AFS-16-535

NM OIL CONSERVATION
ARTESIA DISTRICT
FEB 08 2016
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OCD Artesia

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

	5. Lease Serial No. NMNM94651
	6. If Indian, Allotee or Tribe Name
1a. Type of work: ☑ DRILL ☐ REENTER 1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other 1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone	7. If Unit or CA Agreement, Name and No.
	8. Lease Name and Well No. Cedar Canyon 28 Federal #5H
2. Name of Operator OXY USA Inc.	9. API Well No. 30-015- 43645
3a. Address P.O. Box 50250 Midland, TX 79710	3b. Phone No. *(include area code)* 432-685-5717
	10. Field and Pool, or Exploratory Pierce Crossing Bone Springs, East
4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface 1990 FNL180 FEL SENE Sec 29 T24S R29E At proposed prod. zone 2219 FNL 160 FEL SENE Sec 28 T24S R29E	11. Sec., T. R. M. or Blk. and Survey or Area Sec 22 T24S R29E
14. Distance in miles and direction from nearest town or post office* 6 miles northeast from Loving, NM	12. County or Parish Eddy 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 650	16. No of acres in lease 1400 17. Spacing Unit dedicated to this well 160
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30	19. Proposed Depth 13481'M 8745'V 20. BLM/BIA Bond No. in file ESB00226
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2948' GL	22. Approximate date work will start* 01/20/2016 23. Estimated duration 35

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)* David Stewart	Date 12/15/2015
Title Sr. Regulatory Advisor	david_stewart@oxy.com	
Approved by *(Signature)* Steve Caffey	Name *(Printed/Typed)*	Date FEB - 1 2016
Title Sr. Regulatory Advisor FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval 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.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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.

Carlsbad Controlled Water Basin

2/19/16

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

(Continued on page 2)

*(Instructions on page 2)

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

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
30-015-43645	96473	Pierce Crossing Bone Spring, East

Property Code	Property Name	Well Number
304790	CEDAR CANYON "28" FEDERAL	5H

OGRID No.	Operator Name	Elevation
16696	OXY USA INC.	2948.6'

Surface Location

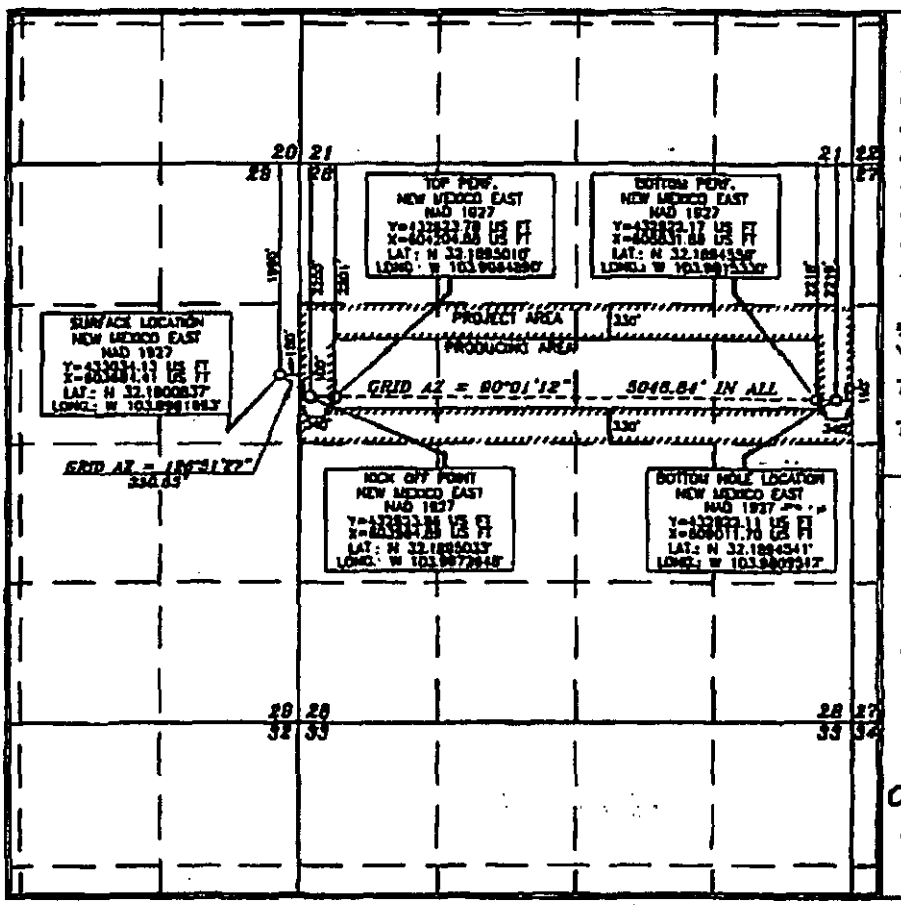
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	28	24 SOUTH	29 EAST, N.M.P.M.		1990'	NORTH	180'	EAST	EDDY

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
H	28	24 SOUTH	29 EAST, N.M.P.M.		2218'	NORTH	160'	EAST	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.

11/12/15
Date

David Stewart Sr. Reg. Adv.
Printed Name

davidstewart@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.

GARY L. JONES
NEW MEXICO
15079
PROFESSIONAL LAND SURVEYOR

OCTOBER 19, 2015
Date of Survey

Signature and Seal of Professional Surveyor

10/30/2015
Certificate Number 15079

WO# 151018WL-E (Rev A) (KA)

OPERATOR NAME / NUMBER: OXY USA INC 16696

LEASE NAME/NUMBER: Cedar Canyon 28 Federal #5H **Federal Lease No.** NMNM094651

STATE: NM **COUNTY:** Eddy

POOL NAME/NUMBER: Pierce Crossing Bone Spring, East 96473

SURFACE LOCATION: 1990 FNL 180 FEL SENE (H) Sec 29 T24S R29E
SL: LAT: 32.1900837N **LONG:**103.9981693W **X:**603684.41 **Y:**433034.13 **NAD:** 27

TOP PERFORATION: 2201 FNL 340 FWL SWNW (E) Sec 28 T24S R29E
TP: LAT: 32.1895010N **LONG:**103.9964890W **X:**604204.88 **Y:**432823.78 **NAD:** 27

BOTTOM PERFORATION: 2218 FNL 340 FEL SENE (H) Sec 28 T24S R29E
BP: LAT: 32.1894559N **LONG:**103.9815330W **X:**608831.69 **Y:**432822.17 **NAD:** 27

BOTTOM HOLE LOCATION: 2219 FNL 160 FEL SENE (H) Sec 28 T24S R29E
BHL: LAT: 32.1894541N **LONG:**103.9809512W **X:**609011.70 **Y:**432822.11 **NAD:** 27

APPROX GR ELEV: 2948.5' **EST KB ELEV:** 2973.5' (25' KB-GL)

COMPANY PERSONNEL:

Name	Title	Office Phone	Mobile Phone
R. Chan Tysor	Drilling Engineer	713-513-6668	832-564-6454
Ryan Farrell	Drilling Engineer Supervisor	713-366-5058	832-291-4744
Roger Allen	Drilling Superintendent	713-215-7617	281-682-3919

OXY USA Inc. - Cedar Canyon 28 Federal #5H

1. Geologic Formations

TVD of target	8745	Pilot hole depth	N/A
MD at TD:	13481	Deepest expected fresh water:	400

Delaware Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Top Rustler	400	Water	
Top Salado (salt)	782	Water	
Top Castile (anhydrite)	1348	Water	
Top Lamar / Delaware	2900	Oil/Gas	
Top Bell Canyon	2936	Oil/Gas	Lost Circulation
Top Cherry Canyon	3639	Oil/Gas	Lost Circulation
Top Brushy Canyon	5047	Oil/Gas	Lost Circulation
Bone Spring	6586	Oil/Gas	
1st Bone Spring Sand	7571	Oil/Gas	
2nd Bone Spring	7791	Oil/Gas	
2nd Bone Spring Sand	8397	Target Zone	
3rd Bone Spring (Approx.)	8780	Oil/Gas	

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

2. Casing Program

Hole Size	Casing Interval From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
14.75"	0	400	10.75"	45.5	J55	BTC	10.94	1.4	6.11
9.875"	0	8030	7.625"	29.7	L80	BTC	5	1.31	2.19
6.75"	0	8750	5.5"	20	P-110	Ultra SF	2.69	1.22	2.05
6.75"	8750	13481	4.5"	13.5	P-110	DQX	2.42	1.23	2.15
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	Y
If yes, are there two strings cemented to surface?	Y
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N/A
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	412	14.8	1.35	6.53	6:50	Premium Plus Cement 2% Calcium Chloride – Flake (Accelerator)
Inter.	1082	10.2	3.05	15.63	15:07	TUNED LIGHT (TM) SYSTEM 0.80% HR-601(Retarder), 3 lbm/sk Kol-Seal (Lost Circulation Additive), 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)
	150	13.2	1.65	8.45	12:57	Super H Cement, 0.1 % HR-800 (Retarder), 0.5 % Halad R-344 (Low Fluid Loss Control), 0.3 % CFR-3 (Dispersant), 2 lbm Kol-Seal (Lost Circulation Additive), 3 lbm Salt (Accelerator))
	DV/ECP Tool @ 2,900' (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations)					
	477	12.9	1.85	9.86	12:44	Hes Light PP cmt w/ 5% salt + .1% Halad R-344
	182	14.8	1.33	6.34	6:31	PP cmt
Prod.	724	13.2	1.65	8.45	12:57	Tuned Light, 3 lbm/sk Kol-Seal (Lost Circulation Additive), 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive), 0.65 % SCR-100 (Retarder)
	DV/ECP Tool N/A					
	N/A					
	N/A					

Casing String	TOC	% Excess (Tail/Lead)
Surface	0'	150%
Intermediate	0'	15% / 125%
Production	7036'	50%

Include Pilot Hole Cementing specs:
Pilot hole depth N/A
KOP 8106' TVD

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld ft3/sack	Water gal/sk	Slurry Description and Cement Type
N/A							
N/A							

4. Pressure Control Equipment

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

*Specify if additional ram is utilized.

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

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

✓	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
✓	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Y — Are anchors required by manufacturer?
✓	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic. We will run the wellhead through the rotary table with the surface casing string.

See COA

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.4-8.8	28-38	N/C
Surf csg	2900'	Saturated Brine	9.8-10	28-32	N/C
2900'	Int shoe	EnerSeal (MMH)	8.8-9.6	38-50	N/C
Int shoe	TD	OBM	8.8-9.4	28-100	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/MD Totco/Visual Monitoring

6. Logging and Testing Procedures

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

Additional logs planned		Interval
No	Resistivity	
No	Density	
No	CBL	
Yes	Mud log	Int CSG - TD
No	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4051 psi
Abnormal Temperature	No

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

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

8. Other facets of operation

	Yes/No
Will the well be drilled with a walking/skidding operation? If yes, describe. • We plan to drill the three well pad in batch by section: all surface sections, intermediate sections and production sections.	Yes
Will more than one drilling rig be used for drilling operations? If yes, describe.	No

See COA

Attachments
__x_ Directional Plan
__x_ H2S Contingency Plan
__x_ Flex III Attachments

Surface Use Plan of Operations

Operator Name/Number: OXY USA Inc. – 16696
Lease Name/Number: Cedar Canyon 28 Federal #5H
Pool Name/Number: Pierce Crossing Bone Spring, East – 96473
Surface Location: 1990 FNL 180 FEL SENE (H) Sec 29 T24S R29E - NMNM094651
Bottom Hole Location: 2219 FNL 160 FEL SENE (H) Sec 28 T24S R29E

1. Existing Roads

a. A copy of the USGS "Pierce Canyon, NM" quadrangle map is attached showing the proposed location. The well location is spotted on the map, which shows the existing road system.

b. The well was staked by Terry J Asel, Certificate No. 15079 on 10/19/15, certified 10/30/15.

c. Directions to Location: From the intersection of USH 285 and Black River Road in Malaga, go east on CR 720 for 1.3 miles. Turn right on CR 746 and go south for 0.8 miles, continue southeast/east for 3.5 miles. Turn right on proposed road and go south for 1033' to location.

2. New of Reconstructed Access Roads:

a. A new access road will be built. The access road will run approximately 1033' south from an existing road to location.

b. The maximum width of the road will be 15'. It will be crowned and made up of 6" of rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.

c. Surface material will be native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location. The average grade will be approximately 1%.

d. No cattle guards, grates or fence cuts will be required. No turnouts are planned.

e. Blade, water and repair existing caliche roads as needed.

f. Water Bars will be incorporated every 200' during the construction of the road, see attached.

3. Location of Existing Wells:

Existing wells within a one mile radius of the proposed well are shown on attached plat.

