Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD
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RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM069377

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
LION OIL 28-33 FEDERAL COM
34H (327301)

2. Name of Operator
OXY USA INCORPORATED (16696)

9. API Well No.
30-025-46956 (98286)

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
5 Greenway Plaza, Suite 110 Houston TX 77046	(713)366-5716	WC-025 G-08 S223227D / WC-025 G-08

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWNE / 255 FNL / 1550 FEL / LAT 32.3691896 / LONG -103.6761338
At proposed prod. zone SWSE / 20 FSL / 1640 FEL / LAT 32.3409164 / LONG -103.6763955

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 28 / T22S / R32E / NMP

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

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
20 feet	320	640

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
35 feet	11863 feet / 22702 feet	FED: ESB000226

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3625 feet	09/01/2020	15 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Leslie Reeves / Ph: (713)497-2492	03/14/2019

Title
Advisor Regulatory

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	03/06/2020

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

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

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

GCP Rec 03/10/2020

KZ 03/11/2020

APPROVED WITH CONDITIONS

Approval Date: 03/06/2020

(Continued on page 2)

*(Instructions on page 2)

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

Operator Certification Data Report

03/09/2020

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Leslie Reeves **Signed on:** 03/14/2019

Title: Advisor Regulatory

Street Address: 5 Greenway Plaza, Suite 110

City: Houston **State:** TX **Zip:** 77046

Phone: (713)497-2492

Email address: Leslie_Reeves@oxy.com

Field Representative

Representative Name:

Street Address: 6001 Deauville

City: Midland **State:** TX **Zip:** 79706

Phone: (575)631-2442

Email address: jim_wilson@oxy.com

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

Application Data Report

03/09/2020

APD ID: 10400039683 **Submission Date:** 03/14/2019

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

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

[redacted]

Show Final Text

Section 1 - General

APD ID: 10400039683 **Tie to previous NOS?** N **Submission Date:** 03/14/2019

BLM Office: CARLSBAD **User:** Leslie Reeves **Title:** Advisor Regulatory

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

Lease number: NMNM069377 **Lease Acres:** 320

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

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

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** OXY USA INCORPORATED

Operator letter of designation:

Operator Info

Operator Organization Name: OXY USA INCORPORATED

Operator Address: 5 Greenway Plaza, Suite 110

Zip: 77046

Operator PO Box:

Operator City: Houston **State:** TX

Operator Phone: (713)366-5716

Operator Internet Address:

Section 2 - Well Information

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

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

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

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WC-025 G-08 S223227D **Pool Name:** WC-025 G-08 S223227D

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

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

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

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** LION OIL 28-33 FEDERAL COM **Number:** 34H & 35H

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

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 25 Miles **Distance to nearest well:** 35 FT **Distance to lease line:** 20 FT

Reservoir well spacing assigned acres Measurement: 640 Acres

Well plat: LionOil28_33FdCom34H_C102_20190304144808.pdf

LionOil28_33FdCom34H_SitePlan_20190304144818.pdf

Well work start Date: 09/01/2020 **Duration:** 15 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:**

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	255	FNL	1550	FEL	22S	32E	28	Aliquot NWNE	32.3691896	-103.6761338	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 069377	3625	0	0	
KOP Leg #1	50	FNL	1640	FEL	22S	32E	28	Aliquot NWNE	32.3697521	-103.676426	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 069377	-8238	12259	11863	

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-1	6	FSL	1639	FEL	22S	32E	28	Aliquot SWSE	32.355393	-103.67641	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 077060	-8238	17434	11863	
PPP Leg #1-2	100	FNL	1640	FEL	22S	32E	28	Aliquot NWNE	32.3696146	-103.6764258	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 069377	-8238	12259	11863	
EXIT Leg #1	100	FSL	1640	FEL	22S	32E	33	Aliquot SWSE	32.3411363	-103.6763957	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 077060	-8238	22602	11863	
BHL Leg #1	20	FSL	1640	FEL	22S	32E	33	Aliquot SWSE	32.3409164	-103.6763955	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 077060	-8238	22702	11863	

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

Drilling Plan Data Report

03/09/2020

APD ID: 10400039683 **Submission Date:** 03/14/2019

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

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

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
410536	RUSTLER	3625	837	837	ANHYDRITE, DOLOMITE, SHALE	USEABLE WATER	N
410535	SALADO	2372	1253	1253	ANHYDRITE, DOLOMITE, HALITE, SHALE	OTHER : SALT	N
410533	CASTILE	783	2842	2842	ANHYDRITE	OTHER : salt	N
410537	LAMAR	-1018	4643	4643	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	N
410538	BELL CANYON	-1061	4686	4686	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER, USEABLE WATER : BRINE	N
410539	CHERRY CANYON	-1980	5605	5605	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	N
410540	BRUSHY CANYON	-3209	6834	6843	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	N
410534	BONE SPRING	-4915	8540	8576	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	N
415263	BONE SPRING 1ST	-6059	9684	9734	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	N
410541	BONE SPRING 2ND	-6343	9968	10025	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Y
410542	BONE SPRING 3RD	-7168	10793	10860	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Y
410543	WOLFCAMP	-8146	11771	11934	SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 11863

Equipment: 13-5/8" 5M Annular, Blind Ram, Double Ram

Requesting Variance? YES

Variance request: Request for the use of a flexible choke line from the BOP to Choke Manifold.

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

tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. A multibowl wellhead or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system will be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. BOP Break Testing Request - As per the agreement reached in the OXY/BLM meeting on Feb 22, 2018, OXY requests permission to allow BOP Break Testing under the following conditions: 1. After a full BOP test is conducted on the first well on the pad. 2. When skidding to drill an intermediate section that does not penetrate into the Wolfcamp. 3. Full BOP test will be required prior to drilling any production section.

Choke Diagram Attachment:

LionOil28_33FdCom34H_ChokeManifold_20190311120907.pdf

BOP Diagram Attachment:

LionOil28_33FdCom34H_BOP5M_20190311120918.PDF

LionOil28_33FdCom34H_FlexHoseCert_20190311120933.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	1193	0	1193			1193	J-55	40.5	BUTT	1.125	1.2	BUOY	1.4	BUOY	1.4
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	11358	0	11289			11358	HCL-80	26.4	BUTT	1.125	1.2	BUOY	1.4	BUOY	1.4
3	PRODUCTION	6.75	5.5	NEW	API	N	0	22701	0	11863			22701	P-110	20	OTHER - DQX	1.125	1.2	BUOY	1.4	BUOY	1.4

Casing Attachments

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LionOil28_33FdCom34H_CsgCriteria_20190311121104.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LionOil28_33FdCom34H_CsgCriteria_20190311121303.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

LionOil28_33FdCom34H_CsgCriteria_20190311121801.pdf

LionOil28_33FdCom34H_5.500in_x_20.00__P110_HC_TMK_UP_SF_TORQ_20190311121815.pdf

LionOil28_33FdCom34H_5.500in_x_20.00__P_110_TMK_UP_DQX_20190311121822.pdf

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Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1193	985	1.33	14.8	1310	100	Cl C	Accelerator
INTERMEDIATE	Lead	4693	0	4693	1068	1.67	13.6	1784	100	Cl C	Accelerator, Retarder
INTERMEDIATE	Lead	4693	4593	10358	576	2.58	10.2	1486	20	Pozzolan C	Retarder
INTERMEDIATE	Tail		10358	11358	167	1.61	13.2	269	20	Cl H	Retarder, Dispersant, Salt
PRODUCTION	Lead		10858	22701	868	1.38	13.2	1198	20	CL H	Retarder, Dispersant, Salt

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CaCl2.

Describe the mud monitoring system utilized: PVT/MD Totco/Visual Monitoring

Circulating Medium Table

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1193	11358	OTHER : Saturated Brine Based Mud	8	10							
11358	22701	OTHER : Water-Based and/or Oil-Based Mud	9.5	12							
0	1193	WATER-BASED MUD	8.6	8.8							

Section 6 - Test, Logging, Coring

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

GR from TD to surface (horizontal well – vertical portion of hole). Mud Log from intermediate shoe to TD.

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

GR,MUDLOG

Coring operation description for the well:

No coring is planned at this time.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 7402 **Anticipated Surface Pressure:** 4792.13

Anticipated Bottom Hole Temperature(F): 175

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

LionOil28_33FdCom34H_H2S1_20190311123106.pdf

LionOil28_33FdCom34H_H2S2_20190311123114.pdf

LionOil28_33FdCom34H_H2SEmerCont_20190311123131.pdf

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

LionOil28_33FdCom34H_DirectPlot_20190311123148.pdf

LionOil28_33FdCom34H_DirectPlan_20190311123201.pdf

Other proposed operations facets description:

OXY requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool will be run in case a contingency second stage is required for cement to reach surface. If cement circulated to surface during first stage we will drop a cancelation cone and not pump the second stage.

OXY requests the option to run production casing with DQX and/or SF TORQ connections to accommodate hole conditions or drilling operations.

OXY requests to pump a two stage cement job on the intermediate II casing string with the first stage being pumped conventionally with the calculated TOC @ the Bone Spring and the second stage performed as a bradenhead squeeze with planned cement from the Bone Spring to surface.

Annular Clearance Variance Request - As per the agreement reached in the OXY/BLM meeting on Feb 22, 2018, Oxy requests permission to allow deviation from the 0.422" annular clearance requirement from Onshore Order #2 under the following conditions:
1. Annular clearance to meet or exceed 0.422" between intermediate casing ID and production casing coupling only on the first 500' overlap between both casings.
2. Annular clearance less than 0.422" is acceptable for the curve and lateral portions of the production open hole section.

Well will be drilled with a walking/skidding operation. Plan to drill the multiple well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.

OXY requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that OXY would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.

