

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

5. Lease Serial No.
NMNM13996

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

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

1. Type of Well
 Oil Well Gas Well Other

8. Well Name and No.
WIDTH CC 6_7 FEDERAL COM 12H

2. Name of Operator
OXY USA INCORPORATED

Contact: SARAH E CHAPMAN
E-Mail: SARAH_CHAPMAN@OXY.COM

9. API Well No.
30-015-45630-00-X1

3a. Address
5 GREENWAY PLAZA SUITE 110
HOUSTON, TX 77046-0521

3b. Phone No. (include area code)
Ph: 713-350-4997

10. Field and Pool or Exploratory Area
PIERCE CROSSING-BONE SPRING

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 6 T24S R29E 170FNL 1700FWL
32.253809 N Lat, 104.026848 W Lon

County or Parish, State
EDDY COUNTY, NM

*Carlsbad Field Office
OCD Artesia*

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A PD
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

OXY USA Inc. respectfully requests to emend the approved APD and change the well name and number for API No. 30-015-45630 from the Width CC 6-7 Federal Com 12H to the Height CC 6-7 Federal Com 317H. Due to spacing changes the well will be drilled and completed in the 3rd Bone Spring and the bottom hole location is moving west 1370' from the current location.

RECEIVED

APR 25 2019

Attached you will find updated:

- Drill Plan
- Connection Specs
- BOP Diagram
- Directional Plan and Plot
- H2S Contingency Information

SEE ATTACHED FOR DISTRICT II-ARTESIA O.C.D.
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #461459 verified by the BLM Well Information System
For OXY USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 04/15/2019 (19PP1680SE)

Name (Printed/Typed) SARAH E CHAPMAN Title REGULATORY SPECIALIST

Signature (Electronic Submission) Date 04/15/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS Title PETROLEUM ENGINEER Date 04/16/2019

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

Office Carlsbad

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

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Rw 1-25-19

Additional data for EC transaction #461459 that would not fit on the form

32. Additional remarks, continued

Spud Rig Data Sheet

Oxy USA Inc. - Height CC 6-7 Federal Com 311H

1. Geologic Formations

TVD of target	9600'	Pilot Hole Depth	N/A
MD at TD:	19995'	Deepest Expected fresh water:	101'

Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	101	
Salado	515	Salt
Castile	1,262	Salt
Lamar/Delaware	2,728	Oil/Gas/Brine
Bell Canyon	2,777	Oil/Gas/Brine
Cherry Canyon	3,629	Oil/Gas/Brine
Brushy Canyon	4,867	Losses
Bone Spring	6,458	Oil/Gas
1st Bone Spring	7,431	Oil/Gas
2nd Bone Spring	8,213	Oil/Gas
3rd Bone Spring	9,302	Oil/Gas

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

2. Casing Program

Hole Size (in)	Casing Interval		Csg. Size (in)	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	Buoyant	Buoyant
	From (ft)	To (ft)							Body SF Tension	Joint SF Tension
14.75	0	455	10.75	40.5	J-55	BTC	1.125	1.2	1.4	1.4
9.875	0	9323	7.625	26.4	L-80 HC	BTC	1.125	1.2	1.4	1.4
6.75	0	19995	5.5	20	P-110	DQX	1.125	1.2	1.4	1.4
SF Values will meet or Exceed										

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

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

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

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.

Oxy USA Inc. - Height CC 6-7 Federal Com 311H

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 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing String	# Sk	Wt. (lb/gal)	Yld (ft ³ /sack)	H ₂ O (gal/sk)	500# Comp. Strength (hours)	Slurry Description
Surface (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Surface (Tail)	367	14.8	1.33	6.365	5:26	Class C Cement, Accelerator
Intermediate 1st Stage (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 1st Stage (Tail)	553	13.2	1.65	8.640	11:54	Class H Cement, Retarder, Dispersant, Salt
Intermediate 2nd Stage (Tail Slurry) to be pumped as Bradenhead Squeeze from surface, down the Intermediate annulus						
Intermediate 2nd Stage (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 2nd Stage (Tail)	656	12.9	1.92	10.41	23:10	Class C Cement, Accelerator
Production (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Production (Tail)	819	13.2	1.38	6.686	3:39	Class H Cement, Retarder, Dispersant, Salt

Oxy USA Inc. - Height CC 6-7 Federal Com 311H

Casing String	Top (ft)	Bottom (ft)	% Excess
Surface (Lead)	N/A	N/A	N/A
Surface (Tail)	0	455	100%
Intermediate 1st Stage (Lead)	N/A	N/A	N/A
Intermediate 1st Stage (Tail)	5327	9323	5%
Intermediate 2nd Stage (Lead)	N/A	N/A	N/A
Intermediate 2nd Stage (Tail)	0	5327	10%
Production (Lead)	N/A	N/A	N/A
Production (Tail)	8823	19995	20%

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
9.875" Hole	13-5/8"	3M	Annular	✓	70% of working pressure
			Blind Ram	✓	
		3M	Pipe Ram		250 psi / 3000 psi
			Double Ram	✓	
			Other*		
6.75" Hole	13-5/8"	5M	Annular	✓	70% of working pressure
			Blind Ram	✓	
		5M	Pipe Ram		250 psi / 5000 psi
			Double Ram	✓	
			Other*		

*Specify if additional ram is utilized.

Oxy will utilize a 5M annular with a 10M BOPE stack. The BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

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

Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.

Oxy USA Inc. - Height CC 6-7 Federal Com 311H

Y	Are anchors required by manufacturer?
	A multibowl or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015. See attached schematics.

BOP Break Testing Request

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

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

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	455	Water-Based Mud	8.6-8.8	40-60	N/C
455	9323	Saturated Brine-Based or Oil-Based Mud	8.0-10.0	35-45	N/C
9323	19995	Water-Based or Oil-Based Mud	9.5-12.0	38-50	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/MD Totco/Visual Monitoring
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6. Logging and Testing Procedures

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5991 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	157°F

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

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

8. Other facets of operation

	Yes/No
Will the well be drilled with a walking/skidding operation? If yes, describe. <ul style="list-style-type: none"> We plan to drill the three well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well. 	Yes
Will more than one drilling rig be used for drilling operations? If yes, describe.	Yes

Oxy USA Inc. - Height CC 6-7 Federal Com 311H

- | | |
|---|--|
| <ul style="list-style-type: none">• Oxy requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Oxy would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig. | |
|---|--|

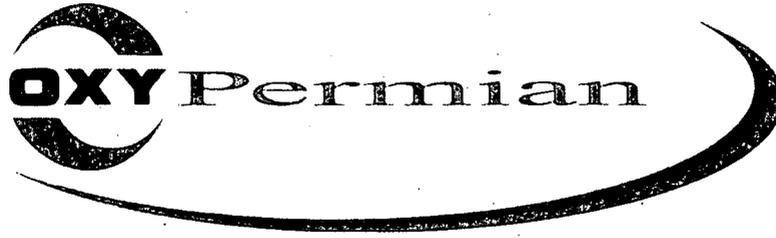
Total estimated cuttings volume: 1408.6 bbls.

Attachments

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

9. Company Personnel

<u>Name</u>	<u>Title</u>	<u>Office Phone</u>	<u>Mobile Phone</u>
TBD	Drilling Engineer		
TBD	Drilling Engineer Supervisor		
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
John Willis	Drilling Manager	713-366-5556	713-259-1417



**Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
Height CC 6-7 Federal Com 311H**

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.

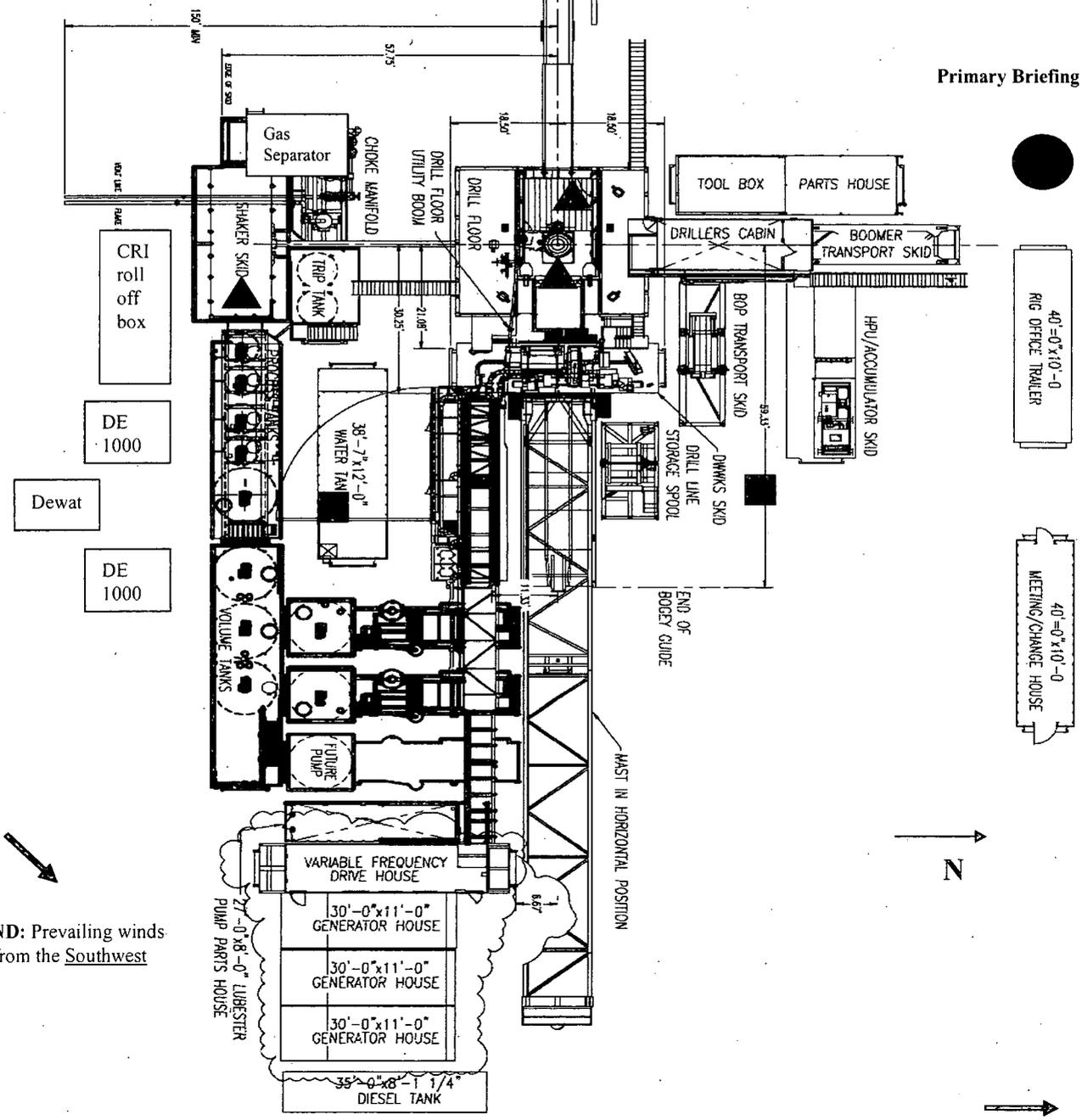
A gas buster is connected to both the choke manifold and flowline outlets.

Secondary Briefing Area

Exit to road. Caution sign placed here.



Primary Briefing Area



WIND: Prevailing winds are from the Southwest



Secondary Egress

OXY USA Inc
APD ATTACHMENT: SPUDDER RIG DATA

OPERATOR NAME / NUMBER: OXY USA Inc

1. SUMMARY OF REQUEST:

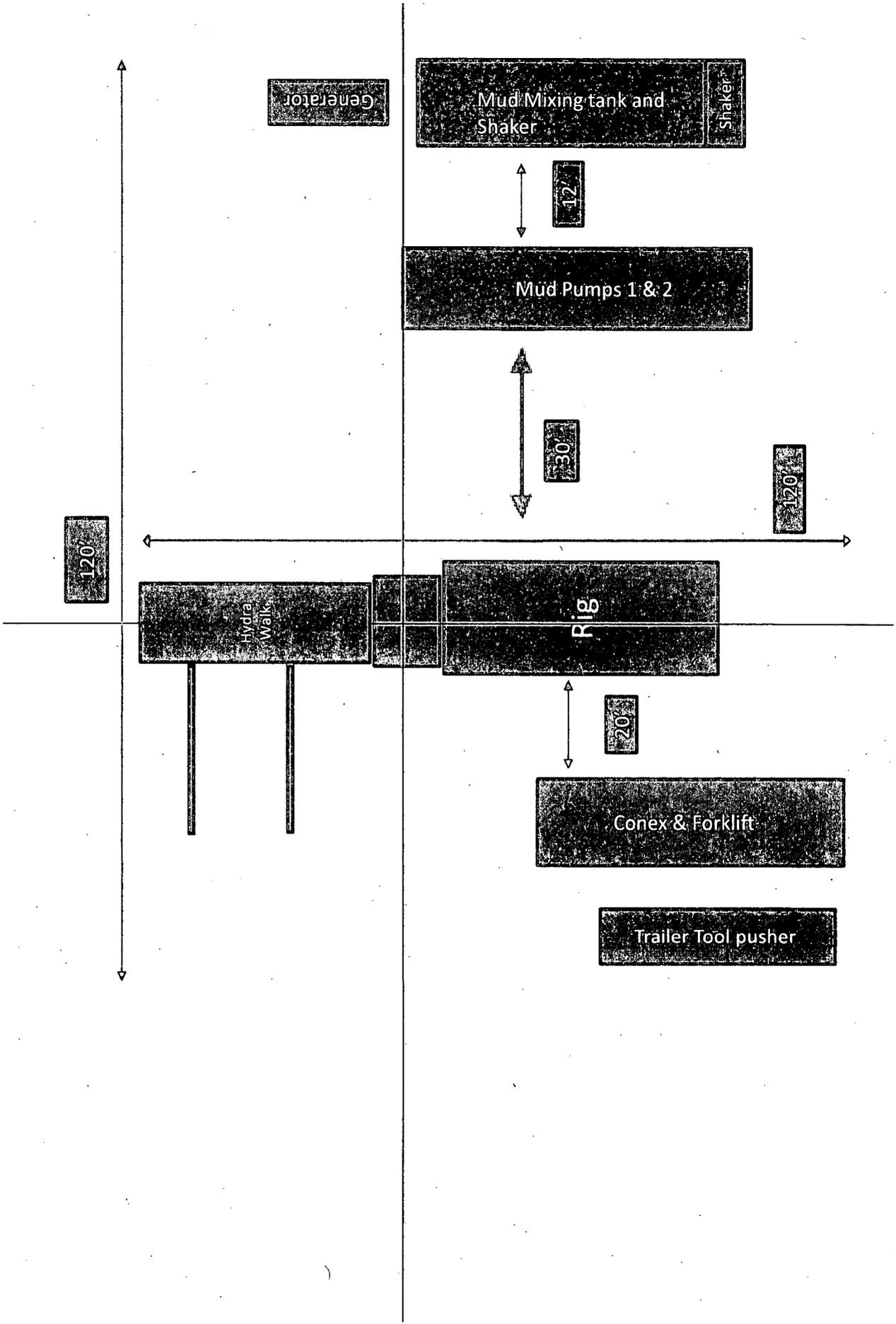
Oxy USA respectfully requests approval for the following operations for the surface hole in the drill plan:

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

2. Description of Operations

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

Spudder Rig Layout



PERFORMANCE DATA

TMK UP DQX
Technical Data Sheet

5.500 in

20.00 lbs/ft

P-110

Tubular Parameters

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

Connection Parameters

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

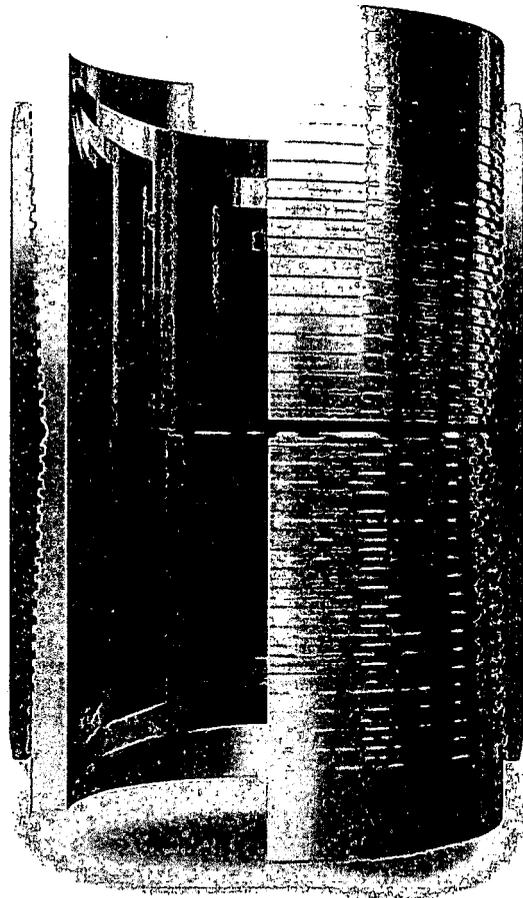
Make-Up Torques

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

Printed on: July-29-2014

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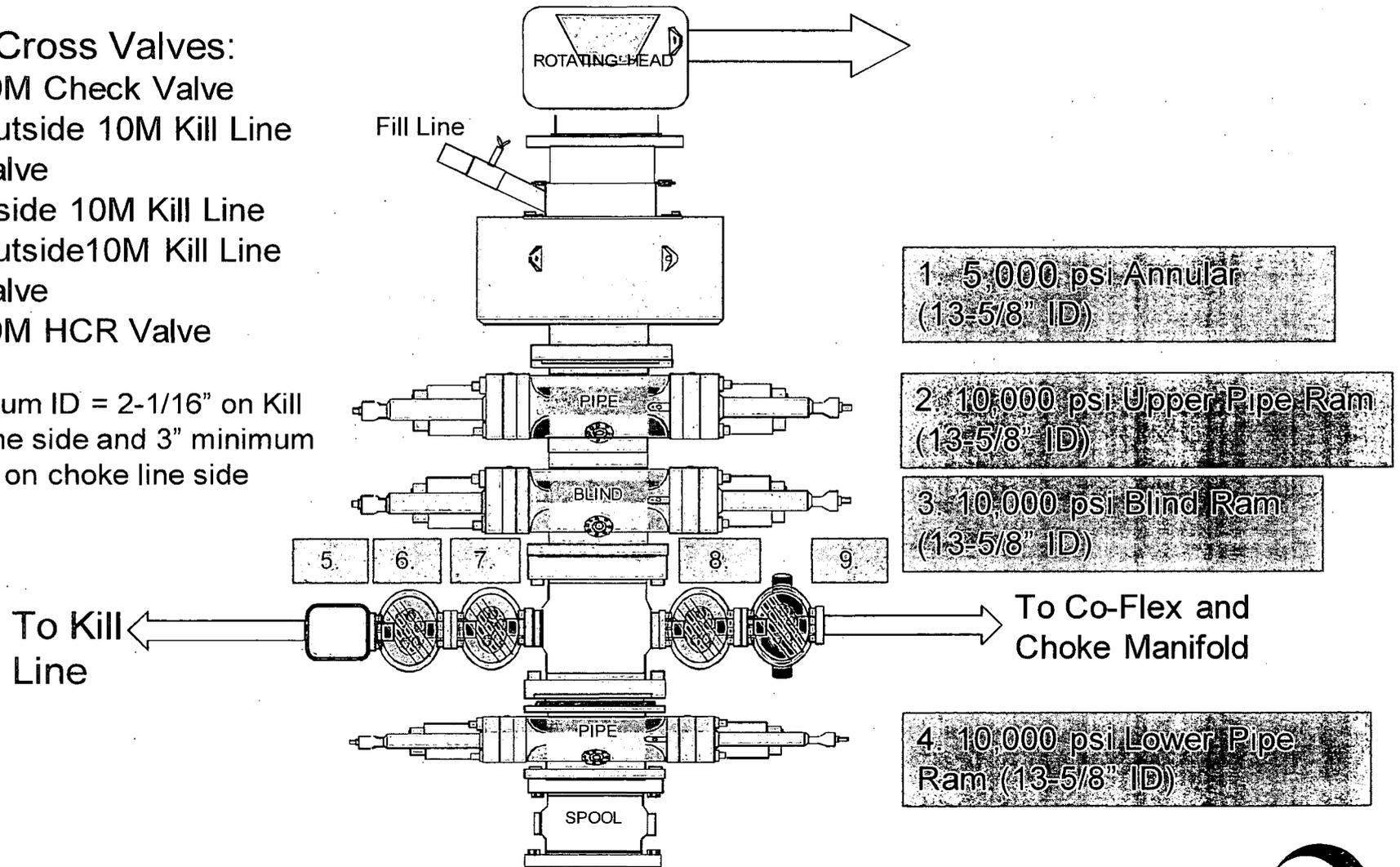


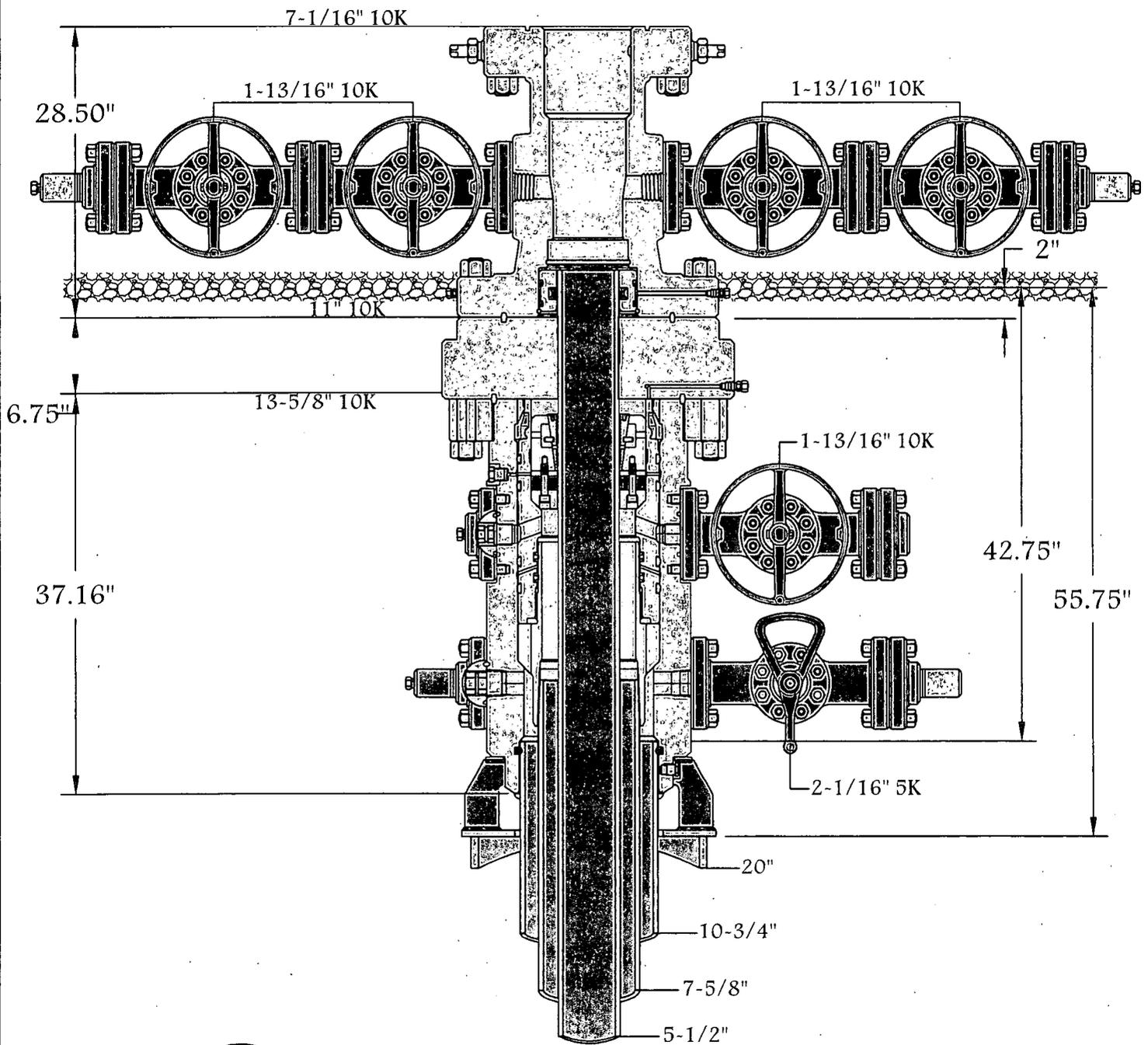
5/10M BOP Stack

Mud Cross Valves:

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

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





13-5/8" 10K MN-DS



Name:	Date:	Working Pressure:	#
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PERFORMANCE DATA

