

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.*Case Serial No.
NMNM40659

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.

IRIDIUM MDP1 28-21 FEDERAL COM 171H

2. Name of Operator
OXY USA INCContact: DAVID STEWART
E-Mail: david_stewart@oxy.com

9. API Well No.

30-015-45076

3a. Address

P.O. BOX 50250
MIDLAND, TX 79710

3b. Phone No. (include area code)

Ph: 432-685-5717

10. Field and Pool or Exploratory Area

WILDCAT WOLFCAMP

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 28 T23S R31E SWSW 430FSL 683FWL
32.269362 N Lat, 103.789083 W Lon

11. County or Parish, State

EDDY COUNTY, NM

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

TYPE OF SUBMISSION

TYPE OF ACTION

☒ Notice of Intent☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Hydraulic Fracturing☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other
Change to Original APD

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 recompleat 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 recompleat 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 amend the APD with the following changes.

1. Amend the TVD for the pilot hole and TMD for the horizontal lateral, see attached. ✓ *RWP*

2. Amend the surface, intermediate and production casings size, type, and depth and add the annular clearance request, see attached.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

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

a. 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.

RECEIVED**AUG 17 2018**

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

Electronic Submission #430042 verified by the BLM Well Information System

For OXY USA INC, sent to the Carlsbad

Committed to AFMSS for processing by MUSTAFA HAQUE on 08/14/2018 ()

DISTRICT II-ARTESIA O.C.D.

Name (Printed/Typed) DAVID STEWART

Title SR. REGULATORY ADVISOR

Signature (Electronic Submission)

Date 08/06/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Mustafa Haque

Title

Petroileum Engineer

Date 08-15-2018

Carlsbad Field Office

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.

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)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****✓ *RWP 8-23-18*

Additional data for EC transaction #430042 that would not fit on the form

32. Additional remarks, continued

b. Annular clearance less than 0.422" is acceptable for the curve and lateral portions of the production open hole section.

2. Amend the cementing program and add bradenhead squeeze stage, see attached.

OXY requests to pump a two stage cement job on either the intermediate II or production casing string with the first stage being pumped conventionally with the calculated TOC @ the Brushy Canyon and the second stage performed as a bradenhead squeeze with planned cement from the top of the Brushy Canyon to surface.

3. Amend BOP program and add BOP Break Testing request, see attached.

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

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

4. Amend the mud program, depth and type, see attached.

5. Amend the drilling conditions, see attached.

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

1. Geologic Formations

TVD of target	11,490'	Pilot Hole Depth	13,300'
MD at TD:	21,739'	Deepest Expected fresh water:	424'

Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	432	Brine
Salado	789	
Castile	2,724	
Lamar/Delaware	4,176	
Bell Canyon	4,211	Water (inj zone)
Cherry Canyon	5,108	Water (inj zone)
Brushy Canyon	6,398	Water (inj zone)
Bone Spring	8,000	Oil/Gas/Water
1st Bone Spring	8,762	Oil/Gas/Water
2nd Bone Spring	9,316	Oil/Gas/Water
3rd Bone Spring	10,164	Oil/Gas/Water
Wolfcamp (Lateral)	11,335	Oil/Gas/Water
Strawn (Pilot)	13,129	Oil/Gas/Water

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

2. Casing Program

Hole Size (in)	Casing Interval		Csg. Size (in)	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	Buoyant Body SF Tension	Buoyant Joint SF Tension
	From (ft)	To (ft)								
17.5	0	590	13.375	54.5	J-55	BTC	1.125	1.2	1.4	1.4
12.25	0	4,276	9.625	43.5	HCL-80	BTC	1.125	1.2	1.4	1.4
8.5	0	4,000	7.625	26.4	HCL-80	SF	1.125	1.2	1.4	1.4
	4,000	10,336	7.625	26.4	HCL-80	FJ	1.125	1.2	1.4	1.4
6.75	0	21,734	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 USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

Annular Clearance Variance Request

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

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

	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?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
Is well within the designated 4 string boundary.	N
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?	Y
If yes, are the first three strings cemented to surface?	Y
Is 2 nd 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?	

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

3. Cementing Program

Casing String	# Sks	Wt. (lb/gal)	Yld (ft3/sack)	H2O (gal/sk)	500# Comp. Strength (hours)	Slurry Description
Surface (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Surface (Tail)	703	14.8	1.33	6.365	5:26	Class C Cement, Accelerator
Intermediate (Lead)	1176	12.9	1.88	10.130	14:22	Pozzolan Cement, Retarder
Intermediate (Tail)	155	14.8	1.33	6.370	12:45	Class C Cement, Accelerator
Intermediate II 1st Stage (Lead)	125	13.2	1.65	8.640	11:54	Class H Cement, Retarder, Dispersant, Salt
Intermediate II 1st Stage (Tail)	51	13.2	1.65	8.640	11:54	Class H Cement, Retarder, Dispersant, Salt
<u>Intermediate II 2nd Stage (Tail Slurry) to be pumped as Bridgmanhead Squeeze from surface, down the Intermediate annulus</u>						
Intermediate II 2nd Stage (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate II 2nd Stage (Tail)	432	12.8	1.92	10.410	23:10	Class C Cement, Accelerator
Production (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Production (Tail)	872	13.2	1.38	6.686	3:49	Class H Cement, Retarder, Dispersant, Salt

Casing String	Top (ft)	Bottom (ft)	% Excess
Surface (Lead)	N/A	N/A	N/A
Surface (Tail)	0	590	100%
Intermediate (Lead)	0	3776	100%
Intermediate (Tail)	3776	4276	20%
Intermediate II 1st Stage (Lead)	6778	9314	5%
Intermediate II 1st Stage (Tail)	9314	10336	5%
Intermediate II 2nd Stage (Lead)	N/A	N/A	N/A
Intermediate II 2nd Stage (Tail)	0	6648 6128	25%
Production (Lead)	N/A	N/A	N/A
Production (Tail)	9836	21734	20%

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

Pilot Hole Cementing Specs:
Pilot Hole Depth: 13,314' MD
KOP: 10,865' MD (Open Hole)

Plug Top (MD)	Plug Bottom (MD)	Excess	No. Sacks	Wt. (lb/gal)	Yld (ft3/sack)	Water (gal/sk)	Slurry Description and Cement Type
12,665	13,314	10%	172	14.4	1.032	4.13	NeoCem TM
11,965	12,665	10%	185	14.4	1.032	4.13	NeoCem TM
11,265	11,965	10%	185	16.4	1.032	4.13	NeoCem TM
10,565	11,265	10%	172	17.5	0.952	3.51	Class H Cement, Retarder

Note: The first to third plugs are designed to isolate the high pressure zones in the Pilot Hole from the KOP. The fourth plug is designed to provide a strong foundation for sidetracking at the KOP.

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12.25" Intermediate	13-5/8"	2M	Annular	✓	70% of working pressure
			Blind Ram	✓	250/2000psi
			Pipe Ram		
			Double Ram	✓	
			Other*		
8.5" Intermediate II	13-5/8"	5M	Annular	✓	70% of working pressure
			Blind Ram	✓	250/5000psi
			Pipe Ram		
			Double Ram	✓	
			Other*		
6.75" Pilot	13-5/8"	5M	Annular	✓	70% of working pressure
		10M	Blind Ram	✓	250/10000psi
			Pipe Ram		
			Double Ram	✓	
			Other*		
6.75" Lateral	13-5/8"	5M	Annular	✓	70% of working pressure
			Blind Ram	✓	250/5000psi
			Pipe Ram		
			Double Ram	✓	
			Other*		

*Specify if additional ram is utilized.

Per BLM's Memorandum No. NM-2017-008: *Decision and Rationale for a Variance Allowing the Use of a 5M Annular Preventer with a 10M BOP Stack*, Oxy requests to employ a 5M annular with a 10M BOPE stack in the pilot and lateral sections of the well and will ensure that two barriers to flow are maintained at all times. Please see attached Well Control Plan.

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.

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

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

BOP Break Testing Request

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

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

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

5. Mud Program

PILOT

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	590	Water-Based Mud	8.6-8.8	40-60	N/C
590	4,276	Saturated Brine-Based Mud	9.8-10.0	35-45	N/C
4,276	10,336	Water-Based Mud	8.2-9.6	38-50	N/C
10,336	13,314	Water-Based Mud	10.0-13.5	42-48	< 10cc

LATERAL

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
10,336	21,734	Water-Based Mud 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	Pilot & Lateral
Yes	Triple Combo (Spectral Gamma, Dipole Sonic, CMR)	Pilot

OXY USA Inc. - Iridium MDP1 28-21 Federal Com 171H – Amended Drill Plan

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	9322 psi (Pilot) 7170 psi (Lateral)
Abnormal Temperature	No
BH Temperature at deepest TVD	187°F (Pilot) 172°F (Lateral)

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	H ₂ S is present
Y	H ₂ S 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 two 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: 1774.5 (Pilot & Lateral) bbls

9. Company Personnel

Name	Title	Office Phone	Mobile Phone
Garrett Granier	Drilling Engineer	713-513-6633	832-265-0581
Randy Neel	Drilling Engineer Supervisor	713-215-7987	713-517-5544
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
John Willis	Drilling Manager	713-366-5556	713-259-1417

Oxy Iridium MDP1 28-21 Federal Com 171H ST01 Rev1 APS 05Jul18

Proposal Geodetic Report

(Def Plan)



Report Date: July 17, 2018 - 03:31 PM
 Client: OXY
 Field: NM Eddy County (NAD 83)
 Structure / Slot: Oxy Iridium MDP1 28-21 Federal Com 171H / Iridium MDP1 28-21 Federal Com 171H
 Well: Iridium MDP1 28-21 Federal Com 171H
 Borehole: ST01
 UWI / API#: Unknown / Unknown

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 358.267 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB=30'
 TVD Reference Elevation: 3399.700 ft above MSL
 Seabed / Ground Elevation: 3399.700 ft above MSL
 Magnetic Declination: 6.909 °

Survey Name: Oxy Iridium MDP1 28-21 Federal Com 171H ST01 Rev1 APS 05Jul18

Total Gravity Field Strength: 998.4514mgm (0.80885 Based)

Survey Date: July 17, 2018
 Tort / AHD / DDI / ERD Ratio: 108.724 ° / 10854.913 ft / 6.349 / 0.945
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 16' 9.70294", W 103° 47' 20.69803"
 Location Grid NE Y/X: N 482153.450 ftUS, E 709554.680 ftUS
 CRS Grid Convergence Angle: 0.2906 °
 Grid Scale Factor: 0.9999415
 Version / Patch: 2.10.720.0

Gravity Model: GARM
 Total Magnetic Field Strength: 48031.570 nT
 Magnetic Dip Angle: 60.018 °
 Declination Date: July 17, 2018
 Magnetic Declination Model: HDGM 2018
 North Reference: Grid North
 Grid Convergence Used: 0.2906 °
 Total Corr Mag North->Grid North: 6.6182 °
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS ("/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	100.00	0.00	208.78	100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	200.00	0.00	208.78	200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	300.00	0.00	208.78	300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	400.00	0.00	208.78	400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	500.00	0.00	208.78	500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	600.00	0.00	208.78	600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	700.00	0.00	208.78	700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	800.00	0.00	208.78	800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	900.00	0.00	208.78	900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1000.00	0.00	208.78	1000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1100.00	0.00	208.78	1100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1200.00	0.00	208.78	1200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1300.00	0.00	208.78	1300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1400.00	0.00	208.78	1400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1500.00	0.00	208.78	1500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1600.00	0.00	208.78	1600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1700.00	0.00	208.78	1700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1800.00	0.00	208.78	1800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	1900.00	0.00	208.78	1900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2000.00	0.00	208.78	2000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2100.00	0.00	208.78	2100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2200.00	0.00	208.78	2200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2300.00	0.00	208.78	2300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2400.00	0.00	208.78	2400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2500.00	0.00	208.78	2500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2600.00	0.00	208.78	2600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2700.00	0.00	208.78	2700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2800.00	0.00	208.78	2800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	2900.00	0.00	208.78	2900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3000.00	0.00	208.78	3000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3100.00	0.00	208.78	3100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3200.00	0.00	208.78	3200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3300.00	0.00	208.78	3300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3400.00	0.00	208.78	3400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3500.00	0.00	208.78	3500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3600.00	0.00	208.78	3600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3700.00	0.00	208.78	3700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3800.00	0.00	208.78	3800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	3900.00	0.00	208.78	3900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4000.00	0.00	208.78	4000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4100.00	0.00	208.78	4100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4200.00	0.00	208.78	4200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4300.00	0.00	208.78	4300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4400.00	0.00	208.78	4400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4500.00	0.00	208.78	4500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4600.00	0.00	208.78	4600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4700.00	0.00	208.78	4700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4800.00	0.00	208.78	4800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	4900.00	0.00	208.78	4900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5000.00	0.00	208.78	5000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5100.00	0.00	208.78	5100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5200.00	0.00	208.78	5200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5300.00	0.00	208.78	5300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5400.00	0.00	208.78	5400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5500.00	0.00	208.78	5500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5600.00	0.00	208.78	5600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5700.00	0.00	208.78	5700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5800.00	0.00	208.78	5800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	5900.00	0.00	208.78	5900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6000.00	0.00	208.78	6000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6100.00	0.00	208.78	6100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6200.00	0.00	208.78	6200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6300.00	0.00	208.78	6300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6400.00	0.00	208.78	6400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6500.00	0.00	208.78	6500.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6600.00	0.00	208.78	6600.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6700.00	0.00	208.78	6700.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6800.00	0.00	208.78	6800.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	6900.00	0.00	208.78	6900.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	7000.00	0.00	208.78	7000.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	7100.00	0.00	208.78	7100.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	7200.00	0.00	208.78	7200.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	7300.00	0.00	208.78	7300.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	7400.00	0.00	208.78	7400.00	0.00	0.00	0.00	0.00	482153.45	709554.68	N 32 16 9.70	W 103 47 20.70
	7500.00	0.00	208.78	7500.00	0.00	0.00	0.00	0.00	482153.45			

Comments	MD	Incl	Adj Grid	TYD	VSEC	NS	EW	DL5	Northng	Easting	Latitude	Longitude
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(N/S...)	(E/W...)
Build 271100												
8500.00	0.00	0.00	208.78	8414.33	-1.10	0.00	-0.62	0.00	462152.33	709554.68	32 16 8.90	W 103 47 20.70
8600.00	3.71	0.00	208.78	8509.87	-1.12	0.00	-2.90	2.00	462152.33	709554.78	32 16 8.65	W 103 47 20.73
8700.00	5.71	0.00	208.78	8599.53	-1.28	0.00	-6.85	2.00	462140.98	709547.88	32 16 9.48	W 103 47 20.78
8800.00	7.71	0.00	208.78	8689.84	-2.23	0.00	-12.48	2.00	462130.75	709542.20	32 16 9.48	W 103 47 20.84
8900.00	9.71	0.00	208.78	8779.94	-3.23	0.00	-16.77	2.00	462117.45	709534.91	32 16 9.35	W 103 47 20.94
9000.00	10.00	0.00	208.78	8869.16	-3.50	0.00	-20.95	2.00	462105.31	709531.73	32 16 9.35	W 103 47 21.03
9100.00	10.00	0.00	208.78	8959.53	-3.71	0.00	-28.11	0.00	462102.27	709528.57	32 16 9.20	W 103 47 21.13
9200.00	10.00	0.00	208.78	9049.84	-3.71	0.00	-36.47	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9300.00	10.00	0.00	208.78	9139.13	-3.71	0.00	-44.83	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9400.00	10.00	0.00	208.78	9229.41	-3.71	0.00	-53.19	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9500.00	10.00	0.00	208.78	9319.68	-3.71	0.00	-61.55	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9600.00	10.00	0.00	208.78	9409.95	-3.71	0.00	-69.91	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9700.00	10.00	0.00	208.78	9500.22	-3.71	0.00	-78.27	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9800.00	10.00	0.00	208.78	9590.49	-3.71	0.00	-86.63	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
9900.00	10.00	0.00	208.78	9680.76	-3.71	0.00	-94.99	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10000.00	10.00	0.00	208.78	9771.03	-3.71	0.00	-103.35	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10100.00	10.00	0.00	208.78	9861.30	-3.71	0.00	-111.71	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10200.00	10.00	0.00	208.78	9951.57	-3.71	0.00	-120.07	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10300.00	10.00	0.00	208.78	10041.84	-3.71	0.00	-128.43	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10400.00	10.00	0.00	208.78	10132.11	-3.71	0.00	-136.79	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10500.00	10.00	0.00	208.78	10222.38	-3.71	0.00	-145.15	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10600.00	10.00	0.00	208.78	10312.65	-3.71	0.00	-153.51	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10700.00	10.00	0.00	208.78	10402.92	-3.71	0.00	-161.87	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10800.00	10.00	0.00	208.78	10493.19	-3.71	0.00	-170.23	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10900.00	10.00	0.00	208.78	10583.46	-3.71	0.00	-178.59	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11000.00	10.00	0.00	208.78	10673.73	-3.71	0.00	-186.95	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
Build 107100												
10884.73	10.00	0.00	208.78	10832.56	-3.71	0.00	-194.00	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
10900.00	7.14	0.00	208.78	10922.83	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11000.00	6.86	0.00	208.78	11012.10	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11100.00	6.58	0.00	208.78	11101.37	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11200.00	6.30	0.00	208.78	11190.64	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11300.00	6.02	0.00	208.78	11279.91	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11400.00	5.74	0.00	208.78	11369.18	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11500.00	5.46	0.00	208.78	11458.45	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11600.00	5.18	0.00	208.78	11547.72	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11700.00	4.90	0.00	208.78	11636.99	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11800.00	4.62	0.00	208.78	11726.26	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
11900.00	4.34	0.00	208.78	11815.53	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12000.00	4.06	0.00	208.78	11904.80	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12100.00	3.78	0.00	208.78	11994.07	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12200.00	3.50	0.00	208.78	12083.34	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12300.00	3.22	0.00	208.78	12172.61	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12400.00	2.94	0.00	208.78	12261.88	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12500.00	2.66	0.00	208.78	12351.15	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12600.00	2.38	0.00	208.78	12440.42	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12700.00	2.10	0.00	208.78	12529.69	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12800.00	1.82	0.00	208.78	12618.96	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
12900.00	1.54	0.00	208.78	12708.23	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13000.00	1.26	0.00	208.78	12797.50	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13100.00	0.98	0.00	208.78	12886.77	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13200.00	0.70	0.00	208.78	12976.04	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13300.00	0.42	0.00	208.78	13065.31	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13400.00	0.14	0.00	208.78	13154.58	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13500.00	0.00	0.00	208.78	13243.85	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13600.00	0.00	0.00	208.78	13333.12	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13700.00	0.00	0.00	208.78	13422.39	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13800.00	0.00	0.00	208.78	13511.66	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
13900.00	0.00	0.00	208.78	13600.93	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14000.00	0.00	0.00	208.78	13690.20	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14100.00	0.00	0.00	208.78	13779.47	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14200.00	0.00	0.00	208.78	13868.74	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14300.00	0.00	0.00	208.78	13958.01	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14400.00	0.00	0.00	208.78	14047.28	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14500.00	0.00	0.00	208.78	14136.55	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14600.00	0.00	0.00	208.78	14225.82	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14700.00	0.00	0.00	208.78	14315.09	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14800.00	0.00	0.00	208.78	14404.36	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
14900.00	0.00	0.00	208.78	14493.63	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15000.00	0.00	0.00	208.78	14582.90	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15100.00	0.00	0.00	208.78	14672.17	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15200.00	0.00	0.00	208.78	14761.44	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15300.00	0.00	0.00	208.78	14850.71	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15400.00	0.00	0.00	208.78	14940.00	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15500.00	0.00	0.00	208.78	15029.27	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82
15600.00	0.00	0.00	208.78	15118.54	-3.71	0.00	-198.97	0.00	462097.05	709518.21	32 16 8.90	W 103 47 21.82

Schlumberger

OXY



Borehole: **ST01** Well: **Iridium MDP1 28-21 Federal Com 171H** Field: **NM Eddy County (NAD 83)** Structure: **Oxy Iridium MDP1 28-21 Federal Com 171H**

Gravity & Magnetic Parameters

Model: **HDOM 2018** Dip: **60.918°** Date: **17-Jul-2018**
 MagDec: **6.909°** F8: **4831.57nT** Gravity F8: **958.451mgm (3.80665 Based)**

Surface Location

NAD83 New Mexico State Plane, Easton Zone, US Feet
 Lat: **N 32 16 8.78** Northing: **442163.48RUS** Grid Conv: **0.2806°**
 Lon: **W 103 47 29.79** Easting: **109554.68RUS** Scale Fact: **0.9993415**

Miscellaneous

Iridium MDP1 28-21 Federal Com 171H
 21 Federal Com 171H
 Oxy Iridium MDP1 28-21 Federal Com 171H ST01 Rev1 APS 05Jul18

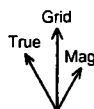
Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler	432.00	0.00	208.78	432.00	0.00	0.00	0.00	0.00
Salado	789.00	0.00	208.78	789.00	0.00	0.00	0.00	0.00
Castile	2724.00	0.00	208.78	2724.00	0.00	0.00	0.00	0.00
Lamar	4176.00	0.00	208.78	4176.00	0.00	0.00	0.00	0.00
Bell Canyon	4211.00	0.00	208.78	4211.00	0.00	0.00	0.00	0.00
Cherry Canyon	5097.00	0.00	208.78	5097.00	0.00	0.00	0.00	0.00
ICP1	5176.00	0.00	208.78	5176.00	0.00	0.00	0.00	0.00
Brushy Canyon	6395.00	0.00	208.78	6395.00	0.00	0.00	0.00	0.00
Bone Spring	8000.00	0.00	208.78	8000.00	0.00	0.00	0.00	0.00
Build 2"/100'	8414.33	0.00	208.78	8414.33	0.00	0.00	0.00	0.00
1st Bone Spring	8762.88	6.97	208.78	8762.00	-18.24	-18.56	-10.19	2.00
Hold Tangent	8914.33	10.00	208.78	8911.79	-37.50	-38.15	-20.95	2.00
2nd Bone Spring	9324.77	10.00	208.78	9316.00	-88.90	-100.62	-55.26	0.00
3rd Bone Spring	10185.85	10.00	208.78	10184.00	-227.72	-231.87	-127.25	0.00
ICP2	10335.85	10.00	208.78	10311.72	-250.16	-254.50	-139.79	0.00
Build/Turn 10"/100'	10864.73	10.00	208.78	10832.56	-329.28	-335.00	-184.00	0.00
Wolfcamp	11419.55	46.96	355.04	11335.04	-154.49	-161.46	-228.23	10.00
Landing Point	11851.96	90.00	359.64	11490.00	238.24	230.96	-244.00	10.00
Iridium MDP1 28-21 Federal Com 171H PBHL	21734.29	90.00	359.64	11490.00	10117.72	10113.09	-306.02	0.00
Wolfcamp B	NaN			11835.00				

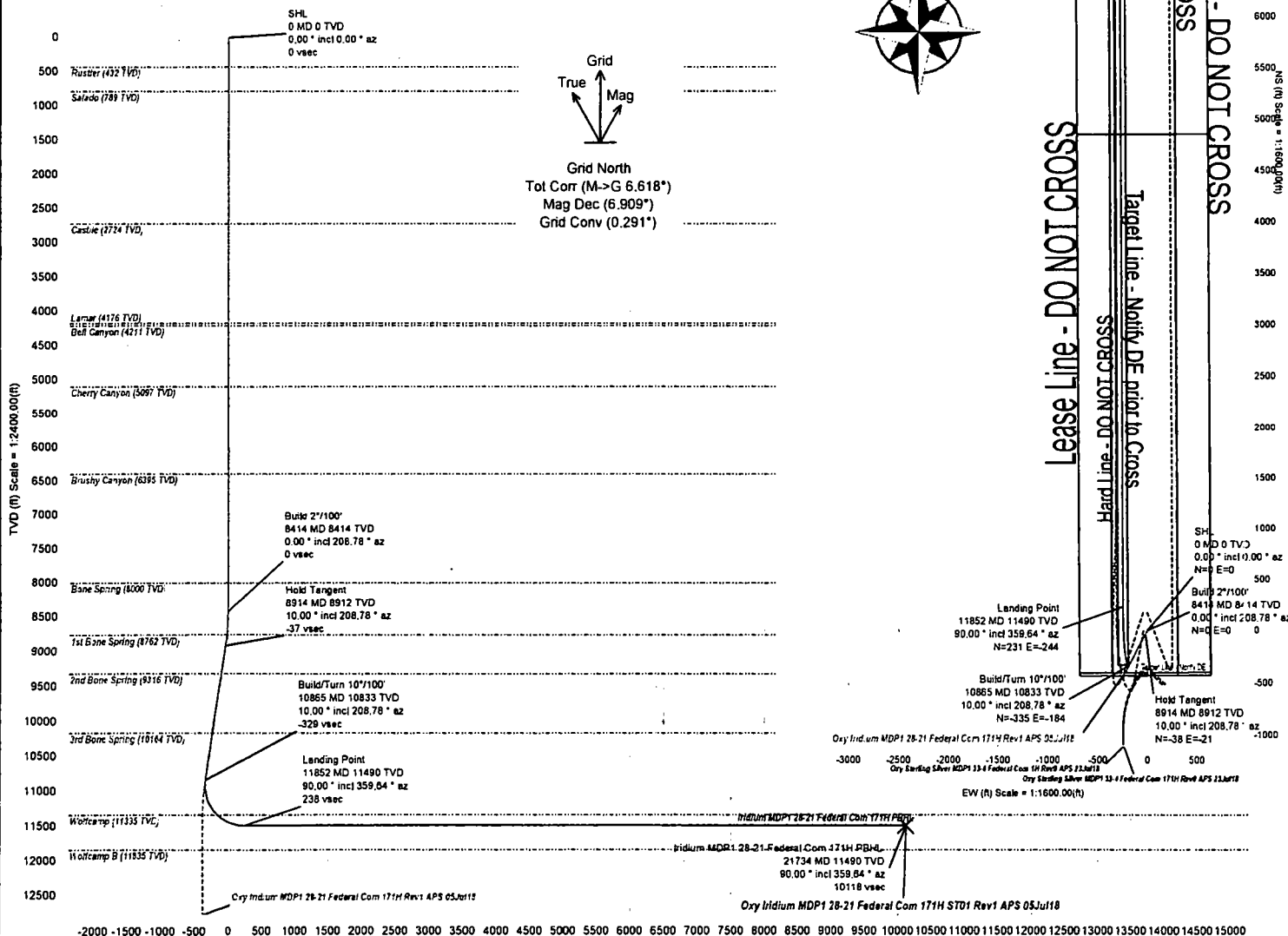
Oxy Iridium MDP1 28-21 Federal Com 171H ST01 Rev1 APS 05Jul18

Oxy Iridium MDP1 28-21 Federal Com 171H Rev1 APS 14Jul18
 Oxy Iridium MDP1 28-21 Federal Com 171H Rev2 APS 14Jul18

Iridium MDP1 28-21 Federal Com 171H PBHL
 21734 MD 11490 TVD
 90.00° incl 359.64° az
 N=10113 E=-306



Grid North
 Tot Corr (M->G 6.618°)
 Mag Dec (6.909°)
 Grid Conv (0.291°)





OXY



Borehole:	Well:	Field:	Structure:
Pilot Hole	Iridium MDP1 28-21 Federal Com 171H	NM Eddy County (NAD 83)	Oxy Iridium MDP1 28-21 Federal Com 171H

Gravity & Magnetic Parameters

Model:	HDGM 2018	Dip:	60.918°	Date:	17-Jul-2018
MagDec:	6.909°	F8:	48031.67nT	Gravity F8:	998.451mgm (9.80665 Based)

Surface Location

Surface Location					NAD83 New Mexico State Plane, Eastern Zone, US Feet				
Lat:	N	32	16	8.70	Northing:	462153.458US	Grid Conv:	0.2908°	
Lon:	W	103	47	20.70	Easting:	709554.680US	Scale Fact:	0.999341	

Miscellaneous

Miscellaneous
 Iridium MDP# 28.
 Slot: 21 Federal Com TVD Ref: RKB=30°3389.7ft above MSL
 171H
 Plan: Oxy Iridium MDP# 28-21 Federal Com 171H Rev1 AP# 05Jun18

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	432.00	0.00	208.78	432.00	0.00	0.00	0.00	0.00
Salado	789.00	0.00	208.78	789.00	0.00	0.00	0.00	0.00
Castile	2724.00	0.00	208.78	2724.00	0.00	0.00	0.00	0.00
Lamar	4176.00	0.00	208.78	4176.00	0.00	0.00	0.00	0.00
Bell Canyon	4211.00	0.00	208.78	4211.00	0.00	0.00	0.00	0.00
Cherry Canyon	5097.00	0.00	208.78	5097.00	0.00	0.00	0.00	0.00
ICP1	5176.00	0.00	208.78	5176.00	0.00	0.00	0.00	0.00
Brushy Canyon	6395.00	0.00	208.78	6395.00	0.00	0.00	0.00	0.00
Bone Spring	8000.00	0.00	208.78	8000.00	0.00	0.00	0.00	0.00
Build 2"/100'	8414.19	0.00	208.78	8414.19	0.00	0.00	0.00	0.00
1st Bone Spring	8762.86	6.97	208.78	8762.00	-18.26	-18.57	-10.20	2.00
Hold Tangent	8914.19	10.00	208.78	8911.68	-37.50	-38.15	-20.95	2.00
2nd Bone Spring	9324.77	10.00	208.78	9316.00	-88.92	-100.64	-55.28	0.00
3rd Bone Spring	10185.85	10.00	208.78	10164.00	-227.74	-231.70	-127.28	0.00
ICP2	10335.85	10.00	208.78	10311.72	-250.18	-254.53	-139.80	0.00
Drop 2"/100	10914.59	10.00	208.78	10881.86	-338.76	-342.81	-188.18	0.00
Wolfcamp	11370.46	0.88	208.78	11335.00	-373.97	-380.46	-208.97	2.00
Hold Vertical	11414.59	0.00	208.78	11379.13	-374.28	-380.76	-209.13	2.00
Wolfcamp B	11870.46	0.00	208.78	11835.00	-374.28	-380.76	-209.13	0.00
Strawn	13164.46	0.00	208.78	13129.00	-374.28	-380.76	-209.13	0.00
Indium MDP1 28-21 Federal	13314.46	0.00	208.78	13279.00	-374.28	-380.76	-209.13	0.00

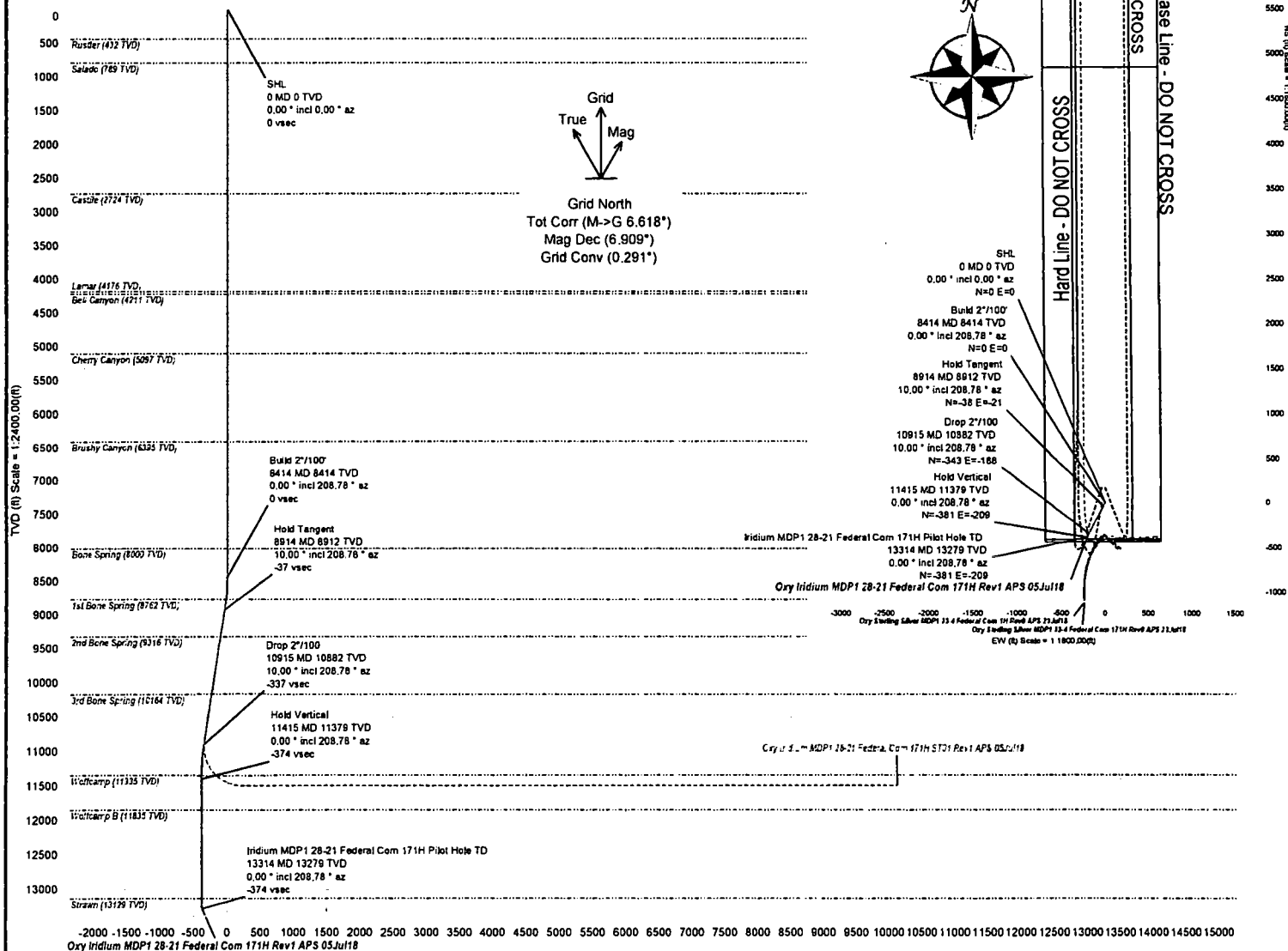
Only Indium MDP1 28-29 Federal Com 171H STD1 Rev1 APS 03Jul18

Oxy Iridium MDP1 75-71 Federal Com 11H Rev2 APS 24Jul18

ease line - DO NOT CROSS

Hard Line - DO NOT CROSS

Lease Line - DO NOT CROSS



Vertical Section (ft) Azim = 358.27° Scale = 1:2400.00(ft) Origin = 0N/-S, 0E/-W

Oxy Iridium MDP1 28-21 Federal Com 171H Rev1 APS 05Jul18 Proposal

Geodetic Report

(Def Plan)



Report Date: July 17, 2018 - 03:16 PM
Client: OXY
Field: NM Eddy County (NAD 83)
Structure / Slot: Oxy Iridium MDP1 28-21 Federal Com 171H / Iridium MDP1 28-21 Federal Com 171H
Well: Iridium MDP1 28-21 Federal Com 171H
Borehole: Pilot Hole
UWI / API#: Unknown / Unknown
Survey Name: Oxy Iridium MDP1 28-21 Federal Com 171H Rev1 APS 05Jul18
Survey Date: July 17, 2018
Tort / AHD / DDI / ERD Ratio: 20.000 * / 434.411 ft / 3.940 / 0.033
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 16' 8.70284", W 103° 47' 20.89803"
Location Grid NE Y/X: N 482153.450 ftUS, E 709554.880 ftUS
CRS Grid Convergence Angle: 0.2908 °
Grid Scale Factor: 0.9999415
Version / Patch: 2.10.720.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 358.267 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB=30'
TVD Reference Elevation: 3399.700 ft above MSL
Seabed / Ground Elevation: 3399.700 ft above MSL
Magnetic Declination: 8.908 °
Total Gravity Field Strength: 998.4514mgm (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48031.570 nT
Magnetic Dip Angle: 60.018 °
Declination Date: July 17, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.2908 °
Total Corr Mag North->Grid North: 8.8182 °
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00		0.00	0.00	0.00	0.00	N/A	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	100.00	0.00	208.78	100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	200.00	0.00	208.78	200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	300.00	0.00	208.78	300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	400.00	0.00	208.78	400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	500.00	0.00	208.78	500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	600.00	0.00	208.78	600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	700.00	0.00	208.78	700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	800.00	0.00	208.78	800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	900.00	0.00	208.78	900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1000.00	0.00	208.78	1000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1100.00	0.00	208.78	1100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1200.00	0.00	208.78	1200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1300.00	0.00	208.78	1300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1400.00	0.00	208.78	1400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1500.00	0.00	208.78	1500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1600.00	0.00	208.78	1600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1700.00	0.00	208.78	1700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1800.00	0.00	208.78	1800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	1900.00	0.00	208.78	1900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2000.00	0.00	208.78	2000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2100.00	0.00	208.78	2100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2200.00	0.00	208.78	2200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2300.00	0.00	208.78	2300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2400.00	0.00	208.78	2400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2500.00	0.00	208.78	2500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2600.00	0.00	208.78	2600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2700.00	0.00	208.78	2700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2800.00	0.00	208.78	2800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	2900.00	0.00	208.78	2900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3000.00	0.00	208.78	3000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3100.00	0.00	208.78	3100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3200.00	0.00	208.78	3200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3300.00	0.00	208.78	3300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3400.00	0.00	208.78	3400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3500.00	0.00	208.78	3500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3600.00	0.00	208.78	3600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3700.00	0.00	208.78	3700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3800.00	0.00	208.78	3800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	3900.00	0.00	208.78	3900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4000.00	0.00	208.78	4000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4100.00	0.00	208.78	4100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4200.00	0.00	208.78	4200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4300.00	0.00	208.78	4300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4400.00	0.00	208.78	4400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4500.00	0.00	208.78	4500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4600.00	0.00	208.78	4600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4700.00	0.00	208.78	4700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4800.00	0.00	208.78	4800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	4900.00	0.00	208.78	4900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5000.00	0.00	208.78	5000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5100.00	0.00	208.78	5100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5200.00	0.00	208.78	5200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5300.00	0.00	208.78	5300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5400.00	0.00	208.78	5400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5500.00	0.00	208.78	5500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5600.00	0.00	208.78	5600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5700.00	0.00	208.78	5700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5800.00	0.00	208.78	5800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	5900.00	0.00	208.78	5900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6000.00	0.00	208.78	6000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6100.00	0.00	208.78	6100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6200.00	0.00	208.78	6200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6300.00	0.00	208.78	6300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6400.00	0.00	208.78	6400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6500.00	0.00	208.78	6500.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6600.00	0.00	208.78	6600.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6700.00	0.00	208.78	6700.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6800.00	0.00	208.78	6800.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	6900.00	0.00	208.78	6900.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	7000.00	0.00	208.78	7000.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	7100.00	0.00	208.78	7100.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	7200.00	0.00	208.78	7200.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	7300.00	0.00	208.78	7300.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	7400.00	0.00	208.78	7400.00	0.00	0.00	0.00	0.00	482153.45	709554.88	N 32 16 9.70	W 103 47 20.70
	7500.00	0.00	208.78	7500.00	0.00	0.00	0.0.					

Comments	MD (ft)	Incl (°)	Azimuth (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (1/100ft)	Northings (ft)	Easting (ft)	Latitude (N/S...)	Longitude (E/W...)
Build 27100'	7800.00	0.00	208.78	7800.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	7900.00	0.00	208.78	7900.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	8000.00	0.00	208.78	8000.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	8100.00	0.00	208.78	8100.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	8200.00	0.00	208.78	8200.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	8300.00	0.00	208.78	8300.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	8400.00	0.00	208.78	8400.00	0.00	0.00	0.00	0.00	482153.45	708554.68	N 32 16 8.70	W 103 47 20.70
	8414.16	0.00	208.78	8414.16	0.00	0.00	0.00	0.00	482152.32	708554.68	N 32 16 8.66	W 103 47 20.70
	8500.00	1.72	208.78	8469.69	-1.11	-1.13	-0.62	2.00	482152.32	708554.68	N 32 16 8.66	W 103 47 20.73
	8600.00	5.72	208.78	8609.87	-5.19	-5.28	-2.00	2.00	482149.66	708541.82	N 32 16 8.58	W 103 47 20.73
Hold Tangent	8700.00	7.72	208.78	8699.53	-12.27	-12.48	-0.68	2.00	482149.66	708541.82	N 32 16 8.58	W 103 47 20.84
	8800.00	7.72	208.78	8699.53	-22.35	-12.74	-12.48	2.00	482130.72	708554.68	N 32 16 8.55	W 103 47 20.84
	8900.00	7.72	208.78	8697.87	-35.40	-38.02	-12.48	2.00	482117.43	708554.68	N 32 16 8.55	W 103 47 20.93
	8914.16	6.72	208.78	8891.66	-37.50	-38.15	-19.05	2.00	482115.31	708554.68	N 32 16 8.55	W 103 47 21.03
	9000.00	10.00	208.78	8896.16	-50.33	-51.21	-28.13	0.00	482102.25	708518.20	N 32 16 8.50	W 103 47 21.13
	9100.00	10.00	208.78	8904.64	-65.39	-46.43	-36.48	0.00	482087.83	708518.20	N 32 16 8.50	W 103 47 21.13
	9200.00	10.00	208.78	8913.12	-80.25	-41.65	-44.85	0.00	482071.82	708500.84	N 32 16 8.75	W 103 47 21.32
	9300.00	10.00	208.78	8921.60	-95.31	-36.87	-53.31	0.00	482056.59	708500.84	N 32 16 8.75	W 103 47 21.32
	9400.00	10.00	208.78	8930.08	-110.16	-112.09	-61.56	0.00	482041.37	708481.12	N 32 16 8.45	W 103 47 21.52
	9500.00	10.00	208.78	8948.57	-125.14	-127.31	-69.82	0.00	482026.03	708481.12	N 32 16 8.45	W 103 47 21.52
Drop 27100	9600.00	10.00	208.78	8967.05	-140.10	-142.53	-78.28	0.00	482010.83	708468.04	N 32 16 8.45	W 103 47 21.72
	9700.00	10.00	208.78	8985.53	-155.06	-157.75	-86.64	0.00	481995.71	708468.04	N 32 16 8.45	W 103 47 21.81
	9800.00	10.00	208.78	8994.01	-170.02	-172.92	-95.00	0.00	481980.40	708451.32	N 32 16 8.45	W 103 47 21.81
	9900.00	10.00	208.78	8998.49	-184.96	-186.19	-103.36	0.00	481965.27	708442.86	N 32 16 8.45	W 103 47 22.01
	10000.00	10.00	208.78	8998.97	-198.94	-203.41	-110.72	0.00	481950.05	708434.60	N 32 16 8.45	W 103 47 22.11
	10100.00	10.00	208.78	8998.45	-214.80	-203.41	-120.08	0.00	481934.83	708429.25	N 32 16 8.45	W 103 47 22.21
	10200.00	10.00	208.78	8997.93	-229.86	-213.85	-128.44	0.00	481919.61	708417.89	N 32 16 8.45	W 103 47 22.31
	10300.00	10.00	208.78	8997.41	-244.82	-216.83	-136.80	0.00	481904.40	708409.53	N 32 16 8.45	W 103 47 22.40
	10400.00	10.00	208.78	8996.89	-259.79	-219.82	-145.16	0.00	481889.18	708394.45	N 32 16 8.45	W 103 47 22.50
	10500.00	10.00	208.78	8996.37	-274.76	-219.82	-153.52	0.00	481873.96	708384.45	N 32 16 8.45	W 103 47 22.60
Hold Vertical	10600.00	10.00	208.78	8995.85	-289.73	-219.82	-161.88	0.00	481858.74	708376.09	N 32 16 8.45	W 103 47 22.70
	10700.00	10.00	208.78	8995.33	-304.70	-219.82	-170.24	0.00	481843.52	708364.56	N 32 16 8.45	W 103 47 22.80
	10800.00	10.00	208.78	8994.81	-319.67	-219.82	-178.60	0.00	481828.30	708354.56	N 32 16 8.45	W 103 47 22.90
	10900.00	10.00	208.78	8994.29	-334.64	-219.82	-186.96	0.00	481813.08	708345.56	N 32 16 8.45	W 103 47 23.00
	11000.00	10.00	208.78	8993.77	-349.61	-219.82	-195.32	0.00	481797.86	708336.56	N 32 16 8.45	W 103 47 23.10
	11100.00	10.00	208.78	8993.25	-364.58	-219.82	-203.68	0.00	481782.64	708327.56	N 32 16 8.45	W 103 47 23.20
	11200.00	10.00	208.78	8992.73	-379.55	-219.82	-212.04	0.00	481767.42	708318.56	N 32 16 8.45	W 103 47 23.30
	11300.00	10.00	208.78	8992.21	-394.52	-219.82	-220.40	0.00	481752.20	708309.56	N 32 16 8.45	W 103 47 23.40
	11400.00	10.00	208.78	8991.69	-409.49	-219.82	-228.76	0.00	481736.98	708300.56	N 32 16 8.45	W 103 47 23.50
	11500.00	10.00	208.78	8991.17	-424.46	-219.82	-237.12	0.00	481721.76	708291.56	N 32 16 8.45	W 103 47 23.60
Indium MDP1 28 21 Federal Com 171H Pilot Hole TD	11600.00	2.28	208.78	11065.17	-372.54	-372.72	-206.11	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	11700.00	2.28	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	11800.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	11900.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12000.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12100.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12200.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12300.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12400.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12500.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
Survey Error Model: Survey Program:	12600.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12700.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12800.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	12900.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	13000.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	13100.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	13200.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	13300.00	0.00	208.78	11064.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	13314.46	0.00	208.78	13264.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
	13314.46	0.00	208.78	13264.54	-374.26	-380.76	-206.13	0.00	481721.72	708345.56	N 32 16 5.95	W 103 47 23.16
Survey Type:	Def Plan											
Survey Error Model: Survey Program:	ISCWSA Rev 0 *** 3-D 65.000% Confidence 2.7855 sigma											
	Description	Part	MD From (ft)	MD To (ft)	ECU From (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey		
		1	0.00	30.000	17100.000	30.000	30.000		NAL_NSG+MSHOT_Depth Only	Pilot Hole / Dry Indium MDP1 28-		
		1	30.000	500.000	17100.000	30.000	30.000		NAL_NSG+MSHOT	Pilot Hole / Dry Indium MDP1 28-		
		1	500.000	13314.460	17100.000	30.000	30.000		NAL_MWD_PLUS 0.5 DEG	Pilot Hole / Dry Indium MDP1 28-		
										21 Federal Com 171H Rev1 APS		

TECHNICAL DATA SHEET TMR UP SF 7.625 X 26.4 L80 HC

TUBULAR PARAMETERS

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

PIPE BODY PROPERTIES

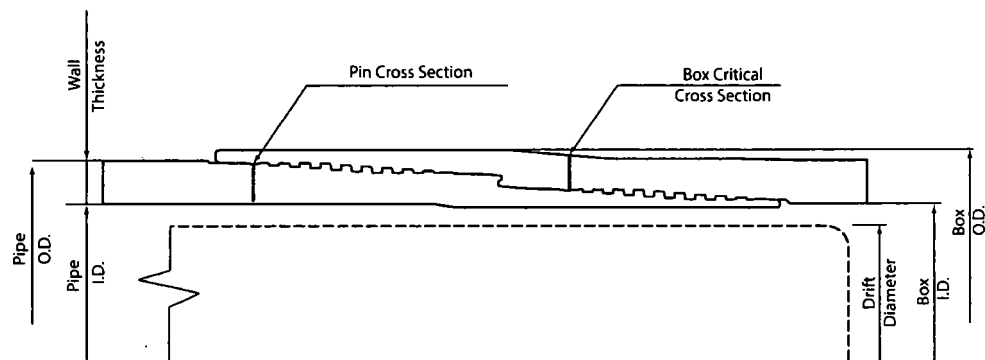
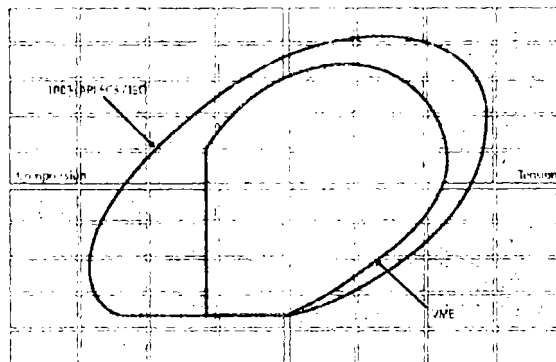
PE Weight, (lbs/ft)	25.56
Nominal Weight, (lbs/ft)	26.40
Nominal ID, (inch)	6.969
Drift Diameter, (inch)	6.844
Nominal Pipe Body Area, (sq inch)	7.519
Yield Strength in Tension, (klbs)	601
Min. Internal Yield Pressure, (psi)	6 020
Collapse Pressure, (psi)	3 910

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
Yield 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



NOTE: The information on this Technical Data Sheet is for informational purposes only and is not intended to be used for any specific purpose. The information on this sheet is for informational purposes only and is not intended to be used for any specific purpose. The information on this sheet is for informational purposes only and is not intended to be used for any specific purpose. The information on this sheet is for informational purposes only and is not intended to be used for any specific purpose.

Print date: 07/10/2018 20:00

TUBULAR PARAMETERS

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

PIPE BODY PROPERTIES

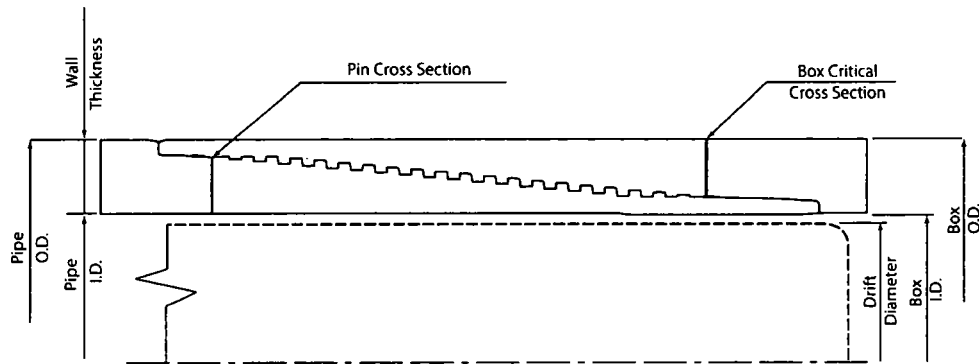
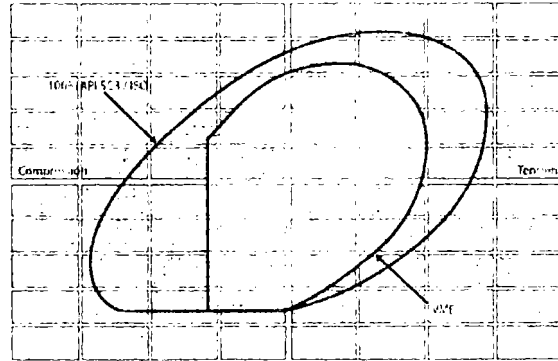
PE Weight, (lbs/ft)	25.56
Nominal Weight, (lbs/ft)	26.40
Nominal ID, (inch)	6.969
Drift Diameter, (inch)	6.844
Nominal Pipe Body Area, (sq inch)	7.519
Yield Strength in Tension, (klbs)	601
Min. Internal Yield Pressure, (psi)	6 020
Collapse Pressure, (psi)	3 910

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
Yield 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



NOTE: The information on this sheet is for general information only and is not guaranteed for any specific application. It is the user's responsibility to verify the information on this sheet for their specific application. The information on this sheet is controlled by TWR and may be updated without notice. Any use of the information on this sheet is at the user's risk. For more information, please contact TWR Technical Sales. Tel: 1-800-368-1444, Email: info@twr.com

PERFORMANCE DATA

TMK UP DQX

Technical Data Sheet

5.500 in

20.00 lbs/ft

P-110

Tubular Parameters

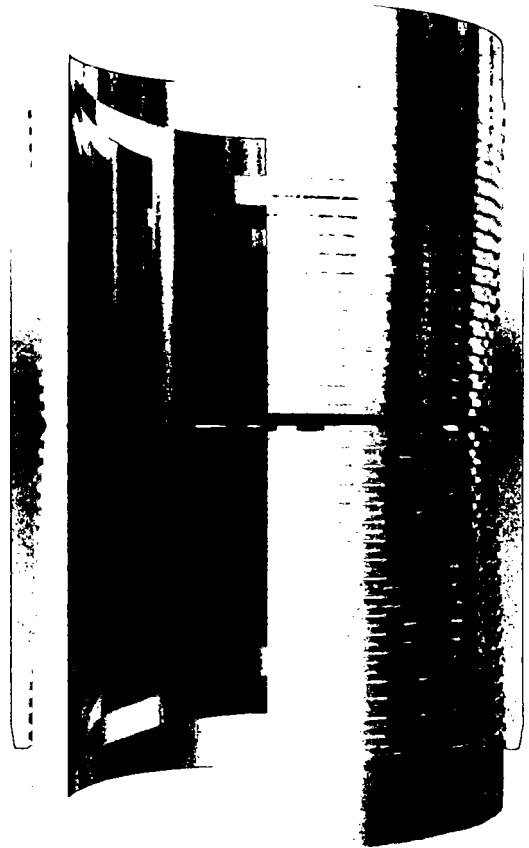
Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	20.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	641,000	lbs
PE Weight	19.81	lbs/ft	Tensile Load	729,000	lbs
Wall Thickness	0.361	in	Min. Internal Yield Pressure	12,600	psi
Nominal ID	4.778	in	Collapse Pressure	11,100	psi
Drift Diameter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

[illegible]

IPSCO

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA Inc
LEASE NO.:	NM40659
WELL NAME & NO.:	Iridium MDP1 28-21 Fed Com 171H
SURFACE HOLE FOOTAGE:	430'/S & 683'/W
BOTTOM HOLE FOOTAGE:	180'/N & 440'/W, sec. 7
LOCATION:	Sec. 21, T. 23 S, R. 31 E
COUNTY:	Lea County

Potash	☐ None	☐ Secretary	☒ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

All previous COAs still apply except for the following:

A. CASING

1. The 13 3/8 inch surface casing shall be set at approximately 590 feet (a minimum of 25 feet 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 **24 hours in the Potash Area** 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.
2. The minimum required fill of cement behind the 9 5/8 inch intermediate casing is:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

3. The minimum required fill of cement behind the 7 5/8 inch intermediate casing is:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Operator has proposed to pump down 9 5/8" X 7 5/8" annulus. Operator must run a CBL from the TD of the 5 1/2" casing to 9 5/8" casing shoe.

Pilot hole is required to have a plug at the bottom of the hole. Operator has proposed to set one plug from bottom of pilot hole to kick-off point – WOC and Tag. Note plug tops on subsequent drilling report.

4. The minimum required fill of cement behind the 5 1/2 inch production casing is:

- Cement as proposed. Operator shall provide method of verification.

MHH 08152018

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

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.