District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101
August 1, 2011

Permit 330344

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

1. Operator Name and Address		2. OGRID Number
OXY USA INC P.O. Box 4294 Houston, TX 772104294		16696
		3. API Number 30-015-53277
4. Property Code 326058	5. Property Name VANADIUM 32 STATE	6. Well No. 005H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
O	29	23S	31E		620	S	2008	E	Eddy

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
C	32	23S	31E	C	10	N	1910	W	Eddy

9. Pool Information

COTTON DRAW;BONE SPRING	13367

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
New Well	OIL		State	3360
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
N	22221	2nd Bone Spring Sand		3/1/2023
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

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

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	459	479	0
Int1	12.25	9.625	40	4254	1132	0
Int2	8.75	7.625	26.4	9447	634	0
Prod	6.75	5.5	20	22221	993	9079

Casing/Cement Program: Additional Comments

22. Proposed Blowout Prevention Program

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

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒, if applicable.** Signature:		**OIL CONSERVATION DIVISION**		
Printed Name:	Electronically filed by KELLEY MONTGOMERY	Approved By:	Katherine Pickford	
Title:	Manager Regulatory	Title:	Geoscientist	
Email Address:	kelley_montgomery@oxy.com	Approved Date:	1/13/2023	Expiration Date: 1/13/2025
Date:	12/9/2022 Phone: 713-366-5716	Conditions of Approval Attached		

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015 53277	13367	COTTON DRAW; BONE SPRING

[4] Property Code	[5] Property Name	[6] Well Number
326058	VANADIUM 32 STATE	5H

[7] OGRID No.	[8] Operator Name	[9] Elevation
16696	OXY USA INC.	3360.0'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	29	23S	31E		620	SOUTH	2008	EAST	EDDY

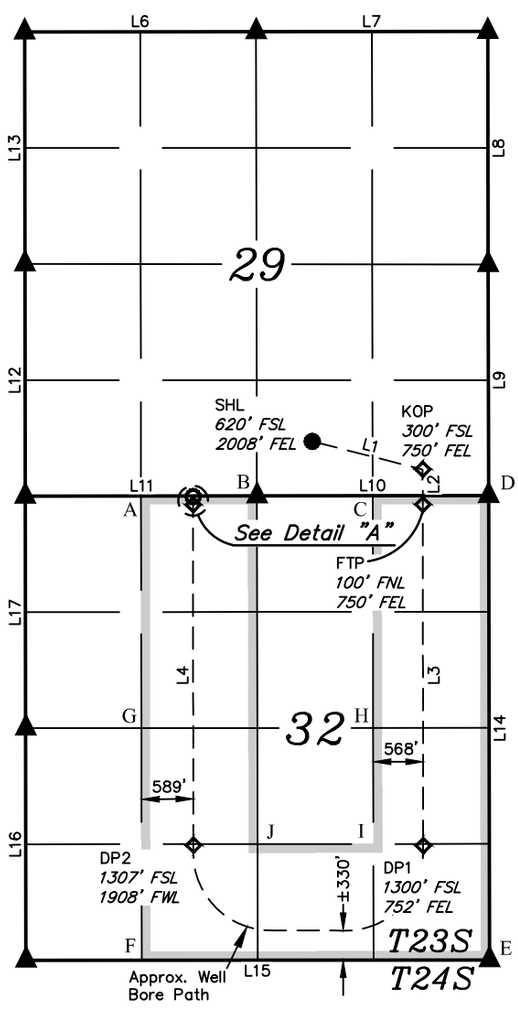
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	32	23S	31E		10	NORTH	1910	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
360			

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

[16]



NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°16'11.58" (32.269882°)
LONGITUDE = 103°47'52.04" (103.797789°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°16'11.13" (32.269759°)
LONGITUDE = 103°47'50.29" (103.797303°)
STATE PLANE NAD 83 (N.M. EAST)
N: 462329.10' E: 706862.93'
STATE PLANE NAD 27 (N.M. EAST)
N: 462269.79' E: 665679.39'

NAD 83 (KICK OFF POINT)
LATITUDE = 32°16'08.41" (32.269003°)
LONGITUDE = 103°47'37.38" (103.793718°)
NAD 27 (KICK OFF POINT)
LATITUDE = 32°16'07.97" (32.268880°)
LONGITUDE = 103°47'35.63" (103.793232°)
STATE PLANE NAD 83 (N.M. EAST)
N: 462015.66' E: 708122.78'
STATE PLANE NAD 27 (N.M. EAST)
N: 461956.36' E: 666939.22'

NAD 83 (FIRST TAKE POINT)
LATITUDE = 32°16'04.45" (32.267904°)
LONGITUDE = 103°47'37.38" (103.793716°)
NAD 27 (FIRST TAKE POINT)
LATITUDE = 32°16'04.01" (32.267781°)
LONGITUDE = 103°47'35.63" (103.793230°)
STATE PLANE NAD 83 (N.M. EAST)
N: 461615.75' E: 708125.36'
STATE PLANE NAD 27 (N.M. EAST)
N: 461556.45' E: 666941.79'

NAD 83 (DEFLECTION POINT 1)
LATITUDE = 32°15'26.03" (32.257231°)
LONGITUDE = 103°47'37.35" (103.793708°)
NAD 27 (DEFLECTION POINT 1)
LATITUDE = 32°15'25.59" (32.257108°)
LONGITUDE = 103°47'35.60" (103.793223°)
STATE PLANE NAD 83 (N.M. EAST)
N: 457733.29' E: 708147.31'
STATE PLANE NAD 27 (N.M. EAST)
N: 457674.10' E: 666963.63'

NAD 83 (DEFLECTION POINT 2)
LATITUDE = 32°15'26.11" (32.257252°)
LONGITUDE = 103°48'07.82" (103.802173°)
NAD 27 (DEFLECTION POINT 2)
LATITUDE = 32°15'25.66" (32.257129°)
LONGITUDE = 103°48'06.08" (103.801688°)
STATE PLANE NAD 83 (N.M. EAST)
N: 457727.66' E: 705530.44'
STATE PLANE NAD 27 (N.M. EAST)
N: 457668.46' E: 664346.77'

NAD 83 (LAST TAKE POINT)
LATITUDE = 32°16'04.45" (32.267903°)
LONGITUDE = 103°48'07.84" (103.802178°)
NAD 27 (LAST TAKE POINT)
LATITUDE = 32°16'04.01" (32.267780°)
LONGITUDE = 103°48'06.09" (103.801692°)
STATE PLANE NAD 83 (N.M. EAST)
N: 461602.26' E: 705509.92'
STATE PLANE NAD 27 (N.M. EAST)
N: 461542.97' E: 664326.36'

NAD 83 (BOTTOM HOLE LOCATION)
LATITUDE = 32°16'05.34" (32.268150°)
LONGITUDE = 103°48'07.84" (103.802178°)
NAD 27 (BOTTOM HOLE LOCATION)
LATITUDE = 32°16'04.90" (32.268027°)
LONGITUDE = 103°48'06.09" (103.801692°)
STATE PLANE NAD 83 (N.M. EAST)
N: 461692.25' E: 705509.39'
STATE PLANE NAD 27 (N.M. EAST)
N: 461632.95' E: 664325.83'

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased 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 heretofore entered by the division.

12/8/2022
Signature Date

LESLIE REEVES
Printed Name

LESLIE_REEVES@OXY.COM
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

November 04, 2022
Date of Survey
Signature and Seal of Professional Surveyor:

Certificate Number:

LINE TABLE			LINE TABLE		
LINE	DIRECTION	LENGTH	LINE	DIRECTION	LENGTH
L1	S75°47'19"E	1298.50'	L10	S89°56'40"W	2636.89'
L2	S00°07'46"E	400.00'	L11	S89°56'45"W	2639.07'
L3	S00°05'01"E	3883.26'	L12	N00°04'21"W	2641.63'
L4	N00°03'47"W	3875.41'	L13	N00°04'18"W	2642.11'
L5	N00°06'04"W	90.00'	L14	N00°06'28"W	5282.92'
L6	S89°57'28"W	2635.59'	L15	S89°56'57"W	5278.28'
L7	S89°56'57"W	2636.60'	L16	N00°03'50"W	2641.51'
L8	N00°05'22"W	2651.78'	L17	N00°06'04"W	2641.03'
L9	N00°08'12"W	2631.20'			

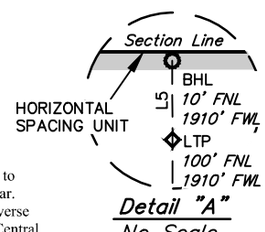
HSU COORDINATES

	NAD 27 N.M. STATE PLANE, EAST ZONE		NAD 83 N.M. STATE PLANE, EAST ZONE	
POINT	NORTHING	EASTING	NORTHING	EASTING
A	461639.91'	663735.43'	461699.21'	704918.98'
B	461646.69'	665054.68'	461705.99'	706238.24'
C	461653.50'	666372.86'	461712.79'	707556.42'
D	461660.30'	667691.03'	461719.60'	708874.60'
E	456378.63'	667722.95'	456437.79'	708906.67'
F	456358.54'	663765.06'	456417.70'	704948.77'
G	458999.41'	663750.67'	459058.64'	704934.31'
H	459012.78'	666388.26'	459072.01'	707571.89'
I	457692.36'	666395.95'	457751.55'	707579.63'
J	457685.67'	665076.94'	457744.86'	706260.61'

● = SURFACE HOLE LOCATION
◇ = KICK OFF/TAKE/ DEFLECTION POINTS
○ = BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED

2000' 1000' 0' 2000'
SCALE
DRAWN BY: Z.L. 11-09-22

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00" (NAD 83)



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

Form APD Conditions

Permit 330344

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address:	API Number:
OXY USA INC [16696] P.O. Box 4294 Houston, TX 772104294	30-015-53277
	Well: VANADIUM 32 STATE #005H

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

Electronic Delivery Confirmation™

USPS CERTIFIED MAIL™

Leslie Reeves
PO BOX 4294
HOUSTON TX 77210-4294

$5.20 US POSTAGE
FIRST-CLASS
Jan 05 2023
Mailed from ZIP 77210
1 OZ FIRST-CLASS MAIL FLATS RATE
ZONE 4
11923275

stamps endicia

062S0012913542

USPS CERTIFIED MAIL

9407 1118 9876 5839 3135 86

Mosaic Potash Carlsbad Inc
1361 POTASH MINES RD
CARLSBAD NM 88220-8958

Reference	
USPS #	9407111898765839313586
USPS Mail Class	Certified with Electronic Delivery Confirmation
USPS Status	Your item was picked up at the post office at 4:19 pm on January 11, 2023 in CARLSBAD, NM 88220.
USPS History	Available for Pickup, 01/11/2023, 5:58 am, CARLSBAD, NM 88220 Arrived at Post Office, 01/11/2023, 5:57 am, CARLSBAD, NM 88220 Departed USPS Regional Facility, January 11, 2023, 5:04 am, LUBBOCK TX DISTRIBUTION CENTER Arrived at USPS Regional Destination Facility, 01/10/2023, 5:32 pm, LUBBOCK TX DISTRIBUTION CENTER In Transit to Next Facility, 01/09/2023 In Transit to Next Facility, 01/08/2023 In Transit to Next Facility, 01/07/2023 Arrived at USPS Regional Origin Facility, 01/06/2023, 9:55 pm, NORTH HOUSTON TX DISTRIBUTION CENTER Accepted at USPS Origin Facility, January 6, 2023, 8:40 pm, HOUSTON, TX 77210 Shipping Label Created, USPS Awaiting Item, January 5, 2023, 8:37 pm, HOUSTON, TX 77210 Pre-Shipment Info Sent to USPS, USPS Awaiting Item, January 5, 2023

State of New Mexico
Energy, Minerals and Natural Resources Department

December 20, 2022

BUREAU OF LAND MANAGEMENT
ATT: James S. Rutley
620 E Greene Street
Carlsbad, NM 88220

STATE LAND OFFICE
ATT: Paige A Czoski
PO BOX 1148
Santa Fe, NM 87505

RE: APPLICATION FOR PERMIT TO DRILL IN POTASH AREA

OPERATOR: OXY USA INC

LEASE NAME: VANADIUM 32 STATE #5H

PROPOSED LOCATION: U/L O Sec 29 T23S R31E 620 FSL 2008 FEL

Lat. 32.269882 Long. -103.797789 NAD83

PROPOSED DEPTH: 22221' MD 9825' TVD

Gentleman:

The application for permit to drill identified above has been filed with this office of the New Mexico Oil Conservation Division. Pursuant to the provisions of Oil Conservation Division Order R – 111 - P, please advise this office whether the location is within an established Life-of-Mine-Reserve that are filed with and approved by your office. If not, please advise whether it is within the buffer zone established by the order.

Thank you for your assistance. Please Return as soon as possible.

Very truly yours,

OIL CONSERVATION DIVISION

Kate Pickford

Petroleum Specialist

505-334-6178 Ext 114

505-372-8856 (cell)

RESONSE:

The above referenced location is in LMR (_____ year) ----------Yes_____ No _____

The above referenced location is within the Buffer Zone----------Yes_____ No _____

Signed _____

Printed Signature _____

Representing _____

OCCIDENTAL

VANADIUM 32 STATE 4H-5H-175H-176H

Permian Resources
New Mexico Delaware Business Unit

Project: NAD27
Scale: 1:14,000

Last Update: 1/12/2023
Author: vym

19 | NMNM 069499 | 20 | 21 | 22

NMNM 006830
25
23S 30E

30 | NMNM 032920801 | 29 | 28 | 27

1 Mile

23S 31E

EDDY

VANADIUM 32 STATE #4H
VANADIUM 32 STATE #175H
VANADIUM 32 STATE #5H
VANADIUM 32 STATE #176H

L064421

36 | 31 | 32 | 33 | 34

V035892

24S 30E
1

6 | 5 | 4

24S 31E

Legend:
- Potash Leases
- State Leases
- Vanadium Wells
- Well Lateral
- Vanadium Wells 1 Mile Buffer

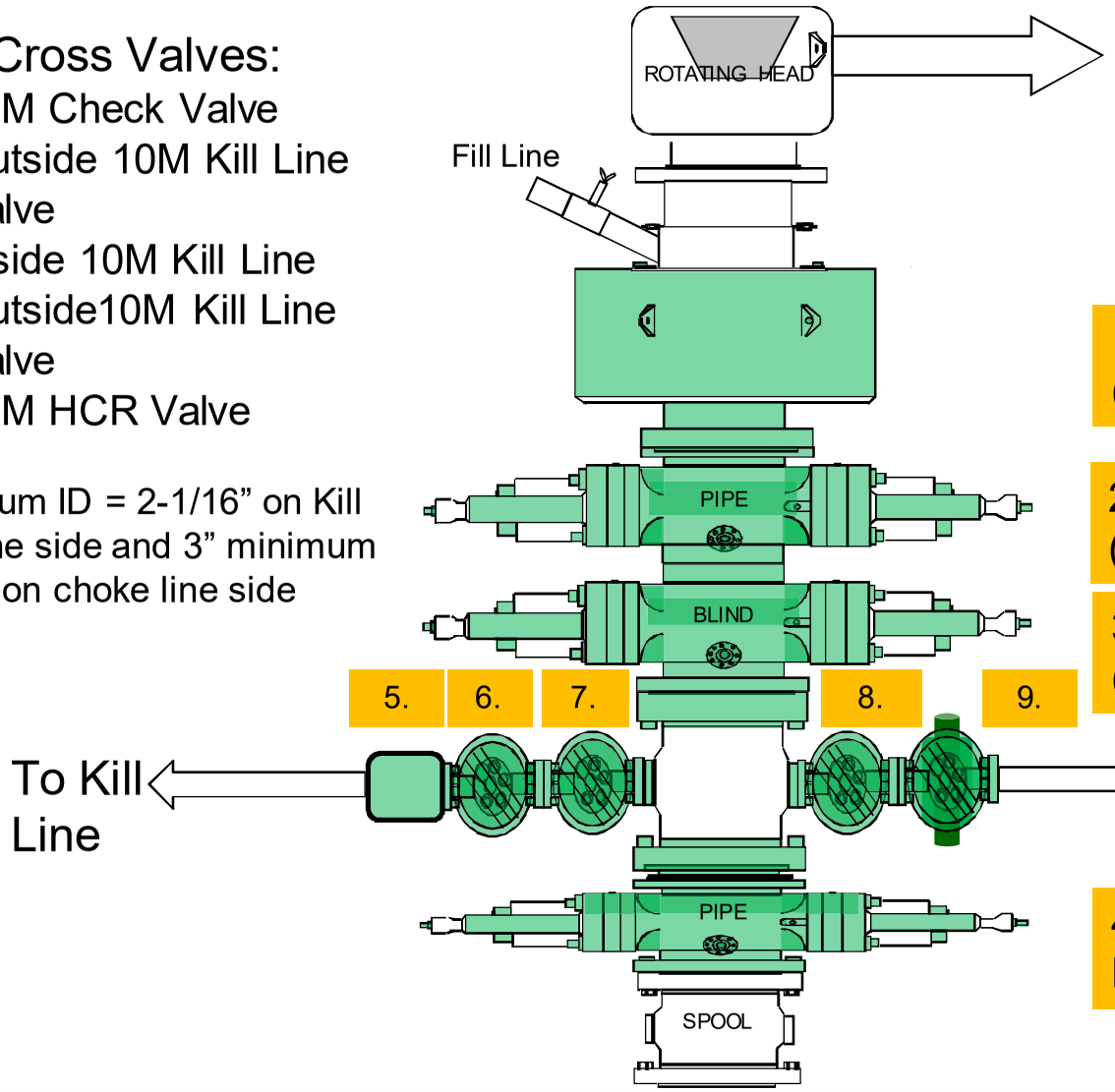
File: M:\Land\New_Mexico\ArcPro Maps\Comm Boundary\Project\Vanadium 32 State 4H-5H-175H-176H.aprx

5/10M BOP Stack

Mud Cross Valves:

5. 10M Check Valve
6. Outside 10M Kill Line Valve
7. Inside 10M Kill Line
8. Outside10M Kill Line Valve
9. 10M HCR Valve

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

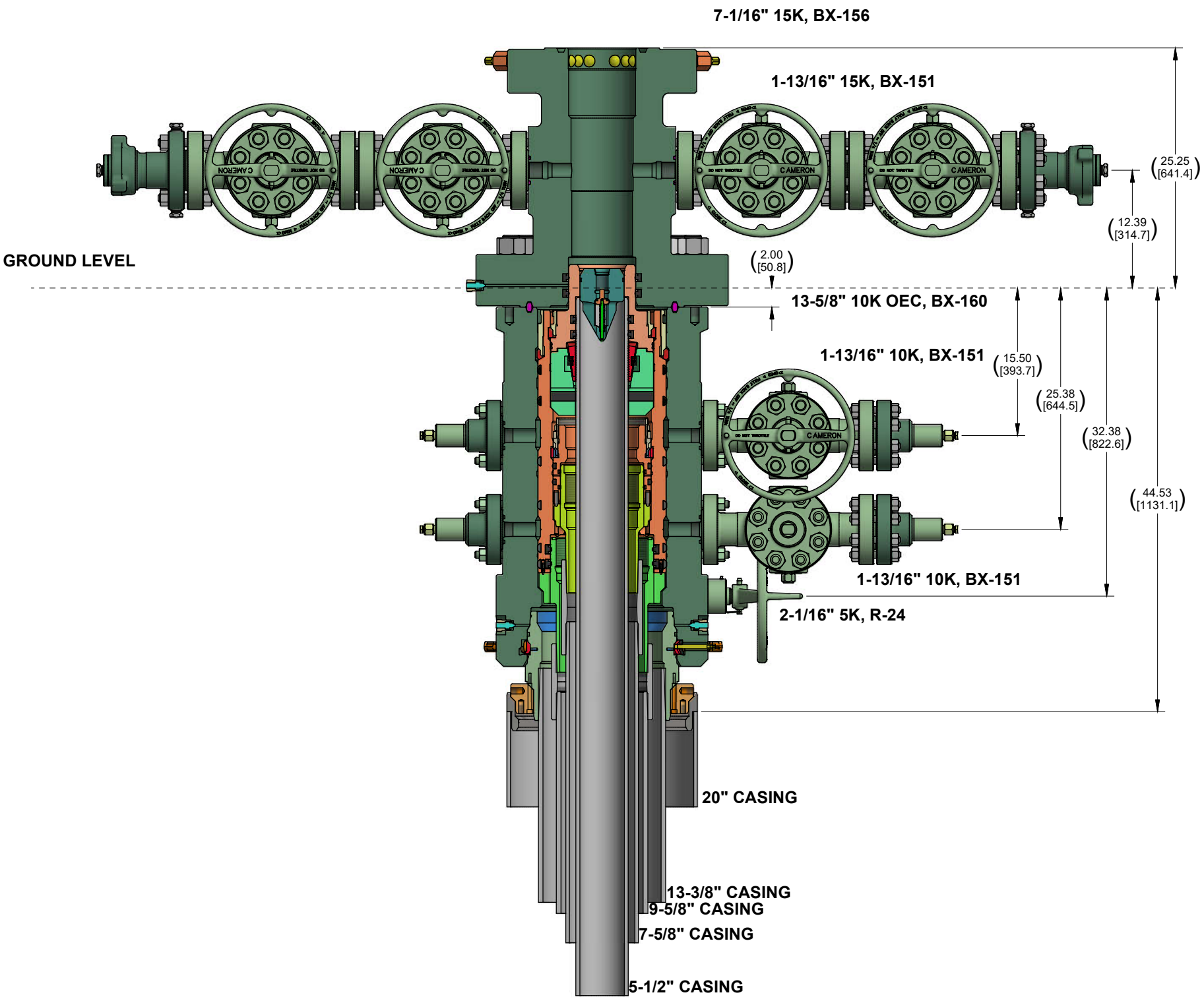


1. 5,000 psi Annular (13-5/8” ID)

2. 10,000 psi Upper Pipe Ram (13-5/8” ID)

3. 10,000 psi Blind Ram (13-5/8” ID)

4. 10,000 psi Lower Pipe Ram (13-5/8” ID)



CONFIDENTIAL

SURFACE TREATMENT	DO NOT SCALE		CAMERON A Schlumberger Company	SURFACE SYSTEMS
	DRAWN BY: A. SKLENKA	DATE 26 Apr 22		
MATERIAL & HEAT TREAT	CHECKED BY: A. SKLENKA	DATE 26 Apr 22	OXY ADAPT NST 10K 3 STAGE WELLHEAD STANDARD / EMERGENCY SYSTEM	
	APPROVED BY: A. SKLENKA	DATE 26 Apr 22		
ESTIMATED WEIGHT: 7968.4 LBS 3614.4 KG	INITIAL USE B/M: IT# 7836394		SHEET 1 OF 1	LO-096232-62 REV: 01

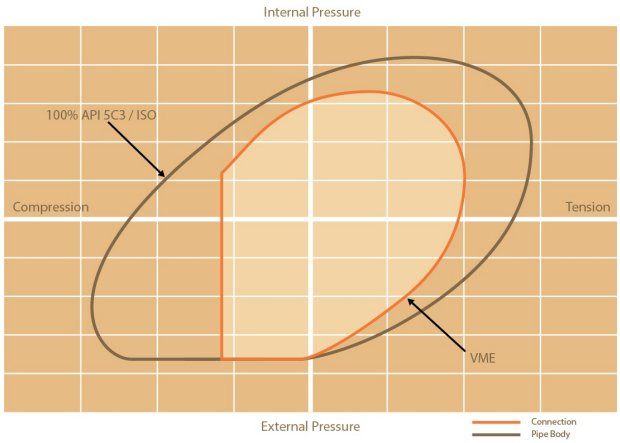
INVENTOR - D

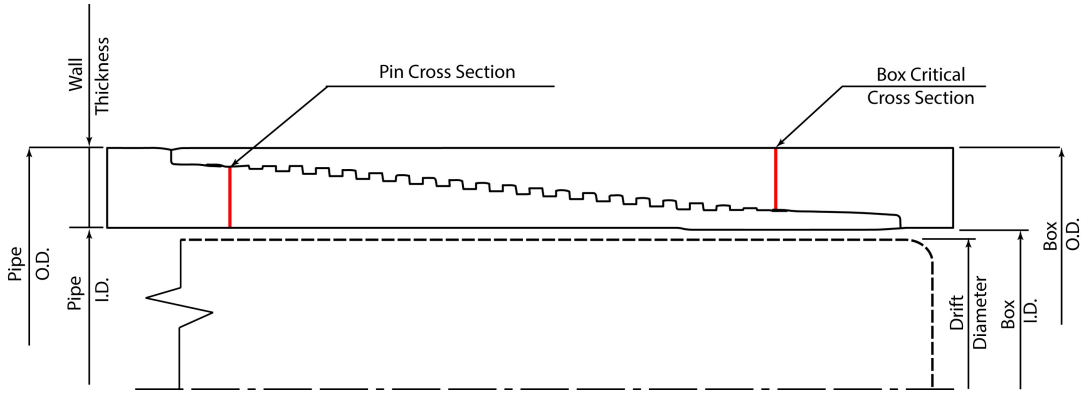
TUBULAR PARAMETERS	
Nominal OD, (inch)	7.625
Wall Thickness, (inch)	0.328
Pipe Grade	L80 HC
Drift	Standard

CONNECTION PARAMETERS	
Connection OD (inch)	7.63
Connection ID, (inch)	6.975
Make-Up Loss, (inch)	4.165
Connection Critical Area, (sq inch)	2.520
Yield Strength in Tension, (klbs)	347
Yeld Strength in Compression, (klbs)	347
Tension Efficiency	58%
Compression Efficiency	58%
Min. Internal Yield Pressure, (psi)	6 020
Collapse Pressure, (psi)	3 910
Uniaxial Bending (deg/100ft)	28.0

MAKE-UP TORQUES	
Yield Torque, (ft-lb)	22 200
Minimum Make-Up Torque, (ft-lb)	12 500
Optimum Make-Up Torque, (ft-lb)	13 900
Maximum Make-Up Torque, (ft-lb)	15 300

PIPE BODY PROPERTIES	
PE Weight, (lbs/ft)	25.56
Nominal Weight, (lbs/ft)	26.40
Nominal ID, (inch)	6.969
Drift Diameter, (inch)	6.844
Nominal Pipe Body Area, (sq inch)	7.519
Yield Strength in Tension, (klbs)	601
Min. Internal Yield Pressure, (psi)	6 020
Collapse Pressure, (psi)	3 910





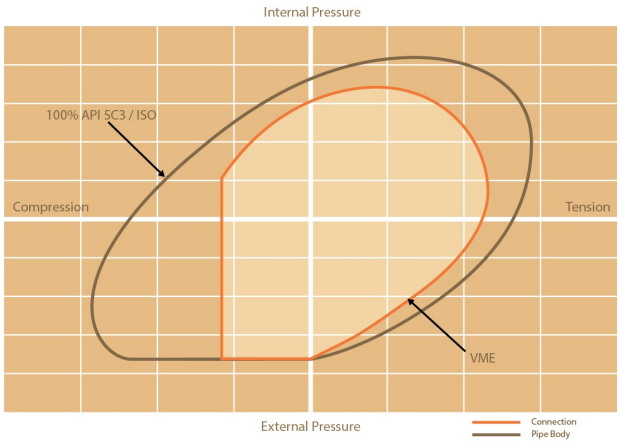
Print date: 07/10/2018 20:11

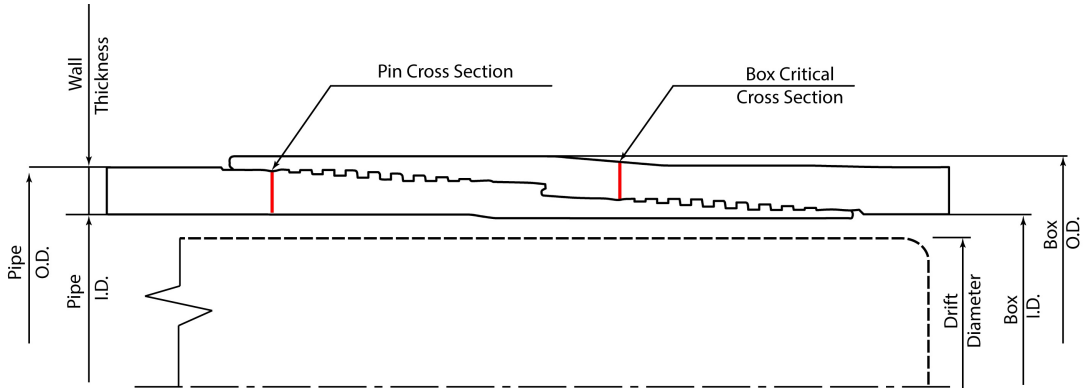
TUBULAR PARAMETERS	
Nominal OD, (inch)	7.625
Wall Thickness, (inch)	0.328
Pipe Grade	L80 HC
Drift	Standard

CONNECTION PARAMETERS	
Connection OD (inch)	7.79
Connection ID, (inch)	6.938
Make-Up Loss, (inch)	6.029
Connection Critical Area, (sq inch)	5.948
Yield Strength in Tension, (klbs)	533
Yeld Strength in Compression, (klbs)	533
Tension Efficiency	89%
Compression Efficiency	89%
Min. Internal Yield Pressure, (psi)	6 020
Collapse Pressure, (psi)	3 910
Uniaxial Bending (deg/100ft)	42.7

MAKE-UP TORQUES	
Yield Torque, (ft-lb)	22 600
Minimum Make-Up Torque, (ft-lb)	15 000
Optimum Make-Up Torque, (ft-lb)	16 500
Maximum Make-Up Torque, (ft-lb)	18 200

PIPE BODY PROPERTIES	
PE Weight, (lbs/ft)	25.56
Nominal Weight, (lbs/ft)	26.40
Nominal ID, (inch)	6.969
Drift Diameter, (inch)	6.844
Nominal Pipe Body Area, (sq inch)	7.519
Yield Strength in Tension, (klbs)	601
Min. Internal Yield Pressure, (psi)	6 020
Collapse Pressure, (psi)	3 910





Print date: 07/10/2018 20:00

Printed on: 8/9/2021

Tenaris

TenarisHydril Wedge 425®

Coupling	Pipe Body
Grade: **P110-CY**	Grade: **P110-CY**
Body: **White**	1st Band: **White**
1st Band: **Grey**	2nd Band: **Grey**
2nd Band: **-**	3rd Band: **-**
3rd Band: **-**	4th Band: **-**
	5th Band: **-**
	6th Band: **-**

Outside Diameter	5.500 in.	**Wall Thickness**	0.361 in.	**Grade**	P110-CY
Min. Wall Thickness	87.50 %	**Pipe Body Drift**	API Standard	**Type**	Casing
Connection OD Option	REGULAR				

Pipe Body Data

Geometry				Performance	
Nominal OD	5.500 in.	**Wall Thickness**	0.361 in.	**Body Yield Strength**	641 x1000 lb
Nominal Weight	20 lb/ft	**Plain End Weight**	19.83 lb/ft	**Min. Internal Yield Pressure**	12,640 psi
Drift	4.653 in.	**OD Tolerance**	API	**SMYS**	110,000 psi
Nominal ID	4.778 in.			**Collapse Pressure**	11,100 psi

Connection Data

Geometry		Performance		Make-Up Torques	
Connection OD	5.777 in.	**Tension Efficiency**	90 %	**Minimum**	15,700 ft-lb
Connection ID	4.734 in.	**Joint Yield Strength**	577 x1000 lb	**Optimum**	19,600 ft-lb
Make-up Loss	5.823 in.	**Internal Pressure Capacity**	12,640 psi	**Maximum**	21,600 ft-lb
Threads per inch	3.77	**Compression Efficiency**	90 %		
Connection OD Option	Regular	**Compression Strength**	577 x1000 lb	**Operation Limit Torques**	
		Max. Allowable Bending	82 °/100 ft	**Operating Torque**	29,000 ft-lb
		External Pressure Capacity	11,100 psi	**Yield Torque**	36,000 ft-lb

Notes

This connection is fully interchangeable with:
TORQ® SFW™ - 5.5 in. - 0.361 in.
Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version

For the lastest performance data, always visit our website: www.tenaris.com

TenarisHydril

7.625" 29.70 lb/ft L80-IC TenarisHydril Wedge 425™

Special Data Sheet
TH DS-21.3633.00
18 October 2021

Nominal OD	7.625 in.	**Wall Thickness**	0.375 in.	**Grade**	L80-IC
Min Wall Thickness	90%	**Type**	CASING	**Connection OD Option**	REGULAR

Pipe Body Data

Geometry				Performance	
Nominal OD	7.625 in.	**Nominal ID**	6.875 in.	**Body Yield Strength**	683 x 1000 lbs
Nominal Weight	29.70 lbs/ft	**Wall Thickness**	0.375 in.	**Internal Yield[1]**	6890 psi
Standard Drift Diameter	6.750 in.	**Plain End Weight**	29.06 lbs/ft	**SMYS**	80000 psi
Special Drift Diameter	NA	**OD Tolerance**	API	**Collapse Pressure**	5900 psi

Connection Data

Geometry		Performance		Make-up Torques	
Connection OD	7.888 in.	**Tension Efficiency**	90%	**Minimum**	22500 ft-lbs
Connection ID	6.831 in.	**Joint Yield Strength**	615 x 1000 lbs	**Optimum**	25000 ft-lbs
Make-up Loss	5.646 in.	**Internal Yield[1]**	7080 psi	**Maximum**	27500 ft-lbs
Threads per in.	3.51	**Compression Efficiency**	90%	Operational Limit Torques	
Connection OD Option	REGULAR	**Compression Strength**	615 x 1000 lbs	**Operating Torque**	49000 ft-lbs
Critical Section Area	7.994 sq in.	**Bending**	43 °/100 ft	**Yield Torque**	61000 ft-lbs
		Collapse	5900 psi		

Notes

*If you need to use torque values that are higher than the maximum indicated, please contact a local Tenaris technical sales representative

1. Internal Yield Rating is based on 90% RBW
2. Important Note: In October 2019, TenarisHydril Wedge 625® RF™ was renamed TenarisHydril Wedge 425™. Product dimensions and properties remain identical and both connections are fully interchangeable.

Tenaris

TenarisHydril Wedge 441®

Coupling	Pipe Body
Grade: **P110-CY**	Grade: **P110-CY**
Body: **White**	1st Band: **White**
1st Band: **Grey**	2nd Band: **Grey**
2nd Band: **-**	3rd Band: **-**
3rd Band: **-**	4th Band: **-**
	5th Band: **-**
	6th Band: **-**

Outside Diameter	5.500 in.	**Wall Thickness**	0.361 in.	**Grade**	P110-CY
Min. Wall Thickness	87.50 %	**Drift**	API Standard	**Type**	Casing
Connection OD Option	REGULAR				

Pipe Body Data

Geometry				Performance	
Nominal OD	5.500 in.	**Wall Thickness**	0.361 in.	**Body Yield Strength**	641 x1000 lb
Nominal Weight	20 lb/ft	**Plain End Weight**	19.83 lb/ft	**Min. Internal Yield Pressure**	12,640 psi
Drift	4.653 in.	**OD Tolerance**	API	**SMYS**	110,000 psi
Nominal ID	4.778 in.			**Collapse Pressure**	11,100 psi

Connection Data

Geometry		Performance		Make-Up Torques	
Connection OD	5.852 in.	**Tension Efficiency**	81.50 %	**Minimum**	15,000 ft-lb
Coupling Length	8.714 in.	**Joint Yield Strength**	522 x1000 lb	**Optimum**	16,000 ft-lb
Connection ID	4.778 in.	**Internal Pressure Capacity**	12,640 psi	**Maximum**	19,200 ft-lb
Make-up Loss	3.780 in.	**Compression Efficiency**	81.50 %		
Threads per inch	3.40	**Compression Strength**	522 x1000 lb	**Operation Limit Torques**	
Connection OD Option	Regular	**Max. Allowable Bending**	71 °/100 ft	**Operating Torque**	32,000 ft-lb
		External Pressure Capacity	11,100 psi	**Yield Torque**	38,000 ft-lb
				Buck-On	
				Minimum	19,200 ft-lb
				Maximum	20,700 ft-lb

Notes

This connection is fully interchangeable with:
Wedge 441® - 5.5 in. - 0.304 in.
Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version

For the lastest performance data, always visit our website: www.tenaris.com

TenarisHydril

5.500" 20.00 lb/ft P110-CY TenarisHydril Wedge 461™ Matched Strength

Special Data Sheet
TH DS-20.0359
12 August 2020
Rev 00

Nominal OD	5.500 in.	**Wall Thickness**	0.361 in.	**Grade**	P110-CY
Min Wall Thickness	87.5%	**Type**	CASING	**Connection OD Option**	MATCHED STRENGTH

Pipe Body Data

Geometry				Performance	
Nominal OD	5.500 in.	**Nominal ID**	4.778 in.	**Body Yield Strength**	641 x 1000 lbs
Nominal Weight	20.00 lbs/ft	**Wall Thickness**	0.361 in.	**Internal Yield**	12640 psi
Standard Drift Diameter	4.653 in.	**Plain End Weight**	19.83 lbs/ft	**SMYS**	110000 psi
Special Drift Diameter	N/A	**OD Tolerance**	API	**Collapse Pressure**	11110 psi

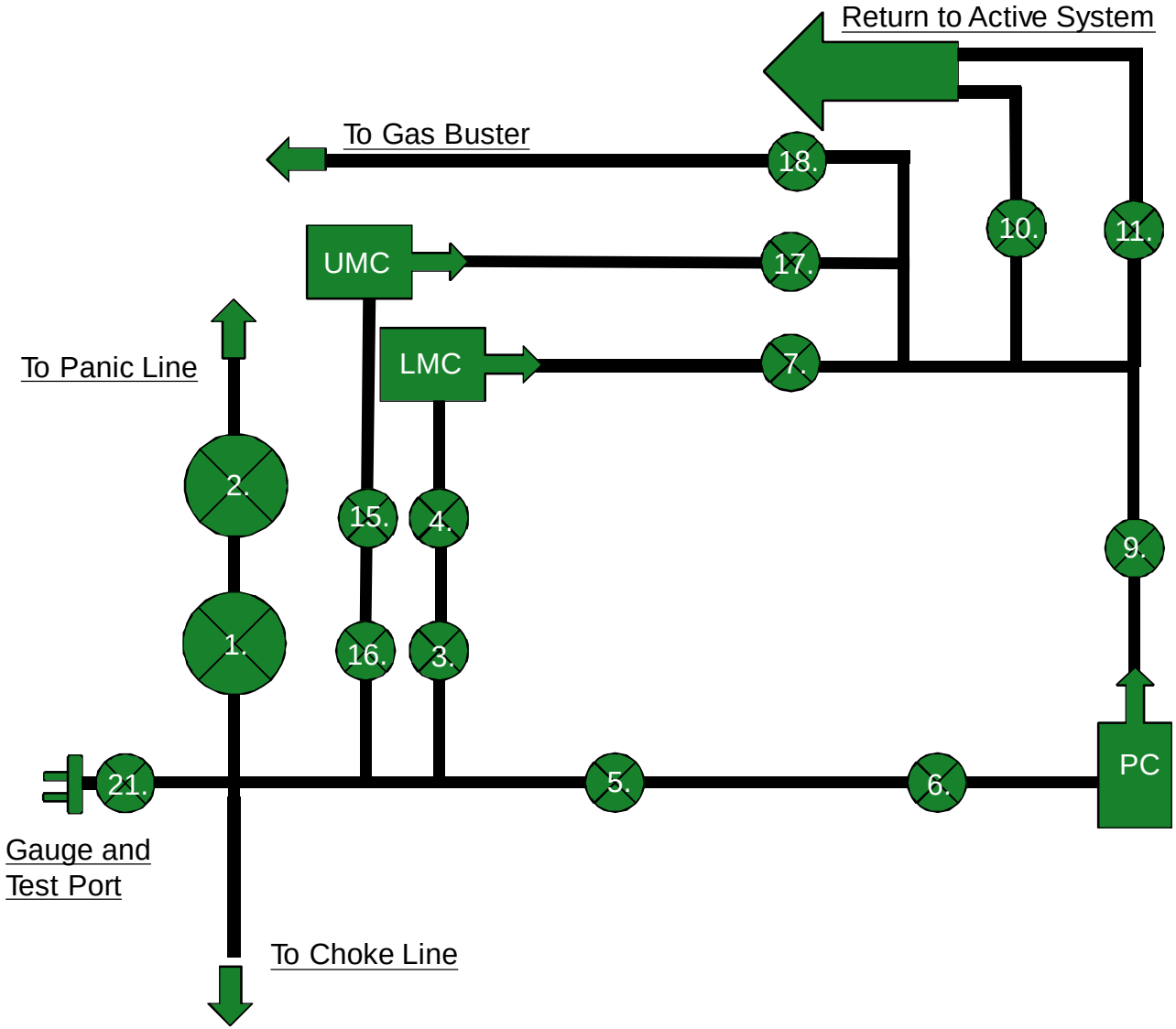
Connection Data

Geometry		Performance		Make-up Torques	
Matched Strength OD	6.050 in.	**Tension Efficiency**	100%	**Minimum**	17000 ft-lbs
Make-up Loss	3.775 in.	**Joint Yield Strength**	641 x 1000 lbs	**Optimum**	18000 ft-lbs
Threads per in.	3.40	**Internal Yield**	12640 psi	**Maximum**	21600 ft-lbs
Connection OD Option	MATCHED STRENGTH	**Compression Efficiency**	100%	**Operational Limit Torques**	
Coupling Length	7.714 in.	**Compression Strength**	641 x 1000 lbs	**Operating Torque**	32000 ft-lbs
		Bending	92 °/100 ft	**Yield Torque**	38000 ft-lbs
		Collapse	11110 psi	**Buck-On Torques**	
				Minimum	21600 ft-lbs
				Maximum	23100 ft-lbs

Notes

*If you need to use torque values that are higher than the maximum indicated, please contact a local Tenaris technical sales representative

10M Choke Panel



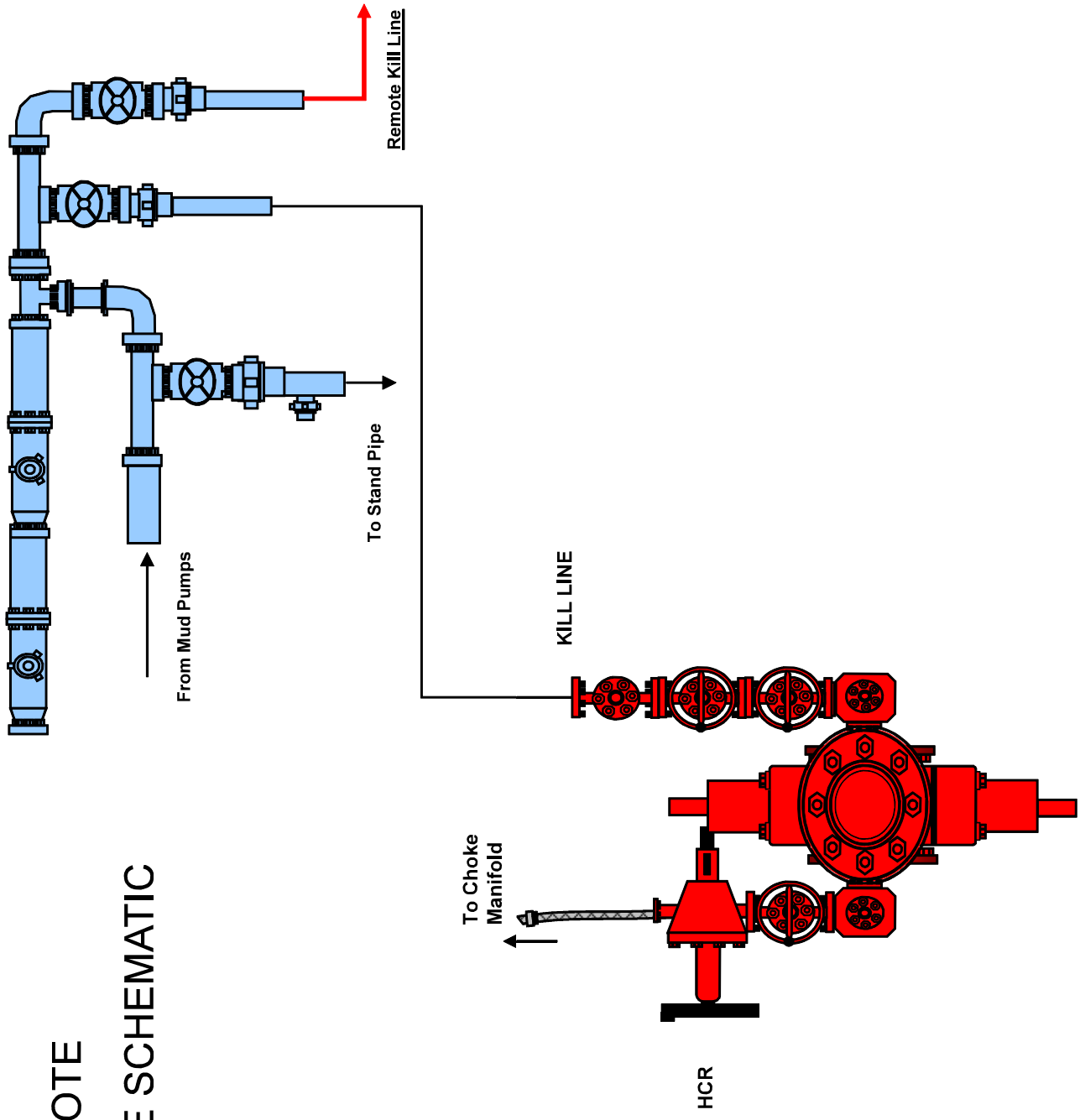
1. Choke Manifold Valve
2. Choke Manifold Valve
3. Choke Manifold Valve
4. Choke Manifold Valve
5. Choke Manifold Valve
6. Choke Manifold Valve
7. Choke Manifold Valve
8. PC – Power Choke
9. Choke Manifold Valve
10. Choke Manifold Valve
11. Choke Manifold Valve
12. LMC – Lower Manual Choke
13. UMC –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

15. Choke Manifold Valve
16. Choke Manifold Valve
17. Choke Manifold Valve
18. Choke Manifold Valve

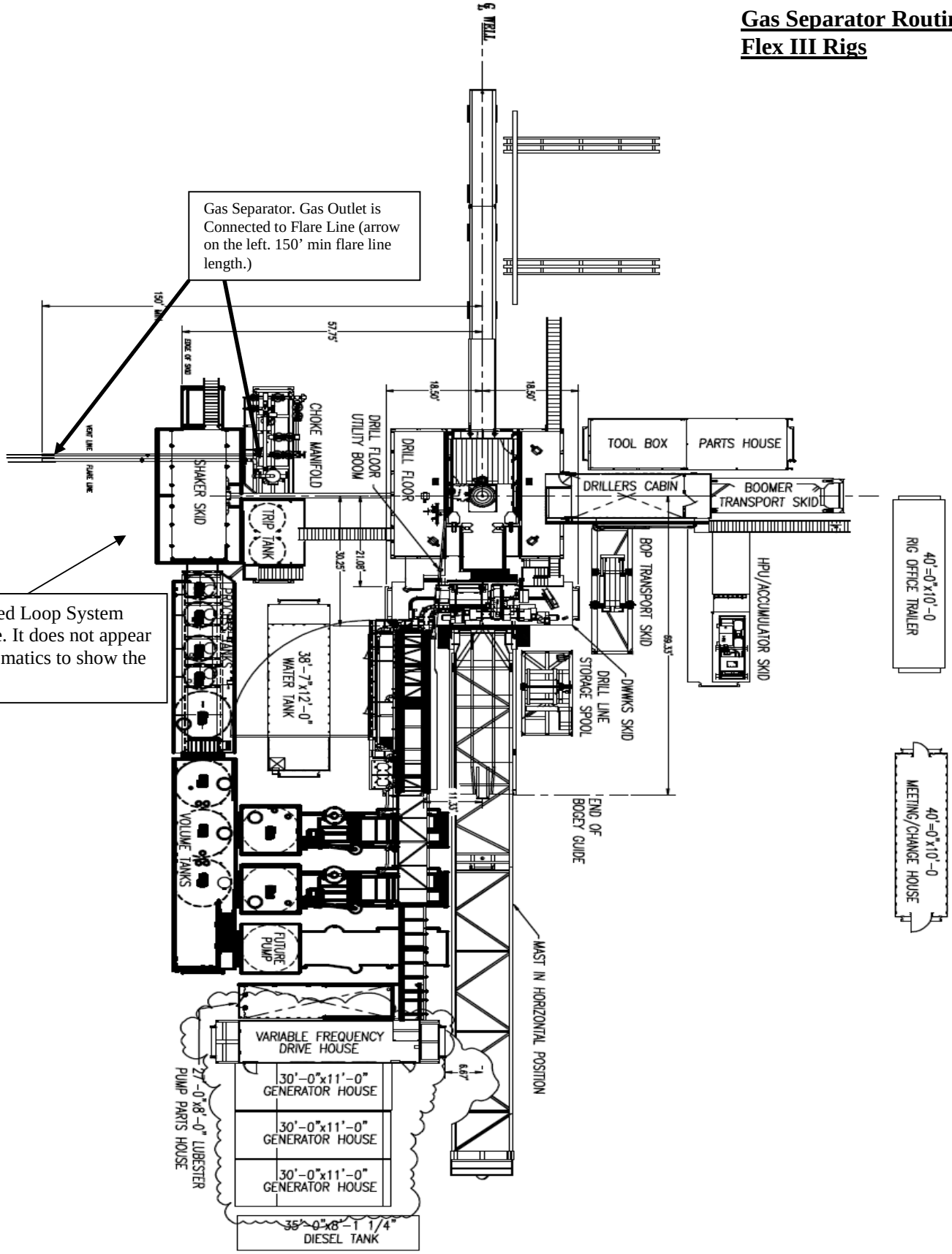
21. Vertical Choke Manifold Valve

***All Valves 3" minimum**

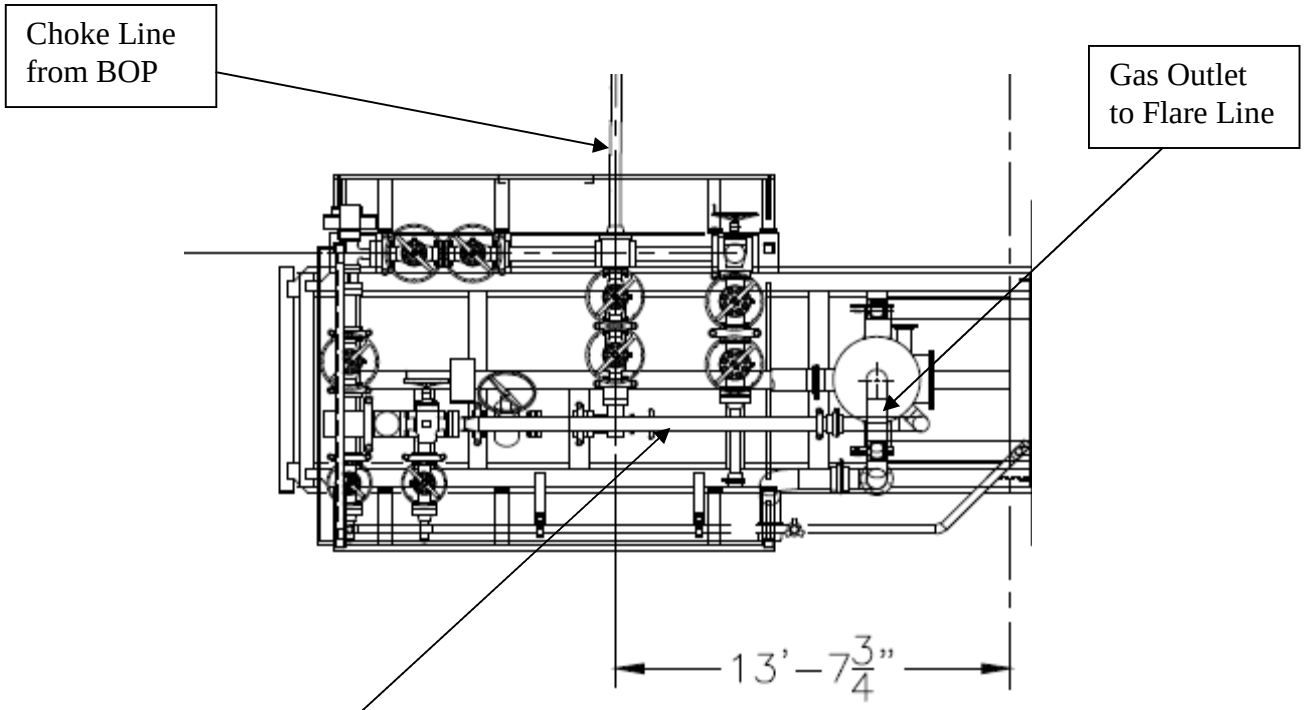
10M REMOTE KILL LINE SCHEMATIC



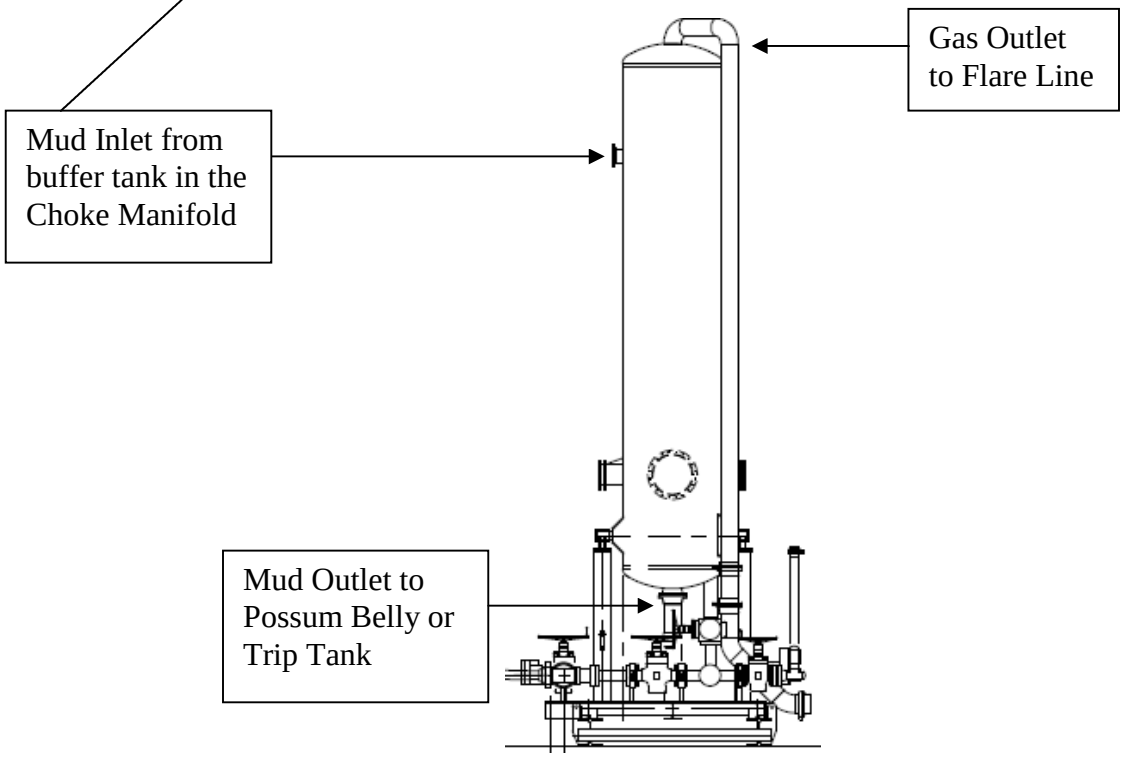
Gas Separator Routing
Flex III Rigs



Choke Manifold – Gas Separator (Top View)

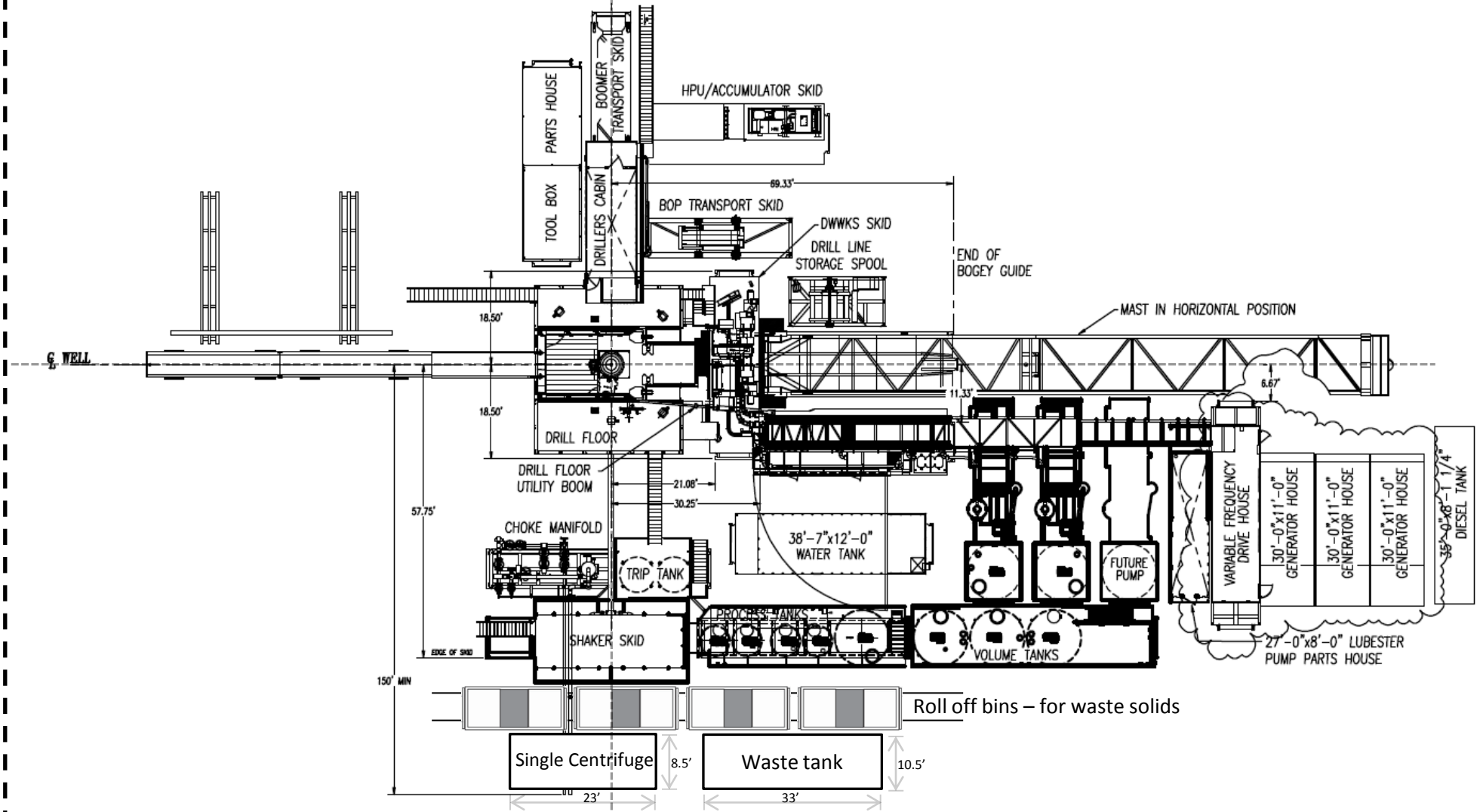


Choke Manifold – Gas Separator (Side View)

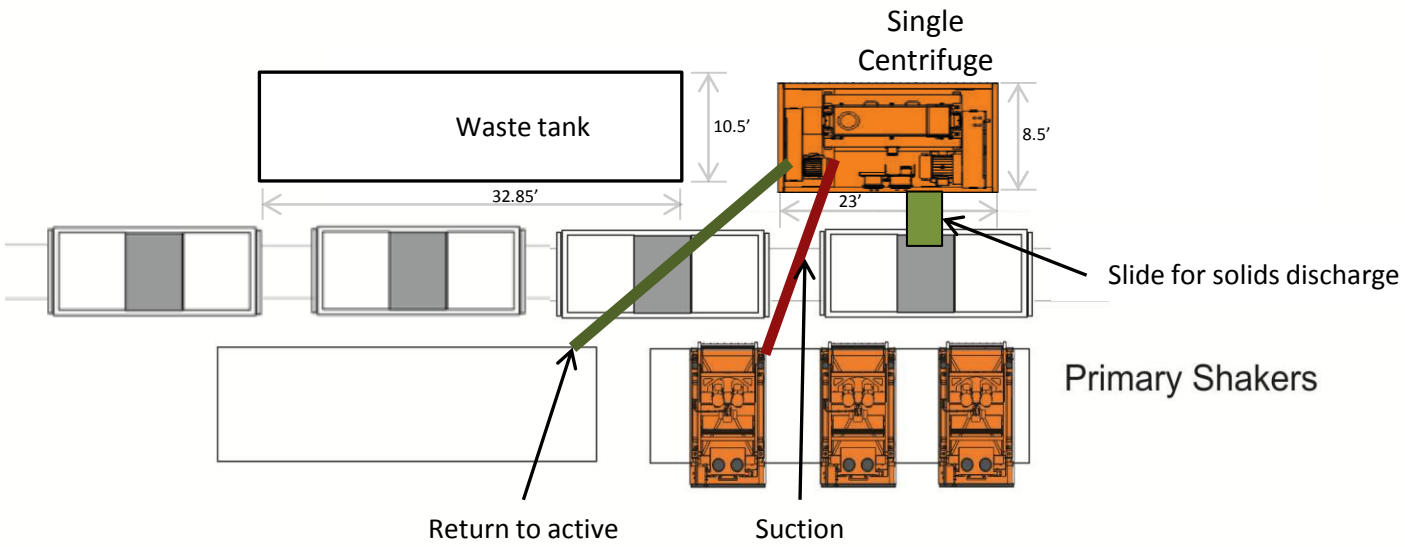


Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

May 28, 2013



Oxy



Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

May 28, 2013

OXY's Minimum Design Criteria

Burst, Collapse, and Tensile SF are calculated using Landmark's Stress Check (Casing Design) software. A sundry will be requested if any lesser grade or different size casing is substituted.

1) Casing Design Assumptions

a) Burst Loads

CSG Test (Surface)

- Internal: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
- External: Pore pressure in open hole.

CSG Test (Intermediate)

- Internal: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
- External: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

CSG Test (Production)

- Internal:
  - For Drilling: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
  - For Production: The design pressure test should be the greater of (1) the planned test pressure prior to stimulation down the casing. (2) the regulatory test pressure, and (3) the expected gas lift system pressure. The design test fluid should be the fluid associated with pressure test having the greatest pressure.
- External:
  - For Drilling: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.
  - For Production: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Gas Column (Surface)

- Internal: Assumes a full column of gas in the casing with a Gas/Oil Gradient of 0.1 psi/ft in the absence of better information. It is limited to the controlling pressure based on the fracture pressure at the shoe or the maximum expected pore pressure within the next drilling interval, whichever results in a lower surface pressure.
- External: Fluid gradient below TOC, pore pressure from the TOC to the Intermediate CSG shoe (if applicable), and MW of the drilling mud that was in the hole when the CSG was run from Intermediate CSG shoe to surface.

Bullheading (Surface / Intermediate)

- Internal: The string must be designed to withstand a pressure profile based on the fracture pressure at the casing shoe with a column of water above the shoe plus an additional surface pressure (in psi) of 0.02 X MD of the shoe to account for pumping friction pressure.
- External: Mud weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Gas Kick (Intermediate)

- The string must be designed to at least a gas kick load case unless the rig is unable to detect a kick. For the gas kick load case, the internal pressure profile must be based on a minimum volume of 50 bbl or the minimum kick detection capability of the rig, whichever is greater, and a kick intensity of 2.0 ppg for Class 1, 1.0 ppg of Class 2, and 0.5 ppg for Class 3 and 4 wells.
- Internal: Influx depth of the maximum pore pressure of 0.55 “gas kick gravity” of gas to surface while drilling the next hole section.
- External: Mud weight to the TOC, cement mix water gradient below TOC, and pore pressure in open hole.

Tubing Leak Near Surface While Producing (Production)

- Internal: SITP plus a packer fluid gradient to the shoe or top of packer.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Tubing Leak Near Surface While Stimulating (Production)

- Internal: Surface pressure or pressure-relief system pressure, whichever is lower plus packer fluid gradient.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Injection / Stimulation Down Casing (Production)

- Internal: Surface pressure plus injection fluid gradient.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

b) Collapse Loads

Lost Circulation (Surface / Intermediate)

- Internal: Lost circulation at the TD of the next hole section, and the fluid level falls to a depth where the hydrostatic of the mud equals pore pressure at the depth of the lost circulation zone.
- External: MW of the drilling mud that was in the hole when the casing was run.

Cementing (Surface / Intermediate / Production)

- Internal: Displacement fluid density.
- External: Mud weight from TOC to surface and cement slurry weight from TOC to casing shoe.

Full Evacuation (Production)

- Internal: Full void pipe.
- External: MW of drilling mud in the hole when the casing was run.

c) Tension Loads

Running Casing (Surface / Intermediate / Production)

- Axial: Buoyant weight of the string plus the lesser of 100,000 lb or the string weight in air.

Green Cement (Surface / Intermediate / Production)

- Axial: Buoyant weight of the string plus cement plug bump pressure load.

Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Vanadium 32
Well: Vanadium 32 State 5H
Wellbore: Wellbore #1
Design: Permitting Plan

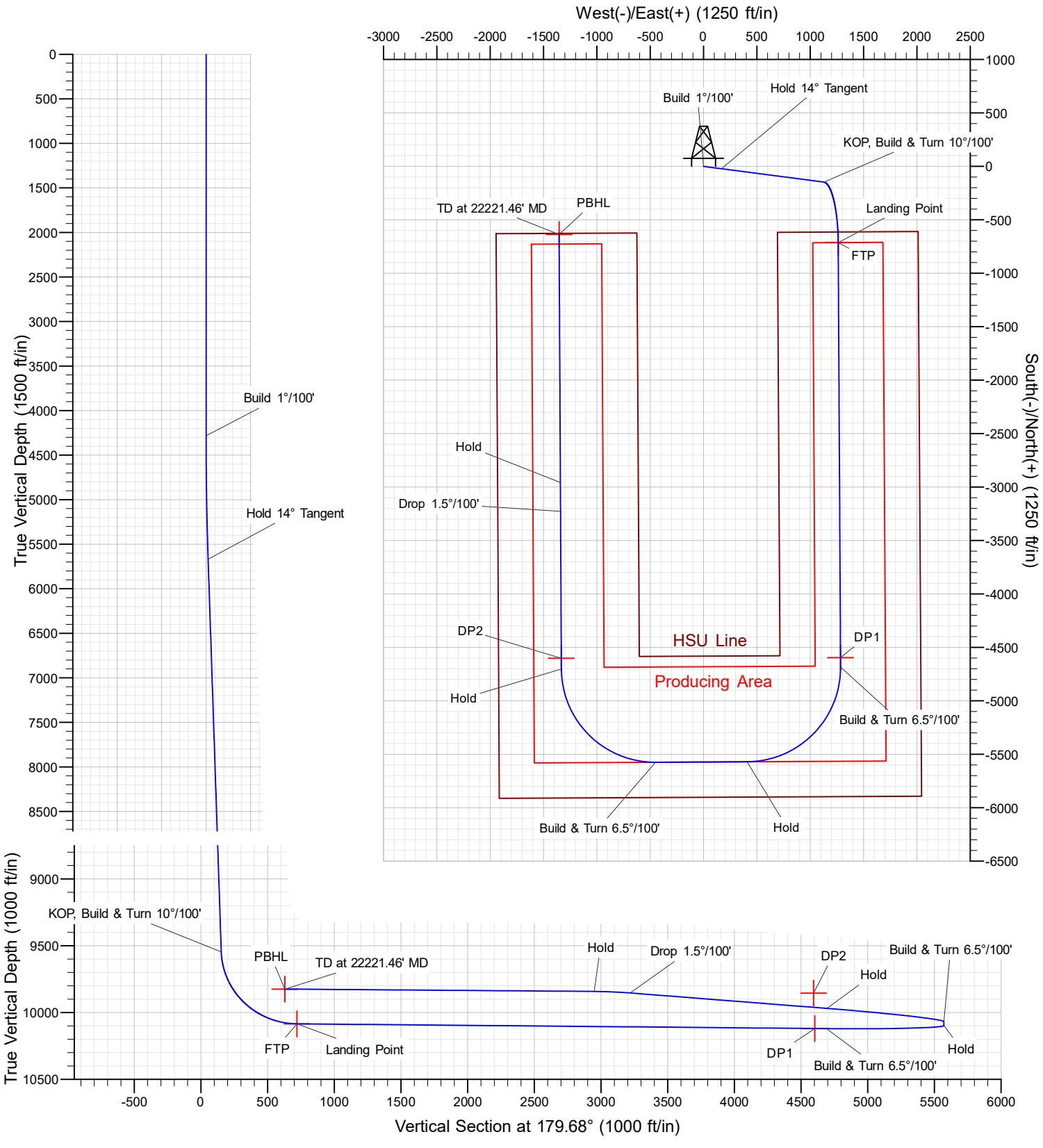
WELL DETAILS: Vanadium 32 State 5H

Ground Level: 3360.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	462329.10	706862.93	32.269882	-103.797789

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	
4282.00	0.00	0.00	4282.00	0.00	0.00	0.00	0.00	0.00	Build 1°/100'
5681.73	14.00	97.40	5667.84	-21.92	168.71	1.00	97.40	22.86	Hold 14° Tangent
9679.16	14.00	97.40	9546.59	-146.51	1127.53	0.00	0.00	152.80	KOP, Build & Turn 10°/100'
10555.51	89.48	179.68	10085.00	-713.39	1262.51	10.00	82.62	720.43	Landing Point
14525.51	89.48	179.68	10120.78	-4683.17	1284.95	0.00	0.00	4690.27	Build & Turn 6.5°/100'
15910.92	91.98	269.71	10098.25	-5569.85	408.21	6.50	88.02	5572.05	Hold
16768.92	91.98	269.71	10068.61	-5574.19	-449.27	0.00	0.00	5571.60	Build & Turn 6.5°/100'
18151.01	94.48	359.70	9969.59	-4702.39	-1332.27	6.50	85.52	4694.88	Hold
19631.01	94.48	359.70	9853.98	-3226.93	-1339.99	0.00	0.00	3219.40	Drop 1.5°/100'



OXY

PRD NM DIRECTIONAL PLANS (NAD 1983)
Vanadium 32
Vanadium 32 State 5H

Wellbore #1

Plan: Permitting Plan

Standard Planning Report

30 November, 2022

OXY
Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**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 Vanadium 32

Site Position:		**Northing:**	461,451.09 usft	**Latitude:**	32.267517
From:	Map	**Easting:**	703,295.81 usft	**Longitude:**	-103.809343
Position Uncertainty:	2.00 ft	**Slot Radius:**	13.200 in		

Well Vanadium 32 State 5H

Well Position	**+N/-S**	0.00 ft	**Northing:**	462,329.10 usf	**Latitude:**	32.269882
	+E/-W	0.00 ft	**Easting:**	706,862.93 usf	**Longitude:**	-103.797789
Position Uncertainty		2.00 ft	**Wellhead Elevation:**	0.00 ft	**Ground Level:**	3,360.00 ft
Grid Convergence:		0.29 °				

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	7/24/2019	6.78	59.97	47,947.40000000

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	179.68

Plan Survey Tool Program **Date** 11/30/2022

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,221.46	Permitting Plan (Wellbore #1)	B001Mb_MWD+HRGM OWSG MWD + HRGM	

OXY

Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permitting Plan		

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	
4,282.00	0.00	0.00	4,282.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,681.73	14.00	97.40	5,667.84	-21.92	168.71	1.00	1.00	0.00	97.40	
9,679.16	14.00	97.40	9,546.59	-146.51	1,127.53	0.00	0.00	0.00	0.00	
10,555.51	89.48	179.68	10,085.00	-713.39	1,262.51	10.00	8.61	9.39	82.62	FTP (Vanadium 32
14,525.51	89.48	179.68	10,120.79	-4,683.17	1,284.95	0.00	0.00	0.00	0.00	
15,910.92	91.98	269.71	10,098.25	-5,569.85	408.21	6.50	0.18	6.50	88.02	
16,768.92	91.98	269.71	10,068.61	-5,574.19	-449.27	0.00	0.00	0.00	0.00	
18,151.01	94.48	359.70	9,969.59	-4,702.39	-1,332.27	6.50	0.18	6.51	85.52	
19,631.01	94.48	359.70	9,853.98	-3,226.93	-1,339.99	0.00	0.00	0.00	0.00	
19,901.00	90.43	359.70	9,842.42	-2,957.25	-1,341.41	1.50	-1.50	0.00	-179.98	
22,221.46	90.43	359.70	9,825.00	-636.89	-1,353.62	0.00	0.00	0.00	0.00	PBHL (Vanadium 32

OXY

Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**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
4,282.00	0.00	0.00	4,282.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.18	97.40	4,300.00	0.00	0.03	0.00	1.00	1.00	0.00
4,400.00	1.18	97.40	4,399.99	-0.16	1.20	0.16	1.00	1.00	0.00
4,500.00	2.18	97.40	4,499.95	-0.53	4.11	0.56	1.00	1.00	0.00
4,600.00	3.18	97.40	4,599.84	-1.14	8.75	1.19	1.00	1.00	0.00
4,700.00	4.18	97.40	4,699.63	-1.96	15.11	2.05	1.00	1.00	0.00
4,800.00	5.18	97.40	4,799.29	-3.02	23.20	3.14	1.00	1.00	0.00
4,900.00	6.18	97.40	4,898.80	-4.29	33.02	4.47	1.00	1.00	0.00
5,000.00	7.18	97.40	4,998.12	-5.79	44.55	6.04	1.00	1.00	0.00
5,100.00	8.18	97.40	5,097.22	-7.51	57.81	7.83	1.00	1.00	0.00
5,200.00	9.18	97.40	5,196.08	-9.46	72.77	9.86	1.00	1.00	0.00
5,300.00	10.18	97.40	5,294.65	-11.62	89.45	12.12	1.00	1.00	0.00

OXY

Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**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	11.18	97.40	5,392.92	-14.01	107.82	14.61	1.00	1.00	0.00
5,500.00	12.18	97.40	5,490.85	-16.62	127.90	17.33	1.00	1.00	0.00
5,600.00	13.18	97.40	5,588.41	-19.45	149.67	20.28	1.00	1.00	0.00
5,681.73	14.00	97.40	5,667.84	-21.92	168.71	22.86	1.00	1.00	0.00
5,700.00	14.00	97.40	5,685.58	-22.49	173.09	23.46	0.00	0.00	0.00
5,800.00	14.00	97.40	5,782.61	-25.61	197.08	26.71	0.00	0.00	0.00
5,900.00	14.00	97.40	5,879.64	-28.72	221.06	29.96	0.00	0.00	0.00
6,000.00	14.00	97.40	5,976.67	-31.84	245.05	33.21	0.00	0.00	0.00
6,100.00	14.00	97.40	6,073.70	-34.96	269.04	36.46	0.00	0.00	0.00
6,200.00	14.00	97.40	6,170.73	-38.07	293.02	39.71	0.00	0.00	0.00
6,300.00	14.00	97.40	6,267.76	-41.19	317.01	42.96	0.00	0.00	0.00
6,400.00	14.00	97.40	6,364.79	-44.31	340.99	46.21	0.00	0.00	0.00
6,500.00	14.00	97.40	6,461.82	-47.42	364.98	49.46	0.00	0.00	0.00
6,600.00	14.00	97.40	6,558.85	-50.54	388.96	52.71	0.00	0.00	0.00
6,700.00	14.00	97.40	6,655.88	-53.66	412.95	55.96	0.00	0.00	0.00
6,800.00	14.00	97.40	6,752.91	-56.77	436.94	59.21	0.00	0.00	0.00
6,900.00	14.00	97.40	6,849.94	-59.89	460.92	62.46	0.00	0.00	0.00
7,000.00	14.00	97.40	6,946.98	-63.01	484.91	65.71	0.00	0.00	0.00
7,100.00	14.00	97.40	7,044.01	-66.12	508.89	68.97	0.00	0.00	0.00
7,200.00	14.00	97.40	7,141.04	-69.24	532.88	72.22	0.00	0.00	0.00
7,300.00	14.00	97.40	7,238.07	-72.36	556.87	75.47	0.00	0.00	0.00
7,400.00	14.00	97.40	7,335.10	-75.47	580.85	78.72	0.00	0.00	0.00
7,500.00	14.00	97.40	7,432.13	-78.59	604.84	81.97	0.00	0.00	0.00
7,600.00	14.00	97.40	7,529.16	-81.71	628.82	85.22	0.00	0.00	0.00
7,700.00	14.00	97.40	7,626.19	-84.82	652.81	88.47	0.00	0.00	0.00
7,800.00	14.00	97.40	7,723.22	-87.94	676.80	91.72	0.00	0.00	0.00
7,900.00	14.00	97.40	7,820.25	-91.06	700.78	94.97	0.00	0.00	0.00
8,000.00	14.00	97.40	7,917.28	-94.17	724.77	98.22	0.00	0.00	0.00
8,100.00	14.00	97.40	8,014.31	-97.29	748.75	101.47	0.00	0.00	0.00
8,200.00	14.00	97.40	8,111.34	-100.41	772.74	104.72	0.00	0.00	0.00
8,300.00	14.00	97.40	8,208.38	-103.52	796.72	107.97	0.00	0.00	0.00
8,400.00	14.00	97.40	8,305.41	-106.64	820.71	111.22	0.00	0.00	0.00
8,500.00	14.00	97.40	8,402.44	-109.76	844.70	114.47	0.00	0.00	0.00
8,600.00	14.00	97.40	8,499.47	-112.87	868.68	117.72	0.00	0.00	0.00
8,700.00	14.00	97.40	8,596.50	-115.99	892.67	120.97	0.00	0.00	0.00
8,800.00	14.00	97.40	8,693.53	-119.11	916.65	124.23	0.00	0.00	0.00
8,900.00	14.00	97.40	8,790.56	-122.22	940.64	127.48	0.00	0.00	0.00
9,000.00	14.00	97.40	8,887.59	-125.34	964.63	130.73	0.00	0.00	0.00
9,100.00	14.00	97.40	8,984.62	-128.46	988.61	133.98	0.00	0.00	0.00
9,200.00	14.00	97.40	9,081.65	-131.57	1,012.60	137.23	0.00	0.00	0.00
9,300.00	14.00	97.40	9,178.68	-134.69	1,036.58	140.48	0.00	0.00	0.00
9,400.00	14.00	97.40	9,275.71	-137.81	1,060.57	143.73	0.00	0.00	0.00
9,500.00	14.00	97.40	9,372.74	-140.92	1,084.56	146.98	0.00	0.00	0.00
9,600.00	14.00	97.40	9,469.77	-144.04	1,108.54	150.23	0.00	0.00	0.00
9,679.16	14.00	97.40	9,546.59	-146.51	1,127.53	152.80	0.00	0.00	0.00
9,700.00	14.41	105.73	9,566.79	-147.54	1,132.52	153.86	10.00	1.98	39.98
9,800.00	19.56	135.73	9,662.57	-162.94	1,156.25	169.39	10.00	5.15	30.00
9,900.00	27.45	151.40	9,754.30	-195.24	1,179.02	201.82	10.00	7.89	15.66
10,000.00	36.33	160.17	9,839.16	-243.46	1,200.15	250.16	10.00	8.88	8.77
10,100.00	45.63	165.81	9,914.60	-306.13	1,219.01	312.94	10.00	9.30	5.64
10,200.00	55.13	169.89	9,978.32	-381.36	1,235.01	388.25	10.00	9.50	4.07
10,300.00	64.73	173.11	10,028.38	-466.85	1,247.67	473.81	10.00	9.61	3.22
10,400.00	74.40	175.85	10,063.25	-560.00	1,256.61	567.01	10.00	9.67	2.74
10,500.00	84.10	178.34	10,081.89	-658.00	1,261.55	665.03	10.00	9.70	2.49
10,555.51	89.48	179.68	10,085.00	-713.39	1,262.51	720.43	10.00	9.71	2.41

OXY
Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**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)
10,600.00	89.48	179.68	10,085.40	-757.88	1,262.76	764.92	0.00	0.00	0.00
10,700.00	89.48	179.68	10,086.30	-857.87	1,263.32	864.92	0.00	0.00	0.00
10,800.00	89.48	179.68	10,087.20	-957.87	1,263.89	964.91	0.00	0.00	0.00
10,900.00	89.48	179.68	10,088.11	-1,057.86	1,264.46	1,064.91	0.00	0.00	0.00
11,000.00	89.48	179.68	10,089.01	-1,157.86	1,265.02	1,164.90	0.00	0.00	0.00
11,100.00	89.48	179.68	10,089.91	-1,257.85	1,265.59	1,264.90	0.00	0.00	0.00
11,200.00	89.48	179.68	10,090.81	-1,357.85	1,266.15	1,364.90	0.00	0.00	0.00
11,300.00	89.48	179.68	10,091.71	-1,457.84	1,266.72	1,464.89	0.00	0.00	0.00
11,400.00	89.48	179.68	10,092.61	-1,557.83	1,267.28	1,564.89	0.00	0.00	0.00
11,500.00	89.48	179.68	10,093.51	-1,657.83	1,267.85	1,664.88	0.00	0.00	0.00
11,600.00	89.48	179.68	10,094.42	-1,757.82	1,268.41	1,764.88	0.00	0.00	0.00
11,700.00	89.48	179.68	10,095.32	-1,857.82	1,268.98	1,864.88	0.00	0.00	0.00
11,800.00	89.48	179.68	10,096.22	-1,957.81	1,269.54	1,964.87	0.00	0.00	0.00
11,900.00	89.48	179.68	10,097.12	-2,057.81	1,270.11	2,064.87	0.00	0.00	0.00
12,000.00	89.48	179.68	10,098.02	-2,157.80	1,270.67	2,164.86	0.00	0.00	0.00
12,100.00	89.48	179.68	10,098.92	-2,257.79	1,271.24	2,264.86	0.00	0.00	0.00
12,200.00	89.48	179.68	10,099.82	-2,357.79	1,271.80	2,364.86	0.00	0.00	0.00
12,300.00	89.48	179.68	10,100.72	-2,457.78	1,272.37	2,464.85	0.00	0.00	0.00
12,400.00	89.48	179.68	10,101.63	-2,557.78	1,272.94	2,564.85	0.00	0.00	0.00
12,500.00	89.48	179.68	10,102.53	-2,657.77	1,273.50	2,664.84	0.00	0.00	0.00
12,600.00	89.48	179.68	10,103.43	-2,757.77	1,274.07	2,764.84	0.00	0.00	0.00
12,700.00	89.48	179.68	10,104.33	-2,857.76	1,274.63	2,864.83	0.00	0.00	0.00
12,800.00	89.48	179.68	10,105.23	-2,957.75	1,275.20	2,964.83	0.00	0.00	0.00
12,900.00	89.48	179.68	10,106.13	-3,057.75	1,275.76	3,064.83	0.00	0.00	0.00
13,000.00	89.48	179.68	10,107.03	-3,157.74	1,276.33	3,164.82	0.00	0.00	0.00
13,100.00	89.48	179.68	10,107.94	-3,257.74	1,276.89	3,264.82	0.00	0.00	0.00
13,200.00	89.48	179.68	10,108.84	-3,357.73	1,277.46	3,364.81	0.00	0.00	0.00
13,300.00	89.48	179.68	10,109.74	-3,457.73	1,278.02	3,464.81	0.00	0.00	0.00
13,400.00	89.48	179.68	10,110.64	-3,557.72	1,278.59	3,564.81	0.00	0.00	0.00
13,500.00	89.48	179.68	10,111.54	-3,657.72	1,279.15	3,664.80	0.00	0.00	0.00
13,600.00	89.48	179.68	10,112.44	-3,757.71	1,279.72	3,764.80	0.00	0.00	0.00
13,700.00	89.48	179.68	10,113.34	-3,857.70	1,280.28	3,864.79	0.00	0.00	0.00
13,800.00	89.48	179.68	10,114.25	-3,957.70	1,280.85	3,964.79	0.00	0.00	0.00
13,900.00	89.48	179.68	10,115.15	-4,057.69	1,281.42	4,064.79	0.00	0.00	0.00
14,000.00	89.48	179.68	10,116.05	-4,157.69	1,281.98	4,164.78	0.00	0.00	0.00
14,100.00	89.48	179.68	10,116.95	-4,257.68	1,282.55	4,264.78	0.00	0.00	0.00
14,200.00	89.48	179.68	10,117.85	-4,357.68	1,283.11	4,364.77	0.00	0.00	0.00
14,300.00	89.48	179.68	10,118.75	-4,457.67	1,283.68	4,464.77	0.00	0.00	0.00
14,400.00	89.48	179.68	10,119.65	-4,557.66	1,284.24	4,564.77	0.00	0.00	0.00
14,500.00	89.48	179.68	10,120.56	-4,657.66	1,284.81	4,664.76	0.00	0.00	0.00
14,525.51	89.48	179.68	10,120.79	-4,683.17	1,284.95	4,690.27	0.00	0.00	0.00
14,600.00	89.65	184.51	10,121.35	-4,757.58	1,282.23	4,764.67	6.50	0.23	6.50
14,700.00	89.88	191.01	10,121.75	-4,856.61	1,268.73	4,863.62	6.50	0.23	6.50
14,800.00	90.11	197.51	10,121.76	-4,953.48	1,244.11	4,960.35	6.50	0.23	6.50
14,900.00	90.35	204.00	10,121.35	-5,046.94	1,208.69	5,053.61	6.50	0.23	6.50
15,000.00	90.57	210.50	10,120.55	-5,135.79	1,162.93	5,142.21	6.50	0.23	6.50
15,100.00	90.79	217.00	10,119.36	-5,218.89	1,107.41	5,224.99	6.50	0.22	6.50
15,200.00	91.00	223.49	10,117.80	-5,295.17	1,042.85	5,300.91	6.50	0.21	6.50
15,300.00	91.19	229.99	10,115.89	-5,363.65	970.07	5,368.98	6.50	0.20	6.50
15,400.00	91.37	236.49	10,113.64	-5,423.45	890.02	5,428.33	6.50	0.18	6.50
15,500.00	91.54	242.99	10,111.10	-5,473.79	803.72	5,478.20	6.50	0.16	6.50
15,600.00	91.68	249.49	10,108.29	-5,514.04	712.28	5,517.94	6.50	0.14	6.50
15,700.00	91.80	255.99	10,105.25	-5,543.68	616.88	5,547.04	6.50	0.12	6.50
15,800.00	91.90	262.50	10,102.01	-5,562.32	518.74	5,565.13	6.50	0.10	6.50
15,900.00	91.97	269.00	10,098.63	-5,569.73	419.12	5,571.98	6.50	0.07	6.50

OXY

Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**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)
15,910.92	91.98	269.71	10,098.25	-5,569.85	408.21	5,572.05	6.50	0.06	6.50
16,000.00	91.98	269.71	10,095.18	-5,570.30	319.18	5,572.00	0.00	0.00	0.00
16,100.00	91.98	269.71	10,091.72	-5,570.81	219.25	5,571.95	0.00	0.00	0.00
16,200.00	91.98	269.71	10,088.27	-5,571.31	119.31	5,571.89	0.00	0.00	0.00
16,300.00	91.98	269.71	10,084.81	-5,571.82	19.37	5,571.84	0.00	0.00	0.00
16,400.00	91.98	269.71	10,081.36	-5,572.33	-80.57	5,571.79	0.00	0.00	0.00
16,500.00	91.98	269.71	10,077.90	-5,572.83	-180.51	5,571.74	0.00	0.00	0.00
16,600.00	91.98	269.71	10,074.45	-5,573.34	-280.45	5,571.68	0.00	0.00	0.00
16,700.00	91.98	269.71	10,070.99	-5,573.84	-380.39	5,571.63	0.00	0.00	0.00
16,768.92	91.98	269.71	10,068.61	-5,574.19	-449.27	5,571.60	0.00	0.00	0.00
16,800.00	92.14	271.73	10,067.49	-5,573.80	-480.32	5,571.03	6.50	0.50	6.48
16,900.00	92.62	278.21	10,063.34	-5,565.15	-579.81	5,561.83	6.50	0.48	6.49
17,000.00	93.07	284.71	10,058.37	-5,545.32	-677.64	5,541.45	6.50	0.45	6.49
17,100.00	93.48	291.20	10,052.64	-5,514.57	-772.56	5,510.17	6.50	0.41	6.50
17,200.00	93.85	297.71	10,046.24	-5,473.28	-863.36	5,468.37	6.50	0.37	6.50
17,300.00	94.17	304.21	10,039.24	-5,421.99	-948.85	5,416.61	6.50	0.32	6.51
17,400.00	94.43	310.73	10,031.74	-5,361.36	-1,027.96	5,355.54	6.50	0.26	6.51
17,500.00	94.64	317.24	10,023.82	-5,292.17	-1,099.64	5,285.94	6.50	0.21	6.52
17,600.00	94.79	323.76	10,015.60	-5,215.30	-1,163.00	5,208.73	6.50	0.15	6.52
17,700.00	94.87	330.29	10,007.17	-5,131.76	-1,217.20	5,124.88	6.50	0.09	6.52
17,800.00	94.89	336.81	9,998.65	-5,042.60	-1,261.56	5,035.47	6.50	0.02	6.52
17,900.00	94.85	343.33	9,990.15	-4,948.98	-1,295.50	4,941.67	6.50	-0.04	6.52
18,000.00	94.75	349.86	9,981.77	-4,852.10	-1,318.59	4,844.66	6.50	-0.10	6.52
18,100.00	94.59	356.38	9,973.62	-4,753.20	-1,330.53	4,745.70	6.50	-0.16	6.52
18,151.01	94.48	359.70	9,969.59	-4,702.39	-1,332.27	4,694.88	6.50	-0.21	6.52
18,200.00	94.48	359.70	9,965.76	-4,653.55	-1,332.52	4,646.03	0.00	0.00	0.00
18,300.00	94.48	359.70	9,957.95	-4,553.85	-1,333.04	4,546.34	0.00	0.00	0.00
18,400.00	94.48	359.70	9,950.14	-4,454.16	-1,333.57	4,446.64	0.00	0.00	0.00
18,500.00	94.48	359.70	9,942.33	-4,354.47	-1,334.09	4,346.95	0.00	0.00	0.00
18,600.00	94.48	359.70	9,934.52	-4,254.78	-1,334.61	4,247.26	0.00	0.00	0.00
18,700.00	94.48	359.70	9,926.70	-4,155.08	-1,335.13	4,147.56	0.00	0.00	0.00
18,800.00	94.48	359.70	9,918.89	-4,055.39	-1,335.65	4,047.87	0.00	0.00	0.00
18,900.00	94.48	359.70	9,911.08	-3,955.70	-1,336.18	3,948.17	0.00	0.00	0.00
19,000.00	94.48	359.70	9,903.27	-3,856.00	-1,336.70	3,848.48	0.00	0.00	0.00
19,100.00	94.48	359.70	9,895.46	-3,756.31	-1,337.22	3,748.78	0.00	0.00	0.00
19,200.00	94.48	359.70	9,887.65	-3,656.62	-1,337.74	3,649.09	0.00	0.00	0.00
19,300.00	94.48	359.70	9,879.84	-3,556.92	-1,338.26	3,549.39	0.00	0.00	0.00
19,400.00	94.48	359.70	9,872.03	-3,457.23	-1,338.79	3,449.70	0.00	0.00	0.00
19,500.00	94.48	359.70	9,864.22	-3,357.54	-1,339.31	3,350.01	0.00	0.00	0.00
19,600.00	94.48	359.70	9,856.40	-3,257.84	-1,339.83	3,250.31	0.00	0.00	0.00
19,631.01	94.48	359.70	9,853.98	-3,226.93	-1,339.99	3,219.40	0.00	0.00	0.00
19,700.00	93.45	359.70	9,849.21	-3,158.11	-1,340.35	3,150.57	1.50	-1.50	0.00
19,800.00	91.95	359.70	9,844.51	-3,058.22	-1,340.88	3,050.68	1.50	-1.50	0.00
19,900.00	90.45	359.70	9,842.43	-2,958.25	-1,341.40	2,950.71	1.50	-1.50	0.00
19,901.00	90.43	359.70	9,842.42	-2,957.25	-1,341.41	2,949.71	1.50	-1.50	0.00
20,000.00	90.43	359.70	9,841.68	-2,858.25	-1,341.93	2,850.71	0.00	0.00	0.00
20,100.00	90.43	359.70	9,840.93	-2,758.26	-1,342.46	2,750.72	0.00	0.00	0.00
20,200.00	90.43	359.70	9,840.17	-2,658.26	-1,342.98	2,650.72	0.00	0.00	0.00
20,300.00	90.43	359.70	9,839.42	-2,558.26	-1,343.51	2,550.72	0.00	0.00	0.00
20,400.00	90.43	359.70	9,838.67	-2,458.27	-1,344.03	2,450.72	0.00	0.00	0.00
20,500.00	90.43	359.70	9,837.92	-2,358.27	-1,344.56	2,350.73	0.00	0.00	0.00
20,600.00	90.43	359.70	9,837.17	-2,258.28	-1,345.09	2,250.73	0.00	0.00	0.00
20,700.00	90.43	359.70	9,836.42	-2,158.28	-1,345.61	2,150.73	0.00	0.00	0.00
20,800.00	90.43	359.70	9,835.67	-2,058.29	-1,346.14	2,050.73	0.00	0.00	0.00
20,900.00	90.43	359.70	9,834.92	-1,958.29	-1,346.67	1,950.74	0.00	0.00	0.00

OXY
Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**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)
21,000.00	90.43	359.70	9,834.17	-1,858.29	-1,347.19	1,850.74	0.00	0.00	0.00
21,100.00	90.43	359.70	9,833.42	-1,758.30	-1,347.72	1,750.74	0.00	0.00	0.00
21,200.00	90.43	359.70	9,832.67	-1,658.30	-1,348.25	1,650.75	0.00	0.00	0.00
21,300.00	90.43	359.70	9,831.92	-1,558.31	-1,348.77	1,550.75	0.00	0.00	0.00
21,400.00	90.43	359.70	9,831.17	-1,458.31	-1,349.30	1,450.75	0.00	0.00	0.00
21,500.00	90.43	359.70	9,830.42	-1,358.31	-1,349.83	1,350.75	0.00	0.00	0.00
21,600.00	90.43	359.70	9,829.67	-1,258.32	-1,350.35	1,250.76	0.00	0.00	0.00
21,700.00	90.43	359.70	9,828.91	-1,158.32	-1,350.88	1,150.76	0.00	0.00	0.00
21,800.00	90.43	359.70	9,828.16	-1,058.33	-1,351.40	1,050.76	0.00	0.00	0.00
21,900.00	90.43	359.70	9,827.41	-958.33	-1,351.93	950.77	0.00	0.00	0.00
22,000.00	90.43	359.70	9,826.66	-858.34	-1,352.46	850.77	0.00	0.00	0.00
22,100.00	90.43	359.70	9,825.91	-758.34	-1,352.98	750.77	0.00	0.00	0.00
22,200.00	90.43	359.70	9,825.16	-658.34	-1,353.51	650.77	0.00	0.00	0.00
22,221.46	90.43	359.70	9,825.00	-636.89	-1,353.62	629.32	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 (Vanadium 32 - plan hits target center - Point	0.00	0.00	9,825.00	-636.89	-1,353.62	461,692.25	705,509.39	32.268150	-103.802178
DP2 (Vanadium 32 - plan misses target center by 106.37ft at 18260.32ft MD (9961.05 TVD, -4593.42 N, -1332.84 E) - Point	0.00	0.00	9,855.00	-4,601.72	-1,332.57	457,727.66	705,530.44	32.257252	-103.802173
FTP (Vanadium 32 - plan hits target center - Point	0.00	0.00	10,085.00	-713.39	1,262.51	461,615.75	708,125.36	32.267904	-103.793716
DP1 (Vanadium 32 - plan hits target center - Point	0.00	0.00	10,120.00	-4,596.09	1,284.46	457,733.29	708,147.31	32.257232	-103.793708

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
399.00	399.00	RUSTLER			
745.00	745.00	SALADO			
2,697.00	2,697.00	CASTILE			
4,153.00	4,153.00	DELAWARE			
4,180.00	4,180.00	BELL CANYON			
5,067.46	5,065.00	CHERRY CANYON			
6,410.52	6,375.00	BRUSHY CANYON			
8,059.48	7,975.00	BONE SPRING			
9,134.40	9,018.00	BONE SPRING 1ST			
9,806.83	9,669.00	BONE SPRING 2ND			

OXY
Planning Report

Database:	HOPSPP	**Local Co-ordinate Reference:**	Well Vanadium 32 State 5H
Company:	ENGINEERING DESIGNS	**TVD Reference:**	RKB=25' @ 3385.00ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	**MD Reference:**	RKB=25' @ 3385.00ft
Site:	Vanadium 32	**North Reference:**	Grid
Well:	Vanadium 32 State 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permitting Plan		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4,282.00	4,282.00	0.00	0.00	Build 1°/100'
5,681.73	5,667.84	-21.92	168.71	Hold 14° Tangent
9,679.16	9,546.59	-146.51	1,127.53	KOP, Build & Turn 10°/100'
10,555.51	10,085.00	-713.39	1,262.51	Landing Point
14,525.51	10,120.79	-4,683.17	1,284.95	Build & Turn 6.5°/100'
15,910.92	10,098.25	-5,569.85	408.21	Hold
16,768.92	10,068.61	-5,574.19	-449.27	Build & Turn 6.5°/100'
18,151.01	9,969.59	-4,702.39	-1,332.27	Hold
19,631.01	9,853.98	-3,226.93	-1,339.99	Drop 1.5°/100'
19,901.00	9,842.42	-2,957.25	-1,341.41	Hold
22,221.46	9,825.00	-636.89	-1,353.62	TD at 22221.46' MD

Oxy USA Inc. - Vanadium 32 State 5H

Drill Plan

1. Geologic Formations

TVD of Target (ft):	10085	Pilot Hole Depth (ft):	
Total Measured Depth (ft):	22221	Deepest Expected Fresh Water (ft):	399

Delaware Basin

Formation	MD-RKB (ft)	TVD-RKB (ft)	Expected Fluids
Rustler	399	399	
Salado	746	746	Salt
Castile	2698	2698	Salt
Delaware	4154	4154	Oil/Gas/Brine
Bell Canyon	4180	4180	Oil/Gas/Brine
Cherry Canyon	5067	5065	Oil/Gas/Brine
Brushy Canyon	6411	6375	Losses
Bone Spring	8059	7975	Oil/Gas
Bone Spring 1st	9135	9019	Oil/Gas
Bone Spring 2nd	9808	9670	Oil/Gas
Bone Spring 3rd			Oil/Gas
Wolfcamp			Oil/Gas
Penn			Oil/Gas
Strawn			Oil/Gas

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

2. Casing Program

		MD		TVD					
Section	Hole Size (in)	From (ft)	To (ft)	From (ft)	To (ft)	Csg. OD (in)	Csg Wt. (ppf)	Grade	Conn.
Surface	17.5	0	459	0	459	13.375	54.5	J-55	BTC
Salt	12.25	0	4254	0	4254	9.625	40	L-80 HC	BTC
Intermediate	8.75	0	9579	0	9447	7.625	26.4	L-80 HC	Wedge 425
Production	6.75	0	22221	0	10085	5.5	20	P-110	Wedge 461

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

*Oxy requests the option to run production casing with DQX, TORQ DQW, Wedge 425, Wedge 461, and/or Wedge 441 connections to accommodate hole conditions or drilling operations.

All Casing SF Values will meet or exceed those below			
SF Collapse	**SF Burst**	**Body SF Tension**	**Joint SF Tension**
1.125	1.2	1.4	1.4

Annular Clearance Variance Request

As per the agreement reached in the Oxy/BLM face-to-face 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.

	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?	Y
If yes, are the first three strings cemented to surface?	Y
Is 2nd string set 100' to 600' below the base of salt?	Y
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

Section	Stage	Slurry:	Sacks	Yield (ft^3/ft)	Density (lb/gal)	Excess:	TOC	Placement	Description
Surface	1	Surface - Tail	479	1.33	14.8	100%	-	Circulate	Class C+Accel.
Int.1	1	Intermediate - Tail	141	1.33	14.8	20%	3,754	Circulate	Class C+Accel.
Int.1	1	Intermediate - Lead	991	1.73	12.9	50%	-	Circulate	Class Pozz+Ret.
Int. 2	1	Intermediate 1S - Tail	187	1.65	13.2	5%	6,661	Circulate	Class H+Accel., Disper., Salt
Int. 2	2	Intermediate 2S - Tail BH	447	1.71	13.3	25%	-	Bradenhead Post-Frac	Class C+Accel.
Prod.	1	Production - Tail	993	1.38	13.2	25%	9,079	Circulate	Class H+Ret., Disper., Salt

Offline Cementing

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

The summarized operational sequence will be as follows:
Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe).
Land casing.
Fill pipe with kill weight fluid, and confirm well is static.
If well Oxy requests a variance to cement the 9.625" and/or 7.625" intermediate casing strings offline in accordance to the approved variance, EC Tran 461365.

The summarized operational sequence will be as follows:

1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe).
2. Land casing.
3. Fill pipe with kill weight fluid, and confirm well is static.
   a. If well is not static notify BLM and kill well.
   b. Once well is static notify BLM with intent to proceed with nipple down and offline cementing.
4. Set and pressure test annular packoff.
5. After confirmation of both annular barriers and internal barriers, nipple down BOP and install cap flange. If any barrier fails to test, the BOP stack will not be nippled down until after the cement job is completed.
6. Skid rig to next well on pad.
7. Confirm well is static before removing cap flange.
8. If well is not static notify BLM and kill well prior to cementing or nippling up for further remediation.
9. Install offline cement tool.
10. Rig up cement equipment.
    a. Notify BLM prior to cement job.
11. Perform cement job.
12. Confirm well is static and floats are holding after cement job.
13. Remove cement equipment, offline cement tools and install night cap with pressure gauge for monitoring.

Oxy requests permission to adjust the CBL requirement after bradenhead cement jobs, on 7-5/8" intermediate casings, as per the agreement reached in the OXY/BLM meeting on September 5, 2019.

Four string wells:

- CBL is not required
- If the pumped volume of cement is less than permitted in the APD, BLM will be notified and a CBL may be run
- Echometer will be used after bradenhead cement job to determine TOC before pumping top-out cement

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:	TVD Depth (ft) per Section:
12.25" Hole	13-5/8"	3M	Annular	✓	70% of working pressure	4254
		3M	Blind Ram	✓	250 psi / 3000 psi	
			Pipe Ram			
			Double Ram	✓		
			Other*			
8.75" Hole	13-5/8"	3M	Annular	✓	70% of working pressure	9447
		3M	Blind Ram	✓	250 psi / 3000 psi	
			Pipe Ram			
			Double Ram	✓		
			Other*			
6.75" Hole	13-5/8"	5M	Annular	✓	70% of working pressure	10085
		5M	Blind Ram	✓	250 psi / 5000 psi	
			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.

	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

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

BOP break test under the following conditions:
- After a full BOP test is conducted
- When skidding to drill an intermediate section where ICP is set into the third Bone Spring or shallower.

If the kill line is broken prior to skid, two tests will be performed.
1) Wellhead flange, co-flex hose, kill line connections and upper pipe rams
2) Wellhead flange, HCR valve, check valve, upper pipe rams

If the kill line is not broken prior to skid, only one test will be performed.
1)Wellhead flange, co-flex hose, check valve, upper pipe rams

Oxy will use Cameron ADAPT wellhead system that uses an OEC top flange connection. This connection has been fully vetted and verified by API to Spec 6A and carries an API monogram.

5. Mud Program

Section	Depth		Depth - TVD		Type	Weight (ppg)	Viscosity	Water Loss
	From (ft)	To (ft)	From (ft)	To (ft)				
Surface	0	459	0	459	Water-Based Mud	8.6 - 8.8	40-60	N/C
Intermediate 1	459	4254	459	4254	Saturated Brine-Based or Oil-Based Mud	8.0 - 10.0	35-45	N/C
Intermediate 2	4254	9579	4254	9447	Water-Based or Oil-Based Mud	8.0 - 10.0	38-50	N/C
Production	9579	22221	9447	10085	Water-Based or Oil-Based Mud	8.0 - 9.6	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	
Yes	CBL	Production string
Yes	Mud log	Bone Spring – TD
No	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5035 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	161°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

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 2 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: 1646 bbls

Attachments
_x__ Directional Plan
_x__ H2S Contingency Plan
_x__ Flex III Attachments
_x__ Spudder Rig Attachment
_x__ Premium Connection Specs

9. Company Personnel

Name	Title	Office Phone	Mobile Phone
Garrett Granier	Drilling Engineer	713-513-6633	832-265-0581
Derek Adam	Drilling Engineer Supervisor	713-366-5170	916-802-8873
Casey Martin	Drilling Superintendent	713-497-2530	337-764-4278
Kevin Threadgill	Drilling Manager	713-366-5958	361-815-0788

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan

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

1. Escape

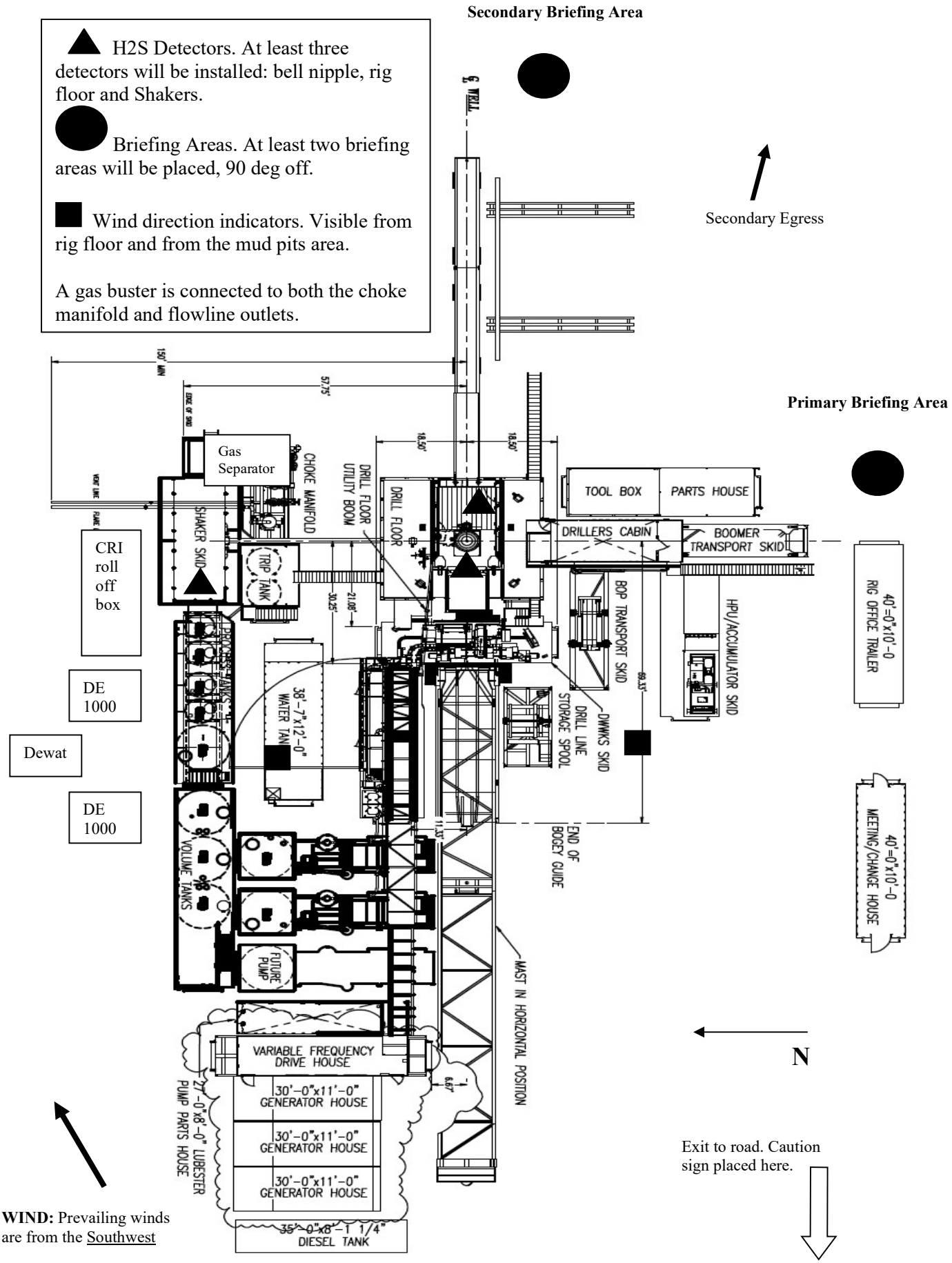
   Personnel shall escape upwind of wellbore in the event of an emergency gas release. Escape can take place through the lease road on the Southeast side of the location. Personnel need to move to a safe distance and block the entrance to location. If the primary route is not an option due to the wind direction,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

▲ 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
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	432-685-5614	
Wilson, Dusty-Safety Advisor	Midland	432-685-5771	(432) 254-2336
John W Dittrich Eniromental 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, TX	(210) 227-1313	
Railroad Commission of TX	District 7C San Angelo, TX	(325) 657-7450	
Railroad Commission of TX	District 8, 8A Midland, TX	(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, TX	(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(Andrews)	(432) 523-5545	
Crane Cty Sheriff's Department	Crane, County (Crane)	(432) 558-3571	
Crockett Cty Sheriff's Department	Crockett County (Ozona)	(325) 392-2661	
Dawson Cty Sheriff's Department	Dawson County (Lamesa)	(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	
Eddy Cty Sheriff's Department	Eddy County (Carlsbad)	(505) 887-7551	
Gaines Cty Sheriff's Department	Gaines County (Seminole)	(432) 758-9871	
Hockley Cty Sheriff's Department	Hockley County(Levelland)	(806) 894-3126	
Kent Cty (Jayton City Sheriff's Dept.)	Kent County(Jayton)	(806) 237-3801	
Lea Cty Sheriff's Department	Lea County (Eunice)	(505) 384-2020	
Lea Cty Sheriff's Department	Lea County (Hobbs)	(505) 393-2515	
Lea Cty Sheriff's Department	Lea County (Lovington)	(505) 396-3611	
Lubbock Cty Sheriff's Department	Lubbock Cty (Abernathy)	(806) 296-2724	
Midland Cty Sheriff's Department	Midland County (Midland)	(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 (Brownfield)	(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 (Monahans)	(432) 943-3254	
Yoakum City Sheriff's Department	Yoakum Co. (Denever City)	(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	
Hobbs City Police	Hobbs, NM	(505) 397-9265 (505) 393-2677	
Jal City Police	Jal, NM	(505) 395-2501	
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	Carlsbad, NM	(505) 885-3137	
NM State Police	Eunice, NM	(505) 392-5588	
NM State Police	Hobbs, 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	(432) 523-4820; (432) 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	
Carlsbad	Carlsbad, NM	(505) 885-3125	
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	(432) 758-3676 (432) 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	(432) 943-3385 or 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	(432) 758-8816 (432) 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	

WORKING DRAFT ONLY – March 16, 2022

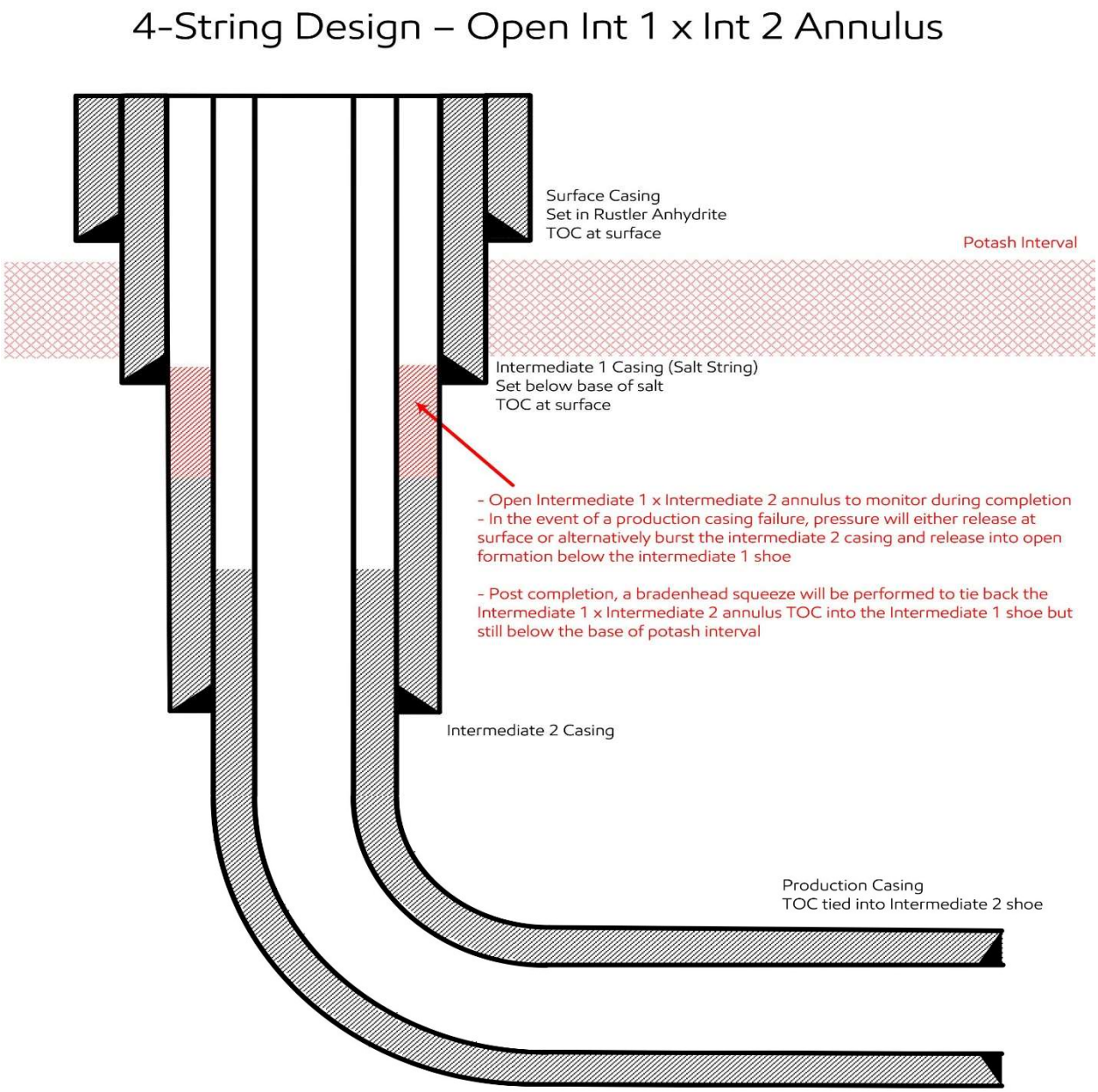


Figure C] 4 – String – Un Cemented Annulus

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

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

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: OXY USA INC. **OGRID:** 16696 **Date:** 12/08/22

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

If Other, please describe: _____

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

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

IV. Central Delivery Point Name: Pure Gold CTB [See 19.15.27.9(D)(1) NMAC]

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

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

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

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

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

Section 2 – Enhanced Plan
EFFECTIVE APRIL 1, 2022

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

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

IX. Anticipated Natural Gas Production:

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

X. Natural Gas Gathering System (NGGS):

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

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

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

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

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

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

Section 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature:	Leslie T. Reeves
Printed Name:	LESLIE REEVES
Title:	REGULATORY MANAGER
E-mail Address:	LESLIE_REEVES@OXY.COM
Date:	12/8/2022
Phone:	713-497-2492

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

III. Well(s)

Well Name	API	WELL LOCATION (ULSTR)	Footages	ANTICIPATED OIL BBL/D	ANTICIPATED GAS MCF/D	ANTICIPATED PROD WATER BBL/D
VANADIUM 32 STATE 4H	PENDING	O-29-T23S-R31E	620' FSL 2038' FEL	3200	4200	5000
VANADIUM 32 STATE 5H	PENDING	O-29-T23S-R31E	620' FSL 2008' FEL	3200	4200	5000
VANADIUM 32 STATE 175H	PENDING	O-29-T23S-R31E	500' FSL 1417' FEL	2000	4300	4600
VANADIUM 32 STATE 176H	PENDING	O-29-T23S-R31E	472' FSL 1405' FEL	2000	4300	4600

V. Anticipated Schedule

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
VANADIUM 32 STATE 4H	PENDING	3/1/2023	5/7/2023	5/7/2023	6/13/2023	6/14/2023
VANADIUM 32 STATE 5H	PENDING	3/1/2023	5/20/2023	5/27/2023	6/13/2023	6/14/2023
VANADIUM 32 STATE 175H	PENDING	3/1/2023	5/8/2023	5/20/2023	6/12/2023	6/13/2023
VANADIUM 32 STATE 176H	PENDING	3/1/2023	4/26/2023	5/20/2023	6/12/2023	6/13/2023

Part VI. Separation Equipment

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

VII. Operational Practices

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, where a gas transporter system is in place. The gas produced from production facility is dedicated to Enterprise Field Services, LLC ("Enterprise") and is connected to Enterprise low/high pressure gathering system located in Eddy County, New Mexico. OXY USA INC. ("OXY") provides (periodically) to Enterprise a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, OXY and Enterprise have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Enterprise's Processing Plant located in Sec. 36, Twn. 24S, Rng. 30E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Enterprise system at that time. Based on current information, it is OXY's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

VIII. Best Management Practices

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

- Power Generation – On lease

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

- Compressed Natural Gas – On lease

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

- NGL Removal – On lease

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

Intent [X] As Drilled [ ]

API #
30-015

Operator Name:	Property Name:	Well Number
OXY USA INC.	VANADIUM 32 STATE	5H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
P	29	23S	31E		300	FSL	750	FEL	EDDY

Latitude	Longitude	NAD
32.269003	-103.793718	NAD83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
A	32	23S	31E		100	FNL	750	FEL	EDDY

Latitude	Longitude	NAD
32.267904	-103.793716	NAD83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
C	32	23S	31E		100	FNL	1910	FWL	EDDY

Latitude	Longitude	NAD
32.267903	-103.802178	NAD83

Is this well the defining well for the Horizontal Spacing Unit? [Yes]

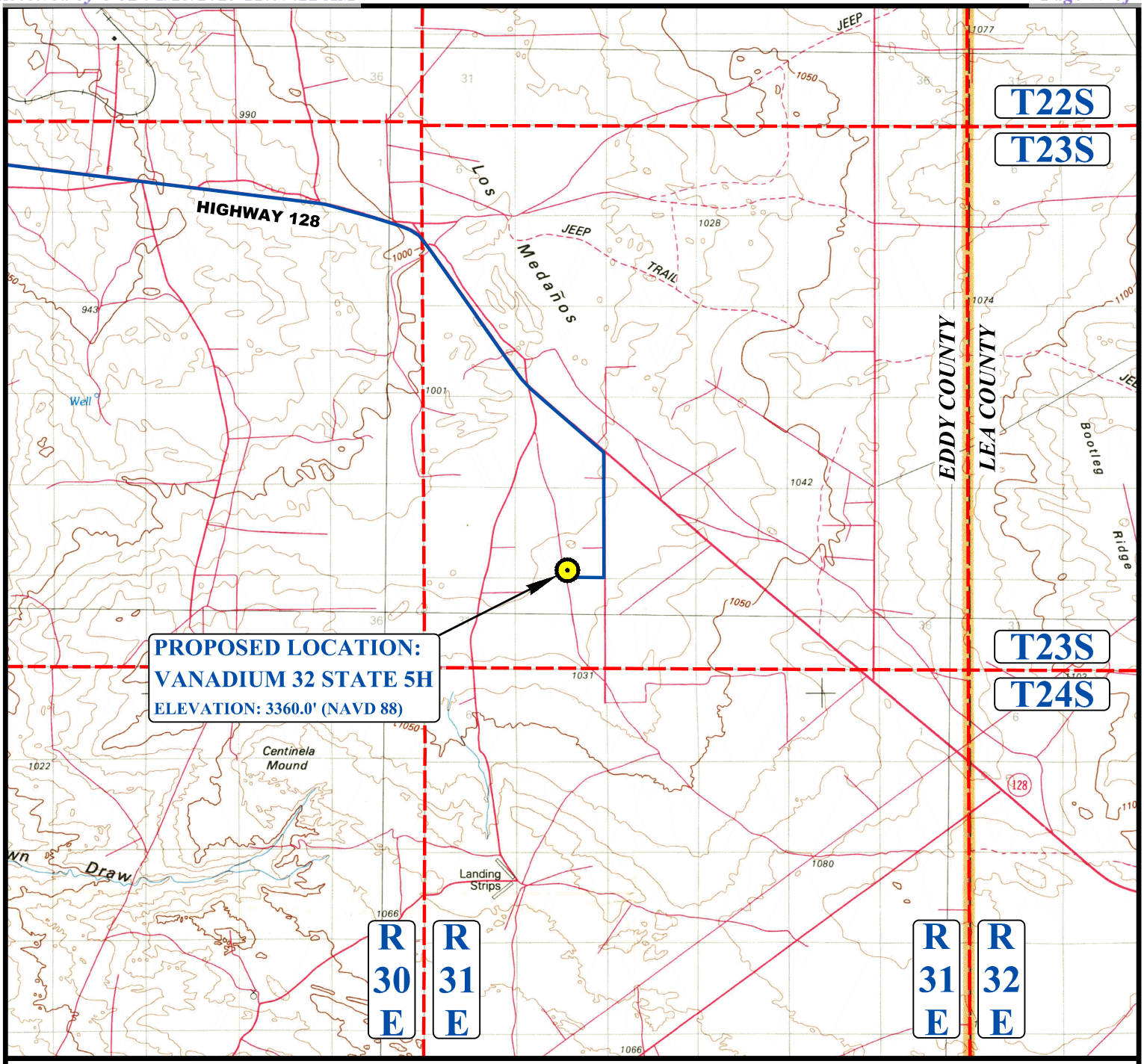
Is this well an infill well? [ ]

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018



PROCEED FROM THE JUNCTION OF JAYDERS ROAD AND U.S. HIGHWAY 285 IN LOVING, NEW MEXICO ALONG U.S. HIGHWAY 285 IN A NORTHERLY DIRECTION APPROXIMATELY 0.6 MILES TO THE JUNCTION OF THIS ROAD AND 8TH STREET TO THE NORTH; TURN LRIGHT AND PROCEED IN A NORTHERLY DIRECTION APPROXIMATELY 1.4 MILES TO THE JUNCTION OF THIS ROAD AND HIGHWAY 31 TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY, THEN NORTHEASTERLY DIRECTION APPROXIMATELY 6.5 MILES TO THE JUNCTION OF THIS ROAD AND HIGHWAY 128 TO THE SOUTHEAST; TURN RIGHT AND PROCEED IN A SOUTHEASTERLY, THEN NORTHEASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 13.9 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTH; TURN RIGHT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 1.4 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE WEST; TURN RIGHT AND PROCEED IN A WESTERLY DIRECTION APPROXIMATELY 0.5 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD TO THE NORTH; FOLLOW ROAD FLAGS IN A NORTHERLY DIRECTION APPROXIMATELY 203' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM LOVING, NEW MEXICO TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 24.3 MILES.

LEGEND:

PROPOSED LOCATION

N

OXY USA INC.

VANADIUM 32 STATE 5H
620' FSL 2008' FEL
SW 1/4 SE 1/4, SECTION 29, T23S, R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

SURVEYED BY	C.T., C.S.	11-04-22	SCALE
DRAWN BY	Z.L.	11-09-22	1 : 100,000

VICINITY MAP

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017