4. Location of Existing and/or Proposed Facilities:

a. In the event the well is found productive, the Cedar Canyon 28 Federal tank battery would be utilized and the necessary production equipment will be installed at the well site. See proposed Production Facilities Layout diagram.

b. Electric line will follow a route approved by the BLM.

c. All flow lines will adhere to API standards consisting of 2 – 4" lines, see attached for proposed route.

5. Location and types of Water Supply

This well will be drilled using a combination of water mud systems. It will be obtained from commercial water stations in the area and will be hauled to location by transport truck using existing and proposed roads.

6. Construction Materials:

Primary
All caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on the location. Will use BLM recommended extra caliche from other locations close by for roads, if available.

Secondary
The secondary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cubic yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

a. The top 6" of topsoil is pushed off and stockpiled along the side of the location.
b. An approximate 120' X 120' area is used within the proposed well site to remove caliche.
c. Subsoil is removed and piled alongside the 120' X 120' within the pad site.
d. When caliche is found, material will be stockpiled within the pad site to build the location and road.
e. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
f. Once the well is drilled the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the attached plat.

7. Methods of Handling Waste Material:

a. A closed loop system will be utilized consisting of above ground steel tanks and haul-off bins. Disposal of liquids, drilling fluids and cuttings will be disposed of at an approved facility. Solids-CRI, Liquids-Laguna

b. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.

c. The supplier, including broken sacks, will pickup slats remaining after completion of well.

d. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.

e. Disposal of fluids to be transported will be by the following companies. TFH Ltd, Laguna SWD Facility

8. Ancillary Facilities: None needed.

9. Well Site Layout:

The proposed well site layout with dimensions of the pad layout and equipment location.

V-Door – West CL Tanks – South Pad – 330' X 470'

10. Plans for Surface Reclamation:

a. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original topsoil will again be returned to the pad and contoured, as close as possible, to the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

b. If the well is deemed commercially productive, caliche from the areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

11. Surface Ownership:

The surface is owned by the U.S. Government and is administered by the BLM. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas. The surface is leased to: Scott Branson, 1501 Mountain Shadow, Carlsbad, NM 88220. They will be notified of our intention to drill prior to any activity.

12. Other Information:

a. The vegetation cover is generally sparse consisting of mesquite, yucca, shinnery oak, sandsage and perennial native range grass. The topsoil is sandy in nature. Wildlife in the area is also sparse consisting of deer, coyotes, rabbits, rodents, reptiles, dove and quail.

b. There is no permanent or live water in the general proximity of the location.

c. There are no dwellings within one mile of the proposed well site.

d. Cultural Resources Examination – This well is located in the Permian Basin MOA. Fees paid 5/20/15, receipt no. 3398043, copy attached.

Pad + ¼ mile road	$1552.00	$.20/ft over ¼ mile	$0.00	$1552.00
Pipeline-up to 1 mile	$1433.00	$299 per ¼ mile	$0.00	$1433.00
Electric Line-up to 1 mile	$717.00	$.22/ft over 1 mile	$0.00	$717.00
Total	$3702.00		$0.00	$3702.00

13. Bond Coverage:

Bond coverage is Individual-NMB000862, Nationwide-ESB00226.

14. Operators Representatives:

The OXY Permian representatives responsible for ensuring compliance of the surface use plan are listed below:

Don Kendrick
Production Coordinator
1502 West Commerce Dr.
Carlsbad, NM 88220
Office – 575-628-4132
Cellular – 575-602-1484

Charles Wagner
Manager Field Operations
1502 West Commerce Dr.
Carlsbad, NM 88220
Office – 575-628-4151
Cellular – 575-725-8306

Calvin (Dusty) Weaver
Operation Specialist
P.O. Box 50250
Midland, TX 79710
Office – 432-685-5723
Cellular – 806-893-3067

Omar Lisigurski
RMT Leader
P.O. Box 4294
Houston, TX 77210
Office – 713-215-7506
Cellular – 281-222-7248

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

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

☑ *AMENDED REPORT*

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Property Code	Property Name	Well Number
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OGRID No.	Operator Name	Elevation
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Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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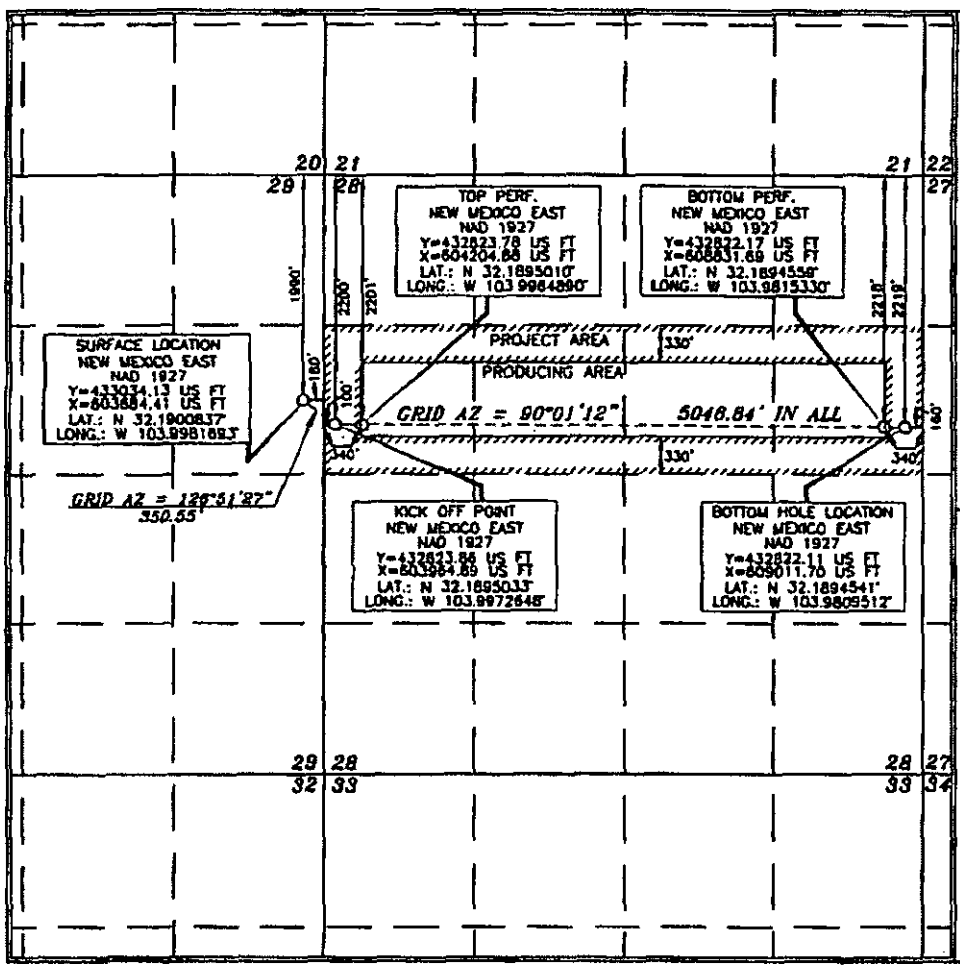
Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	28	24 SOUTH	29 EAST, N.M.P.M.		2219'	NORTH	160'	EAST	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 11/12/15 Date

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.

NEW MEXICO 15079 PROFESSIONAL LAND SURVEYOR

OCTOBER 19, 2015 Date of Survey

Signature and Seal of Professional Surveyor

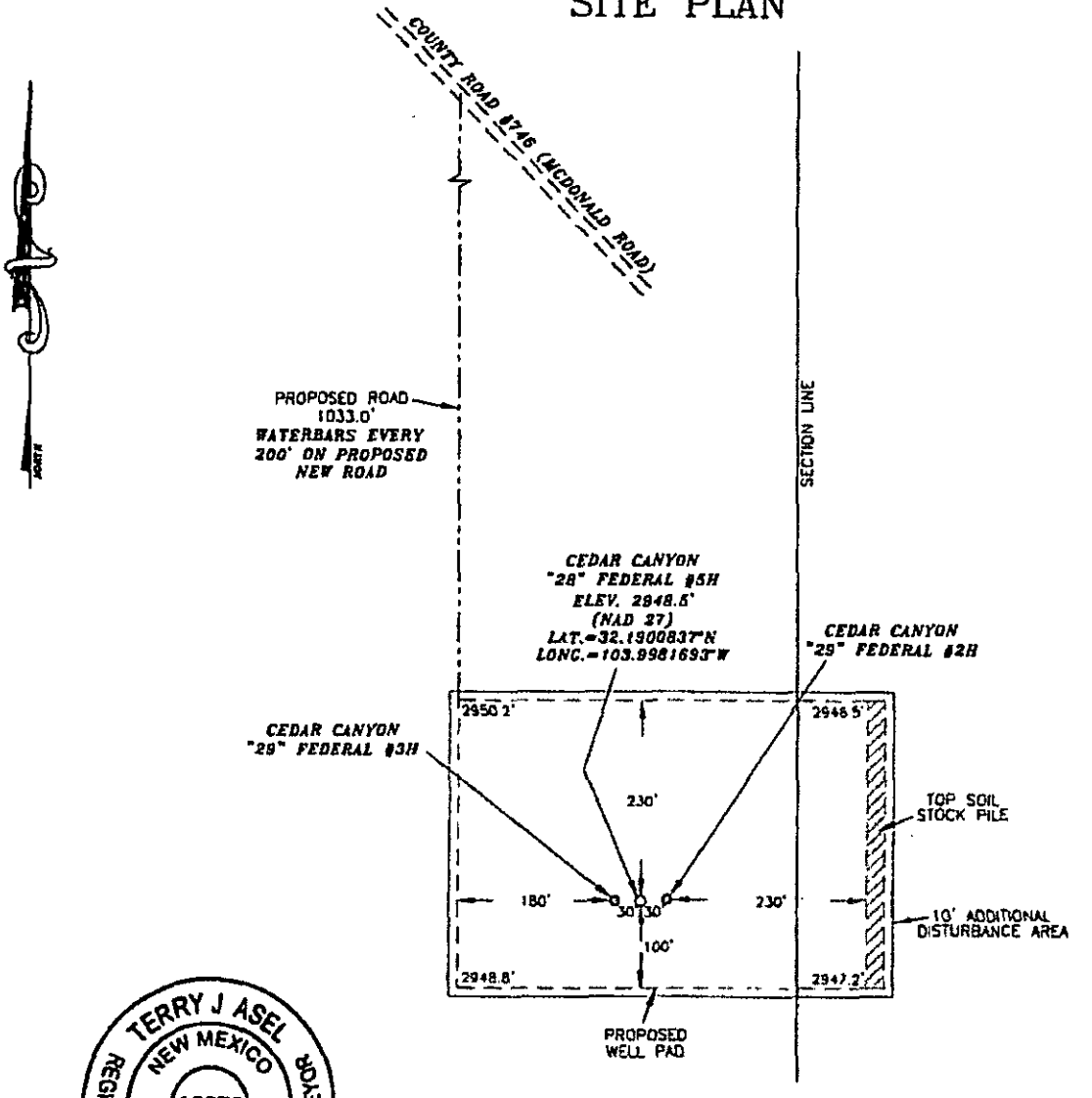
10/30/2015

15079 Certificate Number

WO# 151019WL-c (Rev. A) (KA)

Site Plan -1

OXY USA INC.
CEDAR CANYON "28" FEDERAL #5H
SITE PLAN



TERRY J ASEL
NEW MEXICO
15079
REGISTERED PROFESSIONAL LAND SURVEYOR

LEGEND

ZZZ – 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 10/30/2015
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.

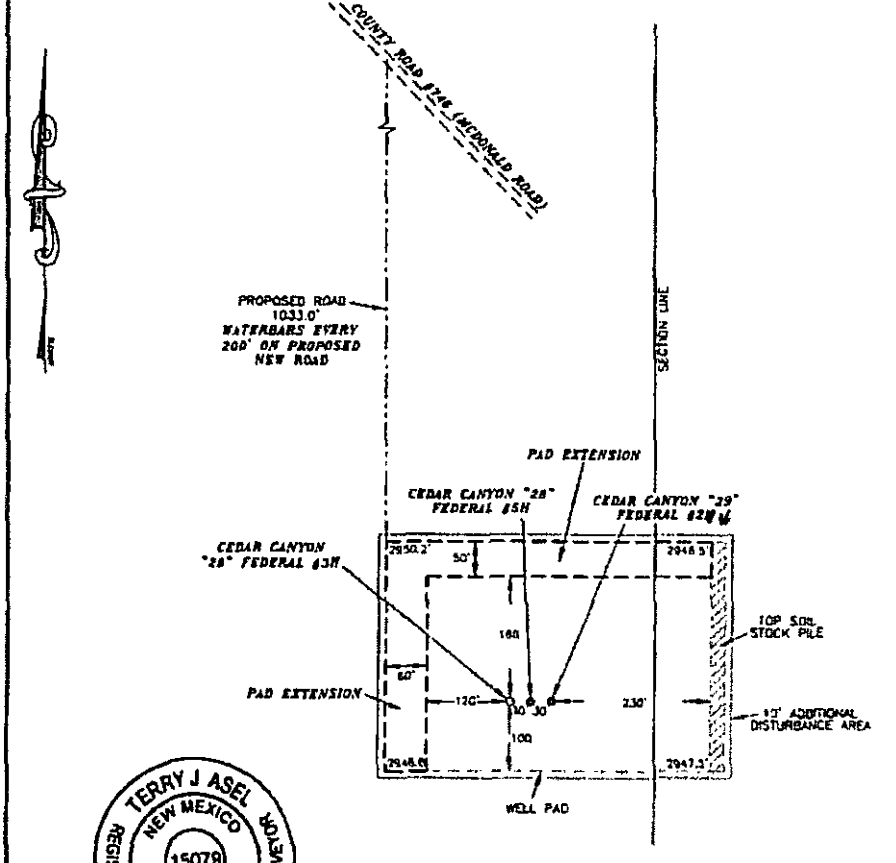
CEDAR CANYON "28" FEDERAL #5H LOCATED AT 1990' FNL & 180' FEL IN SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 10/19/15	Sheet 1 of 1 Sheets	
W.O. Number: 151019WL-c (Rev. A)	Drawn By: KA	Rev: A
Date: 10/29/15	151019WL-c	Scale: 1"=200'

Site Plan -2

OXY USA INC.

CEDAR CANYON "29" FEDERAL #2H & #3H AND "28" FEDERAL #5H
50' NORTH & 60' WEST PAD EXTENSION'S



TERRY J ASEL
NEW MEXICO
15079
REGISTERED PROFESSIONAL LAND SURVEYOR

LEGEND

- DENOTES STOCK PILE AREA
- DENOTES WELL PAD
- DENOTES PROPOSED ROAD
- DENOTES PAD EXTENSION

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 11/2/2015

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

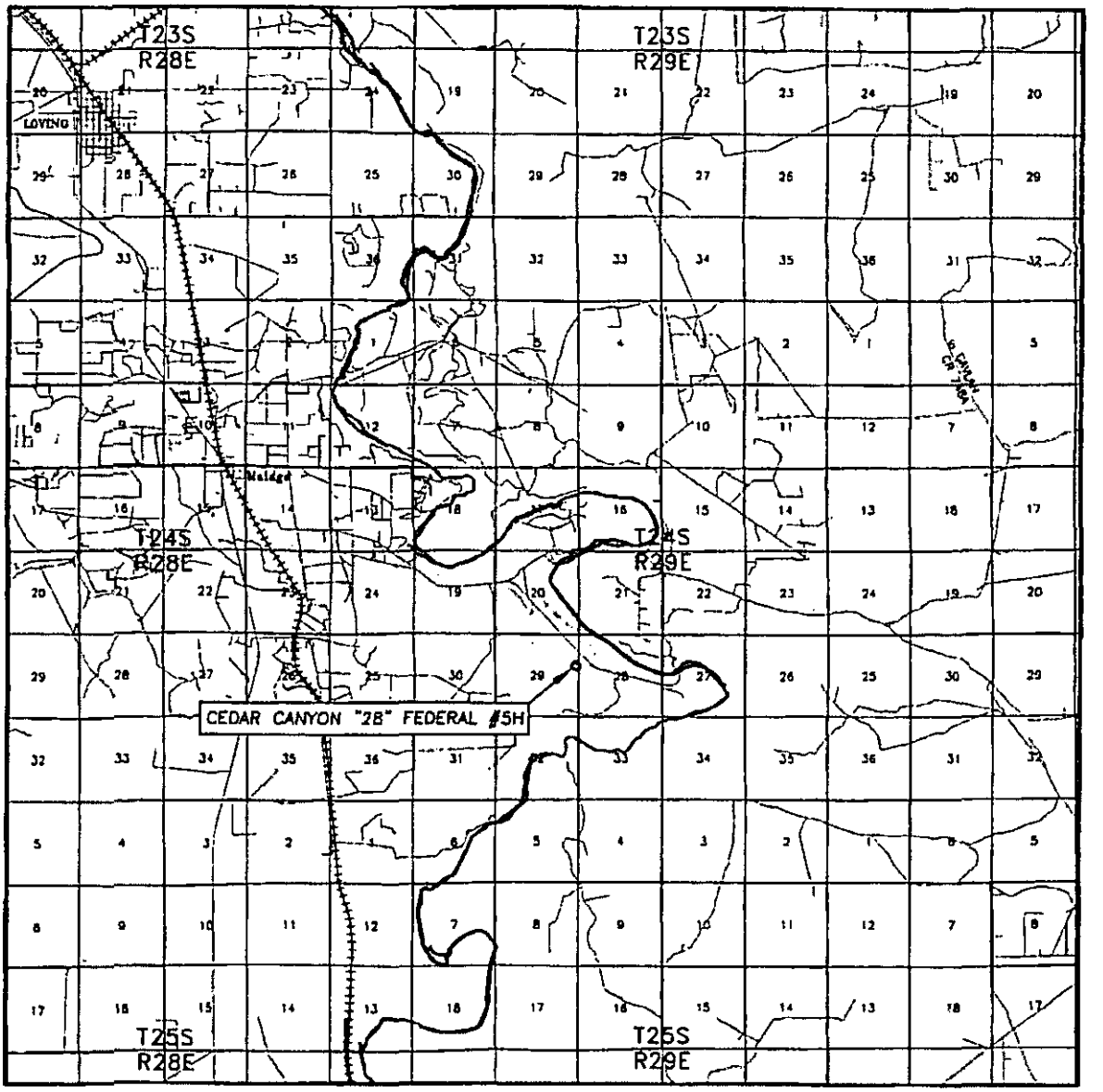
OXY USA INC.

CEDAR CANYON "29" FEDERAL #2H & #3H
AND "28" FEDERAL #5H LOCATED IN SECTION
29, TOWNSHIP 24 SOUTH, RANGE 29 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 10/19/15	Sheet 1 of 1 Sheets	
W.O. Number: 151102PE-a	Drawn By: KA	Rev:
Date: 11/02/15	151102PE-a	Scale: 1"=200'

JM

VICINITY MAP



SCALE: 1" = 2 MILES

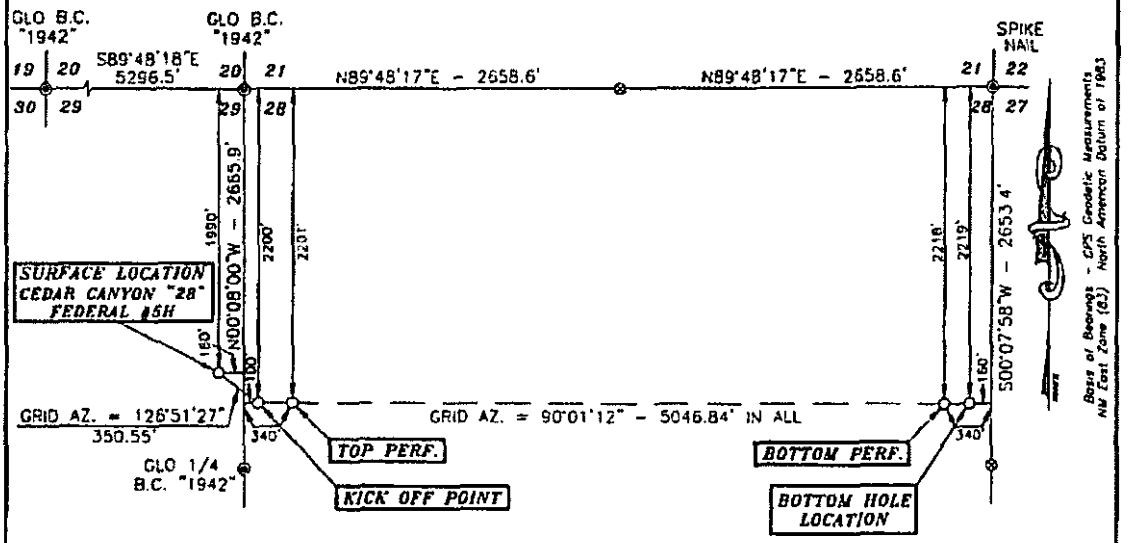
SEC. 29 TWP. 24-S RGE. 29-E
SURVEY N.M.P.M.
COUNTY EDDY
DESCRIPTION 1990' FNL & 180' FEL
ELEVATION 2948.5'
OPERATOR OXY USA INC.
LEASE CEDAR CANYON "28" FEDERAL #5H

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 3.5 MILES, TURN RIGHT ON PROPOSED ROAD AND GO SOUTH FOR 1033.0 FEET TO LOCATION.

Location

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



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 3.5 MILES, TURN RIGHT ON PROPOSED ROAD AND GO SOUTH FOR 1033.0 FEET TO LOCATION.

TERRY J ASEL NEW MEXICO 15079 REGISTERED PROFESSIONAL LAND SURVEYOR

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 10/30/2015
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

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

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

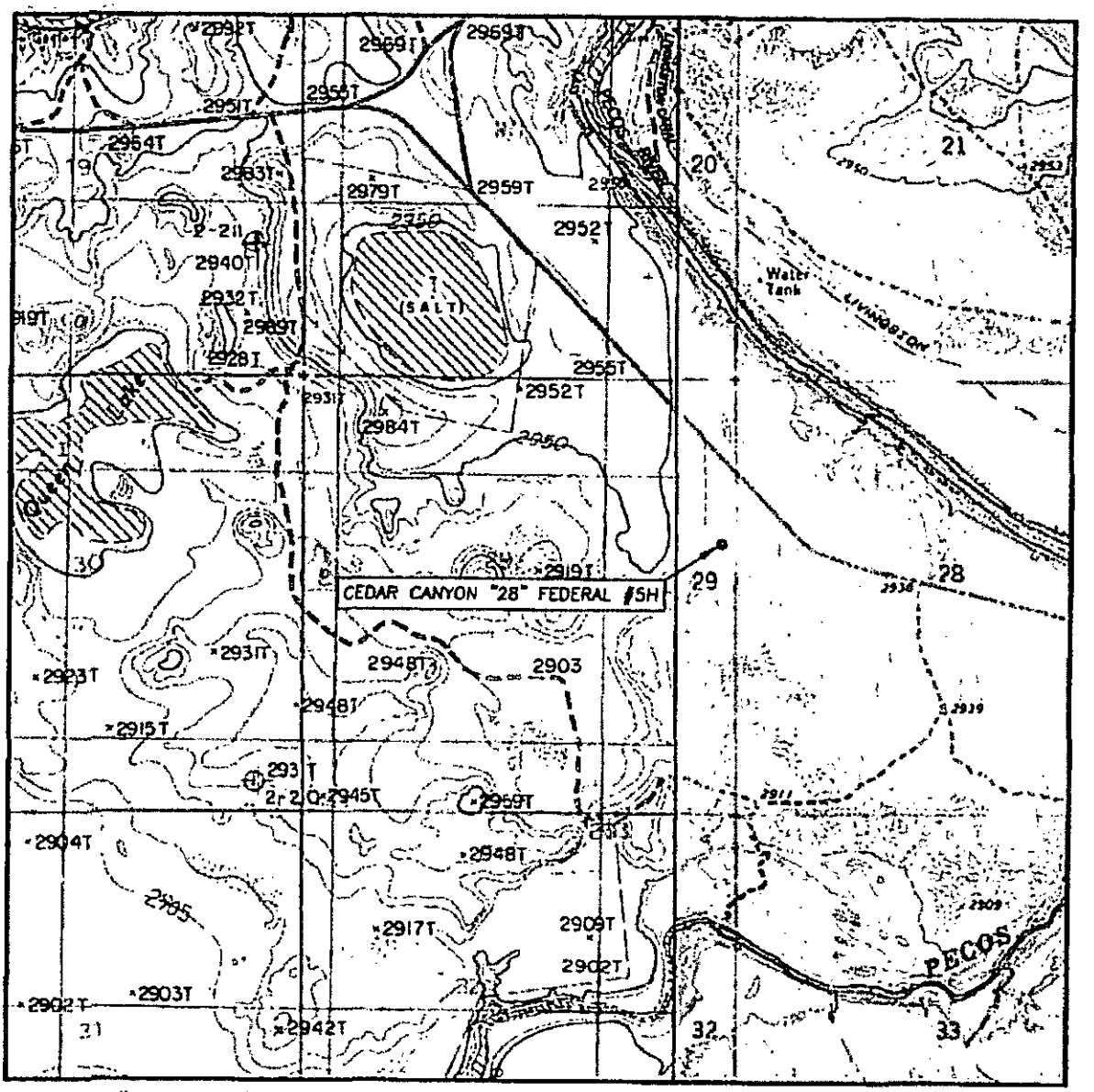
OXY USA INC.