Other proposed operations facets attachment:

LionOil28_33FdCom34H_DrillPlan_20190311123223.pdf

LionOil28_33FdCom34H_GasCapPlan_20190311123404.pdf

LionOil28_33FdCom34H_SpudRigData_20190311123415.pdf

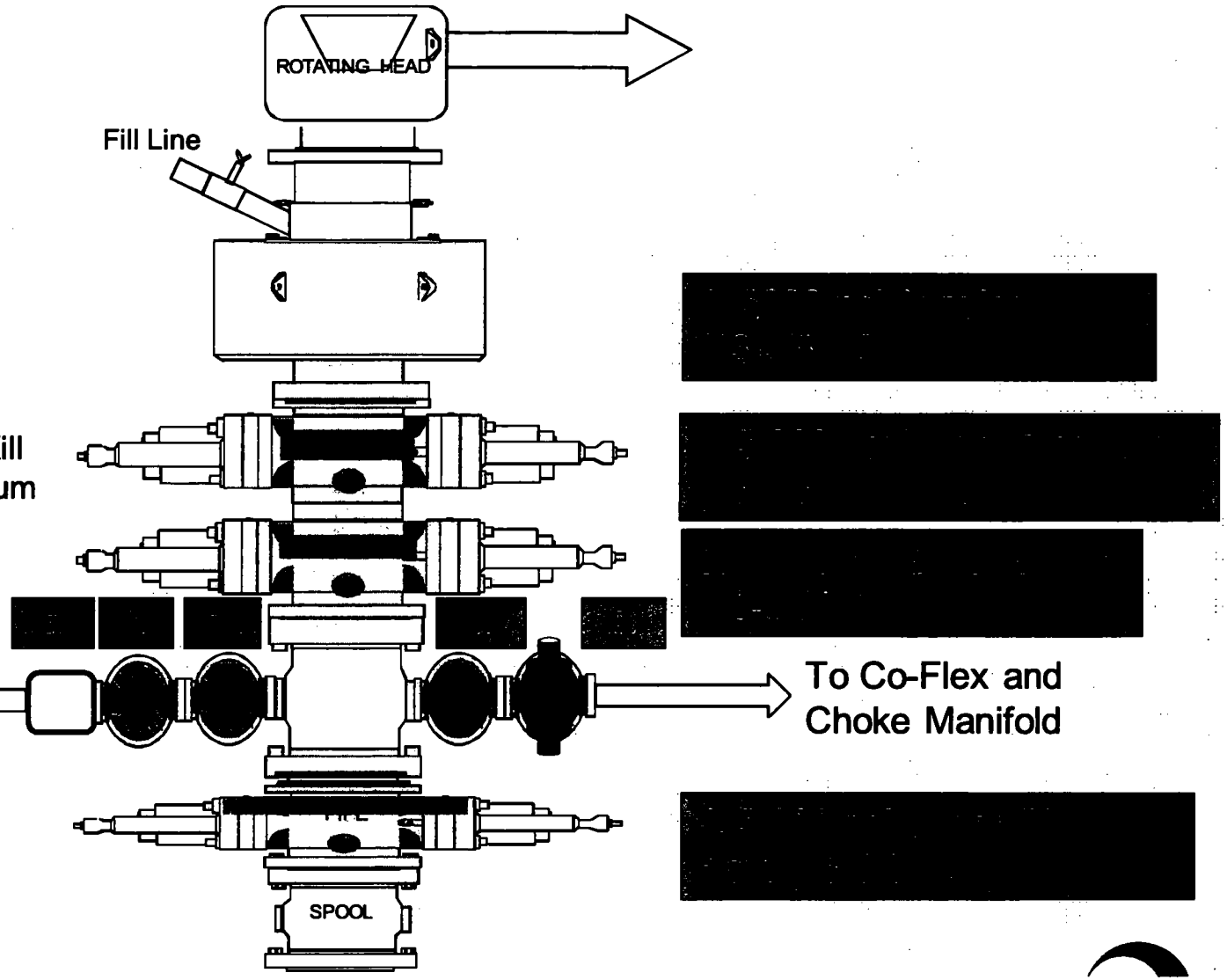
Other Variance attachment:

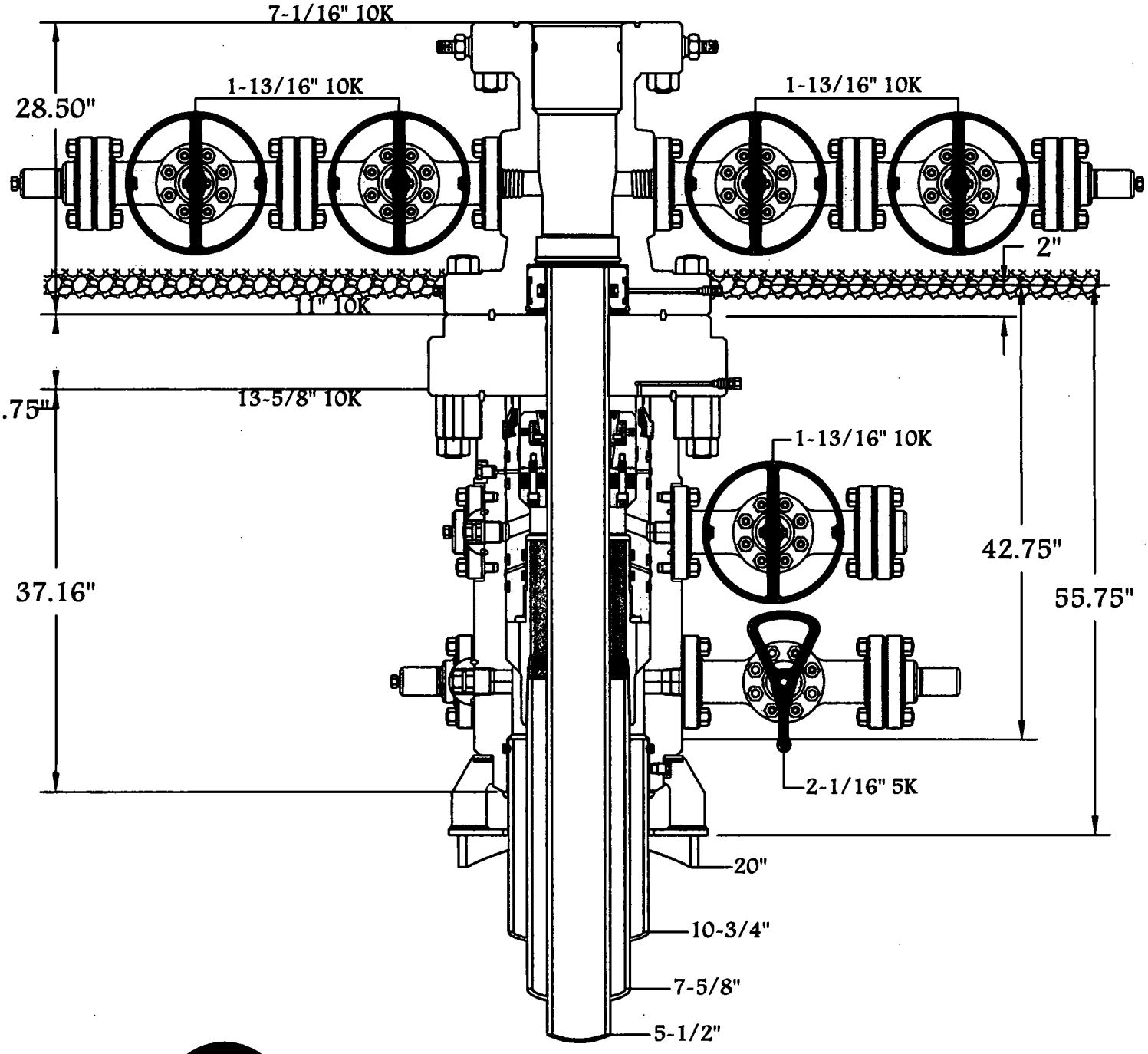
5M BOP Stack

Mud Cross Valves:

5. 5M Check Valve
6. Outside 5M Kill Line Valve
7. Inside 5M Kill Line
8. Outside 5M Kill Line Valve
9. 5M HCR Valve