TMK UP SF TORQ™

5.500 in

20.00 lbs/ft

P110 HC

Technical Data Sheet

Tubular Parameters

Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	20.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P110 HC		Yield Load	641,000	lbs
PE Weight	19.81	lbs/ft	Tensile Load	728,000	lbs
Wall Thickness	0.361	in	Min. Internal Yield Pressure	12,640	psi
Nominal ID	4.778	in	Collapse Pressure	12,780	psi
Drift Diameter	4.653	in			
Nom. Pipe Body Area	5.828	in ²			

Connection Parameters

Connection OD	5.777	in
Connection ID	4.734	in
Make-Up Loss	5.823	in
Critical Section Area	5.875	in ²
Tension Efficiency	90.0	%
Compression Efficiency	90.0	%
Yield Load In Tension	576,000	lbs
Min. Internal Yield Pressure	12,640	psi
Collapse Pressure	12,780	psi
Uniaxial Bending	83	% / 100 ft

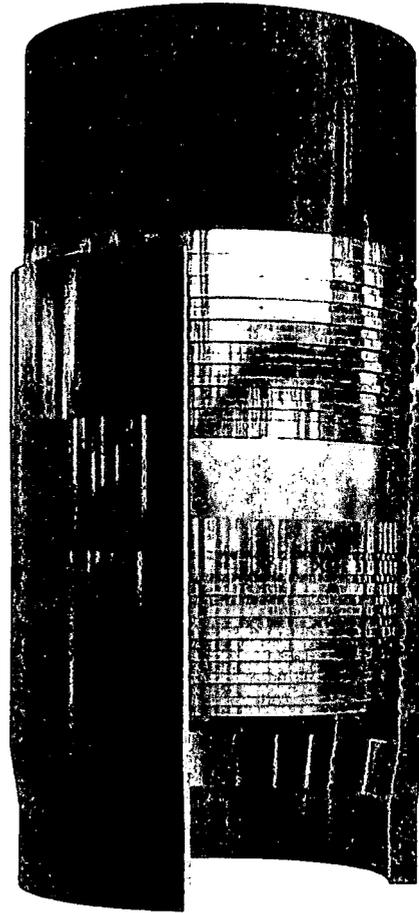
Make-Up Torques

Min. Make-Up Torque	15,700	ft-lbs
Opt. Make-Up Torque	19,600	ft-lbs
Max. Make-Up Torque	21,600	ft-lbs
Operating Torque	29,000	ft-lbs
Yield Torque	36,000	ft-lbs

Printed on: February-22-2018

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PERFORMANCE DATA

TMK UP TORQ™ DQW

5.500 in

20.00 lbs/ft

P110 CY

Technical Data Sheet

Tubular Parameters

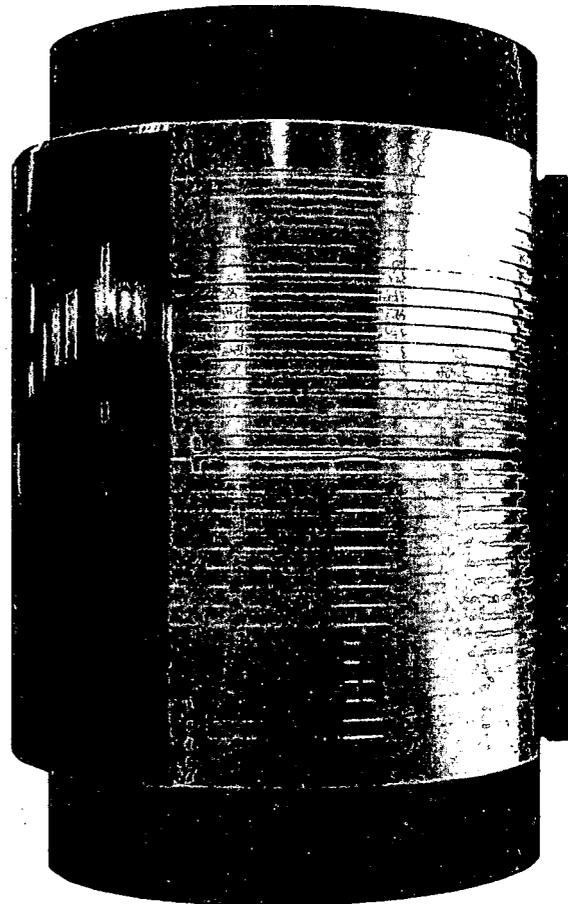
Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	20.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P110 CY		Yield Load	641,000	lbs
PE Weight	19.81	lbs/ft	Tensile Load	729,000	lbs
Wall Thickness	0.361	in	Min. Internal Yield Pressure	12,640	psi
Nominal ID	4.778	in	Collapse Pressure	11,110	psi
Drift Diameter	4.653	in			
Nom. Pipe Body Area	5.828	in ²			

Connection Parameters

Connection OD	6.050	in
Connection ID	4.778	in
Make-Up Loss	4.324	in
Critical Section Area	5.828	in ²
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	641,000	lbs
Min. Internal Yield Pressure	12,640	psi
Collapse Pressure	11,110	psi
Uniaxial Bending	92	°/ 100 ft

Make-Up Torques

Min. Make-Up Torque	14,000	ft-lbs
Opt. Make-Up Torque	16,000	ft-lbs
Max. Make-Up Torque	18,000	ft-lbs
Operating Torque	36,800	ft-lbs
Yield Torque	46,000	ft-lbs



Printed on: March-05-2019

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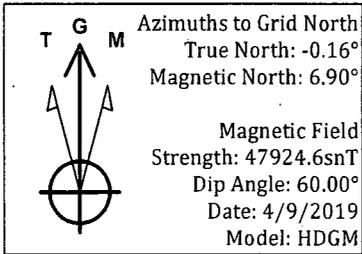




Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
 Site: HEIGHT CC 6_7 FED COM
 Well: Height CC 6_7 Federal Com 311H
 Wellbore: Wellbore #1
 Design: Permitting Plan

PROJECT DETAILS: NM DIRECTIONAL PLANS (NAD 1983)

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

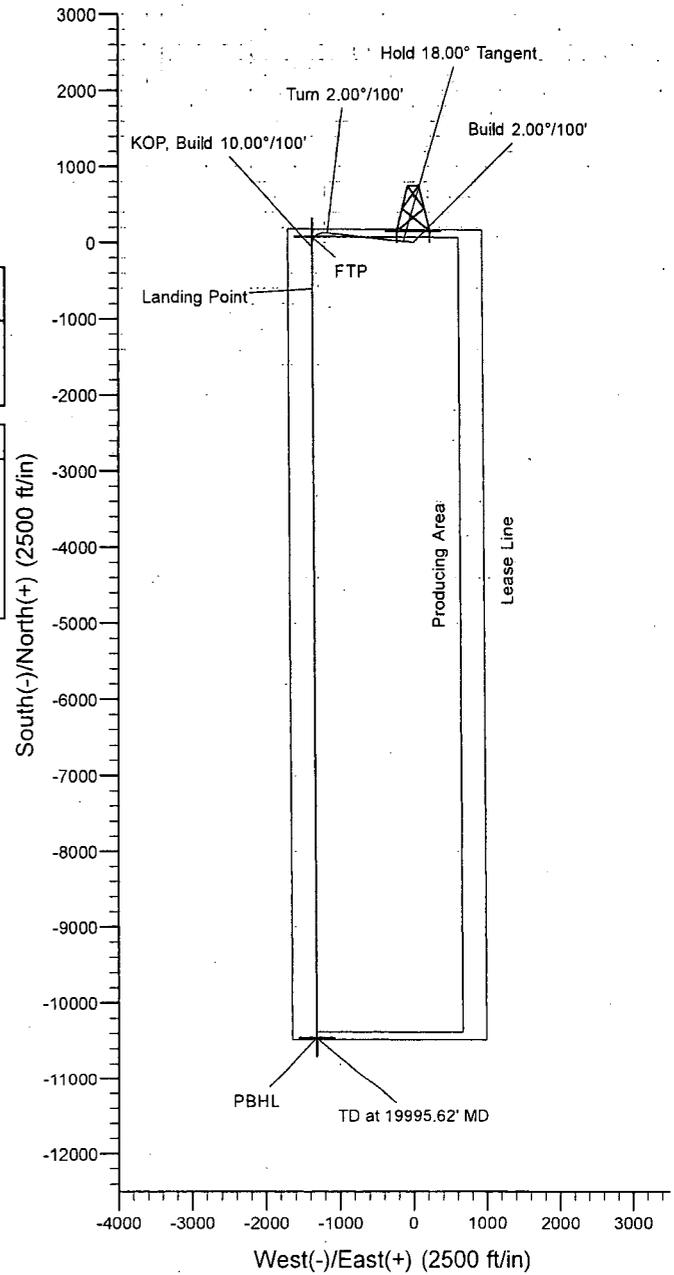
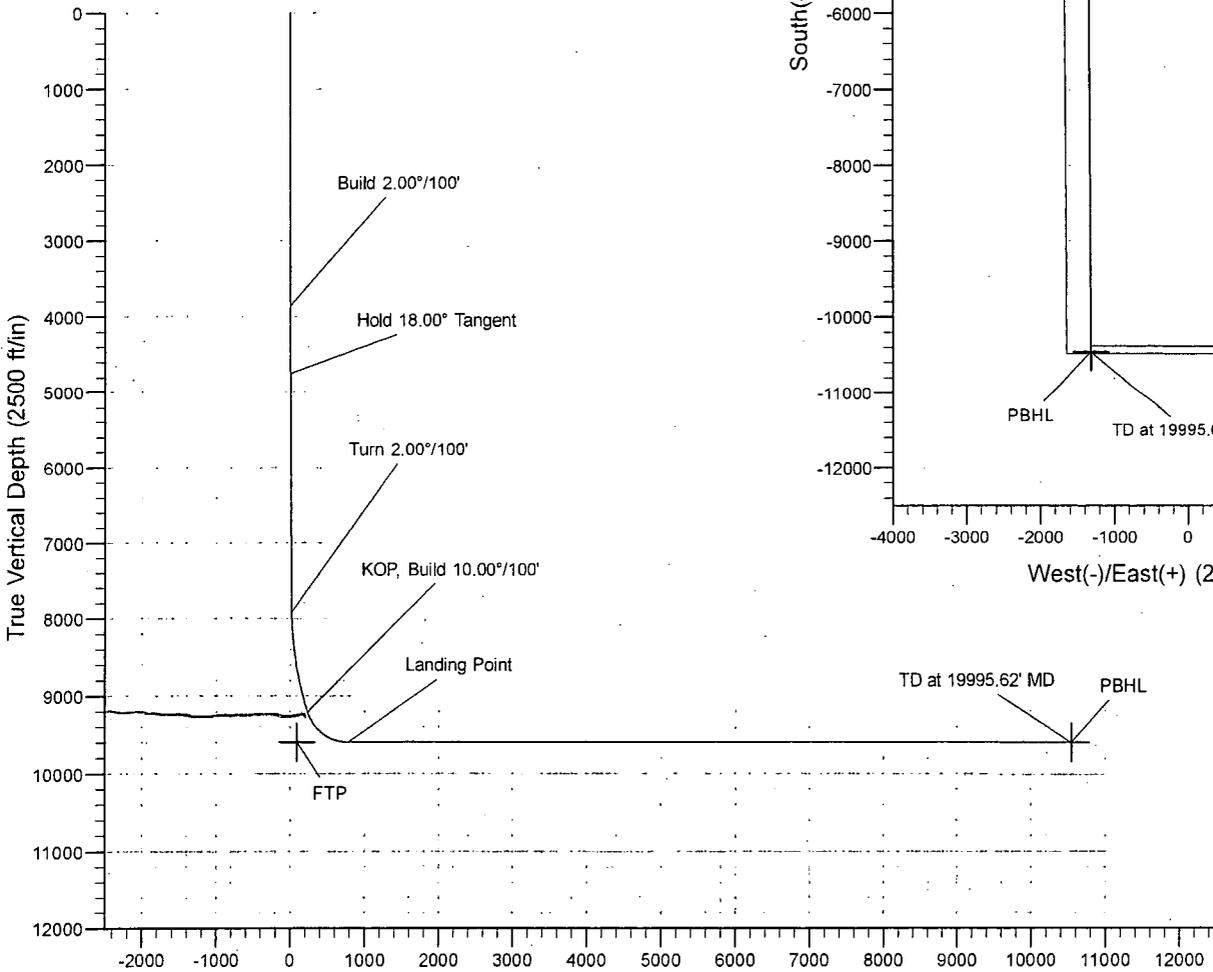


WELL DETAILS: Height CC 6_7 Federal Com 311H

+N/-S	+E/-W	Northing	Ground Level	Easting	Latitude	Longitude
0.00	0.00	456204.04	2957.70	636081.76	32° 15' 13.710553 N	104° 1' 36.653795 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3861.00	0.00	0.00	3861.00	0.00	0.00	0.00	0.00	0.00	Build 2.00°/100'
4760.82	18.00	276.14	4746.10	14.99	-139.35	2.00	276.14	2.52	Hold 18.00° Tangent
8091.49	18.00	276.14	7913.81	125.04	-1162.49	0.00	0.00	21.01	Turn 2.00°/100'
9423.62	18.00	179.70	9204.10	-62.16	-1369.77	2.00	-136.78	232.61	KOP, Build 10.00°/100'
10143.62	90.00	179.70	9600.00	-607.07	-1366.93	10.00	0.00	772.90	Landing Point
19995.62	90.00	179.70	9600.00	-10458.93	-1315.47	0.00	0.00	10541.34	TD at 19995.62' MD



TD at 19995.62' MD PBHL

OXY

**PRD NM DIRECTIONAL PLANS (NAD 1983)
HEIGHT CC 6_7 FED COM
Height CC 6_7 Federal Com 311H**

Wellbore #1

Plan: Permitting Plan

Standard Planning Report

11 April, 2019

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Height CC 6_7 Federal Com 311H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=26.5' @ 2984.20ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=26.5' @ 2984.20ft
Site:	HEIGHT CC 6_7 FED COM	North Reference:	Grid
Well:	Height CC 6_7 Federal Com 311H	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:	HEIGHT CC 6_7 FED COM				
Site Position:	Northing:	0.00 usft	Latitude:	30° 59' 18.403714 N	
From: Map	Easting:	0.00 usft	Longitude:	106° 3' 38.987298 W	
Position Uncertainty:	50.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.89 °

Well:	Height CC 6_7 Federal Com 311H					
Well Position	+N-S	456,093.29 ft	Northing:	456,204.04 usft	Latitude:	32° 15' 13.710553 N
	+E-W	635,927.35 ft	Easting:	636,081.76 usft	Longitude:	104° 1' 36.653795 W
Position Uncertainty	2.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	2,957.70 ft	

Wellbore:	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	HDGM	4/9/2019	7.07	60.00	47,925

Design:	Permitting Plan			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	187.17

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	
3,861.00	0.00	0.00	3,861.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,760.82	18.00	276.14	4,746.10	14.99	-139.35	2.00	2.00	0.00	276.14	
8,091.49	18.00	276.14	7,913.81	125.04	-1,162.49	0.00	0.00	0.00	0.00	
9,423.62	18.00	179.70	9,204.10	-62.16	-1,369.77	2.00	0.00	-7.24	-136.78	
10,143.62	90.00	179.70	9,600.00	-607.07	-1,366.93	10.00	10.00	0.00	0.00	
19,995.62	90.00	179.70	9,600.00	-10,458.93	-1,315.47	0.00	0.00	0.00	0.00	PBHL (Height CC)

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Height CC 6_7 Federal Com 311H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=26.5' @ 2984.20ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=26.5' @ 2984.20ft
Site:	HEIGHT CC 6_7 FED COM	North Reference:	Grid
Well:	Height CC 6_7 Federal Com 311H	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	0.00
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	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	0.00
500.00	0.00	0.00	500.00	0.00	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	0.00
700.00	0.00	0.00	700.00	0.00	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	0.00
900.00	0.00	0.00	900.00	0.00	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	0.00
1,100.00	0.00	0.00	1,100.00	0.00	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	0.00
1,300.00	0.00	0.00	1,300.00	0.00	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	0.00
1,500.00	0.00	0.00	1,500.00	0.00	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	0.00
1,700.00	0.00	0.00	1,700.00	0.00	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	0.00
1,900.00	0.00	0.00	1,900.00	0.00	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	0.00
2,100.00	0.00	0.00	2,100.00	0.00	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	0.00
2,300.00	0.00	0.00	2,300.00	0.00	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	0.00
2,500.00	0.00	0.00	2,500.00	0.00	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	0.00
2,700.00	0.00	0.00	2,700.00	0.00	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	0.00
2,900.00	0.00	0.00	2,900.00	0.00	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	0.00
3,100.00	0.00	0.00	3,100.00	0.00	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	0.00
3,300.00	0.00	0.00	3,300.00	0.00	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	0.00
3,500.00	0.00	0.00	3,500.00	0.00	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	0.00
3,700.00	0.00	0.00	3,700.00	0.00	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	0.00
3,861.00	0.00	0.00	3,861.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.78	276.14	3,900.00	0.03	-0.26	0.00	2.00	2.00	0.00	0.00
4,000.00	2.78	276.14	3,999.95	0.36	-3.35	0.06	2.00	2.00	0.00	0.00
4,100.00	4.78	276.14	4,099.72	1.07	-9.91	0.18	2.00	2.00	0.00	0.00
4,200.00	6.78	276.14	4,199.21	2.14	-19.92	0.36	2.00	2.00	0.00	0.00
4,300.00	8.78	276.14	4,298.28	3.59	-33.38	0.60	2.00	2.00	0.00	0.00
4,400.00	10.78	276.14	4,396.83	5.41	-50.27	0.91	2.00	2.00	0.00	0.00
4,500.00	12.78	276.14	4,494.71	7.59	-70.56	1.28	2.00	2.00	0.00	0.00
4,600.00	14.78	276.14	4,591.83	10.14	-94.25	1.70	2.00	2.00	0.00	0.00
4,700.00	16.78	276.14	4,688.06	13.05	-121.28	2.19	2.00	2.00	0.00	0.00
4,760.82	18.00	276.14	4,746.10	14.99	-139.35	2.52	2.00	2.00	0.00	0.00
4,800.00	18.00	276.14	4,783.36	16.28	-151.39	2.74	0.00	0.00	0.00	0.00
4,900.00	18.00	276.14	4,878.47	19.59	-182.11	3.29	0.00	0.00	0.00	0.00
5,000.00	18.00	276.14	4,973.58	22.89	-212.83	3.85	0.00	0.00	0.00	0.00
5,100.00	18.00	276.14	5,068.68	26.20	-243.54	4.40	0.00	0.00	0.00	0.00

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Height CC 6_7 Federal Com 311H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=26.5' @ 2984.20ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=26.5' @ 2984.20ft
Site:	HEIGHT CC 6_7 FED COM	North Reference:	Grid
Well:	Height CC 6_7 Federal Com 311H	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)
5,200.00	18.00	276.14	5,163.79	29.50	-274.26	4.96	0.00	0.00	0.00
5,300.00	18.00	276.14	5,258.90	32.80	-304.98	5.51	0.00	0.00	0.00
5,400.00	18.00	276.14	5,354.01	36.11	-335.70	6.07	0.00	0.00	0.00
5,500.00	18.00	276.14	5,449.11	39.41	-366.42	6.62	0.00	0.00	0.00
5,600.00	18.00	276.14	5,544.22	42.72	-397.14	7.18	0.00	0.00	0.00
5,700.00	18.00	276.14	5,639.33	46.02	-427.86	7.73	0.00	0.00	0.00
5,800.00	18.00	276.14	5,734.44	49.33	-458.58	8.29	0.00	0.00	0.00
5,900.00	18.00	276.14	5,829.54	52.63	-489.29	8.84	0.00	0.00	0.00
6,000.00	18.00	276.14	5,924.65	55.93	-520.01	9.40	0.00	0.00	0.00
6,100.00	18.00	276.14	6,019.76	59.24	-550.73	9.95	0.00	0.00	0.00
6,200.00	18.00	276.14	6,114.87	62.54	-581.45	10.51	0.00	0.00	0.00
6,300.00	18.00	276.14	6,209.97	65.85	-612.17	11.06	0.00	0.00	0.00
6,400.00	18.00	276.14	6,305.08	69.15	-642.89	11.62	0.00	0.00	0.00
6,500.00	18.00	276.14	6,400.19	72.45	-673.61	12.17	0.00	0.00	0.00
6,600.00	18.00	276.14	6,495.30	75.76	-704.33	12.73	0.00	0.00	0.00
6,700.00	18.00	276.14	6,590.40	79.06	-735.04	13.28	0.00	0.00	0.00
6,800.00	18.00	276.14	6,685.51	82.37	-765.76	13.84	0.00	0.00	0.00
6,900.00	18.00	276.14	6,780.62	85.67	-796.48	14.39	0.00	0.00	0.00
7,000.00	18.00	276.14	6,875.73	88.98	-827.20	14.95	0.00	0.00	0.00
7,100.00	18.00	276.14	6,970.83	92.28	-857.92	15.50	0.00	0.00	0.00
7,200.00	18.00	276.14	7,065.94	95.58	-888.64	16.06	0.00	0.00	0.00
7,300.00	18.00	276.14	7,161.05	98.89	-919.36	16.61	0.00	0.00	0.00
7,400.00	18.00	276.14	7,256.16	102.19	-950.07	17.17	0.00	0.00	0.00
7,500.00	18.00	276.14	7,351.26	105.50	-980.79	17.72	0.00	0.00	0.00
7,600.00	18.00	276.14	7,446.37	108.80	-1,011.51	18.28	0.00	0.00	0.00
7,700.00	18.00	276.14	7,541.48	112.10	-1,042.23	18.83	0.00	0.00	0.00
7,800.00	18.00	276.14	7,636.59	115.41	-1,072.95	19.39	0.00	0.00	0.00
7,900.00	18.00	276.14	7,731.69	118.71	-1,103.67	19.94	0.00	0.00	0.00
8,000.00	18.00	276.14	7,826.80	122.02	-1,134.39	20.50	0.00	0.00	0.00
8,091.49	18.00	276.14	7,913.81	125.04	-1,162.49	21.01	0.00	0.00	0.00
8,100.00	17.87	275.76	7,921.91	125.31	-1,165.10	21.06	2.00	-1.45	-4.46
8,200.00	16.48	270.89	8,017.46	127.07	-1,194.55	22.99	2.00	-1.39	-4.86
8,300.00	15.22	265.20	8,113.66	126.20	-1,221.81	27.26	2.00	-1.26	-5.69
8,400.00	14.12	258.59	8,210.40	122.68	-1,246.86	33.87	2.00	-1.09	-6.62
8,500.00	13.24	250.99	8,307.57	116.54	-1,269.65	42.81	2.00	-0.89	-7.59
8,600.00	12.61	242.50	8,405.05	107.77	-1,290.16	54.07	2.00	-0.63	-8.49
8,700.00	12.27	233.34	8,502.71	96.39	-1,308.36	67.64	2.00	-0.34	-9.16
8,800.00	12.24	223.91	8,600.44	82.40	-1,324.24	83.49	2.00	-0.02	-9.43
8,900.00	12.54	214.68	8,698.12	65.84	-1,337.77	101.62	2.00	0.29	-9.23
9,000.00	13.13	206.07	8,795.63	46.71	-1,348.93	121.99	2.00	0.59	-8.61
9,100.00	13.98	198.33	8,892.85	25.04	-1,357.73	144.59	2.00	0.85	-7.73
9,200.00	15.04	191.57	8,989.67	0.86	-1,364.13	169.38	2.00	1.07	-6.76
9,300.00	16.28	185.75	9,085.96	-25.81	-1,368.14	196.34	2.00	1.24	-5.82
9,400.00	17.66	180.77	9,181.61	-54.93	-1,369.74	225.43	2.00	1.38	-4.98
9,423.62	18.00	179.70	9,204.10	-62.16	-1,369.77	232.61	2.00	1.45	-4.51
9,500.00	25.64	179.70	9,274.95	-90.53	-1,369.62	260.74	10.00	10.00	0.00
9,600.00	35.64	179.70	9,360.88	-141.42	-1,369.36	311.20	10.00	10.00	0.00
9,700.00	45.64	179.70	9,436.67	-206.47	-1,369.02	375.69	10.00	10.00	0.00
9,800.00	55.64	179.70	9,500.01	-283.68	-1,368.61	452.26	10.00	10.00	0.00
9,900.00	65.64	179.70	9,548.98	-370.72	-1,368.16	538.56	10.00	10.00	0.00
10,000.00	75.64	179.70	9,582.09	-464.95	-1,367.67	631.99	10.00	10.00	0.00
10,100.00	85.64	179.70	9,598.34	-563.49	-1,367.15	729.69	10.00	10.00	0.00
10,143.62	90.00	179.70	9,600.00	-607.07	-1,366.93	772.90	10.00	10.00	0.00
10,200.00	90.00	179.70	9,600.00	-663.44	-1,366.63	828.80	0.00	0.00	0.00

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Height CC 6_7 Federal Com 311H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=26.5' @ 2984.20ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=26.5' @ 2984.20ft
Site:	HEIGHT CC 6_7 FED COM	North Reference:	Grid
Well:	Height CC 6_7 Federal Com 311H	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)
10,300.00	90.00	179.70	9,600.00	-763.44	-1,366.11	927.95	0.00	0.00	0.00
10,400.00	90.00	179.70	9,600.00	-863.44	-1,365.59	1,027.11	0.00	0.00	0.00
10,500.00	90.00	179.70	9,600.00	-963.44	-1,365.06	1,126.26	0.00	0.00	0.00
10,600.00	90.00	179.70	9,600.00	-1,063.44	-1,364.54	1,225.41	0.00	0.00	0.00
10,700.00	90.00	179.70	9,600.00	-1,163.44	-1,364.02	1,324.56	0.00	0.00	0.00
10,800.00	90.00	179.70	9,600.00	-1,263.44	-1,363.50	1,423.71	0.00	0.00	0.00
10,900.00	90.00	179.70	9,600.00	-1,363.44	-1,362.97	1,522.86	0.00	0.00	0.00
11,000.00	90.00	179.70	9,600.00	-1,463.43	-1,362.45	1,622.02	0.00	0.00	0.00
11,100.00	90.00	179.70	9,600.00	-1,563.43	-1,361.93	1,721.17	0.00	0.00	0.00
11,200.00	90.00	179.70	9,600.00	-1,663.43	-1,361.41	1,820.32	0.00	0.00	0.00
11,300.00	90.00	179.70	9,600.00	-1,763.43	-1,360.89	1,919.47	0.00	0.00	0.00
11,400.00	90.00	179.70	9,600.00	-1,863.43	-1,360.36	2,018.62	0.00	0.00	0.00
11,500.00	90.00	179.70	9,600.00	-1,963.43	-1,359.84	2,117.78	0.00	0.00	0.00
11,600.00	90.00	179.70	9,600.00	-2,063.43	-1,359.32	2,216.93	0.00	0.00	0.00
11,700.00	90.00	179.70	9,600.00	-2,163.42	-1,358.80	2,316.08	0.00	0.00	0.00
11,800.00	90.00	179.70	9,600.00	-2,263.42	-1,358.27	2,415.23	0.00	0.00	0.00
11,900.00	90.00	179.70	9,600.00	-2,363.42	-1,357.75	2,514.38	0.00	0.00	0.00
12,000.00	90.00	179.70	9,600.00	-2,463.42	-1,357.23	2,613.53	0.00	0.00	0.00
12,100.00	90.00	179.70	9,600.00	-2,563.42	-1,356.71	2,712.69	0.00	0.00	0.00
12,200.00	90.00	179.70	9,600.00	-2,663.42	-1,356.18	2,811.84	0.00	0.00	0.00
12,300.00	90.00	179.70	9,600.00	-2,763.42	-1,355.66	2,910.99	0.00	0.00	0.00
12,400.00	90.00	179.70	9,600.00	-2,863.41	-1,355.14	3,010.14	0.00	0.00	0.00
12,500.00	90.00	179.70	9,600.00	-2,963.41	-1,354.62	3,109.29	0.00	0.00	0.00
12,600.00	90.00	179.70	9,600.00	-3,063.41	-1,354.10	3,208.44	0.00	0.00	0.00
12,700.00	90.00	179.70	9,600.00	-3,163.41	-1,353.57	3,307.60	0.00	0.00	0.00
12,800.00	90.00	179.70	9,600.00	-3,263.41	-1,353.05	3,406.75	0.00	0.00	0.00
12,900.00	90.00	179.70	9,600.00	-3,363.41	-1,352.53	3,505.90	0.00	0.00	0.00
13,000.00	90.00	179.70	9,600.00	-3,463.41	-1,352.01	3,605.05	0.00	0.00	0.00
13,100.00	90.00	179.70	9,600.00	-3,563.41	-1,351.48	3,704.20	0.00	0.00	0.00
13,200.00	90.00	179.70	9,600.00	-3,663.40	-1,350.96	3,803.36	0.00	0.00	0.00
13,300.00	90.00	179.70	9,600.00	-3,763.40	-1,350.44	3,902.51	0.00	0.00	0.00
13,400.00	90.00	179.70	9,600.00	-3,863.40	-1,349.92	4,001.66	0.00	0.00	0.00
13,500.00	90.00	179.70	9,600.00	-3,963.40	-1,349.40	4,100.81	0.00	0.00	0.00
13,600.00	90.00	179.70	9,600.00	-4,063.40	-1,348.87	4,199.96	0.00	0.00	0.00
13,700.00	90.00	179.70	9,600.00	-4,163.40	-1,348.35	4,299.11	0.00	0.00	0.00
13,800.00	90.00	179.70	9,600.00	-4,263.40	-1,347.83	4,398.27	0.00	0.00	0.00
13,900.00	90.00	179.70	9,600.00	-4,363.39	-1,347.31	4,497.42	0.00	0.00	0.00
14,000.00	90.00	179.70	9,600.00	-4,463.39	-1,346.78	4,596.57	0.00	0.00	0.00
14,100.00	90.00	179.70	9,600.00	-4,563.39	-1,346.26	4,695.72	0.00	0.00	0.00
14,200.00	90.00	179.70	9,600.00	-4,663.39	-1,345.74	4,794.87	0.00	0.00	0.00
14,300.00	90.00	179.70	9,600.00	-4,763.39	-1,345.22	4,894.03	0.00	0.00	0.00
14,400.00	90.00	179.70	9,600.00	-4,863.39	-1,344.69	4,993.18	0.00	0.00	0.00
14,500.00	90.00	179.70	9,600.00	-4,963.39	-1,344.17	5,092.33	0.00	0.00	0.00
14,600.00	90.00	179.70	9,600.00	-5,063.38	-1,343.65	5,191.48	0.00	0.00	0.00
14,700.00	90.00	179.70	9,600.00	-5,163.38	-1,343.13	5,290.63	0.00	0.00	0.00
14,800.00	90.00	179.70	9,600.00	-5,263.38	-1,342.61	5,389.78	0.00	0.00	0.00
14,900.00	90.00	179.70	9,600.00	-5,363.38	-1,342.08	5,488.94	0.00	0.00	0.00
15,000.00	90.00	179.70	9,600.00	-5,463.38	-1,341.56	5,588.09	0.00	0.00	0.00
15,100.00	90.00	179.70	9,600.00	-5,563.38	-1,341.04	5,687.24	0.00	0.00	0.00
15,200.00	90.00	179.70	9,600.00	-5,663.38	-1,340.52	5,786.39	0.00	0.00	0.00
15,300.00	90.00	179.70	9,600.00	-5,763.38	-1,339.99	5,885.54	0.00	0.00	0.00
15,400.00	90.00	179.70	9,600.00	-5,863.37	-1,339.47	5,984.69	0.00	0.00	0.00
15,500.00	90.00	179.70	9,600.00	-5,963.37	-1,338.95	6,083.85	0.00	0.00	0.00
15,600.00	90.00	179.70	9,600.00	-6,063.37	-1,338.43	6,183.00	0.00	0.00	0.00

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Height CC 6_7 Federal Com 311H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=26.5' @ 2984.20ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=26.5' @ 2984.20ft
Site:	HEIGHT CC 6_7 FED COM	North Reference:	Grid
Well:	Height CC 6_7 Federal Com 311H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permitting Plan		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	N/S (ft)	E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
15,700.00	90.00	179.70	9,600.00	-6,163.37	-1,337.90	6,282.15	0.00	0.00	0.00	
15,800.00	90.00	179.70	9,600.00	-6,263.37	-1,337.38	6,381.30	0.00	0.00	0.00	
15,900.00	90.00	179.70	9,600.00	-6,363.37	-1,336.86	6,480.45	0.00	0.00	0.00	
16,000.00	90.00	179.70	9,600.00	-6,463.37	-1,336.34	6,579.61	0.00	0.00	0.00	
16,100.00	90.00	179.70	9,600.00	-6,563.36	-1,335.82	6,678.76	0.00	0.00	0.00	
16,200.00	90.00	179.70	9,600.00	-6,663.36	-1,335.29	6,777.91	0.00	0.00	0.00	
16,300.00	90.00	179.70	9,600.00	-6,763.36	-1,334.77	6,877.06	0.00	0.00	0.00	
16,400.00	90.00	179.70	9,600.00	-6,863.36	-1,334.25	6,976.21	0.00	0.00	0.00	
16,500.00	90.00	179.70	9,600.00	-6,963.36	-1,333.73	7,075.36	0.00	0.00	0.00	
16,600.00	90.00	179.70	9,600.00	-7,063.36	-1,333.20	7,174.52	0.00	0.00	0.00	
16,700.00	90.00	179.70	9,600.00	-7,163.36	-1,332.68	7,273.67	0.00	0.00	0.00	
16,800.00	90.00	179.70	9,600.00	-7,263.35	-1,332.16	7,372.82	0.00	0.00	0.00	
16,900.00	90.00	179.70	9,600.00	-7,363.35	-1,331.64	7,471.97	0.00	0.00	0.00	
17,000.00	90.00	179.70	9,600.00	-7,463.35	-1,331.11	7,571.12	0.00	0.00	0.00	
17,100.00	90.00	179.70	9,600.00	-7,563.35	-1,330.59	7,670.27	0.00	0.00	0.00	
17,200.00	90.00	179.70	9,600.00	-7,663.35	-1,330.07	7,769.43	0.00	0.00	0.00	
17,300.00	90.00	179.70	9,600.00	-7,763.35	-1,329.55	7,868.58	0.00	0.00	0.00	
17,400.00	90.00	179.70	9,600.00	-7,863.35	-1,329.03	7,967.73	0.00	0.00	0.00	
17,500.00	90.00	179.70	9,600.00	-7,963.35	-1,328.50	8,066.88	0.00	0.00	0.00	
17,600.00	90.00	179.70	9,600.00	-8,063.34	-1,327.98	8,166.03	0.00	0.00	0.00	
17,700.00	90.00	179.70	9,600.00	-8,163.34	-1,327.46	8,265.19	0.00	0.00	0.00	
17,800.00	90.00	179.70	9,600.00	-8,263.34	-1,326.94	8,364.34	0.00	0.00	0.00	
17,900.00	90.00	179.70	9,600.00	-8,363.34	-1,326.41	8,463.49	0.00	0.00	0.00	
18,000.00	90.00	179.70	9,600.00	-8,463.34	-1,325.89	8,562.64	0.00	0.00	0.00	
18,100.00	90.00	179.70	9,600.00	-8,563.34	-1,325.37	8,661.79	0.00	0.00	0.00	
18,200.00	90.00	179.70	9,600.00	-8,663.34	-1,324.85	8,760.94	0.00	0.00	0.00	
18,300.00	90.00	179.70	9,600.00	-8,763.33	-1,324.32	8,860.10	0.00	0.00	0.00	
18,400.00	90.00	179.70	9,600.00	-8,863.33	-1,323.80	8,959.25	0.00	0.00	0.00	
18,500.00	90.00	179.70	9,600.00	-8,963.33	-1,323.28	9,058.40	0.00	0.00	0.00	
18,600.00	90.00	179.70	9,600.00	-9,063.33	-1,322.76	9,157.55	0.00	0.00	0.00	
18,700.00	90.00	179.70	9,600.00	-9,163.33	-1,322.24	9,256.70	0.00	0.00	0.00	
18,800.00	90.00	179.70	9,600.00	-9,263.33	-1,321.71	9,355.85	0.00	0.00	0.00	
18,900.00	90.00	179.70	9,600.00	-9,363.33	-1,321.19	9,455.01	0.00	0.00	0.00	
19,000.00	90.00	179.70	9,600.00	-9,463.32	-1,320.67	9,554.16	0.00	0.00	0.00	
19,100.00	90.00	179.70	9,600.00	-9,563.32	-1,320.15	9,653.31	0.00	0.00	0.00	
19,200.00	90.00	179.70	9,600.00	-9,663.32	-1,319.62	9,752.46	0.00	0.00	0.00	
19,300.00	90.00	179.70	9,600.00	-9,763.32	-1,319.10	9,851.61	0.00	0.00	0.00	
19,400.00	90.00	179.70	9,600.00	-9,863.32	-1,318.58	9,950.77	0.00	0.00	0.00	
19,500.00	90.00	179.70	9,600.00	-9,963.32	-1,318.06	10,049.92	0.00	0.00	0.00	
19,600.00	90.00	179.70	9,600.00	-10,063.32	-1,317.54	10,149.07	0.00	0.00	0.00	
19,700.00	90.00	179.70	9,600.00	-10,163.32	-1,317.01	10,248.22	0.00	0.00	0.00	
19,800.00	90.00	179.70	9,600.00	-10,263.31	-1,316.49	10,347.37	0.00	0.00	0.00	
19,900.00	90.00	179.70	9,600.00	-10,363.31	-1,315.97	10,446.52	0.00	0.00	0.00	
19,995.62	90.00	179.70	9,600.00	-10,458.93	-1,315.47	10,541.34	0.00	0.00	0.00	

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Height CC 6_7 Federal Com 311H
Company:	ENGINEERING DESIGNS	TVD Reference:	RKB=26.5' @ 2984.20ft
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	RKB=26.5' @ 2984.20ft
Site:	HEIGHT CC 6_7 FED COM	North Reference:	Grid
Well:	Height CC 6_7 Federal Com 311H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permitting Plan		

Design Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/S (ft)	+E/W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL (Height CC 6_7		0.00	0.00	9,600.00	-10,458.93	-1,315.47	445,745.97	634,766.40	32° 13' 30.255410 N	104° 1' 52.314263
- plan hits target center										
- Point										
FTP (Height CC 6_7		0.00	0.00	9,600.00	79.91	-1,370.51	456,283.94	634,711.36	32° 15' 14.539668 N	104° 1' 52.610006
- plan misses target center by 321.65ft at 9637.35ft MD (9390.51 TVD, -164.16 N, -1369.24 E)										
- Point										

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/S (ft)	+E/W (ft)		
3,861.00	3,861.00	0.00	0.00	Build 2.00°/100'	
4,760.82	4,746.10	14.99	-139.35	Hold 18.00° Tangent	
8,091.49	7,913.82	125.04	-1,162.49	Turn 2.00°/100'	
<u>9,423.62</u>	9,204.09	-62.16	-1,369.77	KOP, Build 10.00°/100'	
10,143.62	9,600.00	-607.07	-1,366.93	Landing Point	
19,995.62	9,600.00	-10,458.93	-1,315.47	TD at 19995.62' MD	

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA INC
LEASE NO.:	NMNM13996
WELL NAME & NO.:	HEIGHT CC 6-7 FED COM 311H
SURFACE HOLE FOOTAGE:	170'/N & 1700'/W
BOTTOM HOLE FOOTAGE:	20'/S & 330'/W
LOCATION:	Sec. 6, T24S, R29E
COUNTY:	EDDY, NEW MEXICO



All previous COAs still apply expect the following:

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input type="checkbox"/> COM	<input type="checkbox"/> Unit

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The 10-3/4 inch surface casing shall be set at approximately **455** feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

- include the lead cement)
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Operator shall filled 1/3rd casing with fluid while running intermediate casing to maintain collapse safety factor.

2. The minimum required fill of cement behind the 7-5/8 inch intermediate casing is: Operator has proposed a two stage cement job, the depth may be adjusted as long as the cement is changed proportionally.

- a. First stage: Cement to circulate to **5327 ft.**

Operator shall Bradenhead Squeeze from surface on the 2nd stage.

- b. Second stage above :Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Additional cement may be required. Excess calculates to -21%.**

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

- ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

Annular spacing variance is approved.

- 3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - c. Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification. **Additional cement may be required. Excess calculates to 23%.**

C. PRESSURE CONTROL

- 1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
- 2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi.**
- 3. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the intermediate casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi.**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

- b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- c. Manufacturer representative shall install the test plug for the initial BOP test.
- d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Chaves and Roosevelt Counties
 Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
 During office hours call (575) 627-0272.
 After office hours call (575)

Eddy County
 Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
 (575) 361-2822

Lea County
 Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.

- BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
 3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

- e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips; which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
 - c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
 - d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - e. The results of the test shall be reported to the appropriate BLM office.
 - f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
 - g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi.

The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

ZS 041619

PERFORMANCE DATA

TMK UP DQX
Technical Data Sheet

5.500 in

20.00 lbs/ft

P-110

Tubular Parameters

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

Connection Parameters

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

Make-Up Torques

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

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NOTE:

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