CEDAR CANYON "28" FEDERAL #5H LOCATED AT 1990' FNL & 180' FEL IN SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 10/19/15	Sheet 1 of 1 Sheets	
W.O. Number: 151019WL-c (Rev. A)	Drawn By: KA	Rev: A
Date: 10/29/15	151019WL-c	Scale: 1"=1000'

LUM

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

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

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1990' FNL & 180' FEL

ELEVATION 2948.5'

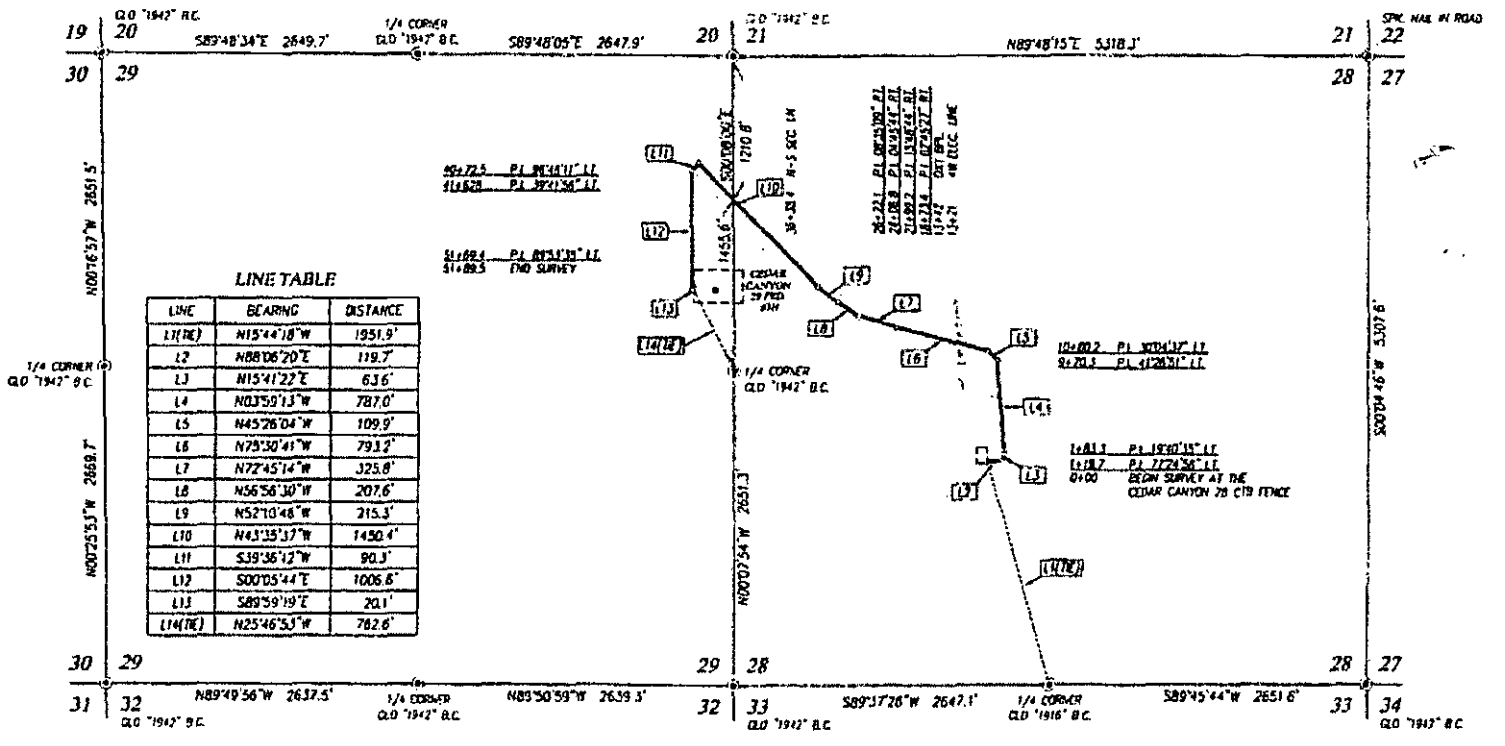
OPERATOR OXY USA INC.

LEASE CEDAR CANYON "28" FEDERAL #5H

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



LINE TABLE

LINE	BEARING	DISTANCE
L1(TIE)	N15°44'18"W	1951.9'
L2	N88°06'20"E	119.7'
L3	N15°41'22"E	63.6'
L4	N03°59'13"W	787.0'
L5	N45°26'04"W	109.9'
L6	N75°30'41"W	79.3'
L7	N72°45'14"W	325.8'
L8	N56°56'30"W	207.6'
L9	N52°10'48"W	215.3'
L10	N43°35'37"W	1450.4'
L11	S39°36'12"W	90.3'
L12	S00°05'44"E	1006.8'
L13	S89°59'19"E	20.1'
L14(TIE)	N25°46'53"W	782.6'

DESCRIPTION

SURVEY FOR A STRIP OF LAND 50.0 FEET WIDE AND 5189.5 FEET OR 0.983 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 28 & 29 TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

LEGEND

⊕ DENOTES FOUND CORNER AS NOTED

1000 0 1000 2000 Feet

Scale: 1"=1000'

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 12239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON Ronald J. Eidson DATE 01/28/2015

RONALD J. EIDSON NEW MEXICO 12239 PROFESSIONAL SURVEYOR

NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES

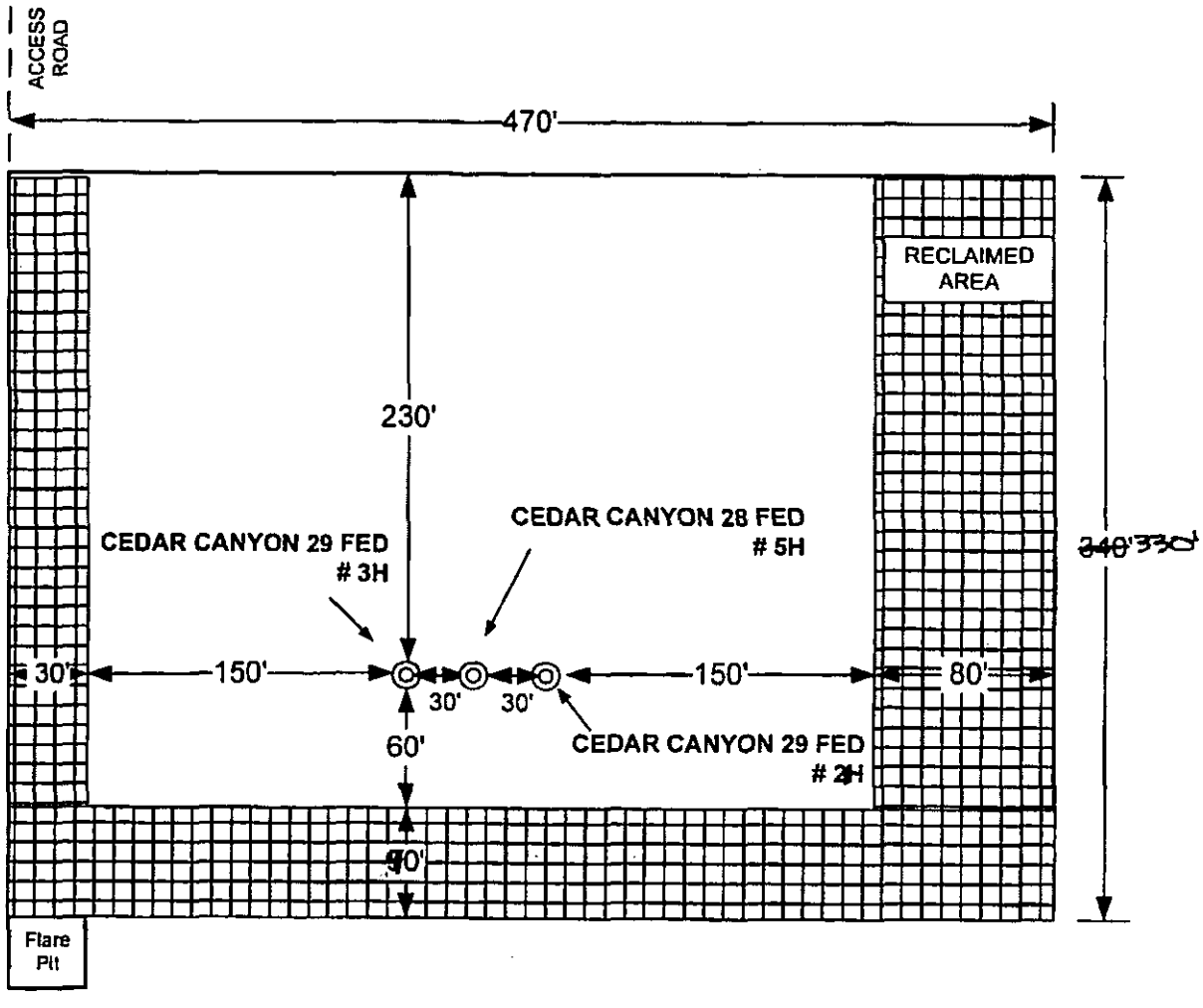
PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TRIPLE# 18021000

OXY U.S.A. INC.

SURVEY FOR A PIPELINE TO
THE CEDAR CANYON 29 FED. #311 CROSSING
SECTIONS 28 & 29,
TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 1/13/15	CAD Date: 1/23/15	Drawn By: LS
W.O. No.: 15110018	Rev:	Rel. W.O.:
		Sheet 1 of 1

Pipeline Surv



NORTH

8' Diameter x 8' Deep Tinhorn Cellar

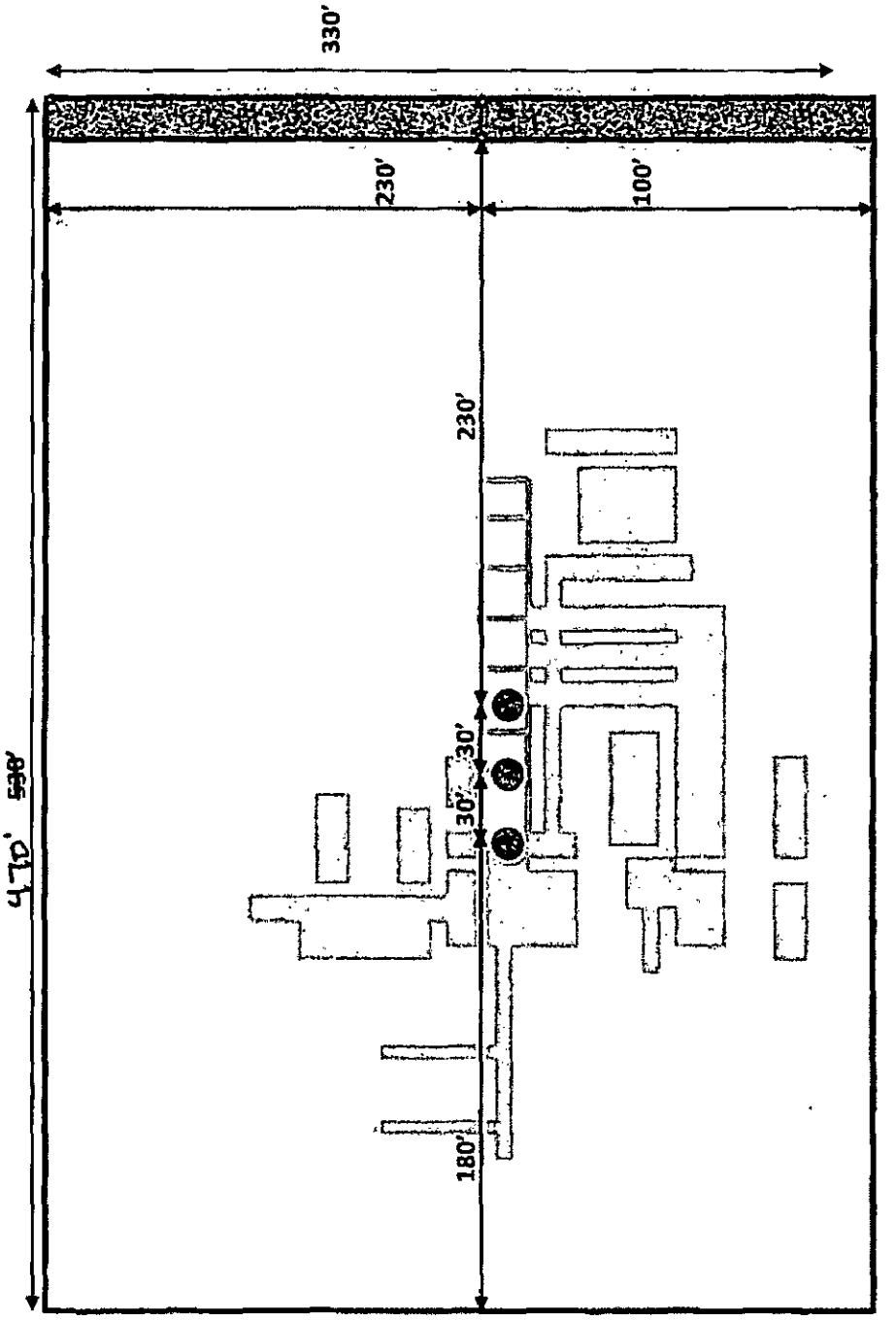
REVISION BLOCK						ENGINEERING RECORD	
NO.	DATE	DESCRIPTION	BY	CHK	APP	BY	DATE

FLEX 3 RIG DIAGRAM
CEDAR CANYON 29 FED # 2H & 3H
Cedar Canyon 28 Fed # 5H
EDDY COUNTY, NEW MEXICO

Well Pad Layout Reclamation

Rig Layout

Pad Site Overall Rig Layout
3 Well Pad Site

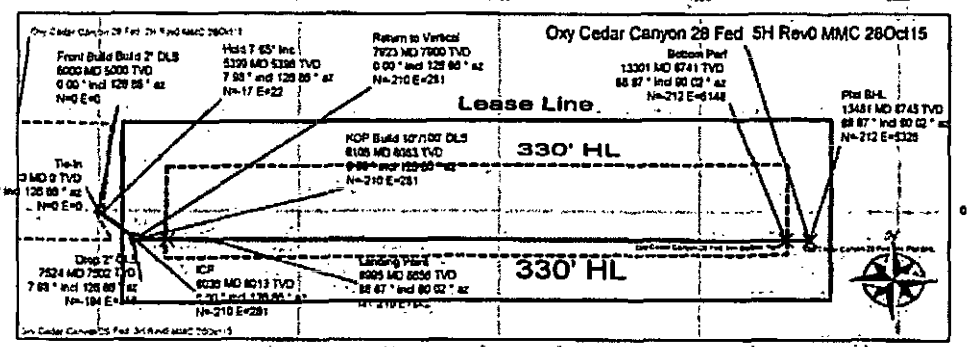


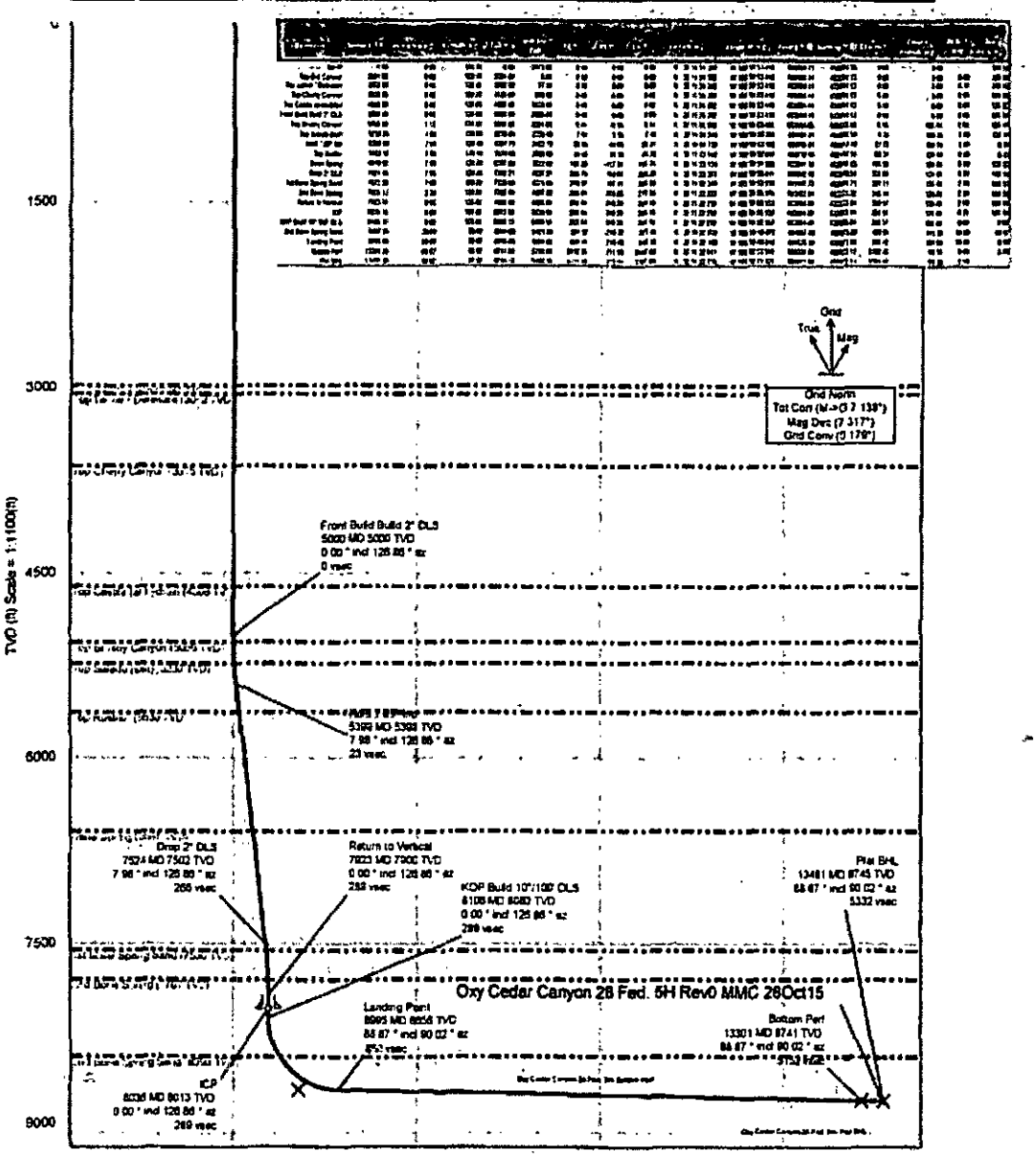
Directional Survey - 1

Schlumberger Plan Rev0 **OXY**

Borehole:	Well:	Field:	Structure:
Orig. Borehole	Cedar Canyon 28 Fed. 5H	NM Eddy County (NAD 27)	H&P 615

EW (ft) Scale = 1 1050(ft)





Vertical Section (ft) Azim = 92.279° Scale = 1:1100(ft) Origin = 0N/-S, 0E/-W

DS-2

Schlumberger

Oxy Cedar Canyon 28 Fed. 5H Rev0 MMC 28Oct15 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 28, 2015 - 01 17 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	92 279 ° (Grid North)
Field:	NM Eddy County (NAD 27)	**Vertical Section Origin:**	0 000 ft, 0 000 ft
Structure / Slot:	Oxy Cedar Canyon 28 Fed 5H / Oxy Cedar Canyon 28 Fed, 5H	**TVD Reference Datum:**	RKB
Well:	Oxy Cedar Canyon 28 Fed. 5H	**TVD Reference Elevation:**	2975 000 ft above MSL
Borehole:	Oxy Cedar Canyon 28 Fed 5H - Orig Borehole	**Seabed / Ground Elevation:**	2948 500 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7 317 °
Survey Name:	Oxy Cedar Canyon 28 Fed. 5H Rev0 MMC 28Oct15	**Total Gravity Field Strength:**	998 464mgn (9 80665 Based)
Survey Date:	October 28, 2015	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104 632 ° / 5397 732 ft / 5 941 / 0 617	**Total Magnetic Field Strength:**	48288 500 nT
Coordinate Reference System:	NAD27 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60 048 °
Location Lat / Long:	N 32° 11' 24 30151", W 103° 58' 53 40953"	**Declination Date:**	October 28, 2015
Location Grid N/E Y/X:	N 433034 130 ftUS, E 603684 410 ftUS	**Magnetic Declination Model:**	HDGM 2015
CRS Grid Convergence Angle:	0 1788 °	**North Reference:**	Grid North
Grid Scale Factor:	0 9999214	**Grid Convergence Used:**	0 1788 °
Version / Patch:	2 8 572 0	**Total Corr Mag North->Grid North:**	7 1381 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Tie-In	0 00	0 00	126 86	0 00	-2975 00	0 00	0 00	0 00	N/A	433034 13	603684 41	N 32 11 24 30	W 103 58 53 41
Front Build Build 2° DLS	5000 00	0 00	126 86	5000 00	2025 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 58 53 41
Hold 7 65° Inc	5389 06	7 66	126 88	5397 79	2422 79	22 85	-16 85	22 21	2 00	433017 48	603706 61	N 32 11 24 14	W 103 58 53 15
Drop 2° DLS	7524 06	7 66	126 86	7502 21	4527 21	265 79	-193 64	258 33	0 00	432840 51	603942 69	N 32 11 22 36	W 103 58 50 41
Return to Vertical	7923 16	0 00	126 86	7900 00	4925 00	288 64	-210 29	280 50	2 00	432823 86	603964 89	N 32 11 22 21	W 103 58 50 15
KOP	8108 31	0 00	126 86	8083 15	5108 15	288 64	-210 29	280 50	0 00	432823 86	603964 89	N 32 11 22 21	W 103 58 50 15
Landing Point	8935 00	88 67	90 02	8654 00	5681 00	849 86	-210 48	842 15	10 00	432823 66	604526 49	N 32 11 22 19	W 103 58 43 82
Bottom Perf	13301 39	88 67	90 02	8741 00	5766 00	5152 05	-211 98	5147 69	0 00	432822 17	608831 69	N 32 11 22 04	W 103 58 53 52
Plat BHL	13481 39	88 67	90 02	8744 55	5769 55	5331 88	-212 04	5327 66	0 00	432822 11	609011 64	N 32 11 22 03	W 103 58 51 42

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 (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0 000	28 500	1/100 000	30 000	30 000	SLB_MWD-STD_HDGM-Depth Only	Oxy Cedar Canyon 28 Fed 5H - Orig Borehole / Oxy Cedar Canyon 28 Fed 5H Rev0 MMC
	1	28 500	13481 386	1/100 000	30 000	30 000	SLB_MWD-STD_HDGM	Oxy Cedar Canyon 28 Fed 5H - Orig Borehole / Oxy Cedar

DS-3

Schlumberger

Oxy Cedar Canyon 28 Fed. 5H Rev0 MMC 28Oct15 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 28, 2015 - 01 13 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	82 279 ° (Grid North)
Field:	NM Eddy County (NAD 27)	**Vertical Section Origin:**	0 000 ft, 0 000 ft
Structure / Slot:	Oxy Cedar Canyon 28 Fed 5H / Oxy Cedar Canyon 28 Fed, 5H	**TVD Reference Datum:**	RKB
Well:	Oxy Cedar Canyon 28 Fed 5H	**TVD Reference Elevation:**	2975 000 ft above MSL
Borehole:	Oxy Cedar Canyon 28 Fed 5H - Orig Borehole	**Seabed / Ground Elevation:**	2948 500 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7 317 °
Survey Name:	Oxy Cedar Canyon 28 Fed 5H Rev0 MMC 28Oct15	**Total Gravity Field Strength:**	998 4543mgn (9 80665 Based)
Survey Date:	October 28, 2015	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104 832 ° / 5397 732 ft / 5 941 / 0 617	**Total Magnetic Field Strength:**	48264 500 nT
Coordinate Reference System:	NAD27 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60 045 °
Location Lat / Long:	N 32° 11' 24 30151", W 103° 59' 53 40953"	**Declination Date:**	October 28, 2015
Location Grid N/E Y/X:	N 433034 130 ftUS, E 603684 410 ftUS	**Magnetic Declination Model:**	HDGM 2015
CRS Grid Convergence Angle:	0 1786 °	**North Reference:**	Grid North
Grid Scale Factor:	0 9999214	**Grid Convergence Used:**	0 1786 °
Version / Patch:	2 8 572 0	**Total Corr Mag North->Grid North:**	7 1381 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (NAD 27)	Longitude (NAD 27)
Tie-In	0 00	0 00	126 86	0 00	-2975 00	0 00	0 00	0 00	N/A	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	100 00	0 00	126 86	100 00	-2875 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	200 00	0 00	126 86	200 00	-2775 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	300 00	0 00	126 86	300 00	-2675 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	400 00	0 00	126 86	400 00	-2575 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	500 00	0 00	126 86	500 00	-2475 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	600 00	0 00	126 86	600 00	-2375 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	700 00	0 00	126 86	700 00	-2275 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
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	900 00	0 00	126 86	900 00	-2075 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1000 00	0 00	126 86	1000 00	-1975 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1100 00	0 00	126 86	1100 00	-1875 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1200 00	0 00	126 86	1200 00	-1775 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1300 00	0 00	126 86	1300 00	-1675 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1400 00	0 00	126 86	1400 00	-1575 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1500 00	0 00	126 86	1500 00	-1475 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1600 00	0 00	126 86	1600 00	-1375 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1700 00	0 00	126 86	1700 00	-1275 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1800 00	0 00	126 86	1800 00	-1175 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	1900 00	0 00	126 86	1900 00	-1075 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2000 00	0 00	126 86	2000 00	-975 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2100 00	0 00	126 86	2100 00	-875 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2200 00	0 00	126 86	2200 00	-775 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2300 00	0 00	126 86	2300 00	-675 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2400 00	0 00	126 86	2400 00	-575 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2500 00	0 00	126 86	2500 00	-475 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2600 00	0 00	126 86	2600 00	-375 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2700 00	0 00	126 86	2700 00	-275 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2800 00	0 00	126 86	2800 00	-175 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	2900 00	0 00	126 86	2900 00	-75 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
Top Bell Canyon	*2981 00*	*0 00*	*126 86*	*2981 00*	*6 00*	*0 00*	*0 00*	*0 00*	*0 00*	*433034 13*	*603684 41*	*N 32 11 24 30*	*W 103 59 53 41*
	3000 00	0 00	126 86	3000 00	25 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
Top Lamar / Delaware	*3052 00*	*0 00*	*126 86*	*3052 00*	*77 00*	*0 00*	*0 00*	*0 00*	*0 00*	*433034 13*	*603684 41*	*N 32 11 24 30*	*W 103 59 53 41*
	3100 00	0 00	126 86	3100 00	125 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3200 00	0 00	126 86	3200 00	225 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3300 00	0 00	126 86	3300 00	325 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3400 00	0 00	126 86	3400 00	425 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3500 00	0 00	126 86	3500 00	525 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3600 00	0 00	126 86	3600 00	625 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
Top Cherry Canyon	*3635 00*	*0 00*	*126 86*	*3635 00*	*660 00*	*0 00*	*0 00*	*0 00*	*0 00*	*433034 13*	*603684 41*	*N 32 11 24 30*	*W 103 59 53 41*
	3700 00	0 00	126 86	3700 00	725 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3800 00	0 00	126 86	3800 00	825 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	3900 00	0 00	126 86	3900 00	925 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4000 00	0 00	126 86	4000 00	1025 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4100 00	0 00	126 86	4100 00	1125 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4200 00	0 00	126 86	4200 00	1225 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4300 00	0 00	126 86	4300 00	1325 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4400 00	0 00	126 86	4400 00	1425 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4500 00	0 00	126 86	4500 00	1525 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4600 00	0 00	126 86	4600 00	1625 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
Top Castle (anhydrite)	*4608 00*	*0 00*	*126 86*	*4608 00*	*1633 00*	*0 00*	*0 00*	*0 00*	*0 00*	*433034 13*	*603684 41*	*N 32 11 24 30*	*W 103 59 53 41*
	4700 00	0 00	126 86	4700 00	1725 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4800 00	0 00	126 86	4800 00	1825 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
	4900 00	0 00	126 86	4900 00	1925 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
Front Build Build 2° DLS	5000 00	0 00	126 86	5000 00	2025 00	0 00	0 00	0 00	0 00	433034 13	603684 41	N 32 11 24 30	W 103 59 53 41
Top Brushy Canyon	*5056 00*	*1 12*	*126 86*	*5056 00*	*2081 00*	*0 45*	*-0 33*	*0 44*	*2 00*	*433033 80*	*603684 85*	*N 32 11 24 30*	*W 103 59 53 40*
	5100 00	2 00	126 86	5099 98	2124 98	1 44	-1 05	1 43	2 00	433033 68	603685 81	N 32 11 24 29	W 103 59 53 39
	5200 00	4 00	126 86	5199 84	2224 84	5 75	-4 19	5 58	2 00	433029 84	603689 09	N 32 11 24 26	W 103 59 53 34
Top Salado (salt)	*5230 25*	*4 60*	*126 86*	*5230 00*	*2255 00*	*7 81*	*-5 55*	*7 43*	*2 00*	*433026 59*	*603691 81*	*N 32 11 24 25*	*W 103 59 53 32*
	5300 00	6 00	126 86	5299 45	2324 45	12 92	-9 41	12 58	2 00	433024 72	603696 97	N 32 11 24 21	W 103 59 53 26
Hold 7.65° Inc	5389 08	7 98	126 86	5387 79	2412 79	22 65	-16 65	22 21	2 00	433017 48	603706 81	N 32 11 24 14	W 103 59 53 15
	5400 00	7 98	126 86	5398 70	2423 70	22 95	-16 72	22 31	0 00	433017 41	603706 72	N 32 11 24 14	W 103 59 53 15
	5500 00	7 98	126 86	5497 73	2522 73	34 39	-25 05	33 42	0 00	433009 08	603717 82	N 32 11 24 05	W 103 58 53 02
	5600 00	7 98	126 86	5596 76	2621 76	45 82	-33 38	44 53	0 00	433000 75	603728 93	N 32 11 23 97	W 103 58 52 89
Top Rustler	*5633 56*	*7 98*	*126 86*	*5630 00*	*2655 00*	*49 68*	*-36 18*	*48 29*	*0 00*	*432997 86*	*603732 66*	*N 32 11 23 94*	*W 103 58 52 85*
	5700 00	7 98	126 86	5695 80	2720 80	57 25	-41 71	55 64	0 00	432992 42	603740 04	N 32 11 23 89	W 103 58 52 76
	5800 00	7 98	126 86	5794 83	2819 83	68 68	-50 04	66 75	0 00	432984 09	603751 15	N 32 11 23 80	W 103 58 52 63
	5900 00	7 98	126 86	5893 86	2918 86	80 12	-58 37	77 86	0 00	432975 77	603762 26	N 32 11 23 72	W 103 58 52 51

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (NUS)	Easting (NUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	8000.00	7.98	126.86	6992.89	6917.89	91.55	-66.70	86.97	0.00	432967.44	603773.37	N 32 11 23.64	W 103 59 52.36
	8100.00	7.98	126.86	8091.82	3116.82	102.98	-75.03	100.08	0.00	432959.11	603784.48	N 32 11 23.56	W 103 59 52.25
	8200.00	7.98	126.86	8190.95	3215.95	114.42	-83.36	111.19	0.00	432950.78	603795.58	N 32 11 23.47	W 103 59 52.12
	8300.00	7.98	126.86	8288.98	3314.98	125.85	-91.69	122.30	0.00	432942.45	603806.70	N 32 11 23.39	W 103 59 51.99
	8400.00	7.98	126.86	8389.01	3414.01	137.28	-100.01	133.41	0.00	432934.12	603817.81	N 32 11 23.31	W 103 59 51.86
	8500.00	7.98	126.86	8488.05	3513.05	148.71	-108.34	144.52	0.00	432925.80	603828.92	N 32 11 23.22	W 103 59 51.73
	8600.00	7.98	126.86	8587.08	3612.08	160.15	-116.67	155.63	0.00	432917.47	603840.03	N 32 11 23.14	W 103 59 51.60
Bone Spring	*8612.02*	*7.98*	*126.86*	*8597.00*	*3622.00*	*161.28*	*-117.51*	*156.74*	*0.00*	*432916.63*	*603841.14*	*N 32 11 23.13*	*W 103 59 51.59*
	8700.00	7.98	126.86	8686.11	3711.11	171.58	-125.00	166.74	0.00	432909.14	603851.14	N 32 11 23.06	W 103 59 51.47
	8800.00	7.98	126.86	8785.14	3810.14	183.01	-133.33	177.85	0.00	432900.81	603862.25	N 32 11 22.98	W 103 59 51.34
	8900.00	7.98	126.86	8884.17	3909.17	194.44	-141.66	188.96	0.00	432892.48	603873.36	N 32 11 22.89	W 103 59 51.22
	7000.00	7.98	126.86	6983.20	4008.20	205.88	-149.99	200.07	0.00	432884.15	603884.46	N 32 11 22.81	W 103 59 51.09
	7100.00	7.98	126.86	7082.23	4107.23	217.31	-158.32	211.18	0.00	432875.82	603895.57	N 32 11 22.73	W 103 59 50.96
	7200.00	7.98	126.86	7181.26	4206.26	228.74	-166.65	222.29	0.00	432867.50	603906.68	N 32 11 22.65	W 103 59 50.83
	7300.00	7.98	126.86	7280.30	4305.30	240.18	-174.98	233.40	0.00	432859.17	603917.79	N 32 11 22.56	W 103 59 50.70
	7400.00	7.98	126.86	7379.33	4404.33	251.61	-183.31	244.51	0.00	432850.84	603928.90	N 32 11 22.48	W 103 59 50.57
	7500.00	7.98	126.86	7478.36	4503.36	263.04	-191.63	255.62	0.00	432842.51	603940.01	N 32 11 22.40	W 103 59 50.44
Drop 2° DLS	7524.08	7.98	126.86	7502.21	4527.21	265.79	-193.64	258.30	0.00	432840.51	603942.69	N 32 11 22.38	W 103 59 50.41
1st Bone Spring Sand	*7572.29*	*7.02*	*126.86*	*7550.00*	*4575.00*	*270.97*	*-197.41*	*263.33*	*2.00*	*432836.73*	*603947.72*	*N 32 11 22.34*	*W 103 59 50.35*
	7600.00	6.48	126.86	7577.52	4602.52	273.65	-199.37	265.93	2.00	432834.78	603950.32	N 32 11 22.32	W 103 59 50.32
	7700.00	4.48	126.86	7677.06	4702.06	281.49	-205.08	273.55	2.00	432829.07	603957.94	N 32 11 22.26	W 103 59 50.23
	7800.00	2.48	126.86	7776.87	4801.87	286.48	-208.70	278.38	2.00	432825.45	603962.77	N 32 11 22.23	W 103 59 50.18
2nd Bone Spring	*7805.13*	*2.36*	*126.86*	*7782.00*	*4807.00*	*286.64*	*-208.83*	*278.56*	*2.00*	*432825.32*	*603962.94*	*N 32 11 22.23*	*W 103 59 50.18*
	7900.00	0.48	126.86	7876.84	4901.84	288.57	-210.23	280.43	2.00	432823.92	603964.82	N 32 11 22.21	W 103 59 50.15
Return to Vertical	7923.18	0.00	126.86	7900.00	4925.00	288.64	-210.29	280.50	2.00	432823.86	603964.89	N 32 11 22.21	W 103 59 50.15
	8000.00	0.00	126.86	7976.84	5001.84	288.64	-210.29	280.50	0.00	432823.86	603964.89	N 32 11 22.21	W 103 59 50.15
KOP	*8038.18*	*0.00*	*126.86*	*8013.00*	*5038.00*	*288.64*	*-210.29*	*280.50*	*0.00*	*432823.86*	*603964.89*	*N 32 11 22.21*	*W 103 59 50.15*
	8100.00	0.00	126.86	8076.84	5101.84	288.64	-210.29	280.50	0.00	432823.86	603964.89	N 32 11 22.21	W 103 59 50.15
KOP Build 10°/100' DLS	8106.31	0.00	126.86	8083.15	5108.15	288.64	-210.29	280.50	0.00	432823.86	603964.89	N 32 11 22.21	W 103 59 50.15
	8200.00	9.37	90.02	8176.42	5201.42	298.28	-210.29	288.14	10.00	432823.86	603972.53	N 32 11 22.21	W 103 59 50.06
	8300.00	19.37	90.02	8273.17	5298.17	321.04	-210.30	312.93	10.00	432823.85	603997.31	N 32 11 22.21	W 103 59 49.76
	8400.00	29.37	90.02	8364.14	5389.14	362.22	-210.31	354.14	10.00	432823.83	604038.52	N 32 11 22.21	W 103 59 49.30
2nd Bone Spring Sand	*8437.26*	*33.09*	*90.02*	*8396.00*	*5421.00*	*381.52*	*-210.32*	*373.45*	*10.00*	*432823.83*	*604057.83*	*N 32 11 22.21*	*W 103 59 49.07*
	8500.00	39.37	90.02	8446.58	5471.58	418.56	-210.33	410.52	10.00	432823.81	604094.89	N 32 11 22.21	W 103 59 48.64
	8600.00	49.37	90.02	8517.98	5542.98	488.34	-210.36	480.38	10.00	432823.79	604164.73	N 32 11 22.21	W 103 59 47.83
	8700.00	59.37	90.02	8576.18	5601.18	569.45	-210.38	561.53	10.00	432823.78	604245.89	N 32 11 22.20	W 103 59 46.88
	8800.00	69.37	90.02	8619.36	5644.36	659.43	-210.42	651.56	10.00	432823.73	604335.93	N 32 11 22.20	W 103 59 45.84
	8900.00	79.37	90.02	8646.27	5671.27	755.53	-210.45	747.75	10.00	432823.70	604432.10	N 32 11 22.20	W 103 59 44.72
Landing Point	8995.00	88.87	90.02	8656.00	5681.00	849.85	-210.48	842.15	10.00	432823.68	604526.49	N 32 11 22.19	W 103 59 43.62
	9000.00	88.87	90.02	8656.09	5681.09	854.85	-210.48	847.15	0.00	432823.68	604531.49	N 32 11 22.19	W 103 59 43.56
	9100.00	88.87	90.02	8658.07	5683.07	954.75	-210.52	947.13	0.00	432823.63	604631.46	N 32 11 22.19	W 103 59 42.40
	9200.00	88.87	90.02	8660.04	5685.04	1054.65	-210.55	1047.11	0.00	432823.59	604731.43	N 32 11 22.19	W 103 59 41.23
	9300.00	88.87	90.02	8662.02	5687.02	1154.55	-210.59	1147.09	0.00	432823.56	604831.40	N 32 11 22.18	W 103 59 40.07
	9400.00	88.87	90.02	8663.99	5688.99	1254.46	-210.62	1247.07	0.00	432823.52	604931.38	N 32 11 22.18	W 103 59 38.91
	9500.00	88.87	90.02	8665.96	5690.96	1354.36	-210.66	1347.05	0.00	432823.49	605031.35	N 32 11 22.18	W 103 59 37.74
	9600.00	88.87	90.02	8667.94	5692.94	1454.26	-210.69	1447.03	0.00	432823.45	605131.32	N 32 11 22.17	W 103 59 36.58
	9700.00	88.87	90.02	8669.91	5694.91	1554.17	-210.73	1547.01	0.00	432823.42	605231.29	N 32 11 22.17	W 103 59 35.42
	9800.00	88.87	90.02	8671.89	5696.89	1654.07	-210.76	1646.99	0.00	432823.39	605331.27	N 32 11 22.16	W 103 59 34.25
	9900.00	88.87	90.02	8673.86	5698.86	1753.97	-210.80	1746.97	0.00	432823.35	605431.24	N 32 11 22.16	W 103 59 33.09
	10000.00	88.87	90.02	8675.83	5700.83	1853.87	-210.83	1846.95	0.00	432823.32	605531.21	N 32 11 22.16	W 103 59 31.93
	10100.00	88.87	90.02	8677.81	5702.81	1953.78	-210.87	1946.93	0.00	432823.28	605631.18	N 32 11 22.15	W 103 59 30.76
	10200.00	88.87	90.02	8679.78	5704.78	2053.68	-210.90	2046.91	0.00	432823.25	605731.16	N 32 11 22.15	W 103 59 29.60
	10300.00	88.87	90.02	8681.76	5706.76	2153.58	-210.94	2146.89	0.00	432823.21	605831.13	N 32 11 22.15	W 103 59 28.44
	10400.00	88.87	90.02	8683.73	5708.73	2253.48	-210.97	2246.87	0.00	432823.18	605931.10	N 32 11 22.14	W 103 59 27.27
	10500.00	88.87	90.02	8685.70	5710.70	2353.39	-211.00	2346.85	0.00	432823.14	606031.07	N 32 11 22.14	W 103 59 26.11
	10600.00	88.87	90.02	8687.68	5712.68	2453.29	-211.04	2446.83	0.00	432823.11	606131.05	N 32 11 22.14	W 103 59 24.95
	10700.00	88.87	90.02	8689.65	5714.65	2553.19	-211.07	2546.81	0.00	432823.07	606231.02	N 32 11 22.13	W 103 59 23.78
	10800.00	88.87	90.02	8691.63	5716.63	2653.10	-211.11	2646.79	0.00	432823.04	606330.99	N 32 11 22.13	W 103 59 22.62
	10900.00	88.87	90.02	8693.60	5718.60	2753.00	-211.14	2746.77	0.00	432823.00	606430.96	N 32 11 22.13	W 103 59 21.46
	11000.00	88.87	90.02	8695.57	5720.57	2852.90	-211.18	2846.76	0.00	432822.97	606530.94	N 32 11 22.12	W 103 59 20.29
	11100.00	88.87	90.02	8697.55	5722.55	2952.80	-211.21	2946.74	0.00	432822.93	606630.91	N 32 11 22.12	W 103 59 19.13
	11200.00	88.87	90.02	8699.52	5724.52	3052.71	-211.25	3046.72	0.00	432822.90	606730.88	N 32 11 22.12	W 103 59 17.97
	11300.00	88.87	90.02	8701.49	5726.49	3152.61	-211.28	3146.70	0.00	432822.86	606830.85	N 32 11 22.11	W 103 59 16.80
	11400.00	88.87	90.02	8703.47	5728.47	3252.51	-211.32	3246.68	0.00	432822.83	606930.83	N 32 11 22.11	W 103 59 15.64
	11500.00	88.87	90.02	8705.44	5730.44	3352.42	-211.35	3346.66	0.00	432822.80	607030.80	N 32 11 22.11	W 103 59 14.48
	11600.00	88.87	90.02	8707.42	5732.42	3452.32	-211.39	3446.64	0.00	432822.76	607130.77	N 32 11 22.10	W 103 59 13.31
	11700.00	88.87	90.02	8709.39	5734.39	3552.22	-211.42	3546.62	0.00	432822.73	607230.74	N 32 11 22.10	W 103 59 12.15
	11800.00	88.87	90.02	8711.36	5736.36	3652.12	-211.46	3646.60	0.00	432822.69	607330.72	N 32 11 22.09	W 103 59 10.99
	11900.00	88.87	90.02	8713.34	5738.34	3752.03	-211.49	3746.58	0.00	432822.66	607430.69	N 32 11 22.09	W 103 59 9.82
	12000.00	88.87	90.02	8715.31	5740.31	3851.93	-211.53	3846.56	0.00	432822.62	607530.66	N 32 11 22.09	W 103 59 8.66
	12100.00	88.87	90.02	8717.29	5742.29	3951.83	-211.56	3946.54	0.00	432822.59	607630.63	N 32 11 22.08	W 103 59 7.50
	12200.00	88.87	90.02	8719.26	5744.26	4051.74	-211.59	4046.52	0.00	432822.55	607730.61	N 32 11 22.08	W 103 59 6.33
	12300.00	88.87	90.02	8721.23	5746.23	4151.64	-211.63	4146.50	0.00	432822.52	607830.58	N 32 11 22.08	W 103 59 5.17
	12400.00	88.87	90.02	8723.21	5748.21	4251.54	-211.66	4246.48	0.00	432822.48	607930.55	N 32 11 22.07	W 103 59 4.01
	12500.00	88.87	90.02	8725.18	5750.18	4351.44	-211.70	4346.46	0.00	432822.45	608030.52	N 32 11 22.07	W 103 59 2.84
	12600.00	88.87	90.02	8727.16	5752.16	4451.35	-211.73	4446.44	0.00	432822.41	608130.50	N 32 11 22.07	W 103 59 1.68
	12700.00	88.87	90.02	8729.13	5754.13	4551.25	-211.77	4546.42	0.00	432822.38	608230.47	N 32 11 22.06	W 103 59 0.52
	12800.00	88.87	90.02	8731.10	5756.10	4651.15	-211.80	4646.40	0.00	432822.34	608330.44	N 32 11 22.06	W 103 58 59.35
	12900.00	88.87	90.02	8733.08	5758.08	4751.05	-211.84	4746.39	0.00	432822.31	608430.41	N 32 11 22.06	W 103 58 58.19
	13000.00	88.87	90.02	8735.05	5760.05	4850.96	-211.87	4846.37	0.00	432822.27	608530.39	N 32 11 22.05	W 103 58 57.03
	13100.00	88.87	90.02	8737.02	5762.02	4950.86	-211.91	4946.35	0.00	432822.24	608630.36	N 32 11 22.05	W 103 58 55.86
	13200.00	88.87	90.02	8739.00	5764.00	5050.76	-211.94	5046.33	0.00	432822.21	608730.33	N 32 11 22.04	W 103 58 54.70
	13300.00	88.87	90.02	8740.97	5765.97	5150.67	-211.98	5146.31	0.00	432822.17	608830.30	N 32 11 22.04	W 103 58 53.54
Bottom Perf	13301.39	88.87	90.02	8741.00	5766.00	5152.05	-211.98	5147.69	0.00	432822.17	608831.68	N 32 11 22.04	W 103 58 53.52
	13400.00	88.87	90.02	8742.95	5767.95	5250.57	-212.01	5246.29	0.00	432822.14	608930.27	N 32 11 22.04	W 103 58 52.37
Plat BHL	13481.39	88.87	90.02	8744.55	5769.55	5331.88	-212.04	5327.58	0.00	432822.11	609011.84	N 32 11 22.03	W 103 58 51.42

Survey Type: Non-Def Plan

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

Survey Program:

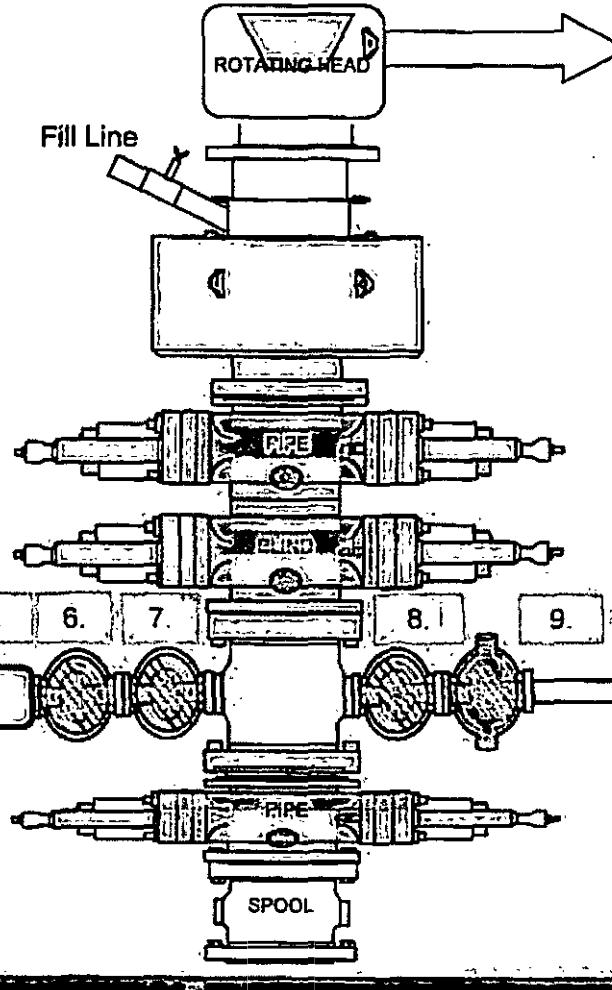
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.500	1/100.000	30.000	30.000	SLB_MWD-STD_HDGM-Depth Only	Oxy Cedar Canyon 28 Fed. 5H - Orig. Borehole / Oxy Cedar Canyon 28 Fed. 5H Rev0 MMC
	1	26.500	13481.388	1/100.000	30.000	30.000	SLB_MWD-STD_HDGM	Oxy Cedar Canyon 28 Fed. 5H - Orig. Borehole / Oxy Cedar

