

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

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.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM88138
2. Name of Operator OXY USA INCORPORATED		6. If Indian, Allottee or Tribe Name
3a. Address 5 GREENWAY PLAZA STE 110 HOUSTON, TX 77046-0521		7. If Unit or CA/Agreement, Name and/or No.
3b. Phone No. (include area code) Ph: 432.685.5717		8. Well Name and No. CEDAR CANYON 23 2H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 23 T24S R29E SWSW 650FSL 660FWL		9. API Well No. 30-015-41194-00-X1
		10. Field and Pool, or Exploratory CORRAL DRAW
		11. County or Parish, and State EDDY COUNTY, NM

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 to Original A PD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplate 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 recomplate 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 drilling plan:

1. Extend the BHL 150' past the east hardline to allow for our shoe track and perforating guns, see attached for amended C-102 plat and amended directional drilling plan.

Proposed TD - 13427'M 8914"V

2. Request casing design modification, to drill the well with smaller bit sizes:
14-3/4" surface hole w/ 11-3/4" csg, 10-5/8" intermediate hole w/ 8-5/8" csg and 7-7/8" production hole w/ 5-1/2" csg. Details are below.

a. Surface Casing

Accepted for record
NMOCDC
NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 19 2014

SEE ATTACHED FOR RECEIVED
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct. Electronic Submission #254844 verified by the BLM Well Information System For OXY USA INCORPORATED, sent to the Carlsbad Committed to AFMS for processing by WESLEY INGRAM on 08/12/2014 (14WWI0314SE)	
Name (Printed/Typed) DAVID STEWART	Title REGULATORY ADVISOR
Signature (Electronic Submission)	Date 07/28/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>WESLEY INGRAM</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>08/12/2014</u>
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 <u>Carlsbad</u>

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 #254844 that would not fit on the form

32. Additional remarks, continued

11-3/4" 47# J-55 BT&C new csg @ 0-435', 14-3/4" hole w/ 8.5# mud

Coll Rating (psi)-1510 Burst Rating (psi)-3070
SF Coll-7.88 SF Burst-1.40 SF Ten-5.87

b. Intermediate Casing

8-5/8" 32# J-55 BT&C new csg @ 0-3030', 10-5/8" hole w/ 10.2# mud

Coll Rating (psi)-2530 Burst Rating (psi)-3930
SF Coll-3.06 SF Burst-1.37 SF Ten-2.77

c. Production Casing

5-1/2" 17# L-80 BT&C new csg @ 0-13427'M, 7-7/8" hole w/ 9.2# mud

Coll Rating (psi)-6290 Burst Rating (psi)-7740
SF Coll-1.53 SF Burst-1.25 SF Ten-1.72

Collapse and burst loads calculated using Stress Check with anticipated loads, see attached for design assumptions

2. Cement program adjustment to the new bit/casing sizes. Cement program modifications detailed below.

a. Surface - Circulate cement to surface w/ 380sx PP cmt w/ 1% CaCl₂, 14.8ppg 1.34 yield 1416# 24hr CS 150% Excess.

b. Intermediate - Circulate cement to surface w/ 510sx HES light PP cmt w/ 5% Salt + .25% HR-800, 12.9ppg 1.69 yield 771# 24hs CS 125% Excess followed by 200sx PP cmt, 14.8ppg 1.33 yield 1789# 24hr CS 125% Excess.

c. Production - Cement w/ 590sx Tuned Light cmt w/ .125#/sx Poly-E-Flake + .8% HR-601 + 3#/sx Kol-Seal, 9.76ppg 3.46 yield 788# 24hr CS 100% Excess followed by 780sx Super H cmt w/ 3#/sx salt + .4% CFR-3 + .5% Halad-344 + .125#/sx poly-e-flake, 13.2ppg 1.63 yield 1162# 24hr CS 40% Excess, Calc TOC 2030'.

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

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

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA INC.
LEASE NO.:	NM88138
WELL NAME & NO.:	2H-CEDAR CANYON 23
SURFACE HOLE FOOTAGE:	650'/S. & 660'/W.
BOTTOM HOLE FOOTAGE	660'/S. & 380'/E.
LOCATION:	Section 23, T. 24 S., R. 29 E., NMPM
COUNTY:	Eddy County, New Mexico

I. DRILLING

A. CASING

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.).

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. **DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.** Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. **IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS.** 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.

Medium cave/karst.

Possible lost circulation in the Delaware and Bone Spring formations.

1. The 11-3/4 inch surface casing shall be set at approximately 435 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If the salt is penetrated, casing shall be set 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.
2. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is: **(Ensure casing is set in the Lamar at approximately 3030')**
- ☒ 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.**

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

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 5-1/2 inch production casing is:
- ☒ Cement should tie-back at least 1000 feet into previous casing string.
Operator shall provide method of verification.
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.

WWI 051214

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

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

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

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-41194	Pool Code 50371	Pool Name Pierce Crossing Bone Spring
Property Code 39439	Property Name CEDAR CANYON 23 Com.	Well Number 2H
OGRID No. 16694	Operator Name OXY U.S.A. INC.	Elevation 2927'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	23	24-S	29-E		650	SOUTH	820	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	23	24-S	29-E		660	SOUTH	180	EAST	EDDY

Dedicated Acres 160	Joint or Infill N	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

150' GEODETTIC COORDINATES NAD 27 NME SURFACE LOCATION Y=435701.4 N X=615130.6 E LAT.=32.197313° N LONG.=103.961140° W CORNER COORDINATES A - Y=436373.2 N, X=614469.0 E B - Y=436411.1 N, X=619767.4 E C - Y=435046.6 N, X=614472.5 E D - Y=435086.9 N, X=619774.1 E BOTTOM HOLE LOCATION Y=435745.6 N X=619590.9 E LAT.=32.197391° N LONG.=103.946720° W BOTTOM PERF. LOCATION Y=435744.3 N X=619440.6 E LAT.= 32.197389° N LONG.= 103.947206° W		OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>David Stewart</i> 7/29/14 Signature Date David Stewart Sr. Reg. Adm. Printed Name david.stewart@oxy.com E-mail Address
PROJECT AREA PRODUCING AREA GRID AZ.=89°25'54" HORIZ. DIST.=4460.5' 330' 180' 150' 660' 330' S.L. B.P. B.H.		SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. AUGUST 11, 2011 Date of Survey Ronald J. Eidson Signature & Seal of Professional Surveyor NEW MEXICO REGISTERED SURVEYOR 3239 8/15/2014 Certificate Number 12641 Ronald J. Eidson 3239 LSL REL W.O. 13 11 0267 JWSC W.O. 14 13 0778

OXY USA Inc
Cedar Canyon 23 Com #2H

Casing Design Assumptions:

Burst Loads

CSG Test (Surface)

- Internal: Displacement fluid + 70% CSG Burst rating
- External: Pore Pressure from section TD to surface

CSG Test (Intermediate)

- Internal: Displacement fluid + 70% CSG Burst rating
- External: Pore Pressure from the Intermediate hole TD to Surface CSG shoe and MW of the drilling mud that was in the hole when the CSG was run to surface

CSG Test (Production)

- Internal: Displacement fluid + 80% CSG Burst rating
- External: Pore Pressure from the well TD the Intermediate CSG shoe and MW of the drilling mud that was in the hole when the CSG was run to surface

Gas Kick (Surface/Intermediate)

- Internal: Gas Kick based on Pore Pressure or Fracture Gradient @ CSG shoe with a gas 0.115psi/ft Gas gradient to surface while drilling the next hole section (e.g. Gas Kick while drilling the production hole section is a burst load used to design the intermediate CSG)
- External: Pore Pressure from section TD to previous CSG shoe and MW of the drilling mud that was in the hole when the CSG was run to surface

Stimulation (Production)

- Internal: Displacement fluid + Max Frac treating pressure (not to exceed 80% CSG Burst rating)
- External: Pore Pressure from the well TD to the Intermediate CSG shoe and 8.5 ppg MWE to surface

Collapse Loads

Lost Circulation (Surface/Intermediate)

- Internal: Losses experienced while drilling the next hole section (e.g. losses while drilling the production hole section are used as a collapse load to design the intermediate CSG). After losses there will be a column of mud inside the CSG with an equivalent weight to the Pore Pressure of the lost circulation zone
- External: MW of the drilling mud that was in the hole when the CSG was run

Cementing (Surface/Intermediate/Production)

- Internal: Displacement Fluid
- External: Cement Slurries to TOC, MW to surface

Full Evacuation (Production)

- Internal: Atmospheric Pressure
- External: MW of the drilling mud that was in the hole when the CSG was run

Tension Loads

Running CSG (Surface/Intermediate/Production)

- Axial load of the buoyant weight of the string plus either 100 klb over-pull or string weight in air, whichever is less

Green Cement (Surface/Intermediate/Production)

- Axial load of the buoyant weight of the string plus the cement plug bump pressure (Final displacement pressure + 500 psi)

Burst, Collapse and Tensile SF are calculated using Landmark's Stress Check (Casing Design) software.



KB @ 2951.00m (HAP 474)
GI 2927.00

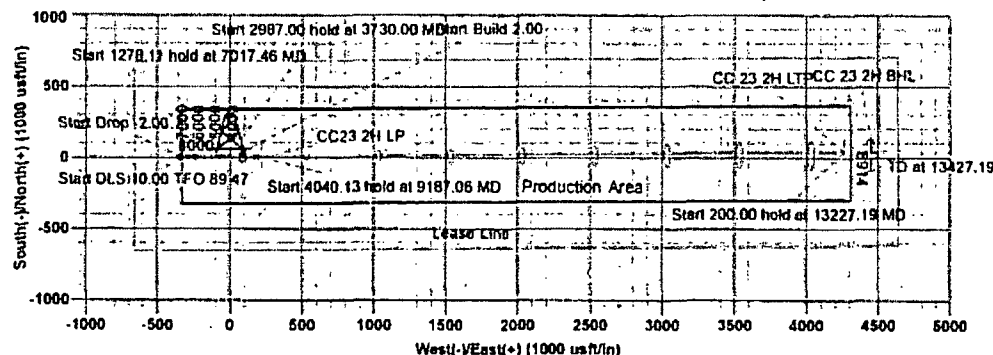
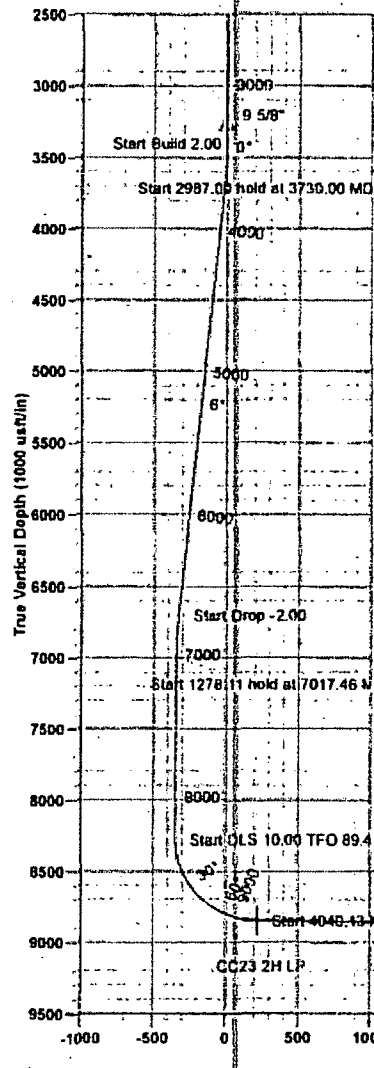
Cedar Canyon 23 2H
Eddy County, New Mexico
Northing: 435701.40
Easting: 615130.60
Design #4



Azimuths to Grid North
True North: -0.20°
Magnetic North: 7.35°

Magnetic Field
Strength: 48366.5nT
Dip Angle: 60.05°
Date: 3/14/2013
Model: IGRF2010

To convert Magnetic North to Grid, Add 7.35°
To convert True North to Grid, Subtract 0.20°



DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
CC23 2H LP	8851.00	5.20	220.79	435706.60	615351.39	32° 11' 50.369 N	103° 57' 37.534 W
CC 23 2H LTP	8911.00	42.40	4260.30	435743.80	619390.90	32° 11' 50.598 N	103° 56' 50.521 W
CC 23 2H BHL	8913.97	44.24	4460.27	435745.64	619590.87	32° 11' 50.607 N	103° 56' 46.194 W

WELL DETAILS Cedar Canyon 23 2H							
		Ground Level:	2927.00				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		
0.00	0.00	435701.40	615130.60	32° 11' 50.325 N	103° 57' 40.103 W		

SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VSec	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3430.00	0.00	0.00	3430.00	0.00	0.00	0.00	0.00	0.00		
3730.00	0.00	270.00	3729.45	0.00	-15.69	2.00	270.00	-15.69		
6717.00	0.00	270.00	6700.09	0.00	-327.92	0.00	0.00	-327.90		
7017.46	0.00	0.00	7000.00	0.00	-343.64	2.00	180.00	-343.62		
8295.57	0.00	0.00	8278.11	0.00	-343.64	0.00	0.00	-343.62		
9187.08	89.15	89.47	8851.00	5.20	220.79	10.00	89.47	220.83	CC 23 2H LTP	
13227.19	89.15	89.47	8911.00	42.40	4260.30	0.00	0.00	4260.51		
13427.19	89.15	89.47	8913.97	44.24	4460.27	0.00	0.00	4460.49	CC 23 2H BHL	

SITE DETAILS:	
Cedar Canyon 23 2H	
Site Centre Northing: 435701.40	
Easting: 615130.60	
Positional Uncertainty: 0.00	
Convergence: 0.20	
Local North Grid	

PROJECT DETAILS:	
Eddy County, New Mexico	
Geodetic System: US State Plane 1927 (Exact solution)	
Datum: NAD 1927 (NADCON CONUS)	
Ellipsoid: Clarke 1866	
Zone: New Mexico East 3001	
System Datum: Mean Sea Level	

CASING DETAILS		
TVD	MD	Size
435.00	435.00	13-5/8
3310.00	3310.00	9-5/8
8913.97	8913.97	5-1/2

Judge Fletcher
11:40, July 24 2014
Scientific Drilling Int'l
633 Rankin Cir
Houston, Tx 77073



Scientific Drilling, Int'l Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Cedar Canyon 23 2H
Company:	OXY	TVD Reference:	KB @ 2951.00usft (H&P 474)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 2951.00usft (H&P 474)
Site:	Cedar Canyon 23 2H	North Reference:	Grid
Well:	Cedar Canyon 23 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Design #4		

Project:	Eddy County, New Mexico, New Mexico		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Cedar Canyon 23 2H		
Site Position:	Northings:	435,701.40 usft	Latitude: 32° 11' 50.325 N
From: Map	Easting:	615,130.60 usft	Longitude: 103° 57' 40.103 W
Position Uncertainty:	0.00 usft	Slot Radius: 13-3/16"	Grid Convergence: 0.20"

Well:	Cedar Canyon 23 2H		
Well Position	+N-S	0.00 usft	Northings: 435,701.40 usft
	+E-W	0.00 usft	Easting: 615,130.60 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level: 2,927.00 usft

Wellbore:	Original Wellpath		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	3/14/2013	7.55
			Dip Angle
			60.05
			Field Strength
			48,387

Design:	Design #4		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			89.43

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,430.00	0.00	0.00	3,430.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,730.00	6.00	270.00	3,729.45	0.00	-15.69	2.00	2.00	0.00	270.00	
6,717.00	6.00	270.00	6,700.09	0.00	-327.92	0.00	0.00	0.00	0.00	
7,017.46	0.00	0.00	7,000.00	0.00	-343.64	2.00	-2.00	0.00	180.00	
8,295.57	0.00	0.00	8,278.11	0.00	-343.64	0.00	0.00	0.00	0.00	
9,187.06	89.15	89.47	8,851.00	5.20	220.79	10.00	10.00	10.04	89.47	
13,227.19	89.15	89.47	8,911.00	42.40	4,260.30	0.00	0.00	0.00	0.00	CC 23 2H LTP
13,427.19	89.15	89.47	8,913.97	44.24	4,460.27	0.00	0.00	0.00	0.00	CC 23 2H BHL



Scientific Drilling, Int'l Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Cedar Canyon 23 2H
Company:	OXY	TVD Reference:	KB @ 2951.00usft (H&P 474)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 2951.00usft (H&P 474)
Site:	Cedar Canyon 23 2H	North Reference:	Grid
Well:	Cedar Canyon 23 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Design #4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
435.00	0.00	0.00	435.00	0.00	0.00	0.00	0.00	0.00	0.00	
13 5/8"										
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,310.00	0.00	0.00	3,310.00	0.00	0.00	0.00	0.00	0.00	0.00	
9 5/8"										
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,430.00	0.00	0.00	3,430.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	1.40	270.00	3,499.99	0.00	-0.86	-0.86	2.00	2.00	0.00	
3,600.00	3.40	270.00	3,599.90	0.00	-5.04	-5.04	2.00	2.00	0.00	
3,700.00	5.40	270.00	3,699.60	0.00	-12.71	-12.71	2.00	2.00	0.00	
3,730.00	6.00	270.00	3,729.45	0.00	-15.69	-15.69	2.00	2.00	0.00	
3,800.00	6.00	270.00	3,799.07	0.00	-23.01	-23.01	0.00	0.00	0.00	
3,900.00	6.00	270.00	3,898.52	0.00	-33.46	-33.46	0.00	0.00	0.00	
4,000.00	6.00	270.00	3,997.97	0.00	-43.92	-43.91	0.00	0.00	0.00	
4,100.00	6.00	270.00	4,097.43	0.00	-54.37	-54.37	0.00	0.00	0.00	
4,200.00	6.00	270.00	4,198.88	0.00	-64.82	-64.82	0.00	0.00	0.00	
4,300.00	6.00	270.00	4,296.33	0.00	-75.27	-75.27	0.00	0.00	0.00	
4,400.00	6.00	270.00	4,395.78	0.00	-85.73	-85.72	0.00	0.00	0.00	
4,500.00	6.00	270.00	4,495.23	0.00	-96.18	-96.18	0.00	0.00	0.00	
4,600.00	6.00	270.00	4,594.69	0.00	-106.63	-106.63	0.00	0.00	0.00	
4,700.00	6.00	270.00	4,694.14	0.00	-117.09	-117.08	0.00	0.00	0.00	



Scientific Drilling, Int'l Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Cedar Canyon 23 2H
Company:	OXY	TVD Reference:	KB @ 2951.00usft (H&P 474)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 2951.00usft (H&P 474)
Site:	Cedar Canyon 23 2H	North Reference:	Grid
Well:	Cedar Canyon 23 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Design #4		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	6.00	270.00	4,793.59	0.00	-127.54	-127.53	0.00	0.00	0.00
4,900.00	6.00	270.00	4,893.04	0.00	-137.99	-137.99	0.00	0.00	0.00
5,000.00	6.00	270.00	4,992.49	0.00	-148.44	-148.44	0.00	0.00	0.00
5,100.00	6.00	270.00	5,091.95	0.00	-158.90	-158.89	0.00	0.00	0.00
5,200.00	6.00	270.00	5,191.40	0.00	-169.35	-169.34	0.00	0.00	0.00
5,300.00	6.00	270.00	5,290.85	0.00	-179.80	-179.79	0.00	0.00	0.00
5,400.00	6.00	270.00	5,390.30	0.00	-190.26	-190.25	0.00	0.00	0.00
5,500.00	6.00	270.00	5,489.76	0.00	-200.71	-200.70	0.00	0.00	0.00
5,600.00	6.00	270.00	5,589.21	0.00	-211.16	-211.15	0.00	0.00	0.00
5,700.00	6.00	270.00	5,688.66	0.00	-221.61	-221.60	0.00	0.00	0.00
5,800.00	6.00	270.00	5,788.11	0.00	-232.07	-232.06	0.00	0.00	0.00
5,900.00	6.00	270.00	5,887.56	0.00	-242.52	-242.51	0.00	0.00	0.00
6,000.00	6.00	270.00	5,987.02	0.00	-252.97	-252.96	0.00	0.00	0.00
6,100.00	6.00	270.00	6,086.47	0.00	-263.43	-263.41	0.00	0.00	0.00
6,200.00	6.00	270.00	6,185.92	0.00	-273.88	-273.87	0.00	0.00	0.00
6,300.00	6.00	270.00	6,285.37	0.00	-284.33	-284.32	0.00	0.00	0.00
6,400.00	6.00	270.00	6,384.83	0.00	-294.78	-294.77	0.00	0.00	0.00
6,500.00	6.00	270.00	6,484.28	0.00	-305.24	-305.22	0.00	0.00	0.00
6,600.00	6.00	270.00	6,583.73	0.00	-315.69	-315.67	0.00	0.00	0.00
6,700.00	6.00	270.00	6,683.18	0.00	-326.14	-326.13	0.00	0.00	0.00
6,717.00	6.00	270.00	6,700.09	0.00	-327.92	-327.90	0.00	0.00	0.00
6,800.00	4.34	270.00	6,782.75	0.00	-335.40	-335.38	2.00	-2.00	0.00
6,900.00	2.35	270.00	6,862.57	0.00	-341.23	-341.22	2.00	-2.00	0.00
7,000.00	0.35	270.00	6,982.54	0.00	-343.58	-343.57	2.00	-2.00	0.00
7,017.46	0.00	0.00	7,000.00	0.00	-343.64	-343.62	2.00	-2.00	0.00
7,100.00	0.00	0.00	7,082.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,200.00	0.00	0.00	7,182.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,300.00	0.00	0.00	7,282.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,400.00	0.00	0.00	7,382.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,500.00	0.00	0.00	7,482.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,600.00	0.00	0.00	7,582.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,700.00	0.00	0.00	7,682.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,800.00	0.00	0.00	7,782.54	0.00	-343.64	-343.62	0.00	0.00	0.00
7,900.00	0.00	0.00	7,882.54	0.00	-343.64	-343.62	0.00	0.00	0.00
8,000.00	0.00	0.00	7,982.54	0.00	-343.64	-343.62	0.00	0.00	0.00
8,100.00	0.00	0.00	8,082.54	0.00	-343.64	-343.62	0.00	0.00	0.00
8,200.00	0.00	0.00	8,182.54	0.00	-343.64	-343.62	0.00	0.00	0.00
8,295.57	0.00	0.00	8,278.11	0.00	-343.64	-343.62	0.00	0.00	0.00
8,300.00	0.44	89.47	8,282.54	0.00	-343.62	-343.60	10.00	10.00	0.00
8,400.00	10.44	89.47	8,381.96	0.09	-334.15	-334.13	10.00	10.00	0.00
8,500.00	20.44	89.47	8,478.23	0.33	-307.55	-307.54	10.00	10.00	0.00
8,600.00	30.44	89.47	8,568.42	0.73	-264.65	-264.63	10.00	10.00	0.00
8,700.00	40.44	89.47	8,649.78	1.26	-206.74	-206.71	10.00	10.00	0.00
8,800.00	50.44	89.47	8,719.86	1.92	-135.57	-135.55	10.00	10.00	0.00
8,900.00	60.44	89.47	8,776.51	2.67	-53.33	-53.30	10.00	10.00	0.00
9,000.00	70.44	89.47	8,818.01	3.51	37.51	37.54	10.00	10.00	0.00
9,100.00	80.44	89.47	8,843.12	4.40	134.17	134.21	10.00	10.00	0.00
9,187.06	89.15	89.47	8,851.00	5.20	220.79	220.83	10.00	10.00	0.00
CC23-2H.LP									
9,200.00	89.15	89.47	8,851.20	5.32	233.72	233.77	0.00	0.00	0.00
9,300.00	89.15	89.47	8,852.68	6.24	333.71	333.75	0.00	0.00	0.00
9,400.00	89.15	89.47	8,854.17	7.16	433.69	433.74	0.00	0.00	0.00
9,500.00	89.15	89.47	8,855.65	8.08	533.68	533.73	0.00	0.00	0.00
9,600.00	89.15	89.47	8,857.14	9.00	633.66	633.72	0.00	0.00	0.00



Scientific Drilling, Int'l Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Cedar Canyon 23 2H
Company:	OXY	TVD Reference:	KB @ 2951.00usft (H&P 474)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 2951.00usft (H&P 474)
Site:	Cedar Canyon 23 2H	North Reference:	Grid
Well:	Cedar Canyon 23 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Design #4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (/100usft)	Build Rate (/100usft)	Turn Rate (/100usft)	
9,700.00	89.15	89.47	8,858.62	9.92	733.65	733.71	0.00	0.00	0.00	
9,800.00	89.15	89.47	8,860.11	10.84	833.63	833.70	0.00	0.00	0.00	
9,900.00	89.15	89.47	8,861.59	11.76	933.62	933.69	0.00	0.00	0.00	
10,000.00	89.15	89.47	8,863.08	12.68	1,033.60	1,033.68	0.00	0.00	0.00	
10,100.00	89.15	89.47	8,864.56	13.60	1,133.59	1,133.67	0.00	0.00	0.00	
10,200.00	89.15	89.47	8,866.05	14.53	1,233.57	1,233.66	0.00	0.00	0.00	
10,300.00	89.15	89.47	8,867.53	15.45	1,333.56	1,333.64	0.00	0.00	0.00	
10,400.00	89.15	89.47	8,869.02	16.37	1,433.54	1,433.63	0.00	0.00	0.00	
10,500.00	89.15	89.47	8,870.50	17.29	1,533.53	1,533.62	0.00	0.00	0.00	
10,600.00	89.15	89.47	8,871.99	18.21	1,633.51	1,633.61	0.00	0.00	0.00	
10,700.00	89.15	89.47	8,873.47	19.13	1,733.50	1,733.60	0.00	0.00	0.00	
10,800.00	89.15	89.47	8,874.96	20.05	1,833.48	1,833.59	0.00	0.00	0.00	
10,900.00	89.15	89.47	8,876.44	20.97	1,933.46	1,933.58	0.00	0.00	0.00	
11,000.00	89.15	89.47	8,877.93	21.89	2,033.45	2,033.57	0.00	0.00	0.00	
11,100.00	89.15	89.47	8,879.41	22.81	2,133.43	2,133.56	0.00	0.00	0.00	
11,200.00	89.15	89.47	8,880.90	23.73	2,233.42	2,233.54	0.00	0.00	0.00	
11,300.00	89.15	89.47	8,882.38	24.65	2,333.40	2,333.53	0.00	0.00	0.00	
11,400.00	89.15	89.47	8,883.87	25.58	2,433.39	2,433.52	0.00	0.00	0.00	
11,500.00	89.15	89.47	8,885.35	26.50	2,533.37	2,533.51	0.00	0.00	0.00	
11,600.00	89.15	89.47	8,886.84	27.42	2,633.36	2,633.50	0.00	0.00	0.00	
11,700.00	89.15	89.47	8,888.32	28.34	2,733.34	2,733.49	0.00	0.00	0.00	
11,800.00	89.15	89.47	8,889.81	29.26	2,833.33	2,833.48	0.00	0.00	0.00	
11,900.00	89.15	89.47	8,891.29	30.18	2,933.31	2,933.47	0.00	0.00	0.00	
12,000.00	89.15	89.47	8,892.78	31.10	3,033.30	3,033.46	0.00	0.00	0.00	
12,100.00	89.15	89.47	8,894.26	32.02	3,133.28	3,133.45	0.00	0.00	0.00	
12,200.00	89.15	89.47	8,895.75	32.94	3,233.27	3,233.43	0.00	0.00	0.00	
12,300.00	89.15	89.47	8,897.23	33.86	3,333.25	3,333.42	0.00	0.00	0.00	
12,400.00	89.15	89.47	8,898.72	34.78	3,433.24	3,433.41	0.00	0.00	0.00	
12,500.00	89.15	89.47	8,900.20	35.70	3,533.22	3,533.40	0.00	0.00	0.00	
12,600.00	89.15	89.47	8,901.69	36.62	3,633.21	3,633.39	0.00	0.00	0.00	
12,700.00	89.15	89.47	8,903.17	37.55	3,733.19	3,733.38	0.00	0.00	0.00	
12,800.00	89.15	89.47	8,904.66	38.47	3,833.17	3,833.37	0.00	0.00	0.00	
12,900.00	89.15	89.47	8,906.14	39.39	3,933.16	3,933.36	0.00	0.00	0.00	
13,000.00	89.15	89.47	8,907.63	40.31	4,033.14	4,033.35	0.00	0.00	0.00	
13,100.00	89.15	89.47	8,909.11	41.23	4,133.13	4,133.33	0.00	0.00	0.00	
13,200.00	89.15	89.47	8,910.60	42.15	4,233.11	4,233.32	0.00	0.00	0.00	
13,227.19	89.15	89.47	8,911.00	42.40	4,260.30	4,260.51	0.00	0.00	0.00	
CC 23 2H LTP										
13,300.00	89.15	89.47	8,912.08	43.07	4,333.10	4,333.31	0.00	0.00	0.00	
13,400.00	89.15	89.47	8,913.57	43.99	4,433.08	4,433.30	0.00	0.00	0.00	
13,427.19	89.15	89.47	8,913.97	44.24	4,460.27	4,460.49	0.00	0.00	0.00	
CC 23 2H BHL										



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Company:	OXY	TVD Reference:	KB @ 2951.00usft (H&P 474)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 2951.00usft (H&P 474)
Site:	Cedar Canyon 23 2H	North Reference:	Grid
Well:	Cedar Canyon 23 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Design #4		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
CC23 2H LP	0.00	0.00	8,851.00	5.20	220.79	435,706.60	615,351.39	32° 11' 50.369 N	103° 57' 37.534 W
- plan misses target center by 0.01usft at 9187.06usft MD (8851.00 TVD, 5 20 N, 220 79 E)									
- Point									
CC 23 2H LTP	0.00	0.00	8,911.00	42.40	4,260.30	435,743.80	619,390.90	32° 11' 50.596 N	103° 56' 50.521 W
- plan hits target center									
- Point									
CC 23 2H BHL	0.00	0.00	8,913.97	44.24	4,460.27	435,745.64	619,590.87	32° 11' 50.607 N	103° 56' 48.194 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(usft)	(usft)		(")	(")	
435.00	435.00	13 5/8"	13-5/8	16	
3,310.00	3,310.00	9 5/8"	9-5/8	12-1/4	
13,626.04		5 1/2"	5-1/2	8-1/2	

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