Form 3160-3
(June 2015)

Carlsbad Field Office
OCD Hobbs
HOBBS OCD
SEP 05 2018
RECEIVED

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.: NMNM097151

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.: FLAGLER 8 FED 11H (322149)

2. Name of Operator: DEVON ENERGY PRODUCTION COMPANY LP (6137)

9. API Well No.: 30-025-45162

3a. Address: 333 West Sheridan Avenue Oklahoma City OK 73102

3b. Phone No. *(include area code)*: (405)552-6571

10. Field and Pool, or Exploratory: DRAPER MILL / BONE SPRING (96392)

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

At surface: SESW / 180 FSL / 2570 FWL / LAT 32.1383495 / LONG -103.5945365

At proposed prod. zone: NENW / 330 FNL / 2300 FWL / LAT 32.1514594 / LONG -103.5954069

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 8 / T25S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish

13. State

| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) | 16. No of acres in lease | 17. Spacing Unit dedicated to this well |
|---|---|---|
| 180 feet | 520 | 160 |
| **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** |
| 2473 feet | 12300 feet / 16962 feet | FED: CO1104 |
| **21. Elevations (Show whether DF, KDB, RT, GL, etc.)** | **22. Approximate date work will start*** | **23. Estimated duration** |
| 3447 feet | 01/05/2019 | 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) | Rebecca Deal / Ph: (405)228-8429 | 03/26/2018 |
| **Title** | | |
| Regulatory Compliance Professional | | |
| **Approved by *(Signature)*** | **Name *(Printed/Typed)*** | **Date** |
| (Electronic Submission) | Cody Layton / Ph: (575)234-5959 | 08/23/2018 |
| **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.

GCP Received 09/06/18

KZ 09/07/18

APPROVED WITH CONDITIONS

Approval Date: 08/23/2018

(Continued on page 2)

*(Instructions on page 2)

Does it add?

SG

## 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 1: 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.



(Continued on page 3)



Original

## Additional Operator Remarks

### Location of Well

1. SHL: SESW / 180 FSL / 2570 FWL / TWSP: 25S / RANGE: 33E / SECTION: 8 / LAT: 32.1383495 / LONG: -103.5945365 ( TVD: 0 feet, MD: 0 feet )
   PPP: SESW / 330 FSL / 2300 FWL / TWSP: 25S / RANGE: 33E / SECTION: 8 / LAT: 32.138766 / LONG: -103.595405 ( TVD: 12219 feet, MD: 12330 feet )
   BHL: NENW / 330 FNL / 2300 FWL / TWSP: 25S / RANGE: 33E / SECTION: 8 / LAT: 32.1514594 / LONG: -103.5954069 ( TVD: 12300 feet, MD: 16962 feet )

## BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

CONFIDENTIAL

## 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.

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**Cementing Program (Alternate Casing Design)**

| Casing | # Sks | Wt. lb/ gal | $H_2O$ gal/sk | Yld ft3/ sack | Slurry Description |
|---|---|---|---|---|---|
| 17.5" Surf. | 901 | 14.8 | 1.33 | 6.3 2 | Lead: Class C Cement + 0.125 lbs/sack Poly-F-Flake |
| 12.25" Inter. | 511 | 10.3 | 3.65 | 22. 06 | Lead: (50:50) Poz (Silica) 3 lbm/sk Kol-Seal, .125 lbm/sk Poly-E-Flake |
| | 306 | 14.8 | 1.33 | 6.3 2 | Tail: Class C Cement + 0.125 lbs/sack Poly-F-Flake |
| 8.75" Prod. | 457 | 9 | 3.27 | 13. 5 | Lead: Tuned Light Cement |

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 | 0' | 30% |
| 5-1/2" Production Casing | 4800' | 25% |

## 4. Pressure Control Equipment (Primary Casing Design)

| | |
|---|---|
| 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: |
|---|---|---|---|---|---|
| 9-7/8" | 13-5/8" | 5M | Annular | X | 50% of rated working pressure |
| | | | Blind Ram | X | 5M |
| | | | Pipe Ram | X | |
| | | | Double Ram | X | |
| | | | Other* | | |

| | | | | | |
|---|---|---|---|---|---|
| 6-3/4" | 13-5/8" | ~~5M~~ 10M | Annular | X | ~~50% of rated working pressure~~ 5000psi |
| | | | Blind Ram | X | ~~5M~~ 10M |
| | | | Pipe Ram | X | |
| | | | Double Ram | X | |
| | | | Other * | | |
| | | | Annular | | |
| | | | Blind Ram | | |
| | | | Pipe Ram | | |
| | | | Double Ram | | |
| | | | Other * | | |

*Specify if additional ram is utilized.

**Pressure Control Equipment (Alternate Casing Design)**

| | |
|---|---|
| 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:** |
|---|---|---|---|---|---|
| 12.25" Int | 13-5/8" | 5M | Annular | X | 50% of rated working pressure |
| | | | Blind Ram | X | 5M |
| | | | Pipe Ram | X | |
| | | | Double Ram | X | |
| | | | Other* | | |
| 8.75" Production | 13-5/8" | ~~5M~~ 10M | Annular | X | ~~50% of rated working pressure~~ 5000psi |
| | | | Blind Ram | X | ~~5M~~ 10M |
| | | | Pipe Ram | X | |
| | | | Double Ram | X | |
| | | | Other * | | |
| | | | Annular | | |
| | | | Blind Ram | | |

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.<br>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.<br><br>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~~. 10,000 (10M) psi<br>• Wellhead will be installed by wellhead representatives.<br>• 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.<br>• Wellhead representative will install the test plug for the initial BOP test.<br>• 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~~ 10M 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.<br>• 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.<br>• Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.<br>• Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.<br><br>After running the 10-3/4" 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.<br><br>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~~ 10,000 psi WP.<br><br>Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.<br><br>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. |

**5. Mud Program (Primary Casing Design)**

| Depth | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|
| From | To | | | | |
| 0 | 1150' | FW Gel | 8.6-8.8 | 28-34 | N/C |
| 1150' | 10,610' | OBM/Cut Brine | 9-10 | 34-65 | N/C - 6 |
| 10,610' | 16,962' | Oil Based Mud | 9-11 | 45-65 | N/C - 6 |

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

**Mud Program (Alternate Casing Design)**

| Depth | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|
| From | To | | | | |
| 0 | 1150' | FW Gel | 8.6-8.8 | 28-34 | N/C |
| 1150' | 5,000' | Brine | 9-10 | 28-34 | N/C |
| 5,000' | 16,962' | Cut Brine | 8.5-10 | 28-34 | N/C |

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**

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)~~ 10,000 (10M) 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;~~ 10M 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 10-3/4" 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 7-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 10M will 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 10,000 psi WP.

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

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)~~ 10,000 (10M) 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~~ 10M 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.

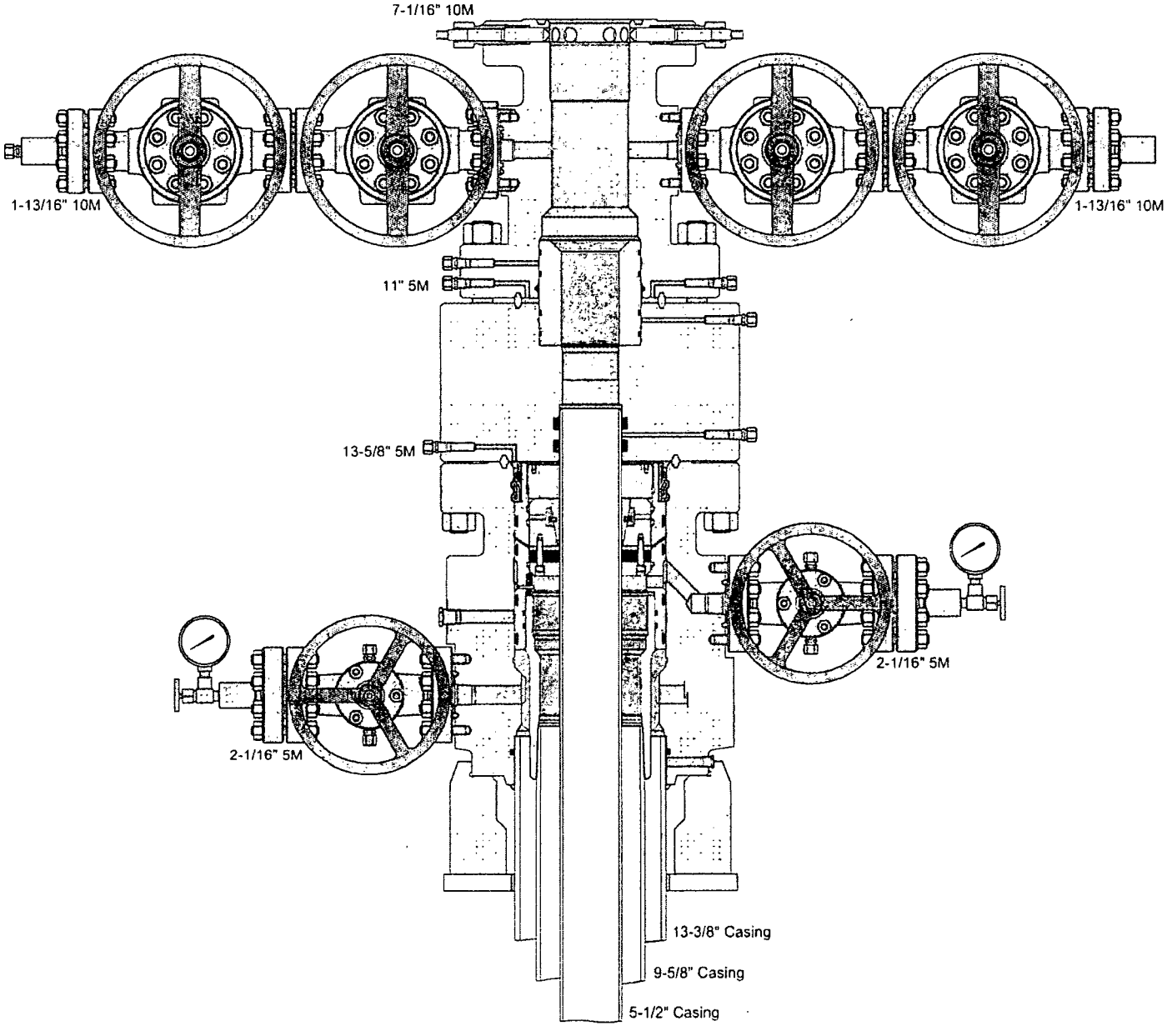
After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum 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~~ 10M 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~~ 10,000 psi WP.

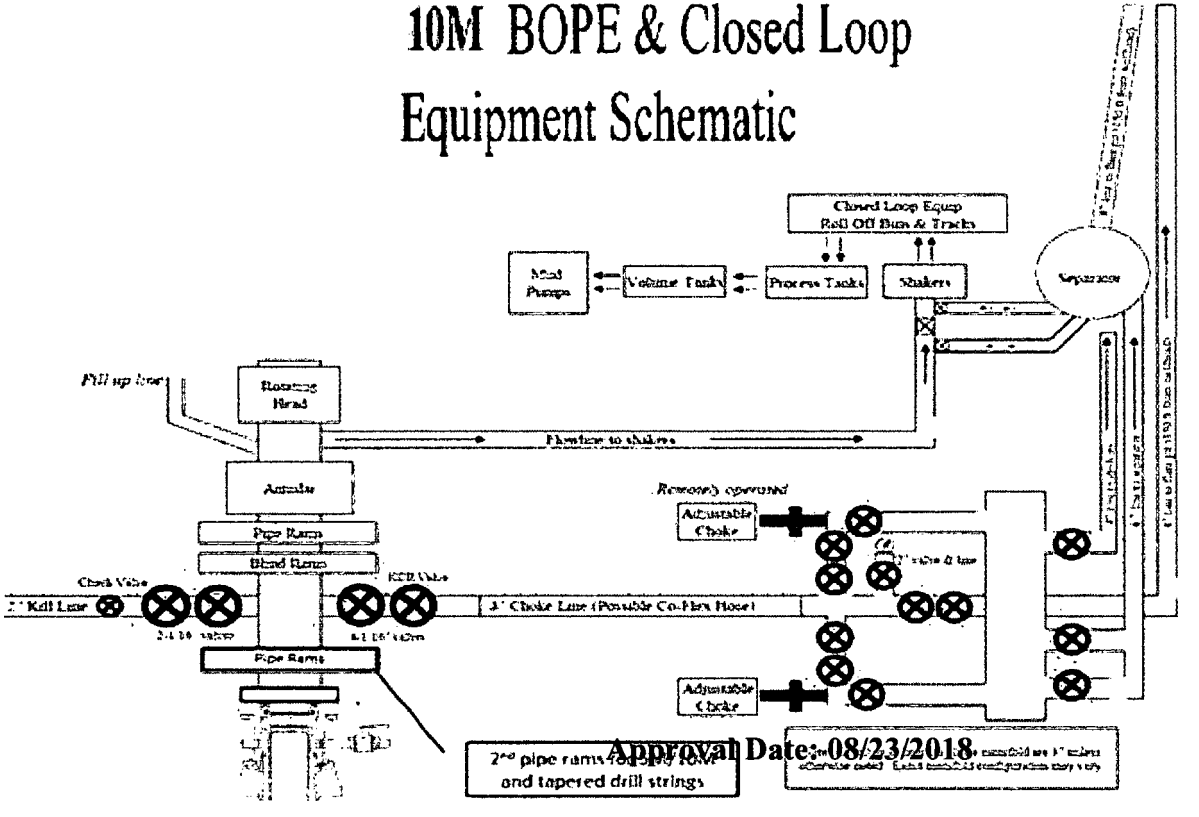
Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

**Approval Date: 08/23/2018**

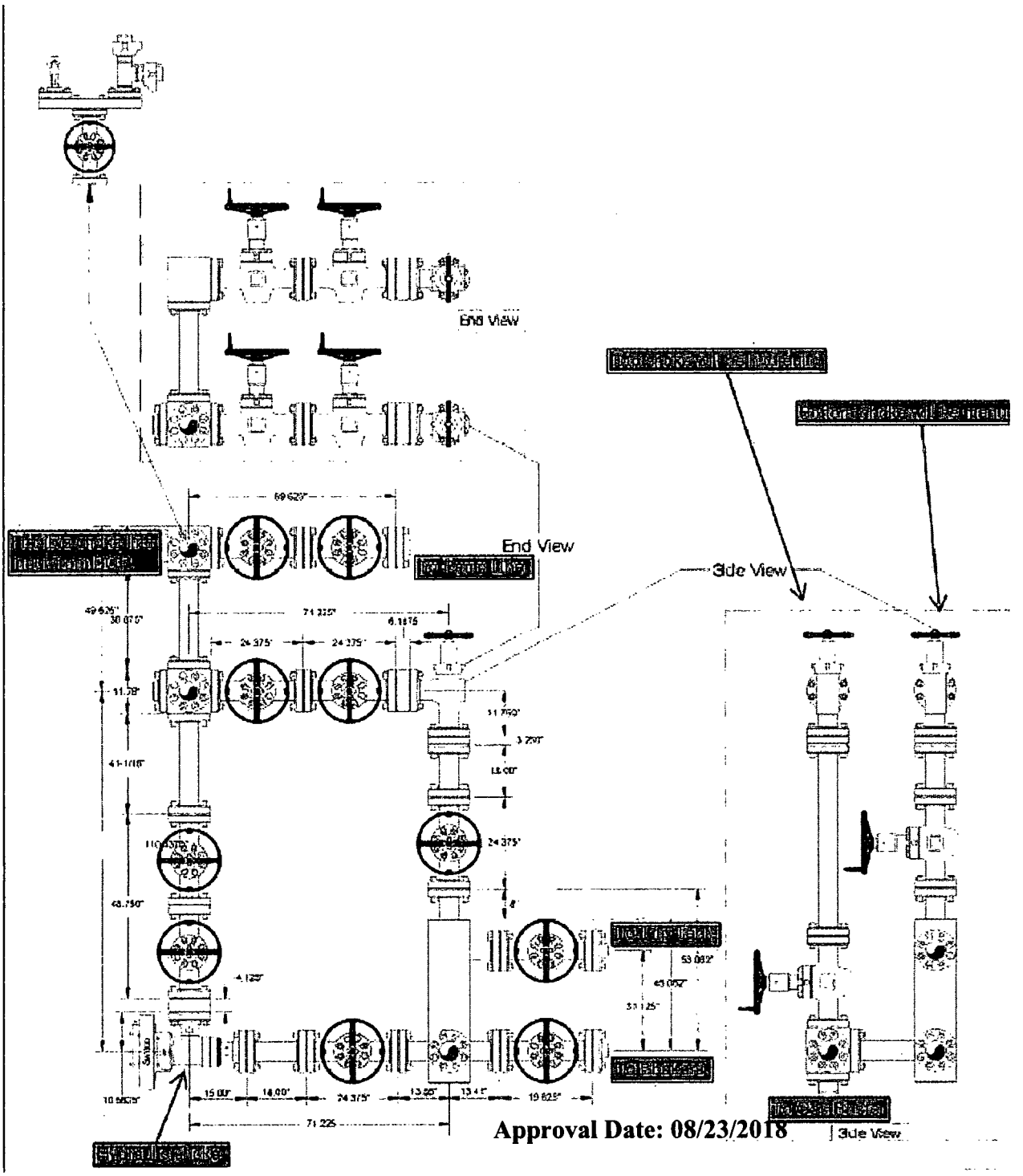



**Approval Date: 08/23/2018**

# 10M BOPE & Closed Loop Equipment Schematic




Approval Date: 08/23/2018




**Approval Date: 08/23/2018**

# 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 |

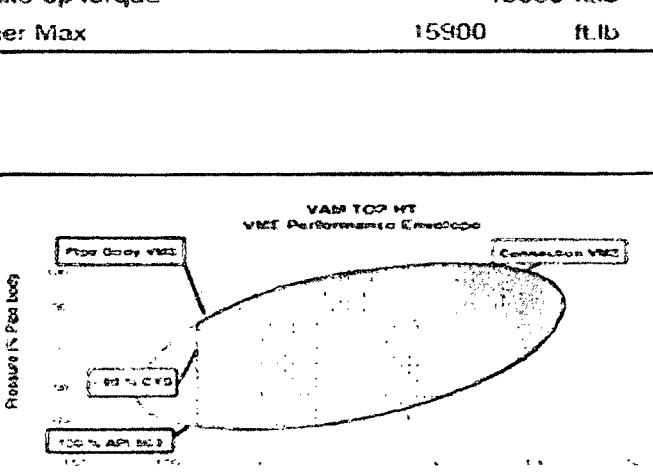
| PIPE PROPERTIES | |
|---|---|
| Nominal OD | 5.500 in. |
| Nominal ID | 4.778 in |
| Nominal Cross Section Area | 5.828 sqin. |
| Grade Type | High Yield |
| Min. Yield Strength | 125 ksi |
| Max Yield Strength | 140 ksi |
| Min. Ultimate Tensile Strength | 135 ksi |

| 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 |

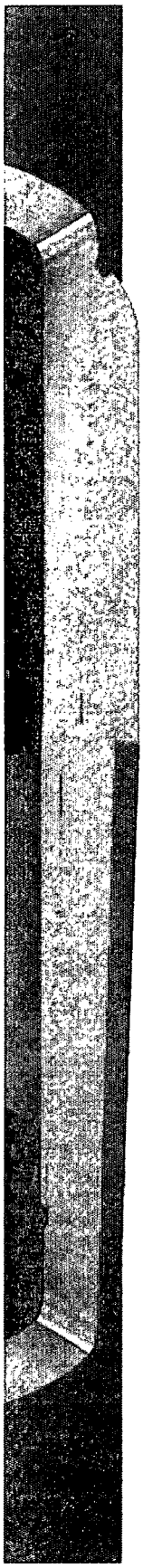
| CONNECTION PERFORMANCES | |
|---|---|
| Tensile Yield Strength | 729 klb |
| Compression Resistance | 583 klb |
| Internal Yield Pressure | 14360 psi |
| External Pressure Resistance | 12090 psi |
| Max. Bending with Sealability (CAL IV) | 20 °/100 ft |
| Max Load on Coupling Face | 388 klb |

| FIELD 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 |

**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




Approval Date: 08/23/2018



Issued on: 18 Jul. 2016

VAM SG

# 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® SG |

## 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 integral semi-flush |
| Connection OD (nom) | 5.697 in. |
| Connection ID (nom) | 4.711 in. |
| Make-up Loss | 6.336 in. |
| Tension Efficiency | 87 % of pipe |
| Compression Efficiency | 61 % of pipe |
| Internal Pressure Efficiency | 100 % of pipe |
| External Pressure Efficiency | 70 % of pipe |

## CONNECTION PERFORMANCES

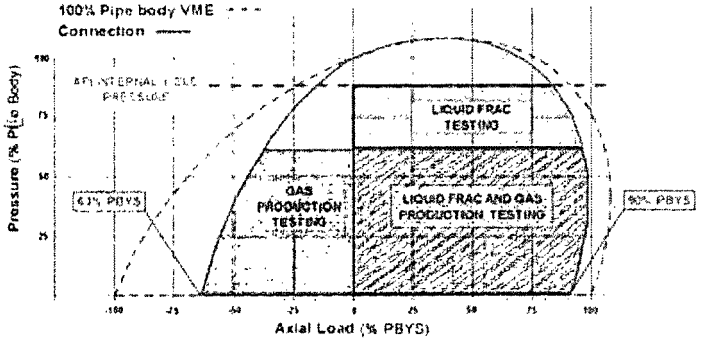
| | |
|---|---|
| Tensile Yield Strength | 634 klb |
| Compression Resistance | 446 klb |
| Internal Yield Pressure | 14360 psi |
| External Pressure Resistance | 8463 psi |
| Max. Bending with Sealability | 40 °/100 ft |

## FIELD TORQUE VALUES

| | |
|---|---|
| Min. Make-up torque | 8100 ft.lb |
| Opti. Make-up torque | 9800 ft.lb |
| Max. Make-up torque | 11500 ft.lb |
| Maximum Torque with Sealability | 12500 ft.lb |

**The single solution for Shale Play needs**

VAM® SG brings VAM® premium sealing performance to a semi-flush connection with extremely high Tension performance and increase Torque capacity, validated to the specific Shale drilling requirements, while remaining highly competitive in North American Shale play economics.





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VAM USA

**Approval Date: 08/23/2018**

## Devon Energy Annular Preventer Summary

### 1. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the 10M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

6-3/4" Production hole section, 10M requirement

| Component | OD | Preventer | RWP |
|---|---|---|---|
| Drillpipe | 4.5" | Fixed lower 4.5"<br>Upper 4.5-7" VBR | 10M |
| HWDP | 4.5" | Fixed lower 4.5"<br>Upper 4.5-7" VBR | 10M |
| Drill collars and MWD tools | 4.75" | Upper 4.5-7" VBR | 10M |
| Mud Motor | 4.75" | Upper 4.5-7" VBR | 10M |
| Production casing | 5.5" | Upper 4.5-7" VBR | 10M |
| ALL | 0-13-5/8" | Annular | 5M |
| Open-hole | - | Blind Rams | 10M |

VBR = Variable Bore Ram. Compatible range listed in chart.

### 2. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The pressure at which control is swapped from the annular to another compatible ram is variable, but the operator will document in the submission their operating pressure limit. The operator may chose an operating pressure less than or equal to RWP, but in no case will it exceed the RWP of the annular preventer.

General Procedure While Drilling

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in Well (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

## Devon Energy Annular Preventer Summary

General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out drill string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

General Procedure While Running Casing

1. Sound alarm (alert crew)
2. Stab crossover and full opening safety valve and close
3. Space out string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to compatible pipe ram.

General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Shut-in with blind rams or BSR. (HCR and choke will already be in the closed position.)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
    a. SICP
    b. Pit gain
    c. Time
6. Regroup and identify forward plan

## Devon Energy Annular Preventer Summary

General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drillpipe thru the stack.
    a. Perform flowcheck, if flowing:
    b. Sound alarm (alert crew)
    c. Stab full opening safety valve and close
    d. Space out drill string with tool joint just beneath the upper pipe ram.
    e. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
    f. Confirm shut-in
    g. Notify toolpusher/company representative
    h. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
    i. Regroup and identify forward plan

2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
    a. Sound alarm (alert crew)
    b. Stab crossover and full opening safety valve and close
    c. Space out drill string with upset just beneath the compatible pipe ram.
    d. Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
    e. Confirm shut-in
    f. Notify toolpusher/company representative
    g. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
    h. Regroup and identify forward plan

3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
    a. Sound alarm (alert crew)
    b. If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario.
    c. If impossible to pick up high enough to pull the string clear of the stack:
    d. Stab crossover, make up one joint/stand of drillpipe, and full opening safety valve and close
    e. Space out drill string with tooljoint just beneath the upper pipe ram.
    f. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
    g. Confirm shut-in
    h. Notify toolpusher/company representative
    i. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
    j. Regroup and identify forward plan

AFMSS

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

# Operator Certification Data Report

08/23/2018

## 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:** Rebecca Deal **Signed on:** 03/26/2018

**Title:** Regulatory Compliance Professional

**Street Address:** 333 West Sheridan Avenue

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

**Phone:** (405)228-8429

**Email address:** Rebecca.Deal@dvn.com

## Field Representative

**Representative Name:** Travis Phibbs

**Street Address:** 6488 Seven Rivers Hwy

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

**Phone:** (575)748-9929

**Email address:** travis.phibbs@dvn.com

**APD ID:** 10400028819 **Submission Date:** 03/26/2018

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

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

Highlighted data reflects the most recent changes

Show Final Text

## Section 1 - General

**APD ID:** 10400028819 **Tie to previous NOS?** **Submission Date:** 03/26/2018

**BLM Office:** CARLSBAD **User:** Rebecca Deal **Title:** Regulatory Compliance Professional

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

**Lease number:** NMNM097151 **Lease Acres:** 520

**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:** (405)552-6571

**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:** FLAGLER 8 FED **Well Number:** 11H **Well API Number:**

**Field/Pool or Exploratory?** Field and Pool **Field Name:** DRAPER MILL **Pool Name:** BONE SPRING

**Is the proposed well in an area containing other mineral resources?** USEABLE WATER

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

**Describe other minerals:**

**Is the proposed well in a Helium production area?** N **Use Existing Well Pad?** NO **New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL **Multiple Well Pad Name:** FLAGLER 8 **Number:** 3

**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:** 2473 FT **Distance to lease line:** 180 FT

**Reservoir well spacing assigned acres Measurement:** 160 Acres

**Well plat:** Flagler_8_Fed_11H_C_102_Signed_20180326103309.pdf

**Well work start Date:** 01/05/2019 **Duration:** 45 DAYS

## Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83 **Vertical Datum:** NAVD88

**Survey number:**

| | 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 | 180 | FSL | 2570 | FWL | 25S | 33E | 8 | Aliquot SESW | 32.1383495 | -103.5945365 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 097151 | 3447 | 0 | 0 |
| KOP Leg #1 | 50 | FSL | 2300 | FWL | 25S | 33E | 8 | Aliquot SESW | 32.137998 | -103.595516 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 097151 | -8280 | 11738 | 11727 |
| PPP Leg #1 | 330 | FSL | 2300 | FWL | 25S | 33E | 8 | Aliquot SESW | 32.138766 | -103.595405 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 097151 | -8772 | 12330 | 12219 |

**Operator Name:** DEVON ENERC ,ODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIT Leg #1 | 330 | FNL | 2300 | FWL | 25S | 33E | 8 | Aliquot NENW | 32.1514594 | -103.5954069 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 097151 | -8853 | 16962 | 12300 |
| BHL Leg #1 | 330 | FNL | 2300 | FWL | 25S | 33E | 8 | Aliquot NENW | 32.1514594 | -103.5954069 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 097151 | -8853 | 16962 | 12300 |

**APD ID:** 10400028819 **Submission Date:** 03/26/2018

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

**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 | --- | 3447 | 0 | 0 | OTHER : Surface | NONE | No |
| 2 | RUSTLER | 2322 | 1145 | 1145 | SANDSTONE | NONE | No |
| 3 | TOP SALT | 1959 | 1508 | 1508 | SALT | NONE | No |
| 4 | BASE OF SALT | -1533 | 5000 | 5000 | LIMESTONE | NONE | No |
| 5 | BELL CANYON | -1533 | 5000 | 5000 | SANDSTONE | NATURAL GAS,OIL | No |
| 6 | CHERRY CANYON | -2573 | 6040 | 6040 | SANDSTONE | NATURAL GAS,OIL | No |
| 7 | BRUSHY CANYON | -4223 | 7690 | 7690 | SANDSTONE | NATURAL GAS,OIL | No |
| 8 | BONE SPRING | -5643 | 9110 | 9110 | SHALE | NATURAL GAS,OIL | No |
| 9 | BONE SPRING 1ST | -6549 | 10016 | 10016 | SANDSTONE | NATURAL GAS,OIL | No |
| 10 | BONE SPRING 2ND | -7143 | 10610 | 10610 | SANDSTONE | NATURAL GAS,OIL | No |
| 11 | BONE SPRING 3RD | -8306 | 11773 | 11773 | SANDSTONE | NATURAL GAS,OIL | Yes |
| 12 | WOLFCAMP | -8834 | 12281 | 12281 | SHALE | NATURAL GAS,OIL | No |

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 5M **Rating Depth:** 10610

**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.

# ACCESS ROAD PLAT

*ACCESS ROAD FOR FLAGLER 8 WELLPAD 3*

*(FLAGLER 8 FEDERAL 38H, 32H, 39H, 25H, 20H, 26H, 7H, 3H, & 11H)*

## DEVON ENERGY PRODUCTION COMPANY, L.P.

## CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
## SECTION 8, TOWNSHIP 25 SOUTH, RANGE 33 EAST, N.M.P.M.
## LEA COUNTY, STATE OF NEW MEXICO
## JANUARY 28, 2018

### DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 8, TOWNSHIP 25 SOUTH, RANGE 33 EAST, N.M.P.M., LEA COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE SW/4 SE/4 OF SAID SECTION 8, TOWNSHIP 25 SOUTH, RANGE 33 EAST, N.M.P.M., WHENCE THE SOUTH QUARTER CORNER OF SAID SECTION 8, TOWNSHIP 25 SOUTH, RANGE 33 EAST, N.M.P.M. BEARS S24°58'40"W, A DISTANCE OF 697.10 FEET;
THENCE N00°21'53"W A DISTANCE OF 399.75 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N60°26'34"E A DISTANCE OF 513.28 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE SOUTHEAST CORNER OF SAID SECTION 8, TOWNSHIP 25 SOUTH, RANGE 33 EAST, N.M.P.M. BEARS S56°21'41"E, A DISTANCE OF 2288.28 FEET;

SAID STRIP OF LAND BEING 913.03 FEET OR 55.34 RODS IN LENGTH, CONTAINING 0.629 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

| | | | |
|---|---|---|---|
| SW/4 SE/4 | 913.03 L.F. | 55.34 RODS | 0.629 ACRES |

*GENERAL NOTES*

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

*SURVEYOR CERTIFICATE*

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 31st DAY OF JANUARY 2018.

FILIMON F. JARAMILLO PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

**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:**

Flagler_8_Fed_11H_5M_BOPE__CK_20180326104119.pdf

**BOP Diagram Attachment:**

Flagler_8_Fed_11H_5M_BOPE__CK_20180326104135.pdf

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**Pressure Rating (PSI):** 5M **Rating Depth:** 12300

**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:**

Flagler_8_Fed_11H_5M_BOPE__CK_20180326104155.pdf

**BOP Diagram Attachment:**

Flagler_8_Fed_11H_5M_BOPE__CK_20180326104547.pdf

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## 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 | 14.75 | 10.75 | NEW | API | N | 0 | 1150 | 0 | 1150 | | | 1150 | J-55 | 40.5 | STC | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |
| 2 | INTERMEDIATE | 9.875 | 7.625 | NEW | API | N | 0 | 10610 | 0 | 10610 | | | 10610 | P-110 | 29.7 | OTHER - BTC | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |
| 3 | PRODUCTION | 6.75 | 5.5 | NEW | API | N | 0 | 16962 | 0 | 12300 | | | 16962 | P-110 | 20 | OTHER - VAM SG | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |

**Operator Name:** DEVON ENERGY P. ODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Flagler_8_Fed_11H_Surf_Csg_Ass_20180326104607.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Flagler_8_Fed_11H_Int_Csg_Ass_20180326104639.pdf

**Casing ID:** 3 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Flagler_8_Fed_11H_Prod_Csg_Ass_20180326104726.pdf

## Section 4 - Cement

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SURFACE | Lead | | 0 | 1150 | 715 | 1.34 | 14.8 | 960 | 50 | CLASS C | 1% Calcium Chloride |
| INTERMEDIATE | Lead | | 0 | 9610 | 811 | 3.27 | 9 | 2652 | 30 | TUNED | TUNED LIGHT |
| INTERMEDIATE | Tail | | 9610 | 10610 | 153 | 1.6 | 13.2 | 215 | 30 | CLASS C | Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite |
| PRODUCTION | Lead | | 10410 | 16962 | 372 | 1.33 | 14.8 | 495 | 25 | CLASS H | 0.125 lbs/sack Poly-E-Flake |

## 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 | 1150 | SPUD MUD | 8.33 | 9 | | | | 2 | | | |

**Operator Name:** DEVON ENERGY P. . .ODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1150 | 10610 | WATER-BASED MUD | 9 | 10 | | | | 2 | | | |
| 10610 | 16962 | OIL-BASED MUD | 9 | 11 | | | | 12 | | | |

## Section 6 - Test, Logging, Coring

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

Will run GRMWD from TD to from KOP. Cement bond logs will be run in vertical to determine top of cement. Stated logs run will be in the Completion Report and submitted to the BLM.

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

CALIPER,CBL,DS,GR,MUDLOG

**Coring operation description for the well:**

N/A

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 7035 **Anticipated Surface Pressure:** 4329

**Anticipated Bottom Hole Temperature(F):** 160

**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:**

Flagler_8_Federal_11H_H2S_Plan_20180326105017.pdf

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** FLAGLER 8 FED **Well Number:** 11H

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Flagler_8_Fed_11H_Dir_Svy_20180326105028.pdf

Flagler_8_Fed_11H_Plot_Point_20180326105157.pdf

**Other proposed operations facets description:**

MULTI-BOWL VERBIAGE
MULTI-BOWL WELLHEAD
CLOSED LOOP DESIGN PLAN
DRILLING PLAN - INCL CONTINGENCY
DRILLING CONTINGENCY
CO-FLEX HOSE
SPUDDER RIG REQUEST

**Other proposed operations facets attachment:**

Flagler_8_Fed_11H_AC_Report_20180326105051.pdf

Flagler_8_Fed_11H_Clsd_Loop_20180326105051.pdf

Flagler_8_Fed_11H_Drilling_Document_20180326105052.pdf

Flagler_8_Fed_11H_MB_Verb_5M_20180326105052.pdf

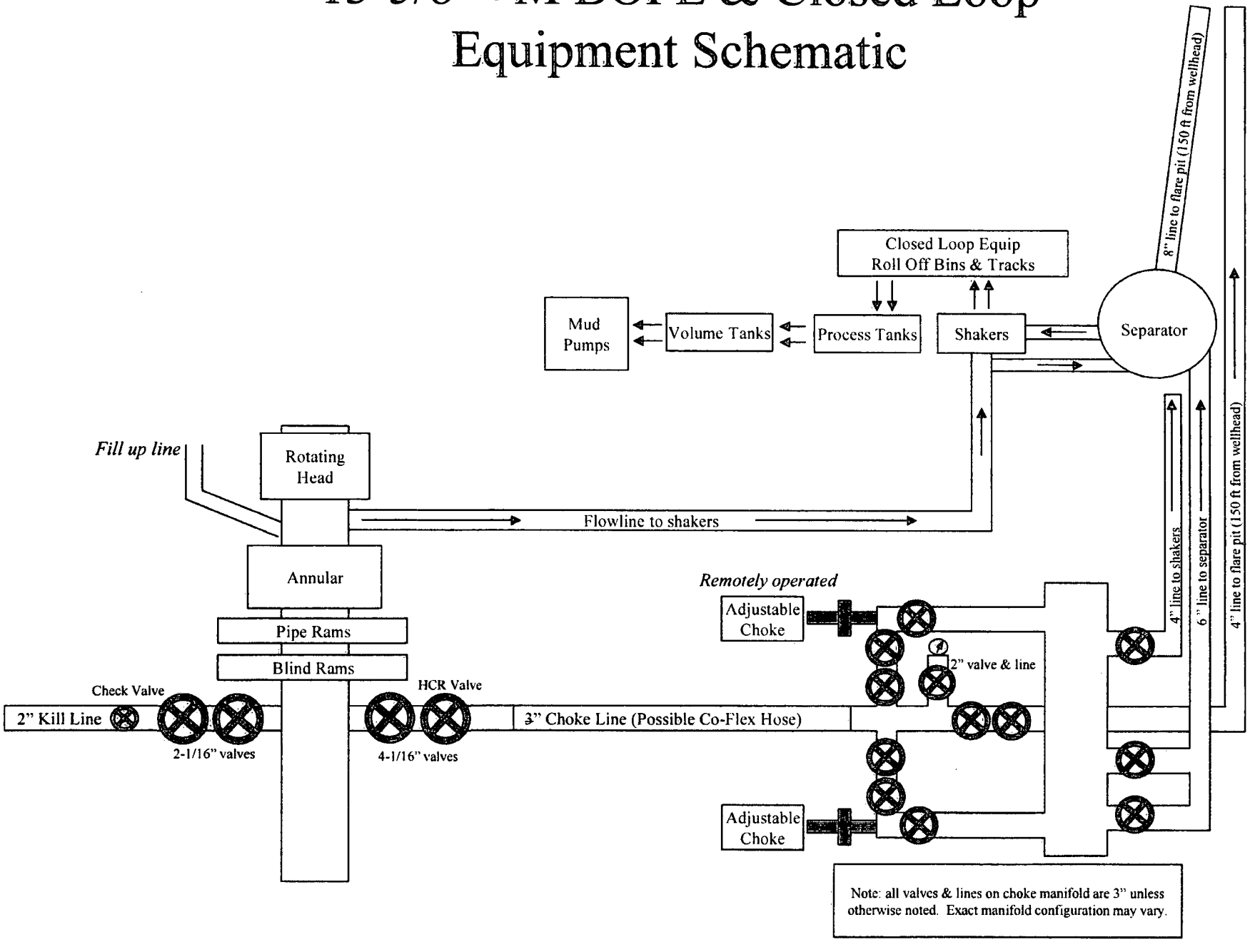
Flagler_8_Fed_11H_MB_Wellhd_5M_WC_20180326105053.pdf

Flagler_8_Fed_11H_Spudder_Rig_Info_20180326105121.pdf

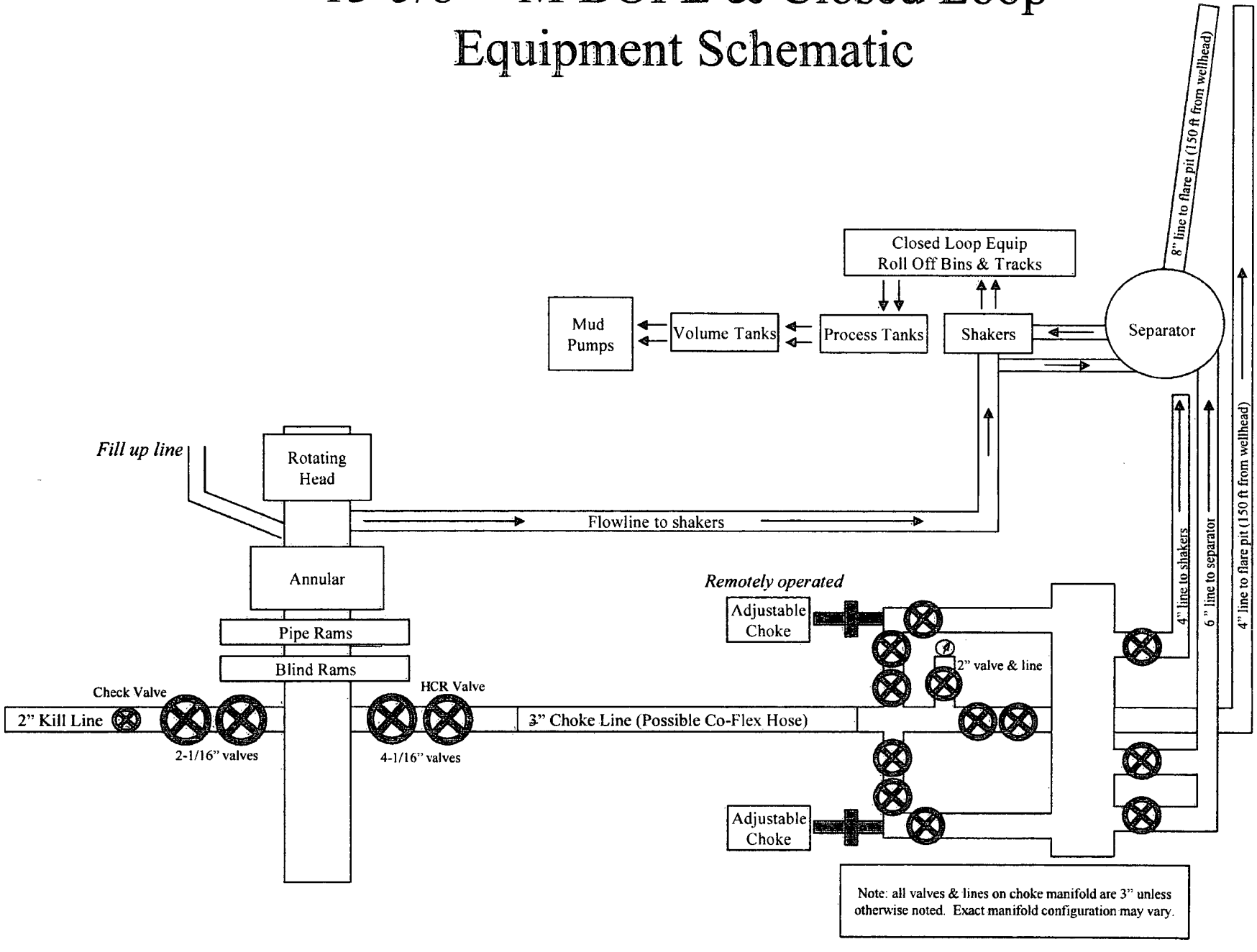
**Other Variance attachment:**

Flagler_8_Fed_11H_Co_flex_20180326105210.pdf

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



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



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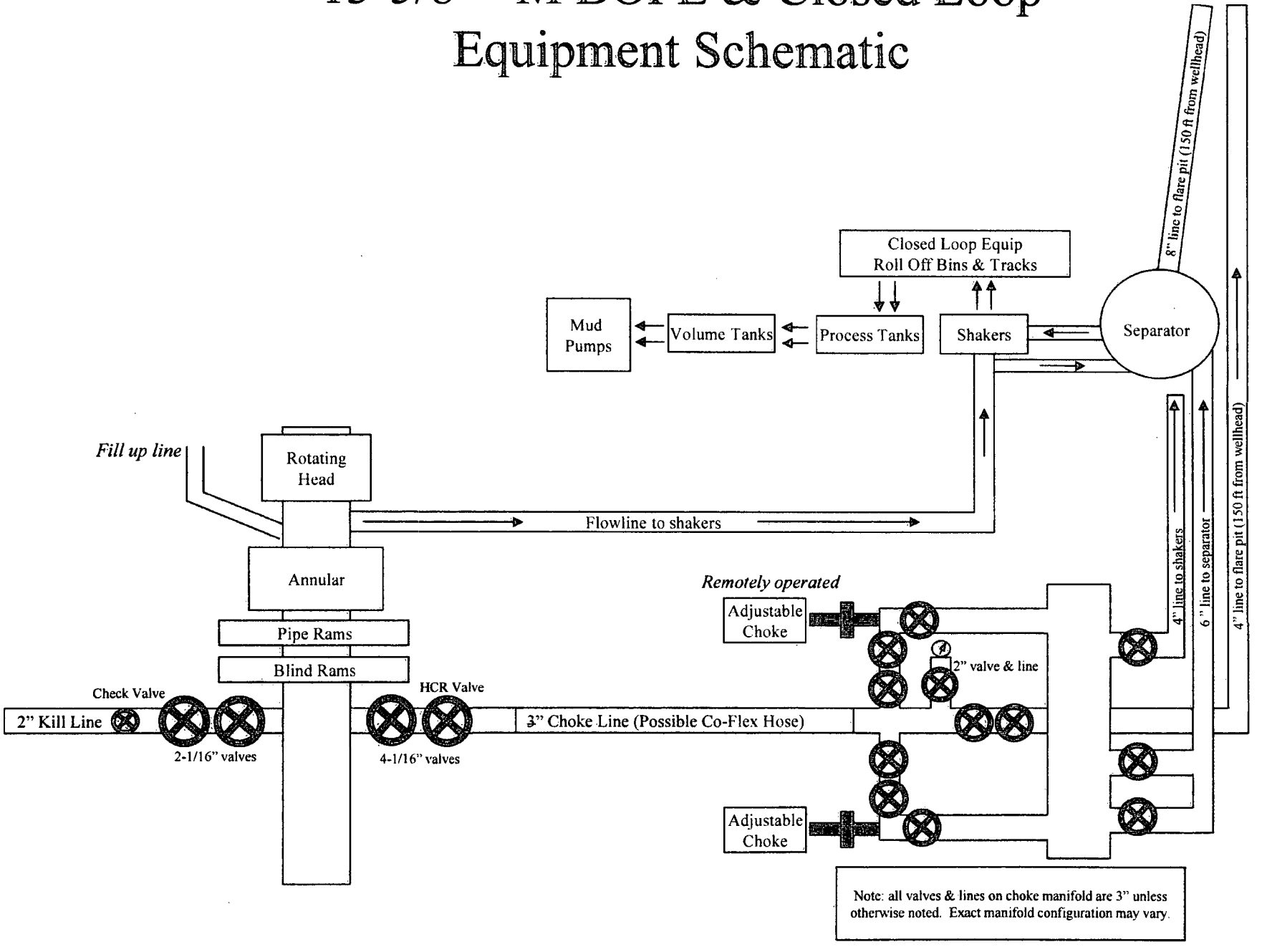

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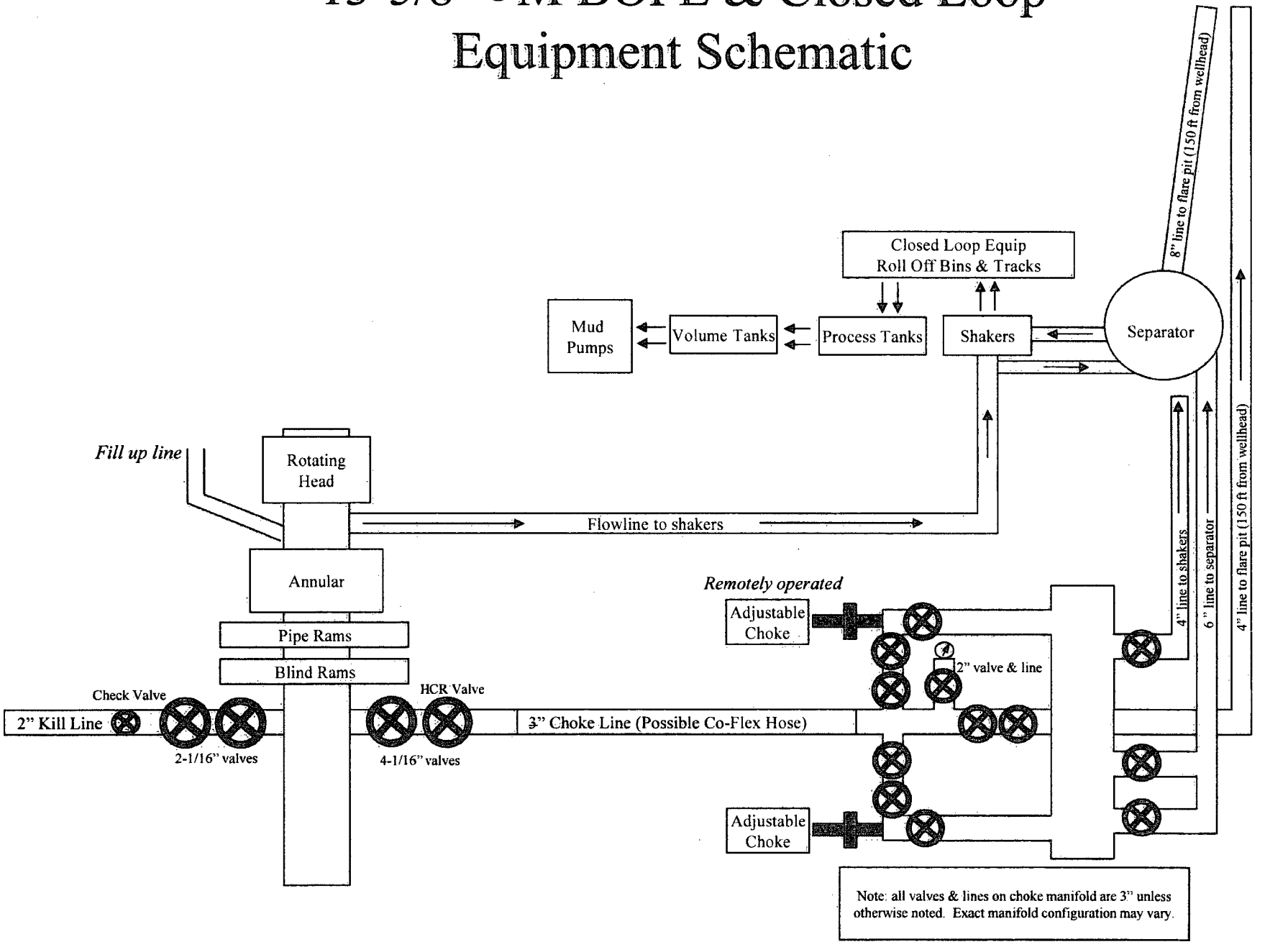

Casing Assumptions and Load Cases

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

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 |