

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No. <b>NMNM086153</b>	
6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No.	
8. Lease Name and Well No. <b>[322147]</b> <b>FLUFFY CAT 16-21 STATE F 218H</b>	
9. API Well No. <b>30-025-44979</b>	
1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER	10. Field and Pool, or Exploratory <b>[53805]</b> <b>SAND DUNES / BONESPRING</b>
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone	11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 16 / T23S / R32E / NMP</b>
2. Name of Operator <b>DEVON ENERGY PRODUCTION COMPANY LP [6137]</b>	
3a. Address <b>333 West Sheridan Avenue Oklahoma City Ok</b>	3b. Phone No. (include area code) <b>(405)552-6571</b>
12. County or Parish <b>LEA</b>	
13. State <b>NM</b>	
14. Distance in miles and direction from nearest town or post office*	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>1084 feet</b>	
16. No. of acres in lease <b>1000</b>	
17. Spacing Unit dedicated to this well <b>240</b>	
18. Distance from proposed location* to nearest well, drilling, completed, 1086 feet applied for, on this lease, ft.	
19. Proposed Depth <b>10460 feet / 17380 feet</b>	
20. BLM/BIA Bond No. on file <b>FED: CO1104</b>	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>3694 feet</b>	
22. Approximate date work will start* <b>08/27/2018</b>	
23. Estimated duration <b>45 days</b>	

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

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

25. Signature (Electronic Submission)	Name (Printed/Typed) <b>Chance Bland / Ph: (405)228-8593</b>	Date <b>03/02/2018</b>
Title <b>Regulatory Compliance Professional</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>Cody Layton / Ph: (575)234-5959</b>	Date <b>07/13/2018</b>
Title <b>Assistant Field Manager Lands &amp; Minerals</b>		
Office <b>CARLSBAD</b>		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

GCP Received 07/18/2018

\*(Instructions on page 2)

**APPROVED WITH CONDITIONS**  
Approval Date: 07/13/2018

*Handwritten signature and date:*  
07/18/18



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

## Operator Certification Data Report

07/17/2018

### 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:** Chance Bland

**Signed on:** 03/01/2018

**Title:** Regulatory Compliance Professional

**Street Address:** 333 West Sheridan Avenue

**City:** Oklahoma City

**State:** OK

**Zip:** 73102

**Phone:** (405)228-8593

**Email address:** Chance.Bland@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



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

## Application Data Report

07/17/2018

APD ID: 10400027858

Submission Date: 03/02/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: FLUFFY CAT 16-21 STATE FED COM

Well Number: 218H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data  
reflects the most  
recent changes.

[Show Final Text](#)

### Section 1 - General

APD ID: 10400027858

Tie to previous NOS?

Submission Date: 03/02/2018

BLM Office: CARLSBAD

User: Chance Bland

Title: Regulatory Compliance  
Professional

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM086153

Lease Acres: 1000

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

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: FLUFFY CAT 16-21 STATE FED COM

Well Number: 218H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: SAND DUNES

Pool Name: BONESPRING

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

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

**Well Name:** FLUFFY CAT 16-21 STATE FED COM

**Well Number:** 218H

**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:** TODD **Number:** 7

**Well Class:** HORIZONTAL

**MDP3 16 WELL PAD**

**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:** 1086 FT

**Distance to lease line:** 1084 FT

**Reservoir well spacing assigned acres Measurement:** 240 Acres

**Well plat:** Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_C\_102\_Sig\_20180301075507.pdf

**Well work start Date:** 08/27/2018

**Duration:** 45 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** 5797

	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	231 4	FSL	108 4	FEL	23S	32E	16	Aliquot NESE	32.30372 53	- 103.6745 751	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	369 4	988 7	988 7
KOP Leg #1	231 4	FSL	108 4	FEL	23S	32E	16	Aliquot NESE	32.32762 2	- 103.7022 98	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	369 4	989 0	988 7
PPP Leg #1	263 4	FSL	920	FEL	23S	32E	16	Aliquot NESE	32.32411 27	- 103.7000 362	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	- 659 3	106 40	102 87

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

**Well Name:** FLUFFY CAT 16-21 STATE FED COM

**Well Number:** 218H

	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
PPP Leg #1	264 0	FSL	920	FEL	23S	32E	21	Aliquot NESE	32.29005 82	- 103.6740 251	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 086153	- 676 6	150 71	104 60
EXIT Leg #1	330	FSL	920	FEL	23S	32E	21	Aliquot SESE	32.28375 54	- 103.6740 251	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 086153	- 676 6	173 80	104 60
BHL Leg #1	330	FSL	920	FEL	23S	32E	21	Aliquot SESE	32.28375 54	- 103.6740 251	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 086153	- 676 6	173 80	104 60

## ACCESS ROAD PLAT

ACCESS ROAD FOR FLUFFY CAT 16-21 STATE FED COM 218H & BIG CAT 16-9 STATE FED COM 217H

**DEVON ENERGY PRODUCTION COMPANY, L.P.  
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING  
SECTION 16, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.  
LEA COUNTY, STATE OF NEW MEXICO  
JANUARY 10, 2018**

### DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING STATE OF NEW MEXICO LAND IN SECTION 16, TOWNSHIP 23 SOUTH, RANGE 32 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 NW/4 SE/4 OF SAID SECTION 16, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., WHENCE THE EAST QUARTER CORNER OF SAID SECTION 16, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS N68°46'55"E, A DISTANCE OF 1487.84 FEET;  
THENCE S00°03'18"E A DISTANCE OF 49.93 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;  
THENCE S71°10'11"E A DISTANCE OF 464.95 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;  
THENCE S00°02'25"W A DISTANCE OF 109.64 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 16, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS N48°09'05"E, A DISTANCE OF 1271.23 FEET;

SAID STRIP OF LAND BEING 624.52 FEET OR 37.85 RODS IN LENGTH, CONTAINING 0.430 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 SE/4	124.20 L.F.	7.53 RODS	0.086 ACRES
NE/4 SE/4	500.32 L.F.	30.32 RODS	0.345 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.

SHEET: 2-2

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

### SURVEYOR CERTIFICATE

I, FILMON 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 10<sup>th</sup> DAY OF JANUARY 2018

FILMON F. JARAMILLO PLS 12797

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

**SURVEY NO. 5797**



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

## Drilling Plan Data Report

07/17/2018

APD ID: 10400027858

Submission Date: 03/02/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: FLUFFY CAT 16-21 STATE FED COM

Well Number: 218H

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	---	3357.5	0	0	OTHER : Surface	NONE	No
2	RUSTLER	2182.5	1175	1175	SANDSTONE	NONE	No
3	SALADO	1802.5	1555	1555	SALT	NONE	No
4	DELAWARE	-1457.5	4815	4815	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-5327.5	8685	8685	SANDSTONE	NATURAL GAS,OIL	No
6	BONE SPRING 1ST	-6487.5	9845	9845	SANDSTONE	NATURAL GAS,OIL	No
7	BONE SPRING 2ND	-7087.5	10445	10445	SANDSTONE	NATURAL GAS,OIL	Yes

### Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M

Rating Depth: 10460

**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 3M 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:**

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_3M\_BOPE\_CHK\_20180301081053.pdf

**BOP Diagram Attachment:**

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_3M\_BOPE\_CHK\_20180301081100.pdf

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

**Well Name:** FLUFFY CAT 16-21 STATE FED COM

**Well Number:** 218H

**Pressure Rating (PSI):** 3M

**Rating Depth:** 6000

**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 3M 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:**

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_3M\_BOPE\_CHK\_20180301081117.pdf

**BOP Diagram Attachment:**

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_3M\_BOPE\_CHK\_20180301081123.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	1210	0	1210	-6802	-7566	1210	H-40	48	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	6000	0	6000	-6802	-11052	6000	J-55	40	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6
3	PRODUCTION	8.75	5.5	NEW	API	N	0	17380	0	10460	-6802	-16802	17380	P-110	17	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.6

**Casing Attachments**



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

**Well Name:** FLUFFY CAT 16-21 STATE FED COM

**Well Number:** 218H

#### Casing Attachments

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_SurfCsg\_Ass\_20180301081223.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_Int\_Csg\_Ass\_20180301081255.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_ProdCasing\_Ass\_20180301081337.pdf

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## Section 4 - Cement

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

**Well Name:** FLUFFY CAT 16-21 STATE FED COM

**Well Number:** 218H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1210	948	1.33	14.8	1261	50	C	0.125 lbs/sack Poly-F-Flake

INTERMEDIATE	Lead		0	5500	618	3.63	10.5	2239	30	C	(65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sks Poly-E-Flake
INTERMEDIATE	Tail		5500	6000	153	1.33	14.8	204	30	C	0.125 lbs/sack Poly-F-Flake
PRODUCTION	Lead		5800	9890	395	3.27	9	1292	25	TUNED	Tuned light
PRODUCTION	Tail		9890	17380	1971	1.2	14.5	2365	25	H	(50:50) Clas H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

## 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

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

**Well Name:** FLUFFY CAT 16-21 STATE FED COM

**Well Number:** 218H

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	1210	WATER-BASED MUD	8.5	9				2			
1210	6000	SALT SATURATED	10	11				2			
6000	17380	WATER-BASED MUD	8.5	9.3							

## 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:** 5230

**Anticipated Surface Pressure:** 2928.8

**Anticipated Bottom Hole Temperature(F):** 167

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

**Describe:**

**Contingency Plans geohazards description:**

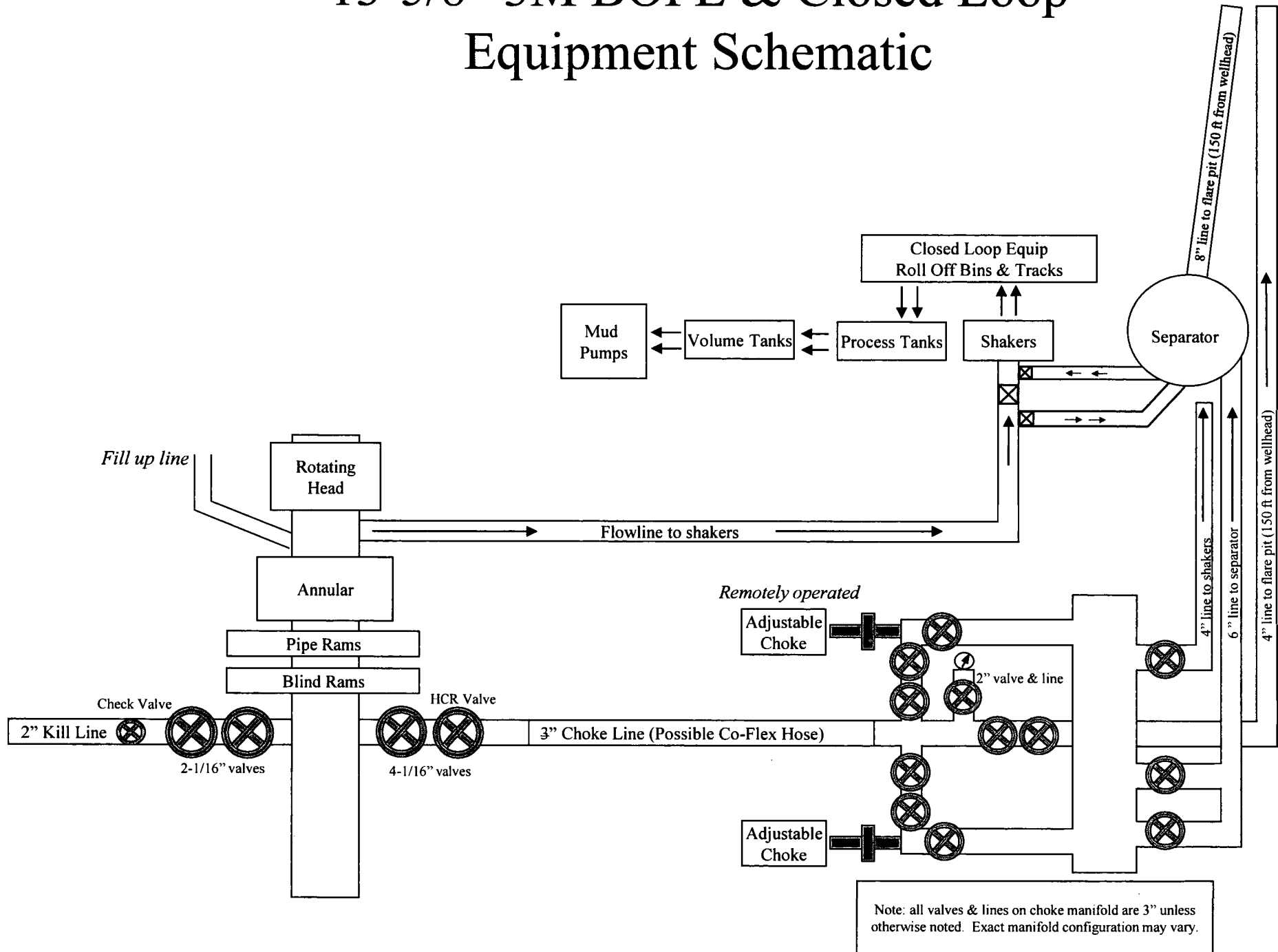
**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

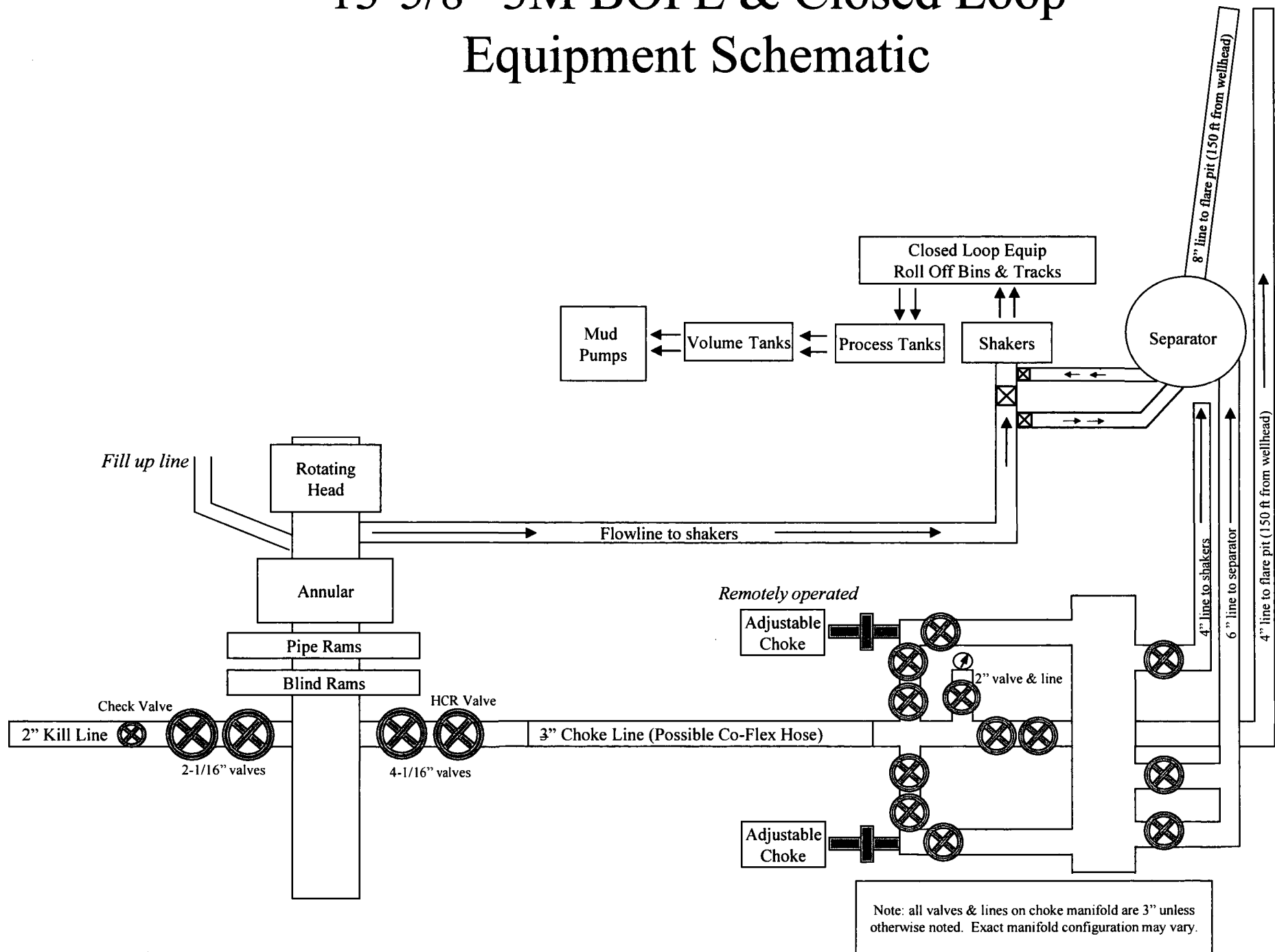
**Hydrogen sulfide drilling operations plan:**

Fluffy\_Cat\_16\_21\_State\_Fed\_Com\_218H\_H2S\_PIn\_20180301081707.pdf

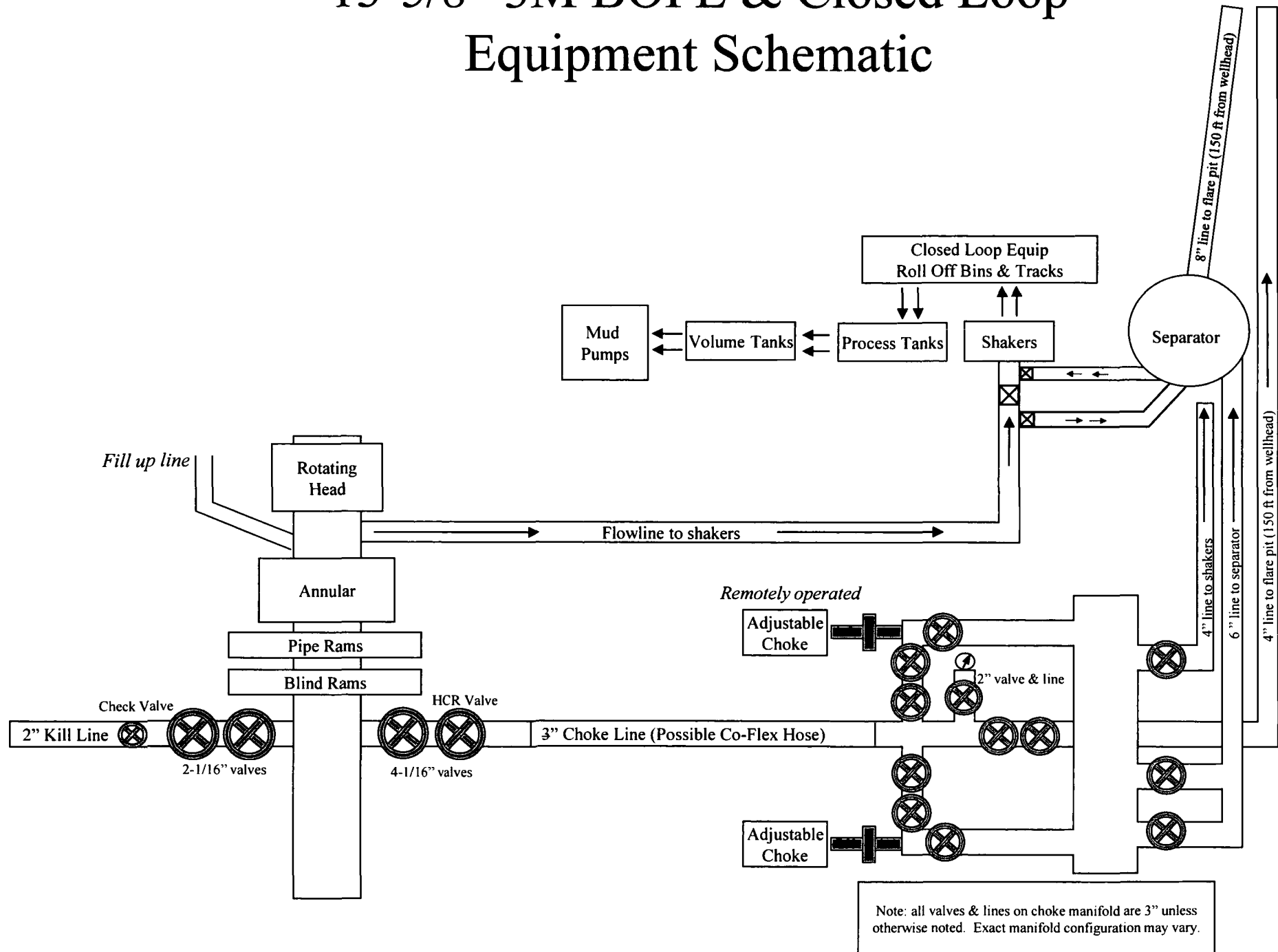
# 13-5/8" 3M BOPE & Closed Loop Equipment Schematic



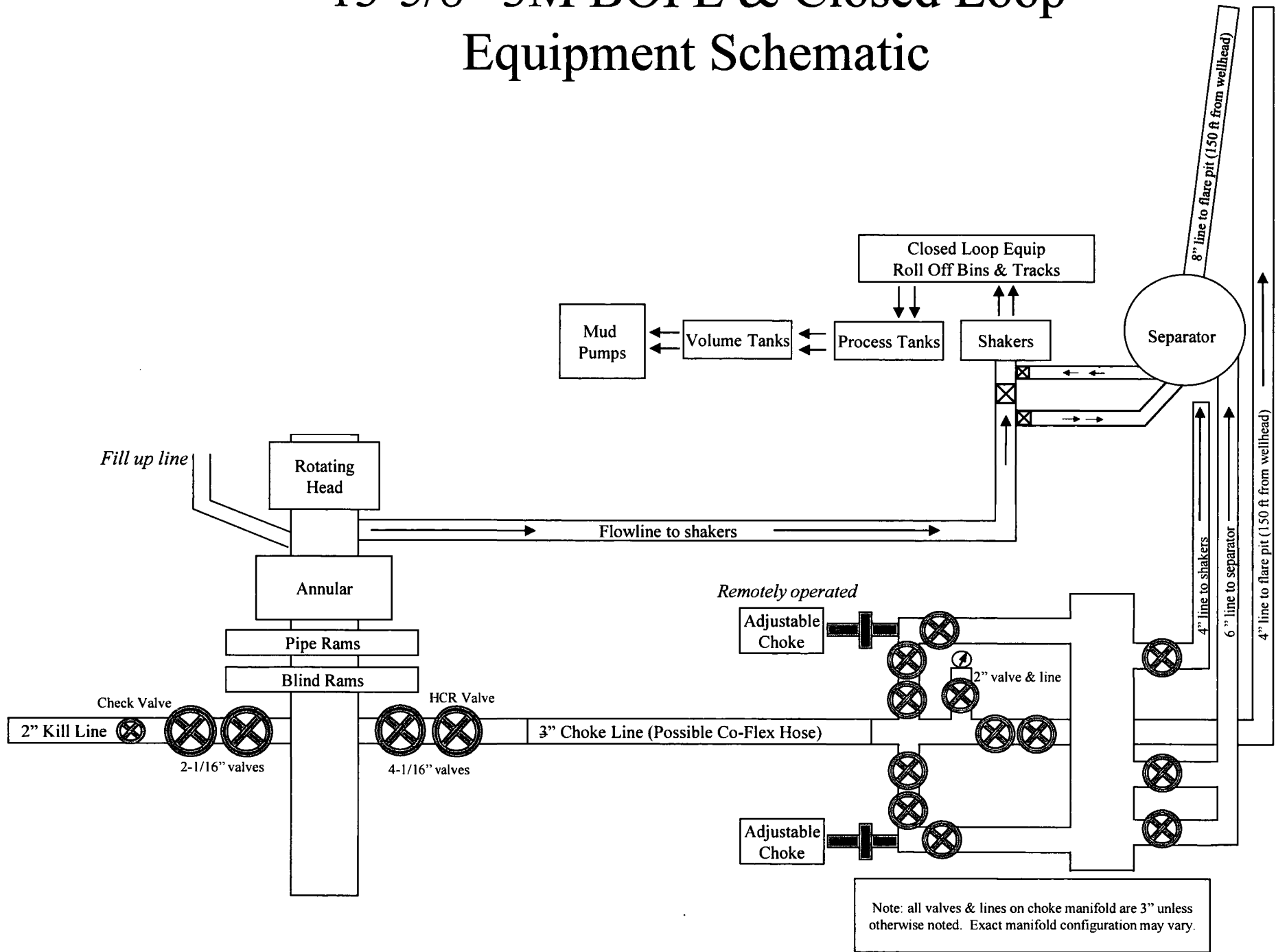
# 13-5/8" 3M BOPE & Closed Loop Equipment Schematic



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



# 13-5/8" 3M 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

WCDSC Permian NM

Fluffy Cat 16-21 State Fed Com 218H - Permit Plan 1

Lea County (NAD83 New Mexico East)

Sec 16-T23S-R32E

Your Ref:

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0		0	0	0	0	0	0
100		0	0	100	0	0	0
200		0	0	200	0	0	0
300		0	0	300	0	0	0
400		0	0	400	0	0	0
500		0	0	500	0	0	0
600		0	0	600	0	0	0
700		0	0	700	0	0	0
800		0	0	800	0	0	0
900		0	0	900	0	0	0
1000		0	0	1000	0	0	0
1100		0	0	1100	0	0	0
1200		0	0	1200	0	0	0
1300		0	0	1300	0	0	0
1400		0	0	1400	0	0	0
1500		0	0	1500	0	0	0
1600		0	0	1600	0	0	0
1700		0	0	1700	0	0	0
1800		0	0	1800	0	0	0
1900		0	0	1900	0	0	0
2000		0	0	2000	0	0	0
2100		0	0	2100	0	0	0
2200	1	121.466	2199.99	-0.46	0.74	0.48	1
2251.01	1.51	121.466	2250.99	-1.04	1.7	1.09	1
2300	1.51	121.466	2299.97	-1.71	2.8	1.79	0
2400	1.51	121.466	2399.93	-3.09	5.05	3.24	0
2500	1.51	121.466	2499.9	-4.46	7.29	4.68	0
2600	1.51	121.466	2599.86	-5.84	9.54	6.12	0
2700	1.51	121.466	2699.83	-7.21	11.79	7.56	0
2800	1.51	121.466	2799.79	-8.59	14.04	9	0
2900	1.51	121.466	2899.76	-9.97	16.28	10.44	0
3000	1.51	121.466	2999.72	-11.34	18.53	11.88	0

3100	1.51	121.466	3099.69	-12.72	20.78	13.33	0
3200	1.51	121.466	3199.65	-14.09	23.03	14.77	0
3300	1.51	121.466	3299.62	-15.47	25.28	16.21	0
3400	1.51	121.466	3399.58	-16.84	27.52	17.65	0
3500	1.51	121.466	3499.55	-18.22	29.77	19.09	0
3600	1.51	121.466	3599.51	-19.6	32.02	20.53	0
3700	1.51	121.466	3699.48	-20.97	34.27	21.97	0
3800	1.51	121.466	3799.44	-22.35	36.51	23.41	0
3900	1.51	121.466	3899.41	-23.72	38.76	24.86	0
4000	1.51	121.466	3999.38	-25.1	41.01	26.3	0
4100	1.51	121.466	4099.34	-26.47	43.26	27.74	0
4200	1.51	121.466	4199.31	-27.85	45.51	29.18	0
4300	1.51	121.466	4299.27	-29.22	47.75	30.62	0
4400	1.51	121.466	4399.24	-30.6	50	32.06	0
4500	1.51	121.466	4499.2	-31.98	52.25	33.5	0
4600	1.51	121.466	4599.17	-33.35	54.5	34.95	0
4700	1.51	121.466	4699.13	-34.73	56.74	36.39	0
4800	1.51	121.466	4799.1	-36.1	58.99	37.83	0
4900	1.51	121.466	4899.06	-37.48	61.24	39.27	0
5000	1.51	121.466	4999.03	-38.85	63.49	40.71	0
5100	1.51	121.466	5098.99	-40.23	65.74	42.15	0
5200	1.51	121.466	5198.96	-41.6	67.98	43.59	0
5300	1.51	121.466	5298.92	-42.98	70.23	45.04	0
5400	1.51	121.466	5398.89	-44.36	72.48	46.48	0
5500	1.51	121.466	5498.85	-45.73	74.73	47.92	0
5600	1.51	121.466	5598.82	-47.11	76.97	49.36	0
5700	1.51	121.466	5698.78	-48.48	79.22	50.8	0
5800	1.51	121.466	5798.75	-49.86	81.47	52.24	0
5900	1.51	121.466	5898.72	-51.23	83.72	53.68	0
6000	1.51	121.466	5998.68	-52.61	85.96	55.12	0
6100	1.51	121.466	6098.65	-53.98	88.21	56.57	0
6200	1.51	121.466	6198.61	-55.36	90.46	58.01	0
6300	1.51	121.466	6298.58	-56.74	92.71	59.45	0
6400	1.51	121.466	6398.54	-58.11	94.96	60.89	0
6500	1.51	121.466	6498.51	-59.49	97.2	62.33	0
6600	1.51	121.466	6598.47	-60.86	99.45	63.77	0
6700	1.51	121.466	6698.44	-62.24	101.7	65.21	0
6800	1.51	121.466	6798.4	-63.61	103.95	66.66	0
6900	1.51	121.466	6898.37	-64.99	106.19	68.1	0
7000	1.51	121.466	6998.33	-66.37	108.44	69.54	0
7100	1.51	121.466	7098.3	-67.74	110.69	70.98	0
7200	1.51	121.466	7198.26	-69.12	112.94	72.42	0
7300	1.51	121.466	7298.23	-70.49	115.19	73.86	0
7400	1.51	121.466	7398.19	-71.87	117.43	75.3	0
7500	1.51	121.466	7498.16	-73.24	119.68	76.74	0
7600	1.51	121.466	7598.12	-74.62	121.93	78.19	0
7700	1.51	121.466	7698.09	-75.99	124.18	79.63	0

7800	1.51	121.466	7798.06	-77.37	126.42	81.07	0
7900	1.51	121.466	7898.02	-78.75	128.67	82.51	0
8000	1.51	121.466	7997.99	-80.12	130.92	83.95	0
8100	1.51	121.466	8097.95	-81.5	133.17	85.39	0
8200	1.51	121.466	8197.92	-82.87	135.42	86.83	0
8300	1.51	121.466	8297.88	-84.25	137.66	88.28	0
8400	1.51	121.466	8397.85	-85.62	139.91	89.72	0
8500	1.51	121.466	8497.81	-87	142.16	91.16	0
8600	1.51	121.466	8597.78	-88.37	144.41	92.6	0
8700	1.51	121.466	8697.74	-89.75	146.65	94.04	0
8800	1.51	121.466	8797.71	-91.13	148.9	95.48	0
8900	1.51	121.466	8897.67	-92.5	151.15	96.92	0
9000	1.51	121.466	8997.64	-93.88	153.4	98.37	0
9100	1.51	121.466	9097.6	-95.25	155.64	99.81	0
9200	1.51	121.466	9197.57	-96.63	157.89	101.25	0
9300	1.51	121.466	9297.53	-98	160.14	102.69	0
9388.55	1.51	121.466	9386.05	-99.22	162.13	103.97	0
9400	1.396	121.466	9397.5	-99.37	162.38	104.12	1
9500	0.396	121.466	9497.49	-100.19	163.71	104.98	1
9539.55	0	0	9537.04	-100.26	163.83	105.05	1
9600	0	0	9597.49	-100.26	163.83	105.05	0
9700	0	0	9697.49	-100.26	163.83	105.05	0
9800	0	0	9797.49	-100.26	163.83	105.05	0
9889.55	0	0	9887.04	-100.26	163.83	105.05	0
9900	1.045	179.594	9897.49	-100.36	163.83	105.15	10
10000	11.045	179.594	9996.8	-110.87	163.9	115.66	10
10100	21.045	179.594	10092.79	-138.47	164.1	143.26	10
10200	31.045	179.594	10182.52	-182.33	164.41	187.1	10
10300	41.045	179.594	10263.27	-241.09	164.83	245.85	10
10400	51.045	179.594	10332.59	-312.99	165.33	317.73	10
10500	61.045	179.594	10388.38	-395.83	165.92	400.55	10
10600	71.044	179.594	10428.93	-487.09	166.57	491.8	10
10700	81.044	179.594	10453.01	-584.02	167.26	588.7	10
10789.56	90	179.594	10460	-673.2	167.89	677.87	10
10800	90	179.594	10460	-683.65	167.96	688.31	0
10900	90	179.594	10460	-783.65	168.67	788.29	0
11000	90	179.594	10460	-883.64	169.38	888.26	0
11100	90	179.594	10460	-983.64	170.09	988.23	0
11200	90	179.594	10460	-1083.64	170.79	1088.21	0
11300	90	179.594	10460	-1183.64	171.5	1188.18	0
11400	90	179.594	10460	-1283.63	172.21	1288.16	0
11500	90	179.594	10460	-1383.63	172.92	1388.13	0
11600	90	179.594	10460	-1483.63	173.63	1488.11	0
11700	90	179.594	10460	-1583.63	174.34	1588.08	0
11800	90	179.594	10460	-1683.62	175.05	1688.06	0
11900	90	179.594	10460	-1783.62	175.75	1788.03	0
12000	90	179.594	10460	-1883.62	176.46	1888.01	0

12100	90	179.594	10460	-1983.62	177.17	1987.98	0
12200	90	179.594	10460	-2083.61	177.88	2087.96	0
12300	90	179.594	10460	-2183.61	178.59	2187.93	0
12400	90	179.594	10460	-2283.61	179.3	2287.91	0
12500	90	179.594	10460	-2383.61	180	2387.88	0
12600	90	179.594	10460	-2483.6	180.71	2487.86	0
12700	90	179.594	10460	-2583.6	181.42	2587.83	0
12800	90	179.594	10460	-2683.6	182.13	2687.81	0
12900	90	179.594	10460	-2783.6	182.84	2787.78	0
13000	90	179.594	10460	-2883.59	183.55	2887.76	0
13100	90	179.594	10460	-2983.59	184.26	2987.73	0
13200	90	179.594	10460	-3083.59	184.96	3087.71	0
13300	90	179.594	10460	-3183.59	185.67	3187.68	0
13400	90	179.594	10460	-3283.58	186.38	3287.66	0
13500	90	179.594	10460	-3383.58	187.09	3387.63	0
13600	90	179.594	10460	-3483.58	187.8	3487.6	0
13700	90	179.594	10460	-3583.58	188.51	3587.58	0
13800	90	179.594	10460	-3683.57	189.21	3687.55	0
13900	90	179.594	10460	-3783.57	189.92	3787.53	0
14000	90	179.594	10460	-3883.57	190.63	3887.5	0
14100	90	179.594	10460	-3983.57	191.34	3987.48	0
14200	90	179.594	10460	-4083.56	192.05	4087.45	0
14300	90	179.594	10460	-4183.56	192.76	4187.43	0
14400	90	179.594	10460	-4283.56	193.47	4287.4	0
14500	90	179.594	10460	-4383.56	194.17	4387.38	0
14600	90	179.594	10460	-4483.55	194.88	4487.35	0
14700	90	179.594	10460	-4583.55	195.59	4587.33	0
14800	90	179.594	10460	-4683.55	196.3	4687.3	0
14900	90	179.594	10460	-4783.55	197.01	4787.28	0
15000	90	179.594	10460	-4883.54	197.72	4887.25	0
15100	90	179.594	10460	-4983.54	198.42	4987.23	0
15200	90	179.594	10460	-5083.54	199.13	5087.2	0
15300	90	179.594	10460	-5183.54	199.84	5187.18	0
15400	90	179.594	10460	-5283.53	200.55	5287.15	0
15500	90	179.594	10460	-5383.53	201.26	5387.13	0
15600	90	179.594	10460	-5483.53	201.97	5487.1	0
15700	90	179.594	10460	-5583.53	202.68	5587.08	0
15800	90	179.594	10460	-5683.52	203.38	5687.05	0
15900	90	179.594	10460	-5783.52	204.09	5787.03	0
16000	90	179.594	10460	-5883.52	204.8	5887	0
16100	90	179.594	10460	-5983.52	205.51	5986.98	0
16200	90	179.594	10460	-6083.51	206.22	6086.95	0
16300	90	179.594	10460	-6183.51	206.93	6186.92	0
16400	90	179.594	10460	-6283.51	207.63	6286.9	0
16500	90	179.594	10460	-6383.51	208.34	6386.87	0
16600	90	179.594	10460	-6483.5	209.05	6486.85	0
16700	90	179.594	10460	-6583.5	209.76	6586.82	0

16800	90	179.594	10460	-6683.5	210.47	6686.8	0
16900	90	179.594	10460	-6783.5	211.18	6786.77	0
17000	90	179.594	10460	-6883.49	211.89	6886.75	0
17100	90	179.594	10460	-6983.49	212.59	6986.72	0
17200	90	179.594	10460	-7083.49	213.3	7086.7	0
17300	90	179.594	10460	-7183.49	214.01	7186.67	0
17380.45	90	179.594	10460	-7263.93	214.58	7267.1	0

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.  
Vertical depths are relative to RKB. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Slot and calculated along an Azimuth of 178.308° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.

Central meridian is -104.333°.

Grid Convergence at Surface is 0.352°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 17380.45ft.,  
the Bottom Hole Displacement is 7267.10ft., in the Direction of 178.308° (Grid).

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 3000 (3M) 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.

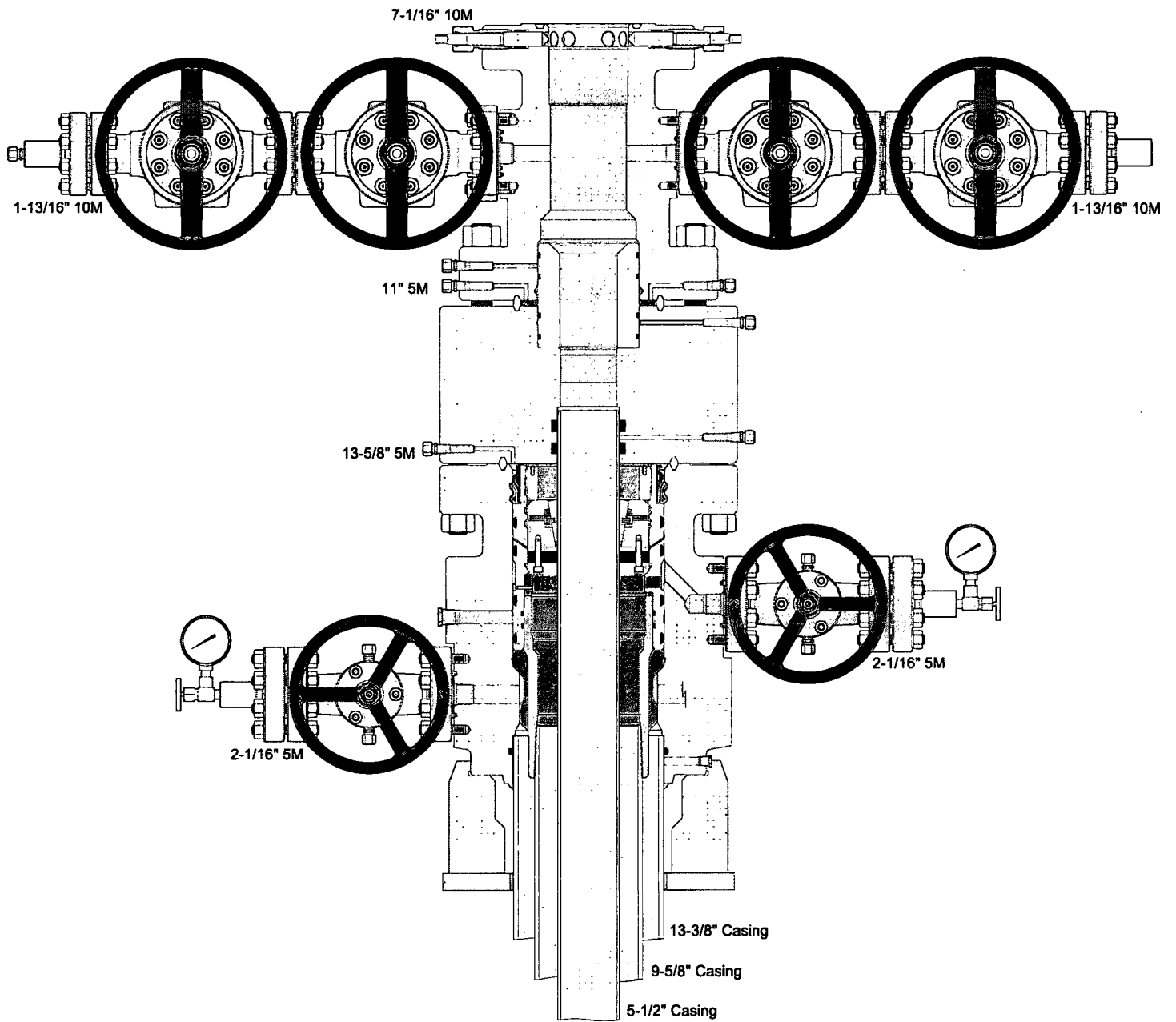
After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum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

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





# Devon Energy, Fluffy Cat 16-21 State Fed Com 218H

## 1. Geologic Formations

TVD of target	10,460	Pilot hole depth	N/A
MD at TD:	17,380	Deepest expected fresh water:	

### Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	1,185		
Salado	1,580		
Base of Salt	4,820		
Delaware	4,830		
1 <sup>st</sup> Bone Spring Lime	8,750		
2 <sup>nd</sup> Bone Spring Sand	10,450		

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

## 2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1210	13.375"	48	H40	BTC	1.125	1.25	1.6
12.25"	0	4500	9.625"	40	J55	BTC	1.125	1.25	1.6
12.25"	4500	6000	9.625"	40	HCK55	BTC	1.125	1.25	1.6
8.75"	0	17,380	5.5"	17	P110	BTC	1.125	2.07	1.6
BLM Minimum Safety Factor							1.125	1	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

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y

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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 3 <sup>rd</sup> 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 2 <sup>nd</sup> 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	Yld ft3/ sack	H <sub>2</sub> O gal/s k	500# Comp. Strengt h (hours)	Slurry Description
Surf.	950	14.8	1.33	6.32	6	Lead: Class C Cement + 0.125 lbs/sack Poly-F-Flake
Inter.	618	10.5	3.625	22	14	Tuned Light Weight
	153	14.8	1.33	6.32	6	Tail: Class C Cement + 0.125 lbs/sack Poly-F-Flake
Prod.	395	9	3.27	13.5	21	Lead: Tuned Light Cement
	1971	14.5	1.2	5.31	25	Tail: (50:50) Clas H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

DV tool 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

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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	5800'	25%

### 4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		
			Blind Ram		
			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.

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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	<p>A multibowl wellhead is being 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.</p> <p>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 3000 (3M) psi.</p> <ul style="list-style-type: none"> <li>○ Wellhead will be installed by wellhead representatives.</li> <li>○ 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.</li> <li>○ Wellhead representative will install the test plug for the initial BOP test.</li> <li>○ Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the packoff, 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.</li> <li>○ 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.</li> <li>○ Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.</li> <li>○ Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.</li> </ul> <p>After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi. Low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2.</p>

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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 3M 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 3,000 psi WP.

Devon's proposed wellhead manufacturers will be EMC Technologies, Cactus Wellhead, or Cameron.

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 3,000 psi WP.

See attached schematic.

### 5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	1210	FW Gel	8.6-8.8	28-34	N/C
1210	6000	Saturated Brine	10.0-11.0	28-34	N/C
6000	17,380	Cut Brine	8.5-9.3	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
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## 6. Logging and Testing Procedures

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

<b>Additional logs planned</b>	<b>Interval</b>
	Resistivity
	Density
X	CBL
X	Mud log
	PEX

## 7. Drilling Conditions

<b>Condition</b>	<b>Specify what type and where?</b>
BH Pressure at deepest TVD	5,186 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H <sub>2</sub> S) monitors will be installed prior to drilling out the surface shoe. If H <sub>2</sub> S 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	H <sub>2</sub> S is present
Y	H <sub>2</sub> S Plan attached

## 8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe