

Form 3160-3  
(June 2015)

FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator		8. Lease Name and Well No.
3a. Address		9. API Well No. 30-015-53172
3b. Phone No. (include area code)		10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
		13. State
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

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

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
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.

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)

## Additional Operator Remarks

### Location of Well

0. SHL: SESW / 195 FSL / 1353 FWL / TWSP: 23S / RANGE: 29E / SECTION: 31 / LAT: 32.254821 / LONG: -104.0279717 ( TVD: 0 feet, MD: 0 feet )

PPP: LOT 4 / 100 FSL / 440 FWL / TWSP: 23S / RANGE: 29E / SECTION: 31 / LAT: 32.2545845 / LONG: -104.0309256 ( TVD: 8269 feet, MD: 8426 feet )

BHL: LOT 1 / 20 FNL / 440 FWL / TWSP: 23S / RANGE: 29E / SECTION: 30 / LAT: 32.2835129 / LONG: -104.0308243 ( TVD: 8457 feet, MD: 18911 feet )

### BLM Point of Contact

Name: Candy Vigil

Title: LIE

Phone: (575) 234-5982

Email: cvigil@blm.gov

CONFIDENTIAL

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
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> API Number <b>30-015-53172</b>	<sup>2</sup> Pool Code 11520	<sup>3</sup> Pool Name CEDAR CANYON;BONE SPRING 11520
<sup>4</sup> Property Code <b>322920</b>	<sup>5</sup> Property Name <b>SPUD MUFFIN 31-30 FED COM</b>	
<sup>7</sup> OGRID No. <b>6137</b>	<sup>8</sup> Operator Name <b>DEVON ENERGY PRODUCTION COMPANY, L.P.</b>	
		<sup>6</sup> Well Number <b>231H</b>
		<sup>9</sup> Elevation <b>2959.3</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
N	31	23 S	29 E		195	SOUTH	1353	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
1	30	23 S	29 E		20	NORTH	440	WEST	EDDY

<sup>12</sup> Dedicated Acres 312.38	<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.

Diagram details: NW CORNER SEC. 30, NE CORNER SEC. 30, W/4 CORNER SEC. 30, NW CORNER SEC. 31, FIRST TAKE POINT 330' PSL, 1650' FEL, SW CORNER SEC. 31, S/4 CORNER SEC. 31, SE CORNER SEC. 31. LOT 1, LOT 2, LOT 3, LOT 4. BOTTOM OF HOLE, LAST TAKE POINT, FIRST TAKE POINT. SPUD MUFFIN 31-30 FED COM 231H. SHL, FTP. Bearings and distances: 88°16'48"E 2559.70 FT, 88°23'39"E 2610.85 FT, 88°50'51"E 2591.44 FT, 89°35'46"W 12641.66 FT, 89°35'48"W 2649.74 FT, etc.

**<sup>17</sup> OPERATOR CERTIFICATION**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

*Jenny Harms* 10-12-2020  
Signature Date

**JENNY HARMS**  
Printed Name

**JENNY.HARMS@DVN.COM**  
E-mail Address

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**<sup>18</sup> SURVEYOR CERTIFICATION**

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

SEPTEMBER 14, 2020  
Date of Survey

*[Signature]*  
Signature and Seal of Professional Surveyor

Certificate Number: **12797**  
Professional Surveyor No. 8474

Intent  As Drilled

API #		
Operator Name: <b>DEVON ENERGY PRODUCTION CO., L.P.</b>	Property Name: <b>SPUD MUFFIN 31-30 FED COM</b>	Well Number <b>231H</b>

Kick Off Point (KOP)

UL	Section <b>31</b>	Township <b>23S</b>	Range <b>29E</b>	Lot	Feet <b>28 FSL</b>	From N/S	Feet <b>440 FWL</b>	From E/W	County <b>EDDY</b>
Latitude <b>32.2543</b>					Longitude <b>-104.0310</b>				NAD <b>83</b>

First Take Point (FTP)

UL	Section <b>31</b>	Township <b>23S</b>	Range <b>29E</b>	Lot <b>4</b>	Feet <b>100</b>	From N/S <b>SOUTH</b>	Feet <b>440</b>	From E/W <b>WEST</b>	County <b>EDDY</b>
Latitude <b>32.2545845</b>					Longitude <b>104.0309256</b>				NAD <b>83</b>

Last Take Point (LTP)

UL	Section <b>30</b>	Township <b>23S</b>	Range <b>29E</b>	Lot <b>1</b>	Feet <b>100</b>	From N/S <b>NORTH</b>	Feet <b>440</b>	From E/W <b>WEST</b>	County <b>EDDY</b>
Latitude <b>32.2832930</b>					Longitude <b>104.0308237</b>				NAD <b>83</b>

Is this well the defining well for the Horizontal Spacing Unit?  NO

Is this well an infill well?  YES

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018

State of New Mexico  
 Energy, Minerals and Natural Resources Department

Submit Electronically  
 Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description Effective May 25, 2021

**I. Operator:** Devon Energy Production Company, L.P. **OGRID:** 6137 **Date:** 12 / 8 / 2022

**II. Type:**  Original  Amendment due to  19.15.27.9.D(6)(a) NMAC  19.15.27.9.D(6)(b) NMAC  Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
See Attached						

**IV. Central Delivery Point Name:** SEE ATTACHMENTS [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
See Attached						

**VI. Separation Equipment:**  Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:**  Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:**  Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Well Name	API	ULSTR	N/S Footage	Call	E/W Footage	Call	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Spud Muffin 31-30 FED COM 231H		31-23S-29E	195	FSL	1353	FWL	(+/-) 1965 BOPD	(+/-) 2830 MCFD	(+/-) 3307 BWPD
Spud Muffin 31-30 FED COM 232H		31-23S-29E	195	FSL	1383	FWL	(+/-) 1965 BOPD	(+/-) 2830 MCFD	(+/-) 3307 BWPD

Well Name	API	Spud Date*	TD Reached Date*	Completion Commencement Date*	Initial Flow Back Date*	First Production Date*
Spud Muffin 31-30 FED COM 231H		9/30/2023	10/30/2023	2/27/2024	2/27/2024	2/27/2024
Spud Muffin 31-30 FED COM 232H		9/9/2023	10/9/2023	2/6/2024	2/6/2024	2/6/2024

\*Approximate Dates Subject to Change

**Section 2 – Enhanced Plan**

**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

**X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.**  Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system  will  will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator  does  does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

Attach Operator’s plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:**  Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.**  Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.**  Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: 
Printed Name: Jeff Walla
Title: Surface Land and Regulatory Manager
E-mail Address:
Date:
Phone:
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:



## VI. Separation Equipment

Devon Energy Production Company, L.P. utilizes a "stage separation" process in which oil and gas separation is carried out through a series of separators operating at successively reduced pressures. Hydrocarbon liquids are produced into a high-pressure inlet separator, then carried through one or more lower pressure separation vessels before entering the storage tanks. The purpose of this separation process is to attain maximum recovery of liquid hydrocarbons from the fluids and allow maximum capture of produced gas into the sales pipeline. Devon utilizes a series of Low-Pressure Compression units to capture gas off the staged separation and send it to the sales pipeline. This process minimizes the amount of flash gas that enters the end-stage storage tanks that is subsequently vented or flared.



## VII. Operational Practices

Devon Energy Production Company, L. P. will employ best management practices and control technologies to maximize the recovery and minimize waste of natural gas through venting and flaring.

- During drilling operations, Devon will utilize flares and/or combustors to capture and control natural gas, where technically feasible. If flaring is deemed technically in-feasible, Devon will employ best management practices to minimize or reduce venting to the extent possible.
- During completions operations, Devon will utilize Green Completion methods to capture gas produced during well completions that is otherwise vented or flared. If capture is technically in-feasible, flares and/or combustors will be used to capture and control flow back fluids entering into frac tanks during initial flowback. Upon indication of first measurable hydrocarbon volumes, Devon will turn operations to onsite separation vessels and flow to the gathering pipeline.
- During production operations, Devon will take every practical effort to minimize waste of natural gas through venting and flaring by:
  - Designing and constructing facilities in a manner consistent to achieve maximum capture and control of hydrocarbon liquids & produced gas
  - Utilizing a closed-loop capture system to collect and route produced gas to sales line via low pressure compression, or to a flare/combustor
  - Flaring in lieu of venting, where technically feasible
  - Utilizing auto-ignitors or continuous pilots, with thermocouples connected to Scada, to quickly detect and resolve issues related to malfunctioning flares/combustors
  - Employ the use of automatic tank gauging to minimize storage tank venting during loading events
  - Installing air-driven or electric-driven pneumatics & combustion engines, where technically feasible to minimize venting to the atmosphere
  - Confirm equipment is properly maintained and repaired through a preventative maintenance and repair program to ensure equipment meets all manufacturer specifications
  - Conduct and document AVO inspections on the frequency set forth in Part 27 to detect and repair any onsite leaks as quickly and efficiently as is feasible



#### VIII. Best Management Practices during Maintenance

Devon Energy Production Company, L.P. will utilize best management practices to minimize venting during active and planned maintenance activities. Devon is operating under guidance that production facilities permitted under NOI permits have no provisions to allow high pressure flaring and high pressure flaring is only allowed in disruption scenarios so long as the duration is less than eight hours. When technically feasible, flaring during maintenance activities will be utilized in lieu of venting to the atmosphere. Devon will work with third-party operators during scheduled maintenance of downstream pipeline or processing plants to address those events ahead of time to minimize venting. Actions considered include identifying alternative capture approaches or planning to temporarily reduce production or shut in the well to address these circumstances.

SPUD MUFFIN 31-30 FED COM 231H

**1. Geologic Formations**

TVD of target	8457	Pilot hole depth	N/A
MD at TD:	18911	Deepest expected fresh water	

**Basin**

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Rustler	114		
Top of Salt	469		
Base of Salt	2544		
Lamar	2784		
Bell Canyon	2784		
Cherry Canyon	3674		
Brushy Canyon	5224		
1st Bone Spring Lime	6484		
1st Bone Spring Sand	7469		
BONE SPRING 2ND	8269		
#REF!	#REF!		

\*H2S, water flows, loss of circulation, abnormal pressures, etc.

## SPUD MUFFIN 31-30 FED COM 231H

**2. Casing Program**

Hole Size	Csg. Size	Wt (PPF)	Grade	Conn	Casing Interval		Casing Interval	
					From (MD)	To (MD)	From (TVD)	To (TVD)
17 1/2	13 3/8	48	H40	BTC	0	139	0	139
12 1/4	9 5/8	40	J-55	BTC	0	2644	0	2644
8 3/4	5 1/2	17	P110	BTC	0	18911	0	8457

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for contingency casing.

SPUD MUFFIN 31-30 FED COM 231H

**3. Cementing Program (3-String Primary Design)**

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft <sup>3</sup> /sack)	Slurry Description
Surface	139	Surf	13.2	1.4	Lead: Class C Cement + additives
Int 1	266	Surf	9.0	3.3	Lead: Class C Cement + additives
	154	500' above shoe	13.2	1.4	Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	9.0	3.3	Squeeze Lead: Class C Cement + additives
	266	Surf	9.0	3.3	Lead: Class C Cement + additives
	154	500' above shoe	13.2	1.4	Tail: Class H / C + additives
Production	498	500' tieback	9.0	3.3	Lead: Class H / C + additives
	2108	KOP	13.2	1.4	Tail: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate	30%
Production	10%

SPUD MUFFIN 31-30 FED COM 231H

**4. Pressure Control Equipment (Three String Design)**

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-58"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
			Annular (5M)		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

SPUD MUFFIN 31-30 FED COM 231H

**5. Mud Program (Three String Design)**

Section	Type	Weight (ppg)
Surface	FW Gel	8.5-9
Intermediate	Brine	10-10.5
Production	WBM	8.5-9

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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**6. Logging and Testing Procedures**

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well - vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain.
	Coring? If yes, explain.

Additional logs planned	Interval
Resistivity	
Density	
X CBL	Production casing
X Mud log	KOP to TD
PEX	

**7. Drilling Conditions**

Condition	Specify what type and where?
BH pressure at deepest TVD	3958
Abnormal temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered measured values and formations will be provided to the BLM.

N	H2S is present
Y	H2S plan attached.

SPUD MUFFIN 31-30 FED COM 231H

**8. Other facets of operation**

Is this a walking operation? Potentially

- 1 If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
- 2 The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
- 3 The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

- 1 Spudder rig will move in and batch drill surface hole.
  - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
- 2 After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
- 3 The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
- 4 A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
- 5 Spudder rig operations is expected to take 4-5 days per well on a multi-well pad.
- 6 The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
- 7 Drilling operations will be performed with drilling rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.
  - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

- Directional Plan
- Other, describe



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

# Drilling Plan Data Report

11/23/2021

APD ID: 10400063418

Submission Date: 10/18/2020

Highlighted data  
reflects the most  
recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM

Well Number: 231H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
910191	UNKNOWN	2959	0	0	ALLUVIUM, OTHER : Surface	NONE	N
910192	RUSTLER	2845	114	114	SANDSTONE	NONE	N
910196	TOP SALT	2490	469	469	SALT	NONE	N
910194	BASE OF SALT	415	2544	2544	SALT	NONE	N
910200	BELL CANYON	175	2784	2784	SANDSTONE	NATURAL GAS, OIL	N
910201	CHERRY CANYON	-715	3674	3674	SANDSTONE	NATURAL GAS, OIL	N
910202	BRUSHY CANYON	-2265	5224	5224	SANDSTONE	NATURAL GAS, OIL	N
910203	BONE SPRING LIME	-3525	6484	6484	LIMESTONE	NATURAL GAS, OIL	N
910193	BONE SPRING	-4510	7469	7469	SANDSTONE	NATURAL GAS, OIL	N
910190	BONE SPRING 2ND	-5310	8269	8269	SANDSTONE	NATURAL GAS, OIL	Y
910204	BONE SPRING LIME	-5690	8649	8649	LIMESTONE	NATURAL GAS, OIL	N
910205	BONE SPRING 3RD	-6395	9354	9354	SANDSTONE	NATURAL GAS, OIL	N
910206	WOLFCAMP	-6800	9759	9759	SANDSTONE	NATURAL GAS, OIL	N
910207	STRAWN	-8541	11500	11500	LIMESTONE	NATURAL GAS, OIL	N

## Section 2 - Blowout Prevention



Commitment Runs Deep



Design Plan  
Operation and Maintenance Plan  
Closure Plan

SENM - Closed Loop Systems  
June 2010

## I. Design Plan

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

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

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

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

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

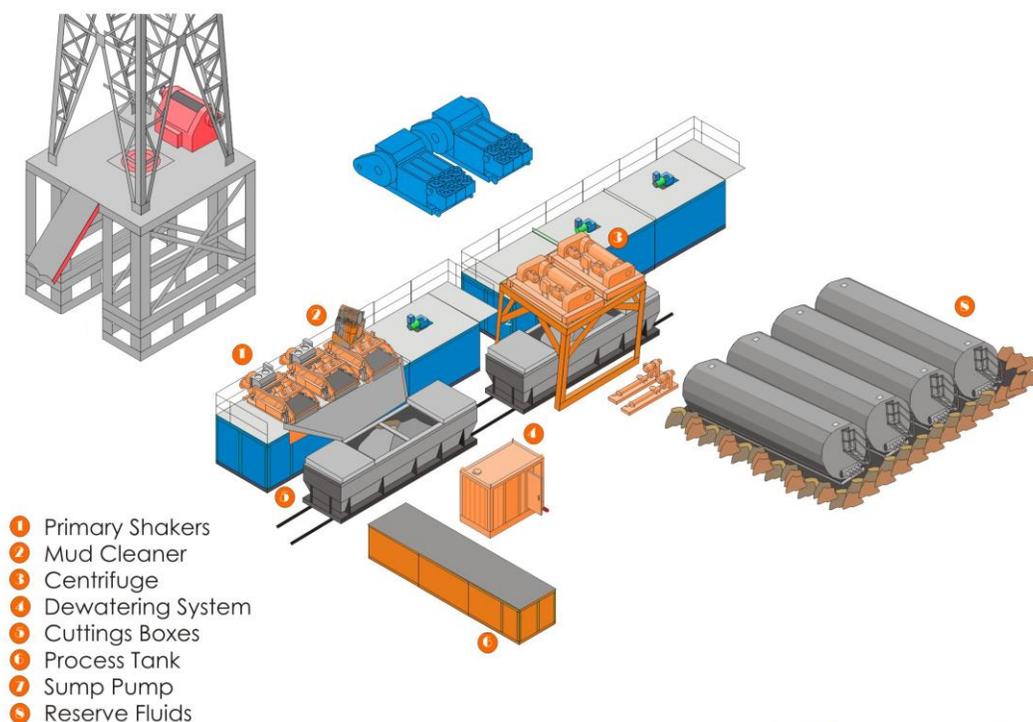
## II. Operations and Maintenance Plan

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

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



## Closed Loop Schematic



**Mi SWACO**

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

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

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

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

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

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

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

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

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

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

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

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

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

### **III. Closure Plan**

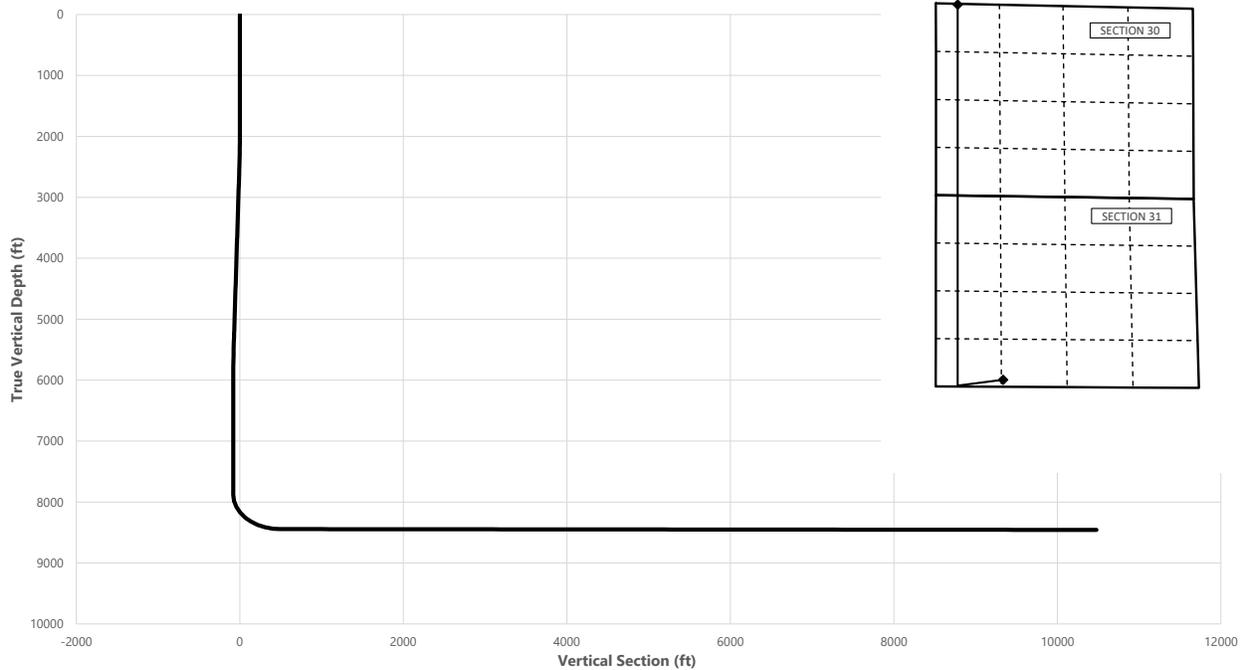
A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.



Well: SPUD MUFFIN 31-30 FED COM 231H  
 County: Eddy  
 Wellbore: Permit Plan  
 Design: Permit Plan #1

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1927  
 Ellipsoid: Clarke 1866  
 Zone: 3001 - NM East (NAD83)

MD (ft)	INC (°)	AZI (°)	TVD (ft)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL
2000.00	0.00	260.00	2000.00	0.00	0.00	0.00	0.00	Start Tangent
2500.00	15.00	260.00	2494.31	-11.30	-64.09	-5.68	1.00	Hold Tangent
5447.23	15.00	260.00	5341.12	-143.76	-815.30	-72.29	0.00	Drop to Vertical
6197.23	0.00	260.00	6082.58	-160.71	-911.43	-80.82	2.00	Hold Vertical
7985.70	0.00	0.00	7871.04	-160.71	-911.43	-80.82	0.00	KOP
8884.95	89.93	0.00	8444.00	411.50	-911.43	489.23	10.00	Landing Point
18910.96	89.93	0.00	8457.00	10437.50	-911.43	10477.22	0.00	BHL



Key Depths	MD (ft)	TVD (ft)
Rustler	0.00	0.00
Top of Salt	469.00	469.00
Base of Salt	2551.44	2544.00
Lamar	2799.91	2784.00
Bell Canyon	2799.91	2784.00
Cherry Canyon	3721.31	3674.00
Brushy Canyon	5325.99	5224.00
1st Bone Spring Lime	6598.65	6484.00
1st Bone Spring Sand	7583.65	7469.00
BONE SPRING 2ND / Point of Penetr	8425.62	8269.00
Exit	18830.96	8456.91

	MD (ft)	TVD (ft)	Lat (°)	Long (°)	Section Footages
SHL	0.00	0.00	32.2547	-104.0281	195' FSL, 1353' FWL of Sec 31 in T23S, R29E
KOP	7985.70	7871.04	32.2543	-104.0310	28' FSL, 440' FWL of Sec 31 in T23S, R29E
Point of Penetration	8425.62	8269.00	32.2546	-104.0309	100' FSL, 440' FWL of Sec 31 in T23S, R29E
Exit	18830.96	8456.91	32.2833	-104.0308	100' FNL, 440' FWL of Sec 30 in T23S, R29E
BHL	18910.96	8457.00	32.2834	-104.0309	20' FNL, 440' FWL of Sec 30 in T23S, R29E

SPUD MUFFIN 31-30 FED COM 231H



**Well:** SPUD MUFFIN 31-30 FED COM 231H  
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**Design:** Permit Plan #1

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**Datum:** North American Datum 1927  
**Ellipsoid:** Clarke 1866  
**Zone:** 3001 - NM East (NAD83)

MD (ft)	INC (°)	AZI (°)	TVD (ft)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL
100.00	0.00	260.00	100.00	0.00	0.00	0.00	0.00	
114.00	0.00	260.00	114.00	0.00	0.00	0.00	0.00	Rustler
200.00	0.00	260.00	200.00	0.00	0.00	0.00	0.00	
300.00	0.00	260.00	300.00	0.00	0.00	0.00	0.00	
400.00	0.00	260.00	400.00	0.00	0.00	0.00	0.00	
469.00	0.00	260.00	469.00	0.00	0.00	0.00	0.00	Top of Salt
500.00	0.00	260.00	500.00	0.00	0.00	0.00	0.00	
600.00	0.00	260.00	600.00	0.00	0.00	0.00	0.00	
700.00	0.00	260.00	700.00	0.00	0.00	0.00	0.00	
800.00	0.00	260.00	800.00	0.00	0.00	0.00	0.00	
900.00	0.00	260.00	900.00	0.00	0.00	0.00	0.00	
1000.00	0.00	260.00	1000.00	0.00	0.00	0.00	0.00	
1100.00	0.00	260.00	1100.00	0.00	0.00	0.00	0.00	
1200.00	0.00	260.00	1200.00	0.00	0.00	0.00	0.00	
1300.00	0.00	260.00	1300.00	0.00	0.00	0.00	0.00	
1400.00	0.00	260.00	1400.00	0.00	0.00	0.00	0.00	
1500.00	0.00	260.00	1500.00	0.00	0.00	0.00	0.00	
1600.00	0.00	260.00	1600.00	0.00	0.00	0.00	0.00	
1700.00	0.00	260.00	1700.00	0.00	0.00	0.00	0.00	
1800.00	0.00	260.00	1800.00	0.00	0.00	0.00	0.00	
1900.00	0.00	260.00	1900.00	0.00	0.00	0.00	0.00	
2000.00	0.00	260.00	2000.00	0.00	0.00	0.00	0.00	Start Tangent
2100.00	3.00	260.00	2099.95	-0.45	-2.58	-0.23	3.00	
2200.00	6.00	260.00	2199.63	-1.82	-10.30	-0.91	3.00	
2300.00	9.00	260.00	2298.77	-4.08	-23.16	-2.05	3.00	
2400.00	12.00	260.00	2397.08	-7.25	-41.10	-3.64	3.00	
2500.00	15.00	260.00	2494.31	-11.30	-64.09	-5.68	1.00	Hold Tangent
2551.44	15.00	260.00	2544.00	-13.61	-77.20	-6.85	0.00	Base of Salt
2600.00	15.00	260.00	2590.90	-15.79	-89.58	-7.94	0.00	
2700.00	15.00	260.00	2687.49	-20.29	-115.07	-10.20	0.00	
2799.91	15.00	260.00	2784.00	-24.78	-140.53	-12.46	0.00	Lamar, Bell Canyon
2800.00	15.00	260.00	2784.09	-24.78	-140.55	-12.46	0.00	
2900.00	15.00	260.00	2880.68	-29.28	-166.04	-14.72	0.00	
3000.00	15.00	260.00	2977.27	-33.77	-191.53	-16.98	0.00	
3100.00	15.00	260.00	3073.86	-38.27	-217.02	-19.24	0.00	
3200.00	15.00	260.00	3170.46	-42.76	-242.51	-21.50	0.00	
3300.00	15.00	260.00	3267.05	-47.26	-268.00	-23.76	0.00	
3400.00	15.00	260.00	3363.64	-51.75	-293.49	-26.02	0.00	
3500.00	15.00	260.00	3460.23	-56.24	-318.97	-28.28	0.00	
3600.00	15.00	260.00	3556.83	-60.74	-344.46	-30.54	0.00	
3700.00	15.00	260.00	3653.42	-65.23	-369.95	-32.80	0.00	
3721.31	15.00	260.00	3674.00	-66.19	-375.38	-33.28	0.00	Cherry Canyon
3800.00	15.00	260.00	3750.01	-69.73	-395.44	-35.06	0.00	
3900.00	15.00	260.00	3846.60	-74.22	-420.93	-37.32	0.00	
4000.00	15.00	260.00	3943.20	-78.72	-446.42	-39.58	0.00	
4100.00	15.00	260.00	4039.79	-83.21	-471.91	-41.84	0.00	
4200.00	15.00	260.00	4136.38	-87.71	-497.40	-44.10	0.00	
4300.00	15.00	260.00	4232.97	-92.20	-522.88	-46.36	0.00	
4400.00	15.00	260.00	4329.57	-96.69	-548.37	-48.62	0.00	
4500.00	15.00	260.00	4426.16	-101.19	-573.86	-50.88	0.00	
4600.00	15.00	260.00	4522.75	-105.68	-599.35	-53.14	0.00	
4700.00	15.00	260.00	4619.34	-110.18	-624.84	-55.40	0.00	
4800.00	15.00	260.00	4715.94	-114.67	-650.33	-57.66	0.00	
4900.00	15.00	260.00	4812.53	-119.17	-675.82	-59.92	0.00	
5000.00	15.00	260.00	4909.12	-123.66	-701.30	-62.18	0.00	
5100.00	15.00	260.00	5005.72	-128.16	-726.79	-64.44	0.00	
5200.00	15.00	260.00	5102.31	-132.65	-752.28	-66.70	0.00	
5300.00	15.00	260.00	5198.90	-137.14	-777.77	-68.96	0.00	
5325.99	15.00	260.00	5224.00	-138.31	-784.39	-69.55	0.00	Brushy Canyon
5400.00	15.00	260.00	5295.49	-141.64	-803.26	-71.22	0.00	
5447.23	15.00	260.00	5341.12	-143.76	-815.30	-72.29	0.00	Drop to Vertical
5500.00	13.94	260.00	5392.21	-146.05	-828.29	-73.44	2.00	
5600.00	11.94	260.00	5489.66	-149.94	-850.35	-75.40	2.00	
5700.00	9.94	260.00	5587.84	-153.24	-869.04	-77.05	2.00	
5800.00	7.94	260.00	5686.62	-155.94	-884.35	-78.41	2.00	
5900.00	5.94	260.00	5785.88	-158.04	-896.26	-79.47	2.00	
6000.00	3.94	260.00	5885.50	-159.53	-904.75	-80.22	2.00	
6100.00	1.94	260.00	5985.36	-160.42	-909.81	-80.67	2.00	
6197.23	0.00	260.00	6082.58	-160.71	-911.43	-80.82	2.00	Hold Vertical

SPUD MUFFIN 31-30 FED COM 231H



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MD (ft)	INC (°)	AZI (°)	TVD (ft)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Comment
6200.00	0.00	0.00	6085.35	-160.71	-911.43	-80.81	0.00	
6300.00	0.00	0.00	6185.35	-160.71	-911.43	-80.81	0.00	
6400.00	0.00	0.00	6285.35	-160.71	-911.43	-80.81	0.00	
6500.00	0.00	0.00	6385.35	-160.71	-911.43	-80.81	0.00	
6598.65	0.00	0.00	6484.00	-160.71	-911.43	-80.81	0.00	1st Bone Spring Lime
6600.00	0.00	0.00	6485.35	-160.71	-911.43	-80.81	0.00	
6700.00	0.00	0.00	6585.35	-160.71	-911.43	-80.81	0.00	
6800.00	0.00	0.00	6685.35	-160.71	-911.43	-80.81	0.00	
6900.00	0.00	0.00	6785.35	-160.71	-911.43	-80.81	0.00	
7000.00	0.00	0.00	6885.35	-160.71	-911.43	-80.81	0.00	
7100.00	0.00	0.00	6985.35	-160.71	-911.43	-80.81	0.00	
7200.00	0.00	0.00	7085.35	-160.71	-911.43	-80.81	0.00	
7300.00	0.00	0.00	7185.35	-160.71	-911.43	-80.81	0.00	
7400.00	0.00	0.00	7285.35	-160.71	-911.43	-80.81	0.00	
7500.00	0.00	0.00	7385.35	-160.71	-911.43	-80.81	0.00	
7583.65	0.00	0.00	7469.00	-160.71	-911.43	-80.81	0.00	1st Bone Spring Sand
7600.00	0.00	0.00	7485.35	-160.71	-911.43	-80.81	0.00	
7700.00	0.00	0.00	7585.35	-160.71	-911.43	-80.81	0.00	
7800.00	0.00	0.00	7685.35	-160.71	-911.43	-80.81	0.00	
7900.00	0.00	0.00	7785.35	-160.71	-911.43	-80.81	0.00	
7985.70	0.00	0.00	7871.04	-160.71	-911.43	-80.82	0.00	KOP
8000.00	1.43	0.00	7885.34	-160.53	-911.43	-80.63	10.00	
8100.00	11.43	0.00	7984.59	-149.35	-911.43	-69.49	10.00	
8200.00	21.43	0.00	8080.38	-121.10	-911.43	-41.35	10.00	
8300.00	31.43	0.00	8169.82	-76.64	-911.43	2.94	10.00	
8400.00	41.43	0.00	8250.17	-17.33	-911.43	62.02	10.00	
8425.62	43.99	0.00	8269.00	0.05	-911.43	79.33	10.00	BONE SPRING 2ND / Point of Penetration
8500.00	51.43	0.00	8319.01	55.03	-911.43	134.11	10.00	
8600.00	61.43	0.00	8374.23	138.24	-911.43	217.01	10.00	
8700.00	71.43	0.00	8414.17	229.78	-911.43	308.20	10.00	
8800.00	81.43	0.00	8437.60	326.87	-911.43	404.92	10.00	
8884.95	89.93	0.00	8444.00	411.50	-911.43	489.23	10.00	Landing Point
8900.00	89.93	0.00	8444.02	426.55	-911.43	504.22	0.00	
9000.00	89.93	0.00	8444.15	526.55	-911.43	603.84	0.00	
9100.00	89.93	0.00	8444.28	626.55	-911.43	703.46	0.00	
9200.00	89.93	0.00	8444.41	726.55	-911.43	803.08	0.00	
9300.00	89.93	0.00	8444.54	826.55	-911.43	902.71	0.00	
9400.00	89.93	0.00	8444.67	926.55	-911.43	1002.33	0.00	
9500.00	89.93	0.00	8444.80	1026.55	-911.43	1101.95	0.00	
9600.00	89.93	0.00	8444.93	1126.55	-911.43	1201.57	0.00	
9700.00	89.93	0.00	8445.06	1226.55	-911.43	1301.19	0.00	
9800.00	89.93	0.00	8445.19	1326.55	-911.43	1400.81	0.00	
9900.00	89.93	0.00	8445.32	1426.55	-911.43	1500.43	0.00	
10000.00	89.93	0.00	8445.45	1526.55	-911.43	1600.05	0.00	
10100.00	89.93	0.00	8445.58	1626.55	-911.43	1699.67	0.00	
10200.00	89.93	0.00	8445.71	1726.55	-911.43	1799.29	0.00	
10300.00	89.93	0.00	8445.84	1826.55	-911.43	1898.91	0.00	
10400.00	89.93	0.00	8445.97	1926.55	-911.43	1998.53	0.00	
10500.00	89.93	0.00	8446.10	2026.55	-911.43	2098.15	0.00	
10600.00	89.93	0.00	8446.23	2126.55	-911.43	2197.78	0.00	
10700.00	89.93	0.00	8446.36	2226.55	-911.43	2297.40	0.00	
10800.00	89.93	0.00	8446.49	2326.55	-911.43	2397.02	0.00	
10900.00	89.93	0.00	8446.62	2426.55	-911.43	2496.64	0.00	
11000.00	89.93	0.00	8446.75	2526.55	-911.43	2596.26	0.00	
11100.00	89.93	0.00	8446.87	2626.55	-911.43	2695.88	0.00	
11200.00	89.93	0.00	8447.00	2726.55	-911.43	2795.50	0.00	
11300.00	89.93	0.00	8447.13	2826.55	-911.43	2895.12	0.00	
11400.00	89.93	0.00	8447.26	2926.55	-911.43	2994.74	0.00	
11500.00	89.93	0.00	8447.39	3026.55	-911.43	3094.36	0.00	
11600.00	89.93	0.00	8447.52	3126.55	-911.43	3193.98	0.00	
11700.00	89.93	0.00	8447.65	3226.55	-911.43	3293.60	0.00	
11800.00	89.93	0.00	8447.78	3326.55	-911.43	3393.23	0.00	
11900.00	89.93	0.00	8447.91	3426.55	-911.43	3492.85	0.00	
12000.00	89.93	0.00	8448.04	3526.55	-911.43	3592.47	0.00	
12100.00	89.93	0.00	8448.17	3626.55	-911.43	3692.09	0.00	
12200.00	89.93	0.00	8448.30	3726.55	-911.43	3791.71	0.00	
12300.00	89.93	0.00	8448.43	3826.55	-911.43	3891.33	0.00	
12400.00	89.93	0.00	8448.56	3926.55	-911.43	3990.95	0.00	
12500.00	89.93	0.00	8448.69	4026.55	-911.43	4090.57	0.00	
12600.00	89.93	0.00	8448.82	4126.55	-911.43	4190.19	0.00	

SPUD MUFFIN 31-30 FED COM 231H



Well: SPUD MUFFIN 31-30 FED COM 231H  
 County: Eddy  
 Wellbore: Permit Plan  
 Design: Permit Plan #1

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1927  
 Ellipsoid: Clarke 1866  
 Zone: 3001 - NM East (NAD83)

MD (ft)	INC (°)	AZI (°)	TVD (ft)	NS (ft)	EW (ft)	VS (ft)	DLS (°/100ft)	Comment
12700.00	89.93	0.00	8448.95	4226.55	-911.43	4289.81	0.00	
12800.00	89.93	0.00	8449.08	4326.55	-911.43	4389.43	0.00	
12900.00	89.93	0.00	8449.21	4426.55	-911.43	4489.05	0.00	
13000.00	89.93	0.00	8449.34	4526.55	-911.43	4588.68	0.00	
13100.00	89.93	0.00	8449.47	4626.55	-911.43	4688.30	0.00	
13200.00	89.93	0.00	8449.60	4726.55	-911.43	4787.92	0.00	
13300.00	89.93	0.00	8449.73	4826.55	-911.43	4887.54	0.00	
13400.00	89.93	0.00	8449.86	4926.55	-911.43	4987.16	0.00	
13500.00	89.93	0.00	8449.99	5026.55	-911.43	5086.78	0.00	
13600.00	89.93	0.00	8450.12	5126.55	-911.43	5186.40	0.00	
13700.00	89.93	0.00	8450.25	5226.55	-911.43	5286.02	0.00	
13800.00	89.93	0.00	8450.38	5326.55	-911.43	5385.64	0.00	
13900.00	89.93	0.00	8450.51	5426.55	-911.43	5485.26	0.00	
14000.00	89.93	0.00	8450.64	5526.55	-911.43	5584.88	0.00	
14100.00	89.93	0.00	8450.77	5626.55	-911.43	5684.50	0.00	
14200.00	89.93	0.00	8450.90	5726.55	-911.43	5784.12	0.00	
14300.00	89.93	0.00	8451.03	5826.55	-911.43	5883.75	0.00	
14400.00	89.93	0.00	8451.16	5926.55	-911.43	5983.37	0.00	
14500.00	89.93	0.00	8451.29	6026.55	-911.43	6082.99	0.00	
14600.00	89.93	0.00	8451.42	6126.55	-911.43	6182.61	0.00	
14700.00	89.93	0.00	8451.55	6226.55	-911.43	6282.23	0.00	
14800.00	89.93	0.00	8451.68	6326.55	-911.43	6381.85	0.00	
14900.00	89.93	0.00	8451.81	6426.55	-911.43	6481.47	0.00	
15000.00	89.93	0.00	8451.94	6526.55	-911.43	6581.09	0.00	
15100.00	89.93	0.00	8452.07	6626.55	-911.43	6680.71	0.00	
15200.00	89.93	0.00	8452.20	6726.55	-911.43	6780.33	0.00	
15300.00	89.93	0.00	8452.33	6826.55	-911.43	6879.95	0.00	
15400.00	89.93	0.00	8452.46	6926.55	-911.43	6979.57	0.00	
15500.00	89.93	0.00	8452.59	7026.55	-911.43	7079.20	0.00	
15600.00	89.93	0.00	8452.72	7126.55	-911.43	7178.82	0.00	
15700.00	89.93	0.00	8452.85	7226.55	-911.43	7278.44	0.00	
15800.00	89.93	0.00	8452.98	7326.55	-911.43	7378.06	0.00	
15900.00	89.93	0.00	8453.11	7426.54	-911.43	7477.68	0.00	
16000.00	89.93	0.00	8453.23	7526.54	-911.43	7577.30	0.00	
16100.00	89.93	0.00	8453.36	7626.54	-911.43	7676.92	0.00	
16200.00	89.93	0.00	8453.49	7726.54	-911.43	7776.54	0.00	
16300.00	89.93	0.00	8453.62	7826.54	-911.43	7876.16	0.00	
16400.00	89.93	0.00	8453.75	7926.54	-911.43	7975.78	0.00	
16500.00	89.93	0.00	8453.88	8026.54	-911.43	8075.40	0.00	
16600.00	89.93	0.00	8454.01	8126.54	-911.43	8175.02	0.00	
16700.00	89.93	0.00	8454.14	8226.54	-911.43	8274.65	0.00	
16800.00	89.93	0.00	8454.27	8326.54	-911.43	8374.27	0.00	
16900.00	89.93	0.00	8454.40	8426.54	-911.43	8473.89	0.00	
17000.00	89.93	0.00	8454.53	8526.54	-911.43	8573.51	0.00	
17100.00	89.93	0.00	8454.66	8626.54	-911.43	8673.13	0.00	
17200.00	89.93	0.00	8454.79	8726.54	-911.43	8772.75	0.00	
17300.00	89.93	0.00	8454.92	8826.54	-911.43	8872.37	0.00	
17400.00	89.93	0.00	8455.05	8926.54	-911.43	8971.99	0.00	
17500.00	89.93	0.00	8455.18	9026.54	-911.43	9071.61	0.00	
17600.00	89.93	0.00	8455.31	9126.54	-911.43	9171.23	0.00	
17700.00	89.93	0.00	8455.44	9226.54	-911.43	9270.85	0.00	
17800.00	89.93	0.00	8455.57	9326.54	-911.43	9370.47	0.00	
17900.00	89.93	0.00	8455.70	9426.54	-911.43	9470.09	0.00	
18000.00	89.93	0.00	8455.83	9526.54	-911.43	9569.72	0.00	
18100.00	89.93	0.00	8455.96	9626.54	-911.43	9669.34	0.00	
18200.00	89.93	0.00	8456.09	9726.54	-911.43	9768.96	0.00	
18300.00	89.93	0.00	8456.22	9826.54	-911.43	9868.58	0.00	
18400.00	89.93	0.00	8456.35	9926.54	-911.43	9968.20	0.00	
18500.00	89.93	0.00	8456.48	10026.54	-911.43	10067.82	0.00	
18600.00	89.93	0.00	8456.61	10126.54	-911.43	10167.44	0.00	
18700.00	89.93	0.00	8456.74	10226.54	-911.43	10267.06	0.00	
18800.00	89.93	0.00	8456.87	10326.54	-911.43	10366.68	0.00	
18830.96	89.93	0.00	8456.91	10357.50	-911.43	10397.52	0.00	Exit
18900.00	89.93	0.00	8457.00	10426.54	-911.43	10466.30	0.00	
18910.96	89.93	0.00	8457.00	10437.50	-911.43	10477.22	0.00	BHL