*Minimum ID = 2-1/16" on Kill Line side and 3" minimum ID on choke line side





13-5/8" 10K MN-DS

CAMERON
A Schlumberger Company

Name:	Date:	Working Pressure:	#

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
Lion Oil 28_33 Fed Com 34H

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

1. Escape

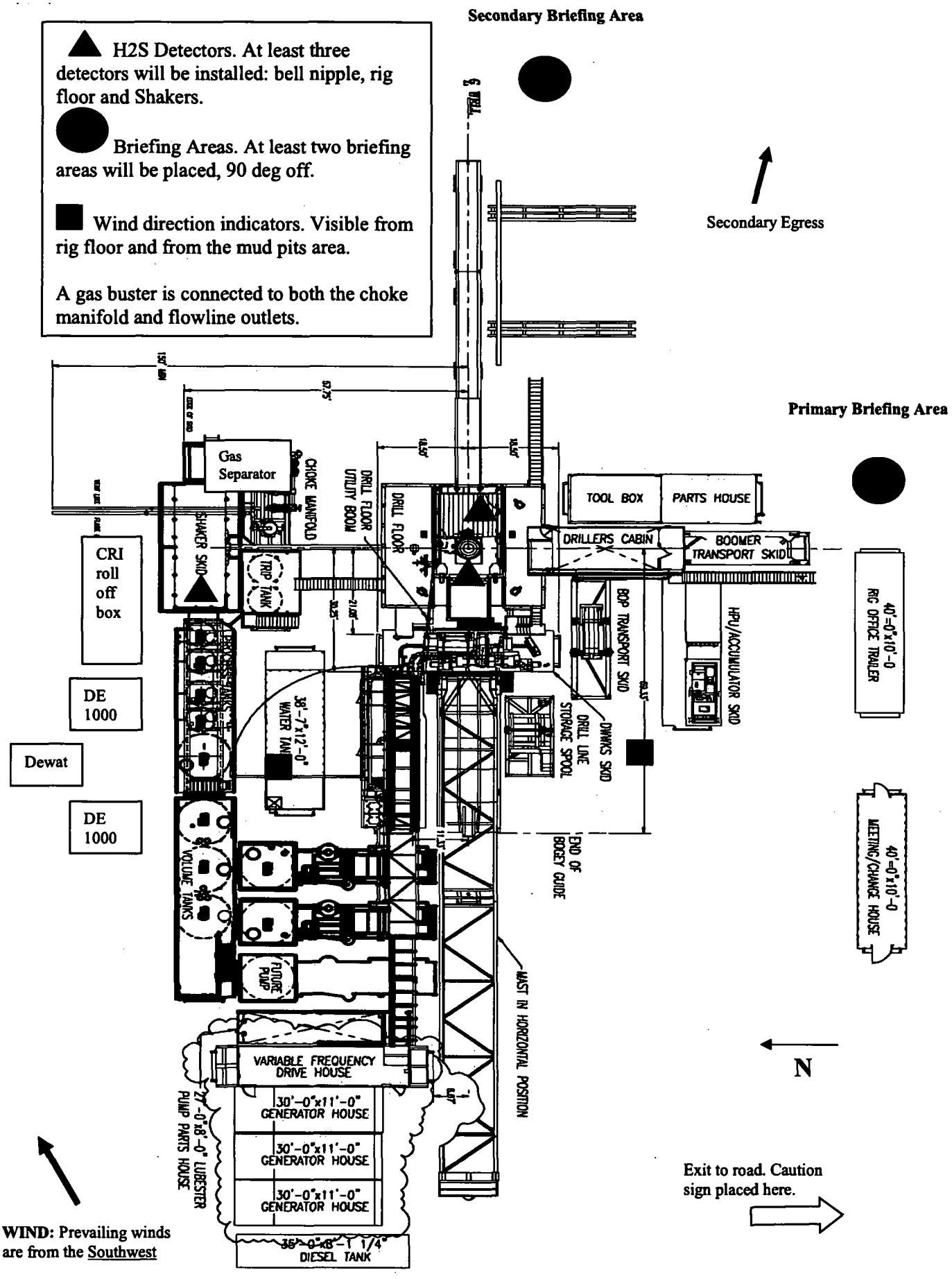
   Personnel shall escape upwind of wellbore in the event of an emergency gas release. Escape can take place through the lease road on the Southeast side of the location. Personnel need to move to a safe distance and block the entrance to location. If the primary route is not an option due to the wind direction,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

▲ H2S Detectors. At least three detectors will be installed: bell nipple, rig floor and Shakers.

● Briefing Areas. At least two briefing areas will be placed, 90 deg off.

■ Wind direction indicators. Visible from rig floor and from the mud pits area.

A gas buster is connected to both the choke manifold and flowline outlets.



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 (H2S) gas.
While drilling this well, it is possible to encounter H2S bearing formations. At all times, the first barrier to control H2S 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 H2S is detected. All H2S 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 commence.
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 H2S.
2. Proper use and maintenance of personal protective equipment and life support systems.
3. H2S detection.
4. Proper use of H2S 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 H2S 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 H2S Drilling Operations Plan.

H2S 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. H2S 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 H2S 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 H2S.

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 briefing

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 BLM Onshore Order #2.

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. H2S 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. H2S 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 H2S 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 H2S 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	1.	Will remain in briefing / muster area until instructed by supervisor.
Mud engineer:	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 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 Grains 100 std. Ft3*	Physical effects
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 H2S.

B. When breaking out any line where H2S can reasonably be expected.

C. When sampling air in areas to determine if toxic concentrations of H2S exists.

D. When working in areas where over 10 ppm H2S has been detected.

E. At any time there is a doubt as to the H2S level in the area to be entered.

Rescue
First aid for H2S 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 H2S gas poisoning – no matter how remote the possibility is.

6. Notify emergency room personnel that the victim(s) has been exposed to H2S gas.

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

Revised CM 6/27/2012

OXY Permian Delaware NM Basin Drilling & Completions Incident Reporting

OXY Permian Crisis Team Hotline Notification

Person	Location	Office Phone	Cell/Mobile Phone	Home Phone	Pager Number
Drilling & Completions Department					
Drilling & Completions Manager: John Willis	Houston	(713) 366-5556	(713) 259-1417		
Drilling Superintendent: Simon Benavides	Houston	(713) 215-7403	(832) 528-3547		
Completions Superintendent: Chris Winter	Houston	(713) 366-5212	(806) 239-8774		
Drilling Eng. Supervisor: Diego Tellez	Houston	(713) 350-4602	(713) 303-4932		
Drilling Eng. Supervisor: Randy Neel	Houston	(713) 215-7987	(713) 517-5544		
Completions Eng. Supervisor: Evan Hinkel	Houston	(713) 366-5436	(281) 236-6153		
Drilling & Completions HES Lead. Ryan Green	Houston	713-336-5753	281-520-5216		
Drilling & Completions HES Advisor:Kenny Williams	Carlsbad	(432) 686-1434	(337) 208-0911		
Drilling & Completions HES Advisor:Kyle Holden	Carlsbad	(432) 686-1435	(661) 369-5328		
Drilling & Completions HES Advisor Sr:Dave Schmidt	Carlsbad		(559) 310-8572		
Drilling & Completions HES Advisor. :Seth Doyle	Carlsbad		(337) 499-0756		
HES / Enviromental & Regulatory Department	Location	Office	Cell Phone		
Jon Hamil-HES Manager	Houston	(713) 497-2494	(832) 537-9885		
Mark Birk-HES Manager	Houston	(713) 350-4615	(949) 413-3127		
Austin Tramell	Midland	(432) 699-4208	(575) 499-4919		
Rico Munoz	Midland	(432) 699-8366	(432) 803-4116		
Amber DuckWorth	Midland		(832) 966-1879		
Kelley Montgomery- Regulatory Manager	Houston	(713) 366-5716	(832) 454-8137		
Sandra Musallam -Regulatory Lead	Houston	+1 (713) 366-5106	+1 (713) 504-8577		
Bishop, Steve-DOT Pipeline Coordinator	Midland	432-685-5814			
Wilson, Dusty-Safety Advisor	Midland	432-685-5771	(432) 254-2338		
John W Dittrich Enironental Advisor	Midland		(575) 390-2828		
William (Jack) Calhoun-Environmental Lead	Houston	+713 (350) 4906	(281) 917-8571		
Robert Barrow-Risk Engineer Manager	Houston	(713) 366-5611	(832) 867-5336		
Sarah Holmes-HSE Cordinator	Midland	432-685-5758			
Administrative	Location	Office			
Sarah Holmes	Midland	432-685-5830			
Robertson, Debbie	Midland	432-685-5812			
Laci Hollaway	Midland	(432) 685-5716	(432) 631-6341		
Administrative	Location	Office			
Rosalinda Escajeda	Midland	432-685-5831			
Moreno, Leslie (contract)	Hobbs	575-397-8247			
Sehon, Angela (contractor)	Levelland	806-894-8347			
Vasquez, Claudia (contractor)	North Cowden	432-385-3120			
XstremeMD	Location	Office			
Medical Case Management	Orla, TX	(337) 205-9314			
Axiom Medical Consulting	Location	Office			
Medical Case Management		(877) 502-9466			
Regulatory Agencies					
Bureau of Land Management	Carlsbad, NM	(505) 887-6544			
Bureau of Land Management	Hobbs, NM	(505) 393-3612			
Bureau of Land Management	Roswell, NM	(505) 393-3612			
Bureau of Land Management	Santa Fe, NM	(505) 988-6030			

DOT Juisdictional Pipelines-Incident Reporting New Mexico Public Regulaion Commission	Santa Fe, NM	(505) 827-3549 (505) 490-2375			
DOT Juisdictional Pipelines-Incident Reporting Texas Railroad Commission	Austin, TX	(512) 463-6788			
EPA Hot Line	Dallas, Texas	(214) 665-6444			
Federal OSHA, Area Office	Lubbock, Texas	(806) 472-7681			
National Response Center	Washington, D. C.	(800) 424-8802			
National Infrastructure Coordinator Center		(202) 282-9201			
New Mexico Air Quality Bureau	Santa Fe, NM	(505) 827-1494			
New Mexico Oil Conservation Division	Artesia, NM	(505) 748-1283	After Hours (505) 370-7545		
New Mexico Oil Conservation Division	Hobbs, NM	(505) 393-6161			
New Mexico Oil Conservation Division	Santa Fe, NM	(505) 471-1068			
New Mexico OCD Environmental Bureau	Santa Fe, NM	(505) 476-3470			
New Mexico Environmental Department	Hobbs, NM	(505) 827-9329			
NM State Emergency Response Center	Santa Fe, NM	(505) 827-9222			
Railroad Commission of TX	District 1 San Antonio,	(210) 227-1313			
Railroad Commission of TX	District 7C San Angelo	(325) 657-7450			
Railroad Commission of TX	District 8, 8A Midland	(432) 684-5581			
Texas Emergency Response Center	Austin, TX	(512) 463-7727			
TCEQ Air	Region 2 Lubbock, TX	(806) 796-3494			
TCEQ Water/Waste/Air	Region 3 Abilene, TX	(325) 698-9674			
TCEQ Water/Waste/Air	Region 7 Midland, TX	(432) 570-1359			
TCEQ Water/Waste/Air	Region 9 San Antonio,	(512) 734-7981			
TCEQ Water/Waste/Air	Region 8 San Angelo	(325) 655-9479			
Medical Facilities					
Abernathy Medical Clinic	Abernathy, TX	(806) 298-2524			
Alliance Hospital	Odessa, TX	(432) 550-1000			
Artesia General Hospital	Artesia, NM	(505) 748-3333			
Brownfield Regional Medical Center	Brownfield, TX	(806) 637-3551			
Cogdell Memorial Hospital	Snyder, TX	(325) 573-6374			
Covenant Hospital Levelland	Levelland, TX	(806) 894-4963			
Covenant Medical Center	Lubbock, TX	(806) 725-1011			
Covenant Medical Center Lakeside	Lubbock, TX	(806) 725-6000			
Covenant Family Health	Synder, TX	(325) 573-1300			
Crockett County Hospital	Ozona, TX	(325) 392-2671			
Guadalupe Medical Center	Carlsbad, NM	(505) 887-6633			
Lea Regional Hospital	Hobbs, NM	(505) 492-5000			
McCamey Hospital	McCamey, TX	(432) 652-8626			
Medical Arts Hospital	Lamesa, TX	(806) 872-2183			
Medical Center Hospital	Odessa, TX	(432) 640-4000			
Medi Center Hospital	San Angelo, TX	(325) 653-6741			
Memorial Hospital	Ft. Stockton	(432) 336-2241			
Memorial Hospital	Seminole, TX	(432) 758-5811			
Midland Memorial Hospital	Midland, TX	(432) 685-1111			
Nor-Lea General Hospital	Lovington, NM	(505) 396-6611			
Odessa Regional Hospital	Odessa, TX	(432) 334-8200			
Permian General Hospital	Andrews, TX	(432) 523-2200			
Reagan County Hospital	Big Lake, TX	(325) 884-2561			
Reeves County Hospital	Pecos, TX	(432) 447-3551			
Shannon Medical Center	San Angelo, TX	(325) 653-6741			
Union County General Hospital	Clayton, NM	(505) 374-2585			
University Medical Center	Lubbock, TX	(806) 725-8200			
Val Verde Regional Medical Center	Del Rio, TX	(830) 775-8566			
Ward Memorial Hospital	Monahans, TX	(432) 943-2511			
Yoakum County Hospital	Denver City, TX	(806) 592-5484			

