

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 27 2017

Form C-102

Revised August 1, 2011

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

RECEIVED

Submit one copy to appropriate
District Office

AMENDED REPORT

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-4141 Fax: (575) 393-8720
District II
871 S. First St., Arroyo, NM 88219
Phone: (575) 748-1283 Fax: (575) 748-8720
District III
1000 Rio Grande Blvd., Aztec, NM 87416
Phone: (505) 334-4176 Fax: (505) 334-4170
District IV
1250 E. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3400 Fax: (505) 476-3402

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-44109	Pool Code 60660	Pool Name Turkey Track, Bone Springs
Property Code 317011	Property Name TURKEY TRACK "9-10" STATE	Well Number 32H
OGRID No. H6696	Operator Name OXY USA INC.	Elevation 3395.1'

Surface Location

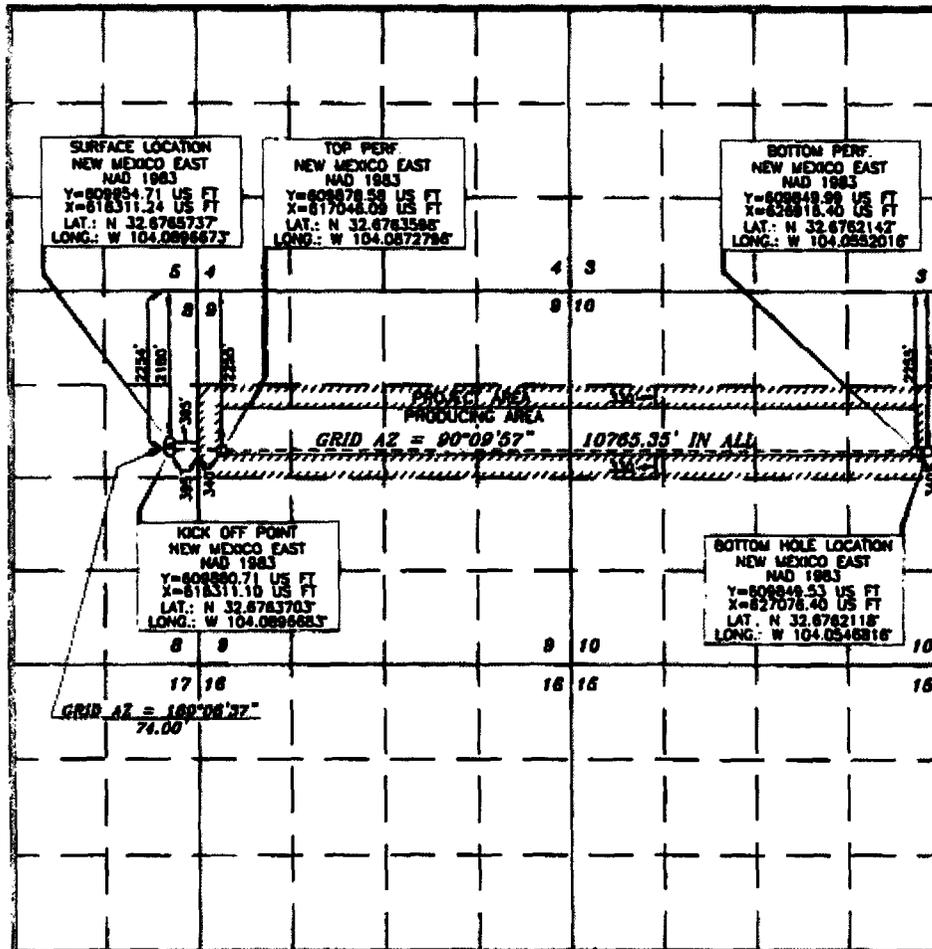
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	8	19 SOUTH	29 EAST, N.M.P.M.		2180'	NORTH	395'	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	10	19 SOUTH	29 EAST, N.M.P.M.		2254'	NORTH	180'	EAST	EDDY

Dedicated Acres 320	Joint or Infill Y	Consolidation Code	Order No.
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No allowance will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that the organization either owns a working interest or mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order authorized by the division.

Signature: Justin Morris Date: 3/22/17

Printed Name: Justin Morris
E-mail Address: Justin_Morris@oxy.com

SURVEYOR CERTIFICATION

I hereby certify that the information shown on this plat was obtained from reliable sources and that the same is true and correct to the best of my belief.

Date of Survey: MARCH 1, 2017

Signature and Seal of Professional Surveyor: [Seal]

Signature: Terry Olson Date: 3/7/2017
Certificate Number: 15079

MAR 27 2017

1. Geologic Formations

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TVD of Target	8855'	Pilot Hole Depth	10350'
MD at TD:	19304'	Deepest Expected Fresh Water	312'

Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	312	Water/Oil/Gas
Base Salado	858	
Seven Rivers	1403	
Queen	2056	Oil/Gas
Grayburg	2394	
San Andres	2943	
Lamar/Delaware	3438	
Bone Spring	3745	Oil/Gas
1st Bone Spring	6824	Oil/Gas
2nd Bone Spring	6928	Oil/Gas
3rd Bone Spring	7985	Oil/Gas
Wolfcamp	8945	Oil/Gas
Penn	9760	
Strawn	10215	

*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	
	From (ft)	To (ft)							Body SF Tension	Joint SF Tension
17.5	0	400	13.375	54.5	J55	BTC	4.83	1.34	2.46	2.63
12.25	0	7500	9.625	47	L80	BTC	1.27	1.77	2.11	2.20
8.5	7400	19304	5.5	20	P-110	DQX	2.41	1.20	2.26	2.49

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 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 cancellation cone and not pump the second stage.

Oxy USA Inc. - Turkey Track 9-10 State 32H

	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
<hr/>	
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.	
<hr/>	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
<hr/>	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
<hr/>	
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?	
<hr/>	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Oxy USA Inc. - Turkey Track 9-10 State 32H

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	336	14.8	1.35	6.53	6:50	Class C Cement, Accelerator
Production Casing	1144	10.2	3.05	15.63	15:07	Pozzolan Cement, Retarder
	239	13.2	1.65	8.45	12:57	Class H Cement, Retarder, Dispersant, Salt
DV/ECP Tool @ 3488' (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations)						
2nd Stage	846	12.9	1.85	9.86	12:44	Class C Cement, Accelerator, Retarder
	265	14.8	1.33	6.34	6:31	Class C Cement
Production Liner	1926	13.2	1.631	8.37	15:15	Class H Cement, Retarder, Dispersant, Salt

Casing String	Top of Lead (ft)	Bottom of Lead (ft)	Top of Tail (ft)	Bottom of Tail (ft)	% Excess Lead	% Excess Tail
Surface	N/A	N/A	0	400	N/A	50%
Production Casing	0	6500	6500	7500	75%	20%
2nd Stage Production Casing	0	2988	2988	3488	75%	125%
Production Liner	N/A	N/A	7400	19304	N/A	15%

• **Cement Top and Liner Overlap**

- Oxy is requesting permission to have minimum fill of cement behind the 5-1/2” production liner to be 100 ft into previous casing string
 - The reason for this is so that we can come back and develop shallower benches from the same 9.625” mainbore in the future
- Our plan is to use a whipstock for our exit through the mainbore
 - Based on our lateral target, we are planning a whipstock cased/hole exit so that kick-off point will allow for roughly 10deg/100’ doglegs needed for the curve
- Cement will be brought to the top of this liner hanger

Oxy USA Inc. - Turkey Track 9-10 State 32H

Include Pilot Hole Cementing specs:

Pilot hole depth: 10,350'

KOP: 8,172'

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld ft³/sack	Water gal/sk	Slurry Description and Cement Type
9750 MD	10350 MD	40	265	14.4	1.246	5.73	50% Class H Cement, 50% Pozzolan Mix, Bentonite
9150 MD	9750 MD	40	265	14.4	1.246	5.73	50% Class H Cement, 50% Pozzolan Mix, Bentonite
8550 MD	9150 MD	40	265	14.4	1.246	5.73	50% Class H Cement, 50% Pozzolan Mix, Bentonite
7950 MD	8550 MD	40	347	17.5	0.952	3.51	Class H Cement, Retarder

Note:

- The first plug from 9750'-10350' MD is designed to be 600' in length to isolate the high pressure zones in the Pilot Hole from the KOP.
- The second plug from 9150'-9750' MD is designed to be 600' in length to isolate the high pressure zones in the Pilot Hole from the KOP.
- The third plug from 8550'-9150' MD is designed to be 600' in length to isolate the high pressure zones in the Pilot Hole from the KOP.
- The fourth plug from 7950'-8550' MD is designed to be 600' in length to provide a strong foundation to sidetrack in open hole at the KOP (~8,172' MD).

Oxy USA Inc. - Turkey Track 9-10 State 32H

4. Pressure Control Equipment

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

<p>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.</p>	
<p>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.</p>	
Y	Are anchors required by manufacturer?
<p>A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. 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.</p> <p>See attached schematic.</p>	

Oxy USA Inc. - Turkey Track 9-10 State 32H

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	400	Water-Based Mud	8.4-8.6	40-60	N/C
400	3488	Brine	9.8-10.0	35-45	N/C
3488	7500	Water-Based Mud	8.8-9.6	38-50	N/C
7500	Pilot TD (10350)	Water-Based Mud	8.8-10.0	35-50	N/C
7500	19304	Oil-Based Mud	8.8-9.6	35-50	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.

Oxy proposes to drill out the 13.375" surface casing shoe with a saturated brine system from 400' - 3488', which is the base of the salt system. At this point we will swap fluid systems to a water-based mud system. We will drill with this system to the Production Casing TD @ 7500'.

What will be used to monitor the loss or gain of fluid?	PVT/MD Totco/Visual Monitoring
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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	Surface Casing Shoe - TD
Yes	Triple Combo	2 nd Bone Springs (~7670' TVD) – Pilot Hole TD (~10350' TVD)
Yes	Cased Hole Gamma Ray and Neutron Logs	Surface – Intermediate Casing Point

Oxy USA Inc. - Turkey Track 9-10 State 32H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5382 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	163°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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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: 2150.95 bbls.

Attachments

- Directional Plan
- H2S Contingency Plan
- Flex III Attachments
- Wellhead Schematic
- Tie-Back Detail Sheet

Oxy USA Inc. - Turkey Track 9-10 State 32H

- Premium/Uncommon Casing Connection Technical Data Sheet
 Spudder Rig Project Summary / Rig Layout

9. Company Personnel

Name	Title	Office Phone	Mobile Phone
Cameron Brennan	Drilling Engineer	713-350-4806	817-614-5393
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

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 27 2017

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ENGINEERING DESIGNS

PRD NM DIRECTIONAL PLANS (NAD 1983)

Turkey Track 9-10

Turkey Track 9-10 State 32H

WB00

Plan: Pilot - Permitting Plan

Standard Planning Report

21 March, 2017

Oxy Planning Report

Database: HOPSPP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB00
Design: Pilot - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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	Turkey Track 9-10				
Site Position:		Northing:	610,014.71 usft	Latitude:	32° 40' 36.259118 N
From:	Map	Easting:	616,311.36 usft	Longitude:	104° 5' 22.799335 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.13 °

Well	Turkey Track 9-10 State 32H					
Well Position	+N/-S	-60.01 ft	Northing:	609,954.71 usft	Latitude:	32° 40' 35.665405 N
	+E/-W	-0.12 ft	Easting:	616,311.24 usft	Longitude:	104° 5' 22.802351 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	3,395.10 ft	Ground Level:	3,395.10 ft

Wellbore	WB00				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/31/2016	7.57	60.55	48,310

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

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	
10,350.00	0.00	0.00	10,350.00	0.00	0.00	0.00	0.00	0.00	0.00	

Oxy Planning Report

Database: HOPSPP
Company: ENGINEERING DESIGNS
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MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
312.00	0.00	0.00	312.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
858.00	0.00	0.00	858.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Salado									
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
1,403.00	0.00	0.00	1,403.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
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
2,056.00	0.00	0.00	2,056.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
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
2,394.00	0.00	0.00	2,394.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg									
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
2,943.00	0.00	0.00	2,943.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andres									
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
3,438.00	0.00	0.00	3,438.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware									
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
3,745.00	0.00	0.00	3,745.00	0.00	0.00	0.00	0.00	0.00	0.00

Oxy Planning Report

Database: HOPSPP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB00
Design: Pilot - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
Bone Spring									
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
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
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,824.00	0.00	0.00	6,824.00	0.00	0.00	0.00	0.00	0.00	0.00
1st Bone Spring									
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,928.00	0.00	0.00	6,928.00	0.00	0.00	0.00	0.00	0.00	0.00
2nd Bone Spring									
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,985.00	0.00	0.00	7,985.00	0.00	0.00	0.00	0.00	0.00	0.00
3rd Bone Spring									
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00

Oxy Planning Report

Database: HOPSPP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB00
Design: Pilot - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,945.00	0.00	0.00	8,945.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolfcamp									
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00
9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00
9,760.00	0.00	0.00	9,760.00	0.00	0.00	0.00	0.00	0.00	0.00
Penn									
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00
10,350.00	0.00	0.00	10,350.00	0.00	0.00	0.00	0.00	0.00	0.00
Pilot Hole TD at 10350.00									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
TT_9-10_32H_KOP - hit/miss target - Shape	0.00	0.00	8,207.04	-74.01	-0.14	609,880.71	616,311.10	32° 40' 34.933158 N	104° 5' 22.805977
- plan misses target center by 74.01ft at 8207.04ft MD (8207.04 TVD, 0.00 N, 0.00 E)									
- Point									
TT_9-10_32H_TP - hit/miss target - Shape	0.00	0.00	8,780.00	-76.14	734.91	609,878.58	617,046.09	32° 40' 34.895301 N	104° 5' 14.206691
- plan misses target center by 738.85ft at 8780.00ft MD (8780.00 TVD, 0.00 N, 0.00 E)									
- Point									
TT_9-10_32H_BHL - hit/miss target - Shape	0.00	0.00	8,855.00	-105.19	10,766.09	609,849.53	627,076.40	32° 40' 34.362478 N	104° 3' 16.853713
- plan misses target center by 10766.60ft at 8855.00ft MD (8855.00 TVD, 0.00 N, 0.00 E)									
- Point									

Oxy Planning Report

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Wellbore: WB00
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
312.00	311.80	Rustler			
858.00	857.80	Base Salado			
1,403.00	1,402.80	Seven Rivers			
2,056.00	2,055.80	Queen			
2,394.00	2,393.80	Grayburg			
2,943.00	2,942.80	San Andres			
3,438.00	3,437.80	Delaware			
3,745.00	3,744.80	Bone Spring			
6,824.00	6,823.80	1st Bone Spring		0.00	
6,928.00	6,927.80	2nd Bone Spring			
7,985.00	7,984.80	3rd Bone Spring			
8,945.00	8,944.80	Wolfcamp			
9,760.00	9,759.80	Penn			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,350.00	10,350.00	0.00	0.00	Pilot Hole TD at 10350.00

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 27 2017

RECEIVED

ENGINEERING DESIGNS

PRD NM DIRECTIONAL PLANS (NAD 1983)

Turkey Track 9-10

Turkey Track 9-10 State 32H

WB01

Plan: Lateral - Permitting Plan

Standard Planning Report

21 March, 2017

Oxy Planning Report

Database: HOPSP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB01
Design: Lateral - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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	Turkey Track 9-10				
Site Position:		Northing:	610,014.71 usft	Latitude:	32° 40' 36.259118 N
From:	Map	Easting:	616,311.36 usft	Longitude:	104° 5' 22.799335 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.13 °

Well	Turkey Track 9-10 State 32H					
Well Position	+N/-S	-60.01 ft	Northing:	609,954.71 usft	Latitude:	32° 40' 35.665405 N
	+E/-W	-0.12 ft	Easting:	616,311.24 usft	Longitude:	104° 5' 22.802351 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	3,395.10 ft	Ground Level:	3,395.10 ft

Wellbore	WB01				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	HDGM	12/31/2016	(°) 7.57	(°) 60.55	(nT) 48,310

Design	Lateral - Permitting Plan			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	8,172.07
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	90.56

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
8,172.07	0.00	0.00	8,172.07	0.00	0.00	0.00	0.00	0.00	0.00	
8,186.07	1.90	98.00	8,186.07	-0.03	0.23	13.57	13.57	0.00	98.00	
8,226.07	1.90	98.00	8,226.05	-0.22	1.54	0.00	0.00	0.00	0.00	
9,111.34	90.43	96.57	8,780.00	-66.70	574.61	10.00	10.00	-0.16	-1.43	
9,272.01	89.57	90.17	8,780.00	-76.14	734.91	4.02	-0.53	-3.99	-97.59	TT_9-10_32H_TP
19,303.51	89.57	90.17	8,855.00	-105.19	10,766.09	0.00	0.00	0.00	0.00	TT_9-10_32H_BHL

Oxy Planning Report

Database: HOPSP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
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Wellbore: WB01
Design: Lateral - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

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

Oxy Planning Report

Database: HOPSP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB01
Design: Lateral - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,172.07	0.00	0.00	8,172.07	0.00	0.00	0.00	0.00	0.00	0.00
Openhole Sidetrack									
8,186.07	1.90	98.00	8,186.07	-0.03	0.23	0.23	13.57	13.57	0.00
Drill 40' Rat Hole									
8,200.00	1.90	98.00	8,199.99	-0.10	0.69	0.69	0.00	0.00	0.00
8,226.07	1.90	98.00	8,226.05	-0.22	1.54	1.55	0.00	0.00	0.00
Start Curve @ 10° DLS									
8,300.00	9.29	96.86	8,299.57	-1.10	8.69	8.70	10.00	10.00	-1.54
8,400.00	19.29	96.71	8,396.35	-4.00	33.18	33.21	10.00	10.00	-0.15
8,500.00	29.29	96.66	8,487.38	-8.78	73.99	74.07	10.00	10.00	-0.05
8,600.00	39.29	96.63	8,569.90	-15.29	129.88	130.02	10.00	10.00	-0.03
8,700.00	49.29	96.61	8,641.38	-23.33	199.16	199.37	10.00	10.00	-0.02
8,800.00	59.29	96.60	8,699.68	-32.66	279.71	280.02	10.00	10.00	-0.01
8,900.00	69.29	96.59	8,743.00	-42.99	369.11	369.51	10.00	10.00	-0.01
9,000.00	79.29	96.58	8,770.04	-54.02	464.62	465.12	10.00	10.00	-0.01
9,100.00	89.29	96.57	8,779.97	-65.40	563.34	563.95	10.00	10.00	-0.01
9,111.34	90.43	96.57	8,780.00	-66.70	574.61	575.23	10.00	10.00	-0.01
Turn to Align with BHL @ 4.02° DLS									
9,200.00	89.95	93.04	8,779.70	-74.12	662.94	663.63	4.02	-0.53	-3.99
9,272.01	89.57	90.17	8,780.00	-76.14	734.91	735.62	4.02	-0.53	-3.99
Landing Point									
9,300.00	89.57	90.17	8,780.21	-76.22	762.90	763.61	0.00	0.00	0.00
9,400.00	89.57	90.17	8,780.96	-76.51	862.90	863.60	0.00	0.00	0.00
9,500.00	89.57	90.17	8,781.70	-76.80	962.90	963.60	0.00	0.00	0.00
9,600.00	89.57	90.17	8,782.45	-77.09	1,062.89	1,063.59	0.00	0.00	0.00

Oxy Planning Report

Database: HOPSP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB01
Design: Lateral - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
9,700.00	89.57	90.17	8,783.20	-77.38	1,162.89	1,163.59	0.00	0.00	0.00
9,800.00	89.57	90.17	8,783.95	-77.67	1,262.89	1,263.58	0.00	0.00	0.00
9,900.00	89.57	90.17	8,784.70	-77.96	1,362.88	1,363.58	0.00	0.00	0.00
10,000.00	89.57	90.17	8,785.44	-78.24	1,462.88	1,463.57	0.00	0.00	0.00
10,100.00	89.57	90.17	8,786.19	-78.53	1,562.88	1,563.57	0.00	0.00	0.00
10,200.00	89.57	90.17	8,786.94	-78.82	1,662.87	1,663.56	0.00	0.00	0.00
10,300.00	89.57	90.17	8,787.69	-79.11	1,762.87	1,763.56	0.00	0.00	0.00
10,400.00	89.57	90.17	8,788.43	-79.40	1,862.87	1,863.55	0.00	0.00	0.00
10,500.00	89.57	90.17	8,789.18	-79.69	1,962.86	1,963.55	0.00	0.00	0.00
10,600.00	89.57	90.17	8,789.93	-79.98	2,062.86	2,063.54	0.00	0.00	0.00
10,700.00	89.57	90.17	8,790.68	-80.27	2,162.86	2,163.54	0.00	0.00	0.00
10,800.00	89.57	90.17	8,791.42	-80.56	2,262.85	2,263.53	0.00	0.00	0.00
10,900.00	89.57	90.17	8,792.17	-80.85	2,362.85	2,363.53	0.00	0.00	0.00
11,000.00	89.57	90.17	8,792.92	-81.14	2,462.85	2,463.52	0.00	0.00	0.00
11,100.00	89.57	90.17	8,793.67	-81.43	2,562.84	2,563.52	0.00	0.00	0.00
11,200.00	89.57	90.17	8,794.41	-81.72	2,662.84	2,663.51	0.00	0.00	0.00
11,300.00	89.57	90.17	8,795.16	-82.01	2,762.84	2,763.51	0.00	0.00	0.00
11,400.00	89.57	90.17	8,795.91	-82.30	2,862.83	2,863.50	0.00	0.00	0.00
11,500.00	89.57	90.17	8,796.66	-82.59	2,962.83	2,963.50	0.00	0.00	0.00
11,600.00	89.57	90.17	8,797.41	-82.88	3,062.83	3,063.49	0.00	0.00	0.00
11,700.00	89.57	90.17	8,798.15	-83.17	3,162.82	3,163.49	0.00	0.00	0.00
11,800.00	89.57	90.17	8,798.90	-83.46	3,262.82	3,263.48	0.00	0.00	0.00
11,900.00	89.57	90.17	8,799.65	-83.75	3,362.82	3,363.48	0.00	0.00	0.00
12,000.00	89.57	90.17	8,800.40	-84.04	3,462.82	3,463.47	0.00	0.00	0.00
12,100.00	89.57	90.17	8,801.14	-84.33	3,562.81	3,563.47	0.00	0.00	0.00
12,200.00	89.57	90.17	8,801.89	-84.62	3,662.81	3,663.46	0.00	0.00	0.00
12,300.00	89.57	90.17	8,802.64	-84.91	3,762.81	3,763.46	0.00	0.00	0.00
12,400.00	89.57	90.17	8,803.39	-85.20	3,862.80	3,863.45	0.00	0.00	0.00
12,500.00	89.57	90.17	8,804.13	-85.49	3,962.80	3,963.45	0.00	0.00	0.00
12,600.00	89.57	90.17	8,804.88	-85.77	4,062.80	4,063.44	0.00	0.00	0.00
12,700.00	89.57	90.17	8,805.63	-86.06	4,162.79	4,163.43	0.00	0.00	0.00
12,800.00	89.57	90.17	8,806.38	-86.35	4,262.79	4,263.43	0.00	0.00	0.00
12,900.00	89.57	90.17	8,807.12	-86.64	4,362.79	4,363.42	0.00	0.00	0.00
13,000.00	89.57	90.17	8,807.87	-86.93	4,462.78	4,463.42	0.00	0.00	0.00
13,100.00	89.57	90.17	8,808.62	-87.22	4,562.78	4,563.41	0.00	0.00	0.00
13,200.00	89.57	90.17	8,809.37	-87.51	4,662.78	4,663.41	0.00	0.00	0.00
13,300.00	89.57	90.17	8,810.12	-87.80	4,762.77	4,763.40	0.00	0.00	0.00
13,400.00	89.57	90.17	8,810.86	-88.09	4,862.77	4,863.40	0.00	0.00	0.00
13,500.00	89.57	90.17	8,811.61	-88.38	4,962.77	4,963.39	0.00	0.00	0.00
13,600.00	89.57	90.17	8,812.36	-88.67	5,062.76	5,063.39	0.00	0.00	0.00
13,700.00	89.57	90.17	8,813.11	-88.96	5,162.76	5,163.38	0.00	0.00	0.00
13,800.00	89.57	90.17	8,813.85	-89.25	5,262.76	5,263.38	0.00	0.00	0.00
13,900.00	89.57	90.17	8,814.60	-89.54	5,362.75	5,363.37	0.00	0.00	0.00
14,000.00	89.57	90.17	8,815.35	-89.83	5,462.75	5,463.37	0.00	0.00	0.00
14,100.00	89.57	90.17	8,816.10	-90.12	5,562.75	5,563.36	0.00	0.00	0.00
14,200.00	89.57	90.17	8,816.84	-90.41	5,662.74	5,663.36	0.00	0.00	0.00
14,300.00	89.57	90.17	8,817.59	-90.70	5,762.74	5,763.35	0.00	0.00	0.00
14,400.00	89.57	90.17	8,818.34	-90.99	5,862.74	5,863.35	0.00	0.00	0.00
14,500.00	89.57	90.17	8,819.09	-91.28	5,962.73	5,963.34	0.00	0.00	0.00
14,600.00	89.57	90.17	8,819.83	-91.57	6,062.73	6,063.34	0.00	0.00	0.00
14,700.00	89.57	90.17	8,820.58	-91.86	6,162.73	6,163.33	0.00	0.00	0.00
14,800.00	89.57	90.17	8,821.33	-92.15	6,262.73	6,263.33	0.00	0.00	0.00
14,900.00	89.57	90.17	8,822.08	-92.44	6,362.72	6,363.32	0.00	0.00	0.00
15,000.00	89.57	90.17	8,822.83	-92.73	6,462.72	6,463.32	0.00	0.00	0.00

