NM OIL CONSERVATION
OCD Artesia ARTESIA DISTRICT

AUG 3 2015

RECEIVED

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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.

5. Lease Serial No.
NMNM94651

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
CEDAR CANYON 28 FEDERAL 6H

2. Name of Operator
OXY USA INCORPORATED
Contact: DAVID STEWART

9. API Well No.
30-015-43234

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

3b. Phone No. (include area code)
Ph: 432.685.5717

10. Field and Pool, or Exploratory
PIERCE CROSSING

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 28 T24S R29E NESE 1870FSL 200FEL

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 recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 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.)

surface
use existing COA

OXY USA Inc. respectfully requests approval for the following changes to the drilling plan:

Proposed TD - 13533'M 8625'V

Accepted for record NMOCD 8/12/15

1. Move Surface Location 50' south 40' east:
New - 1820 FSL 240 FEL
Old - 1870 FSL 200 FEL
See attached for amended plats

SEE ATTACHED FOR CONDITIONS OF APPROVAL

2. Request casing design modification, to drill the well with smaller bit sizes:
14-3/4" surface hole w/ 10-3/4" csg, 9-7/8" intermediate hole w/ 7-5/8" csg and 6-3/4" production hole w/ 5-1/2 & 4-1/2" csg. Details are below.

Accepted for record NMOCD

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #309876 verified by the BLM Well Information System
For OXY USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by JENNIFER SANCHEZ on 07/23/2015 (15JAS0436SE)

Name *(Printed/Typed)* DAVID STEWART — Title REGULATORY ADVISOR

Signature (Electronic Submission) — Date 07/22/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED
JUL 24 2015
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Approved By ______ Title ______ Date ______

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

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 #309876 that would not fit on the form

32. Additional remarks, continued

a.Surface Casing
10-3/4" 45.5# J-55 BT&C new csg @ 0-400', 14-3/4" hole w/ 8.4# mud

Coll Rating (psi)-2090 Burst Rating (psi)-3580
SF Coll-12.00 SF Burst-1.42 SF Ten-5.91

*The surface casing will be set a minimum of 25' into the Rustler Anhydrite. If salt is encountered it will be set at least 25' above the salt.

b.Intermediate Casing
7-5/8" 26.4# L-80 BT&C new csg @ 0-2900', 9-7/8" hole w/ 10.0# mud

Coll Rating (psi)-3400 Burst Rating (psi)-6020
SF Coll-5.44 SF Burst-1.37 SF Ten-3.62

c.Production Casing
5-1/2" 20# P-110 USF new csg @ 0-8900'M, 6-3/4" hole w/ 9.2# mud
Coll Rating (psi)-11100 Burst Rating (psi)-12600
SF Coll-2.67 SF Burst-1.26 SF Ten-2.30

4-1/2" 13.5# P-110 BT&C new csg @ 8900-13533'M, 6-3/4" hole w/ 9.2# mud
Coll Rating (psi)-10670 Burst Rating (psi)-12410
SF Coll-2.57 SF Burst-1.25 SF Ten-2.70

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

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

a. Surface - Circulate cement to surface w/ 430sx PP cmt w/ 2% CaCl2, 14.8ppg 1.35 yield 1415# 24hr CS 150% Excess.

b. Intermediate - Circulate cement to surface w/ 580sx HES light PP cmt w/ 5% Salt + .1% HR-800, 12.9ppg 1.85 yield 824# 24hs CS 125% Excess followed by 200sx PP cmt, 14.8ppg 1.33 yield 1789# 24hr CS 125% Excess.

c. Production - Cement w/ 220sx Tuned Light (TM) system cmt w/ 3#/sx Kol-Seal + .125#/sx Poly-E-Flake + .8% HR-601, 10.2ppg 3.05 yield 555# 24hr CS 25% Excess followed by 530sx Super H cmt w/ 3#/sx salt + .1% HR-800 + .3% CFR-3 + .5% Halad(R)-344 + 2#/sx Kol-Seal, 13.2ppg 1.65 yield 1462# 24hr CS 25% Excess. Estimated TOC @ 1900'.

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.

4. Mud Program

Depth	Mud WT	Vis Sec	Fluid Loss	Type
0-400'	8.4-8.8	28-38	NC	FW Gel
400-2900'	9.8-10	28-32	NC	NaCl Brine
2900-TD	8.8-9.6	38-50	50-75cc/30min	EnerSeal (MMH)

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 3 2015

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, NM 87505

RECEIVED

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

☑ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-43234	96473	Pierce Crossing; Bone Spring, East

Property Code	Property Name	Well Number
304790	CEDAR CANYON "28" FEDERAL	6H

OGRID No.	Operator Name	Elevation
16696	OXY USA INC.	2924.8'

Surface Location

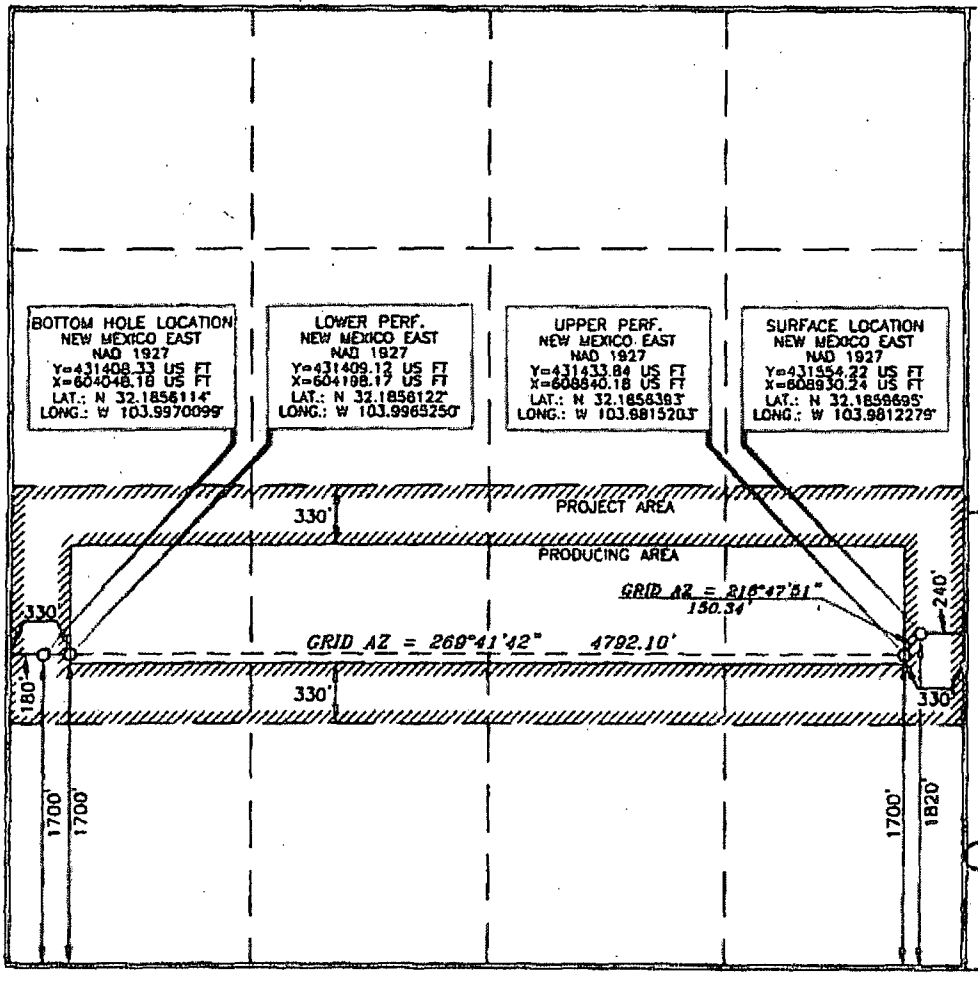
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	28	24 SOUTH	29 EAST, N.M.P.M.		1820'	SOUTH	240'	EAST	EDDY

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
L	28	24 SOUTH	29 EAST, N.M.P.M.		1700'	SOUTH	180'	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160	N		

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.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 7/21/15

David Stewart Sr. Reg. Adv.
Printed Name

david_stewart@oxy.com
E-mail Address

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.

15079
JULY 17, 2015
Date of Survey

Signature and Seal of Professional Surveyor

JERRY J. ASEL — NEW MEXICO — PROFESSIONAL LAND SURVEYOR

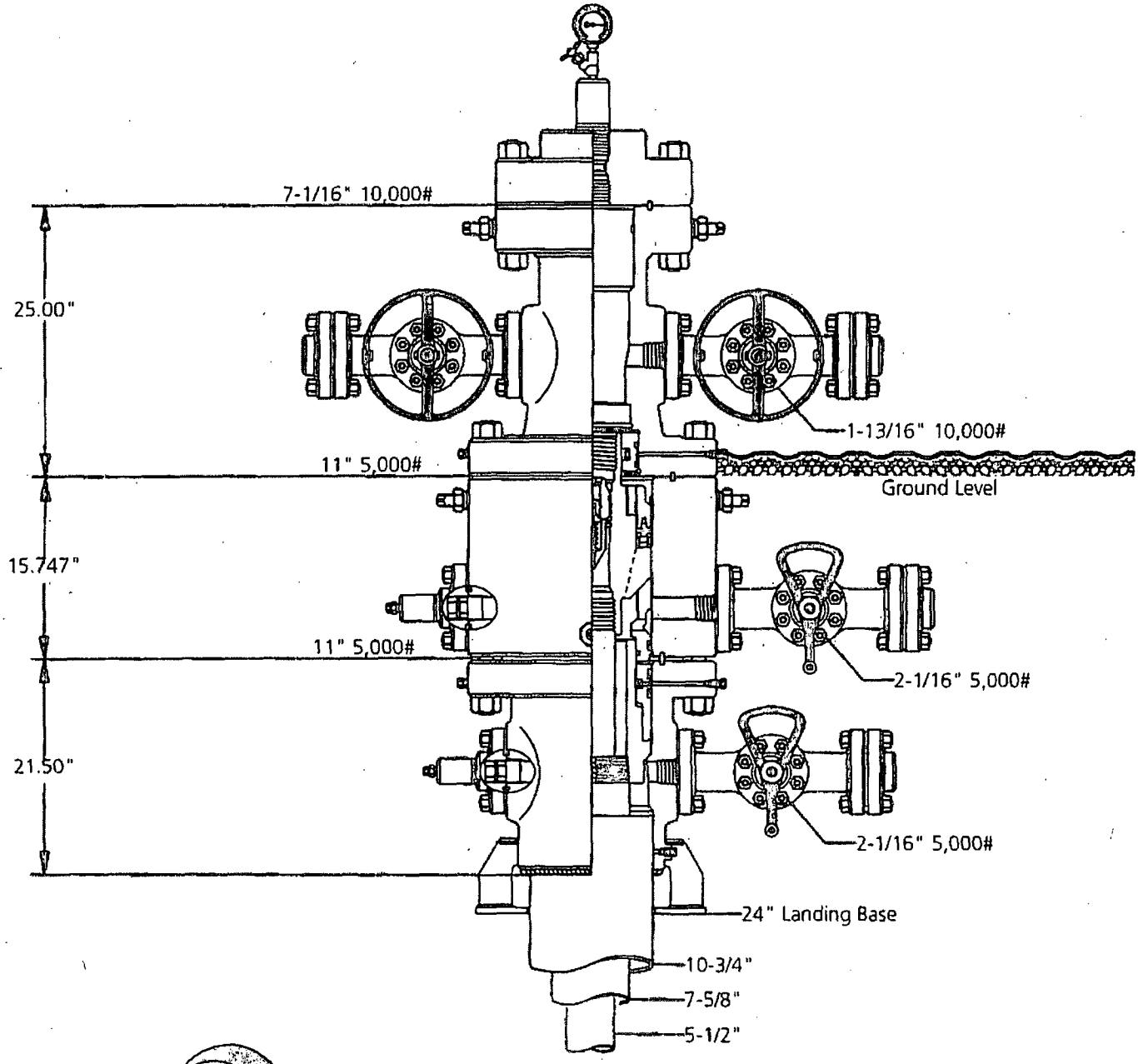
7/17/2015

Certificate Number 15079

WO# 141204WL-c (Rev. A) (KA)

Wellhead

Note: Dimensional information reflected on this drawing are estimated measurements only.



OXY

11" 5K MBS w/ 5.5" Mandrel
Permian Basin
SENM

CAMERON

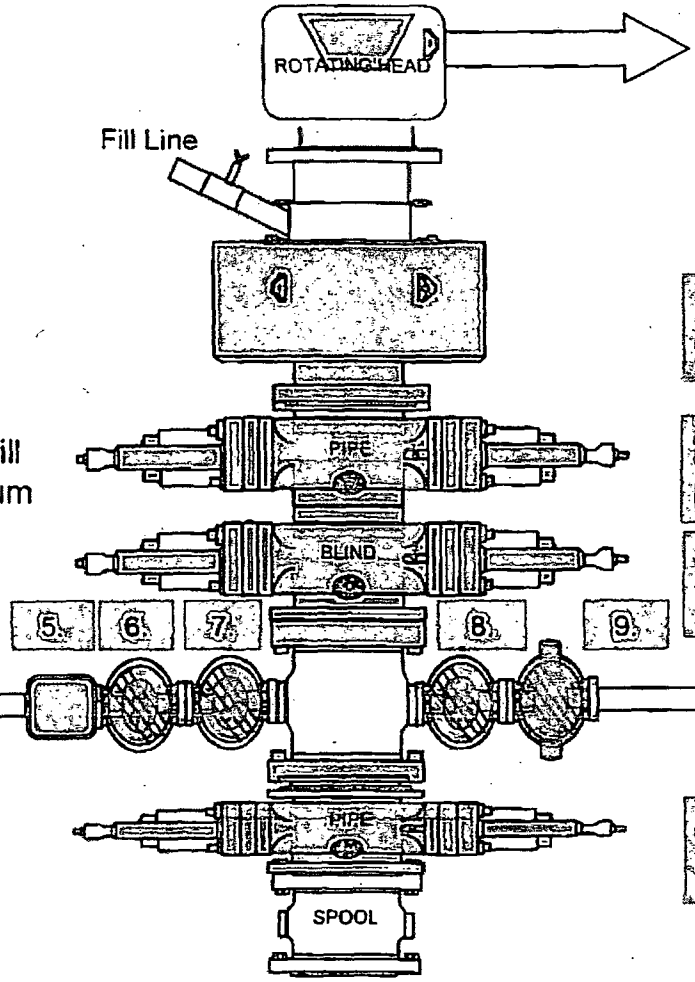
Name	Jeanette	Date	5-17-15	#	1256281

5M BOP Stack

Mud Cross Valves:

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

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



1. 5000 psi Annular (13-3/8" ID)
2. 5,000 psi Upper Pipe Ram (13-3/8" ID)
3. 5,000 psi Blind Ram (13-3/8" ID)
4. 5,000 psi Lower Pipe Ram (13-3/8" ID)

To Kill Line

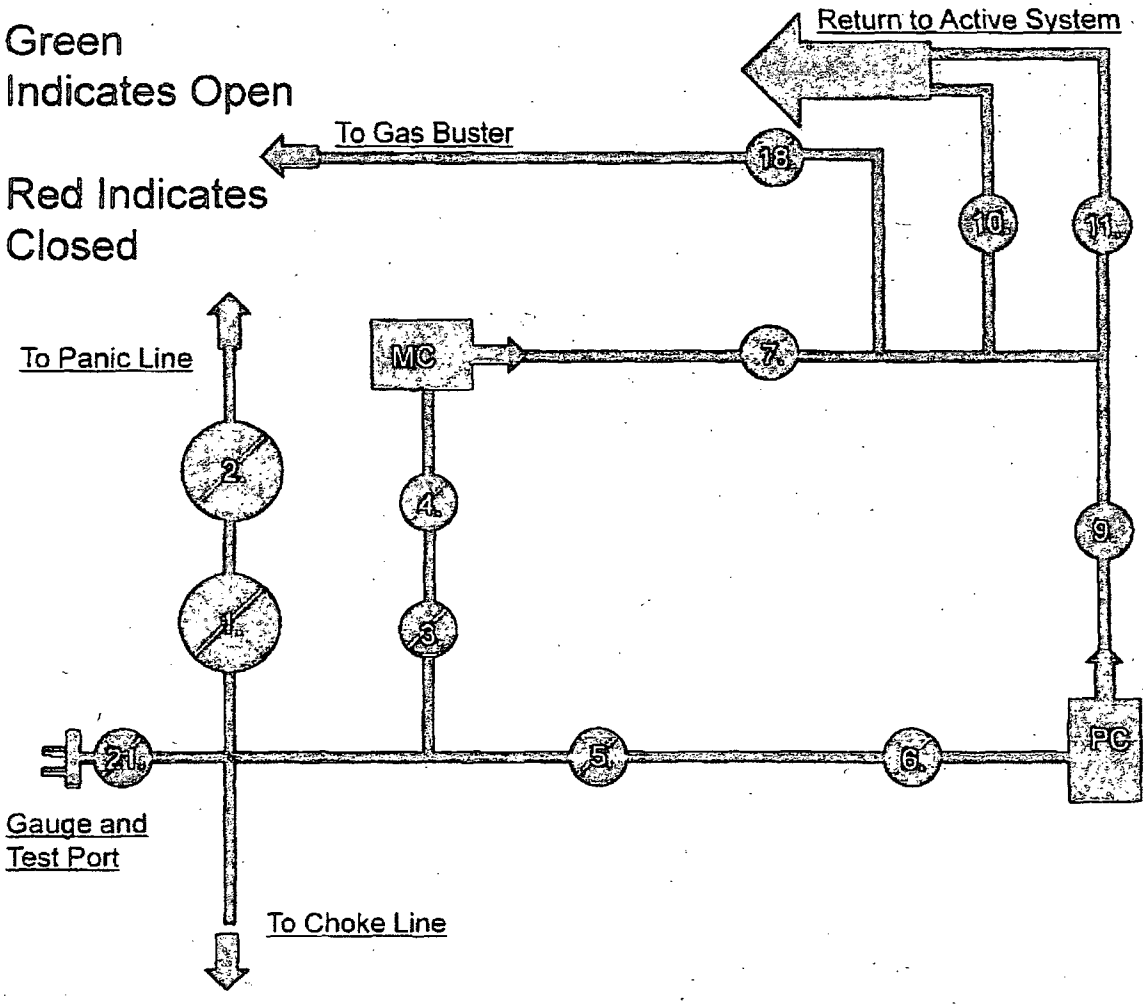
To Co-Flex and Choke Manifold

BOP

5M Choke Panel

Green
Indicates Open

Red Indicates
Closed



1. 4" Choke Manifold Valve
2. 4" Choke Manifold Valve
3. 3" Choke Manifold Valve
4. 3" Choke Manifold Valve
5. 3" Choke Manifold Valve
6. 3" Choke Manifold Valve
7. 3" Choke Manifold Valve
8. PC – Power Choke
9. 3" Choke Manifold Valve
10. 3" Choke Manifold Valve
11. Choke Manifold Valve
12. MC – Manual Choke

18. Choke Manifold Valve

21. Vertical Choke Manifold Valve

***All Valves 3" minimum**

Choke Manifold-1

OXY USA Inc.
Cedar Canyon 28 Federal #6H/7H

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: Fresh water 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.

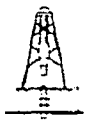
OXY Permian

Cedar Canyon 28 Federal 6H
Eddy County, NM (NAD 27 NME)
Northing: 431554.22
Easting: 608930.24
Plan #6

To convert Magnetic North to Grid, Add 7.18°
To convert True North to Grid, Subtract 0.19°

Azimuths to Grid North
True North: -0.19°
Magnetic North: 7.18°

Magnetic Field
Strength: 48372.3snT
Dip Angle: 60.05°
Date: 1/7/2015
Model: HDGM



KB @ 2949.80usft
Gr @ 2924.80

WELL DETAILS CC 28 Fed 6H
Ground Level: 2924.80

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	431554.22	608930.24	32° 11' 9.490 N	103° 58' 52.420 W

SECTION DETAILS

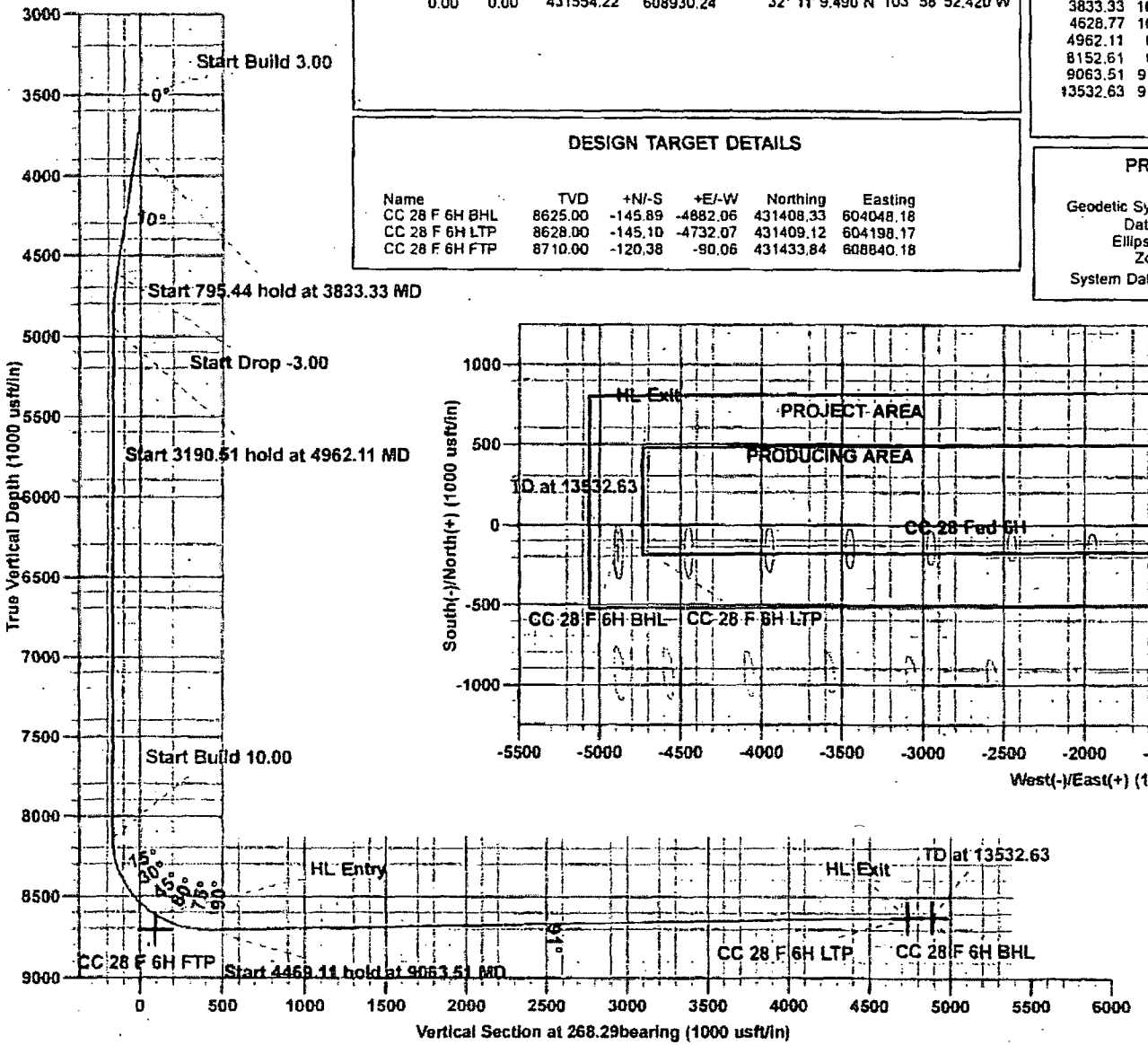
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3500.00	0.00	0.00	3500.00	0.00	0.00	0.00	0.00	0.00	
3833.33	10.00	120.00	3831.64	-14.51	25.13	3.00	120.00	-24.68	
4628.77	10.00	120.00	4615.00	-83.57	144.75	0.00	0.00	-142.19	
4962.11	0.00	0.00	4946.64	-98.08	169.88	3.00	180.00	-166.87	
8152.61	0.00	0.00	8137.15	-98.08	169.88	0.00	0.00	-166.87	
9063.51	91.09	269.46	8710.00	-103.61	-413.95	10.00	269.46	416.86	
13532.63	91.09	269.46	8625.00	-145.89	-4882.06	0.00	0.00	4884.24	CC 28 F 6H BHL

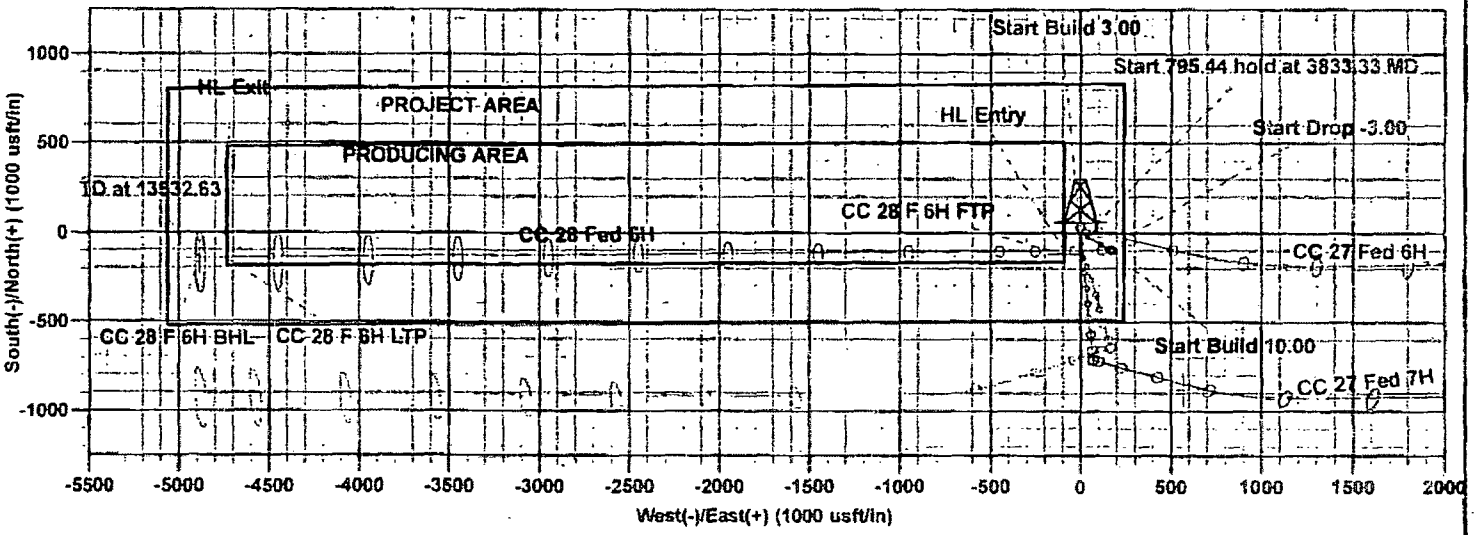
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
CC 28 F 6H BHL	8625.00	-145.89	-4882.06	431408.33	604048.18
CC 28 F 6H LTP	8628.00	-145.10	-4732.07	431409.12	604198.17
CC 28 F 6H FTP	8710.00	-120.38	-90.06	431433.84	608840.18

PROJECT DETAILS:
Eddy County, NM (NAD 27 NME)
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

SITE DETAILS:
Cedar Canyon 28 Federal 6H
Site Centre Northing: 431604.37
Easting: 608970.27
Positional Uncertainty: 0.00
Convergence: 0.19
Local North: Grid





DP-2

OXY Permian

Scientific Drilling
Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well CC 28 Fed 6H
Company:	OXY	TVD Reference:	KB @ 2949.80usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	KB @ 2949.80usft
Site:	Cedar Canyon 28 Federal 6H	North Reference:	Grid
Well:	CC 28 Fed 6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #6		

Project Eddy County, NM (NAD 27 NME), 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 28 Federal 6H

Site Position:		Northing:	431,604.37 usft	Latitude:	32° 11' 9.985 N
From:	Map	Easting:	608,970.27 usft	Longitude:	103° 58' 51.953 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.19 °

Well CC 28 Fed 6H

Well Position	+N/-S	-50.15 usft	Northing:	431,554.22 usft	Latitude:	32° 11' 9.490 N
	+E/-W	-40.03 usft	Easting:	608,930.24 usft	Longitude:	103° 58' 52.420 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	2,924.80 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/7/2015	7.37	60.05	48,372

Design Plan #6

Audit Notes:

Version:		Phase:	PLAN	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (bearing)
	0.00	0.00	0.00	268.29

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,833.33	10.00	120.00	3,831.64	-14.51	25.13	3.00	3.00	0.00	120.00	
4,628.77	10.00	120.00	4,615.00	-83.57	144.75	0.00	0.00	0.00	0.00	
4,962.11	0.00	0.00	4,946.64	-98.08	169.88	3.00	-3.00	0.00	180.00	
8,152.61	0.00	0.00	8,137.15	-98.08	169.88	0.00	0.00	0.00	0.00	
9,063.51	91.09	269.46	8,710.00	-103.61	-413.95	10.00	10.00	0.00	269.46	
13,532.63	91.09	269.46	8,625.00	-145.89	-4,882.06	0.00	0.00	0.00	0.00	CC 28 F 6H BHL

DP-3

OXY Permian

Scientific Drilling
Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well CC 28 Fed 6H
Company:	OXY	TVD Reference:	KB @ 2949.80usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	KB @ 2949.80usft
Site:	Cedar Canyon 28 Federal 6H	North Reference:	Grid
Well:	CC 28 Fed 6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #6		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	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
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	3.00	120.00	3,599.95	-1.31	2.27	-2.23	3.00	3.00	0.00
3,700.00	6.00	120.00	3,699.63	-5.23	9.06	-8.90	3.00	3.00	0.00
3,800.00	9.00	120.00	3,798.77	-11.76	20.36	-20.00	3.00	3.00	0.00
3,833.33	10.00	120.00	3,831.64	-14.51	25.13	-24.68	3.00	3.00	0.00
3,900.00	10.00	120.00	3,897.30	-20.30	35.15	-34.53	0.00	0.00	0.00
4,000.00	10.00	120.00	3,995.78	-28.98	50.19	-49.30	0.00	0.00	0.00
4,100.00	10.00	120.00	4,094.26	-37.66	65.23	-64.08	0.00	0.00	0.00
4,200.00	10.00	120.00	4,192.74	-46.34	80.27	-78.85	0.00	0.00	0.00
4,300.00	10.00	120.00	4,291.22	-55.03	95.31	-93.62	0.00	0.00	0.00
4,400.00	10.00	120.00	4,389.70	-63.71	110.35	-108.39	0.00	0.00	0.00
4,500.00	10.00	120.00	4,488.18	-72.39	125.38	-123.17	0.00	0.00	0.00
4,600.00	10.00	120.00	4,586.66	-81.07	140.42	-137.94	0.00	0.00	0.00
4,628.77	10.00	120.00	4,615.00	-83.57	144.75	-142.19	0.00	0.00	0.00
4,700.00	7.86	120.00	4,685.36	-89.10	154.33	-151.60	3.00	-3.00	0.00
4,800.00	4.86	120.00	4,784.73	-94.64	163.92	-161.02	3.00	-3.00	0.00
4,900.00	1.86	120.00	4,884.55	-97.57	169.00	-166.01	3.00	-3.00	0.00
4,962.11	0.00	0.00	4,946.64	-98.08	169.88	-166.87	3.00	-3.00	0.00
5,000.00	0.00	0.00	4,984.54	-98.08	169.88	-166.87	0.00	0.00	0.00

OXY Permian

Scientific Drilling
Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well CC 28 Fed 6H
Company:	OXY	TVD Reference:	KB @ 2949.80usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	KB @ 2949.80usft
Site:	Cedar Canyon 28 Federal 6H	North Reference:	Grid
Well:	CC 28 Fed 6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #6		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.00	0.00	0.00	5,084.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,200.00	0.00	0.00	5,184.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,300.00	0.00	0.00	5,284.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,400.00	0.00	0.00	5,384.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,500.00	0.00	0.00	5,484.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,600.00	0.00	0.00	5,584.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,700.00	0.00	0.00	5,684.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,800.00	0.00	0.00	5,784.54	-98.08	169.88	-166.87	0.00	0.00	0.00
5,900.00	0.00	0.00	5,884.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,000.00	0.00	0.00	5,984.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,100.00	0.00	0.00	6,084.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,200.00	0.00	0.00	6,184.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,300.00	0.00	0.00	6,284.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,400.00	0.00	0.00	6,384.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,500.00	0.00	0.00	6,484.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,600.00	0.00	0.00	6,584.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,700.00	0.00	0.00	6,684.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,800.00	0.00	0.00	6,784.54	-98.08	169.88	-166.87	0.00	0.00	0.00
6,900.00	0.00	0.00	6,884.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,000.00	0.00	0.00	6,984.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,100.00	0.00	0.00	7,084.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,200.00	0.00	0.00	7,184.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,300.00	0.00	0.00	7,284.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,400.00	0.00	0.00	7,384.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,500.00	0.00	0.00	7,484.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,600.00	0.00	0.00	7,584.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,700.00	0.00	0.00	7,684.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,800.00	0.00	0.00	7,784.54	-98.08	169.88	-166.87	0.00	0.00	0.00
7,900.00	0.00	0.00	7,884.54	-98.08	169.88	-166.87	0.00	0.00	0.00
8,000.00	0.00	0.00	7,984.54	-98.08	169.88	-166.87	0.00	0.00	0.00
8,100.00	0.00	0.00	8,084.54	-98.08	169.88	-166.87	0.00	0.00	0.00
8,152.61	0.00	0.00	8,137.15	-98.08	169.88	-166.87	0.00	0.00	0.00
8,200.00	4.74	269.46	8,184.48	-98.10	167.92	-164.91	10.00	10.00	0.00
8,250.00	9.74	269.46	8,234.07	-98.16	161.62	-158.62	10.00	10.00	0.00
8,300.00	14.74	269.46	8,282.92	-98.26	151.03	-148.02	10.00	10.00	0.00
8,350.00	19.74	269.46	8,330.65	-98.40	136.21	-133.21	10.00	10.00	0.00
8,400.00	24.74	269.46	8,376.92	-98.58	117.30	-114.30	10.00	10.00	0.00
8,450.00	29.74	269.46	8,421.36	-98.79	94.42	-91.43	10.00	10.00	0.00
8,500.00	34.74	269.46	8,463.64	-99.05	67.76	-64.77	10.00	10.00	0.00
8,550.00	39.74	269.46	8,503.43	-99.33	37.51	-34.53	10.00	10.00	0.00
8,600.00	44.74	269.46	8,540.44	-99.65	3.91	-0.93	10.00	10.00	0.00
8,650.00	49.74	269.46	8,574.38	-100.00	-32.78	35.76	10.00	10.00	0.00
8,700.00	54.74	269.46	8,604.99	-100.37	-72.30	75.26	10.00	10.00	0.00
8,750.00	59.74	269.46	8,632.03	-100.77	-114.33	117.29	10.00	10.00	0.00
8,800.00	64.74	269.46	8,655.32	-101.19	-158.56	161.51	10.00	10.00	0.00
8,850.00	69.74	269.46	8,674.65	-101.62	-204.65	207.59	10.00	10.00	0.00
8,900.00	74.74	269.46	8,689.90	-102.08	-252.25	255.18	10.00	10.00	0.00
8,950.00	79.74	269.46	8,700.94	-102.54	-300.99	303.92	10.00	10.00	0.00
9,000.00	84.74	269.46	8,707.69	-103.01	-350.52	353.44	10.00	10.00	0.00
9,050.00	89.74	269.46	8,710.10	-103.48	-400.44	403.35	10.00	10.00	0.00
9,063.51	91.09	269.46	8,710.00	-103.61	-413.95	416.86	10.00	10.00	0.00
9,100.00	91.09	269.46	8,709.31	-103.95	-450.43	453.34	0.00	0.00	0.00
9,200.00	91.09	269.46	8,707.41	-104.90	-550.41	553.30	0.00	0.00	0.00
9,300.00	91.09	269.46	8,705.51	-105.85	-650.39	653.26	0.00	0.00	0.00

DP-5

OXY Permian

Scientific Drilling
Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well CC 28 Fed 6H
Company:	OXY	TVD Reference:	KB @ 2949.80usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	KB @ 2949.80usft
Site:	Cedar Canyon 28 Federal 6H	North Reference:	Grid
Well:	CC 28 Fed 6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #6		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,400.00	91.09	269.46	8,703.60	-106.79	-750.36	753.22	0.00	0.00	0.00
9,500.00	91.09	269.46	8,701.70	-107.74	-850.34	853.18	0.00	0.00	0.00
9,600.00	91.09	269.46	8,699.80	-108.69	-950.32	953.14	0.00	0.00	0.00
9,700.00	91.09	269.46	8,697.90	-109.63	-1,050.30	1,053.10	0.00	0.00	0.00
9,800.00	91.09	269.46	8,695.99	-110.58	-1,150.27	1,153.06	0.00	0.00	0.00
9,900.00	91.09	269.46	8,694.09	-111.53	-1,250.25	1,253.02	0.00	0.00	0.00
10,000.00	91.09	269.46	8,692.19	-112.47	-1,350.23	1,352.99	0.00	0.00	0.00
10,100.00	91.09	269.46	8,690.29	-113.42	-1,450.21	1,452.95	0.00	0.00	0.00
10,200.00	91.09	269.46	8,688.39	-114.37	-1,550.18	1,552.91	0.00	0.00	0.00
10,300.00	91.09	269.46	8,686.48	-115.31	-1,650.16	1,652.87	0.00	0.00	0.00
10,400.00	91.09	269.46	8,684.58	-116.26	-1,750.14	1,752.83	0.00	0.00	0.00
10,500.00	91.09	269.46	8,682.68	-117.21	-1,850.12	1,852.79	0.00	0.00	0.00
10,600.00	91.09	269.46	8,680.78	-118.15	-1,950.09	1,952.75	0.00	0.00	0.00
10,700.00	91.09	269.46	8,678.87	-119.10	-2,050.07	2,052.71	0.00	0.00	0.00
10,800.00	91.09	269.46	8,676.97	-120.05	-2,150.05	2,152.67	0.00	0.00	0.00
10,900.00	91.09	269.46	8,675.07	-120.99	-2,250.03	2,252.64	0.00	0.00	0.00
11,000.00	91.09	269.46	8,673.17	-121.94	-2,350.00	2,352.60	0.00	0.00	0.00
11,100.00	91.09	269.46	8,671.26	-122.89	-2,449.98	2,452.56	0.00	0.00	0.00
11,200.00	91.09	269.46	8,669.36	-123.83	-2,549.96	2,552.52	0.00	0.00	0.00
11,300.00	91.09	269.46	8,667.46	-124.78	-2,649.94	2,652.48	0.00	0.00	0.00
11,400.00	91.09	269.46	8,665.56	-125.73	-2,749.91	2,752.44	0.00	0.00	0.00
11,500.00	91.09	269.46	8,663.66	-126.67	-2,849.89	2,852.40	0.00	0.00	0.00
11,600.00	91.09	269.46	8,661.75	-127.62	-2,949.87	2,952.36	0.00	0.00	0.00
11,700.00	91.09	269.46	8,659.85	-128.57	-3,049.84	3,052.32	0.00	0.00	0.00
11,800.00	91.09	269.46	8,657.95	-129.51	-3,149.82	3,152.29	0.00	0.00	0.00
11,900.00	91.09	269.46	8,656.05	-130.46	-3,249.80	3,252.25	0.00	0.00	0.00
12,000.00	91.09	269.46	8,654.14	-131.41	-3,349.78	3,352.21	0.00	0.00	0.00
12,100.00	91.09	269.46	8,652.24	-132.35	-3,449.75	3,452.17	0.00	0.00	0.00
12,200.00	91.09	269.46	8,650.34	-133.30	-3,549.73	3,552.13	0.00	0.00	0.00
12,300.00	91.09	269.46	8,648.44	-134.24	-3,649.71	3,652.09	0.00	0.00	0.00
12,400.00	91.09	269.46	8,646.53	-135.19	-3,749.69	3,752.05	0.00	0.00	0.00
12,500.00	91.09	269.46	8,644.63	-136.14	-3,849.66	3,852.01	0.00	0.00	0.00
12,600.00	91.09	269.46	8,642.73	-137.08	-3,949.64	3,951.97	0.00	0.00	0.00
12,700.00	91.09	269.46	8,640.83	-138.03	-4,049.62	4,051.94	0.00	0.00	0.00
12,800.00	91.09	269.46	8,638.93	-138.98	-4,149.60	4,151.90	0.00	0.00	0.00
12,900.00	91.09	269.46	8,637.02	-139.92	-4,249.57	4,251.86	0.00	0.00	0.00
13,000.00	91.09	269.46	8,635.12	-140.87	-4,349.55	4,351.82	0.00	0.00	0.00
13,100.00	91.09	269.46	8,633.22	-141.82	-4,449.53	4,451.78	0.00	0.00	0.00
13,200.00	91.09	269.46	8,631.32	-142.76	-4,549.51	4,551.74	0.00	0.00	0.00
13,300.00	91.09	269.46	8,629.41	-143.71	-4,649.48	4,651.70	0.00	0.00	0.00
13,400.00	91.09	269.46	8,627.51	-144.66	-4,749.46	4,751.66	0.00	0.00	0.00
13,500.00	91.09	269.46	8,625.61	-145.60	-4,849.44	4,851.62	0.00	0.00	0.00
13,532.63	91.09	269.46	8,625.00	-145.89	-4,882.06	4,884.24	0.00	0.00	0.00

OXY Permian

Scientific Drilling
Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well CC 28 Fed 6H
Company:	OXY	TVD Reference:	KB @ 2949.80usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	KB @ 2949.80usft
Site:	Cedar Canyon 28 Federal 6H	North Reference:	Grid
Well:	CC 28 Fed 6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #6		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (bearing)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CC 28 F 6H BHL - plan hits target center - Point	0.00	0.00	8,625.00	-145.89	-4,882.06	431,408.33	604,048.18	32° 11' 8.201 N	103° 59' 49.236 W
CC 28 F 6H LTP - plan misses target center by 0.63usft at 13382.61usft MD (8627.84 TVD, -144.49 N, -4732.07 E) - Point	0.00	0.00	8,628.00	-145.10	-4,732.07	431,409.12	604,198.17	32° 11' 8.204 N	103° 59' 47.490 W
CC 28 F 6H FTP - plan misses target center by 82.18usft at 8765.01usft MD (8639.43 TVD, -100.89 N, -127.39 E) - Point	0.00	0.00	8,710.00	-120.38	-90.06	431,433.84	608,840.18	32° 11' 8.302 N	103° 58' 53.473 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,500.00	3,500.00	0.00	0.00	Start Build 3.00
3,833.33	3,831.64	-14.51	25.13	Start 795.44 hold at 3833.33 MD
4,628.77	4,615.00	-83.57	144.75	Start Drop -3.00
4,962.11	4,946.64	-98.08	169.88	Start 3190.51 hold at 4962.11 MD
8,152.61	8,137.15	-98.08	169.88	Start Build 10.00
8,721.36	8,616.99	-100.54	-89.96	HL Entry
9,063.51	8,710.00	-103.61	-413.95	Start 4469.11 hold at 9063.51 MD
13,382.70	8,627.84	-144.49	-4,732.16	HL Exit
13,532.63	8,625.00	-145.89	-4,882.06	TD at 13532.63

H2S-1

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
Cedar Canyon 28 Federal 6H

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

1. Escape

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

H2S-2

Exit to road. Caution sign placed here.

Secondary Briefing Area

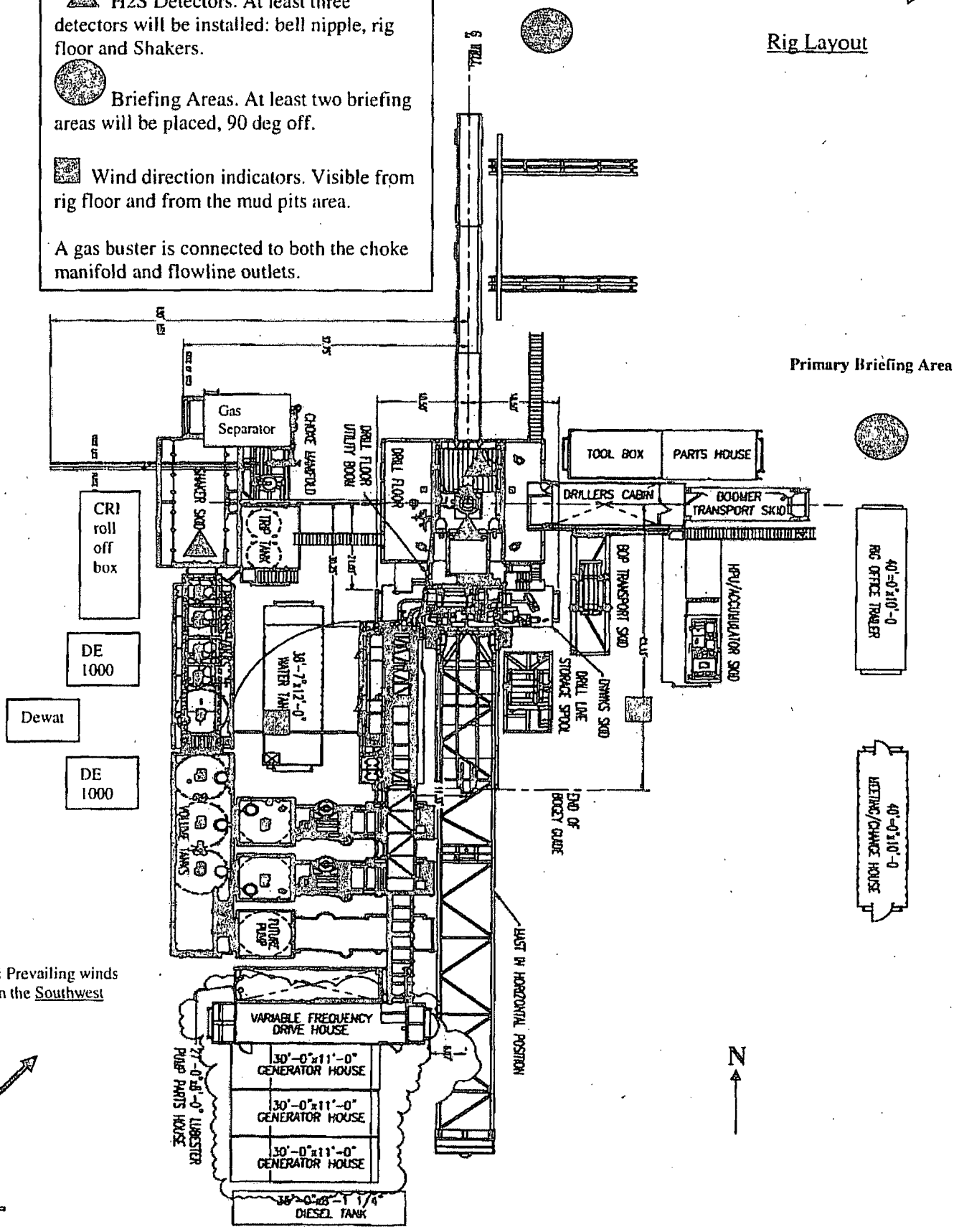
H2S Detectors. At least three detectors will be installed: bell nipple, rig floor and Shakers.

Briefing Areas. At least two briefing areas will be placed, 90 deg off.

Wind direction indicators. Visible from rig floor and from the mud pits area.

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

Rig Layout

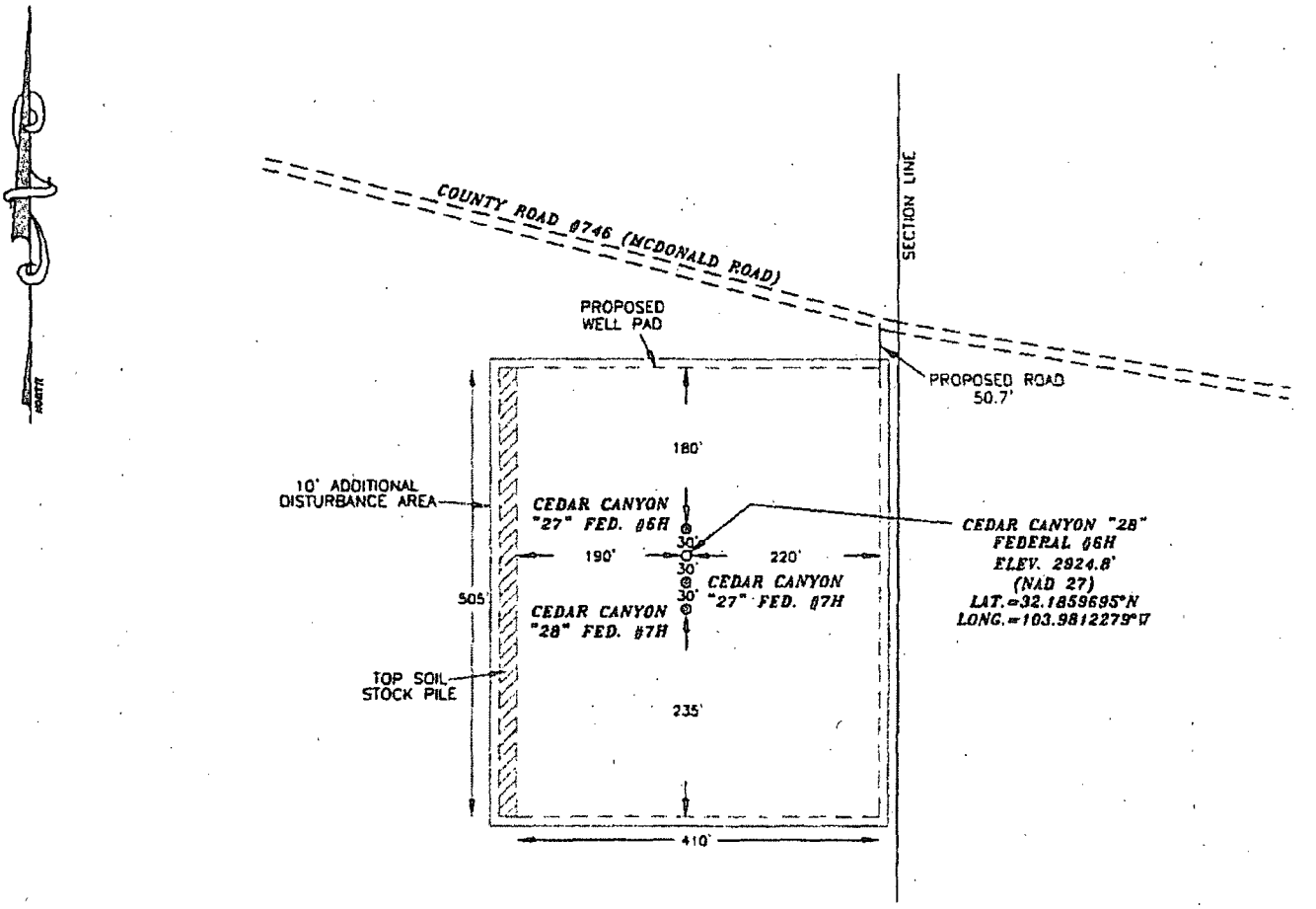


WIND: Prevailing winds are from the Southwest

Secondary Egress

Site Plan

OXY USA INC.
CEDAR CANYON "28" FEDERAL #6H
SITE PLAN



TERRY J ASEL NEW MEXICO 15079 REGISTERED PROFESSIONAL LAND SURVEYOR

LEGEND

- ▨ - DENOTES STOCK PILE AREA
- - - - - DENOTES PROPOSED WELL PAD
- ——— DENOTES PROPOSED ROAD

200' 0 200' 400' FEET

SCALE: 1"=200'

SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel N.M. R.P.L.S. No. 15079 — 7/17/2015

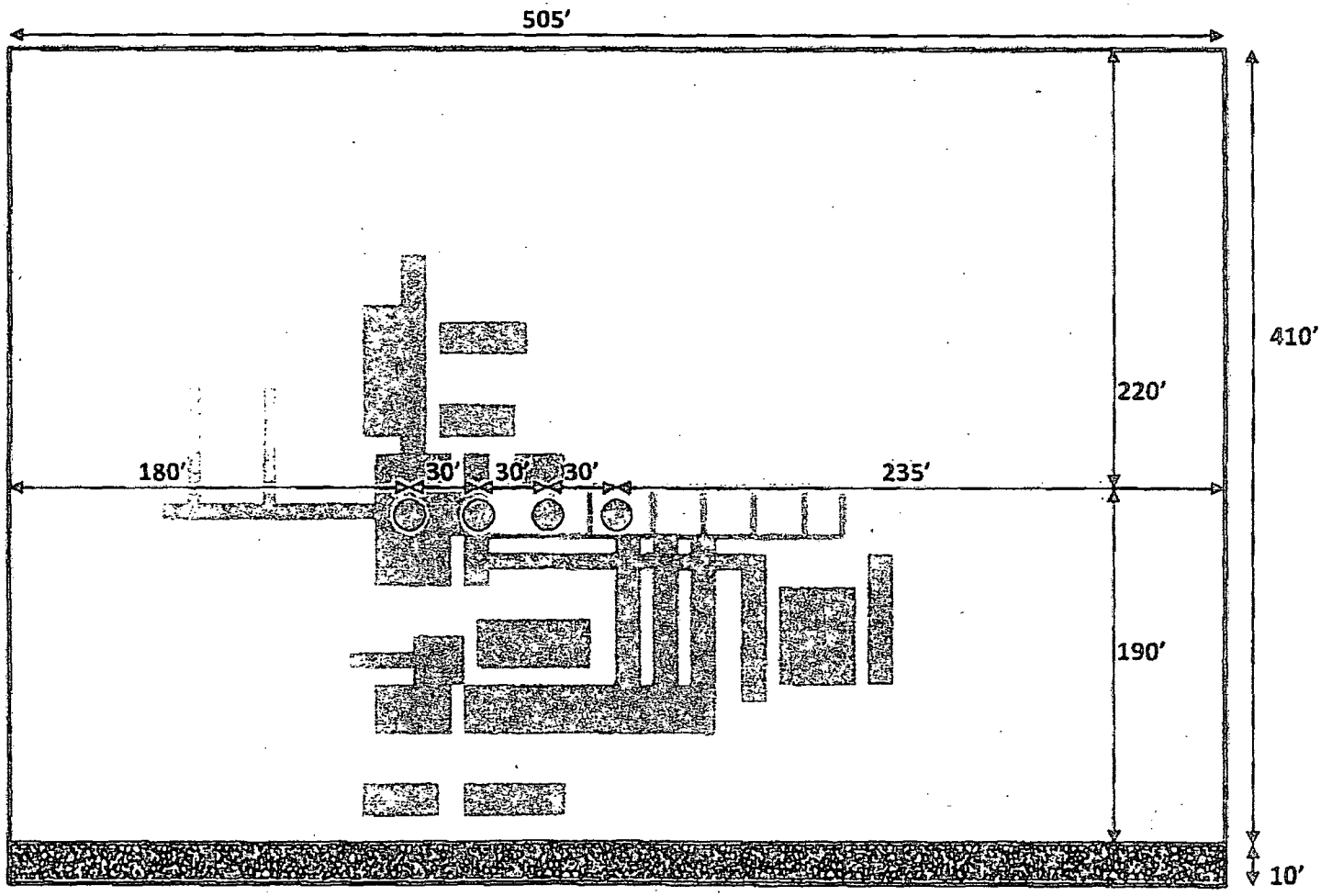
Asel Surveying
P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

OXY USA INC.

CEDAR CANYON "28" FEDERAL #6H LOCATED AT 1820' FSL & 240' FEL IN SECTION 28, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 07/17/15	Sheet 1 of 1 Sheets	
W.O. Number: 141204WL-c (Rev. A)	Drawn By: KA	Rev: A
Date: 07/13/15	141204WL-c	Scale: 1"=200'

Pad Site Overall Rig Layout
4 Well Pad Site

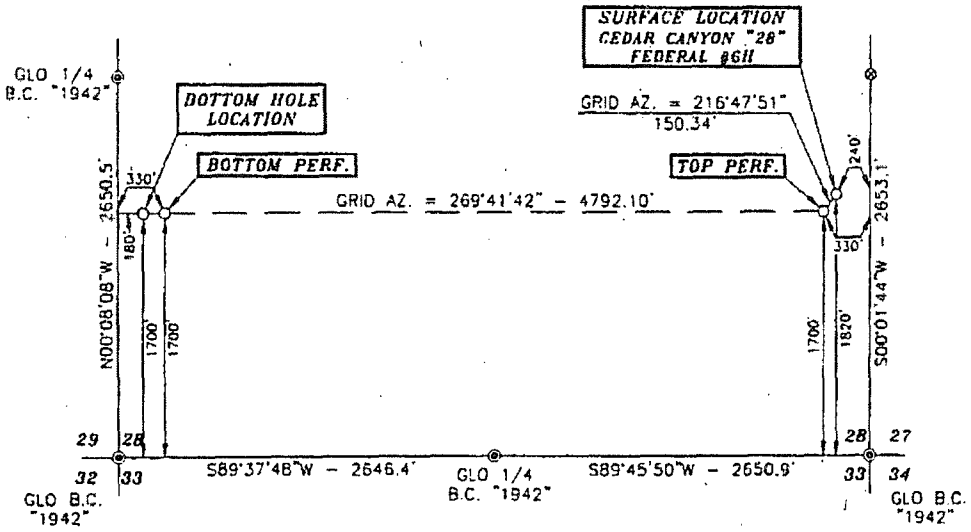


← N —

Pad Layout

Staking Detail

SECTION 28, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY NEW MEXICO



Basis of Bearings - GPS Geodetic Measurements
NM East Zone (83) North American Datum of 1983

DRIVING DIRECTIONS:
FROM THE INTERSECTION OF U.S. HWY. #285 AND BLACK RIVER VILLAGE ROAD IN MALAGA, GO EAST ON COUNTY ROAD #720 FOR 1.3 MILES, TURN RIGHT ON COUNTY ROAD #746 (MCDONALD ROAD) AND GO SOUTH FOR 0.8 MILES, CONTINUE SOUTHEAST/EAST FOR 4.7 MILES, TURN RIGHT ON PROPOSED ROAD AND GO SOUTH FOR 50.7 FEET TO LOCATION.

TERRY J ASEL
NEW MEXICO
15079
REGISTERED PROFESSIONAL LAND SURVEYOR

LEGEND
⊕ - DENOTES FOUND MONUMENT AS NOTED
⊗ - DENOTES CALCULATED CORNER

1000' 0 1000' 2000' FEET
SCALE: 1"=1000'

SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 7/17/2015
Terry J. Asel, N.M. R.P.L.S. No. 15079

Asel Surveying
P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

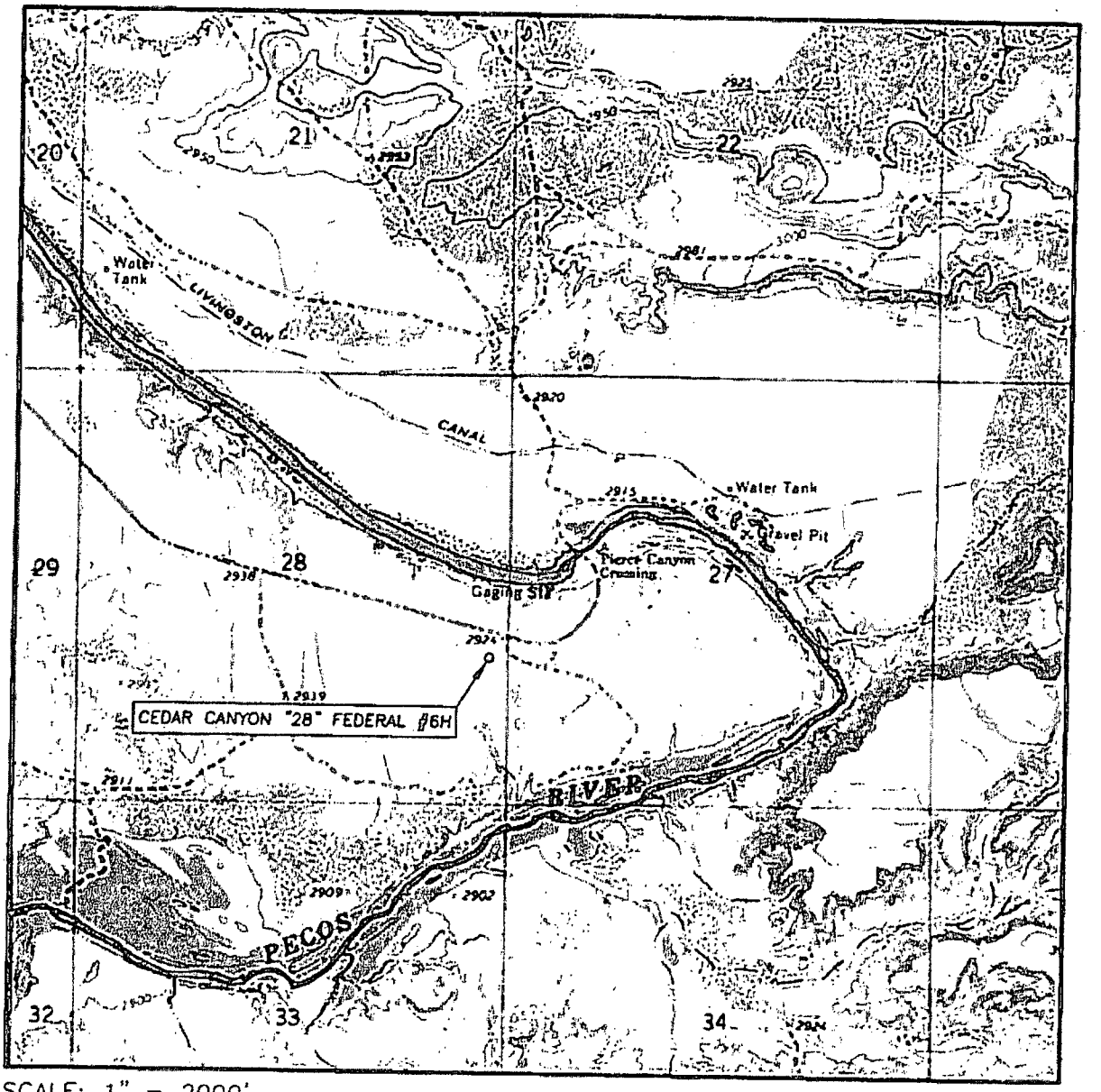
OXY USA INC.

CEDAR CANYON "28" FEDERAL #6H LOCATED AT 1820' FSL & 240' FEL IN SECTION 28, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 07/17/15	Sheet 1 of 1 Sheets	
W.O. Number: 141204WL-c (Rev. A)	Drawn By: KA	Rev: A
Date: 07/13/15	141204WL-c	Scale: 1"=1000'

LUM

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

SEC. 28 TWP. 24-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1820' FSL & 240' FEL

ELEVATION 2924.8'

OPERATOR OXY USA INC.

LEASE CEDAR CANYON "28" FEDERAL #6H

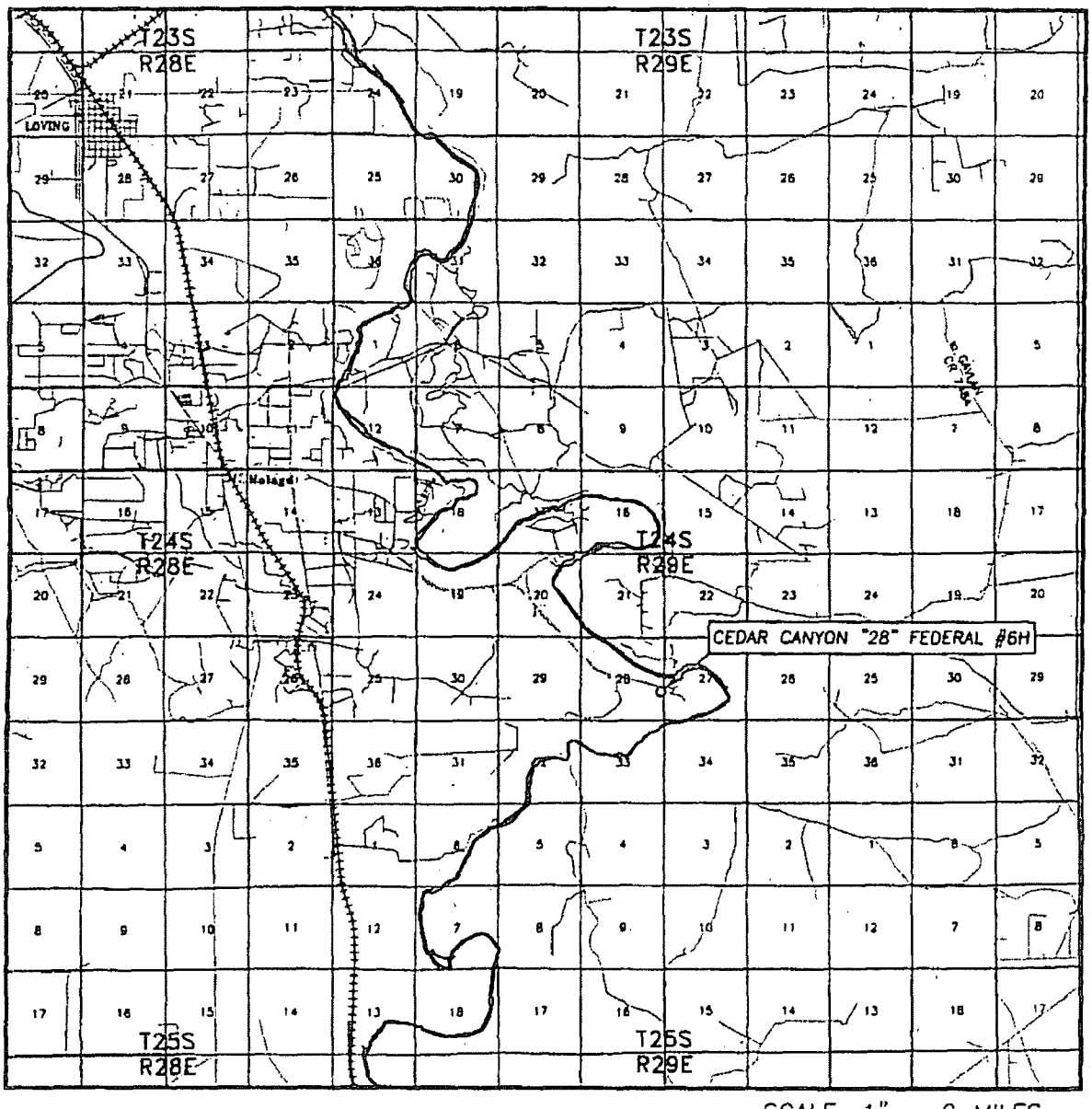
U.S.G.S. TOPOGRAPHIC MAP
PIERCE CANYON, N.M.

Asel Surveying

P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

VM

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 28 TWP. 24-S RGE. 29-E
SURVEY N.M.P.M.
COUNTY EDDY
DESCRIPTION 1820' FSL & 240' FEL
ELEVATION 2924.8'
OPERATOR OXY USA INC.
LEASE CEDAR CANYON "28" FEDERAL #6H

Asel Surveying
P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

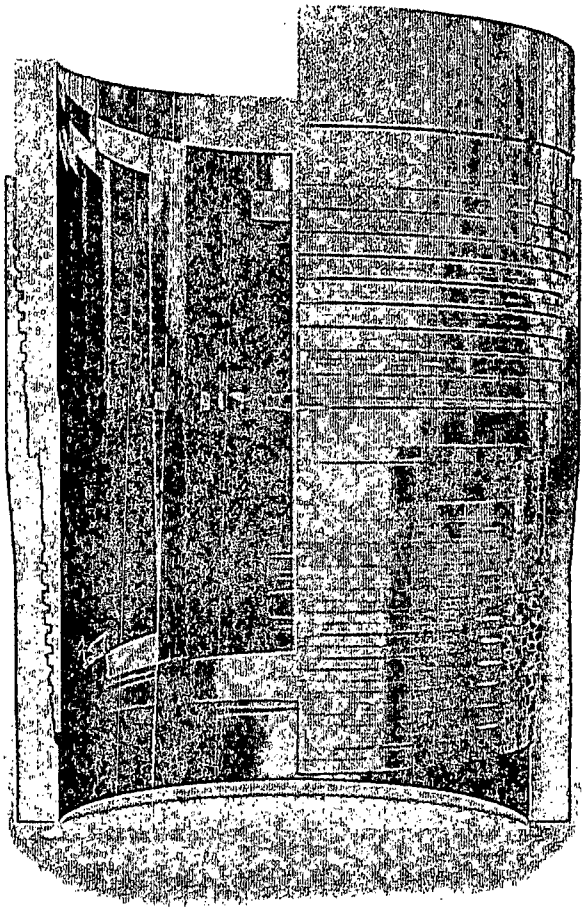
DIRECTIONS FROM THE INTERSECTION OF U.S. HWY. #285 AND BLACK RIVER VILLAGE ROAD IN MALAGA, GO EAST ON COUNTY ROAD #720 FOR 1.3 MILES, TURN RIGHT ON COUNTY ROAD #746 (MCDONALD ROAD) AND GO SOUTH FOR 0.8 MILES, CONTINUE SOUTHEAST/EAST FOR 4.7 MILES, TURN RIGHT ON PROPOSED ROAD AND GO SOUTH FOR 50.7 FEET TO LOCATION.

PERFORMANCE DATA

TMK Ultra Premium SF™ **5.500 in** **20.00 lbs/ft** **P-110**
Technical Data Sheet

Tubular Parameters

Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	20.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	641,000	lbs
PE Weight	19.81	lbs/ft	Tensile Load	728,000	lbs
Wall Thickness	0.361	in	Min. Internal Yield Pressure	12,600	psi
Nominal ID	4.778	in	Collapse Pressure	11,100	psi
Drift Diameter	4.653	in			
Nom. Pipe Body Area	5.828	in²			



Connection Parameters

Connection OD	5.646	in
Connection ID	4.734	in
Make-Up Loss	5.526	in
Critical Section Area	5.289	in²
Tension Efficiency	90.5	%
Compression Efficiency	90.5	%
Yield Load In Tension	580,000	lbs
Min. Internal Yield Pressure	12,600	psi
Collapse Pressure	11,100	psi

Make-Up Torques

Min. Make-Up Torque	10,100	ft-lbs
Opt. Make-Up Torque	10,600	ft-lbs
Max. Make-Up Torque	11,700	ft-lbs
Yield Torque	15,600	ft-lbs

Printed on: February-25-2014

Sanchez, Jennifer <j1sanchez@blm.gov>

Sundry for CC 27/28 - Connection specs

1 message

Diego_Tellez@oxy.com <Diego_Tellez@oxy.com> Fri, Jul 24, 2015 at 10:03 AM
To: j1sanchez@blm.gov
Cc: Chan_Tysor@oxy.com, Jim_Wilson@oxy.com, David_Stewart@oxy.com, Ricardo_Viloria@oxy.com, Juan_Mejia2@oxy.com

Hi Jennifer,

As per our phone conversation please find attached the specs for the 5 ½" connection we are planning on running for our production string.

Hole size	Casing	Connection	Connection OD	Clearance	Meets BLM requirement of **0.422"** clearance?
6.750"	5 ½" 20# P110	USF	5.646"	**0.552"**	Yes
6.750"	4 ½" 13.5# P110	~~DQX~~ BTRC	~~5.000"~~	~~**0.875"**~~	~~Yes~~

For this well

Also, we are 7-9 days from spudding well Cypress 34 Federal 10H. We submitted the sundry (very similar to the ones for CC 27/28) back in June (6/25/15 – EC Transaction 306905 – Serial No. 830-830-4621). Could you also help us approving this one, provided it meets all BLM requirements to your satisfaction? API number for this well is 30-015-43076.

Many thanks for helping us with these sundries.

Regards,

Diego Tellez

Drilling Engineer - Team Lead

Permian Resources Delaware / New Mexico

Occidental Oil & Gas Corp.

O: 713-350-4602 / M: 713-303-4932

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA, Inc
LEASE NO.:	NMNM94651
WELL NAME & NO.:	Cedar Canyon 28 Federal 6H
SURFACE HOLE FOOTAGE:	1820'/S & 240'/E
BOTTOM HOLE FOOTAGE	1700'/S & 180'/W
LOCATION:	Section 28, T.24 S., R.29 E., NMPM
COUNTY:	Eddy County, New Mexico

The original COAs still stand with the following drilling modifications:

I. DRILLING

A. DRILLING OPERATIONS 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)

☒ **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. Setting surface casing with Transcend Drilling Spudder Rig

   a. Notify the BLM when removing the Transcend Drilling Spudder Rig.

   b. Notify the BLM when moving in the H&P Flex Rig. Rig to be moved in within 90 days of notification that Transcend Drilling Spudder Rig has left the location. Failure to notify or have rig on location within 90 days will result in an Incident of Non-Compliance.

   c. Once the H&P Flex Rig is on location, it will drill the Cedar Canyon 28 Federal 6H and 7H and the Cedar Canyon 27 Federal 6H and 7H in conjunction using batch drilling.

d. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as H&P Flex Rig is rigged up on well. CIT for the surface casing shall be performed and results recorded on subsequent sundry.

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 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.

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.

Medium Cave/Karst
Possibility of water flows in the Castile and Salado.
Possibility of lost circulation in the Rustler, Salado, and Delaware.

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 intermediate casing, which shall be set at approximately **2900** feet, is:

    ☒ 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 cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

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 **5-1/2 X 4-1/2** inch production casing is:

   ☒ Cement as proposed by operator. Operator shall provide method of verification. **Excess calculates to 24% - Additional cement may 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.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

Option 1 - BOP testing if wells are drilled conventionally- BOP is not removed between casing strings.

3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**

   a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
   b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
   c. **Manufacturer representative shall install the test plug for the initial BOP test.**

d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

Option 2 - BOP testing for Batch Drilling-BOP is removed between casing strings

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.** BOP/BOPE shall be tested after nipple up according to Onshore Order #2.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

   b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

   c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

   d. The results of the test shall be reported to the appropriate BLM office.

   e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

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

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

JAM 072415