Law Enforcement - Sheriff					
Andrews Cty Sheriff's Department	Andrews County(Andr	(432) 523-5545			
Crane Cty Sheriff's Department	Crane, County (Crane)	(432) 558-3571			
Crockett Cty Sheriff's Department	Crockett County (Ozor	(325) 392-2661			
Dawson Cty Sheriff's Department	Dawson County (Lame	(806) 872-7560			
Ector Cty Sheriff's Department	Ector County (Odessa)	(432) 335-3050			
Eddy Cty Sheriff's Department	Eddy County (Artesia)	(505) 746-2704			
Gaines Cty Sheriff's Department	Gaines County (Semin	(432) 758-9871			
Hockley Cty Sheriff's Department	Hockley County(Level	(806) 894-3126			
Kent Cty (Jayton City Sheriff's Dept.)	Kent County(Jayton)	(806) 237-3801			
Lubbock Cty Sheriff's Department	Lubbock Cty (Abernat	(806) 296-2724			
Midland Cty Sheriff's Department	Midland County (Midl	(432) 688-1277			
Pecos Cty Sheriff's Department	Pecos County (Iraan)	(432) 639-2251			
Reeves Cty Sheriff's Department	Reeves County (Pecos)	(432) 445-4901			
Scurry Cty Sheriff's Department	Scurry County (Snyder	(325) 573-3551			
Terry Cty Sheriff's Department	Terry County (Brownfi	(806) 637-2212			
Union Cty Sheriff's Department	Union County (Clayton	(505) 374-2583			
Upton Cty Sheriff's Department	Upton County (Rankin	(432) 693-2422			
Ward Cty Sheriff's Department	Ward County (Monaha	(432) 943-3254			
Yoakum City Sheriff's Department	Yoakum Co. (Denever	(806) 456-2377			
Law Enforcement - Police					
Abernathy City Police	Abernathy, TX	(806) 298-2545			
Andrews City Police	Andrews, TX	(432) 523-5675			
Artesia City Police	Artesia, NM	(505) 746-2704			
Brownfield City Police	Brownfield, TX	(806) 637-2544			
Carlsbad City Police	Carlsbad, NM	(505) 885-2111			
Clayton City Police	Clayton, NM	(505) 374-2504			
Denver City Police	Denver City, TX	(806) 592-3516			
Eunice City Police	Eunice, NM	(505) 394-2112			
Jayton City Police	Jayton, TX	(806) 237-3801			
Lamesa City Police	Lamesa, TX	(806) 872-2121			
Levelland City Police	Levelland, TX	(806) 894-6164			
Lovington City Police	Lovington, NM	(505) 396-2811			
Midland City Police	Midland, TX	(432) 685-7113			
Monahans City Police	Monahans, TX	(432) 943-3254			
Odessa City Police	Odessa, TX	(432) 335-3378			
Seminole City Police	Seminole, TX	(432) 758-9871			
Snyder City Police	Snyder, TX	(325) 573-2611			
Sundown City Police	Sundown, TX	(806) 229-8241			
Law Enforcement - FBI					
FBI	Alburqueque, NM	(505) 224-2000			
FBI	Midland, TX	(432) 570-0255			
Law Enforcement - DPS					
NM State Police	Artesia, NM	(505) 746-2704			
NM State Police	Eunice, NM	(505) 392-5588			

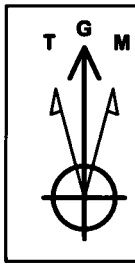
NM State Police	Clayton, NM	(505) 374-2473; 911			
TX Dept of Public Safety	Andrews, TX	(432) 524-1443			
TX Dept of Public Safety	Big Lake, TX	(325) 884-2301			
TX Dept of Public Safety	Brownfield, TX	(806) 637-2312			
TX Dept of Public Safety	Iraan, TX	(432) 639-3232			
TX Dept of Public Safety	Lamesa, TX	(806) 872-8675			
TX Dept of Public Safety	Levelland, TX	(806) 894-4385			
TX Dept of Public Safety	Lubbock, TX	(806) 747-4491			
TX Dept of Public Safety	Midland, TX	(432) 697-2211			
TX Dept of Public Safety	Monahans, TX	(432) 943-5857			
TX Dept of Public Safety	Odessa, TX	(432) 332-6100			
TX Dept of Public Safety	Ozona, TX	(325) 392-2621			
TX Dept of Public Safety	Pecos, TX	(432) 447-3533			
TX Dept of Public Safety	Seminole, TX	(432) 758-4041			
TX Dept of Public Safety	Snyder, TX	(325) 573-0113			
TX Dept of Public Safety	Terry County TX	(806) 637-8913			
TX Dept of Public Safety	Yoakum County TX	(806) 456-2377			
Firefighting & Rescue					
Abernathy	Abernathy, TX	(806) 298-2022			
Amistad/Rosebud	Amistad/Rosebud, NM	(505) 633-9113			
Andrews	Andrews, TX	523-3111			
Artesia	Artesia, NM	(505) 746-5051			
Big Lake	Big Lake, TX	(325) 884-3650			
Brownfield-Administrative & other calls	Brownfield, TX	(816) 637-4547			
Brownfield emergency only	Brownfield, TX	-911			
[illegible]	[illegible]	[illegible]			
Clayton	Clayton, NM	(505) 374-2435			
Cotton Center	Cotton Center, TX	(806) 879-2157			
Crane	Crane, TX	(432) 558-2361			
Del Rio	Del Rio, TX	(830) 774-8650			
Denver City	Denver City, TX	(806) 592-3516			
Eldorado	Eldorado, TX	(325) 853-2691			
Eunice	Eunice, NM	(505) 394-2111			
Garden City	Garden City, TX	(432) 354-2404			
Goldsmith	Goldsmith, TX	(432) 827-3445			
Hale Center	Hale Center, TX	(806) 839-2411			
Halfway	Halfway, TX				
Hobbs	Hobbs, NM	(505) 397-9308			
Jal	Jal, NM	(505) 395-2221			
Jayton	Jayton, TX	(806) 237-3801			
Kermit	Kermit, TX	(432) 586-3468			
Lamesa	Lamesa, TX	(806) 872-4352			
Levelland	Levelland, TX	(806) 894-3154			
Lovington	Lovington, NM	(505) 396-2359			
Maljamar	Maljamar, NM	(505) 676-4100			
McCamey	McCamey, TX	(432) 652-8232			
Midland	Midland, TX	(432) 685-7346			
Monahans	Monahans, TX	(432) 943-4343			
Nara Visa	Nara Visa, NM	(505) 461-3300			
Notrees	Notress, TX	(432) 827-3445			
Odessa	Odessa, TX	(432) 335-4659			
Ozona	Ozona, TX	(325) 392-2626			
Pecos	Pecos, TX	(432) 445-2421			
Petersburg	Petersburg, TX	(806) 667-3461			

Plains	Plains, TX	(806) 456-8067			
Plainview	Plainview, TX	(806) 296-1170			
Rankin	Rankin, TX	(432) 693-2252			
San Angelo	San Angelo, TX	(325) 657-4355			
Sanderson	Sanderson, TX	(432) 345-2525			
Seminole	Seminole, TX	758-9871			
Smyer	Smyer, TX	(806) 234-3861			
Snyder	Snyder, TX	(325) 573-6215			
Sundown	Sundown, TX	**911**			
Tucumcari	Tucumcari, NM	911			
West Odessa	Odessa, TX	(432) 381-3033			
Ambulance					
Abernathy Ambulance	Abernathy, TX	(806) 298-2241			
Amistad/Rosebud	Amistad/Rosebud, NM	(505) 633-9113			
Andrews Ambulance	Andrews, TX	(432) 523-5675			
Artesia Ambulance	Artesia, NM	(505) 746-2701			
Big Lake Ambulance	Big Lake, TX	(325) 884-2423			
Big Spring Ambulance	Big Spring, TX	(432) 264-2550			
Brownfield Ambulance	Brownfield, TX	(806) 637-2511			
Carlsbad Ambulance	Carlsbad, NM	(505) 885-2111; 911			
Clayton, NM	Clayton, NM	(505) 374-2501			
Denver City Ambulance	Denver City, TX	(806) 592-3516			
Eldorado Ambulance	Eldorado, TX	(325) 853-3456			
Eunice Ambulance	Eunice, NM	(505) 394-3258			
Goldsmith Ambulance	Goldsmith, TX	(432) 827-3445			
Hobbs, NM	Hobbs, NM	(505) 397-9308			
Jal, NM	Jal, NM	(505) 395-2501			
Jayton Ambulance	Jayton, TX	(806) 237-3801			
Lamesa Ambulance	Lamesa, TX	(806) 872-3464			
Levelland Ambulance	Levelland, TX	(806) 894-8855			
Lovington Ambulance	Lovington, NM	(505) 396-2811			
McCamey Hospital	McCamey, TX	(432) 652-8626			
Midland Ambulance	Midland, TX	(432) 685-7499			
Monahans Ambulance	Monahans, TX	3731			
Nara Visa, NM	Nara Visa, NM	(505) 461-3300			
Odessa Ambulance	Odessa, TX	(432) 335-3378			
Ozona Ambulance	Ozona, TX	(325) 392-2671			
Pecos Ambulance	Pecos, TX	(432) 445-4444			
Rankin Ambulance	Rankin, TX	(432) 693-2443			
San Angelo Ambulance	San Angelo, TX	(325) 657-4357			
Seminole Ambulance	Seminole, TX	758-9871			
Snyder Ambulance	Snyder, TX	(325) 573-1911			
Stanton Ambulance	Stanton, TX	(432) 756-2211			
Sundown Ambulance	Sundown, TX	**911**			
Tucumcari, NM	Tucumcari, NM	911			
Medical Air Ambulance Service					
AEROCARE - Methodist Hospital	Lubbock, TX	(800) 627-2376			
San Angelo Med-Vac Air Ambulance	San Angelo, TX	(800) 277-4354			
Southwest Air Ambulance Service	Stanford, TX	(800) 242-6199			
Southwest MediVac	Snyder, TX	(800) 242-6199			
Southwest MediVac	Hobbs, NM	(800) 242-6199			
Odessa Care Star	Odessa, TX	(888) 624-3571			
NWTH Medivac	Amarillo, TX	(800) 692-1331			

Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)
Site:	LION OIL 28_33 FED COM
Well:	LION OIL 28_33 FED COM 34H
Wellbore:	Wellbore #1
Design:	Permitting Plan

PROJECT DETAILS: NM DIRECTIONAL PLANS (NAD 1983)

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



Azimuths to Grid North
True North: -0.35°
Magnetic North: 6.41°

Magnetic Field
Strength: 48107.6snT
Dip Angle: 60.12°
Date: 11/19/2018
Model: HDGM

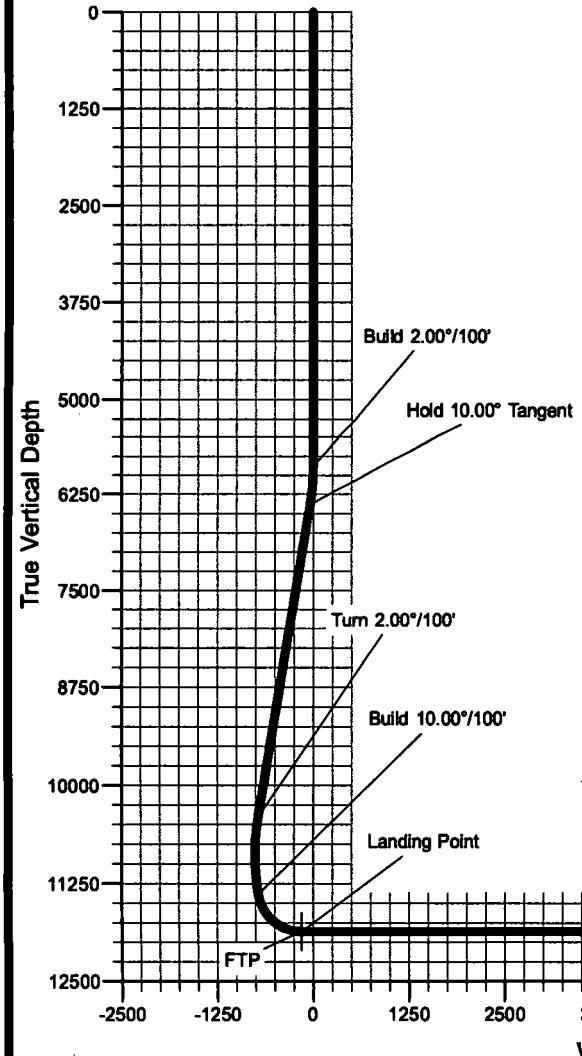
WELL DETAILS: LION OIL 28_33 FED COM 34H

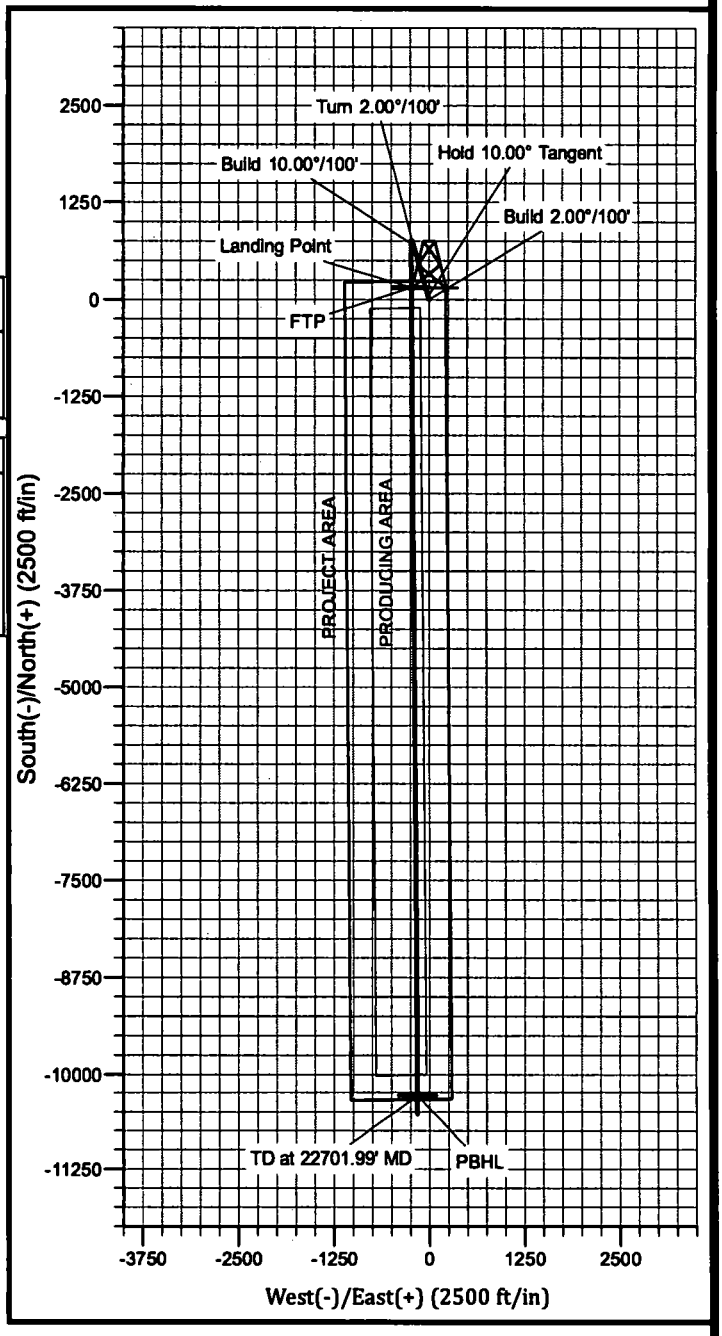
Ground Level: 3625.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	498865.88	744242.89	32° 22' 9.082506 N	103° 40' 34.081600 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5885.00	0.00	0.00	5885.00	0.00	0.00	0.00	0.00	0.00	Build 2.00°/100'
6385.12	10.00	343.73	6382.58	41.80	-12.20	2.00	343.73	-41.61	Hold 10.00° Tangent
10468.41	10.00	343.73	10403.81	722.61	-210.91	0.00	0.00	-719.30	Turn 2.00°/100'
11458.85	10.00	179.60	11389.04	719.16	-234.64	2.00	-171.94	-715.47	Build 10.00°/100'
12258.85	90.00	179.60	11862.50	154.92	-230.70	10.00	0.00	-151.36	Landing Point
22701.99	90.00	179.60	11862.50	-10287.97	-157.76	0.00	0.00	10289.18	TD at 22701.99' MD





OXY

PRD NM DIRECTIONAL PLANS (NAD 1983)
LION OIL 28_33 FED COM
LION OIL 28_33 FED COM 34H

Wellbore #1

Plan: Permitting Plan

Standard Planning Report

19 November, 2018

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well LION OIL 28_33 FED COM 34H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=26.5' @ 3651.50ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=26.5' @ 3651.50ft
Site:	LION OIL 28_33 FED COM	**North Reference:**	Grid
Well:	LION OIL 28_33 FED COM 34H	**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	LION OIL 28_33 FED COM				
Site Position:		**Northing:**	498,014.35 usft	**Latitude:**	32° 22' 2.611384 N
From:	Map	**Easting:**	744,642.56 usft	**Longitude:**	103° 40' 29.468370 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.35 °

Well	LION OIL 28_33 FED COM 34H				
Well Position	**+N/-S**	651.54 ft	**Northing:**	498,665.86 usft	**Latitude:**	32° 22' 9.082506 N
	+E/-W	-399.69 ft	**Easting:**	744,242.89 usft	**Longitude:**	103° 40' 34.081600 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	0.00 ft	**Ground Level:**	3,625.00 ft

Wellbore	Wellbore #1			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	11/19/2018	6.77	60.12	48,108

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	180.88

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	
5,885.00	0.00	0.00	5,885.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,385.12	10.00	343.73	6,382.58	41.80	-12.20	2.00	2.00	0.00	343.73	
10,468.41	10.00	343.73	10,403.81	722.61	-210.91	0.00	0.00	0.00	0.00	
11,458.85	10.00	179.60	11,389.04	719.16	-234.64	2.00	0.00	-16.57	-171.94	
12,258.85	90.00	179.60	11,862.50	154.92	-230.70	10.00	10.00	0.00	0.00	FTP (Lion Oil 28_33
22,702.00	90.00	179.60	11,862.50	-10,287.97	-157.76	0.00	0.00	0.00	0.00	PBHL (Lion Oil

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well LION OIL 28_33 FED COM 34H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=26.5' @ 3651.50ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=26.5' @ 3651.50ft
Site:	LION OIL 28_33 FED COM	**North Reference:**	Grid
Well:	LION OIL 28_33 FED COM 34H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
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
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well LION OIL 28_33 FED COM 34H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=26.5' @ 3651.50ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=26.5' @ 3651.50ft
Site:	LION OIL 28_33 FED COM	**North Reference:**	Grid
Well:	LION OIL 28_33 FED COM 34H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,885.00	0.00	0.00	5,885.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.30	343.73	5,900.00	0.04	-0.01	-0.04	2.00	2.00	0.00
6,000.00	2.30	343.73	5,999.97	2.22	-0.65	-2.21	2.00	2.00	0.00
6,100.00	4.30	343.73	6,099.80	7.74	-2.26	-7.71	2.00	2.00	0.00
6,200.00	6.30	343.73	6,199.37	16.61	-4.85	-16.53	2.00	2.00	0.00
6,300.00	8.30	343.73	6,298.55	28.80	-8.41	-28.67	2.00	2.00	0.00
6,385.12	10.00	343.73	6,382.58	41.80	-12.20	-41.61	2.00	2.00	0.00
6,400.00	10.00	343.73	6,397.24	44.28	-12.92	-44.08	0.00	0.00	0.00
6,500.00	10.00	343.73	6,495.72	60.95	-17.79	-60.67	0.00	0.00	0.00
6,600.00	10.00	343.73	6,594.20	77.63	-22.66	-77.27	0.00	0.00	0.00
6,700.00	10.00	343.73	6,692.68	94.30	-27.52	-93.87	0.00	0.00	0.00
6,800.00	10.00	343.73	6,791.16	110.97	-32.39	-110.46	0.00	0.00	0.00
6,900.00	10.00	343.73	6,889.64	127.65	-37.26	-127.06	0.00	0.00	0.00
7,000.00	10.00	343.73	6,988.12	144.32	-42.12	-143.66	0.00	0.00	0.00
7,100.00	10.00	343.73	7,086.60	160.99	-46.99	-160.25	0.00	0.00	0.00
7,200.00	10.00	343.73	7,185.08	177.67	-51.85	-176.85	0.00	0.00	0.00
7,300.00	10.00	343.73	7,283.56	194.34	-56.72	-193.45	0.00	0.00	0.00
7,400.00	10.00	343.73	7,382.04	211.01	-61.59	-210.04	0.00	0.00	0.00
7,500.00	10.00	343.73	7,480.52	227.69	-66.45	-226.64	0.00	0.00	0.00
7,600.00	10.00	343.73	7,579.00	244.36	-71.32	-243.24	0.00	0.00	0.00
7,700.00	10.00	343.73	7,677.48	261.03	-76.19	-259.83	0.00	0.00	0.00
7,800.00	10.00	343.73	7,775.96	277.71	-81.05	-276.43	0.00	0.00	0.00
7,900.00	10.00	343.73	7,874.44	294.38	-85.92	-293.03	0.00	0.00	0.00
8,000.00	10.00	343.73	7,972.92	311.05	-90.79	-309.62	0.00	0.00	0.00
8,100.00	10.00	343.73	8,071.40	327.72	-95.65	-326.22	0.00	0.00	0.00
8,200.00	10.00	343.73	8,169.88	344.40	-100.52	-342.82	0.00	0.00	0.00
8,300.00	10.00	343.73	8,268.36	361.07	-105.38	-359.41	0.00	0.00	0.00
8,400.00	10.00	343.73	8,366.84	377.74	-110.25	-376.01	0.00	0.00	0.00
8,500.00	10.00	343.73	8,465.32	394.42	-115.12	-392.61	0.00	0.00	0.00
8,600.00	10.00	343.73	8,563.80	411.09	-119.98	-409.20	0.00	0.00	0.00
8,700.00	10.00	343.73	8,662.28	427.76	-124.85	-425.80	0.00	0.00	0.00
8,800.00	10.00	343.73	8,760.76	444.44	-129.72	-442.40	0.00	0.00	0.00
8,900.00	10.00	343.73	8,859.24	461.11	-134.58	-458.99	0.00	0.00	0.00
9,000.00	10.00	343.73	8,957.72	477.78	-139.45	-475.59	0.00	0.00	0.00
9,100.00	10.00	343.73	9,056.20	494.46	-144.32	-492.19	0.00	0.00	0.00
9,200.00	10.00	343.73	9,154.68	511.13	-149.18	-508.78	0.00	0.00	0.00
9,300.00	10.00	343.73	9,253.16	527.80	-154.05	-525.38	0.00	0.00	0.00
9,400.00	10.00	343.73	9,351.64	544.48	-158.91	-541.98	0.00	0.00	0.00
9,500.00	10.00	343.73	9,450.12	561.15	-163.78	-558.57	0.00	0.00	0.00
9,600.00	10.00	343.73	9,548.60	577.82	-168.65	-575.17	0.00	0.00	0.00
9,700.00	10.00	343.73	9,647.08	594.50	-173.51	-591.77	0.00	0.00	0.00
9,800.00	10.00	343.73	9,745.56	611.17	-178.38	-608.36	0.00	0.00	0.00
9,900.00	10.00	343.73	9,844.04	627.84	-183.25	-624.96	0.00	0.00	0.00
10,000.00	10.00	343.73	9,942.52	644.52	-188.11	-641.56	0.00	0.00	0.00
10,100.00	10.00	343.73	10,041.00	661.19	-192.98	-658.15	0.00	0.00	0.00
10,200.00	10.00	343.73	10,139.48	677.86	-197.84	-674.75	0.00	0.00	0.00
10,300.00	10.00	343.73	10,237.96	694.53	-202.71	-691.35	0.00	0.00	0.00
10,400.00	10.00	343.73	10,336.44	711.21	-207.58	-707.94	0.00	0.00	0.00
10,468.41	10.00	343.73	10,403.81	722.61	-210.91	-719.30	0.00	0.00	0.00

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well LION OIL 28_33 FED COM 34H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=26.5' @ 3651.50ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=26.5' @ 3651.50ft
Site:	LION OIL 28_33 FED COM	**North Reference:**	Grid
Well:	LION OIL 28_33 FED COM 34H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
10,500.00	9.38	343.19	10,434.95	727.71	-212.42	-724.37	2.00	-1.98	-1.72
10,600.00	7.41	340.87	10,533.87	741.60	-216.89	-738.19	2.00	-1.97	-2.32
10,700.00	5.45	336.89	10,633.24	752.06	-220.87	-748.59	2.00	-1.95	-3.98
10,800.00	3.56	328.61	10,732.93	759.08	-224.35	-755.55	2.00	-1.90	-8.28
10,900.00	1.89	304.08	10,832.82	762.66	-227.33	-759.08	2.00	-1.67	-24.54
11,000.00	1.57	234.15	10,932.78	762.77	-229.81	-759.16	2.00	-0.32	-69.93
11,100.00	3.06	198.74	11,032.70	759.44	-231.78	-755.80	2.00	1.49	-35.42
11,200.00	4.93	188.07	11,132.45	752.66	-233.24	-749.00	2.00	1.87	-10.67
11,300.00	6.87	183.32	11,231.92	742.44	-234.19	-738.76	2.00	1.94	-4.74
11,400.00	8.84	180.67	11,330.98	728.79	-234.62	-725.10	2.00	1.97	-2.65
11,458.85	10.00	179.60	11,389.04	719.16	-234.64	-715.47	2.00	1.98	-1.82
11,500.00	14.11	179.60	11,429.27	710.56	-234.58	-706.88	10.00	10.00	0.00
11,600.00	24.11	179.60	11,523.63	677.86	-234.35	-674.19	10.00	10.00	0.00
11,700.00	34.11	179.60	11,610.89	629.27	-234.01	-625.60	10.00	10.00	0.00
11,800.00	44.11	179.60	11,688.38	566.26	-233.57	-562.61	10.00	10.00	0.00
11,900.00	54.11	179.60	11,753.75	490.76	-233.05	-487.13	10.00	10.00	0.00
12,000.00	64.11	179.60	11,805.02	405.05	-232.45	-401.44	10.00	10.00	0.00
12,100.00	74.11	179.60	11,840.62	311.74	-231.80	-308.15	10.00	10.00	0.00
12,200.00	84.11	179.60	11,859.48	213.66	-231.11	-210.10	10.00	10.00	0.00
12,258.85	90.00	179.60	11,862.50	154.92	-230.70	-151.36	10.00	10.00	0.00
12,300.00	90.00	179.60	11,862.50	113.77	-230.41	-110.22	0.00	0.00	0.00
12,400.00	90.00	179.60	11,862.50	13.77	-229.71	-10.25	0.00	0.00	0.00
12,500.00	90.00	179.60	11,862.50	-86.22	-229.02	89.73	0.00	0.00	0.00
12,600.00	90.00	179.60	11,862.50	-186.22	-228.32	189.70	0.00	0.00	0.00
12,700.00	90.00	179.60	11,862.50	-286.22	-227.62	289.68	0.00	0.00	0.00
12,800.00	90.00	179.60	11,862.50	-386.22	-226.92	389.65	0.00	0.00	0.00
12,900.00	90.00	179.60	11,862.50	-486.21	-226.22	489.63	0.00	0.00	0.00
13,000.00	90.00	179.60	11,862.50	-586.21	-225.52	589.60	0.00	0.00	0.00
13,100.00	90.00	179.60	11,862.50	-686.21	-224.83	689.58	0.00	0.00	0.00
13,200.00	90.00	179.60	11,862.50	-786.21	-224.13	789.55	0.00	0.00	0.00
13,300.00	90.00	179.60	11,862.50	-886.21	-223.43	889.53	0.00	0.00	0.00
13,400.00	90.00	179.60	11,862.50	-986.20	-222.73	989.50	0.00	0.00	0.00
13,500.00	90.00	179.60	11,862.50	-1,086.20	-222.03	1,089.48	0.00	0.00	0.00
13,600.00	90.00	179.60	11,862.50	-1,186.20	-221.33	1,189.45	0.00	0.00	0.00
13,700.00	90.00	179.60	11,862.50	-1,286.20	-220.63	1,289.43	0.00	0.00	0.00
13,800.00	90.00	179.60	11,862.50	-1,386.19	-219.94	1,389.40	0.00	0.00	0.00
13,900.00	90.00	179.60	11,862.50	-1,486.19	-219.24	1,489.38	0.00	0.00	0.00
14,000.00	90.00	179.60	11,862.50	-1,586.19	-218.54	1,589.35	0.00	0.00	0.00
14,100.00	90.00	179.60	11,862.50	-1,686.19	-217.84	1,689.33	0.00	0.00	0.00
14,200.00	90.00	179.60	11,862.50	-1,786.18	-217.14	1,789.30	0.00	0.00	0.00
14,300.00	90.00	179.60	11,862.50	-1,886.18	-216.44	1,889.28	0.00	0.00	0.00
14,400.00	90.00	179.60	11,862.50	-1,986.18	-215.75	1,989.25	0.00	0.00	0.00
14,500.00	90.00	179.60	11,862.50	-2,086.18	-215.05	2,089.23	0.00	0.00	0.00
14,600.00	90.00	179.60	11,862.50	-2,186.17	-214.35	2,189.20	0.00	0.00	0.00
14,700.00	90.00	179.60	11,862.50	-2,286.17	-213.65	2,289.18	0.00	0.00	0.00
14,800.00	90.00	179.60	11,862.50	-2,386.17	-212.95	2,389.15	0.00	0.00	0.00
14,900.00	90.00	179.60	11,862.50	-2,486.17	-212.25	2,489.13	0.00	0.00	0.00
15,000.00	90.00	179.60	11,862.50	-2,586.16	-211.55	2,589.10	0.00	0.00	0.00
15,100.00	90.00	179.60	11,862.50	-2,686.16	-210.86	2,689.08	0.00	0.00	0.00
15,200.00	90.00	179.60	11,862.50	-2,786.16	-210.16	2,789.05	0.00	0.00	0.00
15,300.00	90.00	179.60	11,862.50	-2,886.16	-209.46	2,889.03	0.00	0.00	0.00
15,400.00	90.00	179.60	11,862.50	-2,986.15	-208.76	2,989.00	0.00	0.00	0.00
15,500.00	90.00	179.60	11,862.50	-3,086.15	-208.06	3,088.98	0.00	0.00	0.00
15,600.00	90.00	179.60	11,862.50	-3,186.15	-207.36	3,188.95	0.00	0.00	0.00

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well LION OIL 28_33 FED COM 34H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=26.5' @ 3651.50ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=26.5' @ 3651.50ft
Site:	LION OIL 28_33 FED COM	**North Reference:**	Grid
Well:	LION OIL 28_33 FED COM 34H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
15,700.00	90.00	179.60	11,862.50	-3,286.15	-206.66	3,288.93	0.00	0.00	0.00
15,800.00	90.00	179.60	11,862.50	-3,386.14	-205.97	3,388.90	0.00	0.00	0.00
15,900.00	90.00	179.60	11,862.50	-3,486.14	-205.27	3,488.88	0.00	0.00	0.00
16,000.00	90.00	179.60	11,862.50	-3,586.14	-204.57	3,588.85	0.00	0.00	0.00
16,100.00	90.00	179.60	11,862.50	-3,686.14	-203.87	3,688.83	0.00	0.00	0.00
16,200.00	90.00	179.60	11,862.50	-3,786.13	-203.17	3,788.80	0.00	0.00	0.00
16,300.00	90.00	179.60	11,862.50	-3,886.13	-202.47	3,888.78	0.00	0.00	0.00
16,400.00	90.00	179.60	11,862.50	-3,986.13	-201.78	3,988.75	0.00	0.00	0.00
16,500.00	90.00	179.60	11,862.50	-4,086.13	-201.08	4,088.73	0.00	0.00	0.00
16,600.00	90.00	179.60	11,862.50	-4,186.12	-200.38	4,188.70	0.00	0.00	0.00
16,700.00	90.00	179.60	11,862.50	-4,286.12	-199.68	4,288.68	0.00	0.00	0.00
16,800.00	90.00	179.60	11,862.50	-4,386.12	-198.98	4,388.66	0.00	0.00	0.00
16,900.00	90.00	179.60	11,862.50	-4,486.12	-198.28	4,488.63	0.00	0.00	0.00
17,000.00	90.00	179.60	11,862.50	-4,586.11	-197.58	4,588.61	0.00	0.00	0.00
17,100.00	90.00	179.60	11,862.50	-4,686.11	-196.89	4,688.58	0.00	0.00	0.00
17,200.00	90.00	179.60	11,862.50	-4,786.11	-196.19	4,788.56	0.00	0.00	0.00
17,300.00	90.00	179.60	11,862.50	-4,886.11	-195.49	4,888.53	0.00	0.00	0.00
17,400.00	90.00	179.60	11,862.50	-4,986.11	-194.79	4,988.51	0.00	0.00	0.00
17,500.00	90.00	179.60	11,862.50	-5,086.10	-194.09	5,088.48	0.00	0.00	0.00
17,600.00	90.00	179.60	11,862.50	-5,186.10	-193.39	5,188.46	0.00	0.00	0.00
17,700.00	90.00	179.60	11,862.50	-5,286.10	-192.70	5,288.43	0.00	0.00	0.00
17,800.00	90.00	179.60	11,862.50	-5,386.10	-192.00	5,388.41	0.00	0.00	0.00
17,900.00	90.00	179.60	11,862.50	-5,486.09	-191.30	5,488.38	0.00	0.00	0.00
18,000.00	90.00	179.60	11,862.50	-5,586.09	-190.60	5,588.36	0.00	0.00	0.00
18,100.00	90.00	179.60	11,862.50	-5,686.09	-189.90	5,688.33	0.00	0.00	0.00
18,200.00	90.00	179.60	11,862.50	-5,786.09	-189.20	5,788.31	0.00	0.00	0.00
18,300.00	90.00	179.60	11,862.50	-5,886.08	-188.50	5,888.28	0.00	0.00	0.00
18,400.00	90.00	179.60	11,862.50	-5,986.08	-187.81	5,988.26	0.00	0.00	0.00
18,500.00	90.00	179.60	11,862.50	-6,086.08	-187.11	6,088.23	0.00	0.00	0.00
18,600.00	90.00	179.60	11,862.50	-6,186.08	-186.41	6,188.21	0.00	0.00	0.00
18,700.00	90.00	179.60	11,862.50	-6,286.07	-185.71	6,288.18	0.00	0.00	0.00
18,800.00	90.00	179.60	11,862.50	-6,386.07	-185.01	6,388.16	0.00	0.00	0.00
18,900.00	90.00	179.60	11,862.50	-6,486.07	-184.31	6,488.13	0.00	0.00	0.00
19,000.00	90.00	179.60	11,862.50	-6,586.07	-183.61	6,588.11	0.00	0.00	0.00
19,100.00	90.00	179.60	11,862.50	-6,686.06	-182.92	6,688.08	0.00	0.00	0.00
19,200.00	90.00	179.60	11,862.50	-6,786.06	-182.22	6,788.06	0.00	0.00	0.00
19,300.00	90.00	179.60	11,862.50	-6,886.06	-181.52	6,888.03	0.00	0.00	0.00
19,400.00	90.00	179.60	11,862.50	-6,986.06	-180.82	6,988.01	0.00	0.00	0.00
19,500.00	90.00	179.60	11,862.50	-7,086.05	-180.12	7,087.98	0.00	0.00	0.00
19,600.00	90.00	179.60	11,862.50	-7,186.05	-179.42	7,187.96	0.00	0.00	0.00
19,700.00	90.00	179.60	11,862.50	-7,286.05	-178.73	7,287.93	0.00	0.00	0.00
19,800.00	90.00	179.60	11,862.50	-7,386.05	-178.03	7,387.91	0.00	0.00	0.00
19,900.00	90.00	179.60	11,862.50	-7,486.04	-177.33	7,487.88	0.00	0.00	0.00
20,000.00	90.00	179.60	11,862.50	-7,586.04	-176.63	7,587.86	0.00	0.00	0.00
20,100.00	90.00	179.60	11,862.50	-7,686.04	-175.93	7,687.83	0.00	0.00	0.00
20,200.00	90.00	179.60	11,862.50	-7,786.04	-175.23	7,787.81	0.00	0.00	0.00
20,300.00	90.00	179.60	11,862.50	-7,886.03	-174.53	7,887.78	0.00	0.00	0.00
20,400.00	90.00	179.60	11,862.50	-7,986.03	-173.84	7,987.76	0.00	0.00	0.00
20,500.00	90.00	179.60	11,862.50	-8,086.03	-173.14	8,087.73	0.00	0.00	0.00
20,600.00	90.00	179.60	11,862.50	-8,186.03	-172.44	8,187.71	0.00	0.00	0.00
20,700.00	90.00	179.60	11,862.50	-8,286.02	-171.74	8,287.68	0.00	0.00	0.00
20,800.00	90.00	179.60	11,862.50	-8,386.02	-171.04	8,387.66	0.00	0.00	0.00
20,900.00	90.00	179.60	11,862.50	-8,486.02	-170.34	8,487.63	0.00	0.00	0.00
21,000.00	90.00	179.60	11,862.50	-8,586.02	-169.65	8,587.61	0.00	0.00	0.00

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well LION OIL 28_33 FED COM 34H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=26.5' @ 3651.50ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=26.5' @ 3651.50ft
Site:	LION OIL 28_33 FED COM	**North Reference:**	Grid
Well:	LION OIL 28_33 FED COM 34H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
21,100.00	90.00	179.60	11,862.50	-8,686.02	-168.95	8,687.58	0.00	0.00	0.00
21,200.00	90.00	179.60	11,862.50	-8,786.01	-168.25	8,787.56	0.00	0.00	0.00
21,300.00	90.00	179.60	11,862.50	-8,886.01	-167.55	8,887.53	0.00	0.00	0.00
21,400.00	90.00	179.60	11,862.50	-8,986.01	-166.85	8,987.51	0.00	0.00	0.00
21,500.00	90.00	179.60	11,862.50	-9,086.01	-166.15	9,087.48	0.00	0.00	0.00
21,600.00	90.00	179.60	11,862.50	-9,186.00	-165.45	9,187.46	0.00	0.00	0.00
21,700.00	90.00	179.60	11,862.50	-9,286.00	-164.76	9,287.43	0.00	0.00	0.00
21,800.00	90.00	179.60	11,862.50	-9,386.00	-164.06	9,387.41	0.00	0.00	0.00
21,900.00	90.00	179.60	11,862.50	-9,486.00	-163.36	9,487.39	0.00	0.00	0.00
22,000.00	90.00	179.60	11,862.50	-9,585.99	-162.66	9,587.36	0.00	0.00	0.00
22,100.00	90.00	179.60	11,862.50	-9,685.99	-161.96	9,687.34	0.00	0.00	0.00
22,200.00	90.00	179.60	11,862.50	-9,785.99	-161.26	9,787.31	0.00	0.00	0.00
22,300.00	90.00	179.60	11,862.50	-9,885.99	-160.57	9,887.29	0.00	0.00	0.00
22,400.00	90.00	179.60	11,862.50	-9,985.98	-159.87	9,987.26	0.00	0.00	0.00
22,500.00	90.00	179.60	11,862.50	-10,085.98	-159.17	10,087.24	0.00	0.00	0.00
22,600.00	90.00	179.60	11,862.50	-10,185.98	-158.47	10,187.21	0.00	0.00	0.00
22,700.00	90.00	179.60	11,862.50	-10,285.98	-157.77	10,287.19	0.00	0.00	0.00
22,702.00	90.00	179.60	11,862.50	-10,287.97	-157.76	10,289.18	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL (Lion Oil 28_33 - plan hits target center - Point	0.00	0.00	11,862.50	-10,287.97	-157.76	488,378.36	744,085.14	32° 20' 27.295141 N	103° 40' 36.656422
FTP (Lion Oil 28_33 - plan hits target center - Point	0.00	0.00	11,862.50	154.92	-230.70	498,820.77	744,012.20	32° 22' 10.629380 N	103° 40' 36.760261

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
5,885.00	5,885.00	0.00	0.00	Build 2.00°/100'
6,385.12	6,382.58	41.80	-12.20	Hold 10.00° Tangent
10,468.41	10,403.81	722.61	-210.91	Turn 2.00°/100'
11,458.85	11,389.04	719.16	-234.64	Build 10.00°/100'
12,258.85	11,862.50	154.92	-230.70	Landing Point
22,702.00	11,862.50	-10,287.97	-157.76	TD at 22701.99' MD

Oxy USA Inc. - Lion Oil 28_33 Fed Com 34H

1. Geologic Formations

TVD of target	11862'	Pilot Hole Depth	N/A
MD at TD:	22701'	Deepest Expected fresh water:	837'

Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	837	
Salado	1,253	Salt
Castile	2,842	Salt
Lamar/Delaware	4,643	Oil/Gas/Brine
Bell Canyon	4,686	Oil/Gas/Brine
Cherry Canyon	5,605	Oil/Gas/Brine
Brushy Canyon	6,834	Losses
Bone Spring	8,540	Oil/Gas
1st Bone Spring	9,684	Oil/Gas
2nd Bone Spring	9,968	Oil/Gas
3rd Bone Spring	10,793	Oil/Gas
Wolfcamp	**11,771**	**Oil/Gas**

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

2. Casing Program

Hole Size (in)	Casing Interval		Csg. Size (in)	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	Buoyant Body SF Tension	Buoyant Joint SF Tension
	From (ft)	To (ft)								
14.75	0	1193	10.75	40.5	J-55	BTC	1.125	1.2	1.4	1.4
9.875	0	11358	7.625	26.4	L-80 HC	BTC	1.125	1.2	1.4	1.4
6.75	0	22701	5.5	20	P-110	DQX	1.125	1.2	1.4	1.4
							SF Values will meet or Exceed			

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

*Oxy requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool may be run in case hole conditions merit pumping a second stage cement job to comply with permitted top of cement. If cement circulated to surface during first stage, we will drop a cancelation cone and not pump the second stage.

*Oxy requests the option to run production casing with DQX and/or SF TORQ connections to accommodate hole conditions or drilling operations.

Annular Clearance Variance Request

As per the agreement reached in the Oxy/BLM meeting on Feb 22, 2018, Oxy requests permission to allow deviation from the 0.422" annular clearance requirement from Onshore Order #2 under the following conditions:

1. Annular clearance to meet or exceed 0.422" between intermediate casing ID and production casing coupling only on the first 500' overlap between both casings.
2. Annular clearance less than 0.422" is acceptable for the curve and lateral portions of the production open hole section.

Oxy USA Inc. - Lion Oil 28_33 Fed Com 34H

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

3. Cementing Program

Casing String	# Sks	Wt. (lb/gal)	Yld (ft3/sack)	H20 (gal/sk)	500# Comp. Strength (hours)	Slurry Description
Surface (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Surface (Tail)	985	14.8	1.33	6.365	5:26	Class C Cement, Accelerator
Intermediate 1st Stage (Lead)	576	10.2	2.58	11.568	6:59	Pozzolan Cement, Retarder
Intermediate 1st Stage (Tail)	167	13.2	1.61	7.804	7:11	Class H Cement, Retarder, Dispersant, Salt
DV/ECP Tool @ 4693 (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations)						
Intermediate 2nd Stage (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 2nd Stage (Tail)	1068	13.6	1.67	8.765	7:32	Class C Cement, Accelerator, Retarder
Production (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Production (Tail)	868	13.2	1.38	6.686	3:39	Class H Cement, Retarder, Dispersant, Salt

Oxy USA Inc. - Lion Oil 28_33 Fed Com 34H

Casing String	Top (ft)	Bottom (ft)	% Excess
Surface (Lead)	N/A	N/A	N/A
Surface (Tail)	0	1193	100%
Intermediate 1st Stage (Lead)	4593	10358	20%
Intermediate 1st Stage (Tail)	10358	11358	20%
Intermediate 2nd Stage (Lead)	N/A	N/A	N/A
Intermediate 2nd Stage (Tail)	0	4693	100%
Production (Lead)	N/A	N/A	N/A
Production (Tail)	10858	22701	20%

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
9.875" Hole	13-5/8"	5M	Annular	✓	70% of working pressure
			Blind Ram	✓	250/5000psi
			Pipe Ram		
			Double Ram	✓	
			Other*		

*Specify if additional ram is utilized.

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

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

	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Y | Are anchors required by manufacturer?
	A multibowl or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015. See attached schematics.

BOP Break Testing Request

As per the agreement reached in the Oxy/BLM meeting on Feb 22, 2018, Oxy requests permission to allow BOP Break Testing under the following conditions:

- After a full BOP test is conducted on the first well on the pad.
- When skidding to drill an intermediate section that does not penetrate into the Wolfcamp.
- Full BOP test will be required prior to drilling any production hole.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	1193	Water-Based Mud	8.6-8.8	40-60	N/C
1193	11358	Saturated Brine-Based or Oil-Based Mud	8.0-10.0	35-45	N/C
11358	22701	Water-Based or Oil-Based Mud	9.5-12.0	38-50	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Oxy will use a closed mud system.

What will be used to monitor the loss or gain of fluid?	PVT/MD Totco/Visual Monitoring

6. Logging and Testing Procedures

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

Additional logs planned		Interval
No	Resistivity	
No	Density	
No	CBL	
Yes	Mud log	ICP - TD
No	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	7402 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	175°F

Pump high viscosity sweeps as needed for hole cleaning. The mud system will be monitored visually/manually as well as with an electronic PVT. The necessary mud products for additional weight and fluid loss control will be on location at all times. Appropriately weighted mud will be used to isolate potential gas, oil, and water zones until such time as casing can be cemented into place for zonal isolation.

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

8. Other facets of operation

	Yes/No
Will the well be drilled with a walking/skidding operation? If yes, describe. • We plan to drill the three well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.	Yes
Will more than one drilling rig be used for drilling operations? If yes, describe. • Oxy requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Oxy would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.	Yes

Total estimated cuttings volume: 1717.1 bbls.

9. Company Personnel

Name	Title	Office Phone	Mobile Phone
Garrett Granier	Drilling Engineer	713-513-6633	832-265-0581
Diego Tellez	Drilling Engineer Supervisor	713-350-4602	713-303-4932
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
John Willis	Drilling Manager	713-366-5556	713-259-1417

AFMSS

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

PWD Data Report
03/09/2020

APD ID: 10400039683 **Submission Date:** 03/14/2019

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

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

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

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

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

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

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

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

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

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

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

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM **Well Number:** 34H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

03/09/2020

APD ID: 10400039683

Submission Date: 03/14/2019

Operator Name: OXY USA INCORPORATED

Well Name: LION OIL 28-33 FEDERAL COM

Well Number: 34H

Well Type: OIL WELL

Well Work Type: Drill

[redacted]

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: ESB000226

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: