

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.***Carlsbad Field Office**
OCD Artesia5. Lease Serial No.
NMNM94651

6. If Indian, Allottee or Tribe Name

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

SUBMIT IN TRIPLICATE - Other instructions on reverse side.8. Well Name and No.
CEDAR CANYON 29 FEDERAL COM 2H9. API Well No.
30-015-42992-00-X110. Field and Pool, or Exploratory
PIERCE CROSSING11. County or Parish, and State
EDDY COUNTY, NM1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
OXY USA INCORPORATED
Contact: DAVID STEWART
E-Mail: david_stewart@oxy.com3a. Address
5 GREENWAY PLAZA SUITE 110
HOUSTON, TX 77046-05213b. Phone No. (include area code)
Ph: 432.685.57174. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 29 T24S R29E NENE 200FNL 319FEL
32.194454 N Lat, 103.998682 W Lon

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall 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 approval for the following changes to the approved APD:

1. Amend casing/cementing program - Amend for current casing inventories, set liner and updated directional plan.

Surface Casing
10-3/4" 40.5# J55 BTC new csg @ 0-400'. 14-3/4" hole
SF Coll-7.6 SF Burst-1.54 SF Ten-2.89Production Casing - 7-5/8" new casing @ 0-8027'M, 9-7/8" hole
a. 7-5/8" 26.4# L-80 BTC new csg @ 0-5527'M
SF Coll-1.19 SF Burst-1.29 SF Ten-1.88**NM OIL CONSERVATION**
ARTESIA DISTRICT

OCT 11 2016

RECEIVED

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

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

Electronic Submission #351594 verified by the BLM Well Information System
For OXY USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by DEBORAH MCKINNEY on 09/19/2016 (16DLM0941SE)

Name (Printed/Typed) DAVID STEWART

Title REGULATORY ADVISOR

Signature (Electronic Submission)

Date 09/19/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By MUSTAFA HAQUE

Title PETROLEUM ENGINEER

Date 10/04/2016

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.

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

Additional data for EC transaction #351594 that would not fit on the form

32. Additional remarks, continued

b. 7-5/8" 29.7# L-80 BTC new csg @ 5527-8027'M

SF Coll-1.13 SF Burst-1.43 SF Ten-3.43

OXY requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool will be run at +/- 2957' in case a contingency second stage is required for cement to reach surface. If cement circulates on 1st stage, cancellation cone will be dropped.

Liner

4-1/2" 11.6# P-110 DQX new csg @ 7927-13463'M. 6-3/4" hole

SF Coll-1.64 SF Burst-1.2 SF Ten-1.91

The requested 100' of liner overlap is to allow future shallower benches to be drilled from the 7-5/8" main-bore casing.

Surface - Cement w/ 265sx PP cement w/ 2% CaCl₂, 14.8ppg 1.35 yield, 500# CS in 6.5hr, 50% Excess

Production - Circulate cement w/ 848sx Tuned Light (TM) system cmt w/ 3#/sx Kol-Seal + .125#/sx Poly-E-Flake + .8% HR-601, 10.2ppg 3.05 yield, 500# CS in 15.07hr, 75% Excess followed by 163sx Super H cmt w/ 3#/sx salt + .1% HR-800 + .3% CFR-3 + .5% HR-344 + 2#/sx Kol-Seal, 13.2ppg 1.65 yield, 500# CS in 12.57hr, 20% Excess.

Contingency 2nd Stage - Circulate cement to surface w/ 469sx HES light PP cmt w/ 5% Salt + .35% HR-800 + 3#/sx Kol-Seal + .125#/sx Poly-E-Flake, 12.9ppg 1.85 yield, 500# CS in 12.44hr, 75% Excess followed by 182sx PP cmt, 14.8ppg 1.33 yield, 500# CS in 6.31hr, 125% Excess.

Liner - Cement w/ 541sx Super H cmt w/ 3#/sx salt + .1% HR-800 + .4% CFR-3 + .5% HR-344, 13.2ppg 1.63 yield, 500# CS in 15.15hr, 15% Excess. TOC @ 7927'

Description of Cement Additives: Salt (Accelerator); CFR-3 (Dispersant); Kol-Seal, Poly-E-Flake (Lost Circulation Additive); HR-344 (Low Fluid Loss Control); HR-601, HR-800 (Retarder)

The above cement volumes could be revised pending the caliper measurement.

2. Mud program -

Depth	Mud WT	Vis Sec	Fluid Loss	Type
0 - 400'	8.4-8.6	40-60	N/C	EnerSeal (MMH)
400-2957'	9.8-10.0	35-45	N/C	Brine
2957-8027'	8.8-9.6	38-50	N/C	EnerSeal (MMH)
8027'-13463'	8.8-9.6	35-50	N/C	OBM

3. Start mudlogging from the intermediate casing shoe to TD.

4. 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.

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

**NM OIL CONSERVATION
ARTESIA DISTRICT**

OCT 11 2016

OPERATOR'S NAME:	OXY USA Inc
LEASE NO.:	NM94651
WELL NAME & NO.:	2H-Cedar Canyon 29 Federal Com
SURFACE HOLE FOOTAGE:	230'/N & 320'/E
BOTTOM HOLE FOOTAGE:	991'/N & 181'/W
LOCATION:	Section 29, T.24 S., R. 29 E., NMPM
COUNTY:	Eddy County, New Mexico

RECEIVED

A. DRILLING OPERATIONS REQUIREMENTS

All previous COAs still apply, except for the following:

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)

☒ **Eddy County**

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

1. **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.**
2. **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.**
3. 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 is located, this does not include the dog house or stairway area.
4. **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.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. 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.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possibility of water flows in the Castile and Salado.

Possibility of lost circulation in the Rustler, Salado, and Delaware.

Medium Cave/Karst

1. The 10-3/4 inch surface casing shall be set at approximately 400 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - 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 is to include the lead cement slurry.**
 - 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.

Formation below the 10-3/4" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

2. The minimum required fill of cement behind the 7-5/8 inch production casing, is:

Operator has proposed DV tool at depth of 2957', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

- a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

- b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.

Formation below the 7-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the 4-1/2 inch production liner is:

☒ Cement as proposed by operator. Operator shall provide method of verification.
Excess calculates to 15% - Additional cement might be required.

4. 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.

MHH 10042016

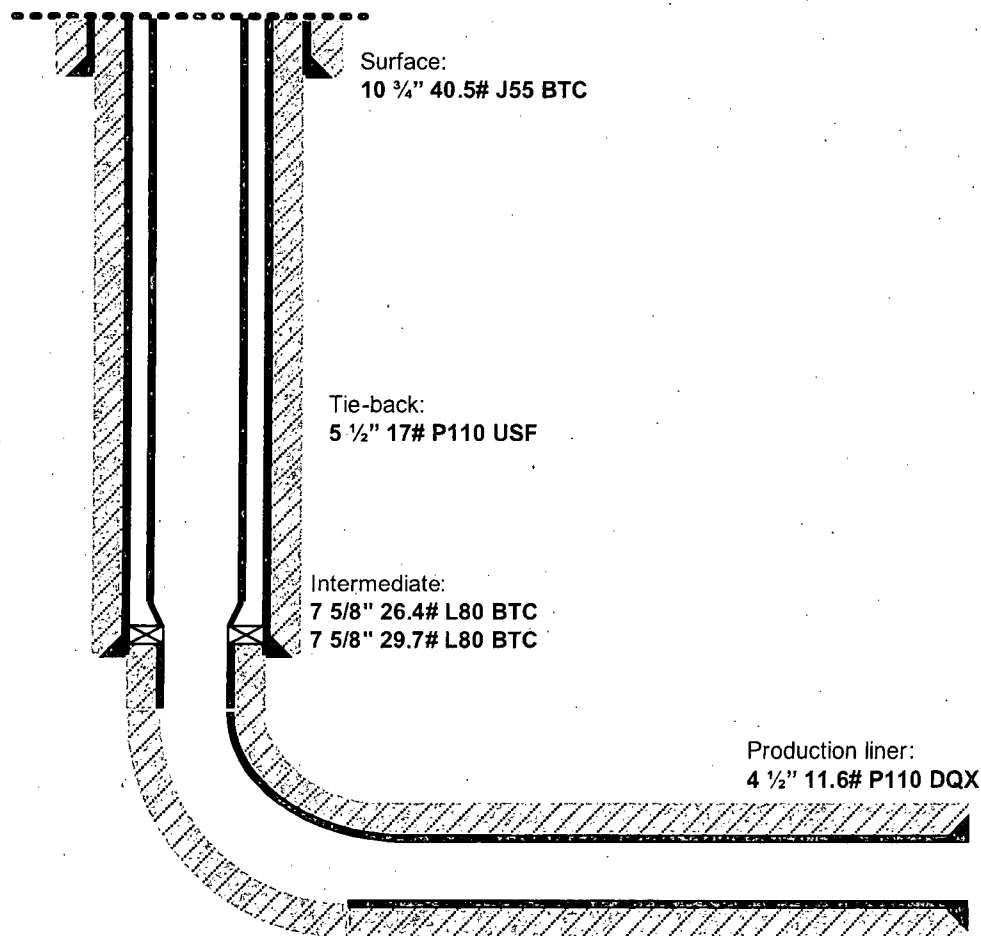
OXY USA WTP LP
Cedar Canyon 29 Fed Com 2H

Below is a summary that describes the general operational steps to drill and complete well Cedar Canyon 29 Fed Com 2H:

- Drill 14 3/4" hole x 10 3/4" casing for surface section. Cement to surface.
- Drill 9 7/8" hole x 7 5/8" casing for intermediate section. Cement to surface.
- Drill 6 3/4" hole x 4 1/2" liner for production section. Cement to top of liner, 100' inside 7 5/8" shoe.
- Release drilling rig from location.
- Move in workover rig and run a 5 1/2" 17# P110 USF tie-back frack string and seal assembly (see connection specs below). Tie into liner hanger Polished Bore Receptacle (PBR) with seal assembly.
- Pump hydraulic fracture job.
- Flowback and produce well.

When a decision is made to develop a secondary bench from this wellbore, a workover rig will be moved to location. The workover rig will then retrieve the tie-back frack string and seal assembly before temporarily abandoning the initial lateral.

General well schematic:



[illegible]

Oxy Cedar Canyon 29 Federal 2H (SL2) Rev3 LBN 24Aug16 Proposal

Geodetic Report

(Non-Def Plan)



Report Date: August 25, 2016 - 02:25 PM Client: OXY Field: NM Eddy County (NAD 27) Structure / Slot: Oxy Cedar Canyon 29 Federal 2H (SL2) / Oxy Cedar Canyon 29 Fed 2H Well: Oxy Cedar Canyon 29 Federal 2H Borehole: Oxy CC 29 2H - Original Borehole UWI / API#: Unknown / Unknown Survey Name: Oxy Cedar Canyon 29 Federal 2H (SL2) Rev3 LBN 24Aug16 Survey Date: August 24, 2016 Tort / AHD / DDI / ERD Ratio: 104 905' / 5419.983 ft / 5.948 / 0.628 Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet Location Lat / Long: N 32° 11' 42.0449" W 103° 59' 55.01016" Location Grid N/E Y/X: N 434824 560 HUS, E 603541.290 HUS CRS Grid Convergence Angle: 0.1783 ° Grid Scale Factor: 0.99992137 Version / Patch: 2.9 370.0	Survey / DLS Computation: Minimum Curvature / Lubinski Vertical Section Azimuth: 267.117 ° (Grid North) Vertical Section Origin: 0.000 ft, 0.000 ft TVD Reference Datum: RKB TVD Reference Elevation: 2975.800 ft above MSL Seabed / Ground Elevation: 2949.300 ft above MSL Magnetic Declination: 7.243 ° Total Gravity Field Strength: 998.464 mgm (9.80665 Based) Gravity Model: GARM Total Magnetic Field Strength: 48205.552 nT Magnetic Dip Angle: 60.045 ° Declination Date: August 24, 2016 Magnetic Declination Model: HDGM 2016 North Reference: Grid North Grid Convergence Used: 0.1783 ° Total Corr Mag North->Grid North: 7.0642 ° Local Coord Referenced To: Structure Reference Point	
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Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	100.00	0.00	131.73	100.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	200.00	0.00	131.73	200.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	300.00	0.00	131.73	300.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	400.00	0.00	131.73	400.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	500.00	0.00	131.73	500.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	600.00	0.00	131.73	600.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	700.00	0.00	131.73	700.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	800.00	0.00	131.73	800.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	900.00	0.00	131.73	900.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1000.00	0.00	131.73	1000.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1100.00	0.00	131.73	1100.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1200.00	0.00	131.73	1200.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1300.00	0.00	131.73	1300.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1400.00	0.00	131.73	1400.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1500.00	0.00	131.73	1500.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1600.00	0.00	131.73	1600.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1700.00	0.00	131.73	1700.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1800.00	0.00	131.73	1800.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	1900.00	0.00	131.73	1900.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2000.00	0.00	131.73	2000.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2100.00	0.00	131.73	2100.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2200.00	0.00	131.73	2200.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2300.00	0.00	131.73	2300.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2400.00	0.00	131.73	2400.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2500.00	0.00	131.73	2500.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2600.00	0.00	131.73	2600.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2700.00	0.00	131.73	2700.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2800.00	0.00	131.73	2800.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	2900.00	0.00	131.73	2900.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3000.00	0.00	131.73	3000.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3100.00	0.00	131.73	3100.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3200.00	0.00	131.73	3200.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3300.00	0.00	131.73	3300.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3400.00	0.00	131.73	3400.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3500.00	0.00	131.73	3500.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3600.00	0.00	131.73	3600.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3700.00	0.00	131.73	3700.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3800.00	0.00	131.73	3800.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	3900.00	0.00	131.73	3900.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	4000.00	0.00	131.73	4000.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	4100.00	0.00	131.73	4100.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	4200.00	0.00	131.73	4200.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	4300.00	0.00	131.73	4300.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
Back Build 1 50'x100'	4385.00	0.00	131.73	4385.00	0.00	0.00	0.00	0.00	434824.56	603541.29	N 32 11 42.02	W 103 59 55.01
	4400.00	0.23	131.73	4400.00	-0.02	-0.02	0.02	1.50	434824.54	603541.31	N 32 11 42.02	W 103 59 55.01
	4500.00	1.73	131.73	4499.98	-1.23	-1.15	1.29	1.50	434823.41	603542.58	N 32 11 42.01	W 103 59 55.00
	4600.00	3.23	131.73	4599.89	-4.31	-4.03	4.51	1.50	434820.53	603545.80	N 32 11 41.98	W 103 59 54.96
	4700.00	4.73	131.73	4699.64	-9.24	-8.64	9.69	1.50	434815.92	603550.98	N 32 11 41.94	W 103 59 54.90
	4800.00	6.23	131.73	4799.18	-16.03	-14.99	16.81	1.50	434809.57	603558.10	N 32 11 41.88	W 103 59 54.82
	4861.78	7.15	131.73	4860.54	-21.15	-19.78	22.18	1.50	434804.78	603563.46	N 32 11 41.83	W 103 59 54.75
	4900.00	7.15	131.73	4898.47	-24.54	-22.95	25.73	0.00	434801.61	603567.02	N 32 11 41.80	W 103 59 54.71
	5000.00	7.15	131.73	4997.69	-33.40	-31.24	35.02	0.00	434793.33	603576.31	N 32 11 41.71	W 103 59 54.60
	5100.00	7.15	131.73	5096.91	-42.26	-39.52	44.31	0.00	434785.04	603585.60	N 32 11 41.63	W 103 59 54.50
	5200.00	7.15	131.73	5196.13	-51.13	-47.81	53.60	0.00	434776.75	603594.89	N 32 11 41.55	W 103 59 54.39
	5300.00	7.15	131.73	5295.35	-59.99	-56.10	62.89	0.00	434768.47	603604.18	N 32 11 41.47	W 103 59 54.28
	5400.00	7.15	131.73	5394.58	-68.85	-64.38	72.18	0.00	434760.18	603613.47	N 32 11 41.39	W 103 59 54.17
	5500.00	7.15	131.73	5493.80	-77.71	-72.67	81.47	0.00	434751.89	603622.75	N 32 11 41.30	W 103 59 54.06
	5600.00	7.15	131.73	5593.02	-86.57	-80.96	90.76	0.00	434743.61	603632.04	N 32 11 41.22	W 103 59 53.96
	5700.00	7.15	131.73	5692.24	-95.44	-89.25	100.05	0.00	434735.32	603641.33	N 32 11 41.14	W 103 59 53.85
	5800.00	7.15	131.73	5791.46	-104.30	-97.53	109.34	0.00	434727.03	603650.62	N 32 11 41.06	W 103 59 53.74
	5900.00	7.15	131.73	5890.69	-113.16	-105.82	118.63	0.00	434718.75	603659.91	N 32 11 40.97	W 103 59 53.63
	6000.00	7.15	131.73	5989.91	-122.02	-114.11	127.92	0.00	434710.46	603669.20	N 32 11 40.89	W 103 59 53.53
	6100.00	7.15	131.73	6089.13	-130.88	-122.39	137.22	0.00	434702.18	603678.49	N 32 11 40.81	W 103 59 53.42
	6200.00	7.15	131.73	6188.35	-139.75	-130.68	146.51	0.00	434693.89	603687.78	N 32 11 40.73	W 103 59 53.31
	6300.00	7.15	131.73	6287.57	-148.61	-138.97	155.80	0.00	434685.60	603697.07	N 32 11 40.64	W 103 59 53.20
	6400.00	7.15	131.73	6386.80	-157.47	-147.26	165.09	0.00	434677.32	603706.36	N 32 11 40.56	W 103 59 53.09
	6500.00	7.15	131.73	6486.02	-166.33	-155.54	174.38	0.00	434669.03	603715.65	N 32 11 40.48	W 103 59 52.99
	6600.00	7.15	131.73	6585.24	-175.19	-163.83	183.67	0.00	434660.74	603724.94	N 32 11 40.40	W 103 59 52.88
	6700.00	7.15	131.73	6684.46	-184.06	-172.12	192.96	0.00	434652.46	603734.23	N 32 11 40.32	W 103 59 52.77
	6800.00	7.15	131.73	6783.68	-192.92	-180.40	202.25	0.00	434644.17	603743.52	N 32 11 40.23	W 103 59 52.66
	6900.00	7.15	131.73	6882.91	-201.78	-188.69	211.54	0.00	434635.88	603752.81	N 32 11 40.15	W 103 59 52.56
	7000.00	7.15	131.73	6982.13	-210.64	-196.98	220.83	0.00	434627.60	603762.10	N 32 11 40.07	W 103 59 52.45
	7047.95	7.15	131.73	7029.71	-214.89	-200.95	225.29	0.00	434623.62	603766.58	N 32 11 40.03	W 103 59 52.40
	7100.00	6.64										

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7400.00	3.78	142.96	7380.11	-237.02	-224.81	248.64	1.00	434589.77	603789.51	N 32 11 39.79 W 103 59 52.12	
	7500.00	2.89	150.81	7479.94	-239.98	-229.64	251.85	1.00	434594.94	603793.12	N 32 11 39.74 W 103 59 52.05	
	7600.00	2.10	165.06	7579.85	-241.48	-233.61	253.56	1.00	434599.97	603796.83	N 32 11 39.70 W 103 59 52.07	
	7700.00	1.56	192.09	7679.80	-241.51	-236.71	253.74	1.00	434587.87	603795.01	N 32 11 39.67 W 103 59 52.07	
	7800.00	1.56	229.17	7779.76	-240.07	-238.95	252.41	1.00	434585.63	603793.58	N 32 11 39.65 W 103 59 52.08	
	7900.00	2.13	255.42	7879.71	-237.16	-240.32	249.57	1.00	434584.26	603790.84	N 32 11 39.64 W 103 59 52.11	
	8000.00	2.13	269.22	7979.61	-232.78	-240.82	245.21	1.00	434583.75	603786.48	N 32 11 39.63 W 103 59 52.17	
ICP	8007.83	3.00	269.98	7987.44	-232.38	-240.83	244.80	1.00	434583.75	603786.07	N 32 11 39.63 W 103 59 52.17	
	8100.00	3.00	269.98	8079.48	-227.56	-240.83	239.98	0.00	434583.75	603781.25	N 32 11 39.63 W 103 59 52.23	
KOP Build 10%/100 ft DLS	8107.83	3.00	269.98	8087.30	-227.15	-240.83	239.57	0.00	434583.75	603780.84	N 32 11 39.63 W 103 59 52.23	
	8200.00	12.22	269.98	8178.56	-214.98	-240.83	227.38	10.00	434583.75	603788.65	N 32 11 39.63 W 103 59 52.37	
	8300.00	22.22	269.98	8273.96	-185.45	-240.84	197.82	10.00	434583.74	603799.09	N 32 11 39.64 W 103 59 52.72	
	8400.00	32.22	269.98	8362.77	-139.83	-240.86	152.14	10.00	434583.72	603693.42	N 32 11 39.64 W 103 59 53.25	
	8500.00	42.22	269.98	8442.31	-79.50	-240.88	91.73	10.00	434583.70	603633.02	N 32 11 39.64 W 103 59 53.95	
	8600.00	52.22	269.98	8510.14	-6.29	-240.91	18.43	10.00	434583.67	603559.72	N 32 11 39.64 W 103 59 54.80	
	8700.00	62.22	269.98	8564.22	77.57	-240.93	-65.59	10.00	434583.64	603475.76	N 32 11 39.64 W 103 59 55.78	
	8800.00	72.22	269.98	8602.89	169.53	-240.97	-157.61	10.00	434583.61	603383.69	N 32 11 39.64 W 103 59 56.85	
	8900.00	82.22	269.98	8624.99	266.81	-241.00	-255.01	10.00	434583.58	603286.30	N 32 11 39.65 W 103 59 57.99	
Landing Point	8989.38	91.15	269.98	8630.16	355.84	-241.03	-344.15	10.00	434583.55	603187.17	N 32 11 39.65 W 103 59 59.02	
	9000.00	91.15	269.98	8629.94	366.44	-241.03	-354.77	0.00	434583.55	603186.55	N 32 11 39.65 W 103 59 59.15	
	9100.00	91.15	269.98	8627.93	466.30	-241.07	-454.75	0.00	434583.51	603086.58	N 32 11 39.65 W 104 0 0.31	
	9200.00	91.15	269.98	8625.91	566.15	-241.10	-554.73	0.00	434583.48	602986.61	N 32 11 39.66 W 104 0 1.47	
	9300.00	91.15	269.98	8623.89	666.01	-241.14	-654.71	0.00	434583.44	602886.64	N 32 11 39.66 W 104 0 2.64	
	9400.00	91.15	269.98	8621.86	765.86	-241.17	-754.69	0.00	434583.41	602786.66	N 32 11 39.66 W 104 0 3.80	
	9500.00	91.15	269.98	8619.86	865.72	-241.21	-854.67	0.00	434583.37	602686.69	N 32 11 39.66 W 104 0 4.96	
	9600.00	91.15	269.98	8617.85	965.57	-241.24	-954.65	0.00	434583.34	602586.72	N 32 11 39.67 W 104 0 6.13	
	9700.00	91.15	269.98	8615.83	1065.43	-241.27	-1054.63	0.00	434583.30	602486.75	N 32 11 39.67 W 104 0 7.29	
	9800.00	91.15	269.98	8613.82	1165.28	-241.31	-1154.60	0.00	434583.27	602386.78	N 32 11 39.67 W 104 0 8.45	
	9900.00	91.15	269.98	8611.80	1265.14	-241.34	-1254.58	0.00	434583.24	602286.81	N 32 11 39.67 W 104 0 9.62	
	10000.00	91.15	269.98	8609.78	1364.99	-241.38	-1354.56	0.00	434583.20	602186.83	N 32 11 39.68 W 104 0 10.78	
	10100.00	91.15	269.98	8607.77	1464.85	-241.41	-1454.54	0.00	434583.17	602086.86	N 32 11 39.68 W 104 0 11.94	
	10200.00	91.15	269.98	8605.75	1564.70	-241.45	-1554.52	0.00	434583.13	601986.89	N 32 11 39.68 W 104 0 13.11	
	10300.00	91.15	269.98	8603.74	1664.56	-241.48	-1654.50	0.00	434583.10	601886.92	N 32 11 39.69 W 104 0 14.27	
	10400.00	91.15	269.98	8601.72	1764.41	-241.52	-1754.48	0.00	434583.06	601786.95	N 32 11 39.69 W 104 0 15.44	
	10500.00	91.15	269.98	8599.71	1864.27	-241.55	-1854.46	0.00	434583.03	601686.98	N 32 11 39.69 W 104 0 16.60	
	10600.00	91.15	269.98	8597.69	1964.12	-241.58	-1954.44	0.00	434582.99	601587.01	N 32 11 39.69 W 104 0 17.76	
	10700.00	91.15	269.98	8595.67	2063.98	-241.62	-2054.42	0.00	434582.96	601487.03	N 32 11 39.70 W 104 0 18.93	
	10800.00	91.15	269.98	8593.66	2163.83	-241.65	-2154.40	0.00	434582.93	601387.06	N 32 11 39.70 W 104 0 20.09	
	10900.00	91.15	269.98	8591.64	2263.69	-241.69	-2254.38	0.00	434582.89	601287.09	N 32 11 39.70 W 104 0 21.25	
	11000.00	91.15	269.98	8589.63	2363.54	-241.72	-2354.36	0.00	434582.86	601187.12	N 32 11 39.70 W 104 0 22.42	
	11100.00	91.15	269.98	8587.61	2463.39	-241.76	-2454.34	0.00	434582.82	601087.15	N 32 11 39.71 W 104 0 23.58	
	11200.00	91.15	269.98	8585.60	2563.25	-241.79	-2554.32	0.00	434582.79	600987.18	N 32 11 39.71 W 104 0 24.74	
	11300.00	91.15	269.98	8583.58	2663.10	-241.83	-2654.30	0.00	434582.75	600887.20	N 32 11 39.71 W 104 0 25.91	
	11400.00	91.15	269.98	8581.56	2762.96	-241.86	-2754.28	0.00	434582.72	600787.23	N 32 11 39.71 W 104 0 27.07	
	11500.00	91.15	269.98	8579.55	2862.81	-241.89	-2854.26	0.00	434582.69	600687.26	N 32 11 39.72 W 104 0 28.23	
	11600.00	91.15	269.98	8577.53	2962.67	-241.93	-2954.24	0.00	434582.65	600587.29	N 32 11 39.72 W 104 0 29.40	
	11700.00	91.15	269.98	8575.52	3062.52	-241.96	-3054.22	0.00	434582.62	600487.32	N 32 11 39.72 W 104 0 30.56	
	11800.00	91.15	269.98	8573.50	3162.38	-242.00	-3154.20	0.00	434582.58	600387.35	N 32 11 39.73 W 104 0 31.72	
	11900.00	91.15	269.98	8571.49	3262.23	-242.03	-3254.18	0.00	434582.55	600287.37	N 32 11 39.73 W 104 0 32.89	
	12000.00	91.15	269.98	8569.47	3362.09	-242.07	-3354.16	0.00	434582.51	600187.40	N 32 11 39.73 W 104 0 34.05	
	12100.00	91.15	269.98	8567.46	3461.94	-242.10	-3454.14	0.00	434582.48	600087.43	N 32 11 39.74 W 104 0 35.21	
	12200.00	91.15	269.98	8565.44	3561.80	-242.14	-3554.12	0.00	434582.44	599987.46	N 32 11 39.74 W 104 0 36.38	
	12300.00	91.15	269.98	8563.42	3661.65	-242.17	-3654.10	0.00	434582.41	599887.49	N 32 11 39.74 W 104 0 37.54	
	12400.00	91.15	269.98	8561.41	3761.51	-242.20	-3754.08	0.00	434582.38	599787.52	N 32 11 39.74 W 104 0 38.70	
	12500.00	91.15	269.98	8559.39	3861.36	-242.24	-3854.06	0.00	434582.34	599687.54	N 32 11 39.74 W 104 0 39.87	
	12600.00	91.15	269.98	8557.36	3961.22	-242.27	-3954.04	0.00	434582.31	599587.57	N 32 11 39.75 W 104 0 41.03	
	12700.00	91.15	269.98	8555.36	4061.07	-242.31	-4054.02	0.00	434582.27	599487.60	N 32 11 39.75 W 104 0 42.19	
	12800.00	91.15	269.98	8553.35	4160.93	-242.34	-4154.00	0.00	434582.24	599387.63	N 32 11 39.75 W 104 0 43.36	
	12900.00	91.15	269.98	8551.33	4260.78	-242.38	-4253.97	0.00	434582.20	599287.66	N 32 11 39.75 W 104 0 44.52	
	13000.00	91.15	269.98	8549.31	4360.64	-242.41	-4353.95	0.00	434582.17	599187.69	N 32 11 39.76 W 104 0 45.68	
	13100.00	91.15	269.98	8547.30	4460.49	-242.44	-4453.93	0.00	434582.13	599087.71	N 32 11 39.76 W 104 0 46.85	
	13200.00	91.15	269.98	8545.28	4560.35	-242.48	-4553.91	0.00	434582.10	598987.74	N 32 11 39.76 W 104 0 48.01	
	13300.00	91.15	269.98	8543.27	4660.20	-242.51	-4653.89	0.00	434582.07	598887.77	N 32 11 39.76 W 104 0 49.17	
	13400.00	91.15	269.98	8541.25	4760.06	-242.55	-4753.87	0.00	434582.03	598787.80	N 32 11 39.77 W 104 0 50.34	
Plat PBHL	13462.09	91.15	269.98	8540.00	4822.05	-242.57	-4815.95	0.00	434582.01	598725.73	N 32 11 39.77 W 104 0 51.06	

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.500	1/100.000	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Oxy CC 29 2H - Original Borehole / Oxy Cedar Canyon 29 Federal 2H (SL2) Rev3 LBN 24Aug16
	1	26.500	13462.088	1/100.000	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Oxy CC 29 2H - Original Borehole / Oxy Cedar Canyon 29 Federal



Oxy Cedar Canyon 29 Federal 2H (SL2) Rev3 LBN 24Aug16 Anti-Collision Summary Report

Analysis Date-24hr Time: August 29, 2016 - 10:18

Client: OXY
 Field: NM Eddy County (NAD 27)
 Structure: Oxy Cedar Canyon 29 Federal 2H (SL2)
 Slot: Oxy Cedar Canyon 29 Fed 2H
 Well: Oxy Cedar Canyon 29 Federal 2H
 Borehole: Oxy CC 29 2H - Original Borehole
 Scan MD Range: 0 00R - 13462 09H

Analysis Method: 3D Least Distance
 Reference Trajectory: Oxy Cedar Canyon 29 Federal 2H (SL2) Rev3 LBN 24Aug16 (Non Del Plan)
 Depth Interval: Every 10.00 Measured Depth (ft)
 Rule Set: NAL Procedure: O&M AntiCollision Standard S002
 Min Pts: All local minima indicated.
 Version / Patch: 2.9.370.0
 Database \ Project: ust153app452 dir slb.com\drilling-NM Eddy County 2.9

Trajectory Error Model: ISCWSA0 3-D 95 000% Confidence 2.7855 sigma

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan

Selection filters

Not performed.

Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans

All Non-Del Surveys when no Del-Survey is set in a borehole - All Non-Del Plans when no Del-Plan is set in a borehole

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
Oxy Cedar Canyon 29 Federal 2H Rev3 LBN 24Aug16 (Non-Del Plan)													
	30.00	24.50	27.50	5.50	N/A	MAS = 7.47 (m)	0.00	0.00	Ct/Ct=15m<15.00			Enter Alert	
	30.00	24.50	27.50	5.50	N/A	MAS = 7.47 (m)	26.50	26.50				WRP	
	30.00	30.09	9.11	-0.09	1.50	OSF1.50	2990.00	2990.00			OSF<1.50	Enter Minor	
	30.00	43.24	0.34	-13.24	1.01	OSF1.50	4385.00	4385.00				MinPt-Ct-Ct	
	30.02	43.32	0.31	-13.30	1.01	OSF1.50	4400.00	4400.00				MinPt	
	43.61	44.02	13.43	-0.41	1.49	OSF1.50	4750.00	4748.44			OSF>1.50	Exit Minor	
	62.17	43.31	32.41	18.81	2.19	OSF1.50	6980.00	6982.28				MinPt-Ct-Ct	
	62.15	43.40	32.34	18.75	2.19	OSF1.50	7000.00	6982.13				MINPT-O-EQU	
	62.16	43.45	32.38	18.75	2.19	OSF1.50	7010.00	6992.05				MinPt-O-ADP	
	62.28	43.54	32.43	18.75	2.19	OSF1.50	7030.00	7011.89				MinPt-O-SF	
	135.43	42.82	106.05	92.61	4.95	OSF1.50	7830.00	7809.75			OSF>5.00	Exit Alert	
	5252.46	45.70	5221.16	5206.76	182.31	OSF1.50	13462.09	8540.00				TD	

Morgan Fed Com 1H (Offset)

MWD ON to 1269TH (Del Survey)

1458.91	32.81	1456.41	1426.10	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
1458.74	32.81	1456.22	1425.63	65958.20	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
1458.62	32.81	1456.12	1425.81	203414.45	MAS = 10.00 (m)	26.50	26.50				WRP	
1458.62	32.81	1456.11	1425.81	187248.26	MAS = 10.00 (m)	30.00	30.00				MinPts	
1458.69	32.81	1456.50	1428.08	1634.32	MAS = 10.00 (m)	220.00	220.00				MINPT-O-EQU	
1478.70	32.81	1460.90	1443.89	110.85	MAS = 10.00 (m)	3040.00	3040.00				MinPts	
1478.60	32.81	1458.47	1444.17	92.00	MAS = 10.00 (m)	3650.00	3650.00				MinPts	
1478.65	32.81	1455.24	1444.17	76.65	MAS = 10.00 (m)	4400.00	4400.00				MinPts	
1478.34	32.81	1455.10	1443.53	78.65	MAS = 10.00 (m)	4570.00	4569.93				MINPT-O-EQU	
1478.26	32.81	1455.10	1443.43	79.31	MAS = 10.00 (m)	4630.00	4629.83				MinPts	
1518.04	32.81	1496.59	1483.23	89.37	MAS = 10.00 (m)	7047.85	7029.71				MinPt-O-SF	
1518.82	32.81	1497.46	1484.11	89.37	MAS = 10.00 (m)	7100.00	7081.38				MinPt-O-SF	
1529.75	32.81	1509.63	1496.94	88.89	MAS = 10.00 (m)	8007.83	7987.44				MinPt-O-SF	
1832.01	32.81	1811.67	1799.20	102.57	MAS = 10.00 (m)	8820.00	8808.67				MinPt-O-SF	
2627.79	44.68	2597.17	2583.11	93.37	OSF1.50	9630.00	8811.20				MinPt-O-SF	
5839.68	66.47	5784.73	5773.45	136.89	OSF1.50	13462.09	8540.00				TD	

Oxy Cedar 21.3 (Offset) INC

ONLY O-5400H (Del Survey)

1711.90	32.81	1708.70	1578.40	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
1710.45	32.81	1707.86	1577.64	18229.72	MAS = 10.00 (m)	26.50	26.50				MinPt-O-SF	
1658.79	306.49	1452.63	1352.30	8.17	OSF1.50	5510.00	5503.72				MinPt-O-SF	
1658.06	306.28	1453.09	1351.85	8.18	OSF1.50	5550.00	5543.41				MinPts	
1634.07	306.12	1453.12	1351.81	8.18	OSF1.50	5560.00	5553.33				MinPt-Ct-Ct	
4459.17	223.33	4318.45	4245.84	30.34	OSF1.50	10100.00	8607.77				MinPt-O-SF	
7178.14	283.44	6889.34	6894.70	38.31	OSF1.50	13462.09	8540.00				TD	

Gaines 28 Federal #1 (Offset)

Gyro-MWD ON to 10575H (Del Survey)

5170.71	32.81	5168.21	5137.60	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
5170.62	32.81	5168.12	5137.82	840964.83	MAS = 10.00 (m)	20.00	20.00				MinPt-O-SF	
5170.61	32.81	5168.11	5137.81	N/A	MAS = 10.00 (m)	26.50	26.50				WRP	
5182.00	32.81	5145.22	5119.20	1201.92	MAS = 10.00 (m)	980.00	980.00				MinPts	
5182.03	32.81	5144.84	5119.82	992.67	MAS = 10.00 (m)	1170.00	1170.00				MINPT-O-EQU	
5148.41	32.81	5138.56	5115.90	550.71	MAS = 10.00 (m)	2040.00	2040.00				MinPts	
5148.53	32.81	5138.45	5115.72	537.13	MAS = 10.00 (m)	2090.00	2090.00				MINPT-O-EQU	
2312.25	49.88	2277.65	2262.37	75.87	OSF1.50	6320.00	6307.42				MinPt-O-SF	
1777.69	33.08	1753.54	1744.81	99.23	OSF1.50	7650.00	7639.81				MinPt-O-ADP	
1777.66	33.04	1753.53	1744.82	99.26	OSF1.50	7670.00	7649.81				MinPts	
1965.12	36.71	1838.84	1828.41	93.87	OSF1.50	8340.00	8310.43				MinPt-O-SF	
6896.83	43.04	6867.31	6853.79	255.09	OSF1.50	13462.09	8540.00				TD	

Oxy Gaines 28.5 (Offset) INC

ONLY O-5380H (Del Survey)

3977.28	32.81	3974.78	3844.47	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
3977.03	32.81	3974.50	3844.22	143286.80	MAS = 10.00 (m)	26.50	26.50				MinPt-O-SF	
3887.38	408.12	3613.80	3478.26	14.37	OSF1.50	5620.00	5612.86				MinPt-O-SF	
3883.27	408.09	3610.38	3475.18	14.35	OSF1.50	5770.00	5781.70				MinPt-O-ADP	
3883.20	408.00	3610.37	3475.20	14.36	OSF1.50	5780.00	5771.62				MINPT-O-EQU	
3483.14	407.81	3610.43	3475.33	14.38	OSF1.50	5800.00	5791.46				MinPt-Ct-Ct	
9326.33	388.62	9066.42	8937.71	36.22	OSF1.50	13462.09	8540.00				TD	

Oxy Gaines 28.2 (Offset) INC

ONLY O-5390H (Del Survey)

4969.12	32.81	4965.02	4935.31	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
4967.91	32.81	4965.38	4935.10	214771.89	MAS = 10.00 (m)	26.50	26.50				MinPt-O-SF	
4878.43	377.91	4825.66	4590.52	18.40	OSF1.50	5630.00	5622.79				MinPt-O-SF	
4872.92	376.89	4820.82	4498.03	18.51	OSF1.50	5830.00	5821.23				MinPt-O-ADP	
4872.86	376.82	4820.81	4498.04	18.52	OSF1.50	5840.00	5831.15				MINPT-O-EQU	
4872.80	376.68	4820.84	4498.11	18.52	OSF1.50	5860.00	5851.00				MinPt-Ct-Ct	
10275.00	362.48	10032.53	9912.54	42.81	OSF1.50	13462.09	8540.00				TD	

5 1/2" 17# P110 USF Tie-back string specifications:

PERFORMANCE DATA

TMK UP ULTRA™ SF
Technical Data Sheet

5.500 in

17.00 lbs/ft

P-110

Tubular Parameters

Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	17.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	545,000	lbs
PE Weight	16.87	lbs/ft	Tensile Load	620,000	lbs
Wall Thickness	0.304	in	Min. Internal Yield Pressure	10,600	psi
Nominal ID	4.892	in	Collapse Pressure	7,480	psi
Drift Diameter	4.767	in			
Nom. Pipe Body Area	4.962	in ²			

Connection Parameters

Connection OD	5.663	in
Connection ID	4.848	in
Make-Up Loss	5.911	in
Critical Section Area	4.559	in ²
Tension Efficiency	91.6	%
Compression Efficiency	91.6	%
Yield Load in Tension	499,000	lbs
Min. Internal Yield Pressure	10,600	psi
Collapse Pressure	7,480	psi
Uniaxial Bending	84	%/100 ft

Make-Up Torques

Min. Make-Up Torque	10,300	ft-lbs
Opt. Make-Up Torque	11,300	ft-lbs
Max. Make-Up Torque	12,400	ft-lbs
Yield Torque	15,500	ft-lbs



Printed on: July-24-2015

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PERFORMANCE DATA

TMK UP ULTRA™ DQX
Technical Data Sheet

4.500 in

11.60 lbs/ft

P-110

Tubular Parameters

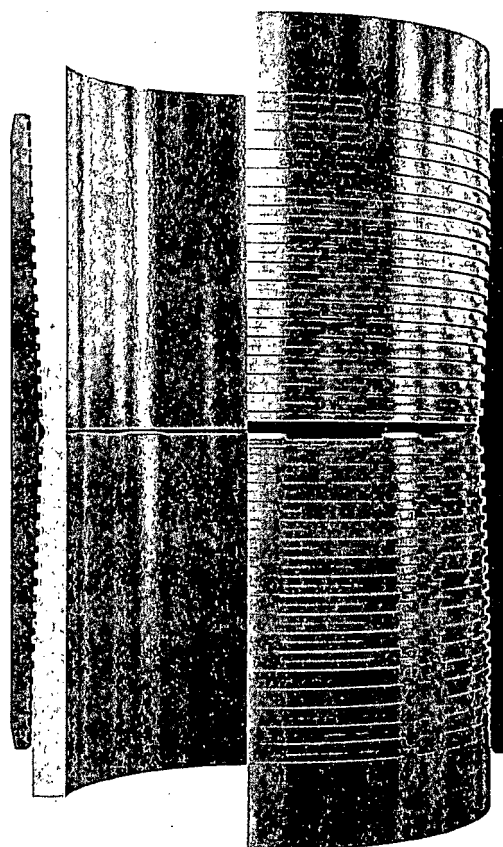
Size	4.500	in	Minimum Yield	110,000	psi
Nominal Weight	11.60	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	367,000	lbs
PE Weight	11.35	lbs/ft	Tensile Load	417,000	lbs
Wall Thickness	0.250	in	Min. Internal Yield Pressure	10,700	psi
Nominal ID	4.000	in	Collapse Pressure	7,580	psi
Drift Diameter	3.875	in			
Nom. Pipe Body Area	3.338	in ²			

Connection Parameters

Connection OD	5.000	in
Connection ID	4.000	in
Make-Up Loss	3.772	in
Critical Section Area	3.338	in ²
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	367,000	lbs
Min. Internal Yield Pressure	10,700	psi
Collapse Pressure	7,580	psi
Uniaxial Bending	112	% / 100 ft

Make-Up Torques

Min. Make-Up Torque	4,800	ft-lbs
Opt. Make-Up Torque	5,400	ft-lbs
Max. Make-Up Torque	5,900	ft-lbs
Yield Torque	8,600	ft-lbs



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