Oxy Planning Report

Database: HOPSP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB01
Design: Lateral - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
15,100.00	89.57	90.17	8,823.57	-93.02	6,562.72	6,563.31	0.00	0.00	0.00
15,200.00	89.57	90.17	8,824.32	-93.30	6,662.71	6,663.31	0.00	0.00	0.00
15,300.00	89.57	90.17	8,825.07	-93.59	6,762.71	6,763.30	0.00	0.00	0.00
15,400.00	89.57	90.17	8,825.82	-93.88	6,862.71	6,863.30	0.00	0.00	0.00
15,500.00	89.57	90.17	8,826.56	-94.17	6,962.70	6,963.29	0.00	0.00	0.00
15,600.00	89.57	90.17	8,827.31	-94.46	7,062.70	7,063.29	0.00	0.00	0.00
15,700.00	89.57	90.17	8,828.06	-94.75	7,162.70	7,163.28	0.00	0.00	0.00
15,800.00	89.57	90.17	8,828.81	-95.04	7,262.69	7,263.27	0.00	0.00	0.00
15,900.00	89.57	90.17	8,829.55	-95.33	7,362.69	7,363.27	0.00	0.00	0.00
16,000.00	89.57	90.17	8,830.30	-95.62	7,462.69	7,463.26	0.00	0.00	0.00
16,100.00	89.57	90.17	8,831.05	-95.91	7,562.68	7,563.26	0.00	0.00	0.00
16,200.00	89.57	90.17	8,831.80	-96.20	7,662.68	7,663.25	0.00	0.00	0.00
16,300.00	89.57	90.17	8,832.54	-96.49	7,762.68	7,763.25	0.00	0.00	0.00
16,400.00	89.57	90.17	8,833.29	-96.78	7,862.67	7,863.24	0.00	0.00	0.00
16,500.00	89.57	90.17	8,834.04	-97.07	7,962.67	7,963.24	0.00	0.00	0.00
16,600.00	89.57	90.17	8,834.79	-97.36	8,062.67	8,063.23	0.00	0.00	0.00
16,700.00	89.57	90.17	8,835.54	-97.65	8,162.66	8,163.23	0.00	0.00	0.00
16,800.00	89.57	90.17	8,836.28	-97.94	8,262.66	8,263.22	0.00	0.00	0.00
16,900.00	89.57	90.17	8,837.03	-98.23	8,362.66	8,363.22	0.00	0.00	0.00
17,000.00	89.57	90.17	8,837.78	-98.52	8,462.65	8,463.21	0.00	0.00	0.00
17,100.00	89.57	90.17	8,838.53	-98.81	8,562.65	8,563.21	0.00	0.00	0.00
17,200.00	89.57	90.17	8,839.27	-99.10	8,662.65	8,663.20	0.00	0.00	0.00
17,300.00	89.57	90.17	8,840.02	-99.39	8,762.64	8,763.20	0.00	0.00	0.00
17,400.00	89.57	90.17	8,840.77	-99.68	8,862.64	8,863.19	0.00	0.00	0.00
17,500.00	89.57	90.17	8,841.52	-99.97	8,962.64	8,963.19	0.00	0.00	0.00
17,600.00	89.57	90.17	8,842.26	-100.26	9,062.64	9,063.18	0.00	0.00	0.00
17,700.00	89.57	90.17	8,843.01	-100.55	9,162.63	9,163.18	0.00	0.00	0.00
17,800.00	89.57	90.17	8,843.76	-100.83	9,262.63	9,263.17	0.00	0.00	0.00
17,900.00	89.57	90.17	8,844.51	-101.12	9,362.63	9,363.17	0.00	0.00	0.00
18,000.00	89.57	90.17	8,845.25	-101.41	9,462.62	9,463.16	0.00	0.00	0.00
18,100.00	89.57	90.17	8,846.00	-101.70	9,562.62	9,563.16	0.00	0.00	0.00
18,200.00	89.57	90.17	8,846.75	-101.99	9,662.62	9,663.15	0.00	0.00	0.00
18,300.00	89.57	90.17	8,847.50	-102.28	9,762.61	9,763.15	0.00	0.00	0.00
18,400.00	89.57	90.17	8,848.25	-102.57	9,862.61	9,863.14	0.00	0.00	0.00
18,500.00	89.57	90.17	8,848.99	-102.86	9,962.61	9,963.14	0.00	0.00	0.00
18,600.00	89.57	90.17	8,849.74	-103.15	10,062.60	10,063.13	0.00	0.00	0.00
18,700.00	89.57	90.17	8,850.49	-103.44	10,162.60	10,163.13	0.00	0.00	0.00
18,800.00	89.57	90.17	8,851.24	-103.73	10,262.60	10,263.12	0.00	0.00	0.00
18,900.00	89.57	90.17	8,851.98	-104.02	10,362.59	10,363.12	0.00	0.00	0.00
19,000.00	89.57	90.17	8,852.73	-104.31	10,462.59	10,463.11	0.00	0.00	0.00
19,100.00	89.57	90.17	8,853.48	-104.60	10,562.59	10,563.10	0.00	0.00	0.00
19,200.00	89.57	90.17	8,854.23	-104.89	10,662.58	10,663.10	0.00	0.00	0.00
19,300.00	89.57	90.17	8,854.97	-105.18	10,762.58	10,763.09	0.00	0.00	0.00
19,303.51	89.57	90.17	8,855.00	-105.19	10,766.09	10,766.61	0.00	0.00	0.00

TD at 19303.51

Oxy Planning Report

Database: HOPSPP
Company: ENGINEERING DESIGNS
Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Turkey Track 9-10
Well: Turkey Track 9-10 State 32H
Wellbore: WB01
Design: Lateral - Permitting Plan

Local Co-ordinate Reference: Well Turkey Track 9-10 State 32H
TVD Reference: WELL @ 3421.60ft (Original Well Elev)
MD Reference: WELL @ 3421.60ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
TT_9-10_32H_KOP - plan misses target center by 73.88ft at 8207.36ft MD (8207.35 TVD, -0.13 N, 0.93 E) - Point	0.00	0.00	8,207.04	-74.01	-0.14	609,880.71	616,311.10	32° 40' 34.933158 N	104° 5' 22.805977
TT_9-10_32H_TP - plan hits target center - Point	0.00	0.00	8,780.00	-76.14	734.91	609,878.58	617,046.09	32° 40' 34.895301 N	104° 5' 14.206691
TT_9-10_32H_BHL - plan hits target center - Point	0.00	0.00	8,855.00	-105.19	10,766.09	609,849.53	627,076.40	32° 40' 34.362478 N	104° 3' 16.853713

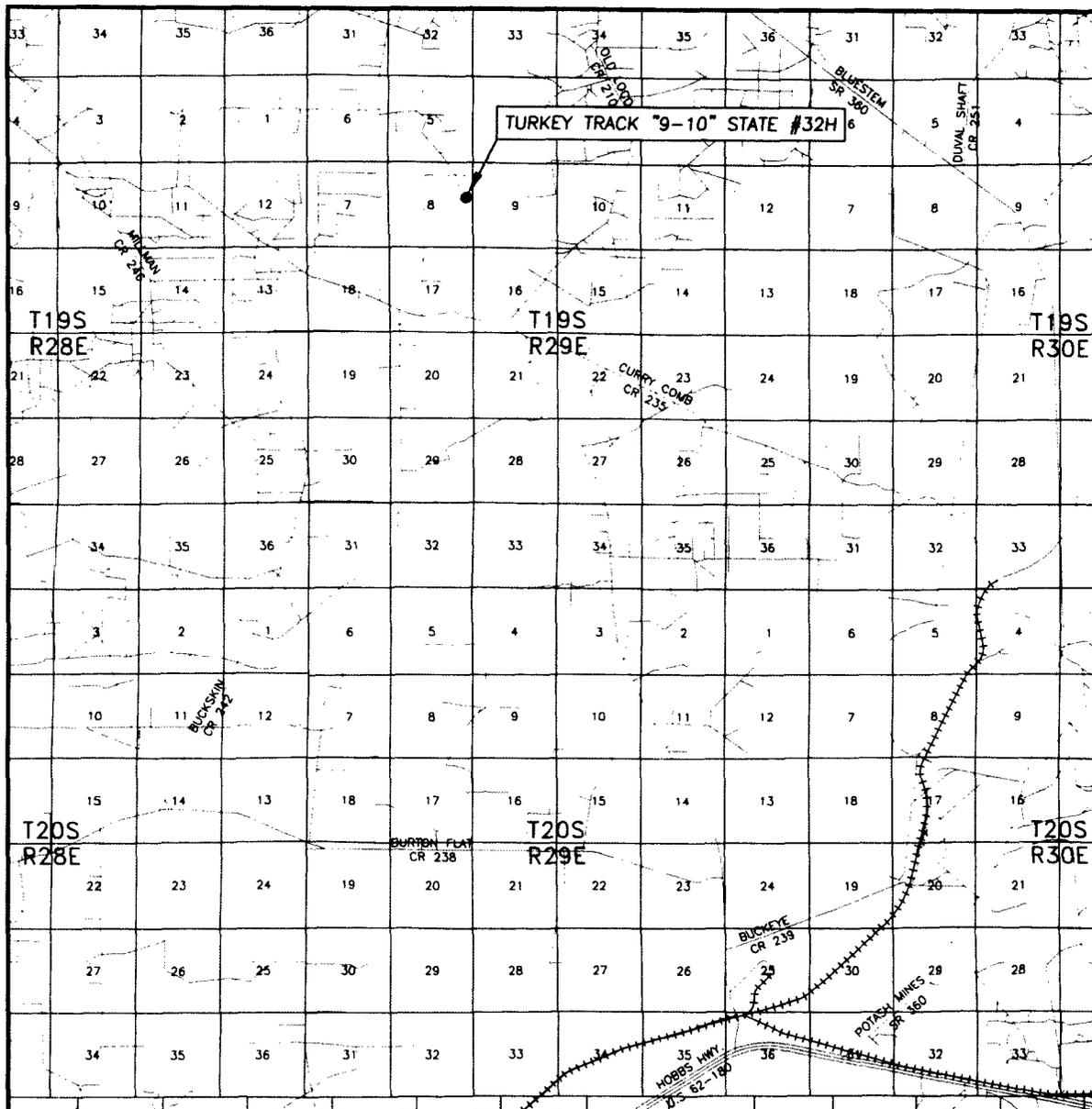
Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
312.00	312.00	Rustler			
858.00	858.00	Base Salado			
1,403.00	1,403.00	Seven Rivers			
2,056.00	2,056.00	Queen			
2,394.00	2,394.00	Grayburg			
2,943.00	2,943.00	San Andres			
3,438.00	3,438.00	Delaware			
3,745.00	3,745.00	Bone Spring			
6,824.00	6,824.00	1st Bone Spring Sand			
6,928.00	6,928.00	2nd Bone Spring Carbonate			
7,985.00	7,985.00	3rd Bone Spring Carbonate			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,172.07	8,172.07	0.00	0.00	Openhole Sidetrack
8,186.07	8,186.07	-0.03	0.23	Drill 40' Rat Hole
8,226.07	8,226.05	-0.22	1.54	Start Curve @ 10° DLS
9,111.34	8,780.00	-66.70	574.61	Turn to Align with BHL @ 4.02° DLS
9,272.01	8,780.00	-76.14	734.91	Landing Point
19,303.51	8,855.00	-105.19	10,766.09	TD at 19303.51

VICINITY MAP

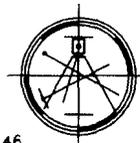


SEC. 8 TWP. 19-S RGE. 29-E
 SURVEY N.M.P.M.
 COUNTY EDDY
 DESCRIPTION 2180' FNL & 395' FEL
 ELEVATION 3395.1'
 OPERATOR OXY USA INC.

SCALE: 1" = 2 MILES

Asel Surveying

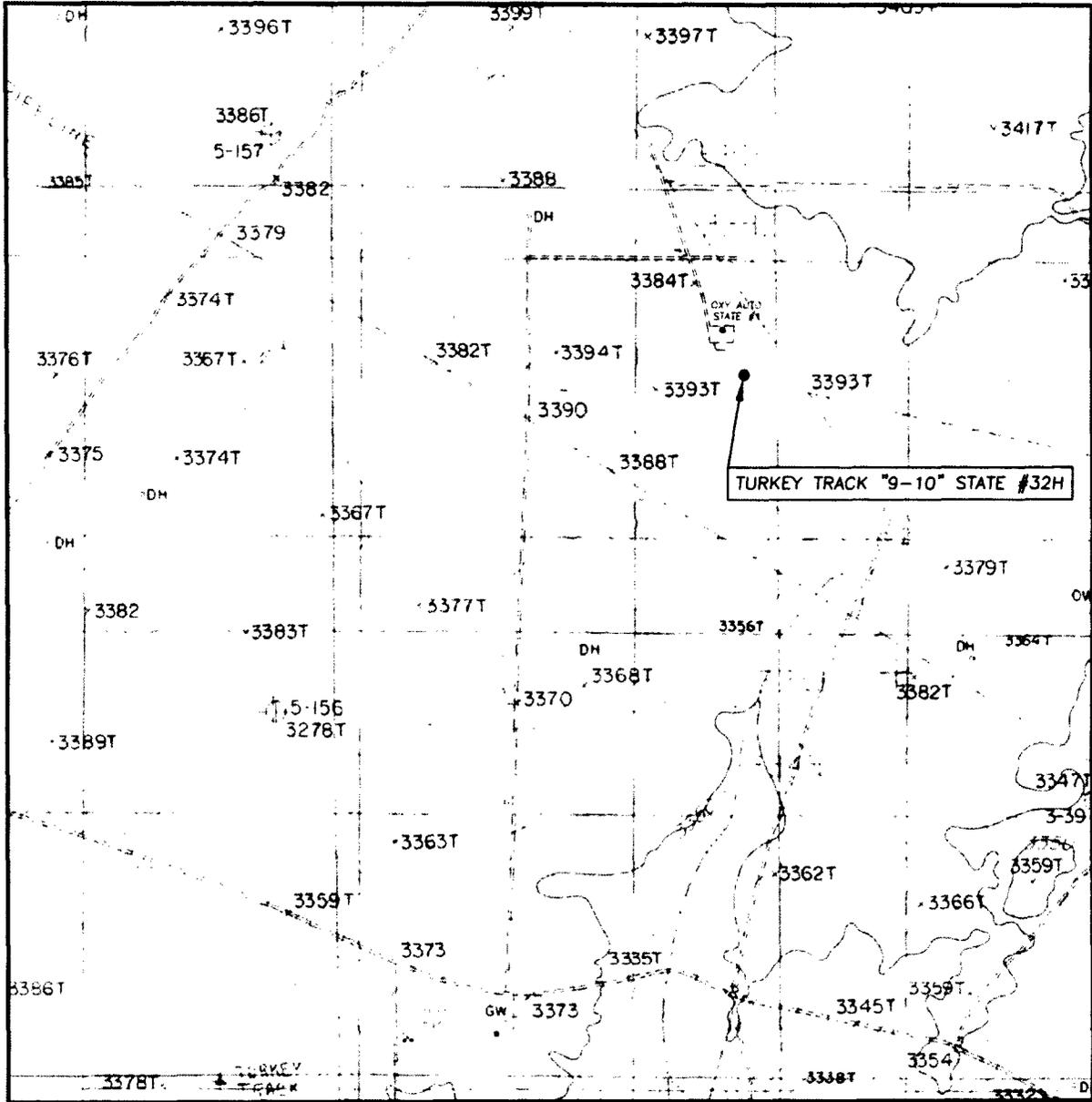
P.O. BOX 393 - 310 W. TAYLOR
 HOBBS, NEW MEXICO - 575-393-9146



LEASE TURKEY TRACK "9-10" STATE #32H

DIRECTIONS FROM THE INTERSECTION OF U.S. HWY. #62/180 AND STATE ROAD #360 (POTASH MINES ROAD), GO NORTHEASTERLY ON STATE ROAD #360 FOR 5.7 MILES, TURN LEFT ON COUNTY ROAD #235 (CURRY COMB ROAD) AND GO NORTHWESTERLY FOR 9.2 MILES, TURN RIGHT ON CALICHE ROAD AND GO NORTH FOR 1.7 MILES, TURN RIGHT AND GO EAST FOR 0.4 MILES, TURN RIGHT AND GO SOUTH FOR 0.2 MILES, CONTINUE SOUTHEAST ON PROPOSED ROAD FOR 102.7 FEET, TURN LEFT AND GO EAST FOR 112.1 FEET TO LOCATION.

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

SEC. 8 TWP. 19-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 2180' FNL & 395' FEL

ELEVATION 3395.1'

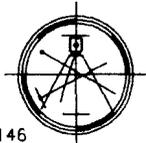
OPERATOR OXY USA INC.

LEASE TURKEY TRACK "9-10" STATE #32H

U.S.G.S. TOPOGRAPHIC MAP
ILLINOIS CAMP NE, N.M.

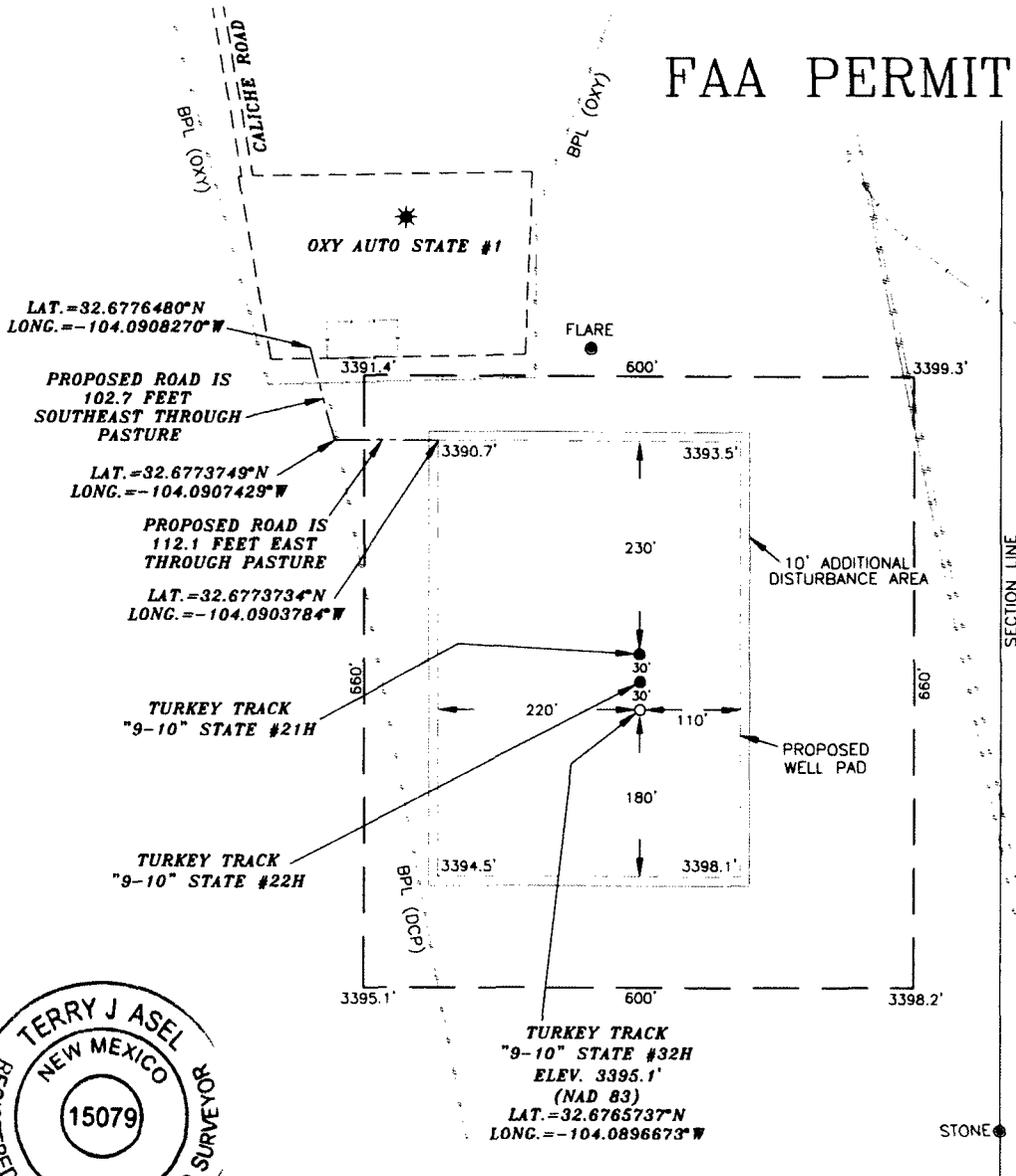
Asel Surveying

P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146



OXY USA INC. TURKEY TRACK "9-10" STATE #32H SITE PLAN

FAA PERMIT: NO

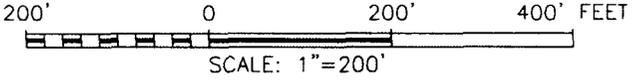


SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 3/7/2017
Terry J. Asel N.M. R.P.L.S. No. 15079

- LEGEND**
- - - - DENOTES PROPOSED WELL PAD
 - - - - DENOTES PROPOSED ROAD
 - * - DENOTES EXISTING WELL



Asel Surveying

P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146



<h2 style="margin: 0;">OXY USA INC.</h2>		
TURKEY TRACK "9-10" STATE #32H LOCATED AT 2180' FNL & 395' FEL IN SECTION 8, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO		
Survey Date: 03/01/17	Sheet 1 of 1 Sheets	
W.O. Number: 170301WL-c	Drawn By: KA	Rev:
Date: 03/06/17	170301WL-c	Scale: 1"=200'

MAR 27 2017

RECEIVED



Permian Drilling Hydrogen Sulfide Drilling Operations Plan Turkey Track 9-10 State 32H

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.

MAR 27 2017

RECEIVED



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

Hydrogen Sulfide Training

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

1. The hazards and characteristics of 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. (Garrett 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

<u>Percent (%)</u>	<u>Ppm</u>	<u>Concentration</u> <u>Grains</u> <u>100 std. Ft3*</u>	<u>Physical effects</u>
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

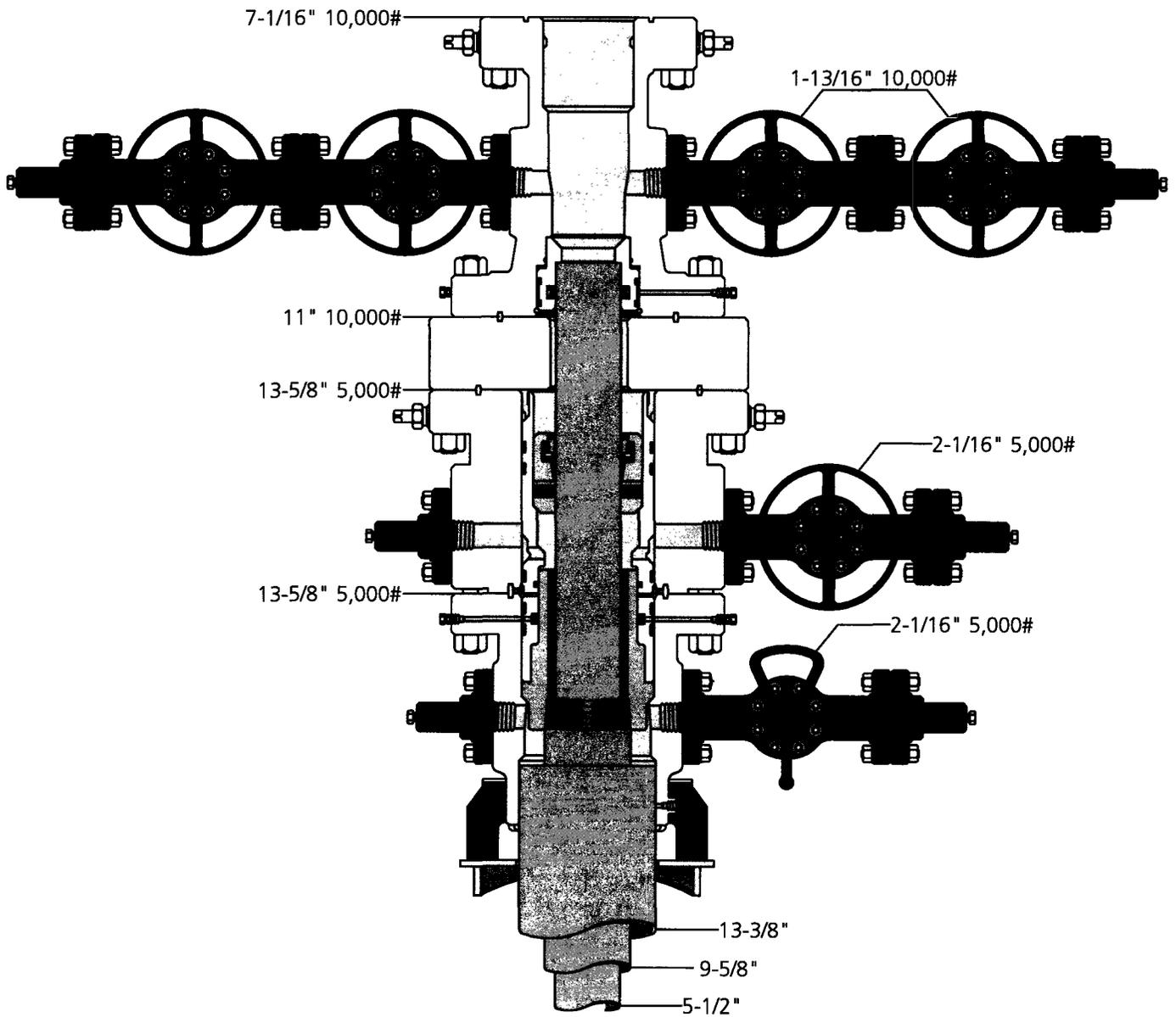
Do not panic!

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



13" 5K MBS SL2 Wellhead



Name: Jeanette	Date: 7-12-16	Working Pressure:	#	J-9786-4
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PERFORMANCE DATA

TMK UP DQX
Technical Data Sheet

5.500 in

20.00 lbs/ft

P-110

Tubular Parameters

Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	20.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	641,000	lbs
PE Weight	19.81	lbs/ft	Tensile Load	729,000	lbs
Wall Thickness	0.361	in	Min. Internal Yield Pressure	12,600	psi
Nominal ID	4.778	in	Collapse Pressure	11,100	psi
Drift Diameter	4.653	in			
Nom. Pipe Body Area	5.828	in ²			

Connection Parameters

Connection OD	6.050	in
Connection ID	4.778	in
Make-Up Loss	4.122	in
Critical Section Area	5.828	in ²
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	641,000	lbs
Min. Internal Yield Pressure	12,600	psi
Collapse Pressure	11,100	psi

Make-Up Torques

Min. Make-Up Torque	11,600	ft-lbs
Opt. Make-Up Torque	12,900	ft-lbs
Max. Make-Up Torque	14,100	ft-lbs
Yield Torque	20,600	ft-lbs

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NOTE:

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