

**District I**

1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**

811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720

**District III**

1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**

1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101  
August 1, 2011

Permit 352210

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

1. Operator Name and Address OXY USA INC P.O. Box 4294 Houston, TX 772104294		2. OGRID Number 16696
		3. API Number 30-025-52118
4. Property Code 330703	5. Property Name SENILE FELINES 18 7 STATE COM	6. Well No. 013H

**7. Surface Location**

UL - Lot O	Section 18	Township 22S	Range 33E	Lot Idn O	Feet From 340	N/S Line S	Feet From 1410	E/W Line E	County Lea
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**8. Proposed Bottom Hole Location**

UL - Lot B	Section 7	Township 22S	Range 33E	Lot Idn B	Feet From 20	N/S Line N	Feet From 2440	E/W Line E	County Lea
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**9. Pool Information**

RED TANK;BONE SPRING, EAST	51687
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**Additional Well Information**

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3631
16. Multiple N	17. Proposed Depth 19755	18. Formation 1st Bone Spring Sand	19. Contractor	20. Spud Date 10/31/2023
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	939	981	0
Int1	12.25	7.827	39.3	8809	3015	0
Prod	6.75	5.5	20	19755	841	8609

**Casing/Cement Program: Additional Comments**

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**22. Proposed Blowout Prevention Program**

Type	Working Pressure	Test Pressure	Manufacturer
Annular	5000	5000	
Double Ram	5000	5000	
Blind	5000	5000	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC <input checked="" type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> , if applicable.	<b>OIL CONSERVATION DIVISION</b>	
Signature:		
Printed Name: Electronically filed by KELLEY MONTGOMERY	Approved By: Paul F Kautz	
Title: Manager Regulatory	Title: Geologist	
Email Address: kelley_montgomery@oxy.com	Approved Date: 10/18/2023	Expiration Date: 10/18/2025
Date: 10/12/2023	Phone: 713-366-5716	Conditions of Approval Attached

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Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACERAGE DEDICATION PLAT

<sup>1</sup> API Number	<sup>2</sup> Pool Code	<sup>3</sup> Pool Name
<sup>4</sup> Property Code	<sup>5</sup> Property Name SENILE FELINES 18 7 STATE COM	<sup>6</sup> Well Number 13H
<sup>7</sup> OGRID No. 16696	<sup>8</sup> Operator Name OXY USA INC.	<sup>9</sup> Elevation 3631'

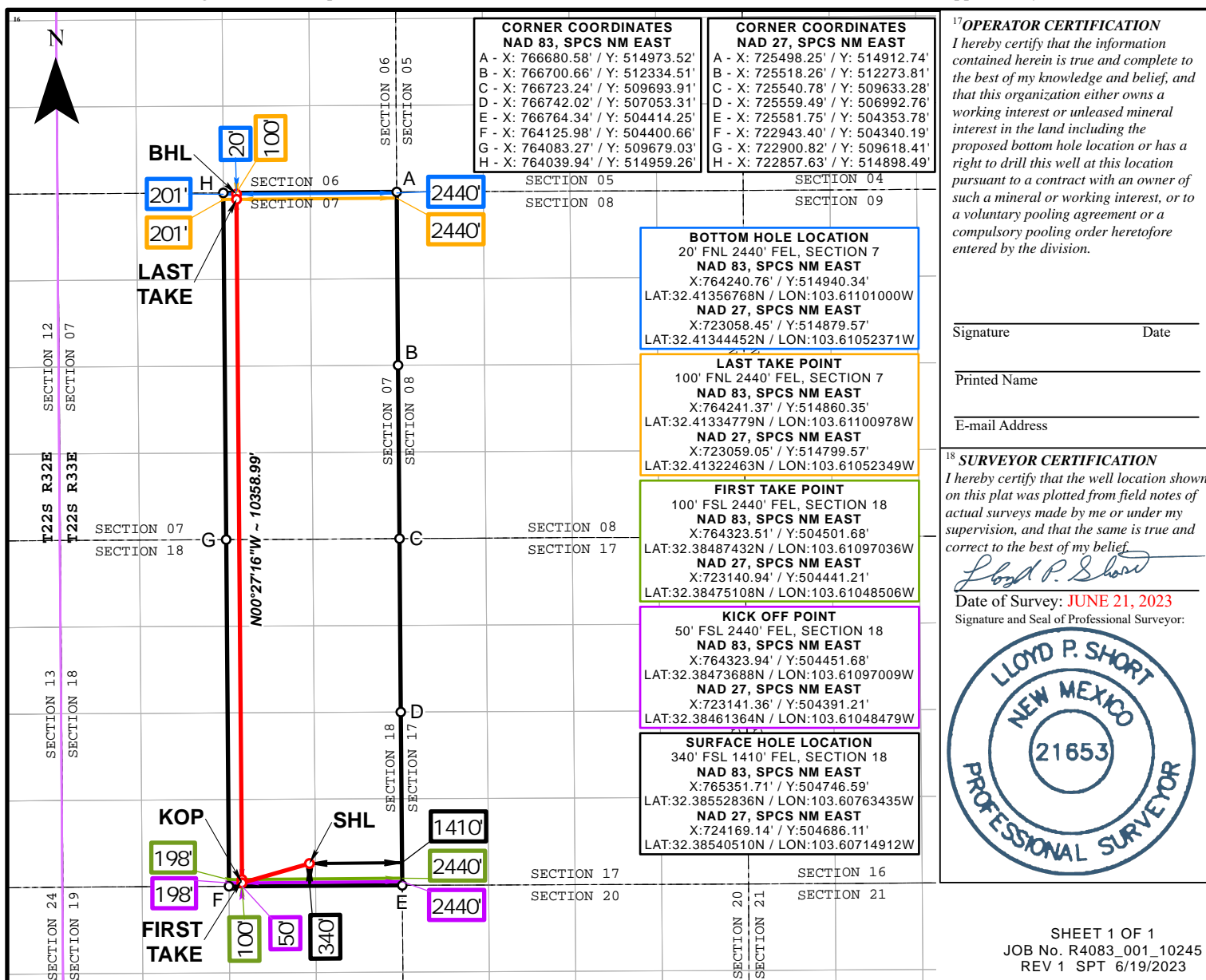
<sup>10</sup> Surface Location

UL or lot no. O	Section 18	Township 22S	Range 33E	Lot Idn	Feet from the 340	North/South line South	Feet from the 1410	East/West line East	County LEA
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<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no. B	Section 7	Township 22S	Range 33E	Lot Idn	Feet from the 20	North/South line North	Feet from the 2440	East/West line East	County LEA
<sup>12</sup> Dedicated Acres 640.00	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.						

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



Distances/areas relative to NAD 83 Combined Scale Factor: 0.99978560 Convergence Angle: 00|22|27.180012°

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

Form APD Conditions

Permit 352210

**PERMIT CONDITIONS OF APPROVAL**

Operator Name and Address: OXY USA INC [16696] P.O. Box 4294 Houston, TX 772104294	API Number: 30-025-52118
	Well: SENILE FELINES 18 7 STATE COM #013H

OCD Reviewer	Condition
pkautz	Notify OCD 24 hours prior to casing & cement
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing
pkautz	If cement does not circulate on any string , a CBL is required for that string of casing.
pkautz	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

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

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** OXY USA INC. **OGRID:** 16696 **Date:** 1 0/ 0 5/ 2 3

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

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

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

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
SEE ATTACHED						

**IV. Central Delivery Point Name:** RED TANK 19 CPF [See 19.15.27.9(D)(1) NMAC]

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

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
SEE ATTACHED						

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

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

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



**Section 2 – Enhanced Plan**  
**EFFECTIVE APRIL 1, 2022**

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

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

**IX. Anticipated Natural Gas Production:**

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

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

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

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

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

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

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

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

### **Section 3 - Certifications**

**Effective May 25, 2021**

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

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

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

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

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

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

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

### **Section 4 - Notices**

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

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

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

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

Page 8

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

Signature: <i>Leslie T. Reeves</i>
Printed Name: LESLIE REEVES
Title: REGULATORY MANAGER
E-mail Address: LESLIE_REEVES@OXY.COM
Date: 10-11-2023
Phone: 713-497-2492
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:

## III. Well(s)

Well Name	API	WELL LOCATION (ULSTR)	Footages	ANTICIPATED OIL BBL/D	ANTICIPATED GAS MCF/D	ANTICIPATED PROD WATER BBL/D
SENILE FELINES 18-7 STATE COM 1H	PENDING	O-18-22S-33E	550'FSL 1498'FEL	800	1850	2150
SENILE FELINES 18-7 STATE COM 2H	PENDING	O-18-22S-33E	550'FSL 1468'FEL	800	1850	2150
SENILE FELINES 18-7 STATE COM 3H	PENDING	O-18-22S-33E	550'FSL 1438'FEL	800	1850	2150
SENILE FELINES 18-7 STATE COM 11H	PENDING	N-18-22S-33E	356'FSL 1753'FWL	1200	3400	2600
SENILE FELINES 18-7 STATE COM 12H	PENDING	N-18-22S-33E	356'FSL 1783'FWL	1200	3400	2600
SENILE FELINES 18-7 STATE COM 13H	PENDING	O-18-22S-33E	340'FSL 1410'FEL	1200	3400	2600
SENILE FELINES 18-7 STATE COM 14H	PENDING	O-18-22S-33E	339' FSL 1380'FEL	1200	3400	2600
SENILE FELINES 18-7 STATE COM 15H	PENDING	O-18-22S-33E	339'FSL 1350'FEL	1200	3400	2600
SENILE FELINES 18-7 STATE COM 71H	PENDING	N-18-22S-33E	355'FSL 1843'FWL	1500	2400	1400
SENILE FELINES 18-7 STATE COM 72H	PENDING	N-18-22S-33E	355'FSL 1873'FWL	1500	2400	1400
SENILE FELINES 18-7 STATE COM 73H	PENDING	O-18-22S-33E	340'FSL 1500'FEL	1500	2400	1400
SENILE FELINES 18-7 STATE COM 74H	PENDING	O-18-22S-33E	340'FSL 1470'FEL	1500	2400	1400

**V. Anticipated Schedule \*Subject to schedule changes.\***

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
SENILE FELINES 18-7 STATE COM 1H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 2H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 3H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 11H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 12H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 13H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 14H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 15H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 71H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 72H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 73H	PENDING	TBD	TBD	TBD	TBD	TBD
SENILE FELINES 18-7 STATE COM 74H	PENDING	TBD	TBD	TBD	TBD	TBD

**CENTRAL DELIVERY POINT NAME: (CPF) RED TANK 19 CPF**

**Part VI. Separation Equipment**

Operator will size the flowback separator to handle 11,000 Bbls of fluid and 6-10MMscfd which is more than the expected peak rates for these wells. Each separator is rated to 1440psig, and pressure control valves and automated communication will cause the wells to shut in in the event of an upset at the facility, therefore no gas will be flared on pad during an upset. Current Oxy practices avoid use of flare or venting on pad, therefore if there is an upset or emergency condition at the facility, the wells will immediately shut down, and reassume production once the condition has cleared.

## **VII. Operational Practices**

### **Gathering System and Pipeline Notification**

Well(s) will be connected to a production facility after flowback operations are complete, where a gas transporter system is in place. The gas produced from production facility is dedicated to MarkWest Midstream ("MPLX") and will be connected to MPLX's high pressure gathering system located in Lea County, New Mexico. OXY USA INC. ("OXY") provides (periodically) to MPLX a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, OXY and MPLX have periodic conference calls to discuss changes to drilling and completion schedules. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

### **Flowback Strategy**

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on MPLX's system at that time. Based on current information, it is OXY's belief the system can take this gas upon completion of the well(s). Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.



### **VIII. Best Management Practices**

#### Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

##### Power Generation – On lease

Only a portion of gas is consumed operating the generator, remainder of gas will be flared

##### Compressed Natural Gas – On lease

Gas flared would be minimal, but might be uneconomical to operate when gas volume declines

##### NGL Removal – On lease

Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

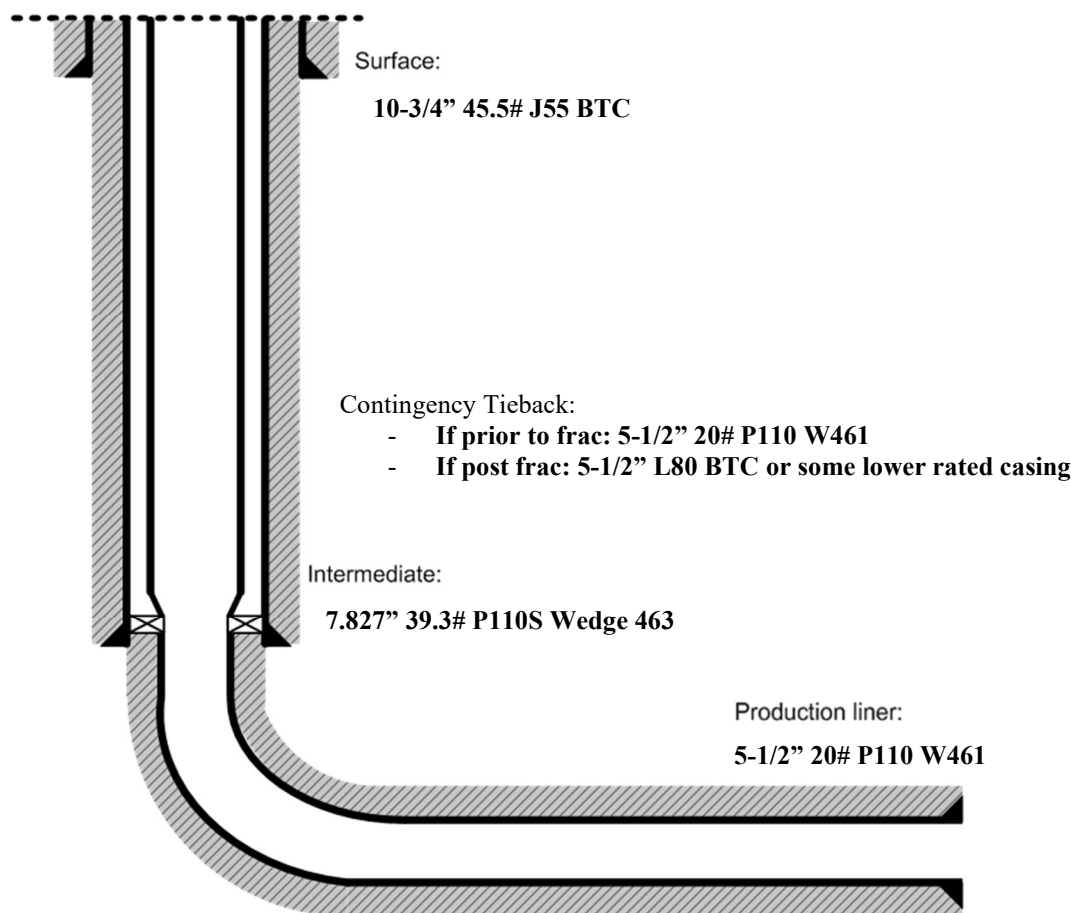
## OXY USA WTP LP

### Falcon SL1 Contingency Tieback Details

Below is a summary that describes the general operational steps to drill and complete the well.

- Drill 14-3/4" hole x 10-3/4" casing for surface section. Cement to surface.
- Drill 9-7/8" hole x 7.827" casing for intermediate section. Cement to surface.
- Drill 6-3/4" hole x 5-1/2" liner for production section. Cement to top of liner, 100' inside 7.827" shoe.
- Release drilling rig from location.
- If contingency tieback required pre-frac:
  - Move in workover rig and run a 5-1/2" 20# P110 Wedge 461 tie-back frac string and seal assembly. Tie into liner hanger Polished Bore Receptacle (PBR) with seal assembly.
  - Pump hydraulic fracture job.
  - Flowback and produce well.
- If contingency tieback required post-frac:
  - Move in workover rig and run a 5-1/2" L80 BTC or lesser rated tie-back string and seal assembly. Tie into liner hanger Polished Bore Receptacle (PBR) with seal assembly.
  - Return well to production.

General well schematic:





Fluid Technology

Quality Document

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## CERTIFICATE OF CONFORMITY

**Supplier** : CONTITECH RUBBER INDUSTRIAL KFT.  
**Equipment** : 6 pcs. Choke and Kill Hose with installed couplings  
**Type** : 3" x 10,67 m WP: 10000 psi  
**Supplier File Number** : 412638  
**Date of Shipment** : April. 2008  
**Customer** : Phoenix Beattie Co.  
**Customer P.o.** : 002491  
**Referenced Standards**  
**/ Codes / Specifications** : API Spec 16 C  
**Serial No.:** 52754,52755,52776,52777,52778,52782

### STATEMENT OF CONFORMITY

We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

Signed : .....

A handwritten signature in black ink, appearing to read "Jack G. G.", written over a dotted line.

ContiTech Rubber  
Industrial Kft.  
Quality Control Dept.  
(1)

Date: 04. April. 2008

Position: Q.C. Manager

## Page: 1/1

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

ContiTech Rubber  
Industrial Kft.  
Quality Control Dept.  
(93)

## Coflex Hose Certification

[illegible]

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

05/23/08

**Coflex Hose Certification**

Form No 100/12

**Phoenix Beattie Corp**

11535 Brittmoore Park Drive  
Houston, TX 77041  
Tel: (832) 327-0141  
Fax: (832) 327-0148  
E-mail mail@phoenixbeattie.com  
www.phoenixbeattie.com

**Delivery Note**

<b>Customer Order Number</b>	370-369-001	<b>Delivery Note Number</b>	003078	<b>Page</b>	1
<b>Customer / Invoice Address</b> HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119		<b>Delivery / Address</b> HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015			

<b>Customer Acc No</b>	<b>Phoenix Beattie Contract Manager</b>	<b>Phoenix Beattie Reference</b>	<b>Date</b>
H01	JJL	006330	05/23/2008

Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
1	HP10CK3A-35-4F1 3" 10K 16C C&K HOSE x 35ft OAL CW 4.1/16" API SPEC FLANGE E/ End 1: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange End 2: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange c/w BX155 Standard ring groove at each end Suitable for H2S Service Working pressure: 10,000psi Test pressure: 15,000psi Standard: API 16C Full specification Armor Guarding: Included Fire Rating: Not Included Temperature rating: -20 Deg C to +100 Deg C	1	1	0
2	SECK3-HPF3 LIFTING & SAFETY EQUIPMENT TO SUIT HP10CK3-35-F1 2 x 160mm ID Safety Clamps 2 x 244mm ID Lifting Collars & element C's 2 x 7ft Stainless Steel wire rope 3/4" OD 4 x 7.75t Shackles	1	1	0
3	SC725-200CS SAFETY CLAMP 200MM 7.25T C/S GALVANISED	1	1	0

Continued...

All goods remain the property of Phoenix Beattie until paid for in full. Any damage or shortage on this delivery must be advised within 5 days.  
Returns may be subject to a handling charge.



# Continental CONTITECH

Quality Document

Released to Imaging: 10/18/2023 2:32:38 PM



Coflex Hose Certification

Form No 100/12

**Phoenix Beattie Corp**

11535 Brittmoore Park Drive  
Houston, TX 77041  
Tel: (832) 327-0141  
Fax: (832) 327-0148  
E-mail mail@phoenixbeattie.com  
www.phoenixbeattie.com

**Delivery Note**

<b>Customer Order Number</b>	370-369-001	<b>Delivery Note Number</b>	003078	<b>Page</b>	2
<b>Customer / Invoice Address</b> HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119		<b>Delivery / Address</b> HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015			

<b>Customer Acc No</b>	<b>Phoenix Beattie Contract Manager</b>	<b>Phoenix Beattie Reference</b>	<b>Date</b>
H01	JJL	006330	05/23/2008

Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
4	SC725-132CS SAFETY CLAMP 132MM 7.25T C/S GALVANIZED C/W BOLTS	1	1	0
5	00CERT-HYDRO HYDROSTATIC PRESSURE TEST CERTIFICATE	1	1	0
6	00CERT-LOAD LOAD TEST CERTIFICATES	1	1	0
7	00FREIGHT INBOUND / OUTBOUND FREIGHT PRE-PAY & ADD TO FINAL INVOICE NOTE: MATERIAL MUST BE ACCOMPANIED BY PAPERWORK INCLUDING THE PURCHASE ORDER, RIG NUMBER TO ENSURE PROPER PAYMENT	1	1	0

Phoenix Beattie Inspection Signature :

Received In Good Condition : Signature

Print Name

Date

All goods remain the property of Phoenix Beattie until paid for in full. Any damage or shortage on this delivery must be advised within 5 days.  
Returns may be subject to a handling charge.

**OXY USA Inc**  
**APD ATTACHMENT: SPUDDER RIG DATA**

**OPERATOR NAME / NUMBER:** OXY USA Inc

**1. SUMMARY OF REQUEST:**

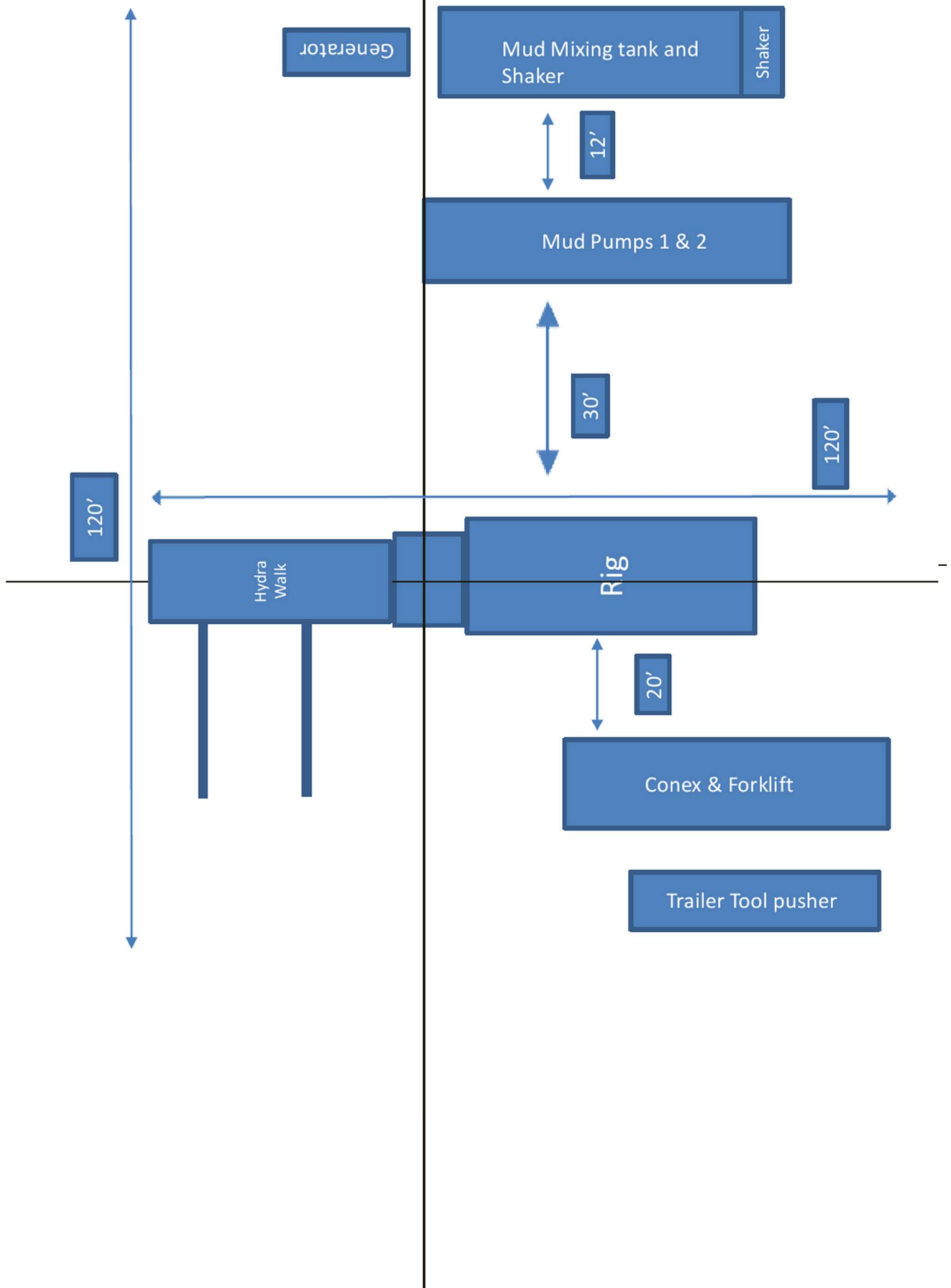
Oxy USA respectfully requests approval for the following operations for the surface hole in the drill plan:

1. Utilize a spudder rig to pre-set surface casing for time and cost savings.

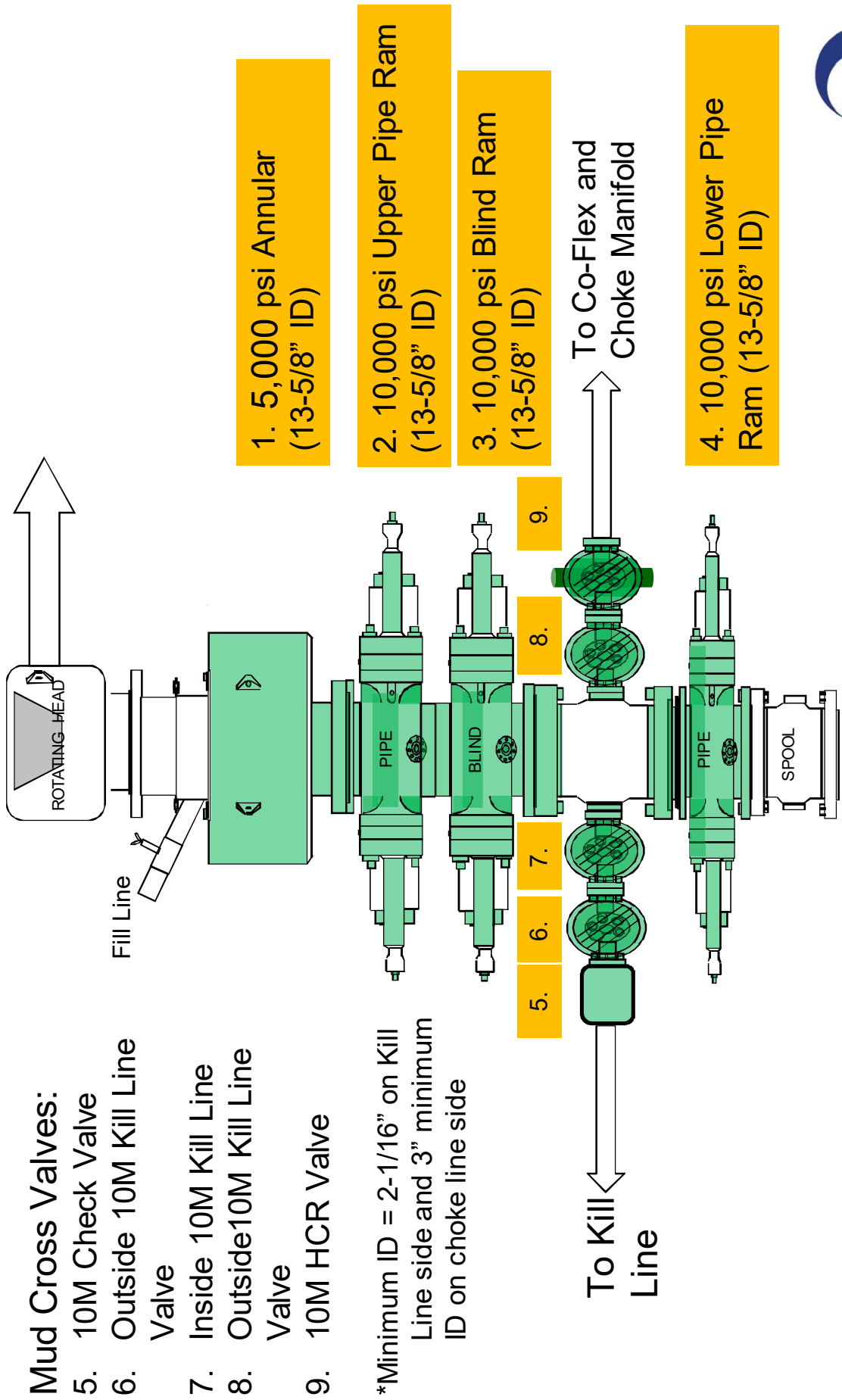
**2. Description of Operations**

1. Spudder rig will move in to drill the surface hole and pre-set surface casing on the well.
  - a. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (43 CFR part 3170 Subpart 3172, all COAs and NMOCD regulations).
  - b. The spudder rig will utilize fresh water-based mud to drill the surface hole to TD. Solids control will be handled entirely on a closed loop basis. No earth pits will be used.
2. The wellhead will be installed and tested as soon as the surface casing is cut off and the WOC time has been reached.
3. A blind flange at the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wingvalves.
  - a. A means for intervention will be maintained while the drilling rig is not over the well.
4. Spudder rig operations are expected to take 2-3 days per well on the pad.
5. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
6. Drilling operations will begin with a larger rig and a BOP stack equal to or greater than the pressure rating that was permitted will be nipped up and tested on the wellhead before drilling operations resume on each well.
  - a. The larger rig will move back onto the location within 90 days from the point at which the wells are secured and the spudder rig is moved off location.
  - b. The BLM will be contacted / notified 24 hours before the larger rig moves back on the pre-set locations.
7. Oxy will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.
8. Once the rig is removed, Oxy will secure the wellhead area by placing a guard rail around the cellar area.

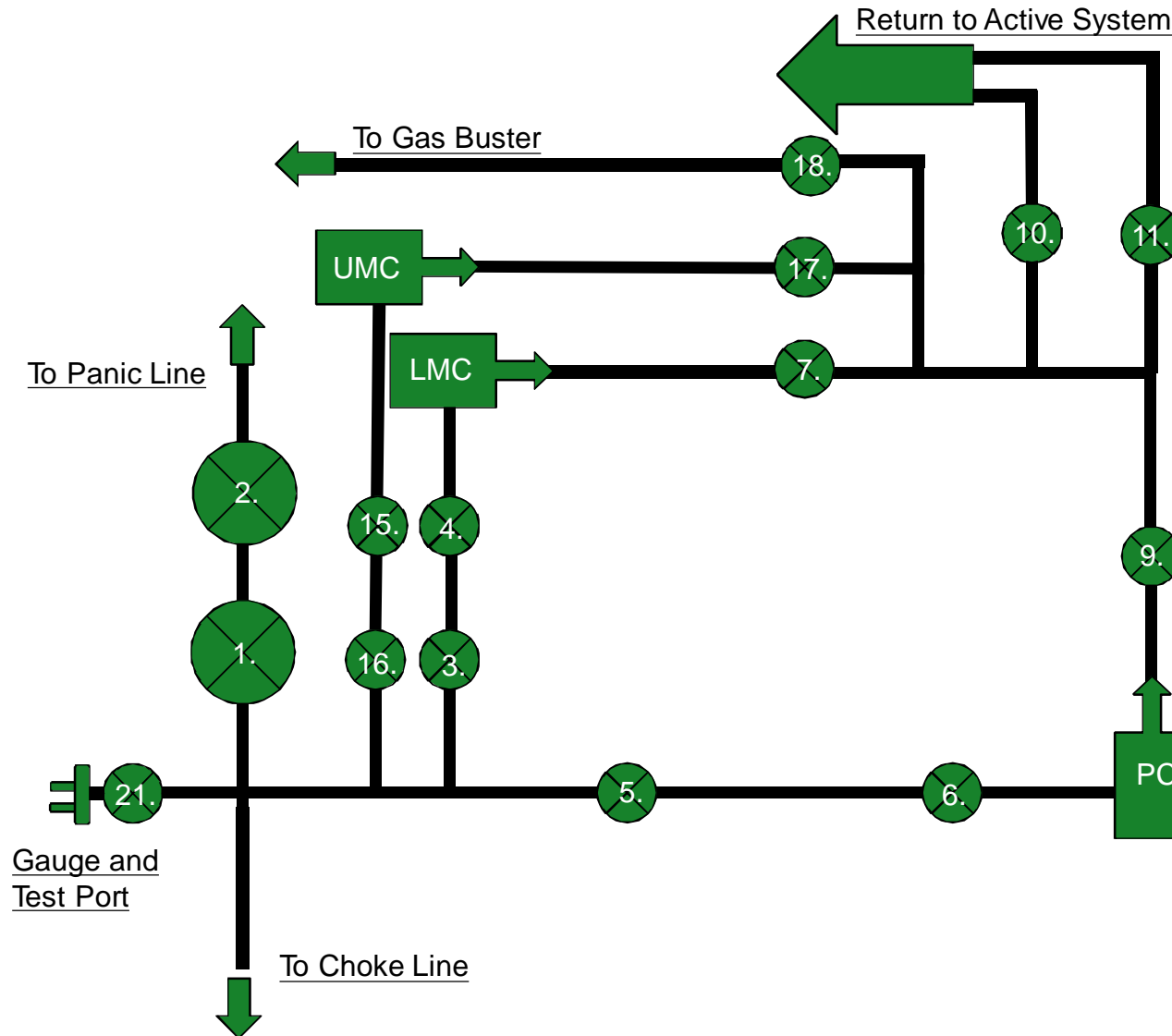
# Spudder Rig Layout



# 5/10M BOP Stack



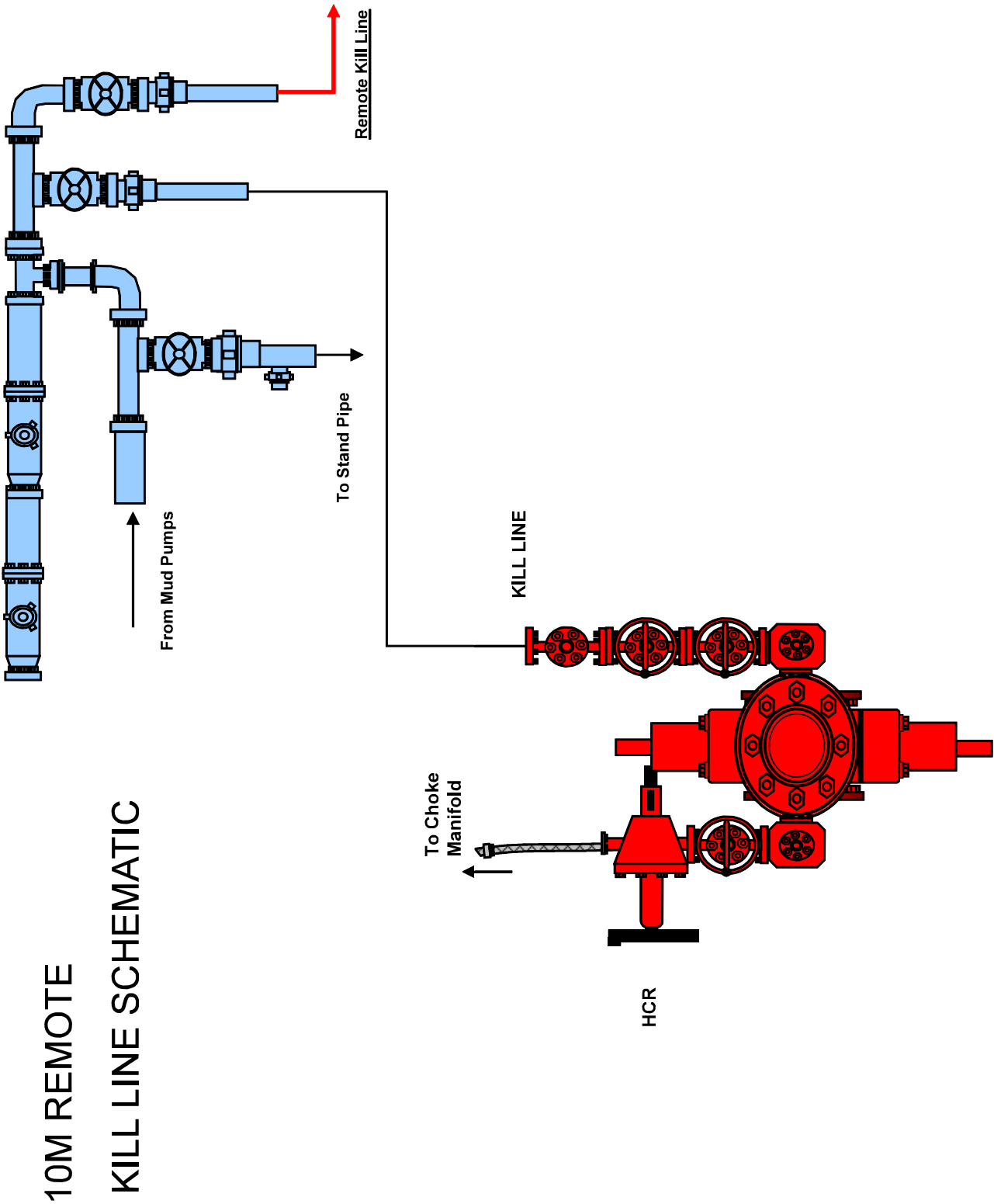
# 10M Choke Panel



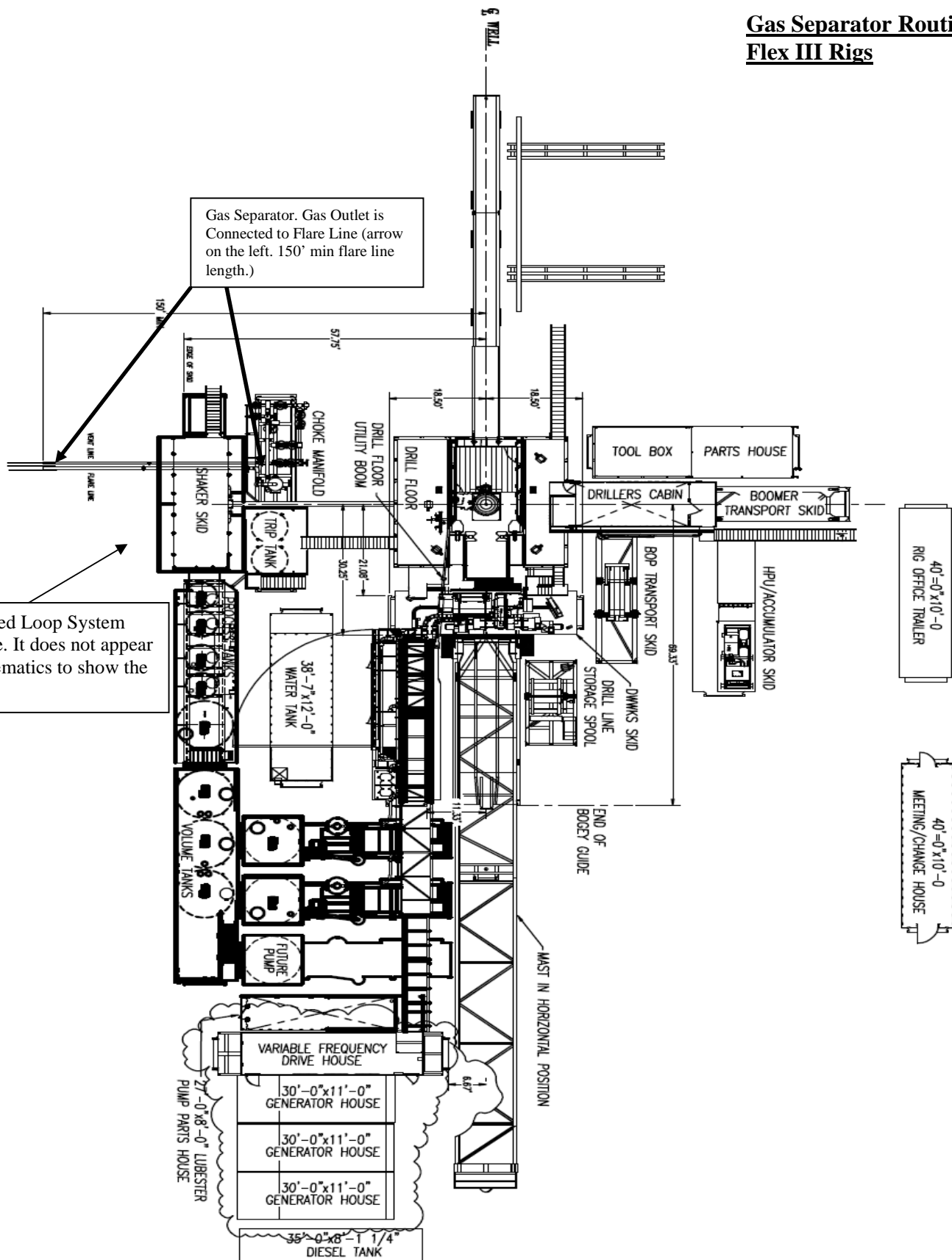
1. Choke Manifold Valve
2. Choke Manifold Valve
3. Choke Manifold Valve
4. Choke Manifold Valve
5. Choke Manifold Valve
6. Choke Manifold Valve
7. Choke Manifold Valve
8. PC – Power Choke
9. Choke Manifold Valve
10. Choke Manifold Valve
11. Choke Manifold Valve
12. LMC – Lower Manual Choke
13. UMC – Upper manual choke
15. Choke Manifold Valve
16. Choke Manifold Valve
17. Choke Manifold Valve
18. Choke Manifold Valve

21. Vertical Choke Manifold Valve

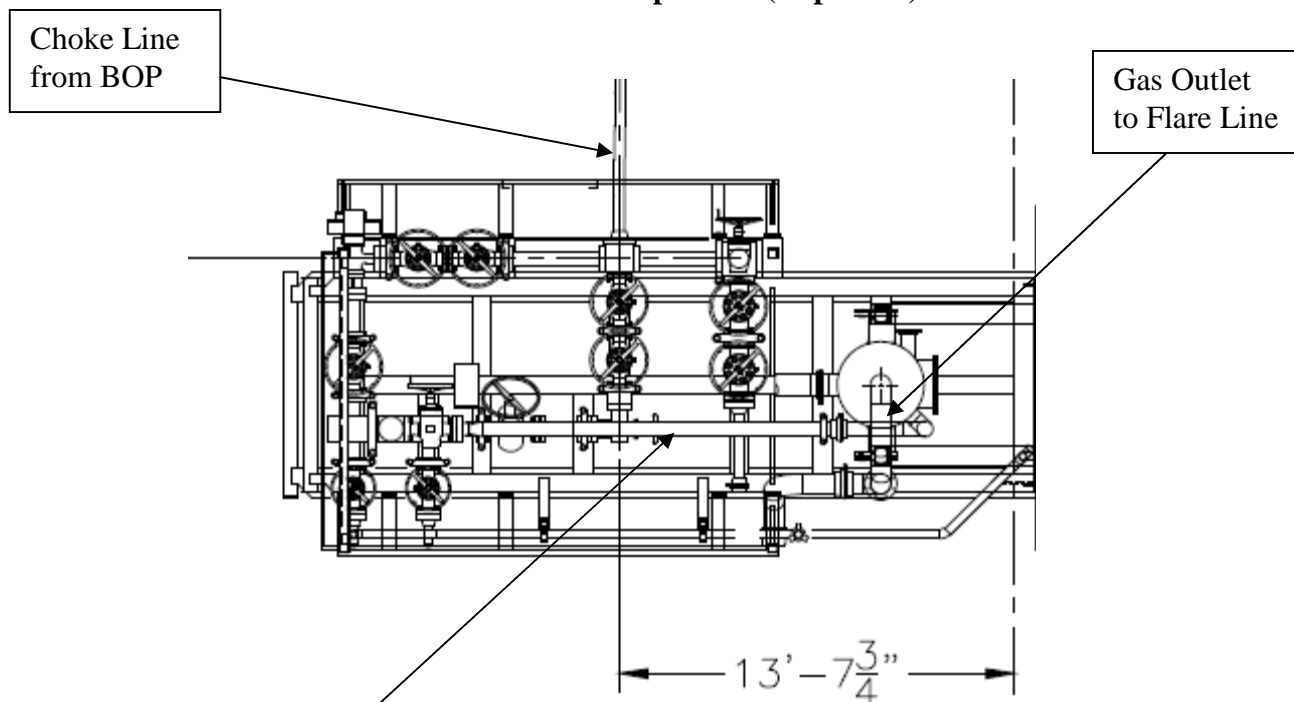
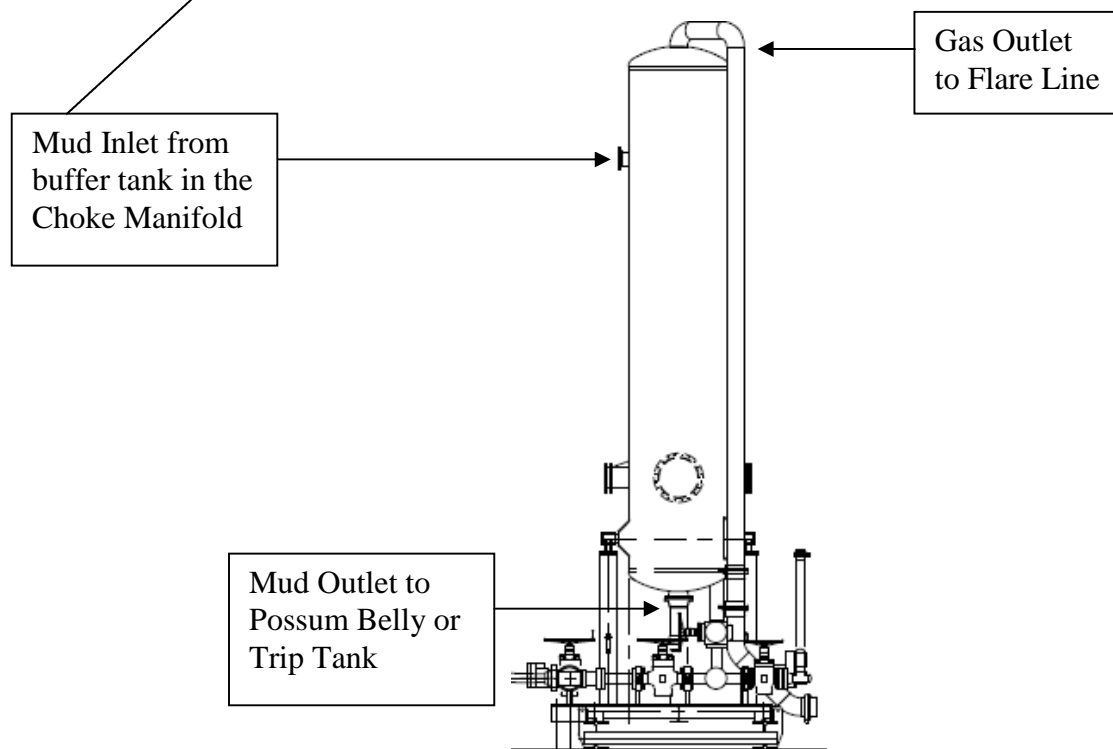
**\*All Valves 3" minimum**



## Gas Separator Routing Flex III Rigs





**Choke Manifold – Gas Separator (Top View)****Choke Manifold – Gas Separator (Side View)**

## BOP Break Testing Request

Oxy requests permission to adjust the BOP break testing requirements as per the agreement reached in the OXY/BLM meeting on September 5, 2019.

BOP break test under the following conditions:

- After a full BOP test is conducted
- When skidding to drill an intermediate section where ICP is set into the third Bone Spring or shallower.
- When skidding to drill a production section that does not penetrate into the third Bone Spring or deeper.

If the kill line is broken prior to skid, two tests will be performed.

- 1) Wellhead flange, co-flex hose, kill line connections and upper pipe rams
- 2) Wellhead flange, HCR valve, check valve, upper pipe rams

If the kill line is not broken prior to skid, only one test will be performed.

- 1) Wellhead flange, co-flex hose, check valve, upper pipe rams

See supporting information below:

**Subject:** Request for a Variance Allowing Break Testing of a Blowout Preventer Stack

OXY USA Inc. (OXY) requests a variance to allow break testing of the Blowout Preventer (BOP) stack when skidding a drilling rig between wells on multi-well pads. This practice entails retesting only the connections of the **BOP** stack that have been disconnected during this operation and not a complete **BOP** test.

### Background

43 CFR part 3170 Subpart 3172 states that a **BOP** test must be performed whenever any seal subject to test pressure is broken. The current interpretation of the Bureau of Land Management (BLM) is this requires a complete **BOP** test and not just a test of the affected component. 43 CFR part 3170 Subpart 3172, Section I.D.2. states, "Some situations may exist either on a well-by-well basis or field-wide basis whereby it is commonly accepted practice to vary a particular minimum standard(s) established in this Order. This situation can be resolved by requesting a variance...". OXY feels the practice of break testing the **BOP** stack is such a situation. Therefore, as per 43 CFR part 3170 Subpart 3172, Section IV., OXY submits this request for the variance.

### Supporting Rationale

43 CFR part 3170 Subpart 3172 became effective on December 19, 1988, and has remained the standard for regulating BLM onshore drilling operations for almost 30 years. During this time there have been significant changes in drilling technology. **BLM** continues to use the variance request process to allow for the use of modern technology and acceptable engineering practices that have arisen since 43 CFR part 3170 Subpart 3172 was originally released. The drilling rig fleet OXY utilizes in New Mexico was built with many modern upgrades. One of which allows the rigs to skid between wells on multi-well pads. A part of this rig package is a hydraulic winch system which safely installs and removes the BOP from the wellhead and carries it during skidding operations. This technology has made break testing a safe and reliable procedure.

American Petroleum Institute (API) standards, specifications and recommended practices are considered industry standards and are consistently utilized and referenced by the industry. 43 CFR part 3170 Subpart 3172 recognized API Recommended Practices (RP) 53 in its original development. API Standard 53,

*Blowout Prevention Equipment Systems for Drilling Wells* (Fourth Edition, November 2012, Addendum 1, July 2016) recognizes break testing as an acceptable practice. Specifically, API Standard 53, Section 6.5.3.4.1.b states "Pressure tests on the well control equipment shall be conducted after the disconnection or repair of any pressure containment seal in the **BOP** stack, choke line, kill line, choke manifold, or wellhead assembly but limited to the affected component."

The Bureau of Safety and Environmental Enforcement (BSEE), Department of Interior, has also utilized the API standards, specifications and best practices in the development of its offshore oil and gas regulations and incorporates them by reference within its regulations. BSEE issued new offshore regulations under 30 CFR Part 250, *Oil and Gas and Sulphur Operations in the Outer Continental Shelf - Blowout Preventer Systems and Well Control*, which became effective on July 28, 2016. Section 250.737(d.1) states "Follow the testing requirements of API Standard 53". In addition, Section 250.737(d.8) has adopted language from **API** Standard 53 as it states "Pressure test affected **BOP** components following the disconnection or repair of any well-pressure containment seal in the wellhead or **BOP** stack assembly".

Break testing has been approved by the BLM in the past. See the Appendix for a Sundry Notice that was approved in 2015 by the Farmington Field Office. This approval granted permission for the operator to break test when skidding its Aztec 1000 rig on multi-well pads.

Oxy feels break testing and our current procedures meet the intent of 43 CFR part 3170 Subpart 3172 and often exceed it. We have not seen any evidence that break testing results in more components failing tests than seen on full BOP tests. As skidding operations take place within the 30-day full BOPE test window, the BOP shell and components such as the pipe rams and check valve get tested to the full rated working pressure more often. Therefore, there are more opportunities to ensure components are in good working order. Also, Oxy's standard requires complete BOP tests more often than that of 43 CFR part 3170 Subpart 3172. In addition to function testing the annular at least weekly and the pipe and blind rams on each trip, Oxy also performs a choke drill prior to drilling out every casing shoe. As a crew's training is a vital part of well control, this procedure to simulate step one of the Driller's Method exceeds the requirements of 43 CFR part 3170 Subpart 3172.

### Procedures

- 1) OXY to submit the break testing plan in the APD or Sundry Notice (SN) and receive approval prior to implementing (See Appendix for examples)
- 2) OXY would perform BOP break testing on multi-well pads where multiple intermediate sections can be drilled and cased within the 30-day BOP test window
- 3) After performing a complete BOP test on the first well and drilling and casing the hole section, three breaks would be made on the BOP.
  - Between the check valve and the kill line
  - Between the HCR valve and the co-flex hose or the co-flex hose and the manifold
  - Between the BOP flange and the wellhead
- 4) The BOP is then lifted and removed from the wellhead by the hydraulic winch system
- 5) After skidding to the next well, the BOP is moved to the wellhead by the hydraulic winch system and installed
- 6) The choke line and kill line are reconnected
- 7) A test plug is installed in the wellhead with a joint of drill pipe and the internal parts of the check valve are removed
- 8) A shell test is performed against the upper pipe rams testing all three breaks
- 9) The internal parts of the check valve are reinstalled and the HCR valve is closed. A second test is performed on them
- 10) These tests consist of a 250 psi low test and a high test to the value submitted in the APD or SN (e.g., 5000 psi)
- 11) Perform a function test of components not pressure tested to include the lower pipe rams, the blind rams and the annular
- 12) If this were a three well pad, the same three breaks on the BOP would be made and steps 4 through 11 would be repeated
- 13) A second break test would only be done if the third hole section could be completed within the 30-day BOP test window
- 14) If a second break test is performed, additional components that were not tested on the initial break test will be tested on this break test

### Notes:

- a. If any parts of the BOP are changed out or any additional breaks are made during the skidding operation, these affected components would also be tested as in step 10.
- b. As the choke manifold remains stationary during the skidding operation and the only break to the manifold is tested in step 8 above, no further testing of the manifold is done until the next full BOP test.

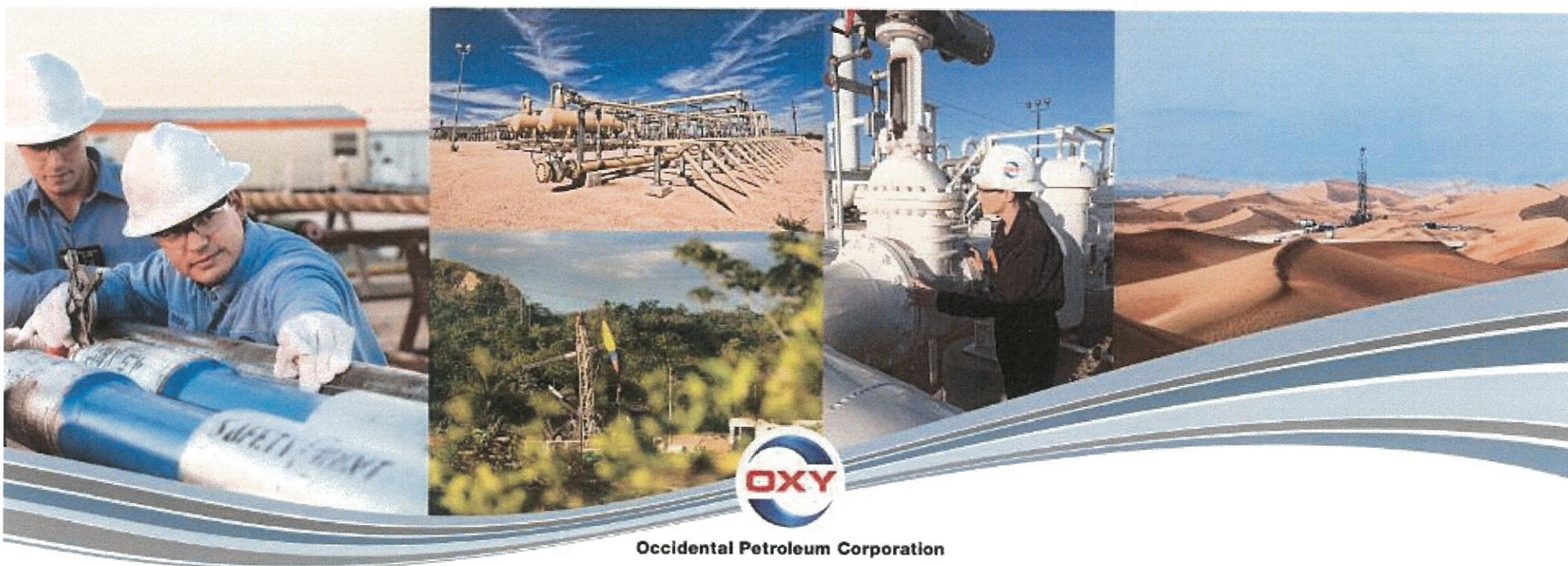
## **Summary**

OXY requests a variance to allow break testing of the BOP stack when skidding drilling rigs between wells on multi-well pads. API standards, specifications and recommended practices are considered industry standards and are consistently utilized and referenced by the industry and the BLM. API Standard 53 recognizes break testing as an acceptable practice and BSEE adopted language from this standard into its newly created 30 CFR Part 250 which also supports break testing. Due to this, OXY feels this request meets the intent of 43 CFR part 3170



# REQUEST FOR A VARIANCE TO BREAK TEST THE BOP

Permian Resources New Mexico



Occidental Petroleum Corporation

# Request for Variance

OXY USA Inc. (OXY) requests a variance to allow break testing of the Blowout Preventer (BOP) stack when skidding a drilling rig between wells on multi-well pads

- This practice entails retesting only the connections of the BOP stack that have been disconnected during this operation and not a complete BOP test.
- As the choke manifold remains stationary during the skidding operation and the only break to the manifold is tested, no further testing of the manifold is done until the next full BOP test.
- This request is being made as per Section IV of the *Onshore Oil and Gas Order (OOGO) No. 2*



# Rationale for Allowing BOP Break Testing

American Petroleum Institute (API) standards, specifications and recommended practices are considered industry standards and are consistently utilized and referenced by the industry

- API Standard 53, *Blowout Prevention Equipment Systems for Drilling Wells* (Fourth Edition, November 2012, Addendum 1, July 2016) recognizes break testing as an acceptable practice.
- Specifically, API Standard 53, Section 6.5.3.4.1.b states “Pressure tests on the well control equipment shall be conducted after the disconnection or repair of any pressure containment seal in the BOP stack, choke line, kill line, choke manifold, or wellhead assembly but limited to the affected component.”



# Rationale for Allowing BOP Break Testing

The Bureau of Safety and Environmental Enforcement (BSEE), Department of Interior, has also utilized the API standards, specifications and best practices in the development of its offshore oil and gas regulations and incorporates them by reference within its regulations.

- BSEE issued new offshore regulations in July 2016 under 30 CFR Part 250, *Oil and Gas and Sulphur Operations in the Outer Continental Shelf - Blowout Preventer Systems and Well Control*. Within these regulations is language adopted from API Standard 53 which also supports break testing.
- Specifically, Section 250.737(d.8) states “Pressure test affected BOP components following the disconnection or repair of any well-pressure containment seal in the wellhead or BOP stack assembly.”



# Rationale for Allowing BOP Break Testing

Break testing has been approved by the BLM in the past

- The Farmington Field Office approved a Sundry Notice (SN) to allow break testing in 2015
- This SN granted permission for the operator to break test when skidding its Aztec 1000 rig on multi-well pads

Oxy feels break testing and our current procedures meet or exceed the intent of OOGO No. 2

- As skidding operations take place within the 30-day full BOPE test window, the BOP shell and components such as the pipe rams and check valve get tested to the full rated working pressure more often
- Oxy's standard requires complete BOP tests more often than that of OOGO No. 2
- Oxy performs a choke drill prior to drilling out every casing shoe. As a crew's training is a vital part of well control, this procedure to simulate step one of the Driller's Method exceeds the requirements of OOGO No. 2



# Break Testing Procedures

- 1) OXY to submit the break testing plan in the APD or Sundry Notice (SN) and receive approval prior to implementing
- 2) OXY would perform BOP break testing on multi-well pads where multiple intermediate sections can be drilled and cased within the full BOP test window
- 3) After performing a complete BOP test on the first well and drilling and casing the hole section, three breaks would be made on the BOP.
  - Between the check valve and the kill line
  - Between the HCR valve and the co-flex hose or the co-flex hose and the manifold
  - Between the BOP flange and the wellhead
- 4) The BOP is then lifted and removed from the wellhead by the hydraulic winch system
- 5) After skidding to the next well, the BOP is moved to the wellhead by the hydraulic winch system and installed
- 6) The choke line and kill line are reconnected
- 7) A test plug is installed in the wellhead with a joint of drill pipe and the internal parts of the check valve are removed



# Break Testing Procedures

- 8) A shell test is performed against the upper pipe rams testing all three breaks
- 9) The internal parts of the check valve are reinstalled and the HCR valve is closed.  
A second test is performed on them
- 10) These tests consist of a 250 psi low test and a high test to the valve submitted in the APD or SN (e.g., 5000 psi)
- 11) Perform a function test of components not pressure tested to include the lower pipe rams, the blind rams and the annular
- 12) If this were a three well pad, the same three breaks on the BOP would be made and steps 4 through 11 would be repeated
- 13) A second break test would only be done if the third hole section could be completed within the 30-day BOP test window
- 14) If a second break test is performed, additional components that were not tested on the first break test will be tested

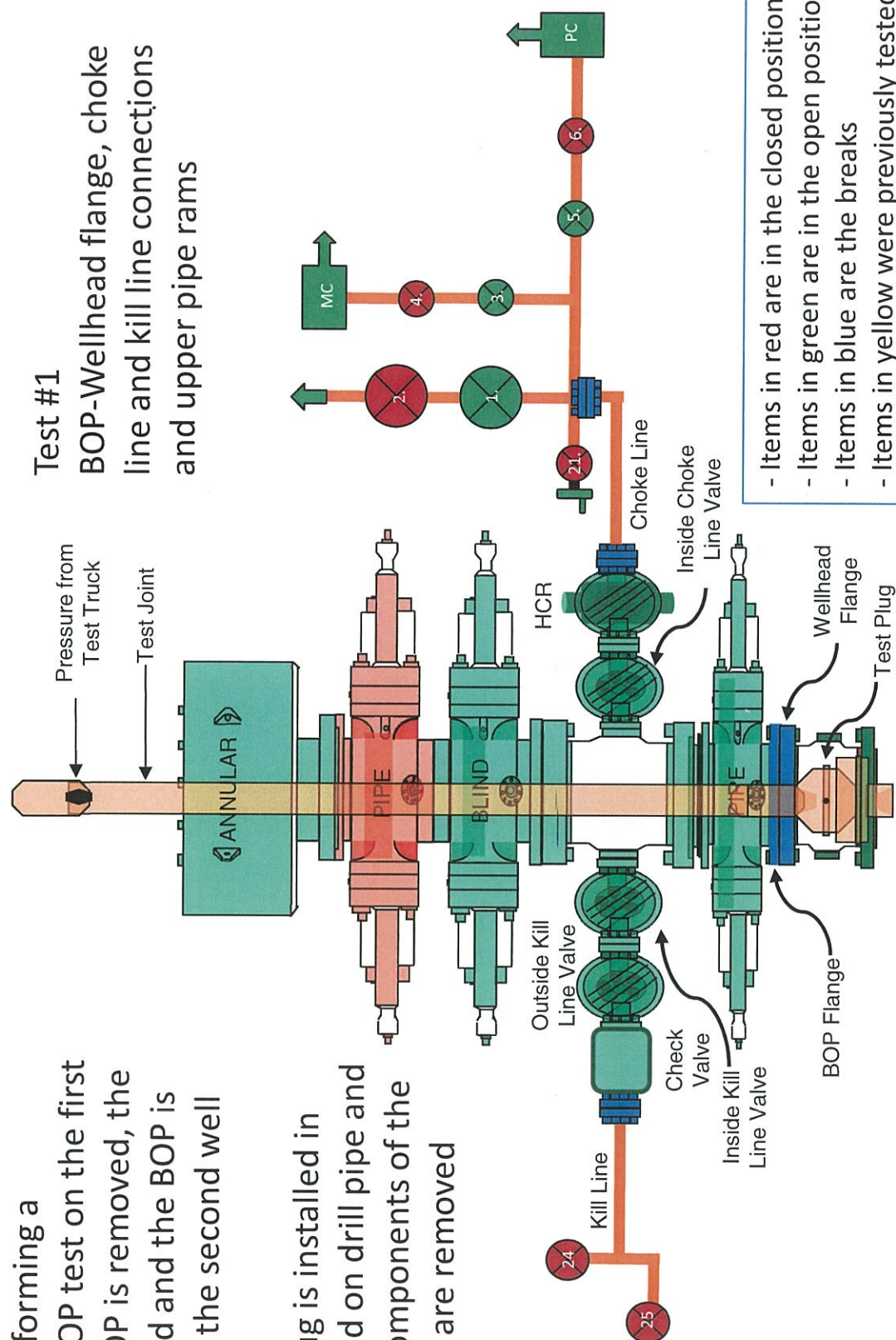




# Break Testing Procedures and Tests

1. After performing a complete BOP test on the first well, the BOP is removed, the rig is skidded and the BOP is installed on the second well

2. A test plug is installed in the wellhead on drill pipe and the inner components of the check valve are removed





# Break Testing Procedures and Tests

3. After Test #1, the inner components of the check valve are reinstalled and the HCR valve is closed





# Second Break Testing Procedures and Tests

Procedures 1 and 2 and Test #1 will be completed as in the first break test (see slide 8)

3. After Test #1, the inner components of the check valve are reinstalled and the inside choke line valve is closed





# BOP Handling System



Hydraulic winch system which moves the BOP from its carrier to the wellhead

BOP standing in its carrier







12

# BOP Handling System



Hydraulic winch  
system moving  
the BOP over to  
the wellhead

Wellhead



## Summary for Variance Request for Break Testing

- API standards, specifications and recommended practices are considered industry standards
  - OOGO No. 2 recognized API Recommended Practices (RP) 53 in its original development
  - API Standard 53 recognizes break testing as an acceptable practice
  - The Bureau of Safety and Environmental Enforcement has utilized API standards, specifications and best practices in the development of its offshore oil and gas regulations
  - API Standard 53 recognizes break testing as an acceptable practice
- OXY feels break testing meets the intent of OOGO No. 2 to protect public health and safety and the environment

# **OXY**

**PRD NM DIRECTIONAL PLANS (NAD 1983)**

**Senile Felines 18\_7**

**Senile Felines 18\_7 State Com 13H**

**Wellbore #1**

**Plan: Permitting Plan**

## **Standard Planning Report**

**22 September, 2023**

OXY  
Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Senile Felines 18_7 State Com 13H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=25' @ 3656.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=25' @ 3656.00ft
Site:	Senile Felines 18_7	North Reference:	Grid
Well:	Senile Felines 18_7 State Com 13H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permitting Plan		

Project	PRD NM DIRECTIONAL PLANS (NAD 1983)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site		Senile Felines 18_7				
Site Position:		Northing:	504,962.34	usft	Latitude:	32.386155
From:	Map	Easting:	763,528.05	usft	Longitude:	-103.613537
Position Uncertainty:		1.00	ft	Slot Radius:	13.200	in

Well	Senile Felines 18_7 State Com 13H					
Well Position	+N/-S	0.00 ft	Northing:	504,746.59 usf	Latitude:	32.385528
	+E/-W	0.00 ft	Easting:	765,351.71 usf	Longitude:	-103.607635
Position Uncertainty		2.00 ft	Wellhead Elevation:	ft	Ground Level:	3,631.00 ft
Grid Convergence:		0.39 °				

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	9/21/2023	6.25	59.98	47,605.90000000

Design	Permitting Plan			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	353.78

Plan Survey Tool Program	Date	9/21/2023		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,755.40	Permitting Plan (Wellbore #1)	B005Mc_MWD+HRGM+SA ISCWSA MWD + HRGM +

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,805.00	0.00	0.00	2,805.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,805.06	10.00	252.40	3,799.99	-26.33	-82.98	1.00	1.00	0.00	252.40	
8,908.69	10.00	252.40	8,826.08	-294.37	-927.77	0.00	0.00	0.00	0.00	
9,838.04	90.00	359.55	9,420.00	277.02	-1,032.37	10.00	8.61	11.53	106.90	
19,755.44	90.00	359.55	9,420.00	10,194.11	-1,110.99	0.00	0.00	0.00	0.00	PBHL (Senile)

# OXY

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Senile Felines 18_7 State Com 13H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=25' @ 3656.00ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=25' @ 3656.00ft
<b>Site:</b>	Senile Felines 18_7	<b>North Reference:</b>	Grid
<b>Well:</b>	Senile Felines 18_7 State Com 13H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
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1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
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1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,805.00	0.00	0.00	2,805.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.95	252.40	2,900.00	-0.24	-0.75	-0.16	1.00	1.00	0.00
3,000.00	1.95	252.40	2,999.96	-1.00	-3.16	-0.65	1.00	1.00	0.00
3,100.00	2.95	252.40	3,099.87	-2.30	-7.24	-1.50	1.00	1.00	0.00
3,200.00	3.95	252.40	3,199.69	-4.12	-12.97	-2.69	1.00	1.00	0.00
3,300.00	4.95	252.40	3,299.38	-6.46	-20.37	-4.22	1.00	1.00	0.00
3,400.00	5.95	252.40	3,398.93	-9.34	-29.42	-6.09	1.00	1.00	0.00
3,500.00	6.95	252.40	3,498.30	-12.73	-40.13	-8.31	1.00	1.00	0.00
3,600.00	7.95	252.40	3,597.45	-16.65	-52.49	-10.87	1.00	1.00	0.00
3,700.00	8.95	252.40	3,696.36	-21.10	-66.49	-13.77	1.00	1.00	0.00
3,800.00	9.95	252.40	3,795.01	-26.06	-82.14	-17.01	1.00	1.00	0.00
3,805.06	10.00	252.40	3,799.99	-26.33	-82.98	-17.18	1.00	1.00	0.00
3,900.00	10.00	252.40	3,893.49	-31.31	-98.69	-20.44	0.00	0.00	0.00
4,000.00	10.00	252.40	3,991.97	-36.57	-115.25	-23.87	0.00	0.00	0.00
4,100.00	10.00	252.40	4,090.45	-41.82	-131.80	-27.29	0.00	0.00	0.00
4,200.00	10.00	252.40	4,188.93	-47.07	-148.35	-30.72	0.00	0.00	0.00
4,300.00	10.00	252.40	4,287.41	-52.32	-164.90	-34.15	0.00	0.00	0.00
4,400.00	10.00	252.40	4,385.89	-57.57	-181.46	-37.58	0.00	0.00	0.00
4,500.00	10.00	252.40	4,484.37	-62.83	-198.01	-41.00	0.00	0.00	0.00
4,600.00	10.00	252.40	4,582.85	-68.08	-214.56	-44.43	0.00	0.00	0.00
4,700.00	10.00	252.40	4,681.33	-73.33	-231.12	-47.86	0.00	0.00	0.00
4,800.00	10.00	252.40	4,779.81	-78.58	-247.67	-51.29	0.00	0.00	0.00
4,900.00	10.00	252.40	4,878.29	-83.83	-264.22	-54.72	0.00	0.00	0.00
5,000.00	10.00	252.40	4,976.77	-89.09	-280.77	-58.14	0.00	0.00	0.00
5,100.00	10.00	252.40	5,075.25	-94.34	-297.33	-61.57	0.00	0.00	0.00
5,200.00	10.00	252.40	5,173.74	-99.59	-313.88	-65.00	0.00	0.00	0.00

# OXY

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Senile Felines 18_7 State Com 13H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=25' @ 3656.00ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=25' @ 3656.00ft
<b>Site:</b>	Senile Felines 18_7	<b>North Reference:</b>	Grid
<b>Well:</b>	Senile Felines 18_7 State Com 13H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,300.00	10.00	252.40	5,272.22	-104.84	-330.43	-68.43	0.00	0.00	0.00
5,400.00	10.00	252.40	5,370.70	-110.09	-346.98	-71.86	0.00	0.00	0.00
5,500.00	10.00	252.40	5,469.18	-115.35	-363.54	-75.28	0.00	0.00	0.00
5,600.00	10.00	252.40	5,567.66	-120.60	-380.09	-78.71	0.00	0.00	0.00
5,700.00	10.00	252.40	5,666.14	-125.85	-396.64	-82.14	0.00	0.00	0.00
5,800.00	10.00	252.40	5,764.62	-131.10	-413.19	-85.57	0.00	0.00	0.00
5,900.00	10.00	252.40	5,863.10	-136.36	-429.75	-88.99	0.00	0.00	0.00
6,000.00	10.00	252.40	5,961.58	-141.61	-446.30	-92.42	0.00	0.00	0.00
6,100.00	10.00	252.40	6,060.06	-146.86	-462.85	-95.85	0.00	0.00	0.00
6,200.00	10.00	252.40	6,158.54	-152.11	-479.41	-99.28	0.00	0.00	0.00
6,300.00	10.00	252.40	6,257.02	-157.36	-495.96	-102.71	0.00	0.00	0.00
6,400.00	10.00	252.40	6,355.50	-162.62	-512.51	-106.13	0.00	0.00	0.00
6,500.00	10.00	252.40	6,453.98	-167.87	-529.06	-109.56	0.00	0.00	0.00
6,600.00	10.00	252.40	6,552.46	-173.12	-545.62	-112.99	0.00	0.00	0.00
6,700.00	10.00	252.40	6,650.94	-178.37	-562.17	-116.42	0.00	0.00	0.00
6,800.00	10.00	252.40	6,749.42	-183.62	-578.72	-119.84	0.00	0.00	0.00
6,900.00	10.00	252.40	6,847.90	-188.88	-595.27	-123.27	0.00	0.00	0.00
7,000.00	10.00	252.40	6,946.39	-194.13	-611.83	-126.70	0.00	0.00	0.00
7,100.00	10.00	252.40	7,044.87	-199.38	-628.38	-130.13	0.00	0.00	0.00
7,200.00	10.00	252.40	7,143.35	-204.63	-644.93	-133.56	0.00	0.00	0.00
7,300.00	10.00	252.40	7,241.83	-209.88	-661.48	-136.98	0.00	0.00	0.00
7,400.00	10.00	252.40	7,340.31	-215.14	-678.04	-140.41	0.00	0.00	0.00
7,500.00	10.00	252.40	7,438.79	-220.39	-694.59	-143.84	0.00	0.00	0.00
7,600.00	10.00	252.40	7,537.27	-225.64	-711.14	-147.27	0.00	0.00	0.00
7,700.00	10.00	252.40	7,635.75	-230.89	-727.70	-150.70	0.00	0.00	0.00
7,800.00	10.00	252.40	7,734.23	-236.14	-744.25	-154.12	0.00	0.00	0.00
7,900.00	10.00	252.40	7,832.71	-241.40	-760.80	-157.55	0.00	0.00	0.00
8,000.00	10.00	252.40	7,931.19	-246.65	-777.35	-160.98	0.00	0.00	0.00
8,100.00	10.00	252.40	8,029.67	-251.90	-793.91	-164.41	0.00	0.00	0.00
8,200.00	10.00	252.40	8,128.15	-257.15	-810.46	-167.83	0.00	0.00	0.00
8,300.00	10.00	252.40	8,226.63	-262.40	-827.01	-171.26	0.00	0.00	0.00
8,400.00	10.00	252.40	8,325.11	-267.66	-843.56	-174.69	0.00	0.00	0.00
8,500.00	10.00	252.40	8,423.59	-272.91	-860.12	-178.12	0.00	0.00	0.00
8,600.00	10.00	252.40	8,522.07	-278.16	-876.67	-181.55	0.00	0.00	0.00
8,700.00	10.00	252.40	8,620.56	-283.41	-893.22	-184.97	0.00	0.00	0.00
8,800.00	10.00	252.40	8,719.04	-288.66	-909.77	-188.40	0.00	0.00	0.00
8,900.00	10.00	252.40	8,817.52	-293.92	-926.33	-191.83	0.00	0.00	0.00
8,908.69	10.00	252.40	8,826.08	-294.37	-927.77	-192.13	0.00	0.00	0.00
9,000.00	11.38	302.70	8,915.98	-291.90	-942.94	-188.02	10.00	1.51	55.10
9,100.00	18.74	329.77	9,012.59	-272.64	-959.37	-167.09	10.00	7.36	27.07
9,200.00	27.77	340.88	9,104.42	-236.65	-975.13	-129.61	10.00	9.03	11.11
9,300.00	37.27	346.75	9,188.66	-185.03	-989.73	-76.72	10.00	9.50	5.87
9,400.00	46.95	350.49	9,262.77	-119.35	-1,002.74	-10.02	10.00	9.68	3.74
9,500.00	56.73	353.20	9,324.48	-41.61	-1,013.75	68.46	10.00	9.77	2.71
9,600.00	66.55	355.35	9,371.94	45.84	-1,022.44	156.34	10.00	9.82	2.16
9,700.00	76.39	357.21	9,403.68	140.34	-1,028.54	250.94	10.00	9.84	1.85
9,800.00	86.25	358.91	9,418.76	239.01	-1,031.86	349.39	10.00	9.86	1.70
9,838.04	90.00	359.55	9,420.00	277.02	-1,032.37	387.24	10.00	9.86	1.66
9,900.00	90.00	359.55	9,420.00	338.98	-1,032.87	448.88	0.00	0.00	0.00
10,000.00	90.00	359.55	9,420.00	438.97	-1,033.66	548.38	0.00	0.00	0.00
10,100.00	90.00	359.55	9,420.00	538.97	-1,034.45	647.87	0.00	0.00	0.00
10,200.00	90.00	359.55	9,420.00	638.97	-1,035.24	747.36	0.00	0.00	0.00
10,300.00	90.00	359.55	9,420.00	738.97	-1,036.04	846.86	0.00	0.00	0.00
10,400.00	90.00	359.55	9,420.00	838.96	-1,036.83	946.35	0.00	0.00	0.00
10,500.00	90.00	359.55	9,420.00	938.96	-1,037.62	1,045.85	0.00	0.00	0.00



# OXY

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Senile Felines 18_7 State Com 13H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=25' @ 3656.00ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=25' @ 3656.00ft
<b>Site:</b>	Senile Felines 18_7	<b>North Reference:</b>	Grid
<b>Well:</b>	Senile Felines 18_7 State Com 13H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,600.00	90.00	359.55	9,420.00	1,038.96	-1,038.41	1,145.34	0.00	0.00	0.00
10,700.00	90.00	359.55	9,420.00	1,138.95	-1,039.21	1,244.83	0.00	0.00	0.00
10,800.00	90.00	359.55	9,420.00	1,238.95	-1,040.00	1,344.33	0.00	0.00	0.00
10,900.00	90.00	359.55	9,420.00	1,338.95	-1,040.79	1,443.82	0.00	0.00	0.00
11,000.00	90.00	359.55	9,420.00	1,438.94	-1,041.58	1,543.32	0.00	0.00	0.00
11,100.00	90.00	359.55	9,420.00	1,538.94	-1,042.38	1,642.81	0.00	0.00	0.00
11,200.00	90.00	359.55	9,420.00	1,638.94	-1,043.17	1,742.31	0.00	0.00	0.00
11,300.00	90.00	359.55	9,420.00	1,738.93	-1,043.96	1,841.80	0.00	0.00	0.00
11,400.00	90.00	359.55	9,420.00	1,838.93	-1,044.76	1,941.29	0.00	0.00	0.00
11,500.00	90.00	359.55	9,420.00	1,938.93	-1,045.55	2,040.79	0.00	0.00	0.00
11,600.00	90.00	359.55	9,420.00	2,038.92	-1,046.34	2,140.28	0.00	0.00	0.00
11,700.00	90.00	359.55	9,420.00	2,138.92	-1,047.13	2,239.78	0.00	0.00	0.00
11,800.00	90.00	359.55	9,420.00	2,238.92	-1,047.93	2,339.27	0.00	0.00	0.00
11,900.00	90.00	359.55	9,420.00	2,338.92	-1,048.72	2,438.77	0.00	0.00	0.00
12,000.00	90.00	359.55	9,420.00	2,438.91	-1,049.51	2,538.26	0.00	0.00	0.00
12,100.00	90.00	359.55	9,420.00	2,538.91	-1,050.30	2,637.75	0.00	0.00	0.00
12,200.00	90.00	359.55	9,420.00	2,638.91	-1,051.10	2,737.25	0.00	0.00	0.00
12,300.00	90.00	359.55	9,420.00	2,738.90	-1,051.89	2,836.74	0.00	0.00	0.00
12,400.00	90.00	359.55	9,420.00	2,838.90	-1,052.68	2,936.24	0.00	0.00	0.00
12,500.00	90.00	359.55	9,420.00	2,938.90	-1,053.48	3,035.73	0.00	0.00	0.00
12,600.00	90.00	359.55	9,420.00	3,038.89	-1,054.27	3,135.22	0.00	0.00	0.00
12,700.00	90.00	359.55	9,420.00	3,138.89	-1,055.06	3,234.72	0.00	0.00	0.00
12,800.00	90.00	359.55	9,420.00	3,238.89	-1,055.85	3,334.21	0.00	0.00	0.00
12,900.00	90.00	359.55	9,420.00	3,338.88	-1,056.65	3,433.71	0.00	0.00	0.00
13,000.00	90.00	359.55	9,420.00	3,438.88	-1,057.44	3,533.20	0.00	0.00	0.00
13,100.00	90.00	359.55	9,420.00	3,538.88	-1,058.23	3,632.70	0.00	0.00	0.00
13,200.00	90.00	359.55	9,420.00	3,638.87	-1,059.02	3,732.19	0.00	0.00	0.00
13,300.00	90.00	359.55	9,420.00	3,738.87	-1,059.82	3,831.68	0.00	0.00	0.00
13,400.00	90.00	359.55	9,420.00	3,838.87	-1,060.61	3,931.18	0.00	0.00	0.00
13,500.00	90.00	359.55	9,420.00	3,938.87	-1,061.40	4,030.67	0.00	0.00	0.00
13,600.00	90.00	359.55	9,420.00	4,038.86	-1,062.20	4,130.17	0.00	0.00	0.00
13,700.00	90.00	359.55	9,420.00	4,138.86	-1,062.99	4,229.66	0.00	0.00	0.00
13,800.00	90.00	359.55	9,420.00	4,238.86	-1,063.78	4,329.15	0.00	0.00	0.00
13,900.00	90.00	359.55	9,420.00	4,338.85	-1,064.57	4,428.65	0.00	0.00	0.00
14,000.00	90.00	359.55	9,420.00	4,438.85	-1,065.37	4,528.14	0.00	0.00	0.00
14,100.00	90.00	359.55	9,420.00	4,538.85	-1,066.16	4,627.64	0.00	0.00	0.00
14,200.00	90.00	359.55	9,420.00	4,638.84	-1,066.95	4,727.13	0.00	0.00	0.00
14,300.00	90.00	359.55	9,420.00	4,738.84	-1,067.74	4,826.63	0.00	0.00	0.00
14,400.00	90.00	359.55	9,420.00	4,838.84	-1,068.54	4,926.12	0.00	0.00	0.00
14,500.00	90.00	359.55	9,420.00	4,938.83	-1,069.33	5,025.61	0.00	0.00	0.00
14,600.00	90.00	359.55	9,420.00	5,038.83	-1,070.12	5,125.11	0.00	0.00	0.00
14,700.00	90.00	359.55	9,420.00	5,138.83	-1,070.91	5,224.60	0.00	0.00	0.00
14,800.00	90.00	359.55	9,420.00	5,238.82	-1,071.71	5,324.10	0.00	0.00	0.00
14,900.00	90.00	359.55	9,420.00	5,338.82	-1,072.50	5,423.59	0.00	0.00	0.00
15,000.00	90.00	359.55	9,420.00	5,438.82	-1,073.29	5,523.08	0.00	0.00	0.00
15,100.00	90.00	359.55	9,420.00	5,538.81	-1,074.09	5,622.58	0.00	0.00	0.00
15,200.00	90.00	359.55	9,420.00	5,638.81	-1,074.88	5,722.07	0.00	0.00	0.00
15,300.00	90.00	359.55	9,420.00	5,738.81	-1,075.67	5,821.57	0.00	0.00	0.00
15,400.00	90.00	359.55	9,420.00	5,838.81	-1,076.46	5,921.06	0.00	0.00	0.00
15,500.00	90.00	359.55	9,420.00	5,938.80	-1,077.26	6,020.56	0.00	0.00	0.00
15,600.00	90.00	359.55	9,420.00	6,038.80	-1,078.05	6,120.05	0.00	0.00	0.00
15,700.00	90.00	359.55	9,420.00	6,138.80	-1,078.84	6,219.54	0.00	0.00	0.00
15,800.00	90.00	359.55	9,420.00	6,238.79	-1,079.63	6,319.04	0.00	0.00	0.00
15,900.00	90.00	359.55	9,420.00	6,338.79	-1,080.43	6,418.53	0.00	0.00	0.00
16,000.00	90.00	359.55	9,420.00	6,438.79	-1,081.22	6,518.03	0.00	0.00	0.00



# OXY Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Senile Felines 18_7 State Com 13H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=25' @ 3656.00ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=25' @ 3656.00ft
<b>Site:</b>	Senile Felines 18_7	<b>North Reference:</b>	Grid
<b>Well:</b>	Senile Felines 18_7 State Com 13H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,100.00	90.00	359.55	9,420.00	6,538.78	-1,082.01	6,617.52	0.00	0.00	0.00
16,200.00	90.00	359.55	9,420.00	6,638.78	-1,082.81	6,717.01	0.00	0.00	0.00
16,300.00	90.00	359.55	9,420.00	6,738.78	-1,083.60	6,816.51	0.00	0.00	0.00
16,400.00	90.00	359.55	9,420.00	6,838.77	-1,084.39	6,916.00	0.00	0.00	0.00
16,500.00	90.00	359.55	9,420.00	6,938.77	-1,085.18	7,015.50	0.00	0.00	0.00
16,600.00	90.00	359.55	9,420.00	7,038.77	-1,085.98	7,114.99	0.00	0.00	0.00
16,700.00	90.00	359.55	9,420.00	7,138.76	-1,086.77	7,214.49	0.00	0.00	0.00
16,800.00	90.00	359.55	9,420.00	7,238.76	-1,087.56	7,313.98	0.00	0.00	0.00
16,900.00	90.00	359.55	9,420.00	7,338.76	-1,088.35	7,413.47	0.00	0.00	0.00
17,000.00	90.00	359.55	9,420.00	7,438.76	-1,089.15	7,512.97	0.00	0.00	0.00
17,100.00	90.00	359.55	9,420.00	7,538.75	-1,089.94	7,612.46	0.00	0.00	0.00
17,200.00	90.00	359.55	9,420.00	7,638.75	-1,090.73	7,711.96	0.00	0.00	0.00
17,300.00	90.00	359.55	9,420.00	7,738.75	-1,091.53	7,811.45	0.00	0.00	0.00
17,400.00	90.00	359.55	9,420.00	7,838.74	-1,092.32	7,910.94	0.00	0.00	0.00
17,500.00	90.00	359.55	9,420.00	7,938.74	-1,093.11	8,010.44	0.00	0.00	0.00
17,600.00	90.00	359.55	9,420.00	8,038.74	-1,093.90	8,109.93	0.00	0.00	0.00
17,700.00	90.00	359.55	9,420.00	8,138.73	-1,094.70	8,209.43	0.00	0.00	0.00
17,800.00	90.00	359.55	9,420.00	8,238.73	-1,095.49	8,308.92	0.00	0.00	0.00
17,900.00	90.00	359.55	9,420.00	8,338.73	-1,096.28	8,408.42	0.00	0.00	0.00
18,000.00	90.00	359.55	9,420.00	8,438.72	-1,097.07	8,507.91	0.00	0.00	0.00
18,100.00	90.00	359.55	9,420.00	8,538.72	-1,097.87	8,607.40	0.00	0.00	0.00
18,200.00	90.00	359.55	9,420.00	8,638.72	-1,098.66	8,706.90	0.00	0.00	0.00
18,300.00	90.00	359.55	9,420.00	8,738.71	-1,099.45	8,806.39	0.00	0.00	0.00
18,400.00	90.00	359.55	9,420.00	8,838.71	-1,100.24	8,905.89	0.00	0.00	0.00
18,500.00	90.00	359.55	9,420.00	8,938.71	-1,101.04	9,005.38	0.00	0.00	0.00
18,600.00	90.00	359.55	9,420.00	9,038.70	-1,101.83	9,104.87	0.00	0.00	0.00
18,700.00	90.00	359.55	9,420.00	9,138.70	-1,102.62	9,204.37	0.00	0.00	0.00
18,800.00	90.00	359.55	9,420.00	9,238.70	-1,103.42	9,303.86	0.00	0.00	0.00
18,900.00	90.00	359.55	9,420.00	9,338.70	-1,104.21	9,403.36	0.00	0.00	0.00
19,000.00	90.00	359.55	9,420.00	9,438.69	-1,105.00	9,502.85	0.00	0.00	0.00
19,100.00	90.00	359.55	9,420.00	9,538.69	-1,105.79	9,602.35	0.00	0.00	0.00
19,200.00	90.00	359.55	9,420.00	9,638.69	-1,106.59	9,701.84	0.00	0.00	0.00
19,300.00	90.00	359.55	9,420.00	9,738.68	-1,107.38	9,801.33	0.00	0.00	0.00
19,400.00	90.00	359.55	9,420.00	9,838.68	-1,108.17	9,900.83	0.00	0.00	0.00
19,500.00	90.00	359.55	9,420.00	9,938.68	-1,108.96	10,000.32	0.00	0.00	0.00
19,600.00	90.00	359.55	9,420.00	10,038.67	-1,109.76	10,099.82	0.00	0.00	0.00
19,700.00	90.00	359.55	9,420.00	10,138.67	-1,110.55	10,199.31	0.00	0.00	0.00
19,755.44	90.00	359.55	9,420.00	10,194.11	-1,110.99	10,254.47	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP (Senile Felines - hit/miss target - Shape - Point)	0.00	0.00	8,826.08	-294.92	-1,027.81	504,451.68	764,323.94	32.384737	-103.610970
- plan misses target center by 98.65ft at 8925.34ft MD (8842.48 TVD, -295.00 N, -930.52 E)									
FTP (Senile Felines - plan misses target center by 202.62ft at 9402.23ft MD (9264.29 TVD, -117.74 N, -1003.01 E) - Point)	0.00	0.00	9,420.00	-244.92	-1,028.24	504,501.68	764,323.51	32.384874	-103.610971
PBHL (Senile Felines - plan hits target center - Point)	0.00	0.00	9,420.00	10,194.11	-1,110.99	514,940.34	764,240.76	32.413568	-103.611010

# OXY

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Senile Felines 18_7 State Com 13H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=25' @ 3656.00ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=25' @ 3656.00ft
<b>Site:</b>	Senile Felines 18_7	<b>North Reference:</b>	Grid
<b>Well:</b>	Senile Felines 18_7 State Com 13H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
879.00	879.00	RUSTLER			
1,550.00	1,550.00	SALADO			
2,786.00	2,786.00	CASTILE			
4,860.10	4,839.00	DELAWARE			
4,940.32	4,918.00	BELL CANYON			
5,948.64	5,911.00	CHERRY CANYON			
7,138.72	7,083.00	BRUSHY CANYON			
8,808.09	8,727.00	BONE SPRING			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,805.00	2,805.00	0.00	0.00	Build 1°/100'
3,805.06	3,799.99	-26.33	-82.98	Hold 10° Tangent
8,908.69	8,826.08	-294.37	-927.77	KOP, Build 10°/100'
9,838.04	9,420.00	277.02	-1,032.37	Landing Point
19,755.44	9,420.00	10,194.11	-1,110.99	TD at 19755.44' MD

## **Falcon SL1 Production Casing Annular Clearance Variance Request**

If Production Casing Connection OD does not meet 0.422" annular clearance inside casing:

- Cement excess will be circulated from Top of Liner to surface (Cement Confirmation)
- Liner Top will be tested to confirm seal.
- If ICP in Bone Spring Pool and lateral landed in Wolfcamp Pool, a CBL will be ran.

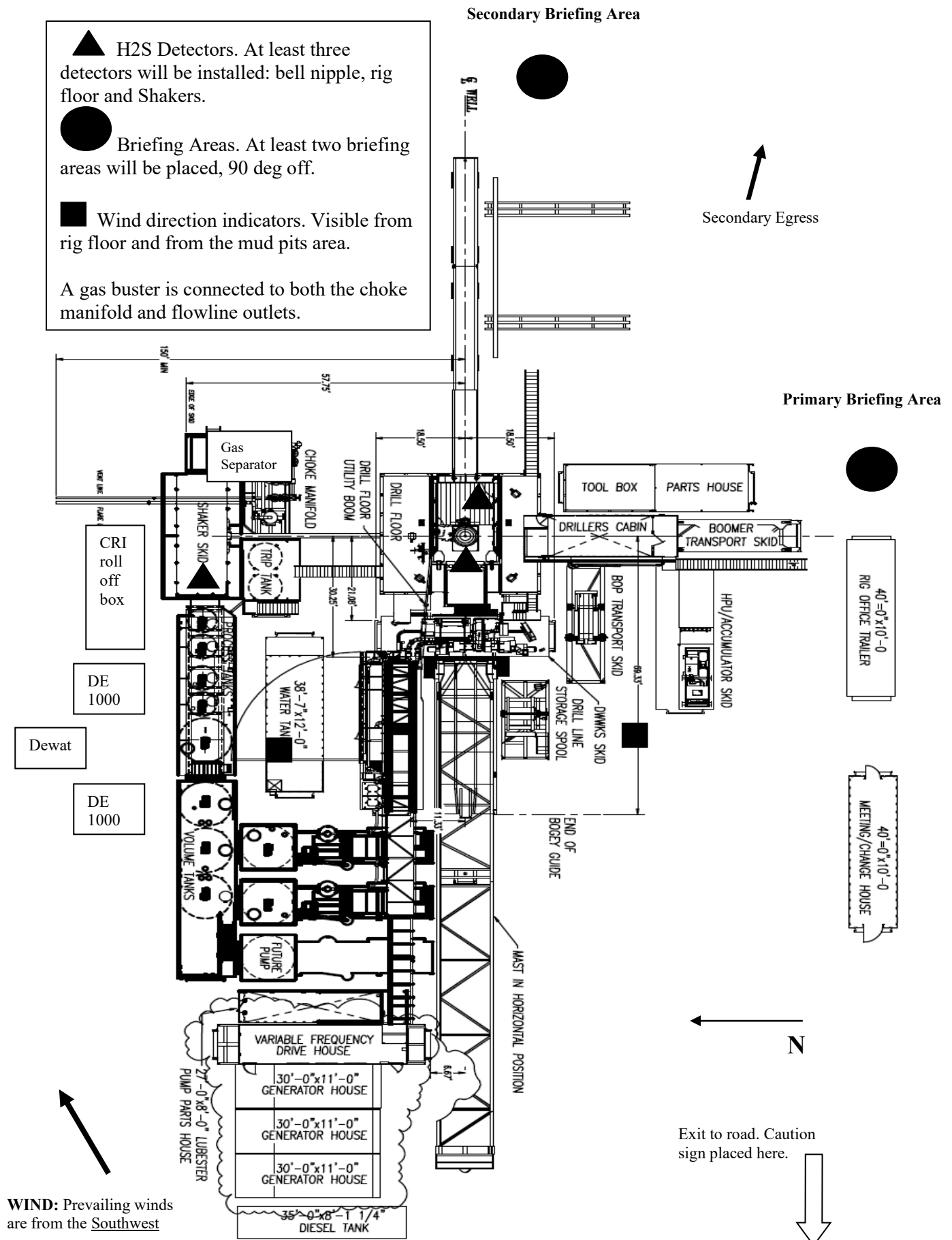


## **Permian Drilling Hydrogen Sulfide Drilling Operations Plan**

Open drill site. No homes or buildings are near the proposed location.

### **1. Escape**

Personnel shall escape upwind of wellbore in the event of an emergency gas release. Escape can take place through the lease road on the Southeast side of the location. Personnel need to move to a safe distance and block the entrance to location. If the primary route is not an option due to the wind direction, then a secondary egress route should be taken.





## **Permian Drilling Hydrogen Sulfide Drilling Operations Plan New Mexico**

### **Scope**

This contingency plan establishes guidelines for the public, all company employees, and contract employees who's work activities may involve exposure to hydrogen sulfide (H<sub>2</sub>S) gas.

While drilling this well, it is possible to encounter H<sub>2</sub>S bearing formations. At all times, the first barrier to control H<sub>2</sub>S emissions will be the drilling fluid, which will have a density high enough to control influx.

### **Objective**

1. Provide an immediate and predetermined response plan to any condition when H<sub>2</sub>S is detected. All H<sub>2</sub>S detections in excess of 10 parts per million (ppm) concentration are considered an Emergency.
2. Prevent any and all accidents, and prevent the uncontrolled release of hydrogen sulfide into the atmosphere.
3. Provide proper evacuation procedures to cope with emergencies.
4. Provide immediate and adequate medical attention should an injury occur.

### **Discussion**

Implementation:	This plan with all details is to be fully implemented before drilling to <u>commence</u> .
Emergency response Procedure:	This section outlines the conditions and denotes steps to be taken in the event of an emergency.
Emergency equipment Procedure:	This section outlines the safety and emergency equipment that will be required for the drilling of this well.
Training provisions:	This section outlines the training provisions that must be adhered to prior to drilling.
Drilling emergency call lists:	Included are the telephone numbers of all persons to be contacted should an emergency exist.
Briefing:	This section deals with the briefing of all people involved in the drilling operation.
Public safety:	Public safety personnel will be made aware of any potential evacuation and any additional support needed.
Check lists:	Status check lists and procedural check lists have been included to insure adherence to the plan.
General information:	A general information section has been included to supply support information.

### **Hydrogen Sulfide Training**

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

1. The hazards and characteristics of H<sub>2</sub>S.
2. Proper use and maintenance of personal protective equipment and life support systems.
3. H<sub>2</sub>S detection.
4. Proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures and prevailing winds.
5. Proper techniques for first aid and rescue procedures.
6. Physical effects of hydrogen sulfide on the human body.
7. Toxicity of hydrogen sulfide and sulfur dioxide.
8. Use of SCBA and supplied air equipment.
9. First aid and artificial respiration.
10. Emergency rescue.

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

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

H<sub>2</sub>S training refresher must have been taken within one year prior to drilling the well. Specifics on the well to be drilled will be discussed during the pre-spud meeting. H<sub>2</sub>S and well control (choke) drills will be performed while drilling the well, at least on a weekly basis. This plan shall be available in the well site. All personnel will be required to carry the documentation proving that the H<sub>2</sub>S training has been taken.

#### **Service company and visiting personnel**

- A. Each service company that will be on this well will be notified if the zone contains H<sub>2</sub>S.
- B. Each service company must provide for the training and equipment of their employees before they arrive at the well site.
- C. Each service company will be expected to attend a well site



### **Emergency Equipment Requirements**

#### 1. Well control equipment

The well shall have hydraulic BOP equipment for the anticipated pressures. Equipment is to be tested on installation and follow Oxy Well Control standard, as well as 43 CFR part 3170 Subpart 3172.

*Special control equipment:*

- A. Hydraulic BOP equipment with remote control on ground.  
Remotely operated choke.
- B. Rotating head
- C. Gas buster equipment shall be installed before drilling out of surface pipe.

#### 2. Protective equipment for personnel

- A. Four (4) 30-minute positive pressure air packs (2 at each briefing area) on location.
- B. Adequate fire extinguishers shall be located at strategic locations.
- C. Radio / cell telephone communication will be available at the rig.
  - Rig floor and trailers.
  - Vehicle.

#### 3. Hydrogen sulfide sensors and alarms

- A. H<sub>2</sub>S sensor with alarms will be located on the rig floor, at the bell nipple, and at the flow line. These monitors will be set to alarm at 10 ppm with strobe light, and audible alarm.
- B. Hand operated detectors with tubes.
- C. H<sub>2</sub>S monitor tester (to be provided by contract Safety Company.)
- D. There shall be one combustible gas detector on location at all times.

#### 4. Visual Warning Systems

- A. One sign located at each location entrance with the following language:

**Caution – potential poison gas  
Hydrogen sulfide  
No admittance without authorization**

*Wind sock – wind streamers:*

- A. One 36” (in length) wind sock located at protection center, at height visible from rig floor.
- B. One 36” (in length) wind sock located at height visible from pit areas.

*Condition flags*

- A. One each condition flag to be displayed to denote conditions.

**green – normal conditions**

**yellow – potential danger**

**red – danger, H2S present**

- B. Condition flag shall be posted at each location sign entrance.

5. Mud Program

The mud program is designed to minimize the risk of having H2S and other formation fluids at surface. Proper mud weight and safe drilling practices will be applied. H2S scavengers will be used to minimize the hazards while drilling. Below is a summary of the drilling program.

*Mud inspection devices:*

Garrett gas train or hatch tester for inspection of sulfide concentration in mud system.

6. Metallurgy

- A. Drill string, casing, tubing, wellhead, blowout preventers, drilling spools or adapters, kill lines, choke manifold, lines and valves shall be suitable for the H2S service.
- B. All the elastomers, packing, seals and ring gaskets shall be suitable for H2S service.

7. Well Testing

No drill stem test will be performed on this well.

8. Evacuation plan

Evacuation routes should be established prior to well spud for each well and discussed with all rig personnel.

9. Designated area

- A. Parking and visitor area: all vehicles are to be parked at a predetermined safe distance from the wellhead.
- B. There will be a designated smoking area.
- C. Two briefing areas on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds perpendicularly, or at a 45-degree angle if wind direction tends to shift in the area.

**Emergency procedures**

- A. In the event of any evidence of H<sub>2</sub>S level above 10 ppm, take the following steps:
  - 1. The Driller will pick up off bottom, shut down the pumps, slow down the pipe rotation.
  - 2. Secure and don escape breathing equipment, report to the upwind designated safe briefing / muster area.
  - 3. All personnel on location will be accounted for and emergency search should begin for any missing, the Buddy System will be implemented.
  - 4. Order non-essential personnel to leave the well site, order all essential personnel out of the danger zone and upwind to the nearest designated safe briefing / muster area.
  - 5. Entrance to the location will be secured to a higher level than our usual "Meet and Greet" requirement, and the proper condition flag will be displayed at the entrance to the location.
  - 6. Take steps to determine if the H<sub>2</sub>S level can be corrected or suppressed and, if so, proceed as required.
- B. If uncontrollable conditions occur:
  - 1. Take steps to protect and/or remove any public in the down-wind area from the rig – partial evacuation and isolation. Notify necessary public safety personnel and appropriate regulatory entities (i.e. BLM) of the situation.

2. Remove all personnel to the nearest upwind designated safe briefing / muster area or off location.
3. Notify public safety personnel of safe briefing / muster area.
4. An assigned crew member will blockade the entrance to the location. No unauthorized personnel will be allowed entry to the location.
5. Proceed with best plan (at the time) to regain control of the well. Maintain tight security and safety procedures.

C. Responsibility:

1. Designated personnel.
  - a. Shall be responsible for the total implementation of this plan.
  - b. Shall be in complete command during any emergency.
  - c. Shall designate a back-up.

- All personnel:
1. On alarm, don escape unit and report to the nearest upwind designated safe briefing / muster area upw
  2. Check status of personnel (buddy system).
  3. Secure breathing equipment.
  4. Await orders from supervisor.

- Drill site manager:
1. Don escape unit if necessary and report to nearest upwind designated safe briefing / muster area.
  2. Coordinate preparations of individuals to return to point of release with tool pusher and driller (using the buddy system).
  3. Determine H2S concentrations.
  4. Assess situation and take control measures.

- Tool pusher:
1. Don escape unit Report to up nearest upwind designated safe briefing / muster area.
  2. Coordinate preparation of individuals to return to point of release with tool pusher drill site manager (using the buddy system).
  3. Determine H2S concentration.
  4. Assess situation and take control measures.

- Driller:
1. Don escape unit, shut down pumps, continue

- rotating DP.
  - 2. Check monitor for point of release.
  - 3. Report to nearest upwind designated safe briefing / muster area.
  - 4. Check status of personnel (in an attempt to rescue, use the buddy system).
  - 5. Assigns least essential person to notify Drill Site Manager and tool pusher by quickest means in case of their absence.
  - 6. Assumes the responsibilities of the Drill Site Manager and tool pusher until they arrive should they be absent.
- Derrick man
- Floor man #1
- Floor man #2
- Mud engineer:
- 1. Will remain in briefing / muster area until instructed by supervisor.
- 1. Report to nearest upwind designated safe briefing / muster area.
  - 2. When instructed, begin check of mud for ph and H2S level. (Garett gas train.)
- Safety personnel:
- 1. Mask up and check status of all personnel and secure operations as instructed by drill site manager.

### **Taking a kick**

When taking a kick during an H2S emergency, all personnel will follow standard Well control procedures after reporting to briefing area and masking up.

### **Open-hole logging**

All unnecessary personnel off floor. Drill Site Manager and safety personnel should monitor condition, advise status and determine need for use of air equipment.

### **Running casing or plugging**

Following the same “tripping” procedure as above. Drill Site Manager and safety personnel should determine if all personnel have access to protective equipment.

### **Ignition procedures**

The decision to ignite the well is the responsibility of the operator (Oxy Drilling Management). The decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope controlling the blowout under the prevailing conditions at the well.

### **Instructions for igniting the well**

1. Two people are required for the actual igniting operation. They must wear self-contained breathing units and have a safety rope attached. One man (tool pusher or safety engineer) will check the atmosphere for explosive gases with the gas monitor. The other man is responsible for igniting the well.
2. Primary method to ignite: 25 mm flare gun with range of approximately 500 feet.
3. Ignite upwind and do not approach any closer than is warranted.
4. Select the ignition site best for protection, and which offers an easy escape route.
5. Before firing, check for presence of combustible gas.
6. After lighting, continue emergency action and procedure as before.
7. All unassigned personnel will remain in briefing area until instructed by supervisor or directed by the Drill Site Manager.

**Remember:** After well is ignited, burning hydrogen sulfide will convert to sulfur dioxide, which is also highly toxic. **Do not assume the area is safe after the well is ignited.**

**Status check list**

Note: All items on this list must be completed before drilling to production casing point.

1. H2S sign at location entrance.
2. Two (2) wind socks located as required.
3. Four (4) 30-minute positive pressure air packs (2 at each Briefing area) on location for all rig personnel and mud loggers.
4. Air packs inspected and ready for use.
5. Cascade system and hose line hook-up as needed.
6. Cascade system for refilling air bottles as needed.
7. Condition flag on location and ready for use.
8. H2S detection system hooked up and tested.
9. H2S alarm system hooked up and tested.
10. Hand operated H2S detector with tubes on location.
11. 1 – 100' length of nylon rope on location.
12. All rig crew and supervisors trained as required.
13. All outside service contractors advised of potential H2S hazard on well.
14. No smoking sign posted and a designated smoking area identified.
15. Calibration of all H2S equipment shall be noted on the IADC report.

Checked by: \_\_\_\_\_ Date: \_\_\_\_\_



**Procedural check list during H2S events**

**Perform each tour:**

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to ensure that it is in proper working order.
3. Make sure all the H2S detection system is operative.

**Perform each week:**

1. Check each piece of breathing equipment to make sure that demand or forced air regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you receive air or feel air flow.
2. BOP skills (well control drills).
3. Check supply pressure on BOP accumulator stand by source.
4. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.
5. Check pressure on breathing equipment air bottles to make sure they are charged to full volume. ( Air quality checked for proper air grade "D" before bringing to location)
6. Confirm pressure on all supply air bottles.
7. Perform breathing equipment drills with on-site personnel.
8. Check the following supplies for availability.
  - A. Emergency telephone list.
  - B. Hand operated H2S detectors and tubes.

**General evacuation plan**

1. When the company approved supervisor (Drill Site Manager, consultant, rig pusher, or driller) determines the H2S gas cannot be limited to the well location and the public will be involved, he will activate the evacuation plan.
2. Drill Site Manager or designee will notify local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company or contractor safety personnel that have been trained in the use of H2S detection equipment and self-contained breathing equipment will monitor H2S concentrations, wind directions, and area of exposure. They will delineate the outer perimeter of the hazardous gas area. Extension to the evacuation area will be determined from information gathered.
4. Law enforcement personnel (state police, police dept., fire dept., and sheriff's dept.) Will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.
5. After the discharge of gas has been controlled, company safety personnel will determine when the area is safe for re-entry.

**Important: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.**

### **Emergency actions**

#### **Well blowout – if emergency**

1. Evacuate all personnel to “Safe Briefing / Muster Areas” or off location if needed.
2. If sour gas – evacuate rig personnel.
3. If sour gas – evacuate public within 3000 ft radius of exposure.
4. Don SCBA and shut well in if possible using the buddy system.
5. Notify Drilling Superintendent and call 911 for emergency help (fire dept and ambulance) if needed.
6. Implement the Blowout Contingency Plan, and Drilling Emergency Action Plan.
6. Give first aid as needed.

#### **Person down location/facility**

1. If immediately possible, contact 911. Give location and wait for confirmation.
2. Don SCBA and perform rescue operation using buddy system.

### Toxic effects of hydrogen sulfide

Hydrogen sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 ppm, which is .001% by volume. Hydrogen sulfide is heavier than air (specific gravity – 1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen sulfide is almost as toxic as hydrogen cyanide and is between five and six times more toxic than carbon monoxide. Toxicity data for hydrogen sulfide and various other gases are compared in table i. Physical effects at various hydrogen sulfide exposure levels are shown in table ii.

Table i  
Toxicity of various gases

Common name	Chemical formula	Specific gravity (sc=1)	Threshold limit (1)	Hazardous limit (2)	Lethal concentration (3)
Hydrogen Cyanide	Hcn	0.94	10 ppm	150 ppm/hr	300 ppm
Hydrogen Sulfide	H2S	1.18	10 ppm	250 ppm/hr	600 ppm
Sulfur Dioxide	So2	2.21	5 ppm	-	1000 ppm
Chlorine	Cl2	2.45	1 ppm	4 ppm/hr	1000 ppm
Carbon Monoxide	Co	0.97	50 ppm	400 ppm/hr	1000 ppm
Carbon Dioxide	Co2	1.52	5000 ppm	5%	10%
Methane	Ch4	0.55	90,000 ppm	Combustible above 5% in air	

- 1) threshold limit – concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.
- 2) hazardous limit – concentration that will cause death with short-term exposure.
- 3) lethal concentration – concentration that will cause death with short-term exposure.

### Toxic effects of hydrogen sulfide

Table ii  
Physical effects of hydrogen sulfide

Percent (%)	Ppm	Concentration	Physical effects
		Grains 100 std. Ft3*	
0.001	<10	00.65	Obvious and unpleasant odor.

0.002	10	01.30	Safe for 8 hours of exposure.
0.010	100	06.48	Kill smell in 3 – 15 minutes. May sting eyes and throat.
0.020	200	12.96	Kills smell shortly; stings eyes and throat.
0.050	500	32.96	Dizziness; breathing ceases in a few minutes; needs prompt artificial respiration.
0.070	700	45.36	Unconscious quickly; death will result if not rescued promptly.
0.100	1000	64.30	Unconscious at once; followed by death within minutes.

\*at 15.00 psia and 60'f.

**Use of self-contained breathing equipment (SCBA)**

1. Written procedures shall be prepared covering safe use of SCBA's in dangerous atmosphere, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available SCBA.
2. SCBA's shall be inspected frequently at random to insure that they are properly used, cleaned, and maintained.
3. Anyone who may use the SCBA's shall be trained in how to insure proper face-piece to face seal. They shall wear SCBA's in normal air and then wear them in a test atmosphere. (note: such items as facial hair {beard or sideburns} and eyeglasses will not allow proper seal.) Anyone that may be reasonably expected to wear SCBA's should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses or contact lenses.
4. Maintenance and care of SCBA's:
  - a. A program for maintenance and care of SCBA's shall include the following:
    1. Inspection for defects, including leak checks.
    2. Cleaning and disinfecting.
    3. Repair.
    4. Storage.
  - b. Inspection, self-contained breathing apparatus for emergency use shall be inspected monthly.
    1. Fully charged cylinders.
    2. Regulator and warning device operation.
    3. Condition of face piece and connections.
    4. Rubber parts shall be maintained to keep them pliable and prevent deterioration.
  - c. Routinely used SCBA's shall be collected, cleaned and disinfected as frequently as necessary to insure proper protection is provided.
5. Persons assigned tasks that requires use of self-contained breathing equipment shall be certified physically fit (medically cleared) for breathing equipment usage at least annually.
6. SCBA's should be worn when:
  - A. Any employee works near the top or on top of any tank unless test reveals less than 10 ppm of H<sub>2</sub>S.

- B. When breaking out any line where H<sub>2</sub>S can reasonably be expected.
- C. When sampling air in areas to determine if toxic concentrations of H<sub>2</sub>S exists.
- D. When working in areas where over 10 ppm H<sub>2</sub>S has been detected.
- E. At any time there is a doubt as to the H<sub>2</sub>S level in the area to be entered.

**Rescue**  
**First aid for H<sub>2</sub>S poisoning**

Do not panic!

Remain calm – think!

1. Don SCBA breathing equipment.
2. Remove victim(s) utilizing buddy system to fresh air as quickly as possible. (go up-wind from source or at right angle to the wind. Not down wind.)
3. Briefly apply chest pressure – arm lift method of artificial respiration to clean the victim's lungs and to avoid inhaling any toxic gas directly from the victim's lungs.
4. Provide for prompt transportation to the hospital, and continue giving artificial respiration if needed.
5. Hospital(s) or medical facilities need to be informed, before-hand, of the possibility of H<sub>2</sub>S gas poisoning – no matter how remote the possibility is.
6. Notify emergency room personnel that the victim(s) has been exposed to H<sub>2</sub>S gas.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration.

Revised CM 6/27/2012



## Offline Cementing Variance Request

Oxy requests a variance to cement the 9.625" and/or 7.625" intermediate casing strings offline in accordance to the approved variance, EC Tran 461365.

### 1. Cement Program

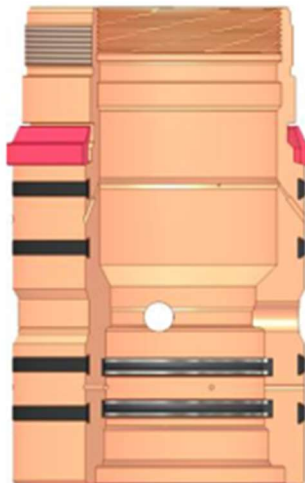
No changes to the cement program will take place for offline cementing.

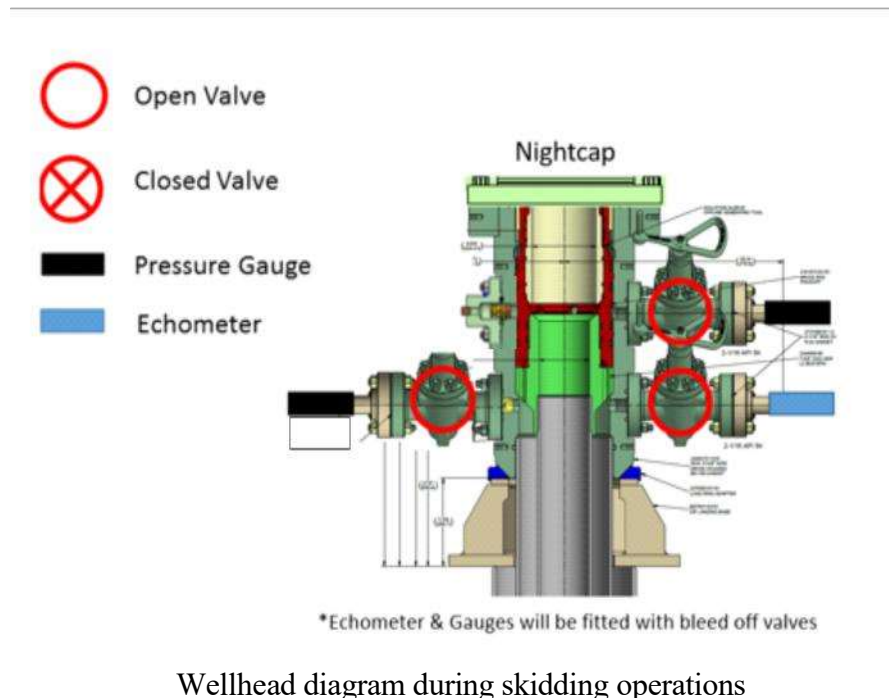
### 2. Offline Cementing Procedure

The operational sequence will be as follows:

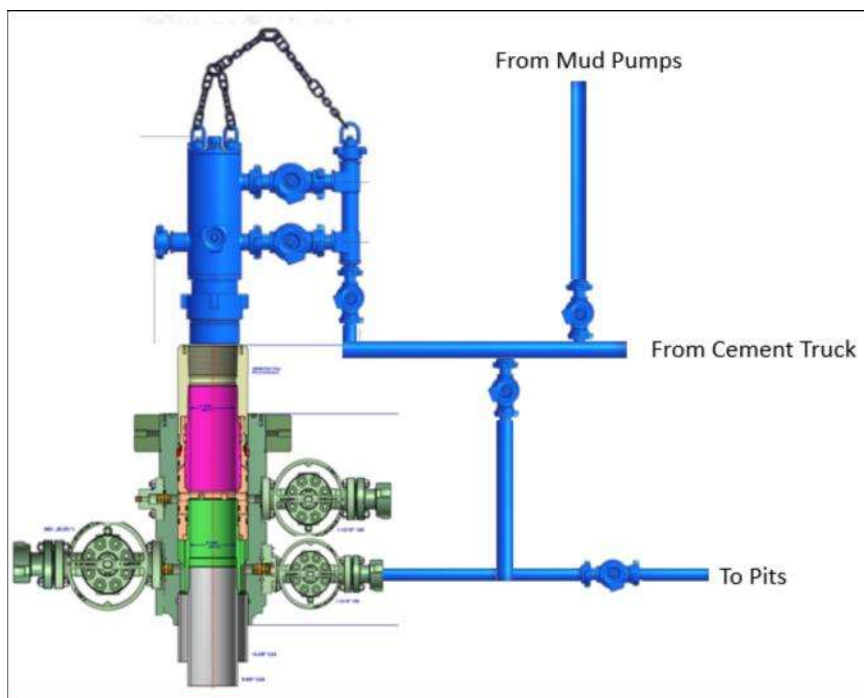
1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe)
2. Land casing with mandrel
3. Fill pipe with kill weight fluid, do not circulate through floats and confirm well is static
4. Set annular packoff shown below and pressure test to confirm integrity of the seal.  
Pressure ratings of wellhead components and valves is 5,000 psi

Annular packoff with both external and internal seals





5. After confirmation of both annular barriers and internal barriers, nipple down BOP and install cap flange.
  - a. If any barrier fails to test, the BOP stack will not be nipped down until after the cement job is completed with cement 500ft above the highest formation capable of flow with kill weight mud above or after it has achieved 50 psi compressive strength if cannot be verified.
6. Skid rig to next well on pad.
7. Confirm well is static before removing cap flange, flange will not be removed and offline cementing operations will not commence until well is under control. If well is not static, casing outlet valves will provide access to both the casing ID and annulus. Rig or third party pump truck will kill well prior to cementing or nipping up for further remediation.
  - a. Well Control Plan
    - i. The Drillers Method will be the primary well control method to regain control of the wellbore prior to cementing, if wellbore conditions do not permit the drillers method other methods of well control may be used
    - ii. Rig pumps or a 3<sup>rd</sup> party pump will be tied into the upper casing valve to pump down the casing ID
    - iii. A high pressure return line will be rigged up to lower casing valve and run to choke manifold to control annular pressure
    - iv. Once influx is circulated out of the hole, kill weight mud will be circulated
    - v. Well will be confirmed static
    - vi. Once confirmed static, cap flange will be removed to allow for offline cementing operations to commence
8. Install offline cement tool
9. Rig up cement equipment



Wellhead diagram during offline cementing operations

10. Circulate bottoms up with cement truck
  - a. If gas is present on bottoms up, well will be shut in and returns rerouted through gas buster to handle entrained gas
  - b. Max anticipated time before circulating with cement truck is 6 hrs
11. Perform cement job taking returns from the annulus wellhead valve
12. Confirm well is static and floats are holding after cement job
13. Remove cement equipment, offline cement tools and install night cap with pressure gauge for monitoring.