**Well:** SPUD MUFFIN 31-30 FED COM 231H  
**County:** Eddy  
**Wellbore:** Permit Plan  
**Design:** Permit Plan #1

**Geodetic System:** US State Plane 1983  
**Datum:** North American Datum 1927  
**Ellipsoid:** Clarke 1866  
**Zone:** 3001 - NM East (NAD83)

<b>MD</b> (ft)	<b>INC</b> (°)	<b>AZI</b> (°)	<b>TVD</b> (ft)	<b>NS</b> (ft)	<b>EW</b> (ft)	<b>VS</b> (ft)	<b>DLS</b> (°/100ft)	<b>Comment</b>
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## **Devon Energy** **APD VARIANCE DATA**

**OPERATOR NAME:** Devon Energy

### **1. SUMMARY OF Variance:**

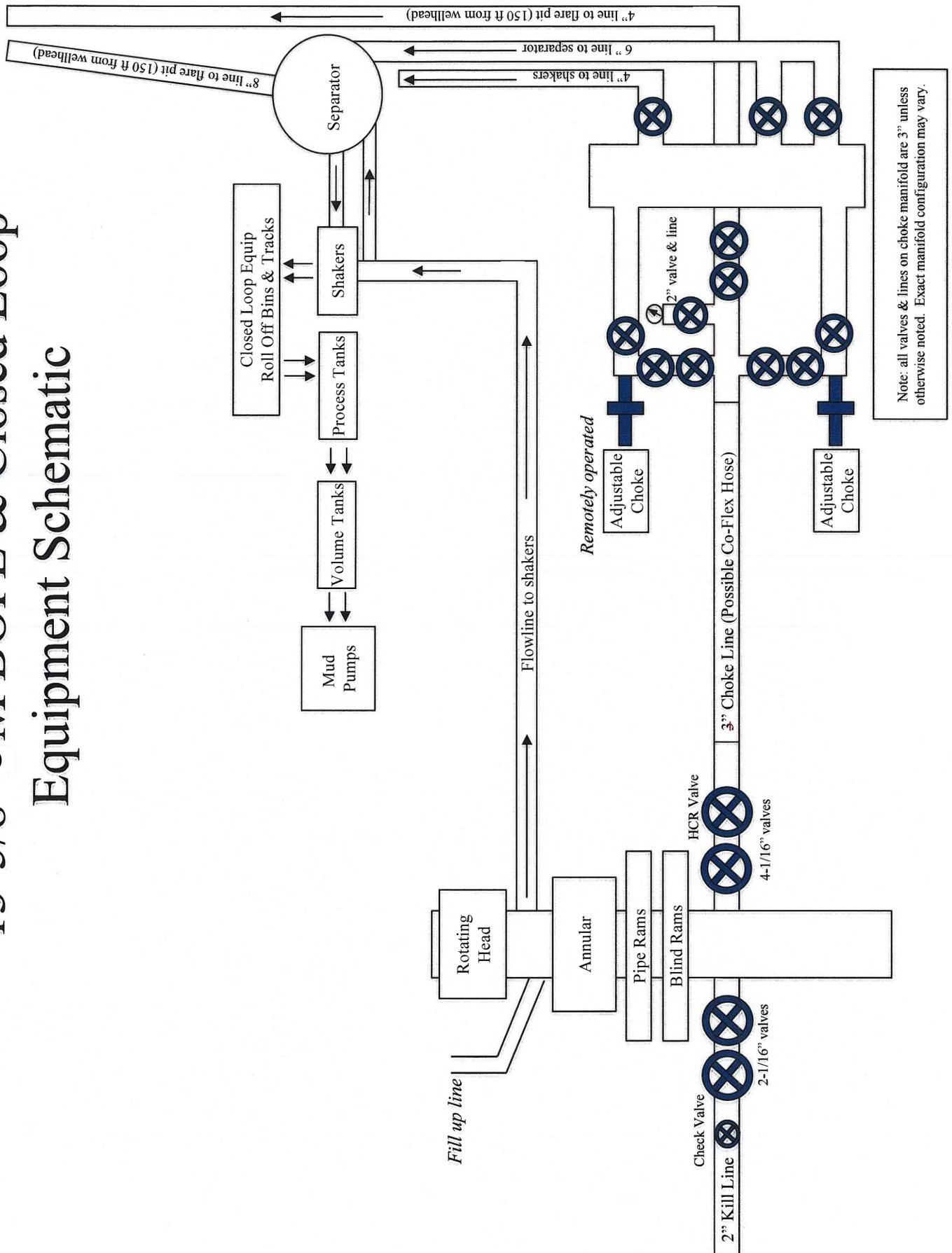
Devon Energy respectfully requests approval for the following additions to the drilling plan:

1. Potential utilization of a spudder rig to pre-set surface casing.

### **2. Description of Operations**

1. A spudder rig contractor may move in their rig to drill the surface hole section and pre-set surface casing on this well.
  - a. After drilling the surface hole section, the rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
  - b. Rig will utilize fresh water based mud to drill surface hole to TD.
2. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
3. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wingvalves.
  - a. A means for intervention will be maintained while the drilling rig is not over the well.
4. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
5. Drilling operation will be performed with the big rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.
  - a. The BLM will be contacted / notified 24 hours before the big rig moves back on to the pad with the pre-set surface casing.
6. Devon Energy will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.
7. Once the rig is removed, Devon Energy will secure the wellhead area by placing a guard rail around the cellar area.

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



A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.

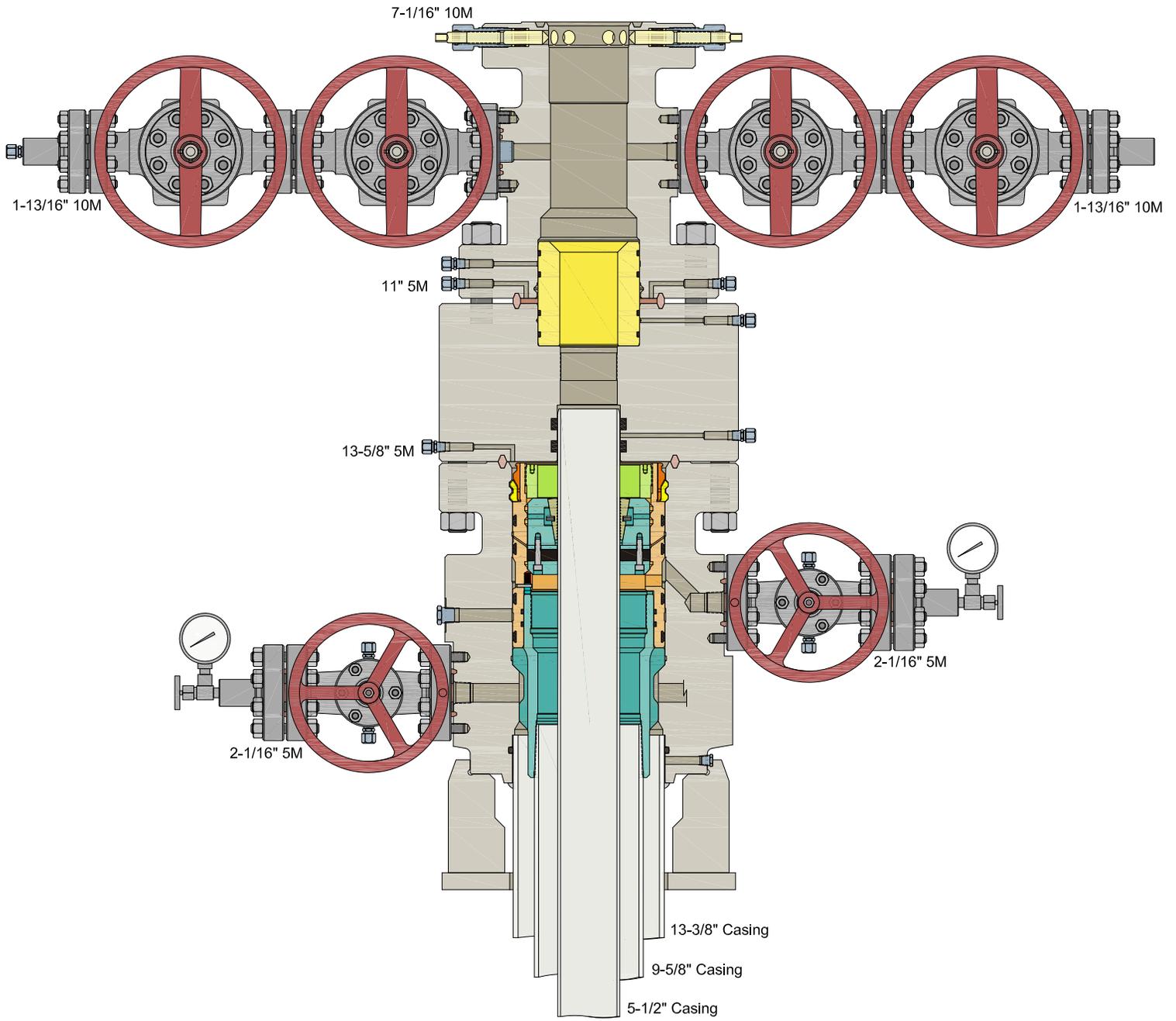
- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 5M will already be installed on the wellhead.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.



Casing Assumptions and Load Cases

Surface

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

<b>Surface Casing Burst Design</b>		
<b>Load Case</b>	<b>External Pressure</b>	<b>Internal Pressure</b>
Pressure Test	Formation Pore Pressure	Max mud weight of next hole-section plus Test psi
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Displace to Gas	Formation Pore Pressure	Dry gas from next casing point

<b>Surface Casing Collapse Design</b>		
<b>Load Case</b>	<b>External Pressure</b>	<b>Internal Pressure</b>
Full Evacuation	Water gradient in cement, mud above TOC	None
Cementing	Wet cement weight	Water (8.33ppg)

<b>Surface Casing Tension Design</b>	
<b>Load Case</b>	<b>Assumptions</b>
Overpull	100kips
Runing in hole	3 ft/s
Service Loads	N/A

Casing Assumptions and Load Cases

Intermediate

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

<b>Intermediate Casing Burst Design</b>		
<b>Load Case</b>	<b>External Pressure</b>	<b>Internal Pressure</b>
Pressure Test	Formation Pore Pressure	Max mud weight of next hole-section plus Test psi
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Fracture @ Shoe	Formation Pore Pressure	Dry gas

<b>Intermediate Casing Collapse Design</b>		
<b>Load Case</b>	<b>External Pressure</b>	<b>Internal Pressure</b>
Full Evacuation	Water gradient in cement, mud above TOC	None
Cementing	Wet cement weight	Water (8.33ppg)

<b>Intermediate Casing Tension Design</b>	
<b>Load Case</b>	<b>Assumptions</b>
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

Casing Assumptions and Load Cases

Production

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

<b>Production Casing Burst Design</b>		
<b>Load Case</b>	<b>External Pressure</b>	<b>Internal Pressure</b>
Pressure Test	Formation Pore Pressure	Fluid in hole (water or produced water) + test psi
Tubing Leak	Formation Pore Pressure	Packer @ KOP, leak below surface 8.6 ppg packer fluid
Stimulation	Formation Pore Pressure	Max frac pressure with heaviest frac fluid

<b>Production Casing Collapse Design</b>		
<b>Load Case</b>	<b>External Pressure</b>	<b>Internal Pressure</b>
Full Evacuation	Water gradient in cement, mud above TOC.	None
Cementing	Wet cement weight	Water (8.33ppg)

<b>Production Casing Tension Design</b>	
<b>Load Case</b>	<b>Assumptions</b>
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Devon Energy Production Company LP</b>
<b>LEASE NO.:</b>	<b>NMNM103603</b>
<b>LOCATION:</b>	Section 31, T.23 S., R.29 E., NMPM
<b>COUNTY:</b>	Eddy County, New Mexico

<b>WELL NAME &amp; NO.:</b>	Spud Muffin 31-30 Fed Com 231H
<b>SURFACE HOLE FOOTAGE:</b>	195'/S & 1353'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 440'/W

<b>WELL NAME &amp; NO.:</b>	Spud Muffin 31-30 Fed Com 232H
<b>SURFACE HOLE FOOTAGE:</b>	195'/S & 1383'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 1320'/W

COA

H2S	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Potash	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Secretary	<input type="checkbox"/> R-111-P
Cave/Karst Potential	<input type="checkbox"/> Low	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> High
Cave/Karst Potential	<input type="checkbox"/> Critical		
Variance	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Flex Hose	<input type="checkbox"/> Other
Wellhead	<input type="checkbox"/> Conventional	<input checked="" type="checkbox"/> Multibowl	<input type="checkbox"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input checked="" type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

### B. CASING

1. The 13-3/8 inch surface casing shall be set at approximately **250 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature

survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing shall be set at approximately **2644 feet** is:
- Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**
- ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

**Operator has proposed to pump down 13-3/8" X 9-5/8" annulus. Operator must run a CBL from TD of the 9-5/8" casing to surface. Submit results to BLM.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.  
**Cement excess is less than 25%, more cement might be required.**

### **C. PRESSURE CONTROL**

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

- b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- c. Manufacturer representative shall install the test plug for the initial BOP test.
- d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

#### **D. SPECIAL REQUIREMENT (S)**

##### **Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

## GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Eddy County

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

Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

## A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

## B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. 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. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### C. DRILLING MUD

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

D. 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.



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

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

**For**

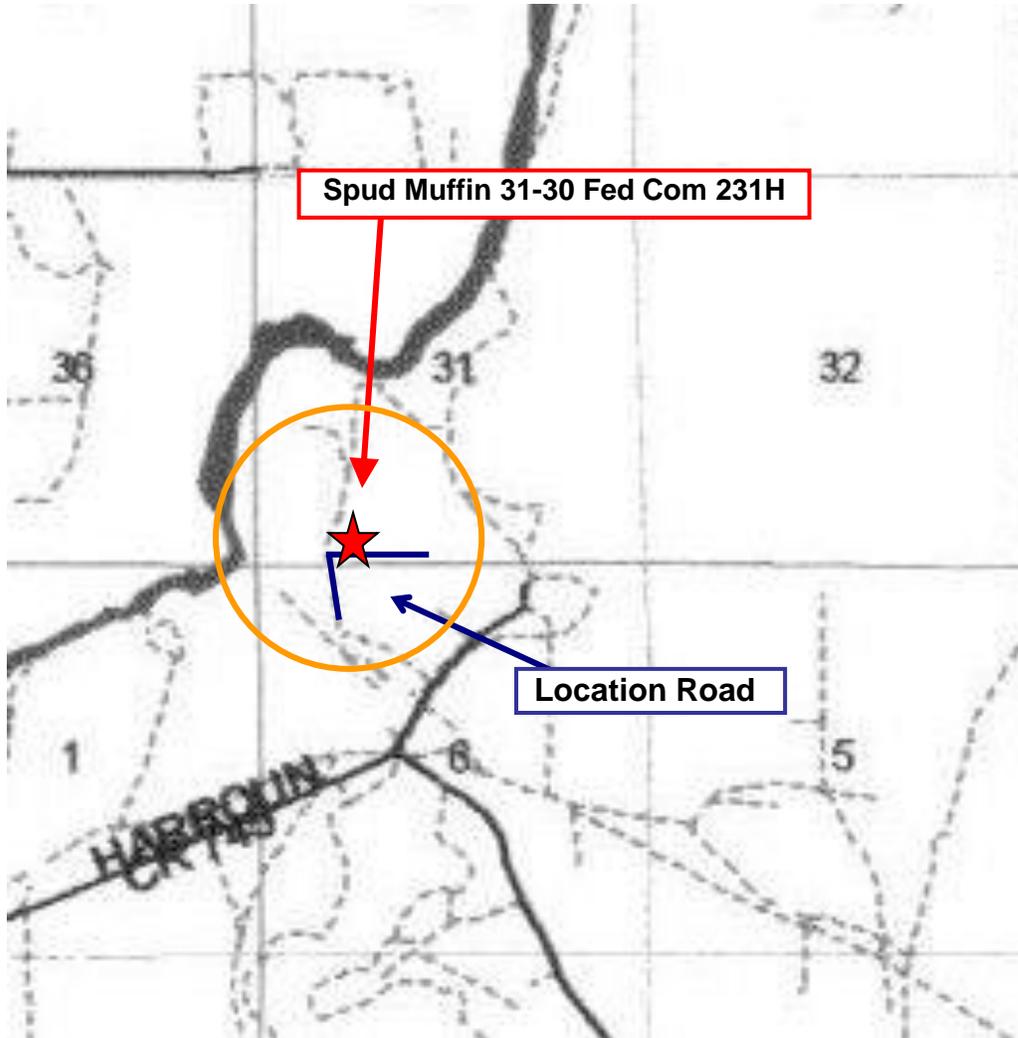
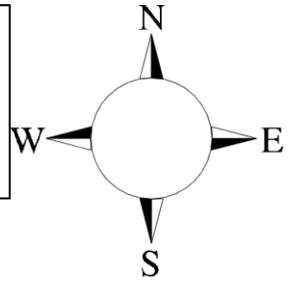
**Spud Muffin 31-30 Fed Com 231H**

**Sec-31 T-23S R-29E  
195' FSL & 1353' FWL  
LAT. = 32.2548210' N (NAD83)  
LONG = 104.0279717' W**

**Eddy County NM**

## Spud Muffin 31-30 Fed Com 231H

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. Crews should then block the 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>
<b>Hydrogen Sulfide</b>	H <sub>2</sub> S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
<b>Sulfur Dioxide</b>	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 tubulars 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

There will be weekly H<sub>2</sub>S and well control drills conducted for all personnel on each crew.

### 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 reasonably expected to contain H<sub>2</sub>S.

## 1. Well Control Equipment

- A. Flare line
- B. Choke manifold – Remotely Operated
- 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.
- E. Mud/Gas Separator

## 2. Protective equipment for essential personnel:

30-minute SCBA units located at briefing areas, as indicated on well site diagram, with escape units available in the top doghouse. 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:

Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights which activate when H<sub>2</sub>S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

- Bell nipple
- Possum Belly/Shale shaker
- Rig floor
- Choke manifold
- Cellar

### 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.

**4. Mud program:**

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.

**5. 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.

**6. Communication:**

- A. Company personnel have/use cellular telephones in the field.
- B. Land line (telephone) communications at Office

**7. 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.

### Delaware Basin Business Unit (DBBU) Key Company Contacts

Employee/Company Contract Representative	Position	Phone Number	After Hours Number
Jonathan Fisher (North)	Drilling Manager	832-967-7912	
Jason Hildebrand (South)	Drilling Manager	405-552-6514	
Rich Downey	Drilling VP	405-228-2415	
Josh Harvey	EHS Manager	405-228-2440	918-500-5536
Laura Wright	EHS Supervisor	405-552-5334	832-969-8145
Robert Glover	EHS Professional	575-703-5712	575-703-5712
Lane Frank	Lead EHS	580-579-7052	580-579-7052
Rickey Porter	Lead EHS	903-720-8315	903-720-8315
Ronnie Handy	Lead EHS	918-839-2046	918-839-2046
Brock Vise	Lead EHS	918-413-3291	918-413-3291

### Delaware Basin Business Unit (DBBU) Emergency Contacts

County/Location	
<b>Police / Sherriff</b>	
Eddy County	575-616-7155
Lea County	575-397-9265
Loving County	432-377-2411
Winkler County	432-586-3461
<b>Fire</b>	
Eddy County	575-616-7155
Lea County	575-397-9265
Loving County	432-377-2411
Winkler County	432-586-3461
<b>Ambulance &amp; Hospital</b>	
Eddy County	575-616-7155
Lea County	575-397-9265
Carlsbad Medical Center	575-887-4100
Lea County Regional Medical Center	575-492-5000
Reeves County Hospital District	432-447-3551
Winkler County Memorial Hospital	432-586-5864
<b>Helicopter/Lifeline Services</b>	
Aero Care/Life Flight	575-616-7155 Eddy County or 575-397-9265 Lea County
OHSI	844-449-0911



**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
 811 S. First St., Artesia, NM 88210  
 Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 165312

**CONDITIONS**

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 165312
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	12/15/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	12/15/2022
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	12/15/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	12/15/2022
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	12/15/2022