Carlsbad Field Office
OCD Artesia

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

5. Lease Serial No.
NMNM082886

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
SPUD MUFFIN 31-30 FED COM
732H 322-920

2. Name of Operator
DEVON ENERGY PRODUCTION COMPANY LP 6137

9. API Well No.
30-015-45459

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
333 West Sheridan Avenue Oklahoma City OK 73102	(800)583-3866	PURPLE SAGE / WOLFCAMP

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SWSW / 270 FSL / 1275 FWL / LAT 32.255029 / LONG -104.028223
At proposed prod. zone NWNW / 230 FNL / 990 FWL / LAT 32.2828861 / LONG -104.0290464

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 31 / T23S / R29E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
	EDDY	NM

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
45.83 feet	39.59	632.38

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
1810 feet	10648 feet / 20600 feet	FED: CO1104

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
2959 feet	03/30/2019	45 days

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.
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 requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Erin Workman / Ph: (405)552-7970	05/02/2018

Title
Regulatory Compliance Professional

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	11/21/2018

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

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.

APPROVED WITH CONDITIONS

Approval Date: 11/21/2018

(Continued on page 2)

*(Instructions on page 2)

Loc Rule 12-3
RW Approved
Advance Copy 11/27/18

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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Additional Operator Remarks

Location of Well

1. SHL: SWSW / 270 FSL / 1275 FWL / TWSP: 23S / RANGE: 29E / SECTION: 31 / LAT: 32.255029 / LONG: -104.028223 (TVD: 0 feet, MD: 0 feet)
   PPP: SWSW / 330 FSL / 990 FWL / TWSP: 23S / RANGE: 29E / SECTION: 31 / LAT: 32.2552018 / LONG: -104.0291436 (TVD: 10544 feet, MD: 10700 feet)
   BHL: NWNW / 230 FNL / 990 FWL / TWSP: 23S / RANGE: 29E / SECTION: 30 / LAT: 32.2828861 / LONG: -104.0290464 (TVD: 10648 feet, MD: 20600 feet)

BLM Point of Contact

Name: Tenille Ortiz
Title: Legal Instruments Examiner
Phone: 5752342224
Email: tortiz@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM082886
WELL NAME & NO.:	SPUD MUFFIN 31-30 FED COM 732H
SURFACE HOLE FOOTAGE:	270'/S & 1275'/W
BOTTOM HOLE FOOTAGE	230'/N & 990'/W
LOCATION:	SECTION 31, T23S, R29E, NMPM
COUNTY:	EDDY

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	
Other	☐4 String Area	☐Capitan Reef	☐WIPP

A. Hydrogen Sulfide

1. 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 **400** feet (a minimum of 25 feet 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 first intermediate casing is:

Option 1 (Single Stage):

- 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. Excess calculates to 24% - additional cement might be required.**

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

❖ 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.

Second intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

3. The minimum required fill of cement behind the **7 5/8** inch second intermediate casing is:

- Cement as proposed. If cement does not circulate, contact the appropriate BLM office.

In the case of lost circulation, operator has proposed to pump down 9 5/8" X 7 5/8" annulus. Operator must run a CBL from TD of the 7 5/8" casing to surface. Submit results to the BLM.

4. 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. **Excess calculates to 22% - additional 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.

Option 1:

i. 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.

Option 2:

ii. **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 Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, 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.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

MHH 11032018

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)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ 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 2nd 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.

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.

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: 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.

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.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM082886
WELL NAME & NO.:	SPUD MUFFIN 31-30 FED COM 732H
SURFACE HOLE FOOTAGE:	270'/S & 1275'/W
BOTTOM HOLE FOOTAGE	230'/N & 990'/W
LOCATION:	SECTION 31, T23S, R29E, NMPM
COUNTY:	EDDY

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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.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION
LEASE NO.:	NMNM82886
WELL NAME & NO.:	SPUD MUFFIN 30-31 FED COM 731H
SURFACE HOLE FOOTAGE:	2485'/S & 735'/W
BOTTOM HOLE FOOTAGE	330'/S & 330'/W
LOCATION:	SECTION 30, T23S, R29E, NMPM
COUNTY:	EDDY

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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.

☐ **Construction**
- Notification
- Topsoil
- Closed Loop System
- Federal Mineral Material Pits
- Well Pads
- Roads

☐ **Road Section Diagram**

☐ **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.

Timing Limitation Exceptions:
The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

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.

Cave/Karst Surface Mitigation
The following stipulations will be applied to minimize impacts during construction, drilling and production:

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

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

Pad Berming:
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

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

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

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

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

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

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

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.
Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

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

Pressure Testing:
The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

During construction, the proponent shall minimize disturbance to existing fences, water lines, troughs, windmills, and other improvements on public lands. The proponent is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the grazing permittee/allottee prior to disturbing any range improvement projects. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

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 strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area 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 exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure 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.

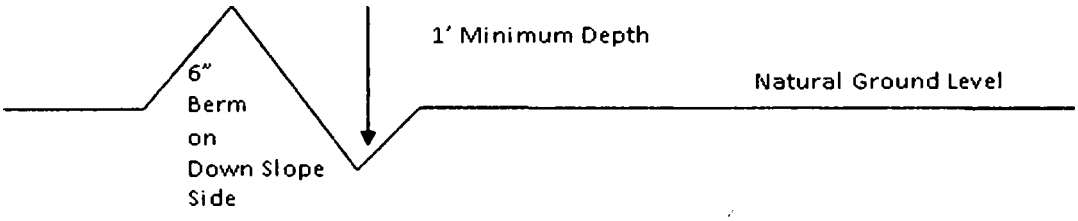
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route 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 cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted 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 fences.

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

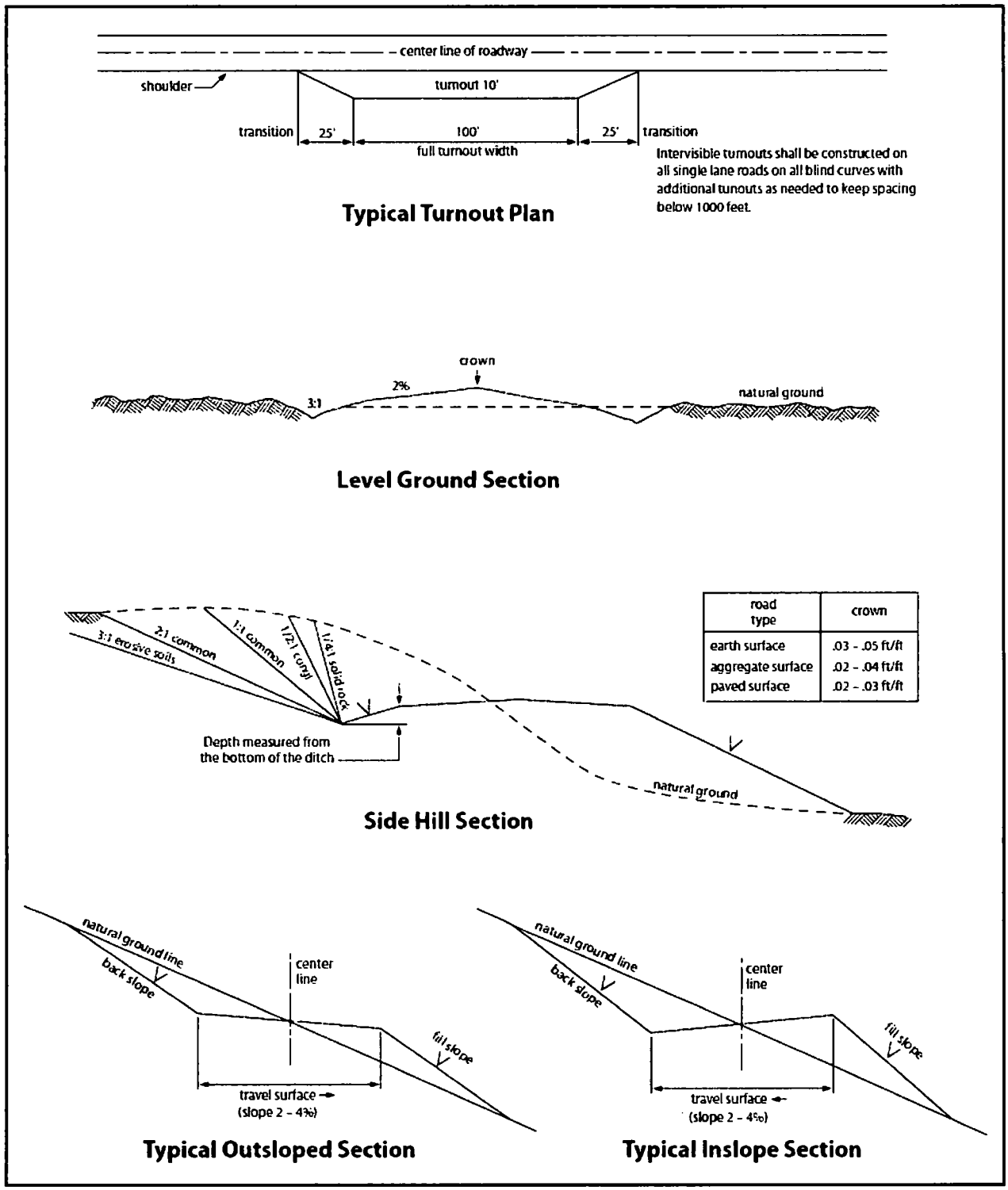


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. 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).

VIII. 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).

IX. 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 1 for Loamy Sites

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 shall 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 shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre shall be doubled. The seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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:

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

AFMSS

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

Operator Certification Data Report

11/26/2018

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently 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 the company I represent, 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.

NAME: Erin Workman **Signed on:** 04/19/2018

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City **State:** OK **Zip:** 73102

Phone: (405)552-7970

Email address: Erin.Workman@dvn.com

Field Representative

Representative Name: Ray Vaz

Street Address: 6488 Seven Rivers HWY

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-1871

Email address: Ray.Vaz@dvn.com

AFMSS

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

Application Data Report

11/26/2018

APD ID: 10400029616 **Submission Date:** 05/02/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400029616 **Tie to previous NOS?** **Submission Date:** 05/02/2018

BLM Office: CARLSBAD **User:** Erin Workman **Title:** Regulatory Compliance Professional

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM082886 **Lease Acres:** 39.59

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** DEVON ENERGY PRODUCTION COMPANY LP

Operator letter of designation:

Operator Info

Operator Organization Name: DEVON ENERGY PRODUCTION COMPANY LP

Operator Address: 333 West Sheridan Avenue **Zip:** 73102

Operator PO Box:

Operator City: Oklahoma City **State:** OK

Operator Phone: (800)583-3866

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** PURPLE SAGE **Pool Name:** WOLFCAMP

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL,POTASH

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** YES **New surface disturbance?** N

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** HARROUN TRUST 31-30 FED COM **Number:** 2H & 3H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: **Distance to nearest well:** 1810 FT **Distance to lease line:** 45.83 FT

Reservoir well spacing assigned acres Measurement: 632.38 Acres

Well plat: SPUD_MUFFIN_31_30_FED_COM_732H_Final_C_102_04_24_18_20180618100150.pdf

Well work start Date: 03/30/2019 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

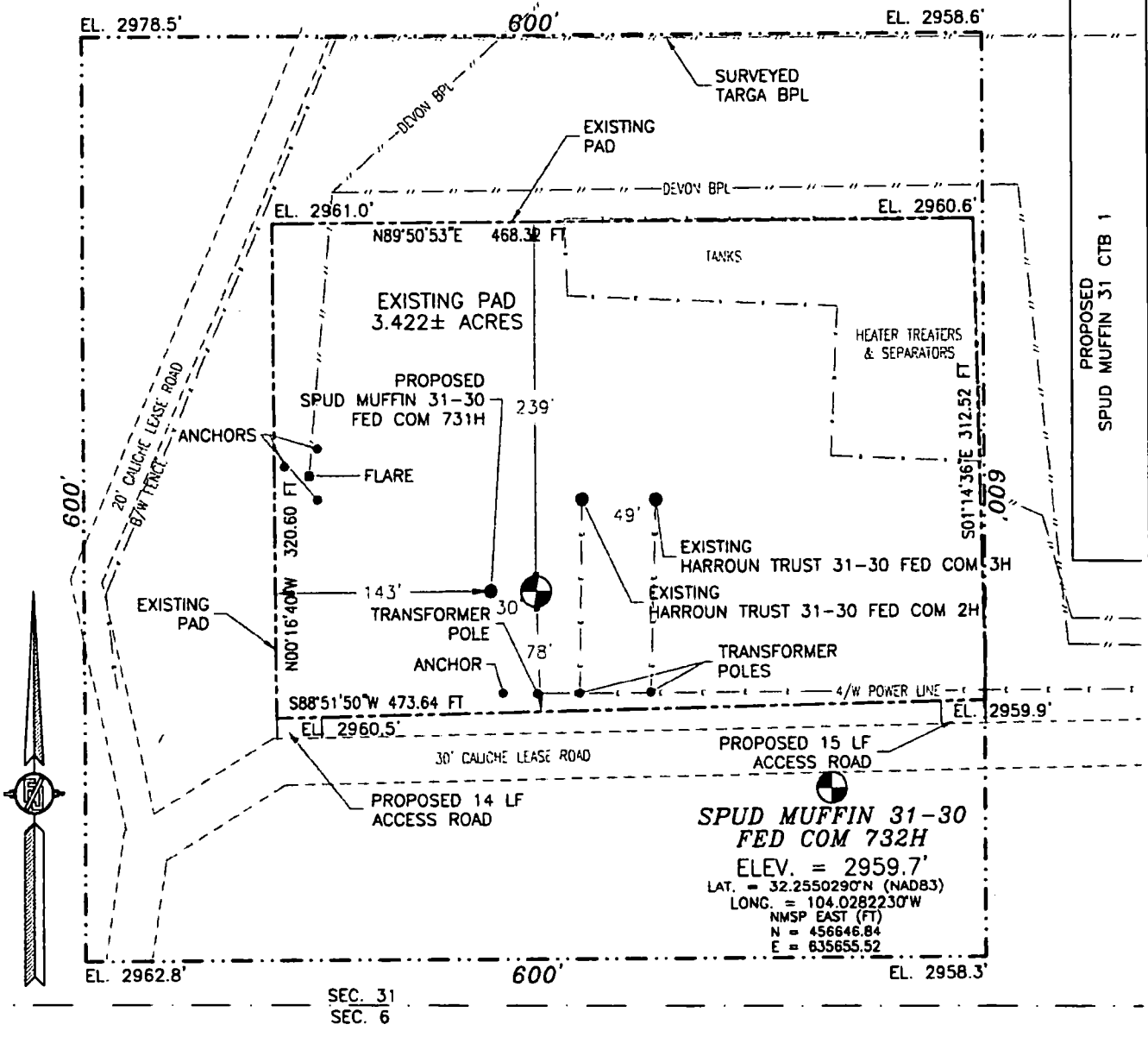
Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 5779E

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	270	FSL	1275	FWL	23S	29E	31	Aliquot SWSW	32.255029	-104.028223	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 082886	2959	0	0
KOP Leg #1	270	FSL	990	FWL	23S	29E	31	Aliquot SWSW	32.255038 9	-104.029144 3	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 082886	-7168	10139	10127
PPP Leg #1	330	FSL	990	FWL	23S	29E	31	Aliquot SWSW	32.255201 8	-104.029143 6	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 082886	-7585	10700	10544

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM NAVD88.



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

BEGINNING AT THE JUNCTION OF US 285 AND CR 720, GO EAST ON CR 720 0.8 OF A MILE TO HARROUN ROAD ON THE LEFT. GO NORTH-NORTHEAST ON HARROUN ROAD FOR 3.1 MILES TO A FORK IN THE ROAD. CONTINUE NORTH. LEFT ON SAID HARROUN ROAD 230' TO A LEASE ROAD TO THE LEFT. GO NORTH 0.5 OF A MILE. GO NORTH 14' TO THE EXISTING SOUTHWEST PAD CORNER OF HARROUN TRUST 31-30 FED COM 2H & 3H FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 FED COM 732H

LOCATED 270 FT. FROM THE SOUTH LINE AND 1275 FT. FROM THE WEST LINE OF SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

LAND STATUS: BLM

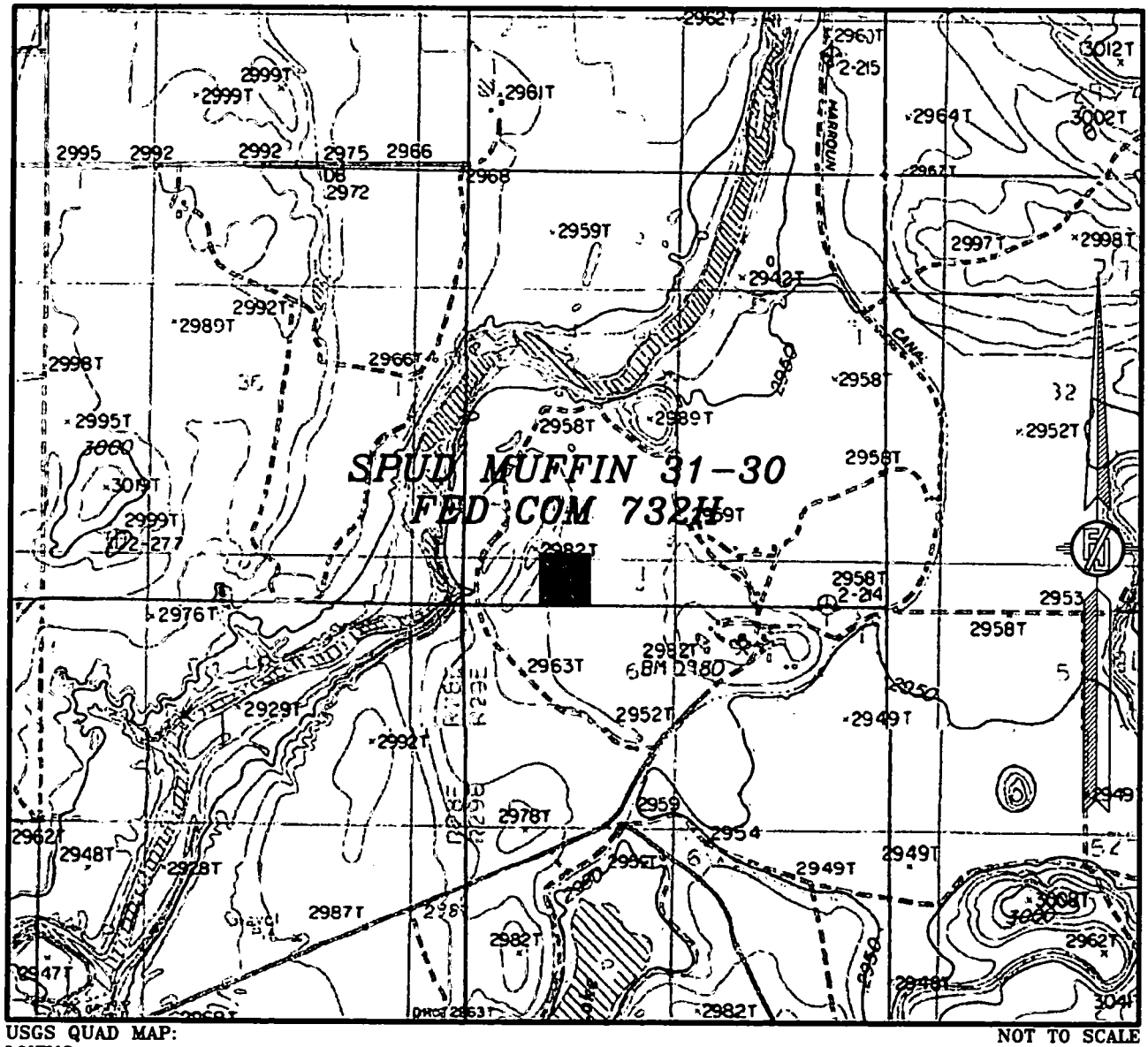
MARCH 14, 2018

SURVEY NO. 5779E

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

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

LOCATION VERIFICATION MAP



USGS QUAD MAP:
LOVING

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 FED COM 732H

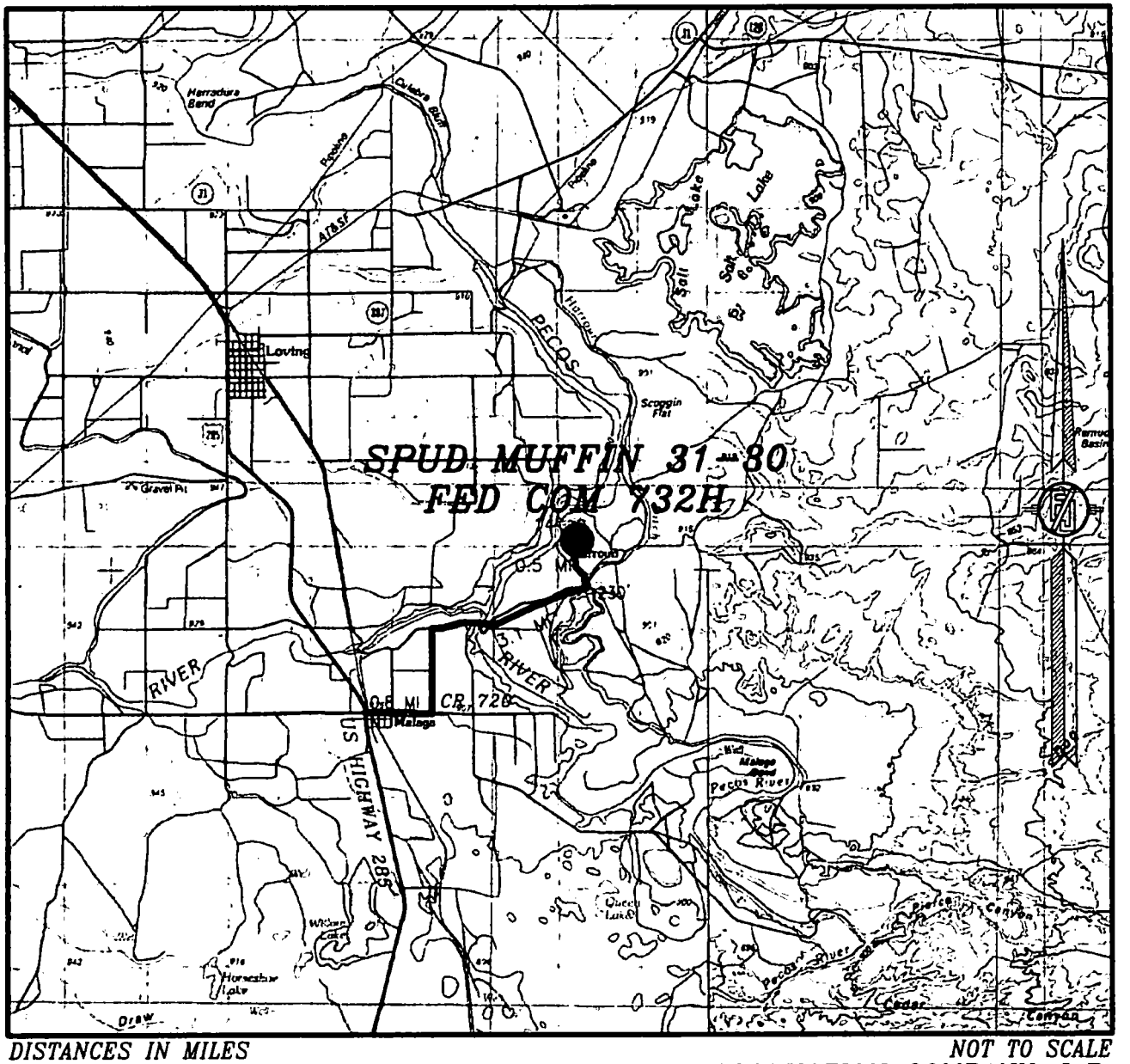
LOCATED 270 FT. FROM THE SOUTH LINE
AND 1275 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

MARCH 14, 2018

SURVEY NO. 5779E

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

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 FED COM 732H

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EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

MARCH 14, 2018

DIRECTIONS TO LOCATION

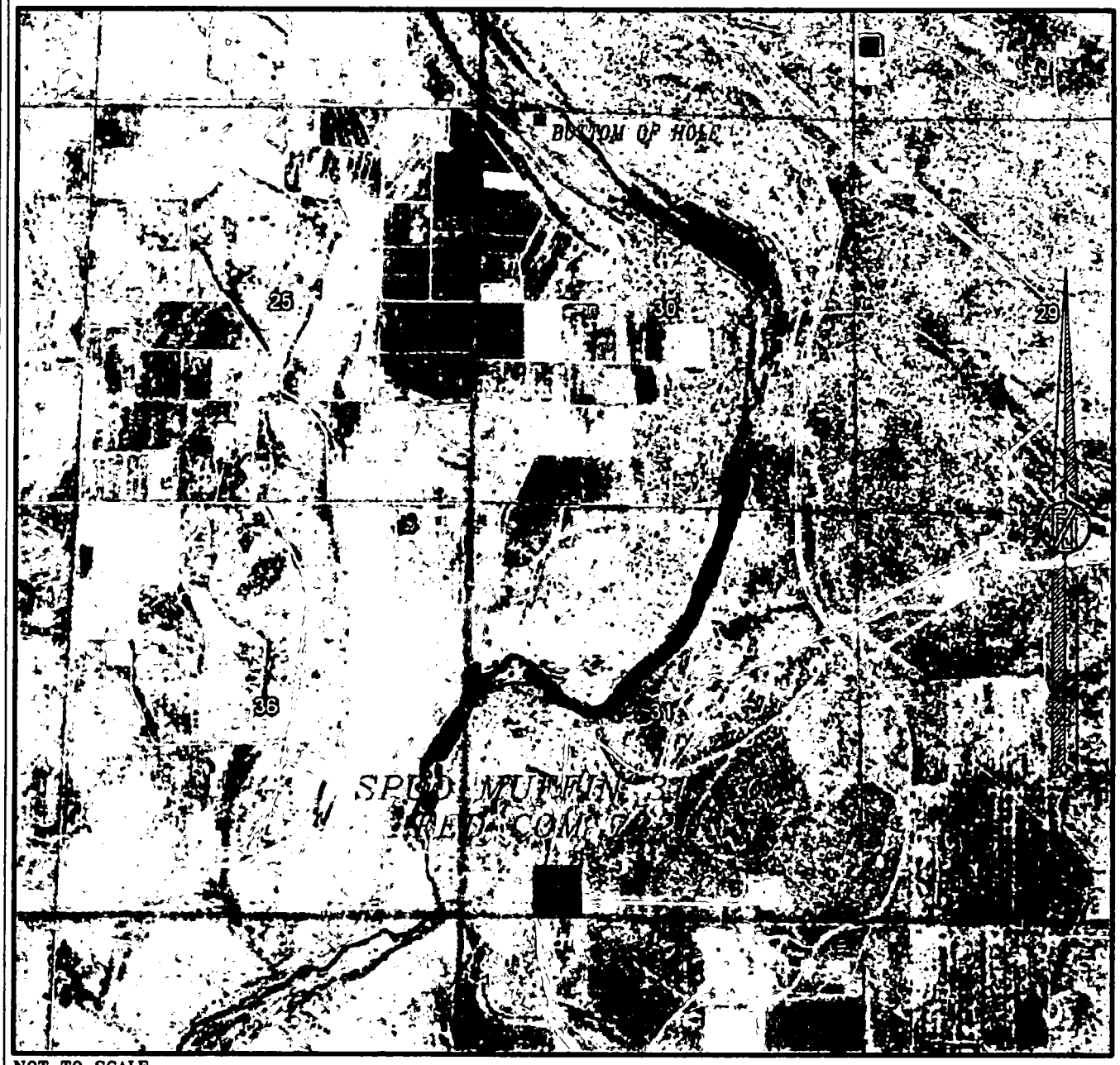
BEGINNING AT THE JUNCTION OF US 285 AND CR 720, GO EAST ON CR 720 0.8 OF A MILE TO HARROUN ROAD ON THE LEFT. GO NORTH-NORTHEAST ON HARROUN ROAD FOR 3.1 MILES TO A FORK IN THE ROAD. CONTINUE NORTH, LEFT ON SAID HARROUN ROAD 230' TO A LEASE ROAD TO THE LEFT, GO NORTH 0.5 OF A MILE, GO NORTH 14' TO THE EXISTING SOUTHWEST PAD CORNER OF HARROUN TRUST 31-30 FED COM 2H & 3H FOR THIS LOCATION.

SURVEY NO. 5779E

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

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31–30 FED COM 732H

LOCATED 270 FT. FROM THE SOUTH LINE
AND 1275 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

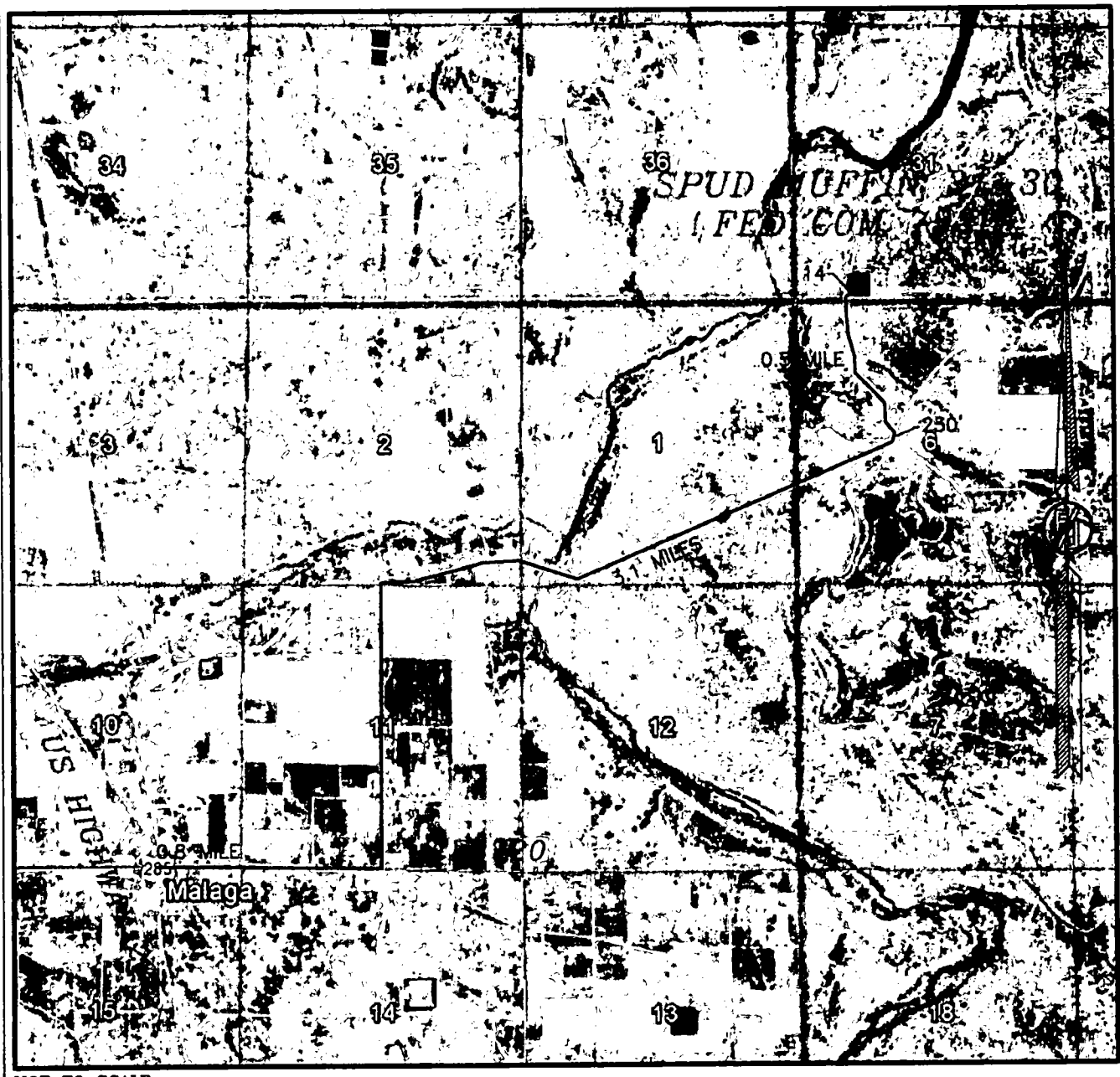
MARCH 14, 2018

SURVEY NO. 5779E

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

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

ACCESS AERIAL ROUTE MAP



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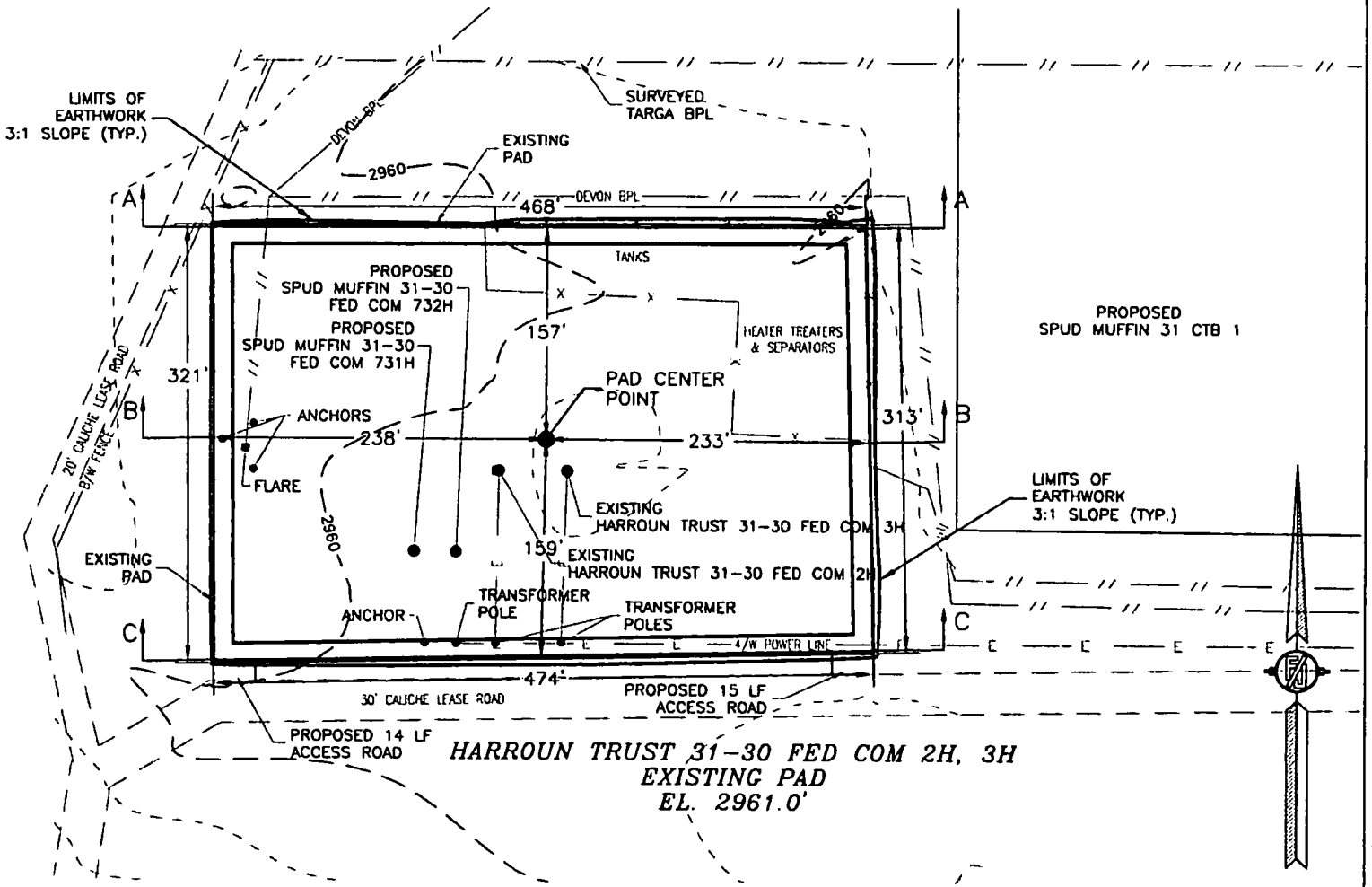
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

MARCH 14, 2018

SURVEY NO. 5779E

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

PLAN VIEW



HARROUN TRUST 31-30 FED COM 2H, 3H
EXISTING PAD
EL. 2961.0'

DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
SPUD MUFFIN 31-30 FED COM 732H
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

012 60 120 240
SCALE 1" = 120'

CUT	FILL	NET
1 CU. YD	7836 CU. YD	7835 CU. YD (FILL)

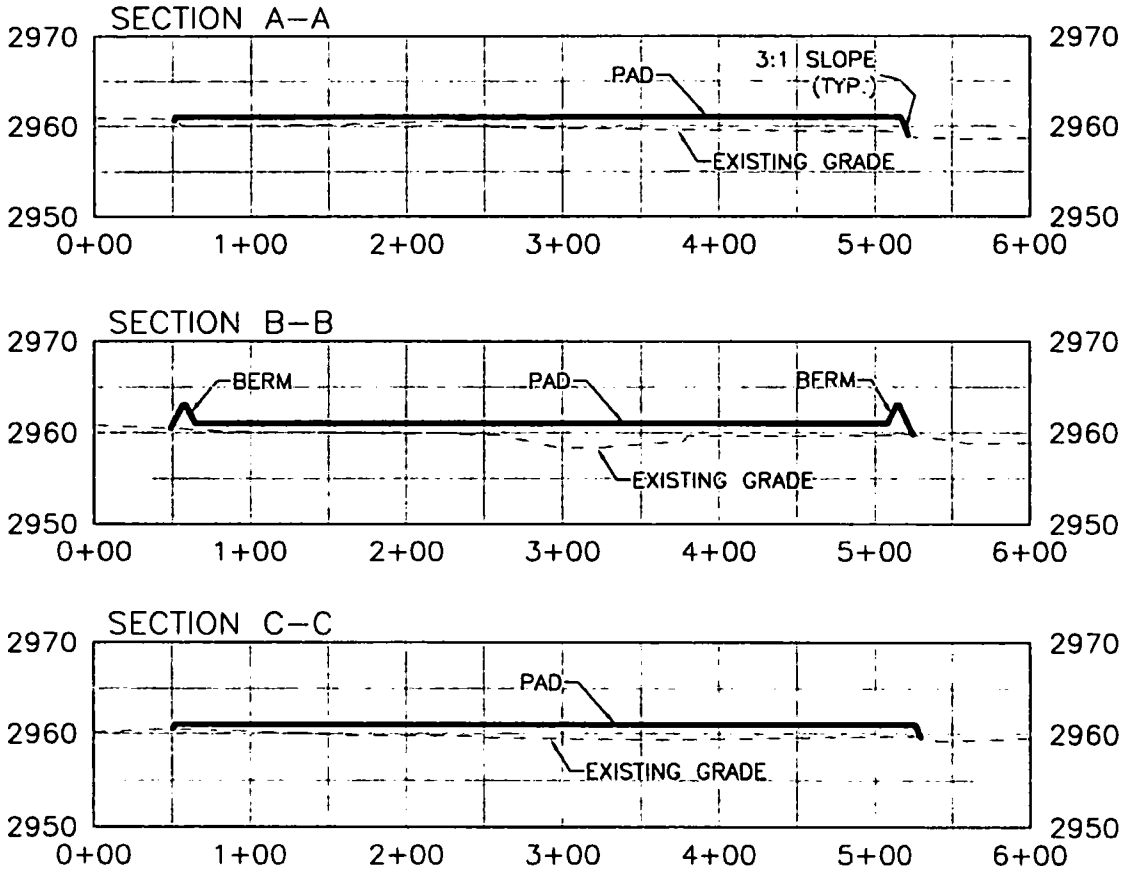
EARTHWORK QUANTITIES ARE ESTIMATED

MARCH 14, 2018

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

SHEET 1-2
SURVEY NO. 5779E

CROSS SECTIONS



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
SPUD MUFFIN 31–30 FED COM 732H
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 14, 2018

012 60 120 240
SCALE 1" = 120' – 1" = 20' VER

CUT	FILL	NET
1 CU. YD	7836 CU. YD	7835 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

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

SHEET 2-2
SURVEY NO. 5779E

APD ID: 10400029616 **Submission Date:** 05/02/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	---	2957	0	0	OTHER : Surface	NONE	No
2	TOP SALT	2632	329	329	SALT	NONE	No
3	BASE OF SALT	211	2750	2750	SALT	NONE	No
4	BELL CANYON	169	2788	2788	SANDSTONE	NATURAL GAS,OIL	No
5	CHERRY CANYON	-683	3640	3640	SANDSTONE	NATURAL GAS,OIL	No
6	BRUSHY CANYON	-1924	4881	4881	SANDSTONE	NATURAL GAS,OIL	No
7	BONE SPRING	-3499	6456	6456	SANDSTONE	NATURAL GAS,OIL	No
8	WOLFCAMP	-6743	9700	9700	SHALE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 10680

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

Requesting Variance? NO

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

Testing Procedure: 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.

Choke Diagram Attachment:

SPUD_MUFFIN_31_30_FED_COM_731H_5M_BOPE_Double_Ram_and_CLS_Schematic_20180420140148.pdf

BOP Diagram Attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

SPUD_MUFFIN_31_30_FED_COM_731H_5M_BOPE_Double_Ram_and_CLS_Schematic_20180420140148.pdf

SPUD_MUFFIN_31_30_FED_COM_732H_5M_BOPE_Double_Ram_and_CLS_Schematic_20180420140231.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 10680

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

Testing Procedure: 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.

Choke Diagram Attachment:

SPUD_MUFFIN_31_30_FED_COM_732H_5M_BOPE_Double_Ram_and_CLS_Schematic_20180420140258.pdf

BOP Diagram Attachment:

SPUD_MUFFIN_31_30_FED_COM_732H_5M_BOPE_Double_Ram_and_CLS_Schematic_20180420140320.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	400	0	400			400	J-55	48	STC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2700	0	2700			2700	J-55	40	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6
3	INTERMEDIATE	8.75	7.625	NEW	API	N	2700	10650	2700	10550			7950	P-110	29.7	OTHER - Flushmax	1.125	1.25	BUOY	1.6	BUOY	1.6
4	PRODUCTION	6.75	5.5	NEW	API	N	0	20600	0	10648			20600	P-110	20	OTHER - VAM SG	1.125	1.25	BUOY	1.6	BUOY	1.6

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

SPUD_MUFFIN_31_30_FED_COM_732H_SurfCsg_Ass_20180420140918.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

SPUD_MUFFIN_31_30_FED_COM_732_H_Int_Csg_Ass_20180420141006.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

SPUD_MUFFIN_31_30_FED_COM_732_H_Int_Csg_Ass_20180420141021.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Casing Attachments

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

SPUD_MUFFIN_31_30_FED_COM_732H_ProdCasing_Ass_20180420141030.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	400	310	1.34	14.8	415	50	Class C	1% Calcium Chloride
INTERMEDIATE	Lead		0	2200	485	1.85	12.9	898	30	Class C	(65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
INTERMEDIATE	Tail		2200	2700	153	1.33	14.8	204	30	Class C	0.125 lbs/sack Poly-E-Flake
INTERMEDIATE	Lead		0	9650	386	3.27	9	1260	30	Tuned	Tuned light
INTERMEDIATE	Tail		9650	10650	108	1.6	14.5	130	30	Class H	Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
PRODUCTION	Lead		10450	20600	967	1.33	14.8	1289	25	Class H	0.125 lbs/sack Poly-E-Flake

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	400	SPUD MUD	8.33	9.1				2			
2700	10650	WATER-BASED MUD	8.6	9.5				2			
400	2700	SALT SATURATED	9.5	10.1				2			
10650	20600	OIL-BASED MUD	10.5	13				12			

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Logs (or some combination thereof depending on whether in vertical or horizontal section) will be run TD to surface; stated logs will be in the Completion Report and submitted to the BLM.

List of open and cased hole logs run in the well:

CBL,DS,GR,MWD

Coring operation description for the well:

NA

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 7200 **Anticipated Surface Pressure:** 4857.44

Anticipated Bottom Hole Temperature(F): 165

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

SPUD_MUFFIN_31_30_FED_COM_732H_H2S_Plans_20180420142205.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Devon_Spud_Muffin_31_30_FED_COM_732H_Plan_3_10K_20180420142638.pdf

Other proposed operations facets description:

5M Verbiage
5M Wellhead
Closed-Loop Design Plan
GCP Form
Anti-Collision Report
Drilling Plan

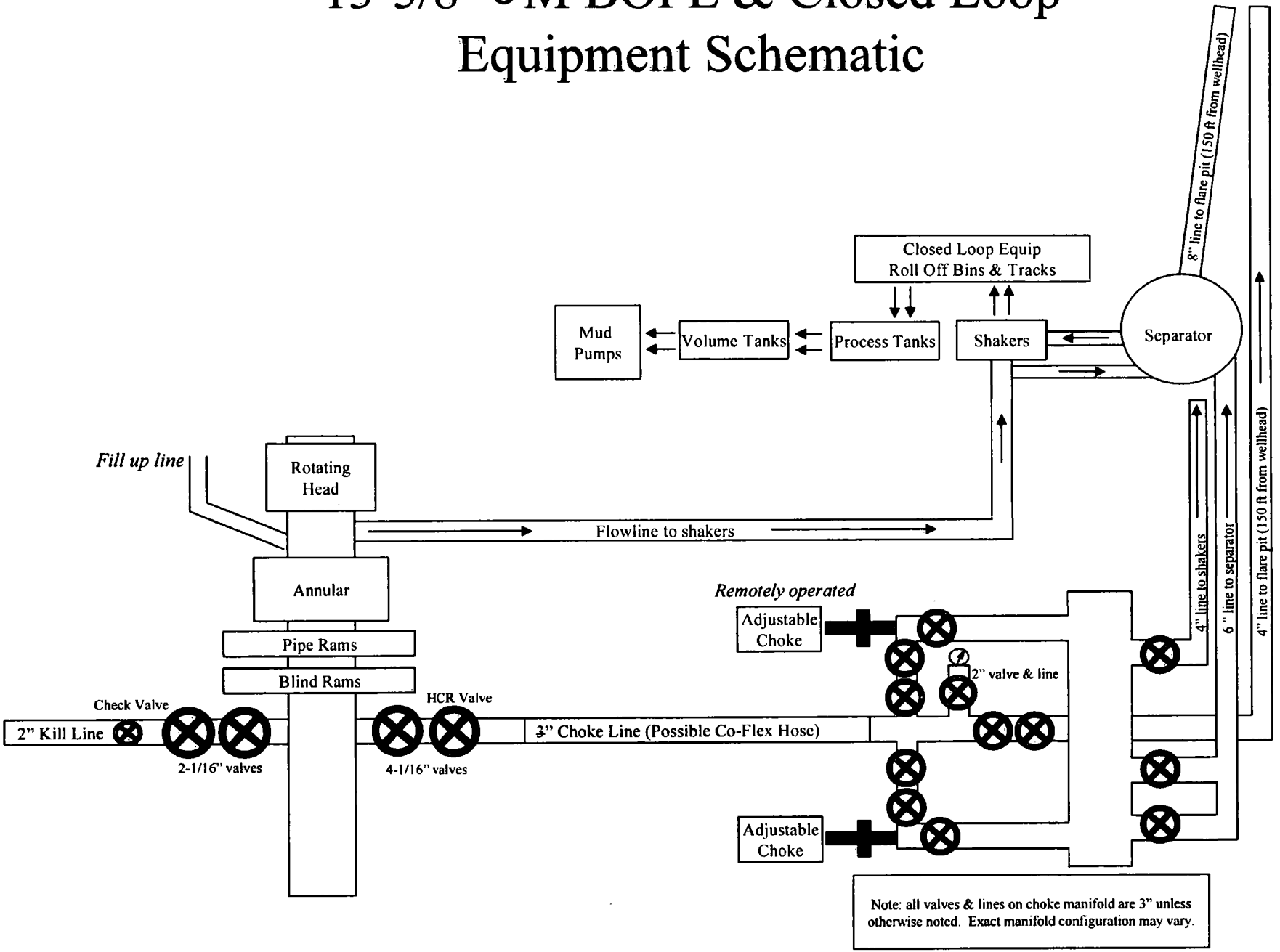
Other proposed operations facets attachment:

SPUD_MUFFIN_31_30_FED_COM_732H__FED_COM_732H_Flushmax_20180420143823.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_5.5_x_20_P110_EC_VAMSG_20180420143823.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_5.5_x_20_P110_EC_VAMTOP_HT_20180420143824.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_Clsd_Loop_20180420143824.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_Drilling_Document_Rev3_20180420143825.docx
SPUD_MUFFIN_31_30_FED_COM_732H_MB_Verb_5M_20180420143826.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_Plan_3_10K_AC_Rpt_20180420143827.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_GCP2_20180919083511.pdf
SPUD_MUFFIN_31_30_FED_COM_732H_Wellhead_Schematic_Rev2_20180919083640.pdf

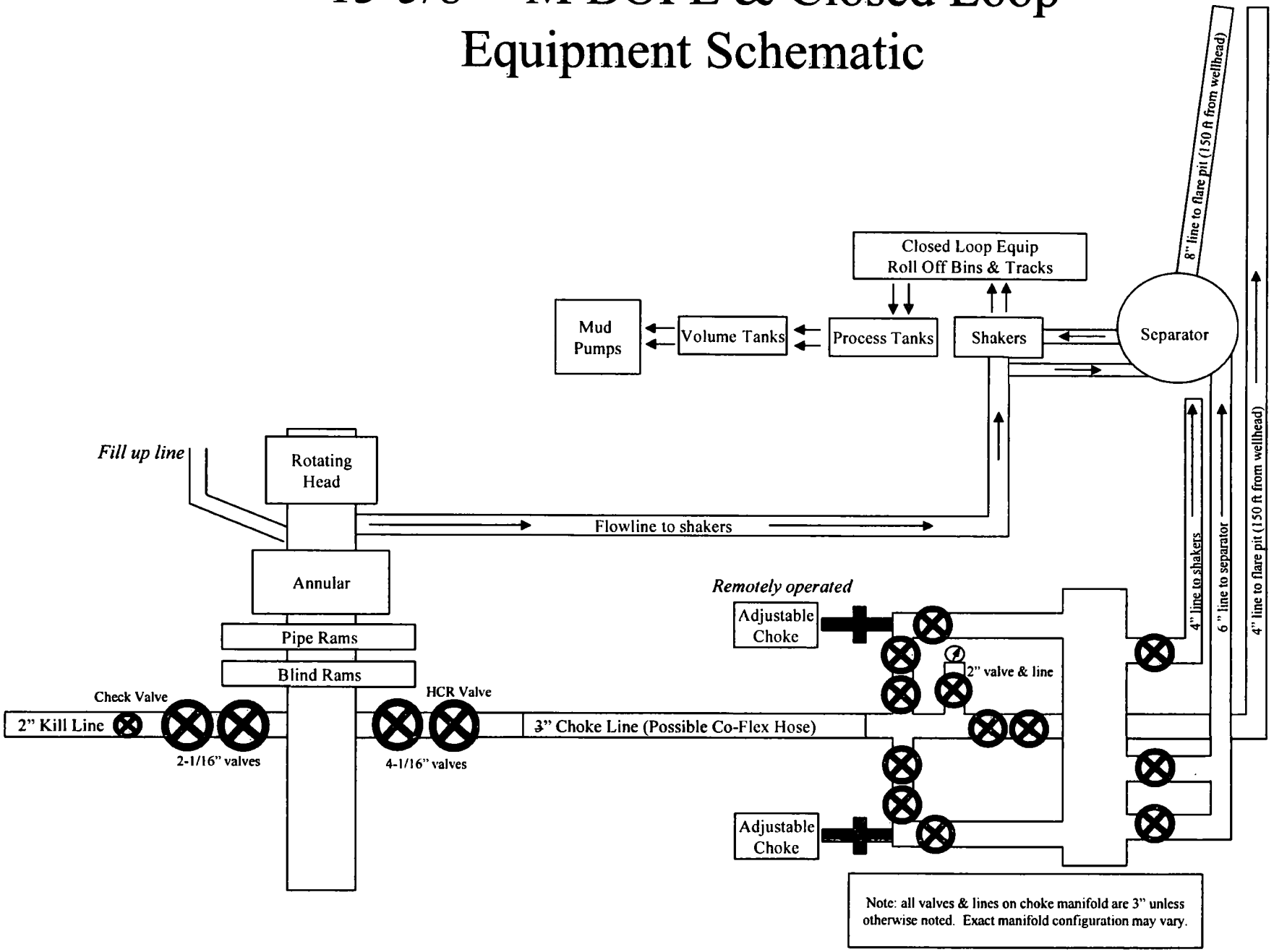
Other Variance attachment:

SPUD_MUFFIN_31_30_FED_COM_732H_Co_flex_20180422144728.pdf

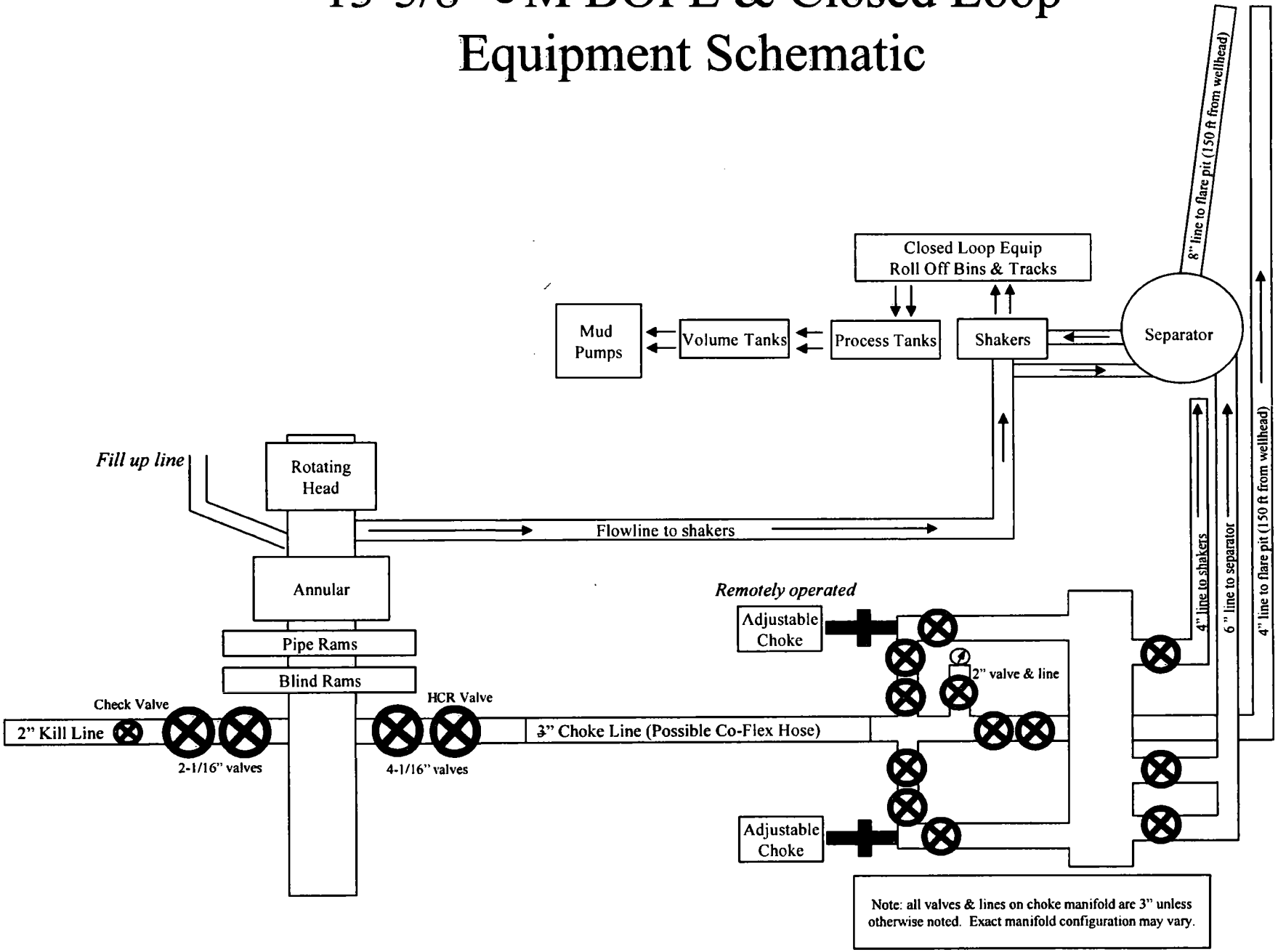
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



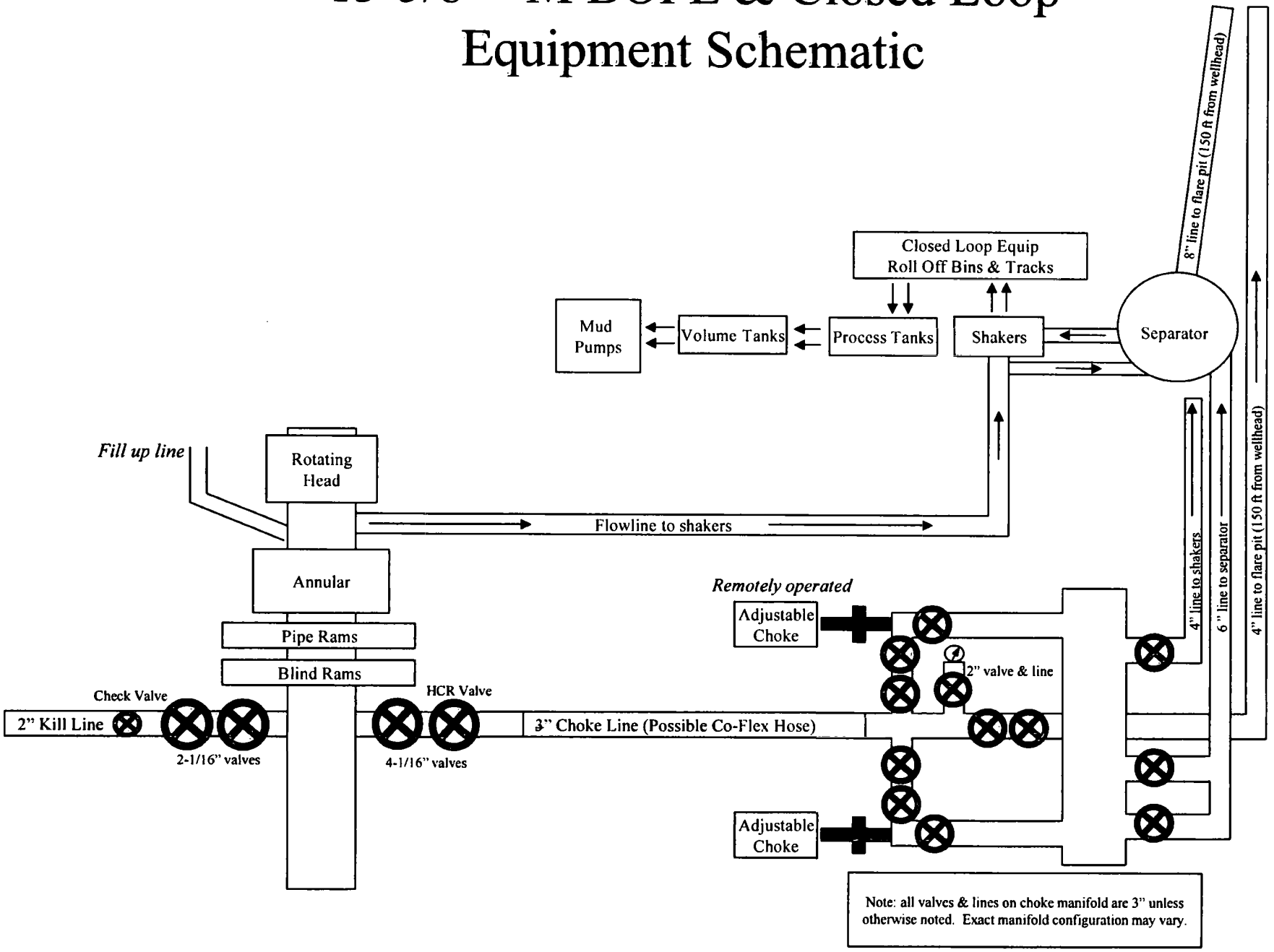
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



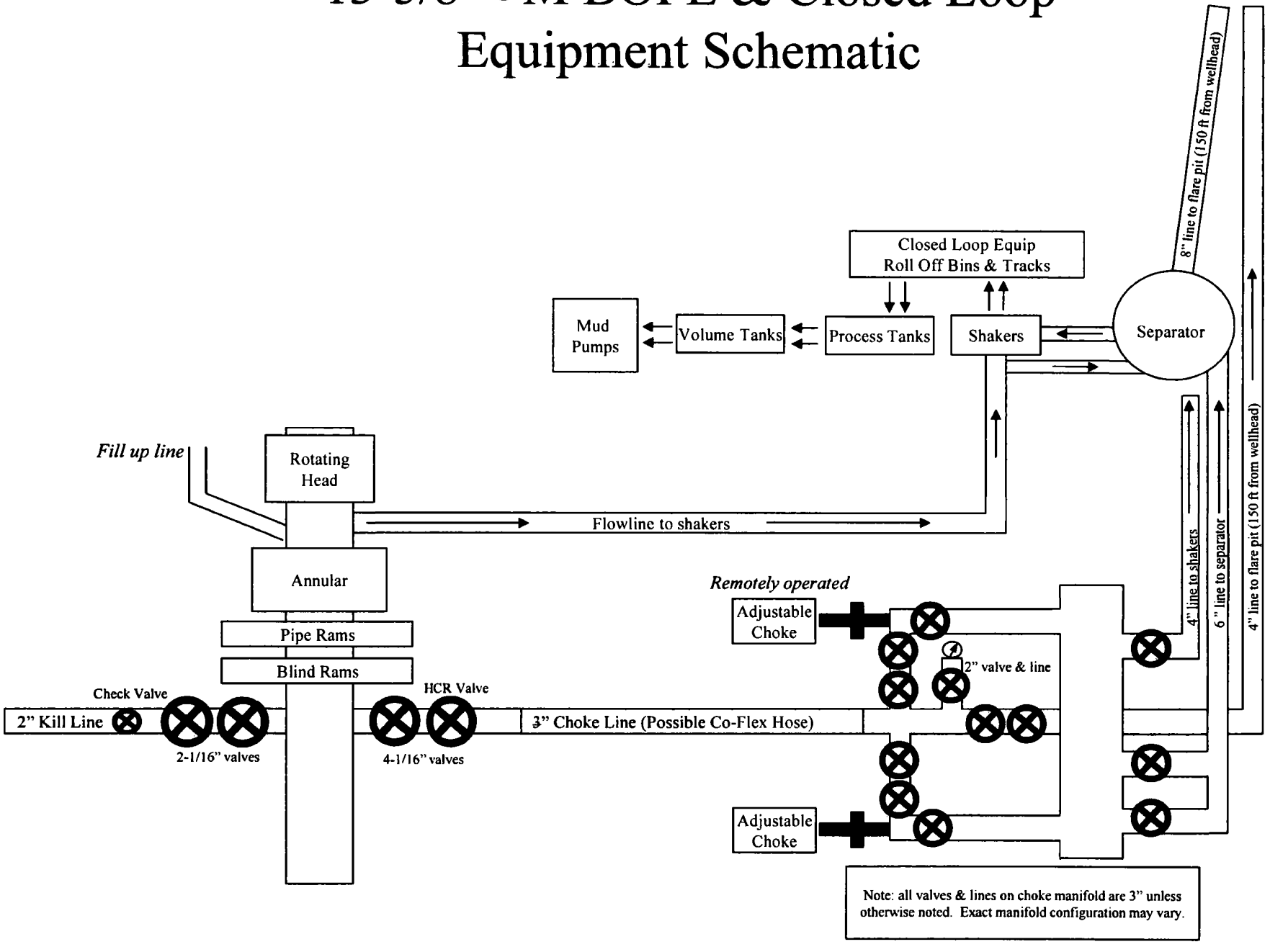
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



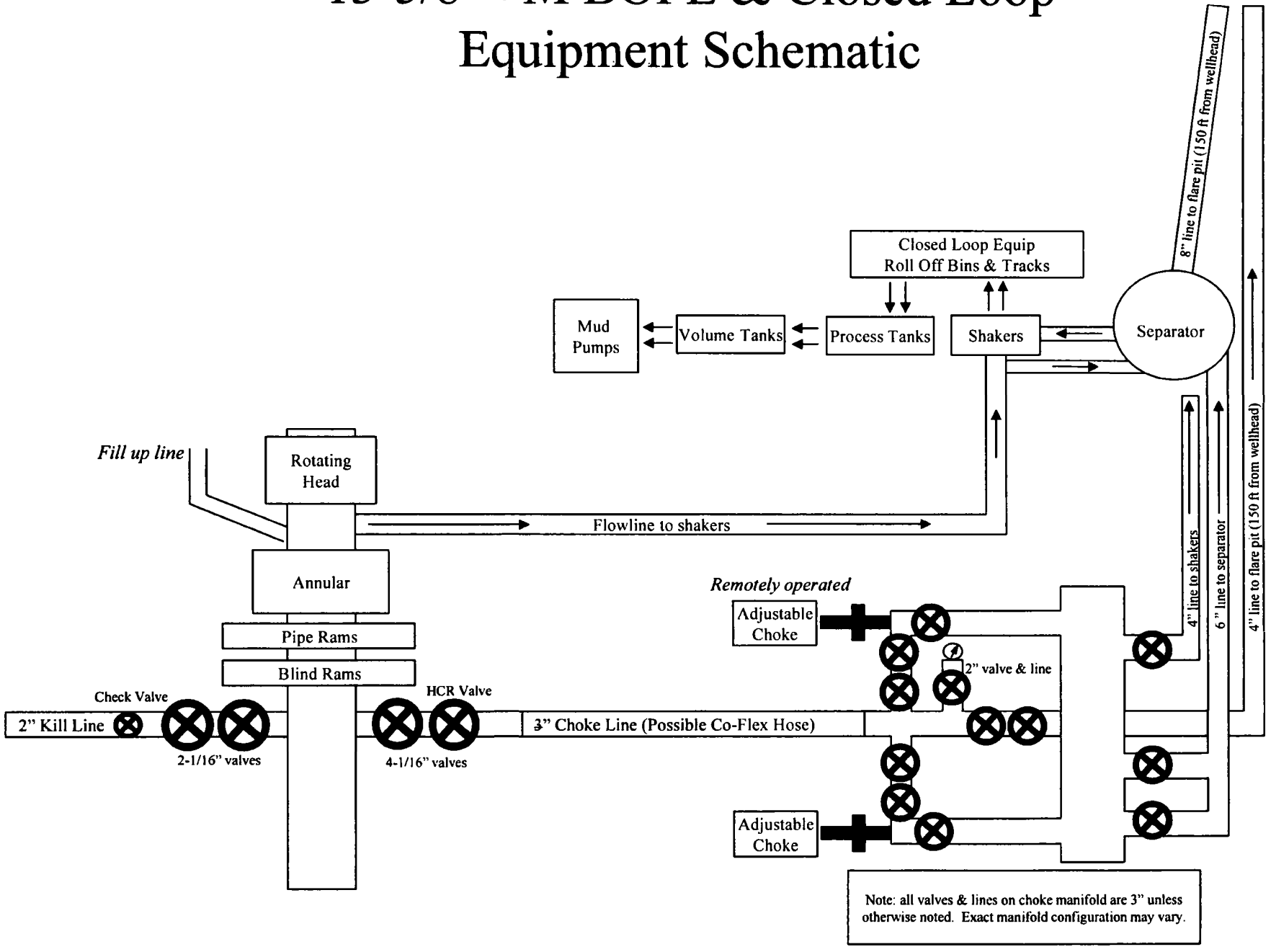
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



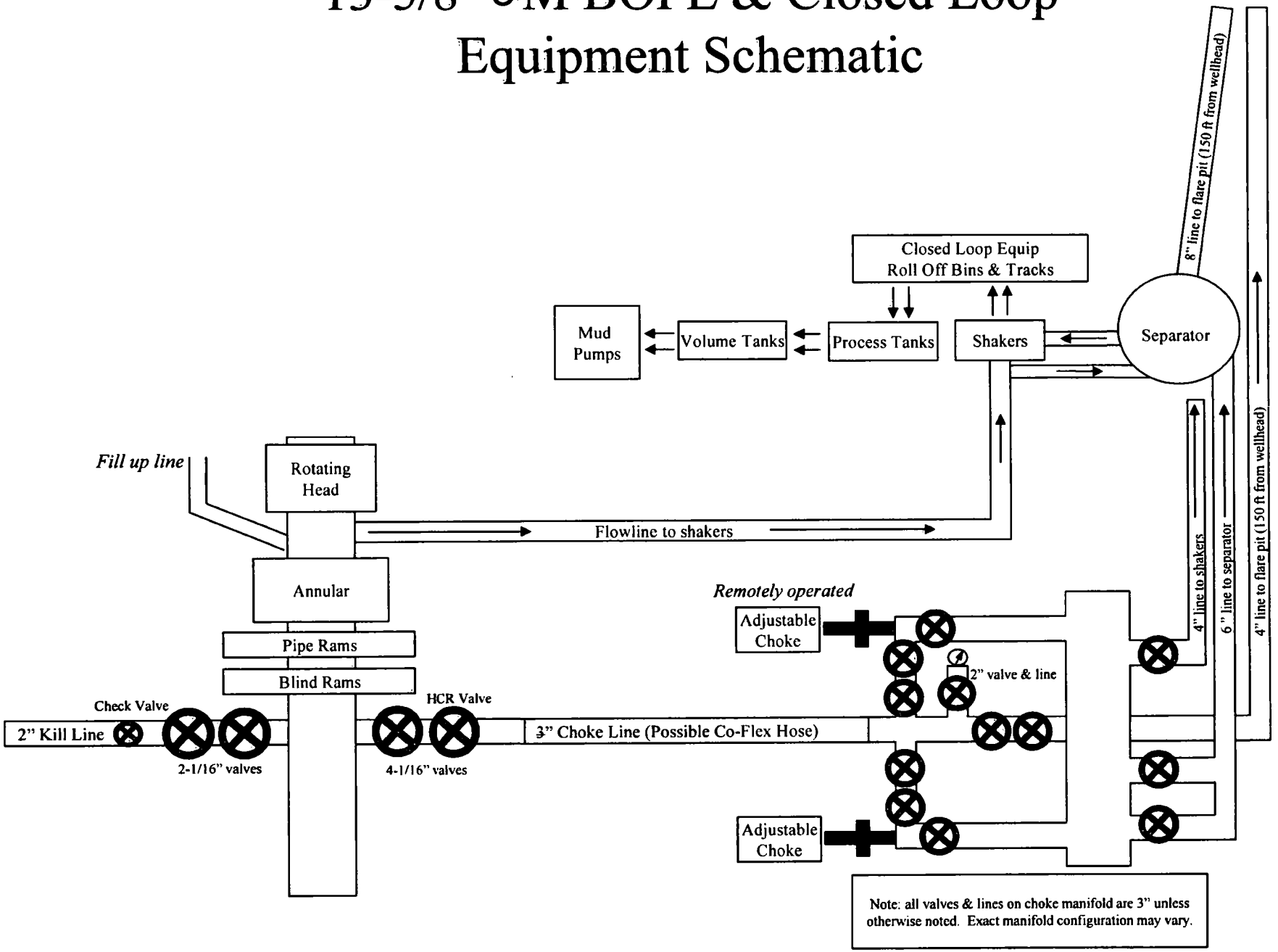
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



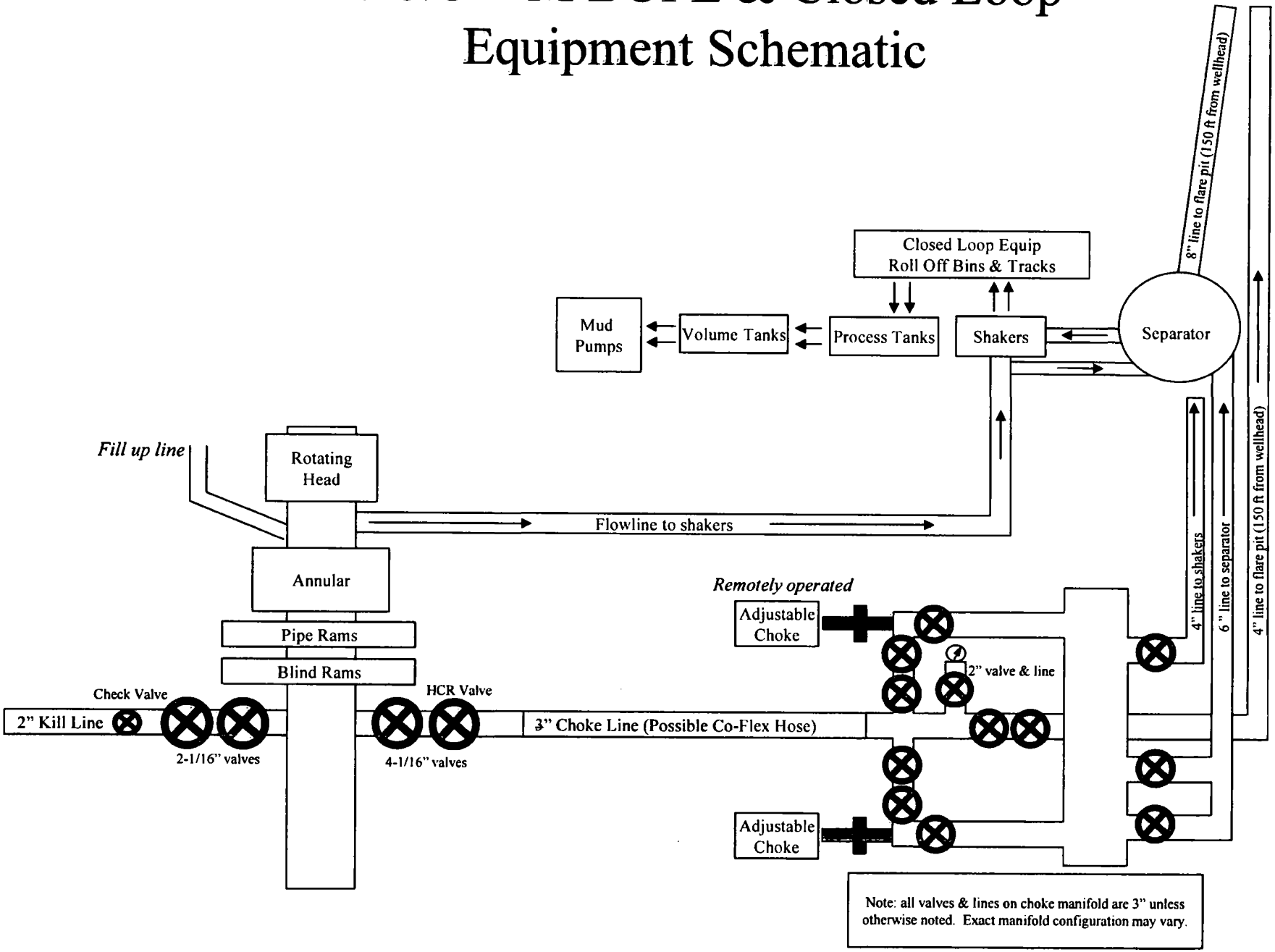
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



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



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



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.

Surface Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
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

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

Surface Casing Tension Design	
Load Case	**Assumptions**
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.

Intermediate Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
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

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

Intermediate Casing Tension Design	
Load Case	**Assumptions**
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.

Production Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
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

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

Production Casing Tension Design	
Load Case	**Assumptions**
Overpull	100kips
Runing in hole	2 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.

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Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Fracture @ Shoe	Formation Pore Pressure	Dry gas

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

Intermediate Casing Tension Design	
Load Case	**Assumptions**
Overpull	100kips
Runing in hole	2 ft/s
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Casing Assumptions and Load Cases

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Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Displace to Gas	Formation Pore Pressure	Dry gas from next casing point

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

Surface Casing Tension Design	
Load Case	**Assumptions**
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.

Intermediate Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
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

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

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

Casing Assumptions and Load Cases

Production

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Load Case	**External Pressure**	**Internal Pressure**
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

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

Production Casing Tension Design	
Load Case	**Assumptions**
Overpull	100kips
Runing in hole	2 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.

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Load Case	**External Pressure**	**Internal Pressure**
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

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

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

devon

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

Hydrogen Sulfide (H_2S) Contingency Plan

For

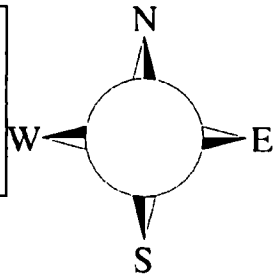
Spud Muffin 31-30 Fed Com 732H

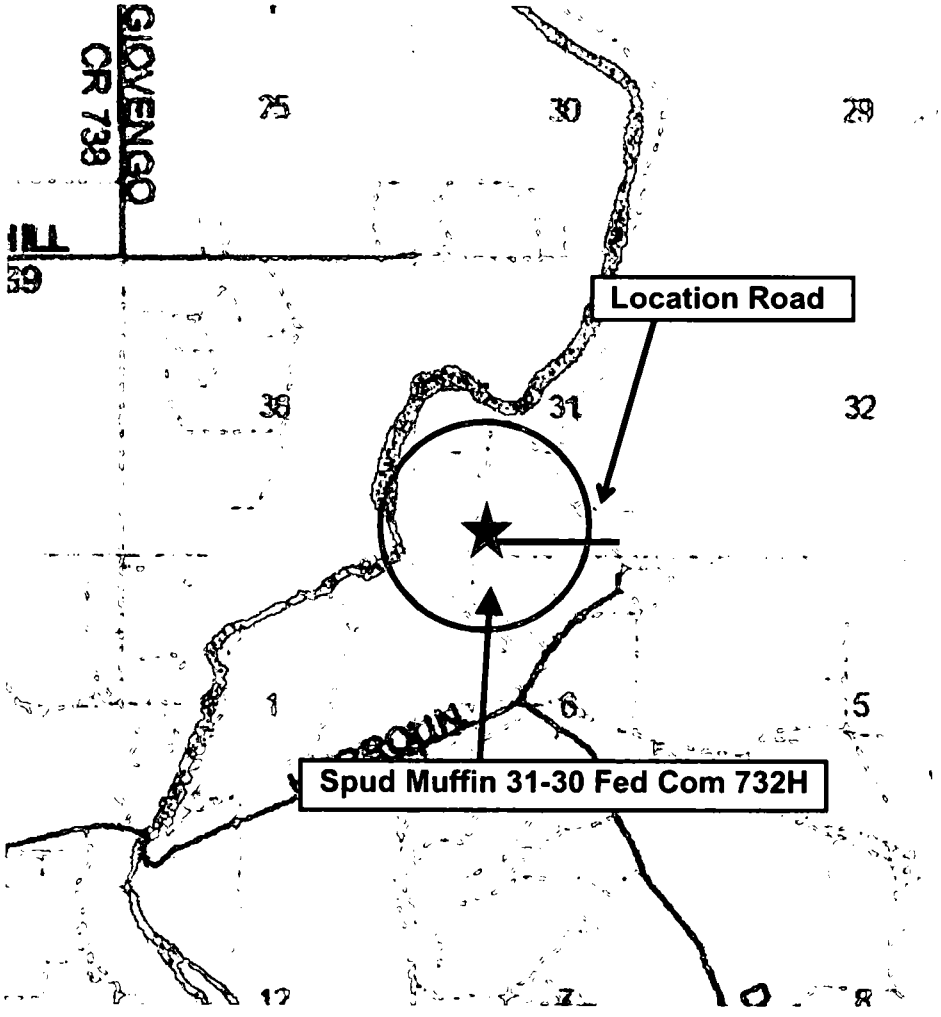
Sec-31 T-23S R-29E
270' FSL & 1275' FWL
LAT. = 32.2550290' N (NAD83)
LONG = 104.0282230' W

Eddy County NM

Spud Muffin 31-30 Fed Com 732H

This is an open drilling site. H_2S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H_2S, including warning signs, wind indicators and H_2S monitor.





Assumed 100 ppm ROE = **3000'** (Radius of Exposure)
100 ppm H2S 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_2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, 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_2S 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_2S, 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_2). 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_2S and SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	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_2S) 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_2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H_2S 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_2S 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_2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H_2S 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_2S.

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_2S detection and monitoring equipment:**

   Portable H_2S monitors positioned on location for best coverage and response. These units have warning lights which activate when H_2S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

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

   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_2S circulated to surface. Proper mud weight, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S 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_2S trim.

   B. All elastomers used for packing and seals shall be H_2S trim.

6. **Communication:**

   A. Company personnel have/use cellular telephones in the field.

   B. Land line (telephone) communications at Office

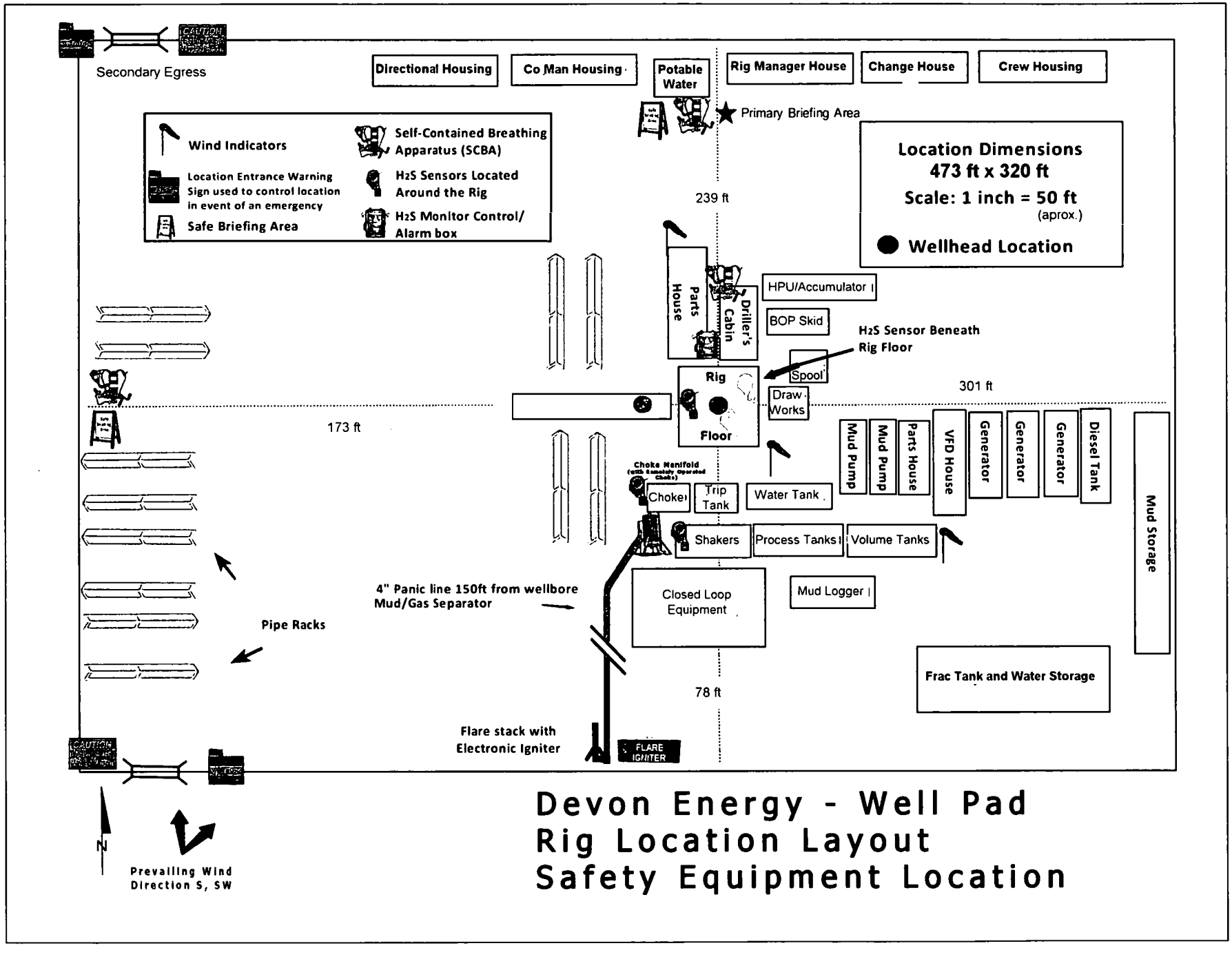
7. **Well testing:**

   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_2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

Devon Energy Corp. Company Call List		
Drilling Supervisor – Basin – Mark Kramer		405-823-4796
EHS Professional – Laura Wright		405-439-8129
Agency Call List		
Lea County (575)	**Hobbs**	
	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
Eddy County (575)	**Carlsbad**	
	State Police	885-3137
	City Police	885-2111
	Sheriff's Office	887-7551
	Ambulance	**911**
	Fire Department	885-3125
	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	(800) 424-8802
	National Pollution Control Center: Direct	(703) 872-6000
	For Oil Spills	(800) 280-7118
	Emergency Services	
	Wild Well Control	(281) 784-4700
	Cudd Pressure Control (915) 699-0139	(915) 563-3356
	Halliburton	(575) 746-2757
	B. J. Services	(575) 746-3569
Give GPS position:	Native Air – Emergency Helicopter – Hobbs	(575) 392-6429
	Flight For Life - Lubbock, TX	(806) 743-9911
	Aerocare - Lubbock, TX	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM	(800) 222-1222
	Poison Control (24/7)	(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service	(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov	

Prepared in conjunction with
Dave Small SHARP COMMUNICATIONS & CONSULTING, LLC


Secondary Egress
Directional Housing
Co Man Housing
Potable Water
Rig Manager House
Change House
Crew Housing
Primary Briefing Area
Wind Indicators
Location Entrance Warning Sign used to control location in event of an emergency
Safe Briefing Area
Self-Contained Breathing Apparatus (SCBA)
H2S Sensors Located Around the Rig
H2S Monitor Control/ Alarm box
Location Dimensions
473 ft x 320 ft
Scale: 1 inch = 50 ft
(aprox.)
Wellhead Location
239 ft
Parts House
Driller's Cabin
HPU/Accumulator
BOP Skid
H2S Sensor Beneath Rig Floor
Spool
Rig Floor
Draw Works
301 ft
173 ft
Mud Pump
Mud Pump
Parts House
VFD House
Generator
Generator
Generator
Diesel Tank
Mud Storage
Choke Manifold
Choke
Trip Tank
Water Tank
Shakers
Process Tanks
Volume Tanks
4" Panic line 150ft from wellbore Mud/Gas Separator
Closed Loop Equipment
Mud Logger
Pipe Racks
Frac Tank and Water Storage
78 ft
Flare stack with Electronic Igniter
FLARE IGNITER
N
Prevailing Wind Direction S, SW
Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location

devon

Company: Devon Energy
Field: Eddy County, New Mexico (NAD 83)
Location: Spud Muffin 31-30 FED COM
Well: 732H
OH
Plan: Plan 3 10K
GL 2957 + 25' KB @ 2982.00usft

PROJECT DETAILS: Eddy County, New Mexico (NAD 83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Azimuths to Grid North
True North: -0.16°
Magnetic North: 6.93°

Magnetic Field
Strength: 47839.7snT
Dip Angle: 60.01°
Date: 2/26/2018
Model: IGRF2015

To convert a Magnetic Direction to a Grid Direction, Add 6.93°

LEGACY DIRECTIONAL

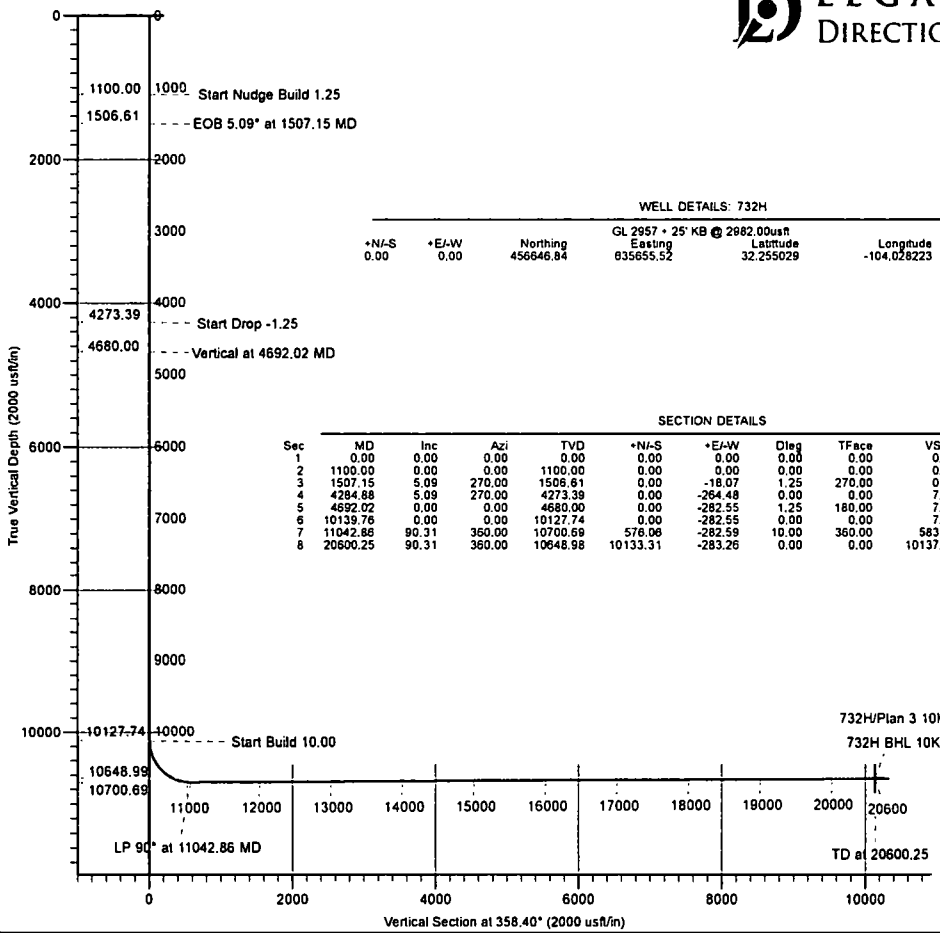
WELL DETAILS: 732H

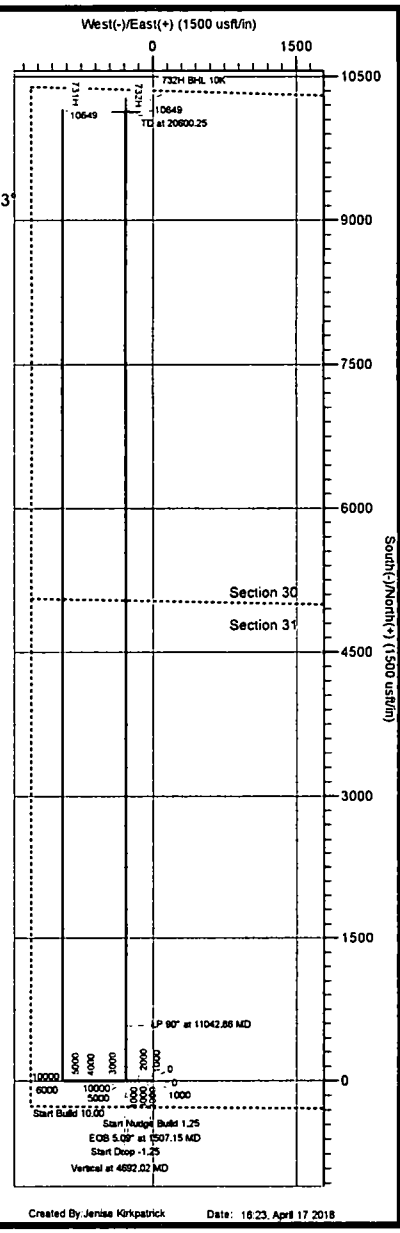
GL 2957 + 25' KB @ 2982.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	456646.84	635655.52	32.255029	-104.026223

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	Start Nudge Build 1.25
3	1507.15	5.09	270.00	1506.61	0.00	-18.07	1.25	270.00	0.50	EOB 5.09° at 1507.15 MD
4	4284.88	5.09	270.00	4273.39	0.00	-264.48	0.00	0.00	7.39	Start Drop -1.25
5	4692.02	0.00	0.00	4680.00	0.00	-282.55	1.25	180.00	7.90	Vertical at 4692.02 MD
6	10139.76	0.00	0.00	10127.74	0.00	-282.55	0.00	0.00	7.90	Start Build 10.00
7	11042.86	90.31	360.00	10700.69	576.06	-282.59	10.00	360.00	583.73	LP 90° at 11042.86 MD
8	20600.25	90.31	360.00	10648.98	10133.31	-283.26	0.00	0.00	10137.27	





Created By: Jenise Kirkpatrick Date: 16:23, April 17 2018

Devon Energy

Eddy County, New Mexico (NAD 83)
Spud Muffin 31-30 FED COM
732H

OH

Plan: Plan 3 10K

Standard Planning Report

17 April, 2018

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 732H
Company:	Devon Energy	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site:	Spud Muffin 31-30 FED COM	**North Reference:**	Grid
Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3 10K		

Project	Eddy County, New Mexico (NAD 83)		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Spud Muffin 31-30 FED COM				
Site Position:		**Northing:**	456,685.34 usft	**Latitude:**	32.255105
From:	Map	**Easting:**	639,419.03 usft	**Longitude:**	-104.016048
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.17 °

Well	732H					
Well Position	**+N/-S**	-38.50 usft	**Northing:**	456,646.84 usft	**Latitude:**	32.255029
	+E/-W	-3,763.51 usft	**Easting:**	635,655.52 usft	**Longitude:**	-104.028223
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	2,957.00 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	2/26/2018	7.09	60.01	47,839.70213082

Design	Plan 3 10K				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	358.40	

Plan Survey Tool Program **Date** 4/17/2018

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,599.60	Plan 3 10K (OH)	MWD	
				OWSG MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,507.15	5.09	270.00	1,506.61	0.00	-18.07	1.25	1.25	0.00	270.00	
4,284.88	5.09	270.00	4,273.39	0.00	-264.48	0.00	0.00	0.00	0.00	
4,692.02	0.00	0.01	4,680.00	0.00	-282.55	1.25	-1.25	0.00	180.00	
10,139.76	0.00	0.00	10,127.74	0.00	-282.55	0.00	0.00	0.00	0.00	
11,042.86	90.31	360.00	10,700.69	576.06	-282.59	10.00	10.00	0.00	360.00	
20,600.25	90.31	360.00	10,648.98	10,133.31	-283.26	0.00	0.00	0.00	0.00	732H BHL 10K

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 732H
Company:	Devon Energy	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site:	Spud Muffin 31-30 FED COM	**North Reference:**	Grid
Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3 10K		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Nudge Build 1.25									
1,200.00	1.25	270.00	1,199.99	0.00	-1.09	0.03	1.25	1.25	0.00
1,300.00	2.50	270.00	1,299.94	0.00	-4.36	0.12	1.25	1.25	0.00
1,400.00	3.75	270.00	1,399.79	0.00	-9.81	0.27	1.25	1.25	0.00
1,507.15	5.09	270.00	1,506.61	0.00	-18.07	0.50	1.25	1.25	0.00
EOB 5.09° at 1507.15 MD									
1,600.00	5.09	270.00	1,599.10	0.00	-26.31	0.74	0.00	0.00	0.00
1,700.00	5.09	270.00	1,698.70	0.00	-35.18	0.98	0.00	0.00	0.00
1,800.00	5.09	270.00	1,798.31	0.00	-44.05	1.23	0.00	0.00	0.00
1,900.00	5.09	270.00	1,897.92	0.00	-52.92	1.48	0.00	0.00	0.00
2,000.00	5.09	270.00	1,997.52	0.00	-61.79	1.73	0.00	0.00	0.00
2,100.00	5.09	270.00	2,097.13	0.00	-70.66	1.97	0.00	0.00	0.00
2,200.00	5.09	270.00	2,196.73	0.00	-79.53	2.22	0.00	0.00	0.00
2,300.00	5.09	270.00	2,296.34	0.00	-88.40	2.47	0.00	0.00	0.00
2,400.00	5.09	270.00	2,395.94	0.00	-97.27	2.72	0.00	0.00	0.00
2,500.00	5.09	270.00	2,495.55	0.00	-106.15	2.97	0.00	0.00	0.00
2,600.00	5.09	270.00	2,595.16	0.00	-115.02	3.21	0.00	0.00	0.00
2,700.00	5.09	270.00	2,694.76	0.00	-123.89	3.46	0.00	0.00	0.00
2,800.00	5.09	270.00	2,794.37	0.00	-132.76	3.71	0.00	0.00	0.00
2,900.00	5.09	270.00	2,893.97	0.00	-141.63	3.96	0.00	0.00	0.00
3,000.00	5.09	270.00	2,993.58	0.00	-150.50	4.21	0.00	0.00	0.00
3,100.00	5.09	270.00	3,093.19	0.00	-159.37	4.45	0.00	0.00	0.00
3,200.00	5.09	270.00	3,192.79	0.00	-168.24	4.70	0.00	0.00	0.00
3,300.00	5.09	270.00	3,292.40	0.00	-177.11	4.95	0.00	0.00	0.00
3,400.00	5.09	270.00	3,392.00	0.00	-185.98	5.20	0.00	0.00	0.00
3,500.00	5.09	270.00	3,491.61	0.00	-194.85	5.44	0.00	0.00	0.00
3,600.00	5.09	270.00	3,591.21	0.00	-203.73	5.69	0.00	0.00	0.00
3,700.00	5.09	270.00	3,690.82	0.00	-212.60	5.94	0.00	0.00	0.00
3,800.00	5.09	270.00	3,790.43	0.00	-221.47	6.19	0.00	0.00	0.00
3,900.00	5.09	270.00	3,890.03	0.00	-230.34	6.44	0.00	0.00	0.00
4,000.00	5.09	270.00	3,989.64	0.00	-239.21	6.68	0.00	0.00	0.00
4,100.00	5.09	270.00	4,089.24	0.00	-248.08	6.93	0.00	0.00	0.00
4,200.00	5.09	270.00	4,188.85	0.00	-256.95	7.18	0.00	0.00	0.00
4,284.88	5.09	270.00	4,273.39	0.00	-264.48	7.39	0.00	0.00	0.00
Start Drop -1.25									
4,300.00	4.90	270.00	4,288.46	0.00	-265.80	7.43	1.25	-1.25	0.00
4,400.00	3.65	270.00	4,388.18	0.00	-273.25	7.64	1.25	-1.25	0.00
4,500.00	2.40	270.00	4,488.03	0.00	-278.53	7.78	1.25	-1.25	0.00
4,600.00	1.15	270.00	4,587.99	0.00	-281.63	7.87	1.25	-1.25	0.00
4,692.02	0.00	0.01	4,680.00	0.00	-282.55	7.90	1.25	-1.25	0.00
Vertical at 4692.02 MD									
4,700.00	0.00	0.00	4,687.98	0.00	-282.55	7.90	0.00	0.00	0.00
4,800.00	0.00	0.00	4,787.98	0.00	-282.55	7.90	0.00	0.00	0.00
4,900.00	0.00	0.00	4,887.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,000.00	0.00	0.00	4,987.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,100.00	0.00	0.00	5,087.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,200.00	0.00	0.00	5,187.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,300.00	0.00	0.00	5,287.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,400.00	0.00	0.00	5,387.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,500.00	0.00	0.00	5,487.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,600.00	0.00	0.00	5,587.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,700.00	0.00	0.00	5,687.98	0.00	-282.55	7.90	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 732H
Company:	Devon Energy	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site:	Spud Muffin 31-30 FED COM	**North Reference:**	Grid
Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3 10K		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,800.00	0.00	0.00	5,787.98	0.00	-282.55	7.90	0.00	0.00	0.00
5,900.00	0.00	0.00	5,887.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,000.00	0.00	0.00	5,987.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,100.00	0.00	0.00	6,087.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,200.00	0.00	0.00	6,187.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,300.00	0.00	0.00	6,287.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,400.00	0.00	0.00	6,387.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,500.00	0.00	0.00	6,487.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,600.00	0.00	0.00	6,587.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,700.00	0.00	0.00	6,687.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,800.00	0.00	0.00	6,787.98	0.00	-282.55	7.90	0.00	0.00	0.00
6,900.00	0.00	0.00	6,887.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,000.00	0.00	0.00	6,987.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,100.00	0.00	0.00	7,087.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,200.00	0.00	0.00	7,187.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,300.00	0.00	0.00	7,287.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,400.00	0.00	0.00	7,387.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,500.00	0.00	0.00	7,487.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,600.00	0.00	0.00	7,587.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,700.00	0.00	0.00	7,687.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,800.00	0.00	0.00	7,787.98	0.00	-282.55	7.90	0.00	0.00	0.00
7,900.00	0.00	0.00	7,887.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,000.00	0.00	0.00	7,987.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,100.00	0.00	0.00	8,087.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,200.00	0.00	0.00	8,187.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,300.00	0.00	0.00	8,287.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,400.00	0.00	0.00	8,387.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,500.00	0.00	0.00	8,487.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,600.00	0.00	0.00	8,587.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,700.00	0.00	0.00	8,687.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,800.00	0.00	0.00	8,787.98	0.00	-282.55	7.90	0.00	0.00	0.00
8,900.00	0.00	0.00	8,887.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,000.00	0.00	0.00	8,987.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,100.00	0.00	0.00	9,087.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,200.00	0.00	0.00	9,187.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,300.00	0.00	0.00	9,287.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,400.00	0.00	0.00	9,387.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,500.00	0.00	0.00	9,487.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,600.00	0.00	0.00	9,587.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,700.00	0.00	0.00	9,687.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,800.00	0.00	0.00	9,787.98	0.00	-282.55	7.90	0.00	0.00	0.00
9,900.00	0.00	0.00	9,887.98	0.00	-282.55	7.90	0.00	0.00	0.00
10,000.00	0.00	0.00	9,987.98	0.00	-282.55	7.90	0.00	0.00	0.00
10,100.00	0.00	0.00	10,087.98	0.00	-282.55	7.90	0.00	0.00	0.00
10,139.76	0.00	0.00	10,127.74	0.00	-282.55	7.90	0.00	0.00	0.00
Start Build 10.00									
10,150.00	1.02	360.00	10,137.98	0.09	-282.55	7.99	10.00	10.00	0.00
10,200.00	6.02	360.00	10,187.87	3.16	-282.55	11.06	10.00	10.00	0.00
10,250.00	11.02	360.00	10,237.30	10.57	-282.55	18.46	10.00	10.00	0.00
10,300.00	16.02	360.00	10,285.90	22.26	-282.55	30.15	10.00	10.00	0.00
10,350.00	21.02	360.00	10,333.29	38.14	-282.55	46.02	10.00	10.00	0.00
10,400.00	26.02	360.00	10,379.12	58.09	-282.55	65.96	10.00	10.00	0.00
10,450.00	31.02	360.00	10,423.04	81.96	-282.56	89.82	10.00	10.00	0.00
10,500.00	36.02	360.00	10,464.71	109.57	-282.56	117.42	10.00	10.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 732H
Company:	Devon Energy	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site:	Spud Muffin 31-30 FED COM	**North Reference:**	Grid
Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3 10K		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,550.00	41.02	360.00	10,503.81	140.70	-282.56	148.54	10.00	10.00	0.00
10,600.00	46.02	360.00	10,540.06	175.12	-282.56	182.95	10.00	10.00	0.00
10,650.00	51.02	360.00	10,573.16	212.57	-282.56	220.38	10.00	10.00	0.00
10,700.00	56.02	360.00	10,602.88	252.76	-282.57	260.56	10.00	10.00	0.00
10,750.00	61.02	360.00	10,628.98	295.39	-282.57	303.17	10.00	10.00	0.00
10,800.00	66.02	360.00	10,651.26	340.13	-282.57	347.90	10.00	10.00	0.00
10,850.00	71.02	360.00	10,669.56	386.65	-282.58	394.39	10.00	10.00	0.00
10,900.00	76.02	360.00	10,683.74	434.58	-282.58	442.30	10.00	10.00	0.00
10,950.00	81.02	360.00	10,693.68	483.56	-282.58	491.27	10.00	10.00	0.00
11,000.00	86.02	360.00	10,699.32	533.23	-282.59	540.92	10.00	10.00	0.00
11,042.86	90.31	360.00	10,700.69	576.06	-282.59	583.73	10.00	10.00	0.00
LP 90° at 11042.86 MD									
11,100.00	90.31	360.00	10,700.38	633.19	-282.59	640.84	0.00	0.00	0.00
11,200.00	90.31	360.00	10,699.84	733.19	-282.60	740.80	0.00	0.00	0.00
11,300.00	90.31	360.00	10,699.30	833.19	-282.61	840.76	0.00	0.00	0.00
11,400.00	90.31	360.00	10,698.76	933.19	-282.62	940.72	0.00	0.00	0.00
11,500.00	90.31	360.00	10,698.22	1,033.19	-282.62	1,040.68	0.00	0.00	0.00
11,600.00	90.31	360.00	10,697.68	1,133.19	-282.63	1,140.64	0.00	0.00	0.00
11,700.00	90.31	360.00	10,697.14	1,233.19	-282.64	1,240.60	0.00	0.00	0.00
11,800.00	90.31	360.00	10,696.59	1,333.18	-282.64	1,340.56	0.00	0.00	0.00
11,900.00	90.31	360.00	10,696.05	1,433.18	-282.65	1,440.52	0.00	0.00	0.00
12,000.00	90.31	360.00	10,695.51	1,533.18	-282.66	1,540.48	0.00	0.00	0.00
12,100.00	90.31	360.00	10,694.97	1,633.18	-282.66	1,640.44	0.00	0.00	0.00
12,200.00	90.31	360.00	10,694.43	1,733.18	-282.67	1,740.40	0.00	0.00	0.00
12,300.00	90.31	360.00	10,693.89	1,833.18	-282.68	1,840.36	0.00	0.00	0.00
12,400.00	90.31	360.00	10,693.35	1,933.18	-282.69	1,940.32	0.00	0.00	0.00
12,500.00	90.31	360.00	10,692.81	2,033.17	-282.69	2,040.28	0.00	0.00	0.00
12,600.00	90.31	360.00	10,692.27	2,133.17	-282.70	2,140.24	0.00	0.00	0.00
12,700.00	90.31	360.00	10,691.72	2,233.17	-282.71	2,240.20	0.00	0.00	0.00
12,800.00	90.31	360.00	10,691.18	2,333.17	-282.71	2,340.16	0.00	0.00	0.00
12,900.00	90.31	360.00	10,690.64	2,433.17	-282.72	2,440.12	0.00	0.00	0.00
13,000.00	90.31	360.00	10,690.10	2,533.17	-282.73	2,540.08	0.00	0.00	0.00
13,100.00	90.31	360.00	10,689.56	2,633.17	-282.73	2,640.04	0.00	0.00	0.00
13,200.00	90.31	360.00	10,689.02	2,733.16	-282.74	2,740.00	0.00	0.00	0.00
13,300.00	90.31	360.00	10,688.48	2,833.16	-282.75	2,839.96	0.00	0.00	0.00
13,400.00	90.31	360.00	10,687.94	2,933.16	-282.76	2,939.92	0.00	0.00	0.00
13,500.00	90.31	360.00	10,687.40	3,033.16	-282.76	3,039.88	0.00	0.00	0.00
13,600.00	90.31	360.00	10,686.86	3,133.16	-282.77	3,139.84	0.00	0.00	0.00
13,700.00	90.31	360.00	10,686.31	3,233.16	-282.78	3,239.80	0.00	0.00	0.00
13,800.00	90.31	360.00	10,685.77	3,333.16	-282.78	3,339.76	0.00	0.00	0.00
13,900.00	90.31	360.00	10,685.23	3,433.15	-282.79	3,439.72	0.00	0.00	0.00
14,000.00	90.31	360.00	10,684.69	3,533.15	-282.80	3,539.67	0.00	0.00	0.00
14,100.00	90.31	360.00	10,684.15	3,633.15	-282.80	3,639.63	0.00	0.00	0.00
14,200.00	90.31	360.00	10,683.61	3,733.15	-282.81	3,739.59	0.00	0.00	0.00
14,300.00	90.31	360.00	10,683.07	3,833.15	-282.82	3,839.55	0.00	0.00	0.00
14,400.00	90.31	360.00	10,682.53	3,933.15	-282.83	3,939.51	0.00	0.00	0.00
14,500.00	90.31	360.00	10,681.99	4,033.15	-282.83	4,039.47	0.00	0.00	0.00
14,600.00	90.31	360.00	10,681.44	4,133.14	-282.84	4,139.43	0.00	0.00	0.00
14,700.00	90.31	360.00	10,680.90	4,233.14	-282.85	4,239.39	0.00	0.00	0.00
14,800.00	90.31	360.00	10,680.36	4,333.14	-282.85	4,339.35	0.00	0.00	0.00
14,900.00	90.31	360.00	10,679.82	4,433.14	-282.86	4,439.31	0.00	0.00	0.00
15,000.00	90.31	360.00	10,679.28	4,533.14	-282.87	4,539.27	0.00	0.00	0.00
15,100.00	90.31	360.00	10,678.74	4,633.14	-282.87	4,639.23	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 732H
Company:	Devon Energy	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site:	Spud Muffin 31-30 FED COM	**North Reference:**	Grid
Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3 10K		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,200.00	90.31	360.00	10,678.20	4,733.13	-282.88	4,739.19	0.00	0.00	0.00
15,300.00	90.31	360.00	10,677.66	4,833.13	-282.89	4,839.15	0.00	0.00	0.00
15,400.00	90.31	360.00	10,677.12	4,933.13	-282.90	4,939.11	0.00	0.00	0.00
15,500.00	90.31	360.00	10,676.58	5,033.13	-282.90	5,039.07	0.00	0.00	0.00
15,600.00	90.31	360.00	10,676.03	5,133.13	-282.91	5,139.03	0.00	0.00	0.00
15,700.00	90.31	360.00	10,675.49	5,233.13	-282.92	5,238.99	0.00	0.00	0.00
15,800.00	90.31	360.00	10,674.95	5,333.13	-282.92	5,338.95	0.00	0.00	0.00
15,900.00	90.31	360.00	10,674.41	5,433.12	-282.93	5,438.91	0.00	0.00	0.00
16,000.00	90.31	360.00	10,673.87	5,533.12	-282.94	5,538.87	0.00	0.00	0.00
16,100.00	90.31	360.00	10,673.33	5,633.12	-282.94	5,638.83	0.00	0.00	0.00
16,200.00	90.31	360.00	10,672.79	5,733.12	-282.95	5,738.79	0.00	0.00	0.00
16,300.00	90.31	360.00	10,672.25	5,833.12	-282.96	5,838.75	0.00	0.00	0.00
16,400.00	90.31	360.00	10,671.71	5,933.12	-282.97	5,938.71	0.00	0.00	0.00
16,500.00	90.31	360.00	10,671.16	6,033.12	-282.97	6,038.67	0.00	0.00	0.00
16,600.00	90.31	360.00	10,670.62	6,133.11	-282.98	6,138.63	0.00	0.00	0.00
16,700.00	90.31	360.00	10,670.08	6,233.11	-282.99	6,238.59	0.00	0.00	0.00
16,800.00	90.31	360.00	10,669.54	6,333.11	-282.99	6,338.55	0.00	0.00	0.00
16,900.00	90.31	360.00	10,669.00	6,433.11	-283.00	6,438.51	0.00	0.00	0.00
17,000.00	90.31	360.00	10,668.46	6,533.11	-283.01	6,538.47	0.00	0.00	0.00
17,100.00	90.31	360.00	10,667.92	6,633.11	-283.01	6,638.43	0.00	0.00	0.00
17,200.00	90.31	360.00	10,667.38	6,733.11	-283.02	6,738.38	0.00	0.00	0.00
17,300.00	90.31	360.00	10,666.84	6,833.10	-283.03	6,838.34	0.00	0.00	0.00
17,400.00	90.31	360.00	10,666.30	6,933.10	-283.04	6,938.30	0.00	0.00	0.00
17,500.00	90.31	360.00	10,665.75	7,033.10	-283.04	7,038.26	0.00	0.00	0.00
17,600.00	90.31	360.00	10,665.21	7,133.10	-283.05	7,138.22	0.00	0.00	0.00
17,700.00	90.31	360.00	10,664.67	7,233.10	-283.06	7,238.18	0.00	0.00	0.00
17,800.00	90.31	360.00	10,664.13	7,333.10	-283.06	7,338.14	0.00	0.00	0.00
17,900.00	90.31	360.00	10,663.59	7,433.10	-283.07	7,438.10	0.00	0.00	0.00
18,000.00	90.31	360.00	10,663.05	7,533.09	-283.08	7,538.06	0.00	0.00	0.00
18,100.00	90.31	360.00	10,662.51	7,633.09	-283.08	7,638.02	0.00	0.00	0.00
18,200.00	90.31	360.00	10,661.97	7,733.09	-283.09	7,737.98	0.00	0.00	0.00
18,300.00	90.31	360.00	10,661.43	7,833.09	-283.10	7,837.94	0.00	0.00	0.00
18,400.00	90.31	360.00	10,660.88	7,933.09	-283.11	7,937.90	0.00	0.00	0.00
18,500.00	90.31	360.00	10,660.34	8,033.09	-283.11	8,037.86	0.00	0.00	0.00
18,600.00	90.31	360.00	10,659.80	8,133.09	-283.12	8,137.82	0.00	0.00	0.00
18,700.00	90.31	360.00	10,659.26	8,233.08	-283.13	8,237.78	0.00	0.00	0.00
18,800.00	90.31	360.00	10,658.72	8,333.08	-283.13	8,337.74	0.00	0.00	0.00
18,900.00	90.31	360.00	10,658.18	8,433.08	-283.14	8,437.70	0.00	0.00	0.00
19,000.00	90.31	360.00	10,657.64	8,533.08	-283.15	8,537.66	0.00	0.00	0.00
19,100.00	90.31	360.00	10,657.10	8,633.08	-283.15	8,637.62	0.00	0.00	0.00
19,200.00	90.31	360.00	10,656.56	8,733.08	-283.16	8,737.58	0.00	0.00	0.00
19,300.00	90.31	360.00	10,656.02	8,833.08	-283.17	8,837.54	0.00	0.00	0.00
19,400.00	90.31	360.00	10,655.47	8,933.07	-283.18	8,937.50	0.00	0.00	0.00
19,500.00	90.31	360.00	10,654.93	9,033.07	-283.18	9,037.46	0.00	0.00	0.00
19,600.00	90.31	360.00	10,654.39	9,133.07	-283.19	9,137.42	0.00	0.00	0.00
19,700.00	90.31	360.00	10,653.85	9,233.07	-283.20	9,237.38	0.00	0.00	0.00
19,800.00	90.31	360.00	10,653.31	9,333.07	-283.20	9,337.34	0.00	0.00	0.00
19,900.00	90.31	360.00	10,652.77	9,433.07	-283.21	9,437.30	0.00	0.00	0.00
20,000.00	90.31	360.00	10,652.23	9,533.06	-283.22	9,537.26	0.00	0.00	0.00
20,100.00	90.31	360.00	10,651.69	9,633.06	-283.22	9,637.22	0.00	0.00	0.00
20,200.00	90.31	360.00	10,651.15	9,733.06	-283.23	9,737.18	0.00	0.00	0.00
20,300.00	90.31	360.00	10,650.60	9,833.06	-283.24	9,837.14	0.00	0.00	0.00
20,400.00	90.31	360.00	10,650.06	9,933.06	-283.25	9,937.09	0.00	0.00	0.00
20,500.00	90.31	360.00	10,649.52	10,033.06	-283.25	10,037.05	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 732H
Company:	Devon Energy	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site:	Spud Muffin 31-30 FED COM	**North Reference:**	Grid
Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3 10K		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,600.25	90.31	360.00	10,648.98	10,133.31	-283.26	10,137.27	0.00	0.00	0.00
TD at 20600.25									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
732H BHL 10K - plan hits target center - Point	0.00	0.00	10,648.98	10,133.31	-283.26	466,780.15	635,372.26	32.282886	-104.029047

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,100.00	1,100.00	0.00	0.00	Start Nudge Build 1.25
1,507.15	1,506.61	0.00	-18.07	EOB 5.09° at 1507.15 MD
4,284.88	4,273.39	0.00	-264.48	Start Drop -1.25
4,692.02	4,680.00	0.00	-282.55	Vertical at 4692.02 MD
10,139.76	10,127.74	0.00	-282.55	Start Build 10.00
11,042.86	10,700.69	576.06	-282.59	LP 90° at 11042.86 MD
20,600.25	10,648.98	10,133.31	-283.26	TD at 20600.25

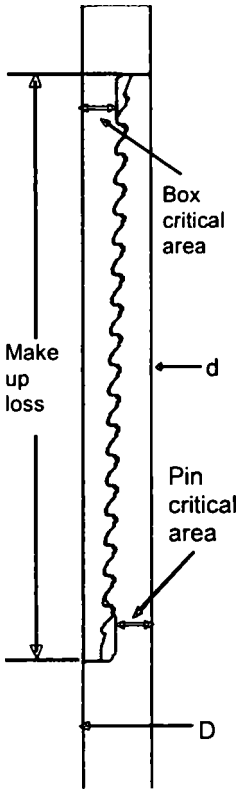
Metal One Corp.	FLUSHMAX-III	Page	44-O
Metal One	**Connection Data Sheet**	Date	25-Jan-17
		Rev.	N - 1

FLUSHMAX-III

Geometry

Pipe Body

	Imperial		S.I.	
Grade	P110		P110	
Pipe OD (D)	7 5/8	in	193.68	mm
Weight	29.70	lb/ft	44.20	kg/m
Actual weight	29.04		43.21	kg/m
Wall Thickness (t)	0.375	in	9.53	mm
Pipe ID (d)	6.875	in	174.63	mm
Pipe body cross section	8.537	in^2	5,508	mm^2
Drift Dia.	6.750	in	171.45	mm



Connection

Box OD (W)	7.625	in	193.68	mm
PIN ID	6.875	in	174.63	mm
Make up Loss	3.040	in	77.22	mm
Box Critical Area	4.424	in^2	2854	mm^2
Joint load efficiency	60	%	60	%
Thread Taper	1 / 16 (3/4" per ft)			
Number of Threads	5 TPI			

Performance

Performance Properties for Pipe Body

S.M.Y.S.	939	kips	4,177	kN
M.I.Y.P.	9,470	psi	65.31	MPa
Collapse Strength	5,350	psi	36.90	MPa

Note S.M.Y.S.= Specified Minimum YIELD Strength of Pipe body
M.I.Y.P. = Minimum Internal Yield Pressure of Pipe body

Performance Properties for Connection

Tensile Yield load	563 kips (60% of S.M.Y.S.)
Min. Compression Yield	563 kips (60% of S.M.Y.S.)
Internal Pressure	7,580 psi (80% of M.I.Y.P.)
External Pressure	100% of Collapse Strength
Max. DLS (deg. /100ft)	25

Recommended Torque

Min.	15,500	ft-lb	21,000	N-m
Opti.	17,200	ft-lb	23,300	N-m
Max.	18,900	ft-lb	25,600	N-m
Operational Max.	23,600	ft-lb	32,000	N-m

Note : Operational Max. torque can be applied for high torque application

Issued on: 31 Mar. 2014

VAM TOP HT Connection Data Sheet

OD	Weight	Wall Th.	Grade	API Drift	Connection
5 1/2 in.	20.00 lb/ft	0.361 in.	P110 EC	4.653 in.	VAM® TOP HT

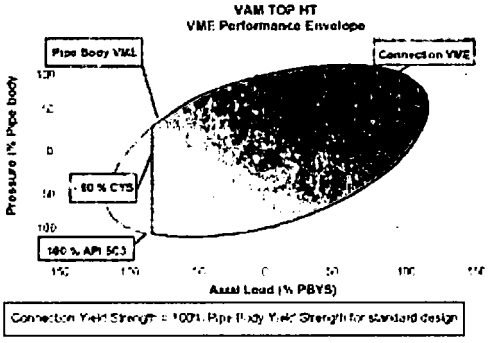
PIPE PROPERTIES	
Nominal OD	5.500 in.
Nominal ID	4.778 in.
Nominal Cross Section Area	5.828 sqin.
Grade Type	High Yield
Min. Yield Strength	125 ksi
Max. Yield Strength	140 ksi
Min. Ultimate Tensile Strength	135 ksi

CONNECTION PROPERTIES	
Connection Type	Premium T&C
Connection OD (nom)	6.071 in.
Connection ID (nom)	4.715 in.
Make-up Loss	4.382 in.
Coupling Length	10.748 in.
Critical Cross Section	5.828 sqin.
Tension Efficiency	100 % of pipe
Compression Efficiency	80 % of pipe
Internal Pressure Efficiency	100 % of pipe
External Pressure Efficiency	100 % of pipe

CONNECTION PERFORMANCES	
Tensile Yield Strength	729 klb
Compression Resistance	583 klb
Internal Yield Pressure	14360 psi
External pressure resistance	12090 psi
Max. bending with sealability	30 °/100 ft
Max. Load on Coupling Face	388 klb

TORQUE VALUES		
Min. Make-up torque	10850	ft.lb
Opti. Make-up torque	11950	ft.lb
Max. Make-up torque	13050	ft.lb
Field Liner Max	15900	ft.lb
Mill and Licensees Torque - Min	15900	ft.lb
Mill and Licensees Torque - Max	17500	ft.lb

VAM® TOP HT (High Torque) is a T&C connection based on the main features of the VAM® TOP connection.
This connection provides reinforced torque capability for liners and where High Torque is anticipated due to string rotation during running operations (torque rotating liner while running, rotating casing when cementing).It has been tested as per ISO13679 CAL IV requirements.
VAM® TOP HT is interchangeable with VAM® TOP product line with the exception of 4 1/2" size.



Do you need help on this product? - Remember no one knows VAM® like VAM

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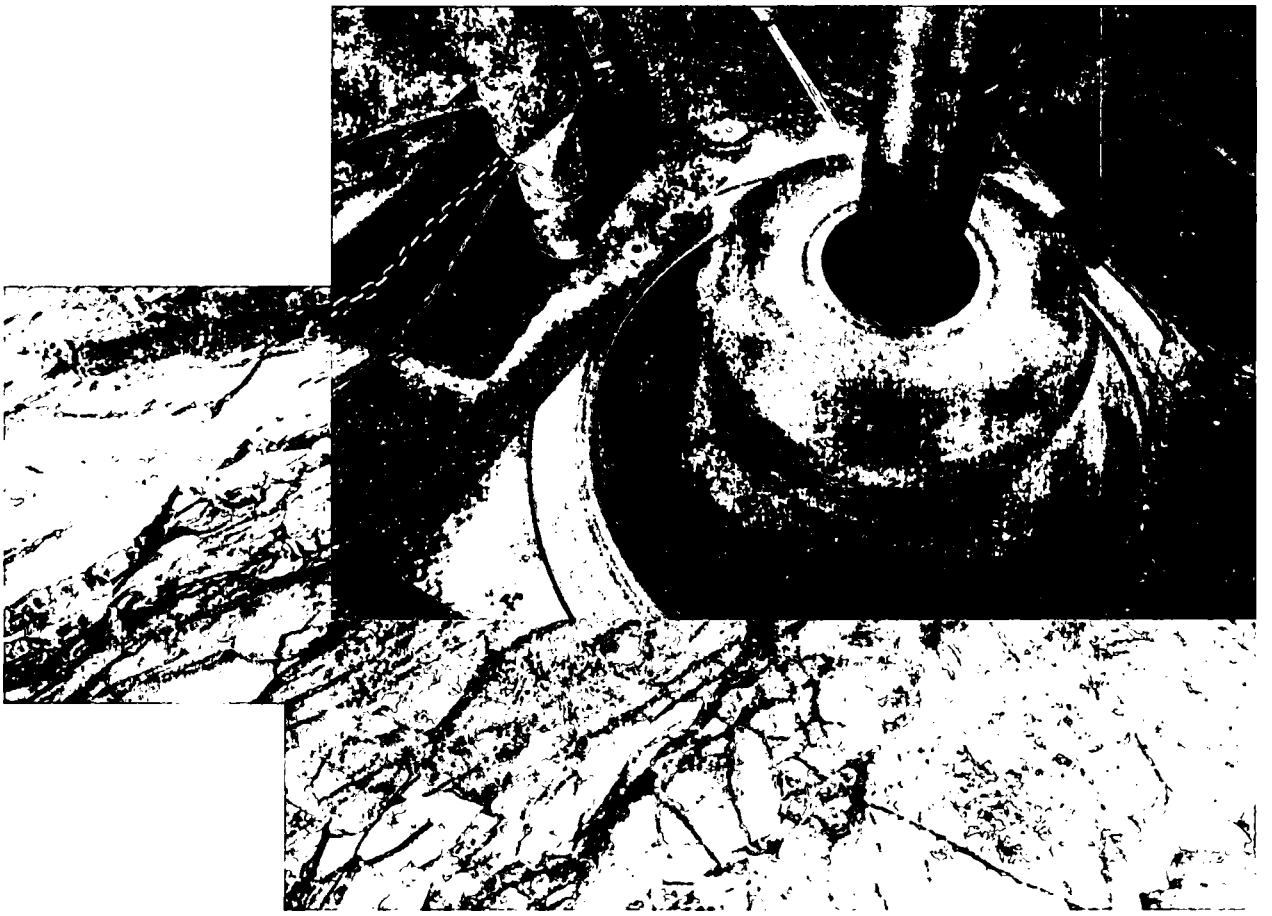


Design Plan
Operation and Maintenance Plan
Closure Plan

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.

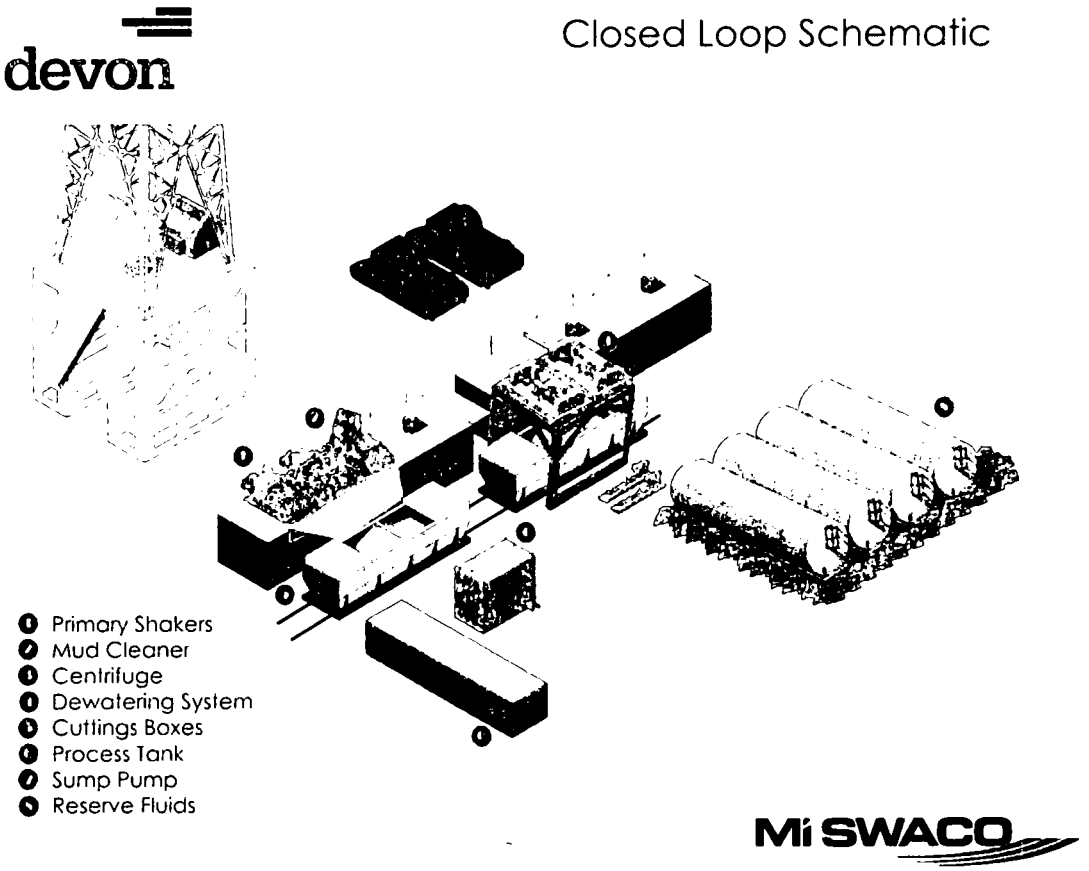
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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.



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.

Devon Energy, Spud Muffin 30-31 Fed 732H

1. **Geologic Formations**

TVD of target	10,648'	Pilot hole depth	N/A
MD at TD:	20,600'	Deepest expected fresh water:	150'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Top Salt/Rustler	329		
Base of Salt	2750		
Bell Canyon	2778		
Cherry Canyon	3630		
Brushy Canyon	4871		
Bone Spring Lime	6438		
1st BSPG Sand	7497		
2nd BSPG Sand	8236		
3rd BSPG Sand	9387		
Wolfcamp	9731		
Wolfcamp XY	9761		
Wolfcamp 100	9864		
Wolfcamp 200	10175		
Wolfcamp 300	10597		

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

2. **Casing Program**

Hole Size (in)	Casing Interval From	Casing Interval To	Casing Size (in)	Weight (lbs/ft)	Grade	Conn	SF* Collapse	SF* Burst	SF* Tension
17-1/2	0'	400'	13-3/8	48	H-40	STC	1.125	1.25	1.6
12-1/4	0'	2700'	9-5/8	40	J-55	LTC	1.125	1.25	1.6
8-3/4	0'	10,650'	7-5/8	29.7	P-110	Flushmax II	1.125	1.25	1.6
6-3/4	0'	20,600'	5-1/2	20	P-110	VAM SG	1.125	1.25	1.6
				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the centralizer requirement for the 7-5/8" flush casing in the 8-3/4" hole and the 5-1/2" SF/Flush casing in the 6-3/4" hole.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	

(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. **Cementing Program**

Casing	# Sks	Wt. lb/ gal	H_20 gal/sk	Yld ft3/ sack	Slurry Description
13-3/8" Surface	310	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
9-5/8" Inter.	485	12.9	9.81	1.85	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	153	14.8	6.32	1.33	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
7-5/8" Int	386	9	13.5	3.27	Lead: Tuned Light® Cement
	108	14.5	5.31	1.2	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
7-5/8" Intr Squeeze	400	14.8	6.32	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	460	13.2	6.32	1.46	Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake
	108	14.5	5.31	1.2	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
5-1/2" Prod	782	14.8	6.32	1.33	Class H Cement + 0.125 lbs/sack Poly-E-Flake

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Surface	0'	50%
9-5/8" Intermediate I	0'	30%
7-5/8" Intermediate II	0'	30%
5-1/2" Production Casing	10,450'	25%

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	□	Tested to:
12-1/4"	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram	X	
			Double Ram	X	
			Other*		
8-3/4"	13-5/8"	5M	Annular (5M)	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram	X	
			Double Ram	X	
			Other *		
6-3/4"	13-5/8"	5M	Annular (5M)	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram		
			Other *		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2.

	On Exploratory wells or 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. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Y | Are anchors required by manufacturer?
Y	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 3M, 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 13-3/8" 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.

	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. Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.

4. **Mud Program**

Depth		Type	Weight (ppg)
From	To		
0	Surface TD	FW Gel	8.6 – 8.8
Surface TD	1st Intermediate TD	Saturated Brine	10.0 – 10.2
1st Intermediate TD	2nd Intermediate TD	Cut Brine	8.5 – 9.5
2nd Intermediate TD	Total MD	Cut Brine/OBM	9.5-13.0

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

6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL fromTD 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	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	7200 psi
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

8. Other facets of operation

Is this a walking operation? Yes

1. In the event the spudder rig is unable to drill the surface holes the 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 with either OBM or cut brine 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? Yes

1. Spudder rig will move in and drill surface hole.

a. Rig will utilize fresh water based mud to drill 14 ¾" 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 10-3/4" 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 the drilling rig. At that time an approved BOP stack will be nippled 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

_x_ Directional Plan

___ Other, describe

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 13-3/8" 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 9-5/8' 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.

Devon Energy

Eddy County, New Mexico (NAD 83)
Spud Muffin 31-30 FED COM
732H

OH
Plan 3 10K

Anticollision Report

17 April, 2018

Anticollision Report

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 732H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Reference Site:	Spud Muffin 31-30 FED COM	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan 3 10K	**Offset TVD Reference:**	Offset Datum

Reference	Plan 3 10K		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 2,271.47 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 4/17/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,599.60	Plan 3 10K (OH)	MWD	OWSG MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Spud Muffin 31-30 FED COM						
731H - OH - Plan 3 10K	900.00	900.00	29.97	23.97	4.991	CC, ES
731H - OH - Plan 3 10K	20,600.25	20,694.83	659.56	317.34	1.927	SF

Offset Design Spud Muffin 31-30 FED COM - 731H - OH - Plan 3 10K — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-89.60	0.21	-29.97	29.97				
100.00	100.00	100.00	100.00	0.13	0.13	-89.60	0.21	-29.97	29.97	29.70	0.27	111.476	
200.00	200.00	200.00	200.00	0.49	0.49	-89.60	0.21	-29.97	29.97	28.98	0.99	30.403	
300.00	300.00	300.00	300.00	0.85	0.85	-89.60	0.21	-29.97	29.97	28.27	1.70	17.601	
400.00	400.00	400.00	400.00	1.21	1.21	-89.60	0.21	-29.97	29.97	27.55	2.42	12.386	
500.00	500.00	500.00	500.00	1.57	1.57	-89.60	0.21	-29.97	29.97	26.83	3.14	9.555	
600.00	600.00	600.00	600.00	1.93	1.93	-89.60	0.21	-29.97	29.97	26.12	3.85	7.777	
700.00	700.00	700.00	700.00	2.29	2.29	-89.60	0.21	-29.97	29.97	25.40	4.57	6.557	
800.00	800.00	800.00	800.00	2.64	2.64	-89.60	0.21	-29.97	29.97	24.68	5.29	5.668	
900.00	900.00	900.00	900.00	3.00	3.00	-89.60	0.21	-29.97	29.97	23.97	6.00	4.991	CC, ES
1,000.00	1,000.00	999.33	999.33	3.36	3.35	-89.61	0.21	-31.05	31.05	24.34	6.71	4.628	
1,100.00	1,100.00	1,098.58	1,098.51	3.72	3.69	-89.65	0.21	-34.27	34.30	26.90	7.41	4.632	
1,200.00	1,199.99	1,197.69	1,197.49	4.07	4.04	0.31	0.21	-39.63	38.62	30.53	8.09	4.774	
1,300.00	1,299.94	1,296.72	1,296.23	4.41	4.39	0.28	0.21	-47.13	42.93	34.16	8.77	4.896	
1,400.00	1,399.79	1,395.66	1,394.69	4.76	4.75	0.26	0.21	-56.74	47.21	37.76	9.44	4.998	
1,500.00	1,499.49	1,494.50	1,492.84	5.11	5.11	0.23	0.21	-68.47	51.46	41.34	10.12	5.085	
1,600.00	1,599.10	1,593.21	1,590.57	5.47	5.49	0.21	0.21	-82.29	56.63	45.83	10.80	5.245	
1,700.00	1,698.70	1,691.65	1,687.72	5.83	5.87	0.19	0.21	-98.16	63.94	52.47	11.47	5.574	
1,800.00	1,798.31	1,789.73	1,784.16	6.20	6.27	0.16	0.21	-116.05	73.38	61.24	12.14	6.043	
1,900.00	1,897.92	1,887.38	1,879.76	6.57	6.68	0.14	0.21	-135.91	84.95	72.14	12.81	6.630	
2,000.00	1,997.52	1,984.49	1,974.40	6.93	7.11	0.12	0.21	-157.67	98.63	85.15	13.48	7.317	
2,100.00	2,097.13	2,081.00	2,067.98	7.31	7.56	0.11	0.21	-181.28	114.39	100.25	14.14	8.090	
2,200.00	2,196.73	2,178.81	2,162.43	7.68	8.02	0.09	0.21	-206.68	131.69	116.85	14.84	8.873	
2,300.00	2,296.34	2,277.28	2,257.50	8.05	8.50	0.08	0.21	-232.33	149.08	133.51	15.56	9.578	
2,400.00	2,395.94	2,375.76	2,352.58	8.43	8.99	0.07	0.21	-257.99	166.46	150.17	16.29	10.219	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 732H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Reference Site:	Spud Muffin 31-30 FED COM	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan 3 10K	**Offset TVD Reference:**	Offset Datum

Offset Design Spud Muffin 31-30 FED COM - 731H - OH - Plan 3 10K — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,500.00	2,495.55	2,474.24	2,447.66	8.80	9.49	0.07	0.21	-283.64	183.84	166.83	17.02	10.803	
2,600.00	2,595.16	2,572.72	2,542.73	9.18	9.99	0.06	0.21	-309.30	201.23	183.48	17.75	11.337	
2,700.00	2,694.76	2,671.19	2,637.81	9.55	10.50	0.06	0.21	-334.95	218.61	200.13	18.48	11.828	
2,800.00	2,794.37	2,769.67	2,732.89	9.93	11.01	0.05	0.21	-360.60	236.00	216.78	19.22	12.280	
2,900.00	2,893.97	2,868.15	2,827.97	10.31	11.53	0.05	0.21	-386.26	253.38	233.43	19.95	12.698	
3,000.00	2,993.58	2,966.63	2,923.04	10.69	12.05	0.05	0.21	-411.91	270.76	250.07	20.69	13.085	
3,100.00	3,093.19	3,065.10	3,018.12	11.07	12.57	0.04	0.21	-437.57	288.15	266.72	21.43	13.445	
3,200.00	3,192.79	3,163.58	3,113.20	11.45	13.10	0.04	0.21	-463.22	305.53	283.36	22.17	13.780	
3,300.00	3,292.40	3,262.06	3,208.27	11.83	13.63	0.04	0.21	-488.88	322.91	300.00	22.91	14.093	
3,400.00	3,392.00	3,360.54	3,303.35	12.21	14.16	0.04	0.21	-514.53	340.30	316.64	23.66	14.385	
3,500.00	3,491.61	3,459.01	3,398.43	12.59	14.69	0.03	0.21	-540.19	357.68	333.28	24.40	14.659	
3,600.00	3,591.21	3,557.49	3,493.50	12.97	15.22	0.03	0.21	-565.84	375.07	349.92	25.14	14.917	
3,700.00	3,690.82	3,655.97	3,588.58	13.35	15.75	0.03	0.21	-591.50	392.45	366.56	25.89	15.159	
3,800.00	3,790.43	3,754.44	3,683.66	13.73	16.29	0.03	0.21	-617.15	409.83	383.20	26.64	15.387	
3,900.00	3,890.03	3,852.92	3,778.74	14.11	16.83	0.03	0.21	-642.80	427.22	399.84	27.38	15.602	
4,000.00	3,989.64	3,951.40	3,873.81	14.50	17.36	0.03	0.21	-668.46	444.60	416.47	28.13	15.806	
4,100.00	4,089.24	4,049.88	3,968.89	14.88	17.90	0.03	0.21	-694.11	461.99	433.11	28.88	15.999	
4,200.00	4,188.85	4,148.35	4,063.97	15.26	18.44	0.03	0.21	-719.77	479.37	449.75	29.62	16.182	
4,300.00	4,288.46	4,246.83	4,159.04	15.64	18.98	0.02	0.21	-745.42	496.78	466.41	30.37	16.356	
4,400.00	4,388.18	4,345.05	4,253.87	16.02	19.52	0.02	0.21	-771.01	515.56	484.44	31.12	16.567	
4,500.00	4,488.03	4,449.33	4,354.64	16.39	20.09	0.02	0.21	-797.85	536.18	504.25	31.93	16.792	
4,600.00	4,587.99	4,560.42	4,462.55	16.74	20.67	0.02	0.21	-824.18	556.86	524.07	32.79	16.981	
4,700.00	4,687.98	4,672.13	4,571.69	17.09	21.23	-89.98	0.21	-848.01	577.30	543.66	33.63	17.164	
4,800.00	4,787.98	4,784.74	4,682.26	17.42	21.76	-89.98	0.21	-869.34	596.24	561.79	34.45	17.308	
4,900.00	4,887.98	4,898.35	4,794.31	17.76	22.27	-89.98	0.21	-888.10	612.75	577.50	35.25	17.384	
5,000.00	4,987.98	5,012.84	4,907.66	18.10	22.75	-89.98	0.21	-904.18	626.80	590.78	36.03	17.399	
5,100.00	5,087.98	5,128.08	5,022.12	18.44	23.20	-89.98	0.21	-917.51	638.37	601.59	36.78	17.356	
5,200.00	5,187.98	5,243.91	5,137.48	18.78	23.62	-89.98	0.21	-928.01	647.43	609.91	37.52	17.258	
5,300.00	5,287.98	5,360.21	5,253.53	19.12	24.02	-89.98	0.21	-935.61	653.96	615.74	38.23	17.108	
5,400.00	5,387.98	5,476.82	5,370.04	19.46	24.39	-89.98	0.21	-940.27	657.96	619.05	38.91	16.910	
5,500.00	5,487.98	5,593.60	5,486.80	19.80	24.73	-89.98	0.21	-941.96	659.41	619.85	39.56	16.669	
5,600.00	5,587.98	5,694.78	5,587.98	20.14	25.01	-89.98	0.21	-941.97	659.42	619.19	40.23	16.392	
5,700.00	5,687.98	5,794.78	5,687.98	20.49	25.29	-89.98	0.21	-941.97	659.42	618.52	40.90	16.121	
5,800.00	5,787.98	5,894.78	5,787.98	20.83	25.57	-89.98	0.21	-941.97	659.42	617.84	41.58	15.860	
5,900.00	5,887.98	5,994.78	5,887.98	21.17	25.85	-89.98	0.21	-941.97	659.42	617.16	42.26	15.606	
6,000.00	5,987.98	6,094.78	5,987.98	21.52	26.13	-89.98	0.21	-941.97	659.42	616.49	42.93	15.359	
6,100.00	6,087.98	6,194.78	6,087.98	21.86	26.42	-89.98	0.21	-941.97	659.42	615.81	43.61	15.120	
6,200.00	6,187.98	6,294.78	6,187.98	22.21	26.70	-89.98	0.21	-941.97	659.42	615.13	44.29	14.888	
6,300.00	6,287.98	6,394.78	6,287.98	22.55	26.99	-89.98	0.21	-941.97	659.42	614.45	44.97	14.662	
6,400.00	6,387.98	6,494.78	6,387.98	22.90	27.28	-89.98	0.21	-941.97	659.42	613.76	45.66	14.443	
6,500.00	6,487.98	6,594.78	6,487.98	23.25	27.57	-89.98	0.21	-941.97	659.42	613.08	46.34	14.230	
6,600.00	6,587.98	6,694.78	6,587.98	23.59	27.86	-89.98	0.21	-941.97	659.42	612.40	47.02	14.023	
6,700.00	6,687.98	6,794.78	6,687.98	23.94	28.16	-89.98	0.21	-941.97	659.42	611.71	47.71	13.821	
6,800.00	6,787.98	6,894.78	6,787.98	24.29	28.46	-89.98	0.21	-941.97	659.42	611.02	48.40	13.625	
6,900.00	6,887.98	6,994.78	6,887.98	24.64	28.75	-89.98	0.21	-941.97	659.42	610.34	49.08	13.435	
7,000.00	6,987.98	7,094.78	6,987.98	24.98	29.05	-89.98	0.21	-941.97	659.42	609.65	49.77	13.249	
7,100.00	7,087.98	7,194.78	7,087.98	25.33	29.35	-89.98	0.21	-941.97	659.42	608.96	50.46	13.068	
7,200.00	7,187.98	7,294.78	7,187.98	25.68	29.65	-89.98	0.21	-941.97	659.42	608.27	51.15	12.892	
7,300.00	7,287.98	7,394.78	7,287.98	26.03	29.96	-89.98	0.21	-941.97	659.42	607.58	51.84	12.720	
7,400.00	7,387.98	7,494.78	7,387.98	26.38	30.26	-89.98	0.21	-941.97	659.42	606.89	52.53	12.553	
7,500.00	7,487.98	7,594.78	7,487.98	26.73	30.57	-89.98	0.21	-941.97	659.42	606.20	53.22	12.390	
7,600.00	7,587.98	7,694.78	7,587.98	27.08	30.87	-89.98	0.21	-941.97	659.42	605.50	53.92	12.231	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 732H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Reference Site:	Spud Muffin 31-30 FED COM	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan 3 10K	**Offset TVD Reference:**	Offset Datum

Offset Design Spud Muffin 31-30 FED COM - 731H - OH - Plan 3 10K — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,700.00	7,687.98	7,794.78	7,687.98	27.43	31.18	-89.98	0.21	-941.97	659.42	604.81	54.61	12.075	
7,800.00	7,787.98	7,894.78	7,787.98	27.78	31.49	-89.98	0.21	-941.97	659.42	604.12	55.30	11.924	
7,900.00	7,887.98	7,994.78	7,887.98	28.13	31.80	-89.98	0.21	-941.97	659.42	603.42	56.00	11.776	
8,000.00	7,987.98	8,094.78	7,987.98	28.48	32.11	-89.98	0.21	-941.97	659.42	602.73	56.69	11.632	
8,100.00	8,087.98	8,194.78	8,087.98	28.83	32.42	-89.98	0.21	-941.97	659.42	602.03	57.39	11.491	
8,200.00	8,187.98	8,294.78	8,187.98	29.18	32.73	-89.98	0.21	-941.97	659.42	601.34	58.08	11.353	
8,300.00	8,287.98	8,394.78	8,287.98	29.53	33.04	-89.98	0.21	-941.97	659.42	600.64	58.78	11.219	
8,400.00	8,387.98	8,494.78	8,387.98	29.88	33.36	-89.98	0.21	-941.97	659.42	599.95	59.47	11.087	
8,500.00	8,487.98	8,594.78	8,487.98	30.23	33.67	-89.98	0.21	-941.97	659.42	599.25	60.17	10.959	
8,600.00	8,587.98	8,694.78	8,587.98	30.58	33.99	-89.98	0.21	-941.97	659.42	598.55	60.87	10.833	
8,700.00	8,687.98	8,794.78	8,687.98	30.94	34.31	-89.98	0.21	-941.97	659.42	597.85	61.57	10.710	
8,800.00	8,787.98	8,894.78	8,787.98	31.29	34.62	-89.98	0.21	-941.97	659.42	597.15	62.27	10.590	
8,900.00	8,887.98	8,994.78	8,887.98	31.64	34.94	-89.98	0.21	-941.97	659.42	596.45	62.97	10.473	
9,000.00	8,987.98	9,094.78	8,987.98	31.99	35.26	-89.98	0.21	-941.97	659.42	595.76	63.66	10.358	
9,100.00	9,087.98	9,194.78	9,087.98	32.35	35.58	-89.98	0.21	-941.97	659.42	595.06	64.36	10.245	
9,200.00	9,187.98	9,294.78	9,187.98	32.70	35.90	-89.98	0.21	-941.97	659.42	594.36	65.06	10.135	
9,300.00	9,287.98	9,394.78	9,287.98	33.05	36.22	-89.98	0.21	-941.97	659.42	593.65	65.77	10.027	
9,400.00	9,387.98	9,494.78	9,387.98	33.40	36.55	-89.98	0.21	-941.97	659.42	592.95	66.47	9.921	
9,500.00	9,487.98	9,594.78	9,487.98	33.76	36.87	-89.98	0.21	-941.97	659.42	592.25	67.17	9.818	
9,600.00	9,587.98	9,694.78	9,587.98	34.11	37.19	-89.98	0.21	-941.97	659.42	591.55	67.87	9.716	
9,700.00	9,687.98	9,794.78	9,687.98	34.46	37.52	-89.98	0.21	-941.97	659.42	590.85	68.57	9.617	
9,800.00	9,787.98	9,894.78	9,787.98	34.81	37.84	-89.98	0.21	-941.97	659.42	590.15	69.27	9.519	
9,900.00	9,887.98	9,994.78	9,887.98	35.17	38.17	-89.98	0.21	-941.97	659.42	589.45	69.97	9.424	
10,000.00	9,987.98	10,094.78	9,987.98	35.52	38.49	-89.98	0.21	-941.97	659.42	588.74	70.68	9.330	
10,100.00	10,087.98	10,194.78	10,087.98	35.87	38.82	-89.98	0.21	-941.97	659.42	588.04	71.38	9.238	
10,200.00	10,187.87	10,294.75	10,187.84	36.23	39.15	-89.98	3.36	-941.97	659.42	587.34	72.08	9.148	
10,205.26	10,193.10	10,300.00	10,193.06	36.25	39.16	-89.98	3.94	-941.97	659.42	587.30	72.12	9.144	
10,300.00	10,285.90	10,394.71	10,285.83	36.57	39.46	-89.98	22.43	-941.97	659.42	586.65	72.77	9.062	
10,400.00	10,379.12	10,494.67	10,379.03	36.89	39.76	-89.98	58.22	-941.97	659.42	585.99	73.43	8.981	
10,500.00	10,464.71	10,594.63	10,464.61	37.18	40.03	-89.99	109.65	-941.98	659.42	585.35	74.07	8.903	
10,600.00	10,540.06	10,694.61	10,539.96	37.44	40.26	-89.99	175.16	-941.98	659.42	584.72	74.70	8.827	
10,700.00	10,602.88	10,794.59	10,602.80	37.70	40.47	-89.99	252.76	-941.99	659.42	584.08	75.34	8.752	
10,800.00	10,651.26	10,894.57	10,651.22	38.00	40.66	-90.00	340.10	-942.00	659.42	583.42	76.01	8.676	
10,900.00	10,683.74	10,994.57	10,683.74	38.35	40.87	-90.00	434.52	-942.01	659.43	582.72	76.71	8.597	
11,000.00	10,699.32	11,094.57	10,699.37	38.72	41.12	-90.00	533.17	-942.01	659.43	581.99	77.44	8.516	
11,100.00	10,700.38	11,194.58	10,700.45	39.11	41.42	-90.01	633.14	-942.02	659.43	581.21	78.22	8.431	
11,200.00	10,699.84	11,294.58	10,699.91	39.57	41.80	-90.01	733.14	-942.03	659.43	580.31	79.12	8.334	
11,300.00	10,699.30	11,394.58	10,699.37	40.09	42.24	-90.01	833.14	-942.04	659.43	579.28	80.15	8.227	
11,400.00	10,698.76	11,494.58	10,698.83	40.67	42.75	-90.01	933.14	-942.05	659.43	578.12	81.31	8.110	
11,500.00	10,698.22	11,594.58	10,698.28	41.30	43.33	-90.01	1,033.13	-942.06	659.43	576.86	82.58	7.986	
11,600.00	10,697.68	11,694.58	10,697.74	41.99	43.96	-90.01	1,133.13	-942.06	659.44	575.48	83.96	7.854	
11,700.00	10,697.14	11,794.58	10,697.20	42.74	44.66	-90.01	1,233.13	-942.07	659.44	573.99	85.44	7.718	
11,800.00	10,696.59	11,894.58	10,696.66	43.53	45.40	-90.01	1,333.13	-942.08	659.44	572.41	87.03	7.577	
11,900.00	10,696.05	11,994.58	10,696.12	44.37	46.20	-90.01	1,433.13	-942.09	659.44	570.73	88.71	7.434	
12,000.00	10,695.51	12,094.58	10,695.58	45.25	47.04	-90.01	1,533.13	-942.10	659.44	568.96	90.48	7.288	
12,100.00	10,694.97	12,194.58	10,695.04	46.18	47.93	-90.01	1,633.13	-942.11	659.44	567.11	92.34	7.142	
12,200.00	10,694.43	12,294.58	10,694.50	47.15	48.86	-90.01	1,733.12	-942.12	659.44	565.17	94.27	6.995	
12,300.00	10,693.89	12,394.58	10,693.96	48.15	49.83	-90.01	1,833.12	-942.12	659.45	563.17	96.28	6.849	
12,400.00	10,693.35	12,494.58	10,693.42	49.19	50.83	-90.01	1,933.12	-942.13	659.45	561.09	98.36	6.705	
12,500.00	10,692.81	12,594.58	10,692.87	50.26	51.87	-90.01	2,033.12	-942.14	659.45	558.94	100.50	6.561	
12,600.00	10,692.27	12,694.58	10,692.33	51.36	52.94	-90.01	2,133.12	-942.15	659.45	556.74	102.71	6.421	
12,700.00	10,691.72	12,794.58	10,691.79	52.50	54.03	-90.01	2,233.12	-942.16	659.45	554.48	104.97	6.282	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 732H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Reference Site:	Spud Muffin 31-30 FED COM	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan 3 10K	**Offset TVD Reference:**	Offset Datum

Offset Design Spud Muffin 31-30 FED COM - 731H - OH - Plan 3 10K — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,800.00	10,691.18	12,894.58	10,691.25	53.65	55.16	-90.01	2,333.12	-942.17	659.45	552.16	107.29	6.146	
12,900.00	10,690.64	12,994.58	10,690.71	54.84	56.31	-90.01	2,433.11	-942.17	659.45	549.79	109.66	6.014	
13,000.00	10,690.10	13,094.58	10,690.17	56.04	57.49	-90.01	2,533.11	-942.18	659.45	547.38	112.08	5.884	
13,100.00	10,689.56	13,194.58	10,689.63	57.27	58.69	-90.01	2,633.11	-942.19	659.46	544.92	114.54	5.758	
13,200.00	10,689.02	13,294.58	10,689.09	58.53	59.91	-90.01	2,733.11	-942.20	659.46	542.42	117.04	5.634	
13,300.00	10,688.48	13,394.58	10,688.55	59.80	61.16	-90.01	2,833.11	-942.21	659.46	539.88	119.58	5.515	
13,400.00	10,687.94	13,494.58	10,688.00	61.08	62.42	-90.01	2,933.11	-942.22	659.46	537.30	122.16	5.398	
13,500.00	10,687.40	13,594.58	10,687.46	62.39	63.70	-90.01	3,033.10	-942.22	659.46	534.69	124.77	5.285	
13,600.00	10,686.86	13,694.58	10,686.92	63.71	64.99	-90.01	3,133.10	-942.23	659.46	532.05	127.42	5.176	
13,700.00	10,686.31	13,794.58	10,686.38	65.05	66.31	-90.01	3,233.10	-942.24	659.46	529.37	130.09	5.069	
13,800.00	10,685.77	13,894.58	10,685.84	66.40	67.63	-90.01	3,333.10	-942.25	659.47	526.67	132.80	4.966	
13,900.00	10,685.23	13,994.58	10,685.30	67.76	68.98	-90.01	3,433.10	-942.26	659.47	523.94	135.53	4.866	
14,000.00	10,684.69	14,094.58	10,684.76	69.14	70.33	-90.01	3,533.10	-942.27	659.47	521.19	138.28	4.769	
14,100.00	10,684.15	14,194.58	10,684.22	70.53	71.70	-90.01	3,633.10	-942.27	659.47	518.41	141.06	4.675	
14,200.00	10,683.61	14,294.58	10,683.68	71.93	73.08	-90.01	3,733.09	-942.28	659.47	515.61	143.86	4.584	
14,300.00	10,683.07	14,394.58	10,683.14	73.34	74.47	-90.01	3,833.09	-942.29	659.47	512.79	146.68	4.496	
14,400.00	10,682.53	14,494.58	10,682.59	74.76	75.87	-90.01	3,933.09	-942.30	659.47	509.95	149.52	4.410	
14,500.00	10,681.99	14,594.58	10,682.05	76.19	77.28	-90.01	4,033.09	-942.31	659.48	507.09	152.39	4.328	
14,600.00	10,681.44	14,694.58	10,681.51	77.63	78.70	-90.01	4,133.09	-942.32	659.48	504.21	155.26	4.247	
14,700.00	10,680.90	14,794.58	10,680.97	79.07	80.13	-90.01	4,233.09	-942.32	659.48	501.32	158.16	4.170	
14,800.00	10,680.36	14,894.58	10,680.43	80.53	81.57	-90.01	4,333.09	-942.33	659.48	498.41	161.07	4.094	
14,900.00	10,679.82	14,994.58	10,679.89	81.99	83.01	-90.01	4,433.08	-942.34	659.48	495.49	164.00	4.021	
15,000.00	10,679.28	15,094.58	10,679.35	83.46	84.46	-90.01	4,533.08	-942.35	659.48	492.55	166.94	3.951	
15,100.00	10,678.74	15,194.58	10,678.81	84.94	85.92	-90.01	4,633.08	-942.36	659.48	489.59	169.89	3.882	
15,200.00	10,678.20	15,294.58	10,678.27	86.42	87.39	-90.01	4,733.08	-942.37	659.48	486.63	172.85	3.815	
15,300.00	10,677.66	15,394.58	10,677.72	87.91	88.87	-90.01	4,833.08	-942.37	659.49	483.65	175.83	3.751	
15,400.00	10,677.12	15,494.58	10,677.18	89.40	90.35	-90.01	4,933.08	-942.38	659.49	480.66	178.82	3.688	
15,500.00	10,676.58	15,594.58	10,676.64	90.90	91.83	-90.01	5,033.08	-942.39	659.49	477.67	181.82	3.627	
15,600.00	10,676.03	15,694.58	10,676.10	92.41	93.32	-90.01	5,133.07	-942.40	659.49	474.66	184.83	3.568	
15,700.00	10,675.49	15,794.58	10,675.56	93.92	94.82	-90.01	5,233.07	-942.41	659.49	471.64	187.86	3.511	
15,800.00	10,674.95	15,894.58	10,675.02	95.43	96.32	-90.01	5,333.07	-942.42	659.49	468.61	190.89	3.455	
15,900.00	10,674.41	15,994.58	10,674.48	96.95	97.83	-90.01	5,433.07	-942.42	659.49	465.57	193.93	3.401	
16,000.00	10,673.87	16,094.58	10,673.94	98.48	99.34	-90.01	5,533.07	-942.43	659.50	462.52	196.97	3.348	
16,100.00	10,673.33	16,194.58	10,673.40	100.00	100.86	-90.01	5,633.07	-942.44	659.50	459.47	200.03	3.297	
16,200.00	10,672.79	16,294.58	10,672.86	101.54	102.38	-90.01	5,733.07	-942.45	659.50	456.40	203.09	3.247	
16,300.00	10,672.25	16,394.58	10,672.31	103.07	103.90	-90.01	5,833.06	-942.46	659.50	453.33	206.17	3.199	
16,400.00	10,671.71	16,494.58	10,671.77	104.61	105.43	-90.01	5,933.06	-942.47	659.50	450.26	209.24	3.152	
16,500.00	10,671.16	16,594.58	10,671.23	106.15	106.96	-90.01	6,033.06	-942.48	659.50	447.17	212.33	3.106	
16,600.00	10,670.62	16,694.58	10,670.69	107.70	108.49	-90.01	6,133.06	-942.48	659.50	444.08	215.42	3.061	
16,700.00	10,670.08	16,794.58	10,670.15	109.25	110.03	-90.01	6,233.06	-942.49	659.51	440.99	218.52	3.018	
16,800.00	10,669.54	16,894.58	10,669.61	110.80	111.58	-90.01	6,333.06	-942.50	659.51	437.88	221.62	2.976	
16,900.00	10,669.00	16,994.58	10,669.07	112.35	113.12	-90.01	6,433.06	-942.51	659.51	434.77	224.73	2.935	
17,000.00	10,668.46	17,094.58	10,668.53	113.91	114.67	-90.01	6,533.05	-942.52	659.51	431.66	227.85	2.894	
17,100.00	10,667.92	17,194.58	10,667.99	115.47	116.22	-90.01	6,633.05	-942.53	659.51	428.54	230.97	2.855	
17,200.00	10,667.38	17,294.58	10,667.44	117.03	117.77	-90.01	6,733.05	-942.53	659.51	425.42	234.10	2.817	
17,300.00	10,666.84	17,394.58	10,666.90	118.60	119.33	-90.01	6,833.05	-942.54	659.51	422.29	237.23	2.780	
17,400.00	10,666.30	17,494.58	10,666.36	120.17	120.89	-90.01	6,933.05	-942.55	659.51	419.15	240.36	2.744	
17,500.00	10,665.75	17,594.58	10,665.82	121.74	122.45	-90.01	7,033.05	-942.56	659.52	416.01	243.50	2.708	
17,600.00	10,665.21	17,694.58	10,665.28	123.31	124.01	-90.01	7,133.05	-942.57	659.52	412.87	246.65	2.674	
17,700.00	10,664.67	17,794.58	10,664.74	124.88	125.58	-90.01	7,233.04	-942.58	659.52	409.72	249.79	2.640	
17,800.00	10,664.13	17,894.58	10,664.20	126.46	127.15	-90.01	7,333.04	-942.58	659.52	406.57	252.95	2.607	
17,900.00	10,663.59	17,994.58	10,663.66	128.04	128.72	-90.01	7,433.04	-942.59	659.52	403.42	256.10	2.575	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 732H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Reference Site:	Spud Muffin 31-30 FED COM	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan 3 10K	**Offset TVD Reference:**	Offset Datum

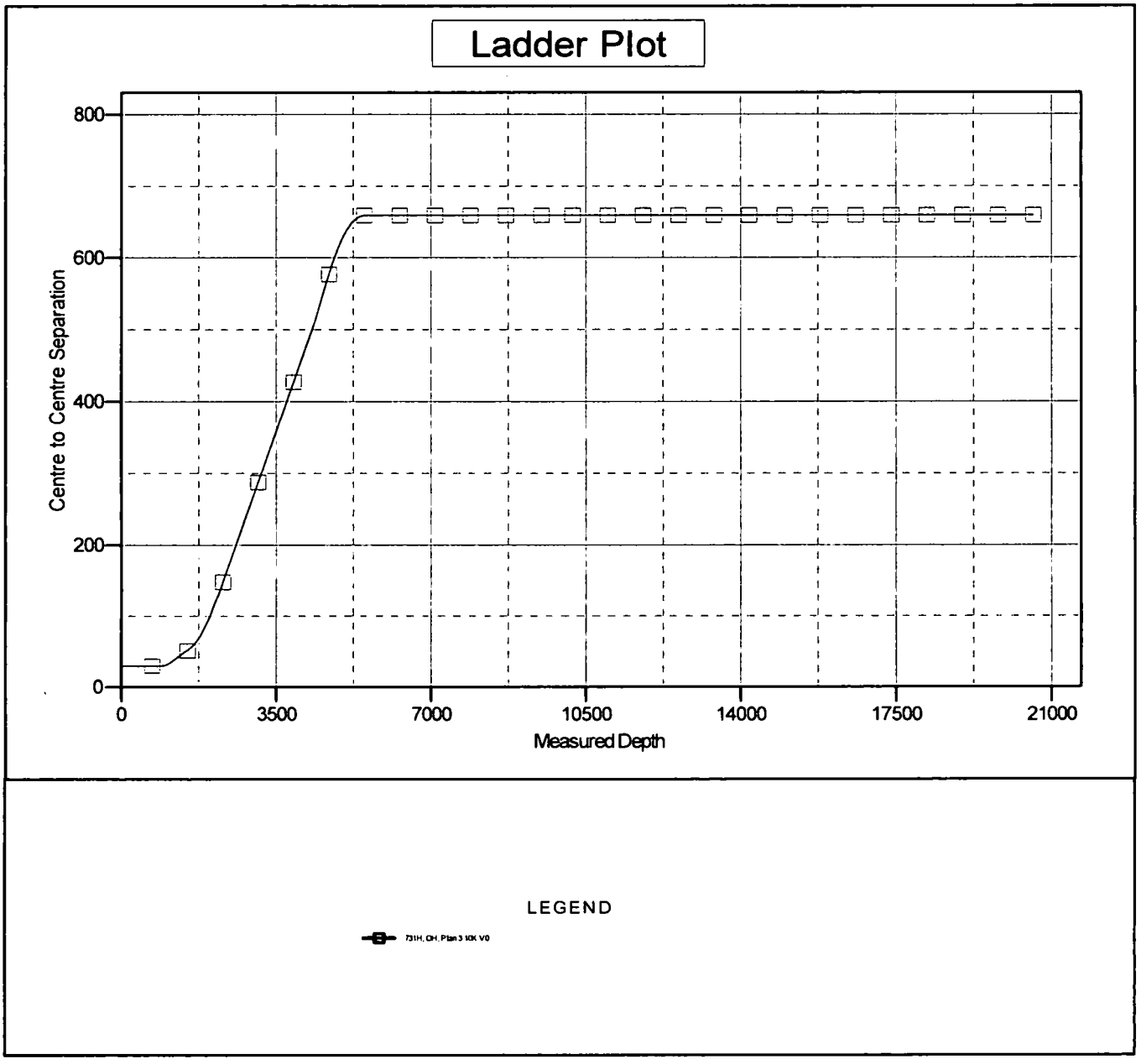
Offset Design Spud Muffin 31-30 FED COM - 731H - OH - Plan 3 10K — **Offset Site Error:** 0.00 usft

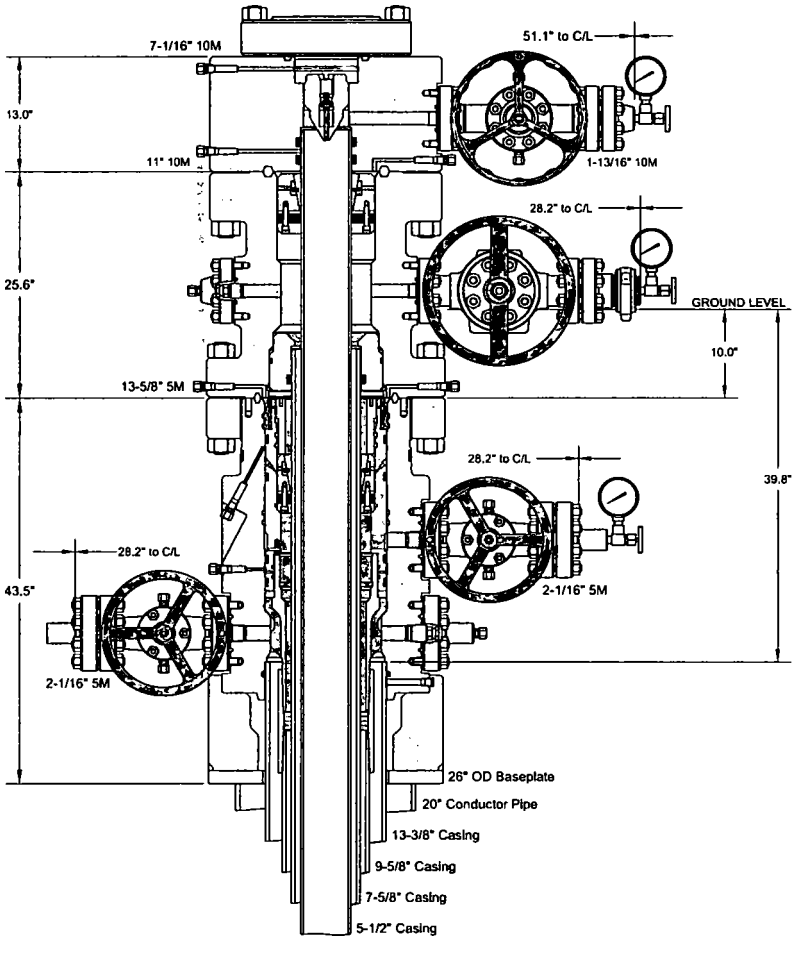
Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

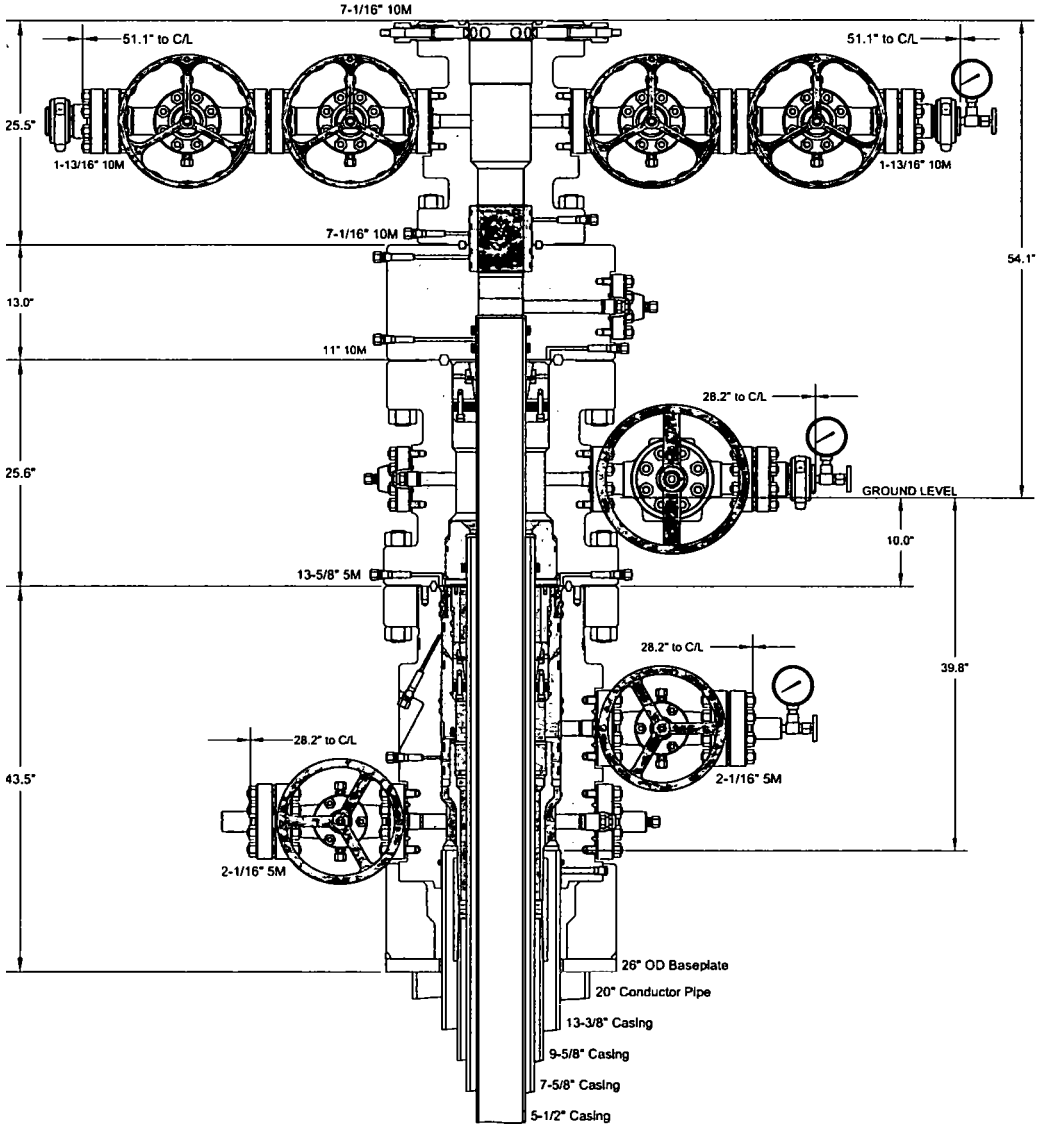
Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,000.00	10,663.05	18,094.58	10,663.12	129.62	130.29	-90.01	7,533.04	-942.60	659.52	400.26	259.26	2.544	
18,100.00	10,662.51	18,194.58	10,662.58	131.20	131.87	-90.01	7,633.04	-942.61	659.52	397.10	262.43	2.513	
18,200.00	10,661.97	18,294.58	10,662.03	132.78	133.44	-90.01	7,733.04	-942.62	659.53	393.93	265.59	2.483	
18,300.00	10,661.43	18,394.58	10,661.49	134.37	135.02	-90.01	7,833.03	-942.63	659.53	390.76	268.76	2.454	
18,400.00	10,660.88	18,494.58	10,660.95	135.95	136.60	-90.01	7,933.03	-942.63	659.53	387.59	271.94	2.425	
18,500.00	10,660.34	18,594.58	10,660.41	137.54	138.18	-90.01	8,033.03	-942.64	659.53	384.41	275.11	2.397	
18,600.00	10,659.80	18,694.58	10,659.87	139.13	139.76	-90.01	8,133.03	-942.65	659.53	381.24	278.29	2.370	
18,700.00	10,659.26	18,794.58	10,659.33	140.72	141.35	-90.01	8,233.03	-942.66	659.53	378.06	281.48	2.343	
18,800.00	10,658.72	18,894.58	10,658.79	142.31	142.94	-90.01	8,333.03	-942.67	659.53	374.87	284.66	2.317	
18,900.00	10,658.18	18,994.58	10,658.25	143.91	144.52	-90.01	8,433.03	-942.68	659.54	371.68	287.85	2.291	
19,000.00	10,657.64	19,094.58	10,657.71	145.50	146.11	-90.01	8,533.02	-942.68	659.54	368.49	291.04	2.266	
19,100.00	10,657.10	19,194.58	10,657.16	147.10	147.70	-90.01	8,633.02	-942.69	659.54	365.30	294.23	2.242	
19,200.00	10,656.56	19,294.58	10,656.62	148.70	149.30	-90.01	8,733.02	-942.70	659.54	362.11	297.43	2.217	
19,300.00	10,656.02	19,394.58	10,656.08	150.30	150.89	-90.01	8,833.02	-942.71	659.54	358.91	300.63	2.194	
19,400.00	10,655.47	19,494.58	10,655.54	151.90	152.48	-90.01	8,933.02	-942.72	659.54	355.71	303.83	2.171	
19,500.00	10,654.93	19,594.58	10,655.00	153.50	154.08	-90.01	9,033.02	-942.73	659.54	352.51	307.03	2.148	
19,600.00	10,654.39	19,694.58	10,654.46	155.10	155.68	-90.01	9,133.02	-942.73	659.54	349.31	310.24	2.126	
19,700.00	10,653.85	19,794.58	10,653.92	156.70	157.27	-90.01	9,233.01	-942.74	659.55	346.10	313.44	2.104	
19,800.00	10,653.31	19,894.58	10,653.38	158.31	158.87	-90.01	9,333.01	-942.75	659.55	342.89	316.65	2.083	
19,900.00	10,652.77	19,994.58	10,652.84	159.91	160.47	-90.01	9,433.01	-942.76	659.55	339.69	319.86	2.062	
20,000.00	10,652.23	20,094.58	10,652.30	161.52	162.08	-90.01	9,533.01	-942.77	659.55	336.47	323.08	2.041	
20,100.00	10,651.69	20,194.58	10,651.75	163.13	163.68	-90.01	9,633.01	-942.78	659.55	333.26	326.29	2.021	
20,200.00	10,651.15	20,294.58	10,651.21	164.74	165.28	-90.01	9,733.01	-942.78	659.55	330.05	329.51	2.002	
20,300.00	10,650.60	20,394.58	10,650.67	166.34	166.89	-90.01	9,833.01	-942.79	659.55	326.83	332.73	1.982	
20,400.00	10,650.06	20,494.58	10,650.13	167.95	168.49	-90.01	9,933.00	-942.80	659.56	323.61	335.95	1.963	
20,500.00	10,649.52	20,594.58	10,649.59	169.56	170.10	-90.01	10,033.00	-942.81	659.56	320.39	339.17	1.945	
20,600.00	10,648.98	20,694.58	10,649.05	171.00	171.70	-90.01	10,133.00	-942.82	659.56	317.35	342.21	1.927	
20,600.25	10,648.98	20,694.83	10,649.05	171.00	171.71	-90.01	10,133.26	-942.82	659.56	317.34	342.22	1.927	SF

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 732H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Reference Site:	Spud Muffin 31-30 FED COM	**MD Reference:**	GL 2957 + 25' KB @ 2982.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	732H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan 3 10K	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to GL 2957 + 25' KB @ 2982.00usft	Coordinates are relative to: 732H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.16°







CACTUS WELLHEAD LLC

DEVON ENERGY CORPORATION

13-3/8" x 9-5/8" x 7-5/8" x 5-1/2" MBU-3T Wellhead System
With 7-1/16" 10M x 7-1/16" 10M CTH-EN Tubing Head,
9-5/8" Mandrel Hanger And 7-5/8" & 5-1/2" Slip Casing Hangers

DRAWN	DLE	23MAY18
APPRV		
DRAWING NO.	ODE0002333	

Continental CONTITECH

Fluid Technology

ContiTech Beattie Corp.
Website: 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

RIG 212

PHOENIX

QUALITY DOCUMENT

PHOENIX RUBBER INDUSTRIAL LTD.

6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
none: (3662) 566-737 • Fax: (3662) 566-738

SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44. Hungary • H-1440 Budapest, P. O. Box 26
Phone: (361) 456-4200 • Fax: (361) 217-2972, 456-4273 • www.taurusemerge.hu

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 552
PURCHASER: Phoenix Beattie Co.				P.O. N°: 1519FA-871
PHOENIX RUBBER order N°: 170466		HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 34128		NOMINAL / ACTUAL LENGTH:		11,43 m
W.P. 68,96 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60 min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 25 MPa

COUPLINGS

Type	Serial N°	Quality	Heat N°
3" coupling with	720 719	AISI 4130	C7626
4 1/16" Flange end		AISI 4130	47357

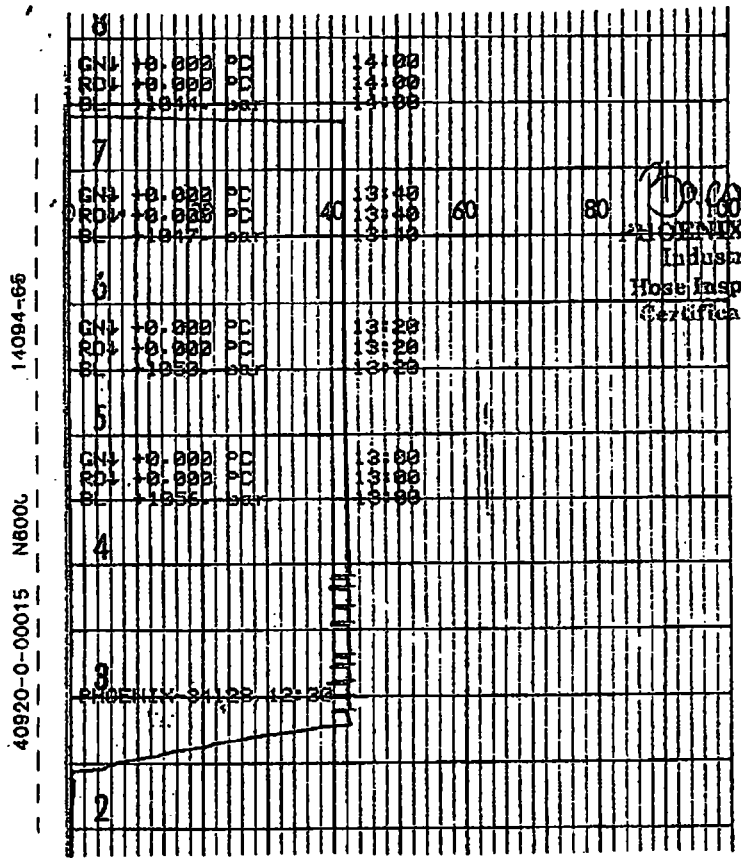
API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
29. April. 2002.		PHOENIX RUBBER Industrial Ltd. Hose Inspection and Certification Dept.

CERTIFIED TRUE COPY
PHOENIX RUBBER Q.C.



PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE CO:
PHOENIX RUBBER Q.C.

APD ID: 10400029616 **Submission Date:** 05/02/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

SPUD_MUFFIN_31_30_FED_COM_732H_Existing_Access_Rd_20180422144610.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

SPUD_MUFFIN_31_30_FED_COM_732H_Existing_Access_Rd_20180422144825.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Battery connects for crude and gas are in process with providers, will provide upon receipt.

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: STIMULATION

Water source type: RECYCLED

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: OTHER

Source land ownership: FEDERAL

Water source transport method: PIPELINE

Source transportation land ownership: FEDERAL

Water source volume (barrels): 350000

Source volume (acre-feet): 45.112583

Source volume (gal): 14700000

Water source and transportation map:

SPUD_MUFFIN_31_30_FED_COM_732H_Water_Map_20180422145220.pdf

Water source comments: The attached Water Transfer Map is a proposal only and the final route and documentation will be provided by a Devon contractor prior to installation. When available Devon will always follow existing disturbance.
New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Dirt fill and caliche will be used to construct well pad.

Construction Materials source location attachment:

SPUD_MUFFIN_31_30_Fed_Com_732H_Caliche_Map_20180422150603.pdf

Section 7 - Methods for Handling Waste

Waste type: COMPLETIONS/STIMULATION

Waste content description: Flow back water during completion operations.

Amount of waste: 3000 barrels

Waste disposal frequency : One Time Only

Safe containment description: NA

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Various disposal locations in Lea and Eddy counties.

Waste type: DRILLING

Waste content description: Water Based Cuttings

Amount of waste: 1750 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: All cuttings will disposed of at R360, Sundance, or equivalent.

Waste type: PRODUCED WATER

Waste content description: Produced water from well operations

Amount of waste: 2000 barrels

Waste disposal frequency : Daily

Safe containment description: NA

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Commercial third party disposal

Waste type: FLOWBACK

Waste content description: Produced water from well operations

Amount of waste: 2000 barrels

Waste disposal frequency : Daily

Safe containment description: NA

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Commercial third party disposal

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

SPUD_MUFFIN_31_30_FED_COM_732H_Rig_Layout_20180422151015.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: No New Surface Disturbance **Multiple Well Pad Name:** HARROUN TRUST 31-30 FED COM

Multiple Well Pad Number: 2H & 3H

Recontouring attachment:

Drainage/Erosion control construction: All areas disturbed shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.
Drainage/Erosion control reclamation: Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season.

Well pad proposed disturbance (acres): 0	**Well pad interim reclamation (acres):**	**Well pad long term disturbance (acres):**
Road proposed disturbance (acres): 0	**Road interim reclamation (acres):**	**Road long term disturbance (acres):**
Powerline proposed disturbance (acres): 0	**Powerline interim reclamation (acres):** 0	**Powerline long term disturbance (acres):** 0
Pipeline proposed disturbance (acres): 0	**Pipeline interim reclamation (acres):**	**Pipeline long term disturbance (acres):**
Other proposed disturbance (acres): 0	**Other interim reclamation (acres):**	**Other long term disturbance (acres):**
	Total interim reclamation:	

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Total proposed disturbance: 0 **Total long term disturbance:**

Disturbance Comments:

Reconstruction method: Operator will use Best Management Practices"BMP" to mechanically recontour to obtain the desired outcome.
Topsoil redistribution: Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.
Soil treatment: Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.
Existing Vegetation at the well pad: Shinnery, yucca, grasses and mesquite.

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery, yucca, grasses and mesquite.

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery, yucca, grasses and mesquite.

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: Shinnery, yucca, grasses and mesquite.

Existing Vegetation Community at other disturbances attachment:

Non native seed used?

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project?

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation?

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: **Seed source:**

Seed name:

Source name: **Source address:**

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre: **Proposed seeding season:**

Seed Summary	
Seed Type	**Pounds/Acre**

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Ray **Last Name:** Vaz

Phone: (575)748-1871 **Email:** Ray.Vaz@dvn.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: Maintain weeds on an as need basis.

Weed treatment plan attachment:

Monitoring plan description: Monitor as needed.

Monitoring plan attachment:

Success standards: NA

Pit closure description: NA

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: PIPELINE

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: SPUD MUFFIN 31-30 FED COM **Well Number:** 732H

Disturbance type: NEW ACCESS ROAD

Describe: Private

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information: Battery connects for crude and gas are in process with providers, will provide upon receipt.

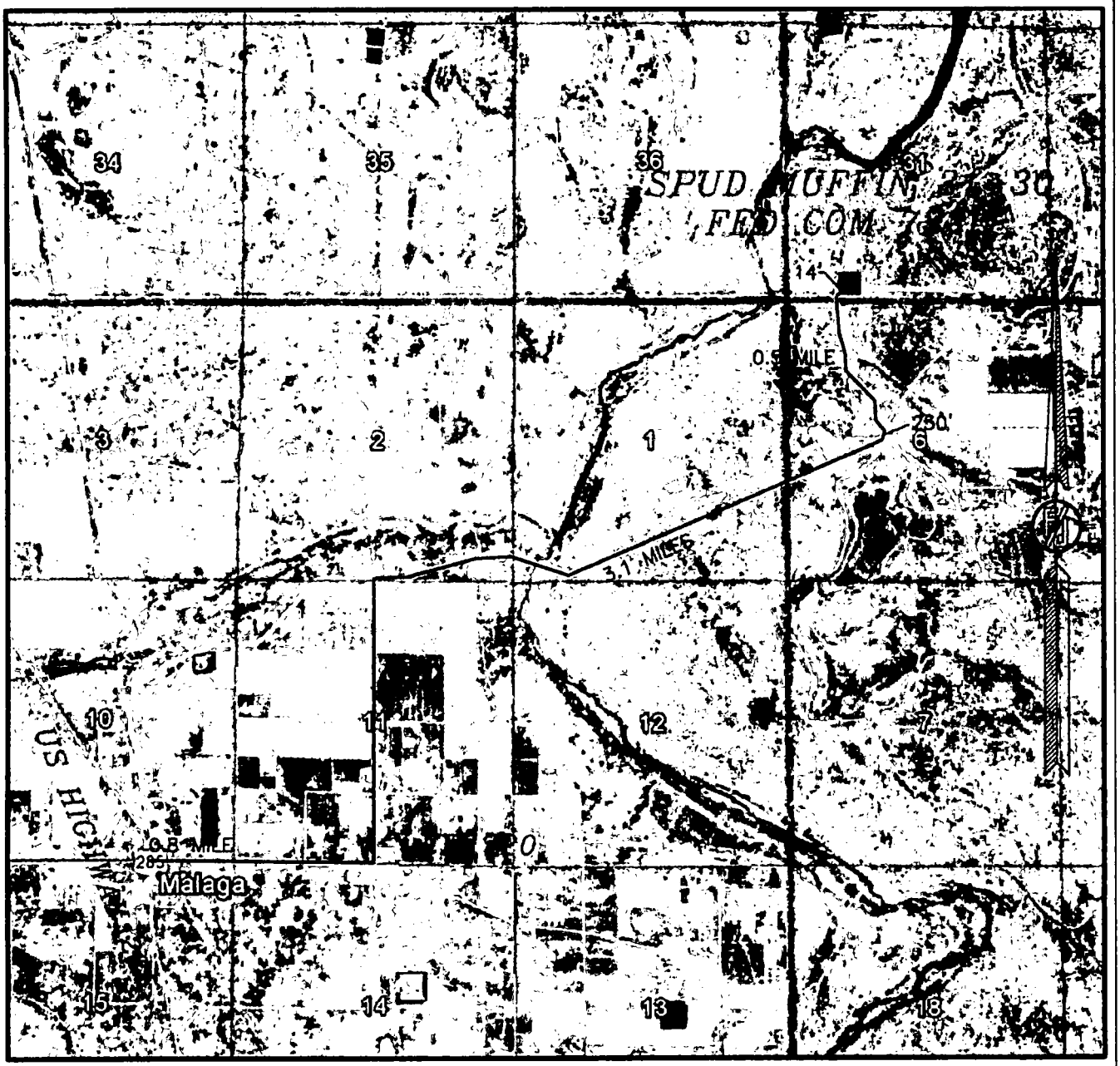
Use a previously conducted onsite? NO

Previous Onsite information:

Other SUPO Attachment

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 FED COM 732H

LOCATED 270 FT. FROM THE SOUTH LINE
AND 1275 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

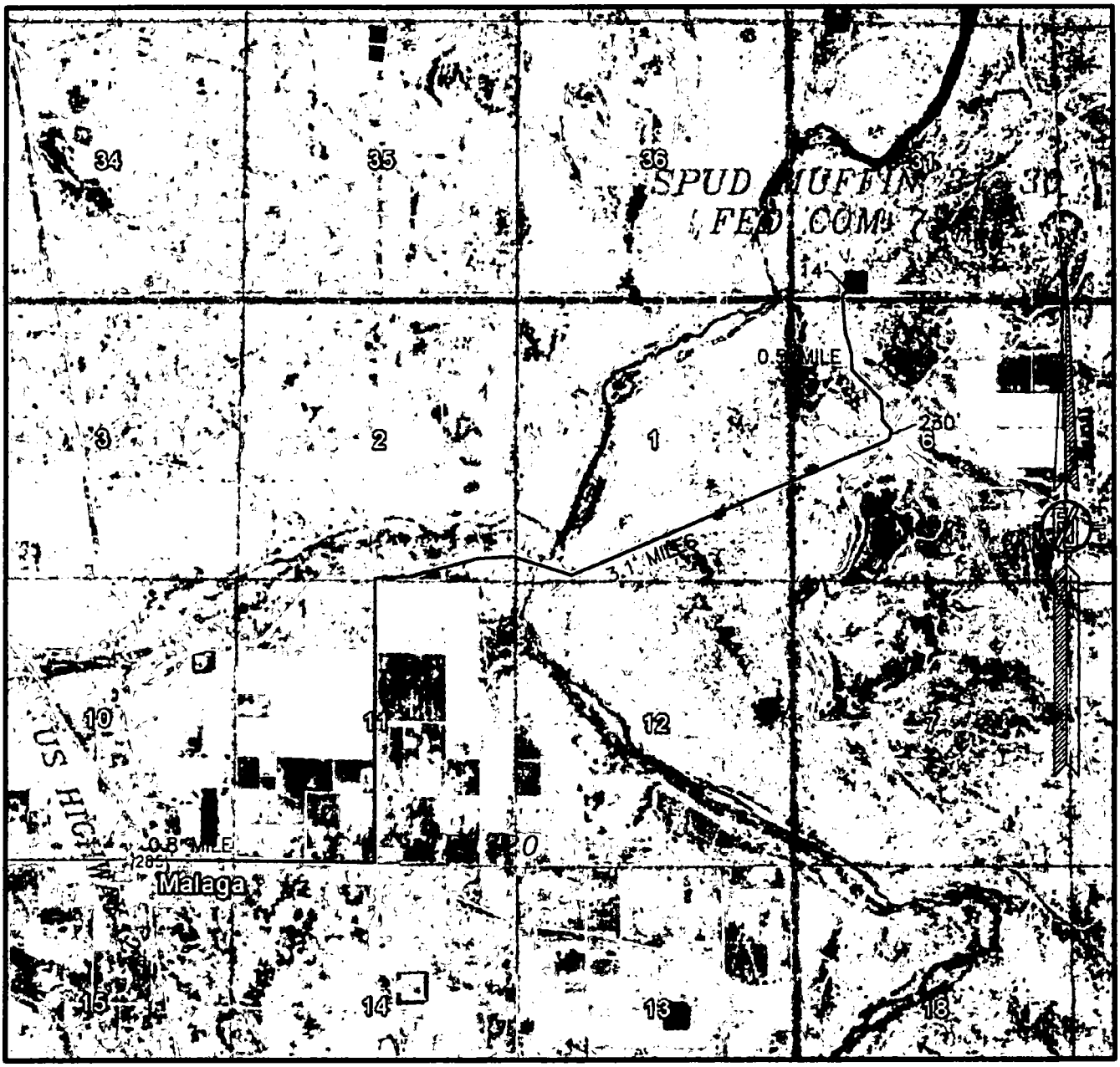
MARCH 14, 2018

SURVEY NO. 5779E

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

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

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LOCATED 270 FT. FROM THE SOUTH LINE
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EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

MARCH 14, 2018

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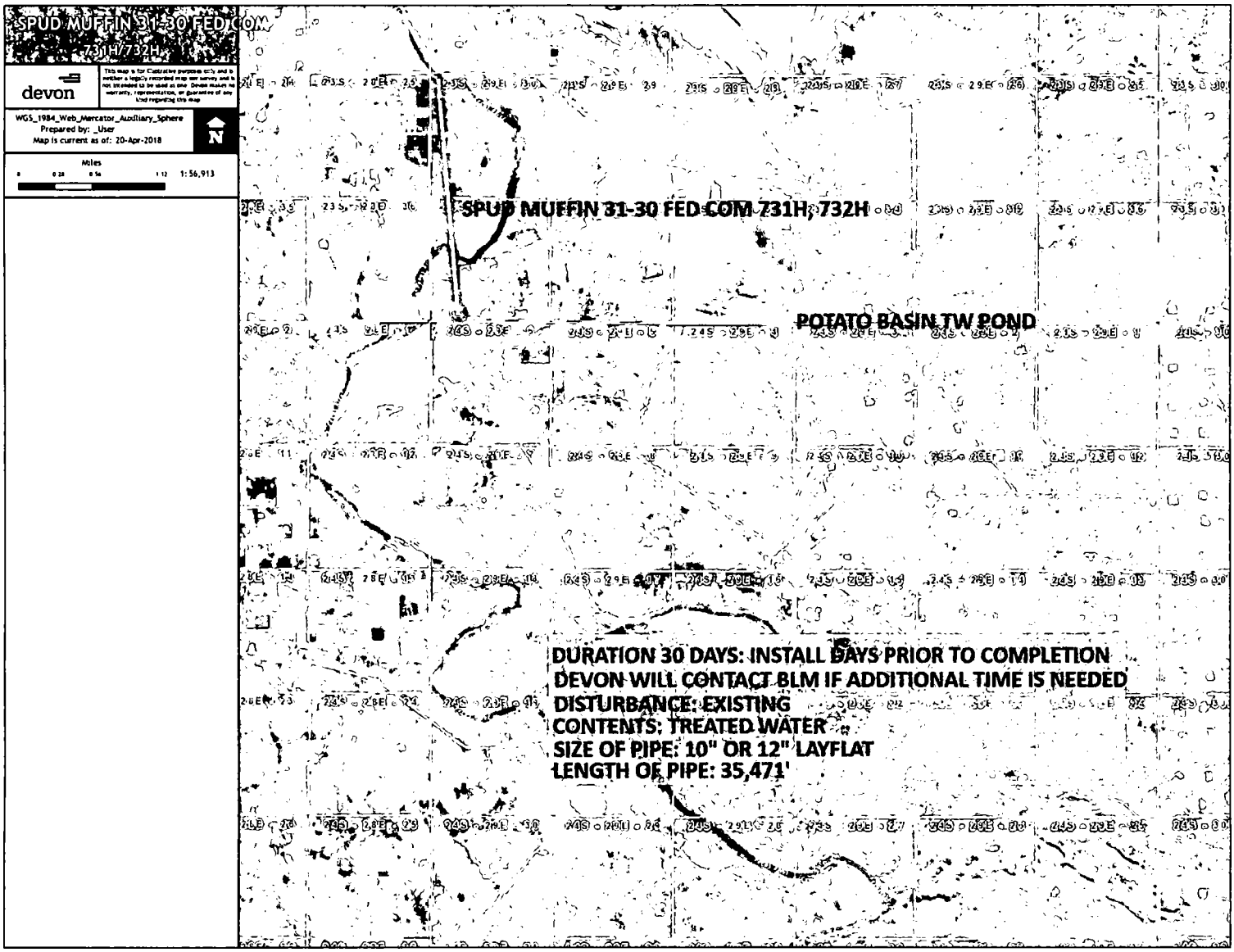
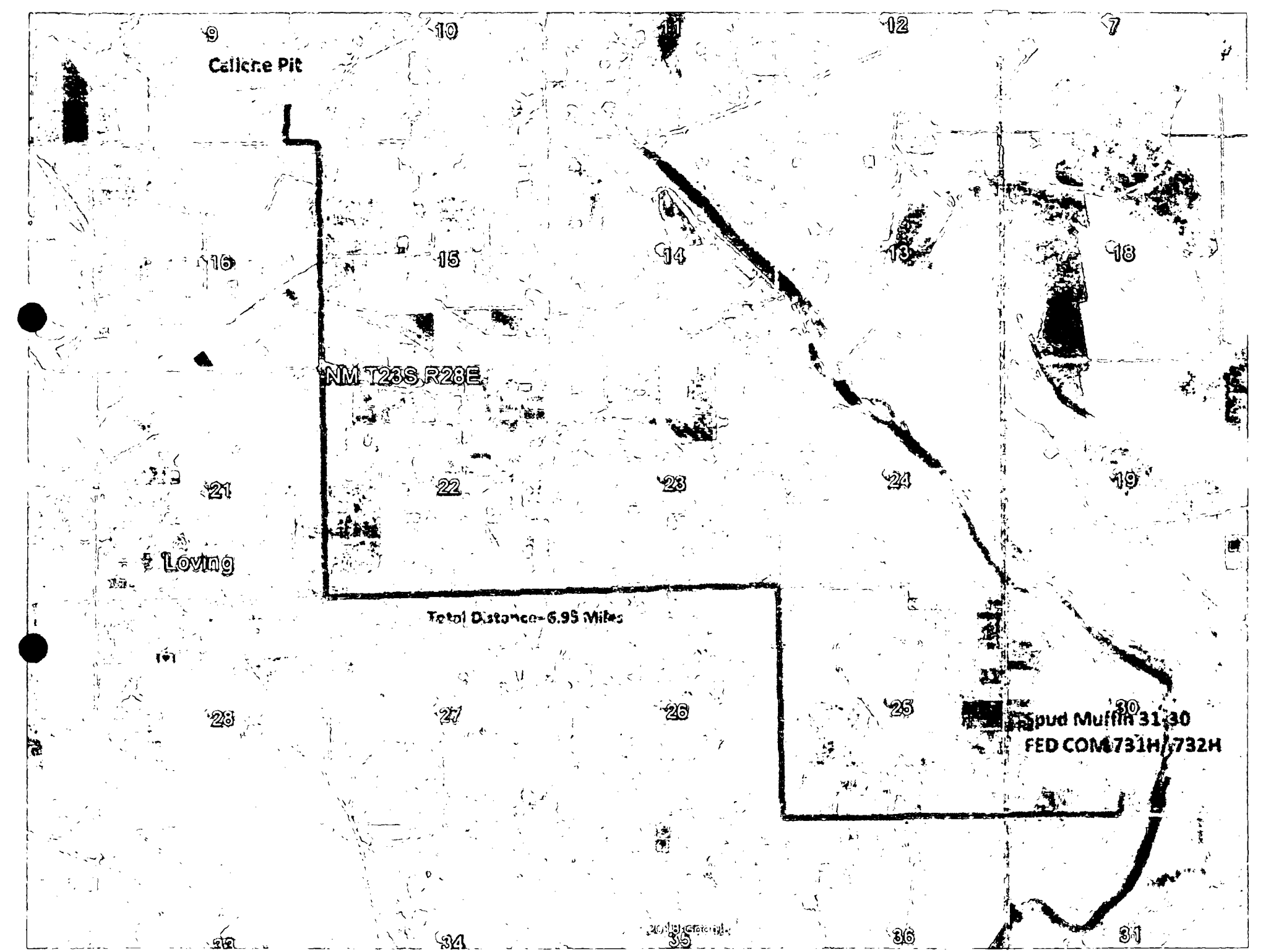

SPUD MUFFIN 31-30 FED COM 731H/732H
devon
This map is for illustrative purposes only and is neither a legally recorded map nor survey and is not intended to be used as one. Devon makes no warranty, representation, or guarantee of any kind regarding this map
WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: _User
Map is current as of: 20-Apr-2018
N
Miles
1:56,913
SPUD MUFFIN 31-30 FED COM 731H, 732H
POTATO BASIN TW POND
DURATION 30 DAYS: INSTALL DAYS PRIOR TO COMPLETION
DEVON WILL CONTACT BLM IF ADDITIONAL TIME IS NEEDED
DISTURBANCE: EXISTING
CONTENTS: TREATED WATER
SIZE OF PIPE: 10" OR 12" LAYFLAT
LENGTH OF PIPE: 35,471'


Caliche Pit
NM T23S R28E
Loving
Total Distance-6.95 Miles
Spud Muffin 31 30
FED COM 731H, 732H
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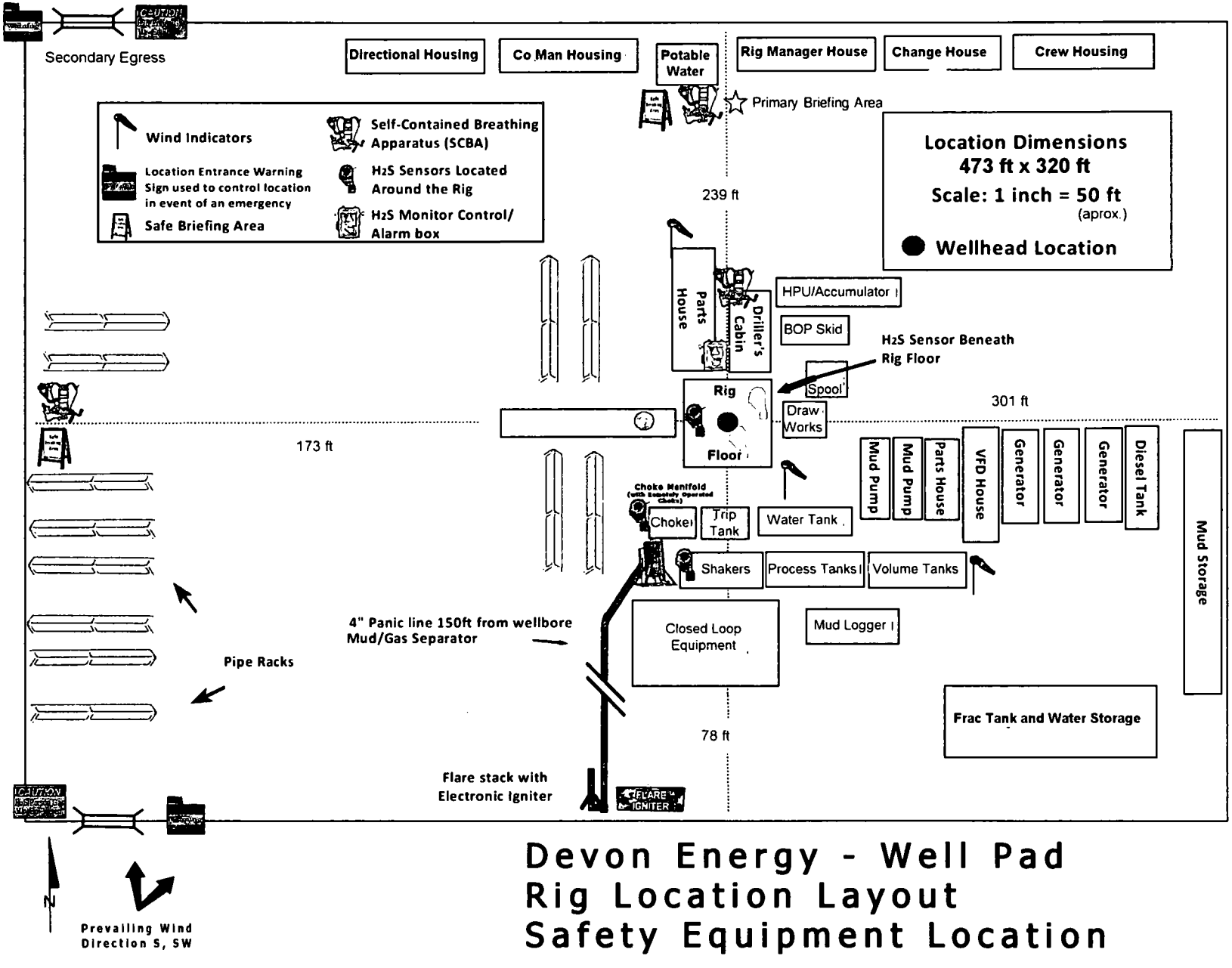
Secondary Egress
Directional Housing
Co Man Housing
Potable Water
Rig Manager House
Change House
Crew Housing
Primary Briefing Area
Wind Indicators
Location Entrance Warning Sign used to control location in event of an emergency
Safe Briefing Area
Self-Contained Breathing Apparatus (SCBA)
H2S Sensors Located Around the Rig
H2S Monitor Control/ Alarm box
Location Dimensions
473 ft x 320 ft
Scale: 1 inch = 50 ft
(aprox.)
Wellhead Location
239 ft
Parts House
Driller's Cabin
HPU/Accumulator
BOP Skid
H2S Sensor Beneath Rig Floor
Spool
Rig Floor
Draw Works
301 ft
173 ft
Mud Pump
Mud Pump
Parts House
VFD House
Generator
Generator
Generator
Diesel Tank
Mud Storage
Choke Manifold
Choke
Trip Tank
Water Tank
Shakers
Process Tanks
Volume Tanks
4" Panic line 150ft from wellbore Mud/Gas Separator
Closed Loop Equipment
Mud Logger
Pipe Racks
Frac Tank and Water Storage
78 ft
Flare stack with Electronic Igniter
FLARE & IGNITER
N
Prevailing Wind Direction S, SW
Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

11/26/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: CO1104

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: