#	LTC	P-110
8-3/4"	7300 - 12459	5-1/2"	7300 - 12459	17#	BTC	P-110

See  
COA

All casing is new and API approved.

Maximum lateral TVD: 8020'

**Design Parameter Factors:**

<u>Casing Size</u>	<u>Collapse Design Factor</u>	<u>Burst Design Factor</u>	<u>Tension Design Factor</u>
20"	2.14	8.67	28.68
13-3/8"	1.71	3.03	7.66
9-5/8"	1.23	1.90	2.92
5-1/2"	2.44	3.03	2.10
5-1/2"	2.29	2.83	6.75

4. **Cement Program: (all cement volumes based on at least 25% excess)**

- a. 20" Surface **Lead:** 605 sacks Class C Cement + 0.125 lbs/sack Cello Flake + 1% bwoc Calcium Chloride + 4% bwoc Bentonite + 81.1% Fresh Water, 13.5 ppg. **Yield:** 1.73 cf/sk.  
**Tail:** 300 sacks Class C Cement + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 56.3% Fresh Water, 14.8 ppg.  
**Yield:** 1.35 cf/sk. **TOC @ surface.**
- b. 13-3/8" Intermediate I **Lead:** 1200 sacks (60:40) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 0.25% bwoc FL- 52 + 1.5% bwoc Sodium Metasilicate + 83.7% Fresh Water, 12.8 ppg. **Yield:** 1.66 cf/sk.  
**Tail:** 450 sacks (60:40) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.5% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.3% Fresh Water, 13.8 ppg. **Yield:** 1.38 cf/sk. **TOC @ surface.**
- c. 9-5/8" Intermediate II **1<sup>st</sup> Stage**  
**Lead:** 645 sacks (60:40) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.125 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 1% bwoc Sodium Metasilicate + 89.6% Fresh Water, 12.6 ppg. **Yield:** 1.73 cf/sk.  
**Tail:** 300 sacks (60:40) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.1% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.2% Fresh Water, 13.8 ppg. **Yield:** 1.38 cf/sk.

**DV tool at ~~2350ft~~ See COA**

**2<sup>nd</sup> Stage**

**Lead:** 450 sacks (60:40) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 1.5% bwoc Sodium Metasilicate + 83.7% Fresh Water, 12.8 ppg. **Yield:** 1.66 cf/sk.  
**Tail:** 150 sacks (60:40) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.5% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.3% Fresh Water, 13.8 ppg. **Yield:** 1.38 cf/sk. **TOC @ surface. See COA**

d. 5-1/2" Production

**Lead:** 555 sacks (35:65) Poz (Fly Ash):Class H Cement + 3% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.7% bwoc FL-52 + 0.3% bwoc ASA-301 + 6% bwoc Bentonite + 105.6% Fresh Water, 12.5 ppg. **Yield:** 2.01 cf/sk.

**Tail:** 1180 sacks (50:50) Poz (Fly Ash):Class H Cement + 5% bwow Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-25 + 0.5% bwoc FL-52 + 0.3% bwoc Sodium Metasilicate + 57.2% Fresh Water 14.2 ppg. **Yield:** 1.28 cf/sk. *See COA*

#### **DV tool at 5000ft**

##### **2<sup>nd</sup> Stage**

**Lead:** 430 sacks Class C Cement + 1% bwoc R-3 + 0.125 lbs/sack Cello Flake + 0.3% bwoc FL-52 + 3% bwoc Sodium Metasilicate + 157% Fresh Water 11.4 ppg. **Yield:** 2.88 cf/sk.

**Tail:** 150 sacks (60:40) Poz (Fly Ash):Class C Cement +5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.1% Fresh Water, 13.8 ppg. **Yield:** 1.37 cf/sk. **TOC @ 2300ft**

ACTUAL CEMENT VOLUMES WILL BE ADJUSTED BASED ON FLUID CALIPER AND CALIPER LOG DATA.

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.

#### **5. Pressure Control Equipment**

The BOP system used to drill the 17-1/2" hole will consist of a 20" 2M Annular preventer. The BOP system will be tested as per BLM Onshore Oil and Gas Order #2 as a 2M system prior to drilling out the casing shoe.

The BOP system used to drill the 12-1/4" and 8-3/4" holes will consist of a 13-5/8" 3M Double Ram and Annular preventer. The BOP system will be tested as per BLM Onshore Oil and Gas Order #2 as a 3M system prior to drilling out the casing shoe.

The pipe rams will be operated and checked as per Onshore Order #2. 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 annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

*See  
COA*

Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line), if an H&P rig is used. The line will be kept as straight as possible with minimal turns.

**Proposed Mud Circulation System**

<u>Depth</u>	<u>Mud Wt.</u>	<u>Visc</u>	<u>Fluid Loss</u>	<u>Type System</u>
0 - 520 <sup>350'</sup>	8.4 - 9.0	28 - 30	N/C	FW
0 - 2190 <sup>2450'</sup>	9.6 - 10.0	28 - 32	N/C	Brine
<del>2190 - 4450</del> <sup>3950'</sup>	8.4 - 9.0	28 - 30	N/C	FW
<del>4450 - 12459</del>	8.4 - 9.0	28 - 29	N/C	FW

*See  
COR*

The necessary mud products for weight addition and fluid loss control will be on location at all times. Visual mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume. If abnormal pressures are encountered, electronic/mechanical mud monitoring equipment will be installed.

**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 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.

**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 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

**8. Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. 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. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 3450 psi and Estimated BHT 125°. No H2S is anticipated to be encountered.

*See  
COR*

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



**Weatherford<sup>®</sup>**

**Drilling Services**

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**Proposal**

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**devon**

RIGEL 20 FED COM 6H

EDDY COUNTY, NM

WELL FILE: **PLAN 1**

APRIL 9, 2013

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**Weatherford International, Ltd.**

P.O. Box 61028  
Midland, TX 79711 USA  
+1.432.561.8892 Main  
+1.432.561.8895 Fax  
[www.weatherford.com](http://www.weatherford.com)



Rigel 20 Fed Com 6H  
Eddy Co, NM

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VS <sub>ec</sub>	Target
1	0.00	0.00	90.30	0.00	0.00	0.00	0.00	0.00	0.00	
2	7512.55	0.00	90.30	7512.55	0.00	0.00	0.00	0.00	0.00	
3	8259.14	89.59	90.30	7990.00	-2.52	474.05	12.00	90.30	474.06	
4	12459.68	89.59	90.30	8020.00	-24.86	4674.42	0.00	0.00	4674.49	PBHL

SITE DETAILS

Rigel 20 Fed Com #6H  
Site Centre Northing: 599920.67  
Easting: 674975.50  
Ground Level: 3416.00  
Positional Uncertainty: 0.00  
Convergence: 0.23

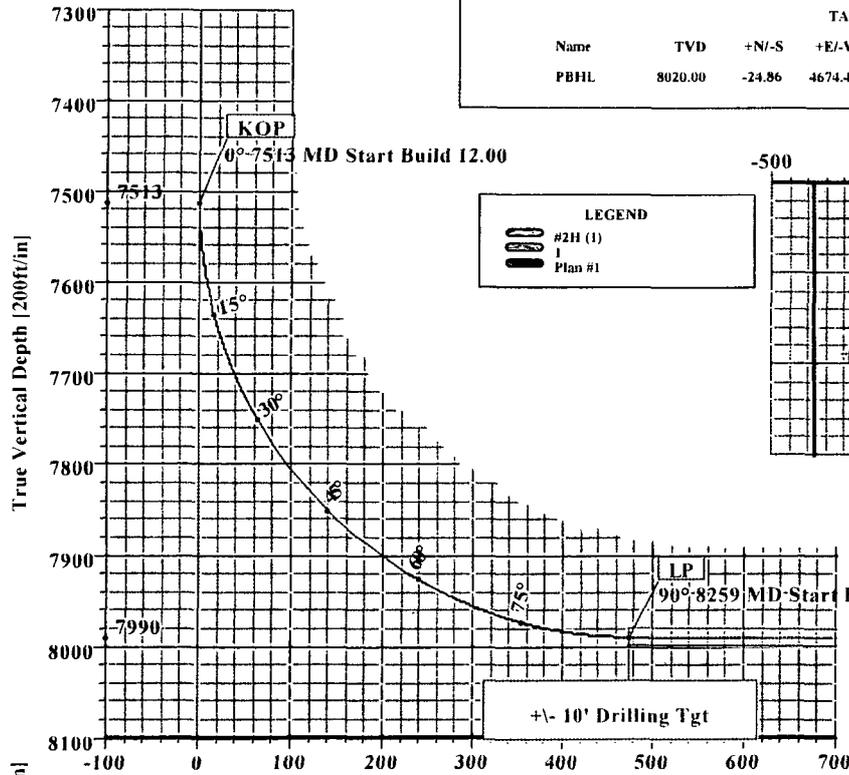
WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Rigel 20 Fed Com #6H	0.00	0.00	599920.67	674975.50	32°38'54.512N	103°53'56.936W	N/A

TARGET DETAILS

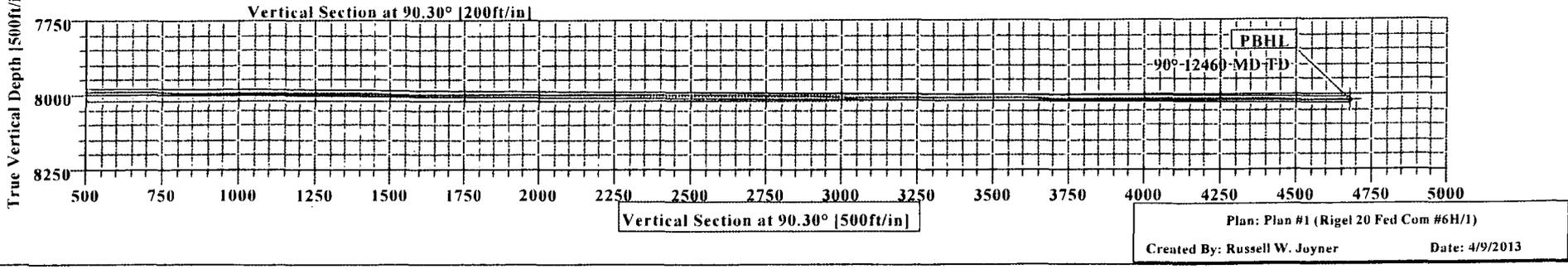
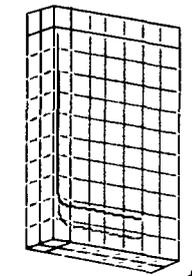
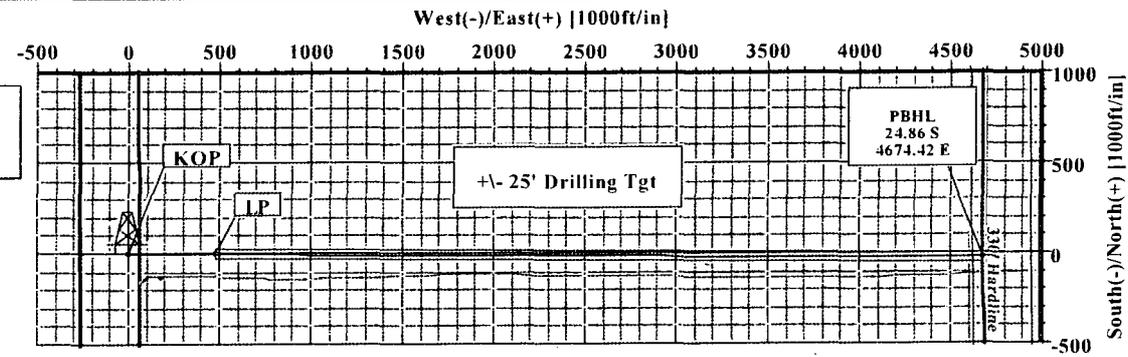
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	8020.00	-24.86	4674.42	599895.81	679649.92	Rectangle (4200x50)

KB ELEV: 3436  
GL ELEV: 3416



LEGEND

- #2H (1)
- Plan #1





# Weatherford Anticollision Report



Company: Devon Energy	Date: 4/9/2013	Time: 08:04:41	Page: 1
Field: Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference: Well: Rigel 20 Fed Com #6H, Grid North		
Reference Site: Rigel 20 Fed Com #6H	Vertical (TVD) Reference: SITE 3436.0		
Reference Well: Rigel 20 Fed Com #6H	Db: Sybase		
Reference Wellpath#:			

NO GLOBAL SCAN: Using user defined selection & scan criteria	Reference: Plan: Plan #1
Interpolation Method: MD + Stations Interval: 100.00 ft	Error Model: ISCWSA Ellipse
Depth Range: 0.00 to 15115.03 ft	Scan Method: Closest Approach 3D
Maximum Radius: 40000.00 ft	Error Surface: Ellipse

Plan: Plan #1	Date Composed: 4/9/2013
Principal: Yes	Version: 1
	Tied-to: From Surface

### Summary

Site	Offset Wellpath Well	Wellpath	Reference MD ft	Offset MD ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
Rigel 20 Fed Com #2H#2H		1 V0	7925.00	7880.09	125.00	92.36	3.83	

Site: Rigel 20 Fed Com #2H  
 Well: #2H  
 Wellpath: 1 V0  
 Inter-Site Error: 0.00 ft

Reference MD ft	TVD ft	Offset MD ft		Semi-Major Axis Ref ft			Offset Location TFO-HS deg		North ft	East ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
		MD	TVD	Ref	Offset	TFO-HS	North	East						
0.00	0.00	2.00	2.00	0.00	0.00	158.95	-161.53	62.17	173.08	173.08	75960.40			
100.00	100.00	101.82	101.82	0.09	0.12	158.89	-161.51	62.36	173.13	172.93	839.99			
200.00	200.00	201.64	201.64	0.31	0.27	158.71	-161.46	62.92	173.29	172.71	298.71			
300.00	300.00	301.56	301.56	0.54	0.53	158.45	-161.42	63.74	173.55	172.48	162.20			
400.00	400.00	401.71	401.70	0.76	0.80	158.14	-161.25	64.70	173.75	172.19	111.39			
500.00	500.00	501.21	501.18	0.99	1.06	157.50	-160.74	66.58	173.99	171.94	84.98			
600.00	600.00	600.41	600.33	1.21	1.32	156.45	-160.20	69.81	174.76	172.22	68.91			
700.00	700.00	700.40	700.23	1.44	1.59	155.18	-159.55	73.77	175.79	172.76	58.06			
800.00	800.00	800.92	800.70	1.66	1.86	154.08	-158.91	77.21	176.68	173.16	50.19			
900.00	900.00	902.12	901.85	1.89	2.12	153.12	-158.01	80.08	177.14	173.13	44.16			
1000.00	1000.00	1003.06	1002.74	2.11	2.38	152.11	-156.39	82.77	176.94	172.45	39.36			
1100.00	1100.00	1104.77	1104.41	2.34	2.63	151.17	-154.26	84.92	176.10	171.13	35.45			
1200.00	1200.00	1205.10	1204.69	2.56	2.86	150.25	-151.57	86.63	174.60	169.18	32.18			
1300.00	1300.00	1305.40	1304.93	2.79	3.10	149.32	-148.74	88.26	172.98	167.09	29.40			
1400.00	1400.00	1404.47	1403.94	3.01	3.34	148.31	-146.03	90.14	171.62	165.27	27.02			
1500.00	1500.00	1505.46	1504.82	3.24	3.60	146.77	-142.28	93.20	170.11	163.28	24.90			
1600.00	1600.00	1604.20	1603.41	3.46	3.85	145.02	-138.35	96.79	168.86	161.54	23.09			
1700.00	1700.00	1703.04	1702.09	3.69	4.11	143.14	-134.78	101.05	168.45	160.66	21.60			
1800.00	1800.00	1801.86	1800.72	3.91	4.38	141.02	-131.13	106.11	168.69	160.40	20.35			
1900.00	1900.00	1899.42	1898.07	4.14	4.64	138.96	-128.35	111.73	170.21	161.44	19.40			
2000.00	2000.00	1998.75	1997.21	4.36	4.90	137.09	-126.72	117.80	173.08	163.82	18.69			
2100.00	2100.00	2099.78	2098.10	4.59	5.17	135.57	-125.23	122.75	175.40	165.65	17.99			
2200.00	2200.00	2199.88	2198.13	4.81	5.43	134.54	-124.57	126.59	177.64	167.41	17.35			
2300.00	2300.00	2300.47	2298.66	5.03	5.69	133.72	-124.16	129.84	179.68	168.96	16.76			
2400.00	2400.00	2402.63	2400.78	5.26	5.96	132.88	-123.21	132.69	181.08	169.87	16.15			
2500.00	2500.00	2502.11	2500.23	5.48	6.22	132.08	-121.77	134.83	181.69	169.99	15.53			
2600.00	2600.00	2600.66	2598.74	5.71	6.47	131.43	-121.12	137.23	183.07	170.89	15.03			
2700.00	2700.00	2699.62	2697.67	5.93	6.73	130.85	-121.06	140.01	185.14	172.49	14.63			
2800.00	2800.00	2799.56	2797.56	6.16	6.98	130.20	-121.01	143.18	187.52	174.39	14.28			
2900.00	2900.00	2899.36	2897.30	6.38	7.23	129.60	-121.03	146.28	189.92	176.31	13.95			
3000.00	3000.00	2997.80	2995.70	6.61	7.47	129.16	-121.72	149.44	192.84	178.77	13.71			
3100.00	3100.00	3097.97	3095.80	6.83	7.71	128.69	-122.48	152.91	196.01	181.48	13.49			
3200.00	3200.00	3197.19	3194.96	7.06	7.94	128.35	-123.65	156.28	199.40	184.41	13.30			
3300.00	3300.00	3297.51	3295.21	7.28	8.16	128.21	-125.45	159.33	202.90	187.47	13.15			
3400.00	3400.00	3398.61	3396.27	7.51	8.38	128.04	-126.84	162.13	205.93	190.05	12.97			
3500.00	3500.00	3499.52	3497.14	7.73	8.61	127.92	-128.11	164.45	208.52	192.18	12.77			



# Weatherford Anticollision Report



<b>Company:</b> Devon Energy	<b>Date:</b> 4/9/2013	<b>Time:</b> 08:04:41	<b>Page:</b> 2
<b>Field:</b> Eddy Co., NM (NAD 83)			
<b>Reference Site:</b> Rigel 20 Fed Com #6H	<b>Co-ordinate(NE) Reference:</b> Well: Rigel 20 Fed Com #6H, Grid North		
<b>Reference Well:</b> Rigel 20 Fed Com #6H	<b>Vertical (TVD) Reference:</b> SITE 3436.0		
<b>Reference Wellpath:</b>	<b>Db:</b> Sybase		

**Site:** Rigel 20 Fed Com #2H  
**Well:** #2H  
**Wellpath:** 1 V0

**Inter-Site Error:** 0.00 ft

Reference		Offset		Semi-Major Axis			Offset Location		Ctr-Ctr Edge Separation		Warning
MD	TVD	MD	TVD	Ref	Offset	TFO-HS	North	East	Distance	Distance	
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft	
3600.00	3600.00	3601.21	3598.81	7.96	8.85	127.78	-128.93	166.36	210.50	193.70	12.53
3700.00	3700.00	3701.09	3698.67	8.18	9.09	127.65	-129.37	167.68	211.81	194.55	12.27
3800.00	3800.00	3800.45	3798.02	8.41	9.32	127.56	-130.22	169.31	213.64	195.92	12.06
3900.00	3900.00	3900.43	3897.98	8.63	9.55	127.54	-131.27	170.85	215.49	197.33	11.86
4000.00	4000.00	4001.34	3998.88	8.86	9.75	127.55	-132.36	172.18	217.20	198.61	11.68
4100.00	4100.00	4102.19	4099.72	9.08	9.91	127.74	-133.69	172.72	218.43	199.45	11.51
4200.00	4200.00	4202.89	4200.41	9.31	10.06	127.90	-134.72	173.05	219.31	199.96	11.33
4300.00	4300.00	4303.00	4300.51	9.53	10.20	128.06	-135.64	173.21	220.01	200.30	11.16
4400.00	4400.00	4403.26	4400.77	9.75	10.33	128.23	-136.52	173.28	220.60	200.53	10.99
4500.00	4500.00	4502.31	4499.82	9.98	10.49	128.36	-137.39	173.57	221.37	200.92	10.82
4600.00	4600.00	4601.87	4599.38	10.20	10.69	128.41	-138.24	174.36	222.53	201.64	10.65
4700.00	4700.00	4702.83	4700.33	10.43	10.89	128.50	-139.11	174.87	223.45	202.15	10.49
4800.00	4800.00	4803.07	4800.57	10.65	11.07	128.60	-139.84	175.15	224.13	202.43	10.33
4900.00	4900.00	4903.24	4900.73	10.88	11.23	128.76	-140.71	175.25	224.75	202.65	10.17
5000.00	5000.00	5003.63	5001.12	11.10	11.43	128.84	-141.25	175.44	225.24	202.73	10.01
5100.00	5100.00	5103.55	5101.04	11.33	11.66	128.83	-141.44	175.74	225.59	202.61	9.82
5200.00	5200.00	5202.78	5200.27	11.55	11.92	128.74	-141.54	176.40	226.17	202.70	9.64
5300.00	5300.00	5301.74	5299.21	11.78	12.18	128.49	-141.37	177.78	227.15	203.21	9.49
5400.00	5400.00	5403.22	5400.67	12.00	12.42	127.96	-140.39	179.94	228.23	203.82	9.35
5500.00	5500.00	5505.08	5502.50	12.23	12.64	127.40	-138.71	181.42	228.38	203.53	9.19
5600.00	5600.00	5606.11	5603.50	12.45	12.82	126.77	-136.42	182.58	227.92	202.66	9.02
5700.00	5700.00	5707.74	5705.09	12.68	12.99	126.12	-133.73	183.29	226.91	201.26	8.85
5800.00	5800.00	5807.25	5804.57	12.90	13.13	125.56	-131.23	183.59	225.68	199.66	8.67
5900.00	5900.00	5908.10	5905.39	13.13	13.27	125.05	-128.83	183.62	224.33	197.95	8.50
6000.00	6000.00	6008.01	6005.27	13.35	13.38	124.68	-126.78	183.20	222.81	196.09	8.34
6100.00	6100.00	6107.28	6104.52	13.58	13.51	124.30	-124.81	182.96	221.49	194.42	8.18
6200.00	6200.00	6206.34	6203.57	13.80	13.64	124.02	-123.41	182.81	220.57	193.15	8.04
6300.00	6300.00	6305.79	6303.02	14.03	13.77	123.88	-122.64	182.67	220.03	192.25	7.92
6400.00	6400.00	6405.15	6402.39	14.25	13.88	123.81	-122.20	182.49	219.63	191.51	7.81
6500.00	6500.00	6505.19	6502.42	14.47	13.95	123.91	-122.52	182.26	219.61	191.20	7.73
6600.00	6600.00	6606.20	6603.43	14.70	14.00	124.11	-122.91	181.43	219.14	190.46	7.64
6700.00	6700.00	6707.42	6704.64	14.92	14.03	124.31	-123.01	180.27	218.26	189.32	7.54
6800.00	6800.00	6808.07	6805.28	15.15	14.06	124.49	-122.78	178.70	216.84	187.64	7.43
6900.00	6900.00	6907.82	6905.01	15.37	14.10	124.82	-122.94	176.79	215.36	185.90	7.31
7000.00	7000.00	7007.60	7004.77	15.60	14.14	125.19	-123.34	174.88	214.02	184.29	7.20
7100.00	7100.00	7107.04	7104.20	15.82	14.19	125.45	-123.45	173.37	212.84	182.85	7.09
7200.00	7200.00	7206.34	7203.50	16.05	14.25	125.57	-123.31	172.42	211.98	181.70	7.00
7300.00	7300.00	7306.87	7304.02	16.27	14.31	125.66	-123.09	171.54	211.15	180.58	6.91
7400.00	7400.00	7407.01	7404.15	16.50	14.37	125.85	-123.05	170.28	210.10	179.24	6.81
7500.00	7500.00	7506.21	7503.34	16.72	14.44	126.11	-123.39	169.16	209.39	178.23	6.72
7512.55	7512.55	7518.97	7516.10	16.75	14.45	126.15	-123.46	169.00	209.30	178.11	6.71
7525.00	7525.00	7531.63	7528.76	16.78	14.46	35.93	-123.53	168.82	209.07	177.85	6.70
7550.00	7549.96	7556.99	7554.12	16.83	14.48	36.34	-123.68	168.41	207.78	176.50	6.64
7575.00	7574.82	7582.16	7579.29	16.89	14.49	37.06	-123.84	167.94	205.40	174.09	6.56
7600.00	7599.51	7606.80	7603.92	16.95	14.51	38.11	-124.02	167.44	201.99	170.67	6.45
7625.00	7623.96	7631.16	7628.28	17.00	14.53	39.50	-124.21	166.92	197.61	166.30	6.31
7650.00	7648.11	7655.18	7652.29	17.06	14.55	41.28	-124.42	166.38	192.33	161.03	6.14
7675.00	7671.88	7678.84	7675.93	17.11	14.57	43.49	-124.65	165.84	186.22	154.93	5.95
7700.00	7695.22	7702.15	7699.24	17.17	14.58	46.18	-124.86	165.28	179.38	148.09	5.73
7725.00	7718.06	7724.92	7722.00	17.23	14.60	49.38	-125.04	164.74	171.93	140.62	5.49
7750.00	7740.33	7747.09	7744.16	17.30	14.62	53.15	-125.19	164.19	164.05	132.69	5.23



# Weatherford Anticollision Report



<b>Company:</b> Devon Energy	<b>Date:</b> 4/9/2013	<b>Time:</b> 08:04:41	<b>Page:</b> 3
<b>Field:</b> Eddy Co., NM (NAD 83)	<b>Co-ordinate(NE) Reference:</b> Well: Rigel 20 Fed Com #6H, Grid North		
<b>Reference Site:</b> Rigel 20 Fed Com #6H	<b>Vertical (TVD) Reference:</b> SITE 3436.0		
<b>Reference Well:</b> Rigel 20 Fed Com #6H	<b>Db:</b> Sybase		
<b>Reference Wellpath:</b>			

**Site:** Rigel 20 Fed Com #2H  
**Well:** #2H  
**Wellpath:** 1 V0

**Inter-Site Error:** 0.00 ft

Reference MD ft	TVD ft	Offset		Semi-Major Axis			Offset Location		Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
		MD ft	TVD ft	Ref ft	Offset ft	TFO-HS deg	North ft	East ft				
7775.00	7761.98	7768.54	7765.60	17.36	14.64	57.49	-125.32	163.66	155.96	124.50	4.96	
7800.00	7782.95	7788.91	7785.97	17.43	14.65	62.34	-125.43	163.20	147.99	116.38	4.68	
7825.00	7803.17	7808.64	7805.70	17.51	14.67	67.70	-125.52	162.83	140.51	108.70	4.42	
7850.00	7822.60	7827.69	7824.74	17.60	14.68	73.46	-125.60	162.54	133.95	101.91	4.18	
7875.00	7841.18	7845.99	7843.04	17.69	14.70	79.45	-125.67	162.33	128.82	96.54	3.99	
7900.00	7858.86	7863.50	7860.55	17.80	14.71	85.46	-125.72	162.19	125.65	93.17	3.87	
7925.00	7875.58	7880.09	7877.15	17.92	14.73	91.22	-125.78	162.08	125.00	92.36	3.83	
7950.00	7891.32	7895.71	7892.76	18.05	14.74	96.50	-125.83	161.98	127.27	94.53	3.89	
7975.00	7906.01	7910.30	7907.35	18.20	14.76	101.14	-125.88	161.90	132.67	99.89	4.05	
8000.00	7919.63	7923.82	7920.87	18.37	14.77	105.02	-125.92	161.83	141.15	108.36	4.30	
8025.00	7932.13	7936.24	7933.29	18.55	14.78	108.09	-125.96	161.77	152.47	119.68	4.65	
8050.00	7943.48	7947.52	7944.57	18.75	14.79	110.31	-126.00	161.72	166.27	133.45	5.07	
8075.00	7953.65	7957.63	7954.68	18.98	14.80	111.68	-126.04	161.68	182.18	149.27	5.54	
8100.00	7962.61	7966.51	7963.57	19.22	14.81	112.17	-126.07	161.64	199.82	166.76	6.04	
8125.00	7970.34	7974.16	7971.21	19.49	14.82	111.74	-126.09	161.61	218.90	185.58	6.57	
8150.00	7976.81	7980.54	7977.60	19.77	14.82	110.33	-126.11	161.58	239.13	205.44	7.10	
8175.00	7982.01	7985.65	7982.70	20.08	14.83	107.84	-126.12	161.56	260.30	226.13	7.62	
8200.00	7985.92	7989.46	7986.51	20.40	14.83	104.17	-126.13	161.54	282.22	247.48	8.12	
8225.00	7988.54	7991.97	7989.02	20.74	14.83	99.21	-126.13	161.53	304.70	269.36	8.62	
8250.00	7989.85	7993.17	7990.22	21.10	14.84	92.89	-126.14	161.52	327.63	291.74	9.13	
8259.14	7990.00	7993.28	7990.33	21.23	14.84	90.25	-126.14	161.52	336.09	300.05	9.33	
8300.00	7990.29	7993.39	7990.44	21.85	14.84	90.30	-126.14	161.52	374.32	337.65	10.21	
8400.00	7991.01	7993.65	7990.70	23.53	14.84	90.42	-126.14	161.52	469.74	431.40	12.25	
8500.00	7991.72	7993.92	7990.97	25.40	14.84	90.55	-126.14	161.52	566.75	526.54	14.09	
8600.00	7992.44	7994.18	7991.23	27.42	14.84	90.67	-126.14	161.52	664.64	622.41	15.74	
8700.00	7993.15	7994.44	7991.49	29.56	14.84	90.79	-126.14	161.52	763.08	718.71	17.20	
8800.00	7993.87	7994.70	7991.75	31.79	14.84	90.91	-126.14	161.51	861.88	815.28	18.50	
8900.00	7994.58	9585.14	8860.78	34.10	29.04	171.42	-136.36	1134.54	874.21	847.97	33.32	
9000.00	7995.29	9669.44	8859.87	36.47	31.03	171.56	-134.44	1218.81	872.03	844.89	32.12	
9100.00	7996.01	9750.17	8860.66	38.90	32.97	171.73	-132.27	1299.50	871.84	843.77	31.06	
9200.00	7996.72	9845.41	8863.60	41.36	35.30	171.94	-129.97	1394.67	873.73	844.66	30.05	
9300.00	7997.44	9955.47	8865.63	43.86	38.02	172.25	-125.94	1504.63	874.24	844.09	29.00	
9400.00	7998.15	10047.35	8867.52	46.39	40.35	172.52	-122.40	1596.43	875.00	843.83	28.08	
9500.00	7998.86	10136.35	8870.24	48.95	42.63	172.70	-120.35	1685.36	876.96	844.73	27.21	
9600.00	7999.58	10225.04	8874.04	51.52	44.91	172.88	-118.52	1773.95	880.18	846.87	26.43	
9700.00	8000.29	10321.56	8879.03	54.11	47.41	172.94	-118.60	1870.34	884.53	850.01	25.62	
9800.00	8001.01	10438.82	8883.92	56.72	50.48	172.96	-119.43	1987.49	888.01	852.10	24.73	
9900.00	8001.72	10536.76	8886.69	59.34	53.05	173.01	-119.36	2085.39	890.05	852.87	23.94	
10000.00	8002.43	10646.32	8890.02	61.98	55.94	173.01	-120.31	2194.89	892.44	853.85	23.13	
10100.00	8003.15	10730.01	8892.29	64.62	58.14	172.98	-121.38	2278.54	894.56	854.71	22.45	
10200.00	8003.86	10840.72	8896.41	67.27	61.09	172.86	-124.33	2389.14	897.86	856.46	21.69	
10300.00	8004.58	10963.44	8898.15	69.93	64.38	172.79	-126.13	2511.83	898.68	855.66	20.89	
10400.00	8005.29	11076.86	8897.20	72.60	67.42	172.78	-126.74	2625.24	897.09	852.56	20.15	
10500.00	8006.01	11170.05	8896.44	75.28	69.91	172.79	-126.78	2718.42	895.51	849.62	19.51	
10600.00	8006.72	11276.50	8895.95	77.96	72.77	172.72	-128.29	2824.87	894.50	847.05	18.85	
10700.00	8007.43	11371.67	8894.26	80.64	75.34	172.67	-129.37	2920.01	892.14	843.21	18.23	
10800.00	8008.15	11455.03	8894.66	83.33	77.59	172.62	-130.60	3003.36	891.97	841.64	17.72	
10900.00	8008.86	11559.84	8895.87	86.03	80.42	172.56	-132.12	3108.15	892.54	840.63	17.19	
11000.00	8009.58	11669.17	8895.70	88.73	83.38	172.48	-133.76	3217.47	891.79	838.24	16.65	
11100.00	8010.29	11755.79	8895.47	91.43	85.73	172.43	-134.98	3304.08	891.00	835.98	16.19	
11200.00	8011.00	11832.68	8897.57	94.13	87.81	172.41	-135.85	3380.93	893.00	836.62	15.84	



# Weatherford Anticollision Report



Company: Devon Energy	Date: 4/9/2013	Time: 08:04:41	Page: 4
Field: Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference: Well: Rigel 20 Fed Com #6H, Grid North		
Reference Site: Rigel 20 Fed Com #6H	Vertical (TVD) Reference: SITE 3436.0		
Reference Well: Rigel 20 Fed Com #6H	Db: Sybase		
Reference Wellpath:			

Site: Rigel 20 Fed Com #2H  
 Well: #2H  
 Wellpath: 1 V0

Inter-Site Error: 0.00 ft

Reference MD ft	TVD ft	Offset		Semi-Major Axis			Offset Location		Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
		MD ft	TVD ft	Ref ft	Offset ft	TFO-HS deg	North ft	East ft				
11300.00	8011.72	11935.82	8901.20	96.84	90.61	172.41	-136.89	3484.00	895.84	837.91	15.46	
11400.00	8012.43	12037.64	8904.47	99.55	93.37	172.42	-137.61	3585.77	898.35	838.89	15.11	
11500.00	8013.15	12147.07	8907.78	102.26	96.34	172.47	-137.68	3695.14	900.60	839.62	14.77	
11600.00	8013.86	12255.28	8909.43	104.98	99.27	172.55	-137.07	3803.34	901.24	838.79	14.43	
11700.00	8014.57	12364.47	8910.65	107.70	102.22	172.70	-135.28	3912.51	901.38	837.54	14.12	
11800.00	8015.29	12481.56	8910.06	110.42	105.42	172.87	-133.08	4029.57	899.85	834.61	13.79	
11900.00	8016.00	12583.29	8908.47	113.14	108.18	172.99	-131.42	4131.27	897.33	830.73	13.47	
12000.00	8016.72	12684.97	8906.72	115.86	110.94	173.12	-129.63	4232.92	894.64	826.69	13.17	
12100.00	8017.43	12786.89	8904.80	118.59	113.69	173.30	-127.11	4334.80	891.70	822.48	12.88	
12200.00	8018.15	12886.68	8902.90	121.31	116.38	173.52	-123.88	4434.52	888.67	818.25	12.62	
12300.00	8018.86	12987.74	8901.06	124.04	119.11	173.76	-120.27	4535.50	885.69	814.12	12.37	
12400.00	8019.57	13089.24	8898.98	126.77	121.85	174.05	-116.03	4636.88	882.44	809.77	12.14	
12459.68	8020.00	13117.00	8898.41	128.40	122.61	174.13	-114.85	4664.61	881.07	807.92	12.04	



**Weatherford**

**Weatherford Drilling Services**

GeoDec v5.03

Report Date: April 09, 2013  
 Job Number: \_\_\_\_\_  
 Customer: Devon  
 Well Name: Rigel 20 Fed Com #6H  
 API Number: \_\_\_\_\_  
 Rig Name: \_\_\_\_\_  
 Location: Eddy Co., NM  
 Block: \_\_\_\_\_  
 Engineer: RWJ

US State Plane 1983	Geodetic Latitude / Longitude
System: New Mexico Eastern Zone	System: Latitude / Longitude
Projection: Transverse Mercator/Gauss Kruger	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
North/South 599920.670 USFT	Latitude 32.6484787 DEG
East/West 674975.500 USFT	Longitude -103.8991445 DEG
Grid Convergence: .23°	
<b>Total Correction: +7.35°</b>	

Geodetic Location WGS84      Elevation =      0.0 Meters  
 Latitude =      32.64848° N      32° 38 min 54.523 sec  
 Longitude =      103.89914° W      103° 53 min 56.920 sec

Magnetic Declination =	7.58°	[True North Offset]	
Local Gravity =	.9988 g	Checksum =	6591
Local Field Strength =	48566 nT	Magnetic Vector X =	23768 nT
Magnetic Dip =	60.42°	Magnetic Vector Y =	3162 nT
Magnetic Model =	bggm2012	Magnetic Vector Z =	42235 nT
Spud Date =	Dec 15, 2013	Magnetic Vector H =	23977 nT

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Weatherford  
Wft Plan Report X Y's.

Company: Devon Energy  
Field: Eddy Co., NM (NAD 83)  
Site: Rigel 20 Fed Com #6H  
Well: Rigel 20 Fed Com #6H  
Wellpath: 1

Date: 4/9/2013 Time: 08:07:55 Page: 1  
Co-ordinate(NE) Reference: Well: Rigel 20 Fed Com #6H, Grid North  
Vertical (TVD) Reference: SITE 3436.0  
Section (VS) Reference: Well (0.00N,0.00E,90.30Azi)  
Survey Calculation Method: Minimum Curvature Db: Sybase

Plan: Plan #1 Date Composed: 4/9/2013  
Principal: Yes Version: 1  
Site: Rigel 20 Fed Com #6H Tied-to: From Surface

Site Position: Northing: 599920.67 ft Latitude: 32 38 54.512 N  
From: Map Easting: 674975.50 ft Longitude: 103 53 56.936 W  
Position Uncertainty: 0.00 ft North Reference: Grid  
Ground Level: 3416.00 ft Grid Convergence: 0.23 deg

Well: Rigel 20 Fed Com #6H Slot Name:  
Well Position: +N/-S 0.00 ft Northing: 599920.67 ft Latitude: 32 38 54.512 N  
+E/-W 0.00 ft Easting: 674975.50 ft Longitude: 103 53 56.936 W  
Position Uncertainty: 0.00 ft

Wellpath: 1 Drilled From: Surface  
Current Datum: SITE Height 3436.00 ft Tie-on Depth: 0.00 ft  
Magnetic Data: 12/15/2013 Above System Datum: Mean Sea Level  
Field Strength: 48611 nT Declination: 7.46 deg  
Vertical Section: Depth From (TVD) +N/-S Direction  
ft ft ft deg  
0.00 0.00 0.00 90.30

MD	Incl	Azim	TVD	+N/-S	+E/-W	DLS	Build	Turn	TFO	Target
ft	deg	deg	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	deg	
0.00	0.00	90.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7512.55	0.00	90.30	7512.55	0.00	0.00	0.00	0.00	0.00	0.00	
8259.14	89.59	90.30	7990.00	-2.52	474.05	12.00	12.00	0.00	90.30	
12459.68	89.59	90.30	8020.00	-24.86	4674.42	0.00	0.00	0.00	0.00	PBHL

MD	Incl	Azim	TVD	N/S	E/W	VS	DLS	MapN	MapE	Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	ft	
7500.00	0.00	90.30	7500.00	0.00	0.00	0.00	0.00	599920.67	674975.50	
7512.55	0.00	90.30	7512.55	0.00	0.00	0.00	0.00	599920.67	674975.50	KOP
7600.00	10.49	90.30	7599.51	-0.04	7.99	7.99	12.00	599920.63	674983.49	
7700.00	22.49	90.30	7695.22	-0.19	36.33	36.33	12.00	599920.48	675011.83	
7800.00	34.49	90.30	7782.95	-0.45	83.94	83.95	12.00	599920.22	675059.44	
7900.00	46.49	90.30	7858.86	-0.79	148.76	148.76	12.00	599919.88	675124.26	
8000.00	58.49	90.30	7919.63	-1.21	227.94	227.95	12.00	599919.46	675203.44	
8100.00	70.49	90.30	7962.61	-1.69	318.03	318.04	12.00	599918.98	675293.53	
8200.00	82.49	90.30	7985.92	-2.21	415.09	415.09	12.00	599918.46	675390.59	
8259.14	89.59	90.30	7990.00	-2.52	474.05	474.06	12.00	599918.15	675449.55	LP
8300.00	89.59	90.30	7990.29	-2.74	514.91	514.91	0.00	599917.93	675490.41	
8400.00	89.59	90.30	7991.01	-3.27	614.90	614.91	0.00	599917.40	675590.40	
8500.00	89.59	90.30	7991.72	-3.80	714.90	714.91	0.00	599916.87	675690.40	
8600.00	89.59	90.30	7992.44	-4.33	814.89	814.91	0.00	599916.34	675790.39	
8700.00	89.59	90.30	7993.15	-4.87	914.89	914.90	0.00	599915.80	675890.39	
8800.00	89.59	90.30	7993.87	-5.40	1014.89	1014.90	0.00	599915.27	675990.39	
8900.00	89.59	90.30	7994.58	-5.93	1114.88	1114.90	0.00	599914.74	676090.38	
9000.00	89.59	90.30	7995.29	-6.46	1214.88	1214.90	0.00	599914.21	676190.38	
9100.00	89.59	90.30	7996.01	-6.99	1314.87	1314.89	0.00	599913.68	676290.37	
9200.00	89.59	90.30	7996.72	-7.52	1414.87	1414.89	0.00	599913.15	676390.37	
9300.00	89.59	90.30	7997.44	-8.06	1514.87	1514.89	0.00	599912.61	676490.37	
9400.00	89.59	90.30	7998.15	-8.59	1614.86	1614.89	0.00	599912.08	676590.36	
9500.00	89.59	90.30	7998.86	-9.12	1714.86	1714.88	0.00	599911.55	676690.36	
9600.00	89.59	90.30	7999.58	-9.65	1814.86	1814.88	0.00	599911.02	676790.36	
9700.00	89.59	90.30	8000.29	-10.18	1914.85	1914.88	0.00	599910.49	676890.35	
9800.00	89.59	90.30	8001.01	-10.72	2014.85	2014.88	0.00	599909.95	676990.35	
9900.00	89.59	90.30	8001.72	-11.25	2114.84	2114.87	0.00	599909.42	677090.34	
10000.00	89.59	90.30	8002.43	-11.78	2214.84	2214.87	0.00	599908.89	677190.34	
10100.00	89.59	90.30	8003.15	-12.31	2314.84	2314.87	0.00	599908.36	677290.34	
10200.00	89.59	90.30	8003.86	-12.84	2414.83	2414.87	0.00	599907.83	677390.33	
10300.00	89.59	90.30	8004.58	-13.37	2514.83	2514.86	0.00	599907.30	677490.33	
10400.00	89.59	90.30	8005.29	-13.91	2614.82	2614.86	0.00	599906.76	677590.32	
10500.00	89.59	90.30	8006.01	-14.44	2714.82	2714.86	0.00	599906.23	677690.32	
10600.00	89.59	90.30	8006.72	-14.97	2814.82	2814.86	0.00	599905.70	677790.32	
10700.00	89.59	90.30	8007.43	-15.50	2914.81	2914.85	0.00	599905.17	677890.31	
10800.00	89.59	90.30	8008.15	-16.03	3014.81	3014.85	0.00	599904.64	677990.31	

10900.00	89.59	90.30	8008.96	-16.57	3114.80	3114.85	0.00	599904.10	678090.30
11000.00	89.59	90.30	8009.58	-17.10	3214.80	3214.84	0.00	599903.57	678190.30
11100.00	89.59	90.30	8010.29	-17.63	3314.80	3314.84	0.00	599903.04	678290.30
11200.00	89.59	90.30	8011.00	-18.16	3414.79	3414.84	0.00	599902.51	678390.29
11300.00	89.59	90.30	8011.72	-18.69	3514.79	3514.84	0.00	599901.98	678490.29
11400.00	89.59	90.30	8012.43	-19.22	3614.78	3614.93	0.00	599901.45	678590.28
11500.00	89.59	90.30	8013.15	-19.76	3714.78	3714.93	0.00	599900.91	678690.28
11600.00	89.59	90.30	8013.86	-20.29	3814.78	3814.83	0.00	599900.39	678790.28
11700.00	89.59	90.30	8014.57	-20.82	3914.77	3914.83	0.00	599899.95	678890.27
11800.00	89.59	90.30	8015.29	-21.35	4014.77	4014.82	0.00	599899.32	678990.27
11900.00	89.59	90.30	8016.00	-21.88	4114.76	4114.82	0.00	599898.79	679090.26
12000.00	89.59	90.30	8016.72	-22.42	4214.76	4214.82	0.00	599898.25	679190.26
12100.00	89.59	90.30	8017.43	-22.95	4314.76	4314.82	0.00	599897.72	679290.26
12200.00	89.59	90.30	8018.15	-23.48	4414.75	4414.81	0.00	599897.19	679390.25
12300.00	89.59	90.30	8018.86	-24.01	4514.75	4514.81	0.00	599896.66	679490.25
12400.00	89.59	90.30	8019.57	-24.54	4614.74	4614.81	0.00	599896.13	679590.24
12459.68	89.59	90.30	8020.00	-24.86	4674.42	4674.49	0.00	599895.81	679649.92 PBHL

## Targets

Name	Description		TVD ft	+N/-S ft	+E/-W ft	Map		<--- Latitude			--- Longitude				
	Dip.	Dir.				Northing ft	Easting ft	Deg	Min	Sec	Deg	Min	Sec		
PBHL	0.41	90.30	8020.00	-24.86	4674.42	599895.81	679649.92	32	38	54.073	N	103	53	2.265	W

-Rectangle (4200x50)

## Casing Points

MD	TVD	Diameter	Hole Size	Name
----	-----	----------	-----------	------

## Annotation

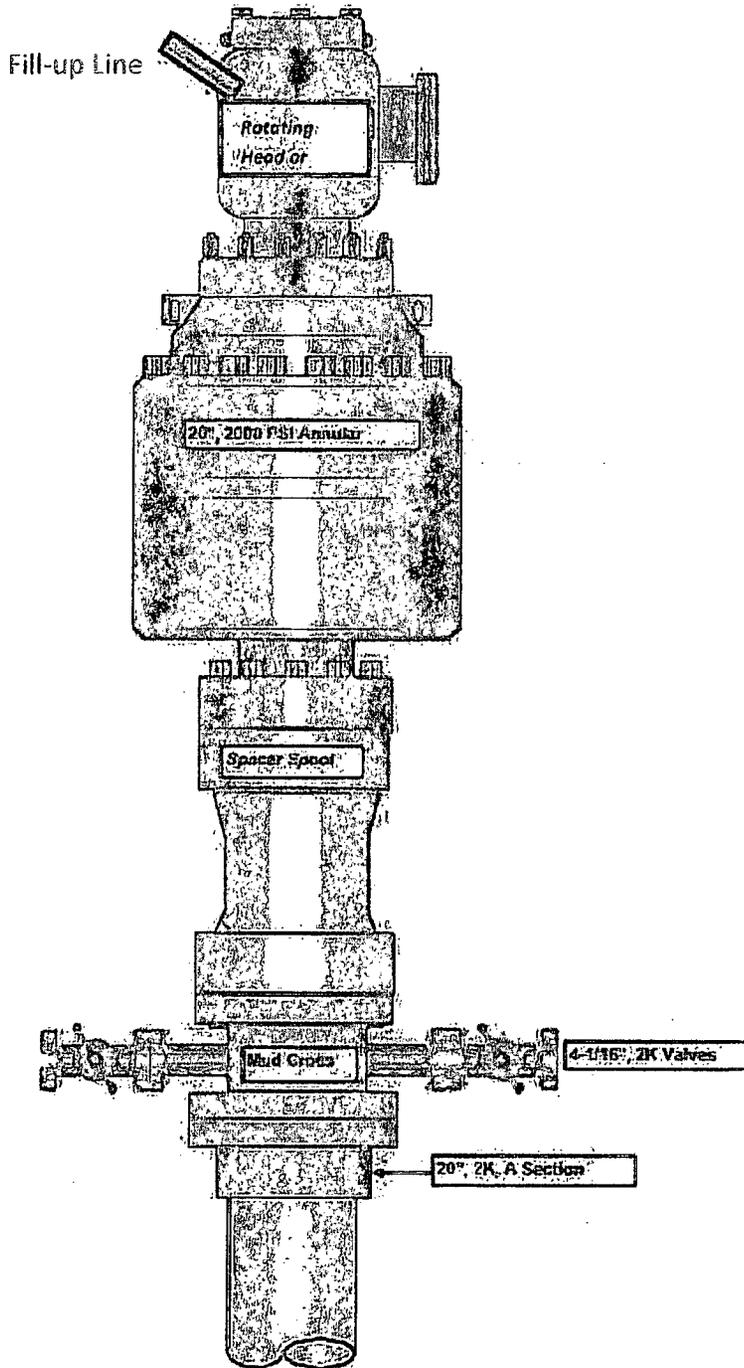
MD ft	TVD ft	
7512.55	7512.55	KOP
8259.14	7990.00	LP
12459.67	8020.00	PBHL

NOTES REGARDING BLOWOUT PREVENTERS  
Devon Energy Production Company, LP  
**Rigel 20 Fed Com 6H**

Surface Location: 1699' FNL & 265' FWL, Unit E, Sec 20 T19S R31E, Eddy, NM  
Bottom Hole Location: 1750' FNL & 340' FEL, Unit H, Sec 20 T19S R31E, Eddy, NM

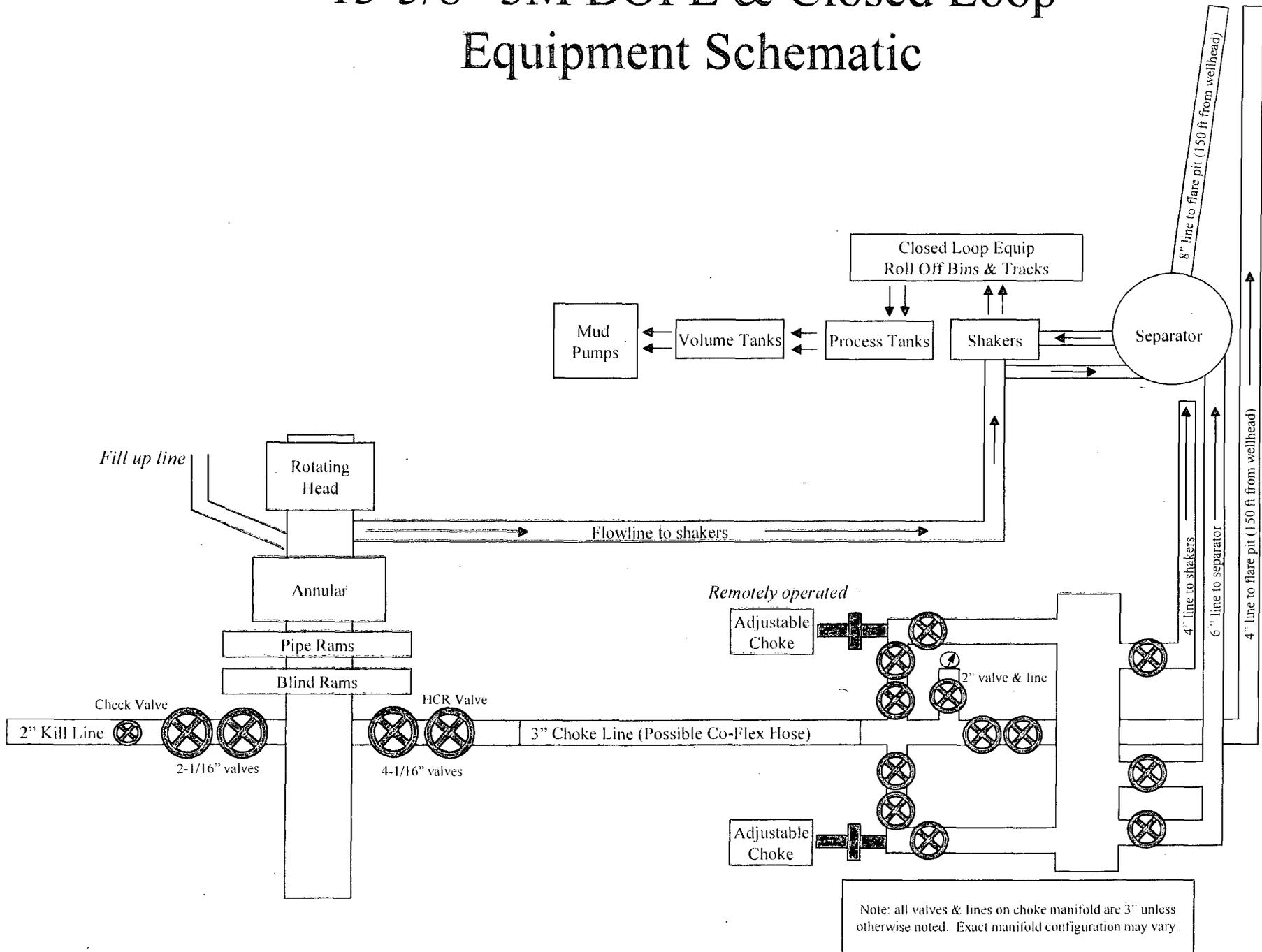
1. Drilling nipple will be constructed so it can be removed mechanically without the aid of a welder. The minimum internal diameter will equal BOP bore.
2. Wear ring will be properly installed in head.
3. Blowout preventer and all associated fittings will be in operable condition to withstand a minimum 3000 psi working pressure.
4. All fittings will be flanged.
5. A full bore safety valve tested to a minimum 3000 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.

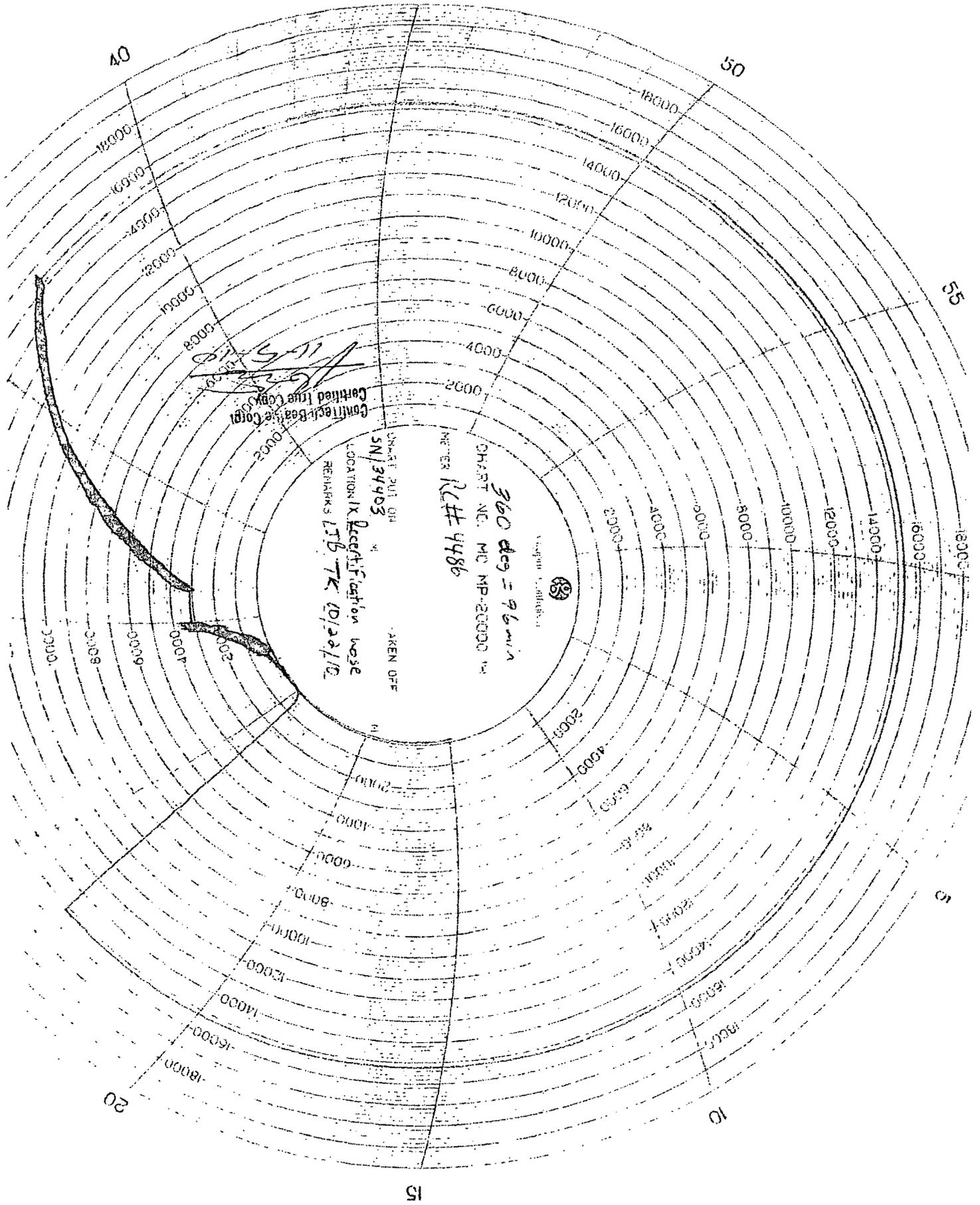
20" 2K Annular



THE SAME CHOKE MANIFOLD WILL BE USED ON THE 2K ANNULAR AS ON THE 13 5/8" 3M BOPE & CLOSED LOOP EQUIPMENT SCHEMATIC.

# 13-5/8" 3M BOPE & Closed Loop Equipment Schematic







Fluid Technology

ContiTech Beattie Corp.  
Website: [www.contitechbeattie.com](http://www.contitechbeattie.com)

Monday, June 14, 2010

RE: Drilling & Production Hoses  
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly. It is good practice to use lifting & safety equipment but not mandatory.

Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

Robin Hodgson  
Sales Manager  
ContiTech Beattie Corp

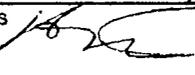
ContiTech Beattie Corp,  
11535 Brittmoore Park Drive,  
Houston, TX 77041  
Phone: +1 (832) 327-0141  
Fax: +1 (832) 327-0148  
[www.contitechbeattie.com](http://www.contitechbeattie.com)



# H&P 300



## Hydrostatic Test Certificate

Certificate Number: 4520	PBC No: 10321	<b>Customer Name &amp; Address:</b>	
Customer Purchase Order No: RIG 300		HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119	
Project:			
<b>Test Centre Address:</b>		<b>Accepted by ContiTech Beattie Inspection:</b>	
ContiTech Beattie Corp. 11535 Brittmoore Park Drive Houston, TX 77041 USA		Signed: Josh Sims 	<b>Accepted by Client Inspection:</b>
		Date: 10/27/10	

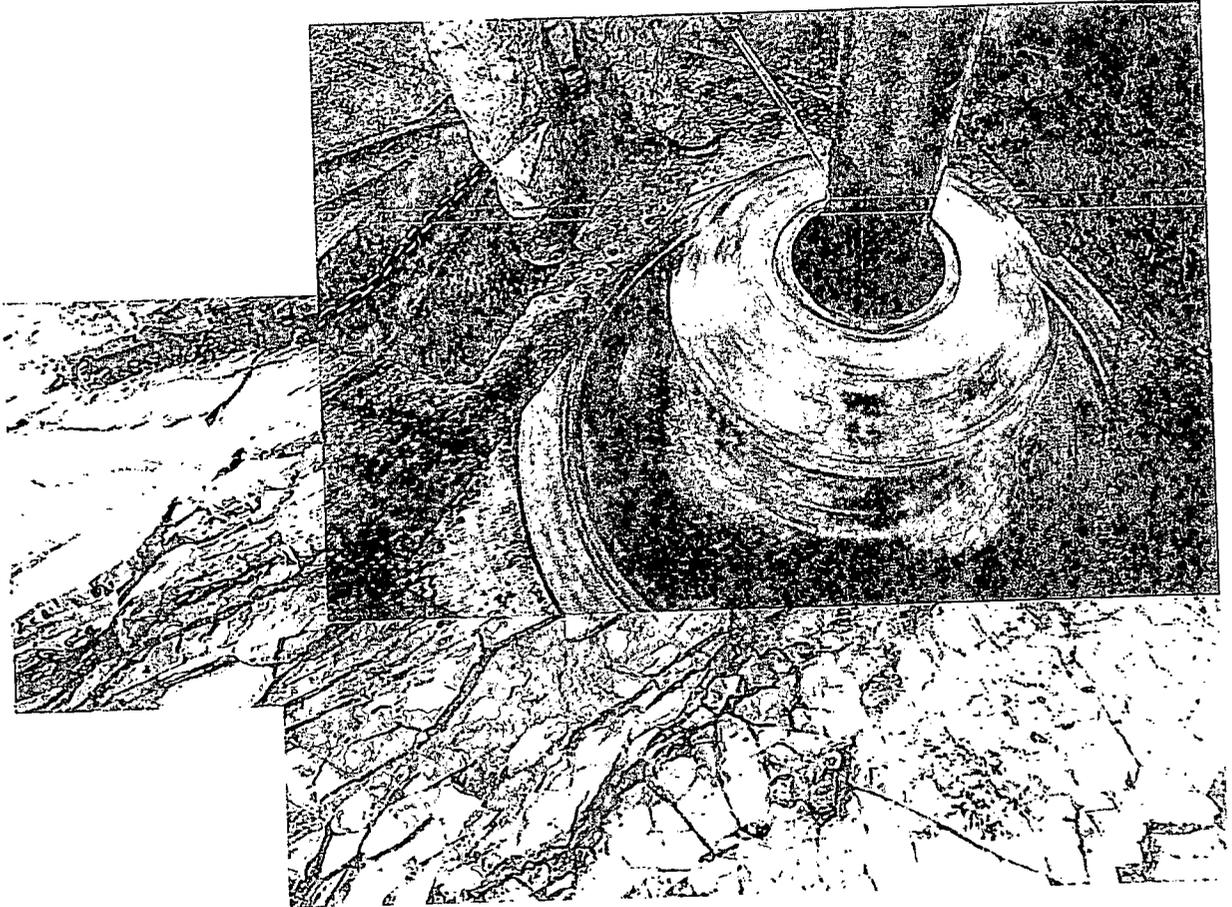
We certify that the goods detailed hereon have been inspected by our Quality Management System, and to the best of our knowledge are found to conform to relevant industrial standards within the requirements of the purchase order as issued to ContiTech Beattie Corporation.

These goods were made in the United States of America.

Item	Part No.	Description	Qty	Serial Number	As-Built Length (m)	Work Press.	Test Press.	Test Time (minutes)
1		3" ID 10K Choke & Kill Hose x 35ft OAL End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange End B: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange Working Pressure: 10,000psi Test Pressure: 15,000psi Serial#: 49106	1	49106		10 kpsi	15 kpsi	60



Commitment Runs Deep



Design Plan  
Operation and Maintenance Plan  
Closure Plan

SENM - Closed Loop Systems  
April 2010

## I. Design Plan

Devon uses various high efficient closed loop systems (CLS). The CLS shown 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.

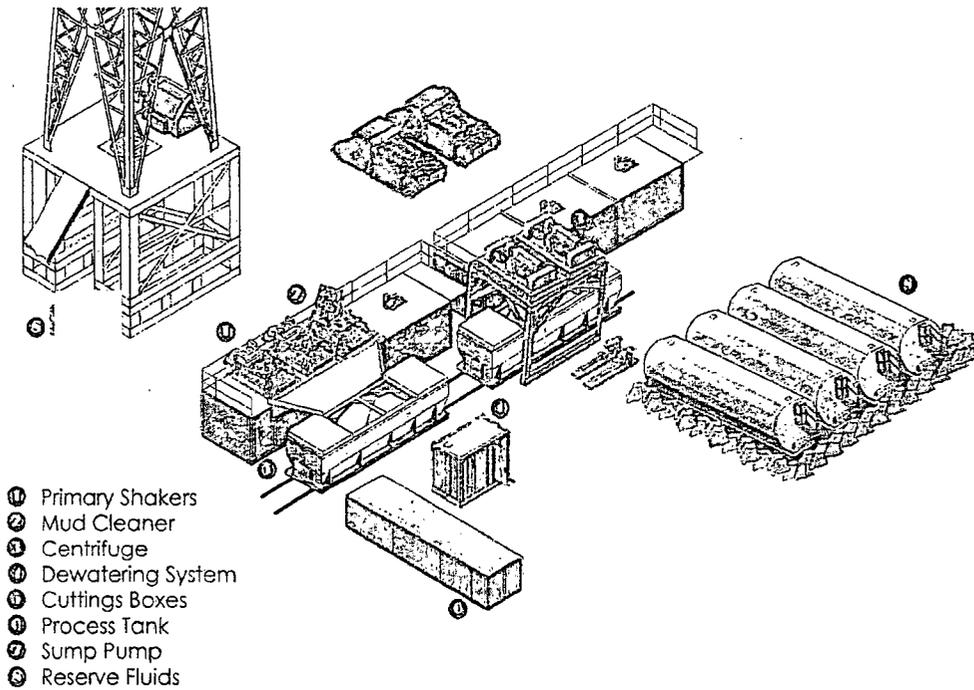
## II. Operations and Maintenance Plan

*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 utilized depending on the well's anticipated solids volume. One or two centrifuges can be used 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 Solids Control 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.

### **III. Closure Plan**

A maximum 170' X 170' 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.



**Devon Energy Center  
333 West Sheridan Avenue  
Oklahoma City, Oklahoma 73102-5015**

# **Hydrogen Sulfide (H<sub>2</sub>S) Contingency Plan**

**For**

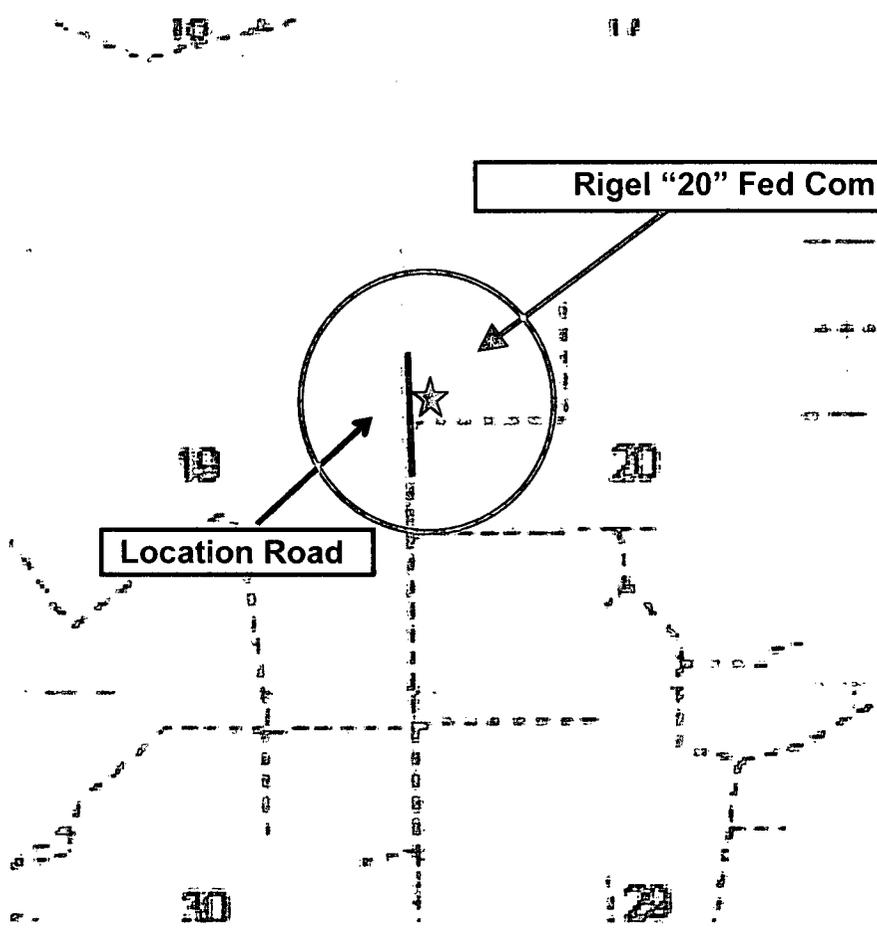
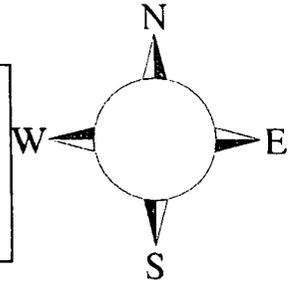
**Rigel "20" Fed Com 6H**

**Sec-20, T-19S R-31E  
1990' FNL & 265' FWL,  
LAT. = 32.6476790'N (NAD83)  
LONG = 103.8991416'W**

**Eddy County NM**

# Rigel "20" Fed Com 6H

This is an open drilling site. H<sub>2</sub>S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H<sub>2</sub>S, including warning signs, wind indicators and H<sub>2</sub>S monitor.



Assumed 100 ppm ROE = 3000' (Radius of Exposure)  
100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan

## Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road, West then Northwest on lease road. Crews should then block entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

**Assumed 100 ppm ROE = 3000'**

**100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.**

### Emergency Procedures

In the event 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.
- Evacuate any public places encompassed by the 100 ppm ROE.
- 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 occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
  - Detection of H<sub>2</sub>S, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency 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>**

<b>Common Name</b>	<b>Chemical Formula</b>	<b>Specific Gravity</b>	<b>Threshold Limit</b>	<b>Hazardous Limit</b>	<b>Lethal Concentration</b>
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)

## **Hydrogen Sulfide Drilling Operation Plan**

### **I. HYDROGEN SULFIDE (H<sub>2</sub>S) TRAINING**

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

## II. HYDROGEN SULFIDE TRAINING

Note: All H<sub>2</sub>S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H<sub>2</sub>S.

### 1. Well Control Equipment

- A. Flare line
- B. Choke manifold *w/ remotely operated choke*
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit
- D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

### 2. Protective equipment for essential personnel:

- A. 30-minute SCBA units located in the doghouse and at briefing areas, as indicated on well site diagram. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

### 3. H<sub>2</sub>S detection and monitoring equipment:

- A. Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H<sub>2</sub>S levels of 20 PPM are reached. These units are usually capable of detecting SO<sub>2</sub>, which is a byproduct of burning H<sub>2</sub>S.

### 4. Visual warning systems:

- A. Wind direction indicators as shown on well site diagram

- B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

**5. Mud program:**

- A. The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H<sub>2</sub>S trim.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephones and 2-way radio
- B. Land line (telephone) communications at Office

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

**Devon Energy Corp. Company Call List**

<b>Artesia (575)</b>	<b>Cellular</b>	<b>Office</b>	<b>Home</b>
Foreman – Robert Bell.....	748-7448 .....	748-0178 .....	746-2991
Asst. Foreman –Tommy Polly.....	748-5290.....	748-0165.....	748-2846
Don Mayberry.....	748-5235 .....	748-0164 .....	746-4945
Montral Walker.....	390-5182 .....	748-0193 .....	(936) 414-6246
Engineer – Marcos Ortiz.....	(405) 317-0666.....	(405) 552-8152.....	(405) 381-4350

**Agency Call List**

<b><u>Lea County (575)</u></b>	<b>Hobbs</b>	
	Lea County Communication Authority .....	393-3981
	State Police .....	392-5588
	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

<b><u>Eddy County (575)</u></b>	<b>Carlsbad</b>	
	State Police .....	885-3137
	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
	NM Emergency Response Commission (Santa Fe) .....	(505) 476-9600
	24 HR .....	(505) 827-9126
	National Emergency Response Center (Washington, DC) .....	(800) 424-8802

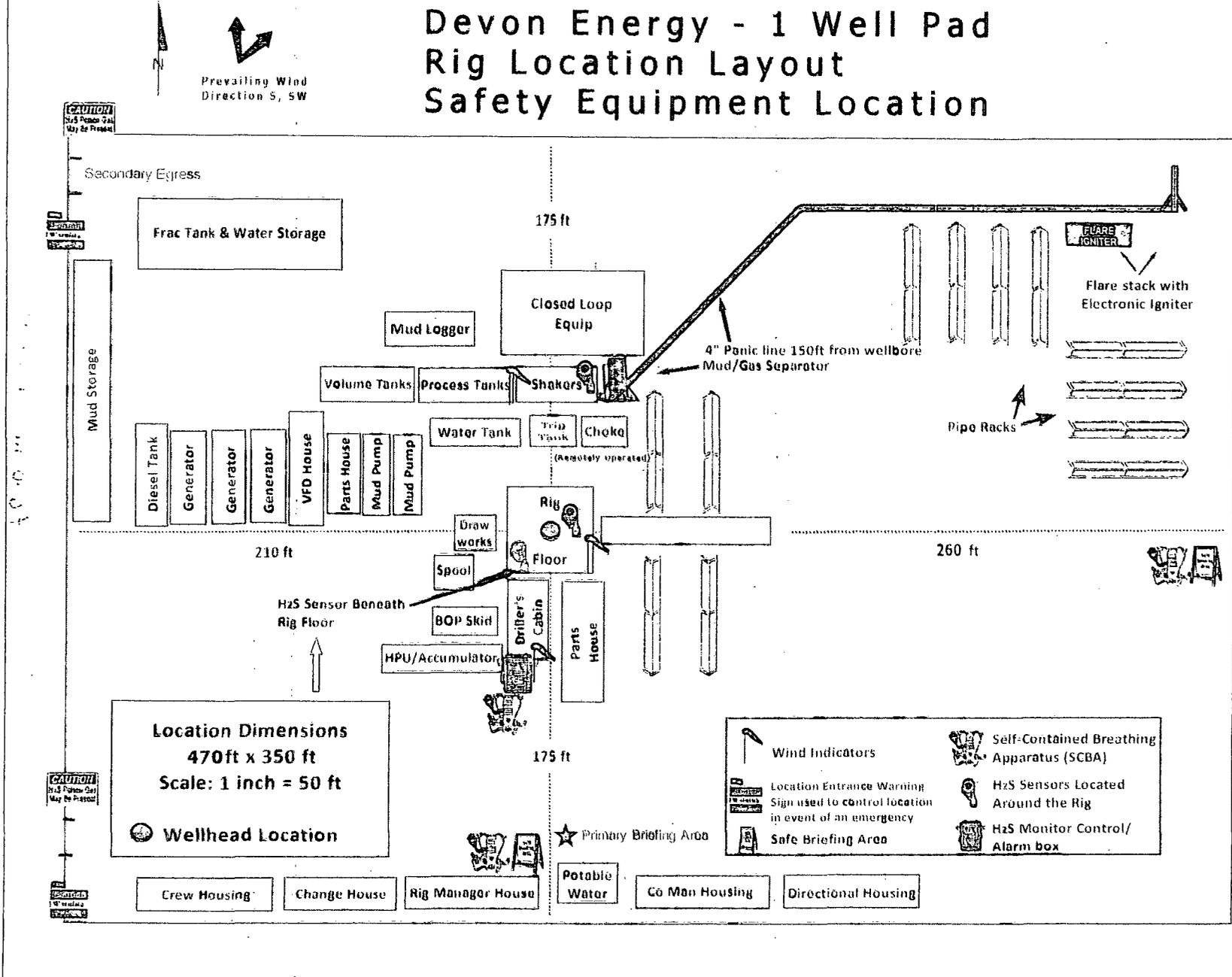
**Emergency Services**

	Boots & Coots IWC .....	(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>	Native Air – Emergency Helicopter – Hobbs.....	(575) 392-6429
<i>GPS</i>	Flight For Life - Lubbock, TX .....	(806) 743-9911
<i>position:</i>	Aerocare - Lubbock, TX .....	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM .....	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM .....	(575) 272-3115

Prepared in conjunction with  
Dave Small



# Devon Energy - 1 Well Pad Rig Location Layout Safety Equipment Location





### Proposed Interim Site Reclamation

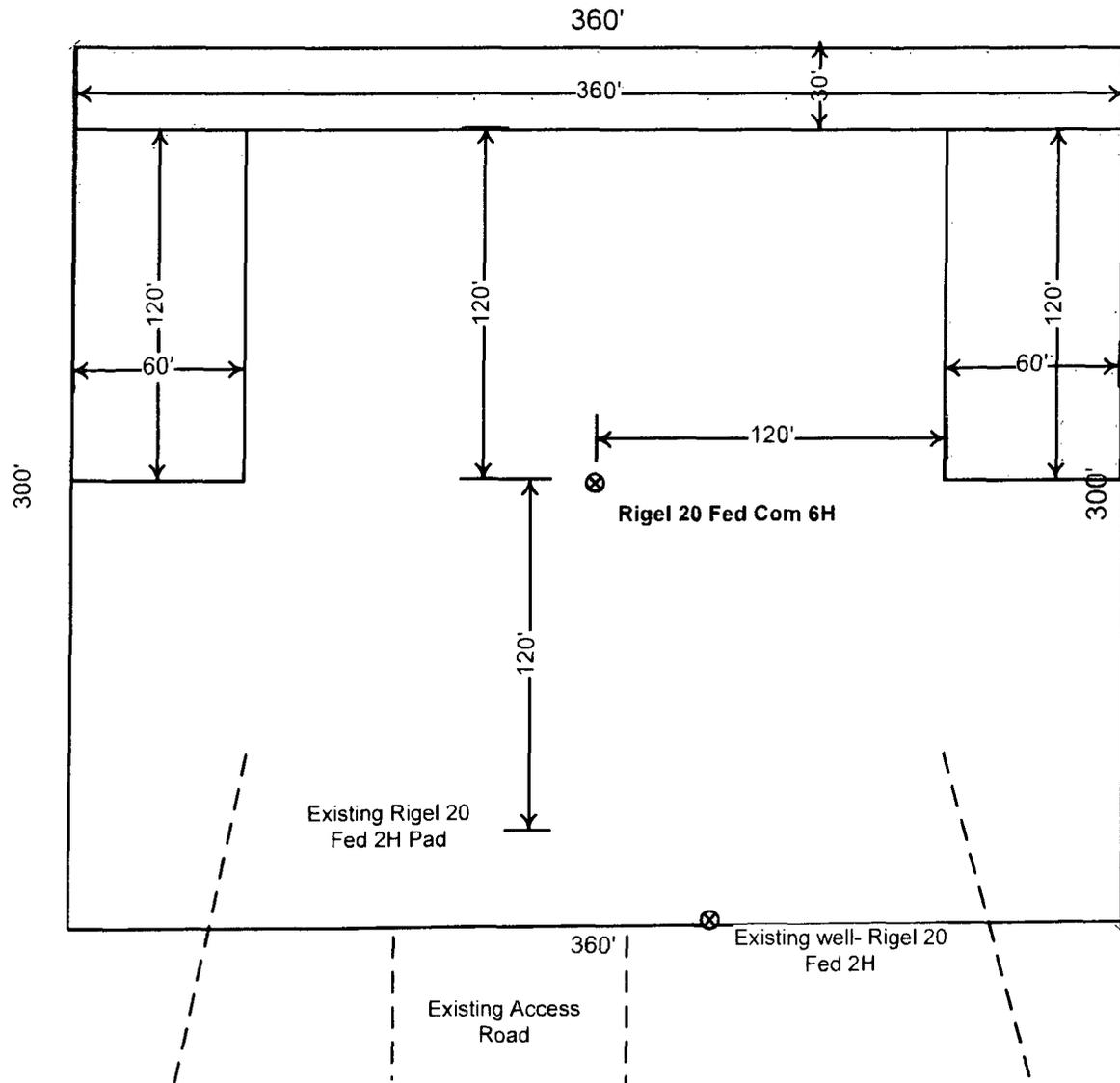
Devon Energy Production Co.  
Rigel 20 Fed Com 6H  
1699' FNL & 265' FWL  
Sec. 20-T19S-R31E  
Eddy County, NM



Proposed Reclamation Area



Scale: 1in = 60ft.



Stockpile for Spoils Pile- East Side of Location

**SURFACE USE PLAN**  
Devon Energy Production Company, LP  
**Rigel 20 Fed Com 6H**

Surface Location: 1699' FNL & 265' FWL, Unit E, Sec 20 T19S R31E, Eddy, NM  
Bottom Hole Location: 1750' FNL & 340' FEL, Unit H, Sec 20 T19S R31E, 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 Madron Surveyors.
- b. All roads into the location are depicted on Exhibit 3. Existing roads will be maintained and kept the same or better condition than before operations began.
- c. Directions to Location: From CR. 222 and CR. 248 go south-southwest on CR. 222 4.7 miles, turn right on Caliche Road and go north 1.75 miles and location is on the right (east) 195'.

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

- a. The well site layout, Form C-102 shows the existing County road. No new access road will be constructed.
- b. 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, the Rigel 20 Fed Com 1H tank battery Sec 20 T19S R31E will be utilized and the necessary production equipment will be installed at the well site. See Diagram.  
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. If said power poles are needed, a plat and a sundry notice will be filed with your office.
- b. All flow lines will adhere to API standards.
- c. 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:**

The caliche utilized for the drilling pad and proposed access road will be from minerals that are located onsite or will be used onsite. If minerals are not available onsite, then an established mineral pit will be used to build the location and stem road.

**7. Methods of Handling Waste Material:**

- a. Drill cuttings will be disposed.
- 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 sent to a closed loop system. Water produced during completion will be put into a closed loop system. Oil and condensate produced will be put into 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 sump pits and living facilities.
- c. Mud pits in the active circulating system will be steel pits.
- d. A closed loop system will be utilized.
- e. 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. A copy to be provided to the BLM.

**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 original top soil will again be returned to the pad and contoured, as close as possible, to the original topography.
- b. The location and road will be rehabilitated as recommended by the BLM.
- c. If the well is deemed commercially productive, 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.

- d. All disturbed areas not needed for active support of production operations will undergo interim reclamation. The portions of the cleared well site not needed for operational and safety purposes will be recontoured to a final or intermediate contour that blends with the surrounding topography as much as possible. Topsoil will be spread over areas not needed for all-weather operations.

**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, sage bush, 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 the Permian Basin Cultural Resource Fund in lieu of being required to conduct a Class III Survey for cultural resources associated with their project within the BLM office in Carlsbad, New Mexico.

**13. Bond Coverage:**

Bond Coverage is Nationwide; Bond # is CO-1104; NMB-001801

# PECOS DISTRICT CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Devon Energy Production Company, LP</b>
<b>LEASE NO.:</b>	<b>NMNM-63362</b>
<b>WELL NAME &amp; NO.:</b>	<b>Rigel 20 Fed Com 6H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>1699' FNL &amp; 0265' FWL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>1750' FNL &amp; 0340' FEL</b>
<b>LOCATION:</b>	<b>Section 20, T. 19 S., R 31 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

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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**
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Communitization Agreement
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Drilling**
  - H2S requirements
  - Cement requirements
  - Capitan Reef
  - Logging Requirements
  - Waste Material and Fluids
- 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)

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**Ground-level Abandoned Well Marker to avoid raptor perching:** Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

### **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. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

## **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) 234-5909 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 in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

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**

Payment shall be made to the BLM prior to removal of any federal mineral materials. 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. EXCLOSURE FENCING (CELLARS & PITS)**

#### **Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For

examples of enclosure fencing design, refer to BLM's Oil and Gas Gold Book, Enclosure Fence Illustrations, Figure 1, Page 18.)

### G. 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 twenty-five (25) 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:

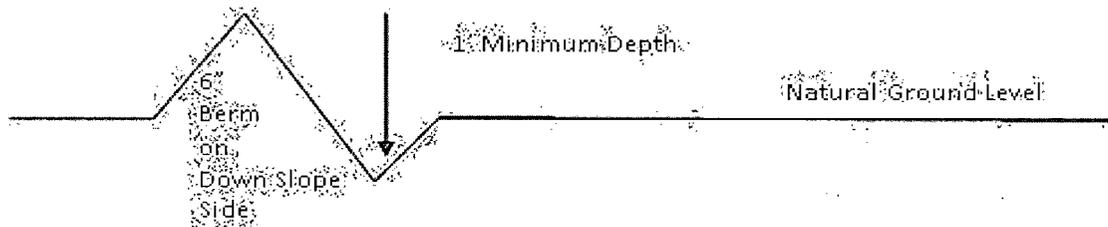


## Drainage

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.

### Cross Section of a Typical Lead-off Ditch



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

### Formula for Spacing Interval of Lead-off Ditches

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

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

## Culvert Installations

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

## Cattleguards

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

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

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

**Fence Requirement**

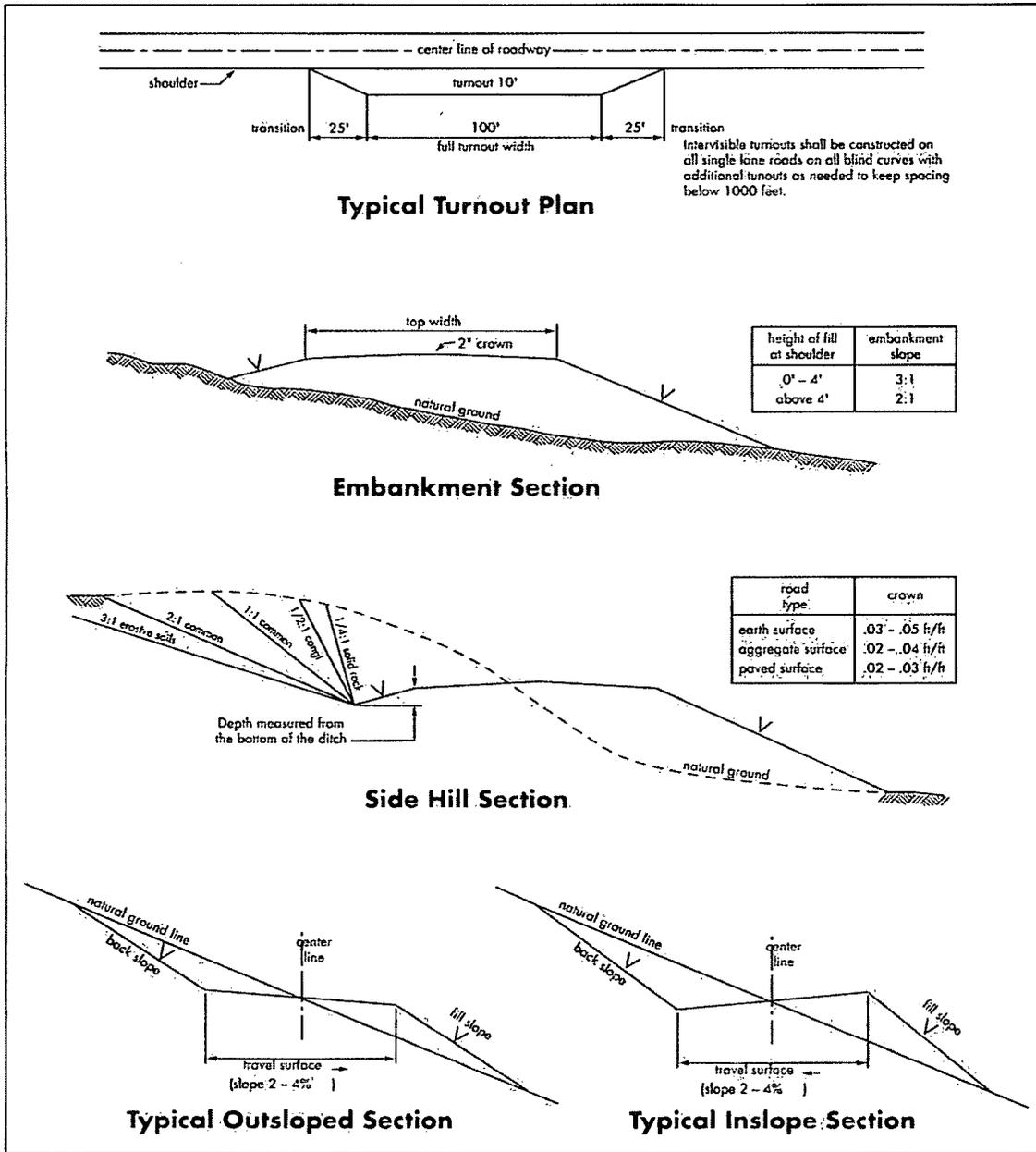
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

**Public Access**

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
  - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
  - d. The results of the test shall be reported to the appropriate BLM office.
  - e. 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.**
  - f. 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. This test shall be performed prior to the test at full stack pressure.

#### **D. DRILL STEM TEST**

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

**E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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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.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

### **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** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## **IX. 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.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation 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 that is free of contaminants 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.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## **X. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by

drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 2, for Sandy 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>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

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