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



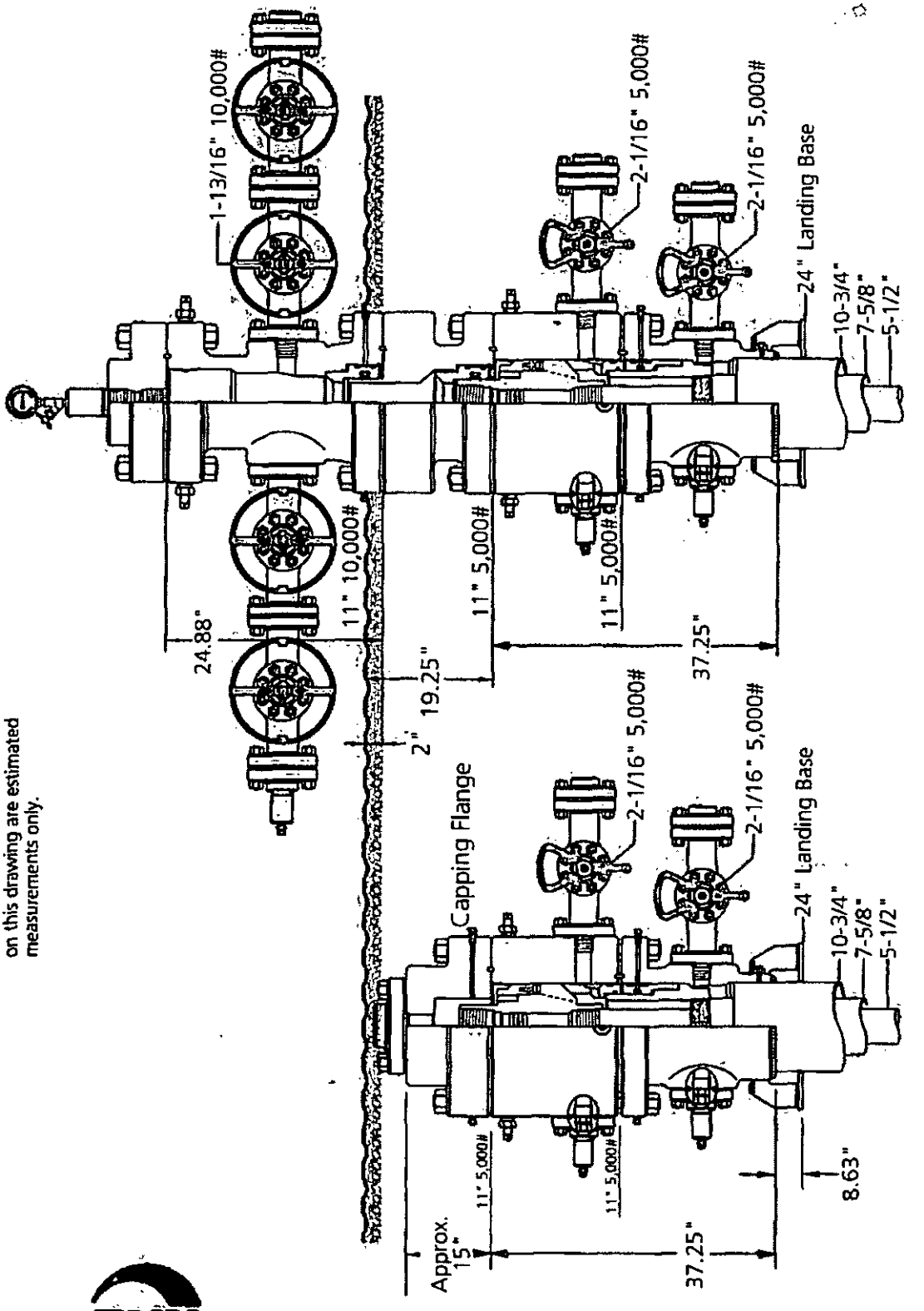
1. 5000 psi Annular (13-3/8" ID)
2. 5,000 psi Upper Pipe Ram (13-3/8" ID)
3. 5,000 psi Blind Ram (13-3/8" ID)
4. 5,000 psi Lower Pipe Ram (13-3/8" ID)

To Kill Line

To Co-Flex and Choke Manifold

BOP-1

BOP-2



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

11" 10K MBS w/ 5.5" Mandrel

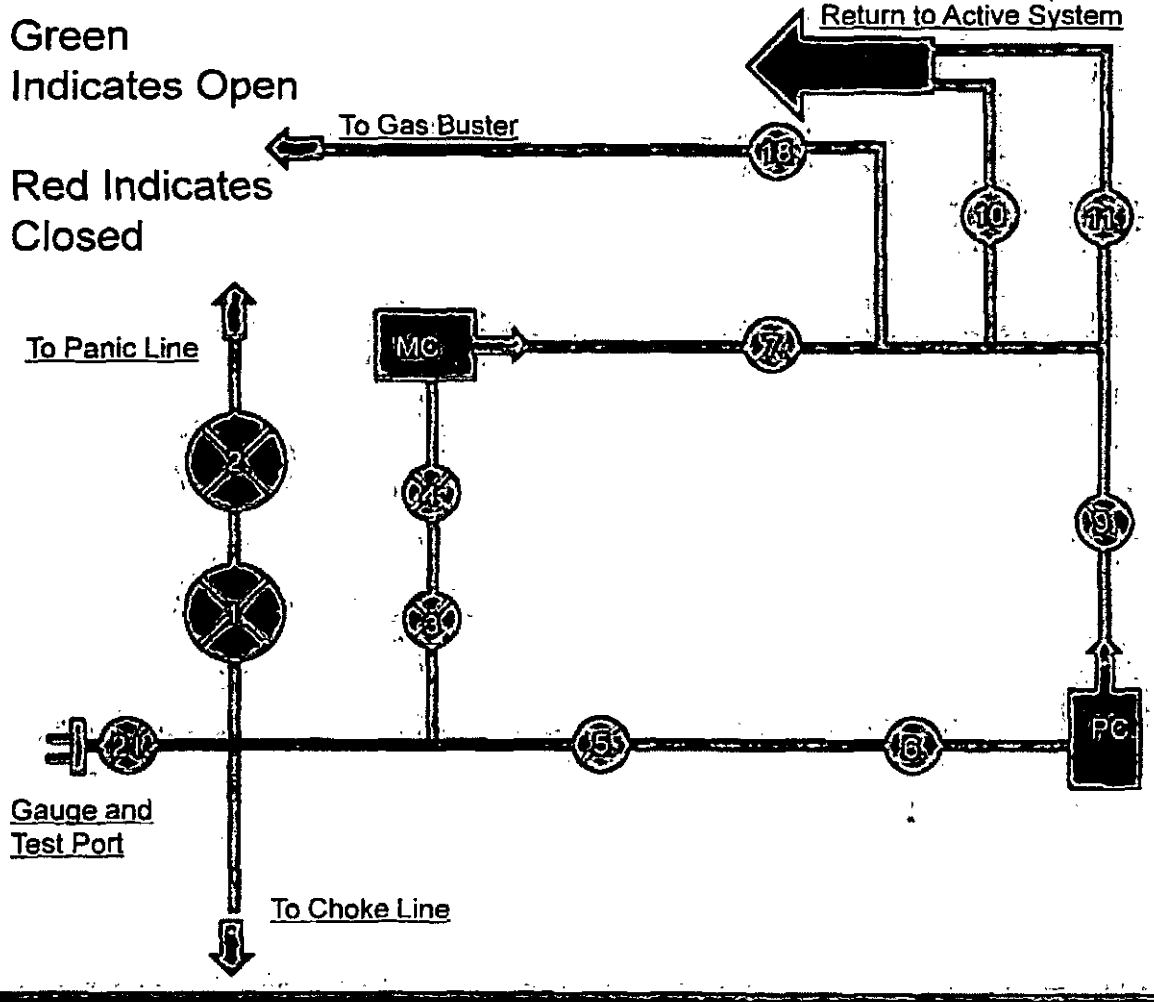
CAMERON

Jeanette	8-5-15	#	J-9579-4

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

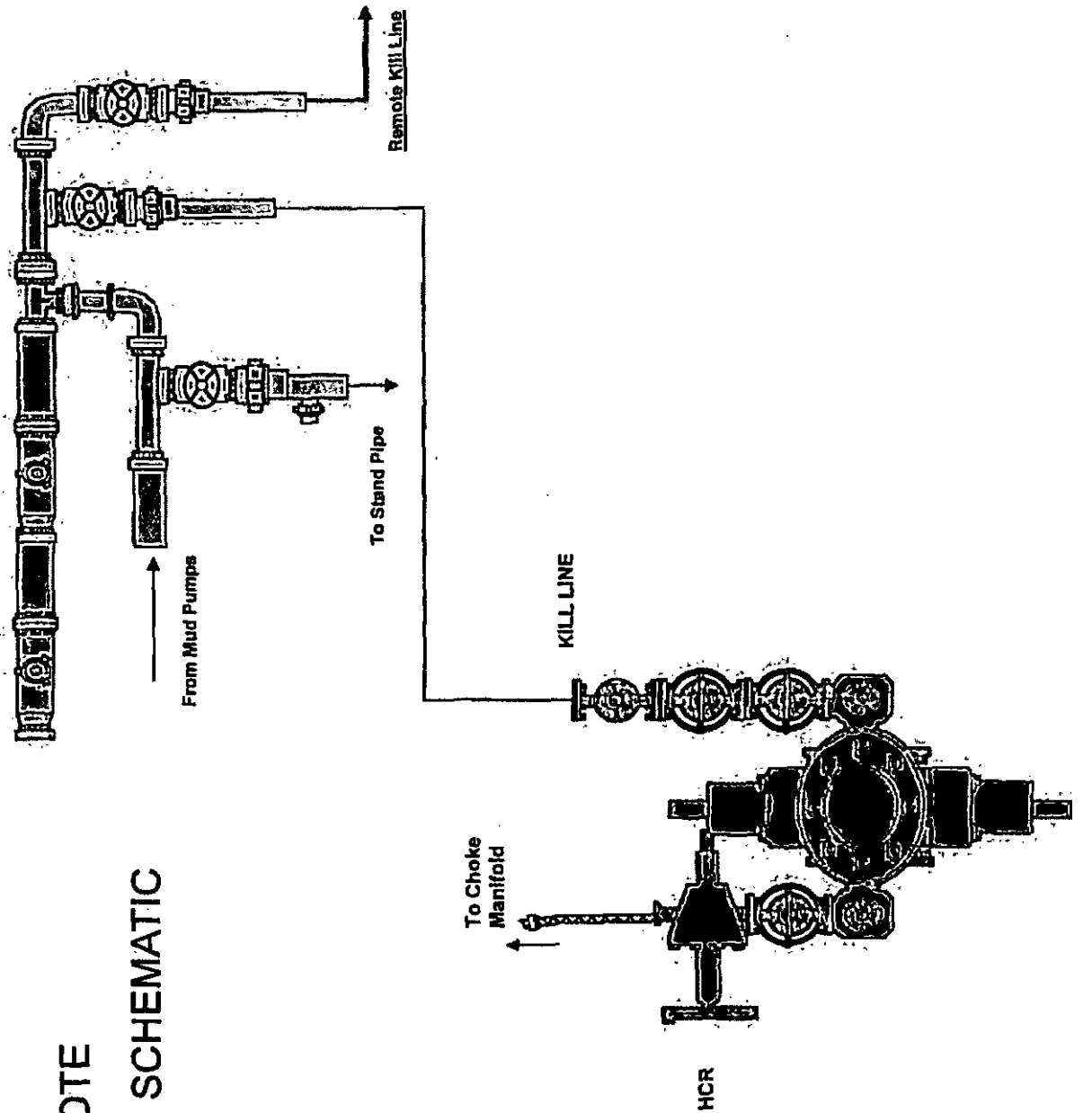
21. Vertical Choke Manifold Valve

***All Valves 3" minimum**

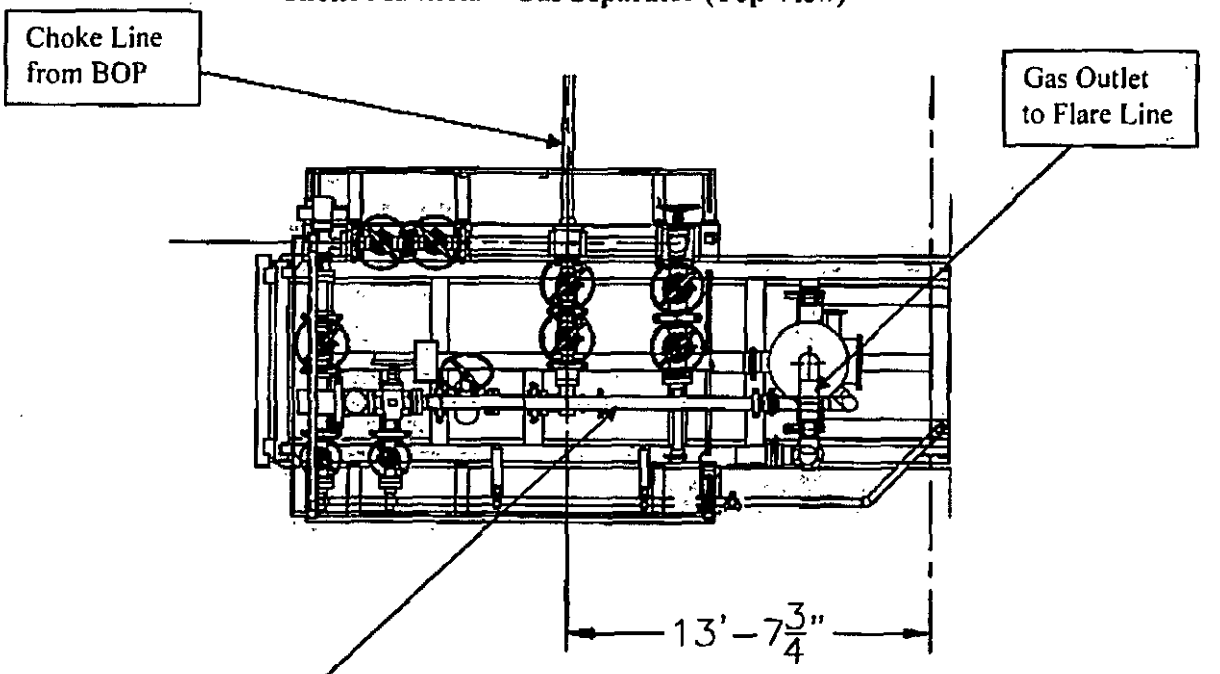
CM-1

CM-2

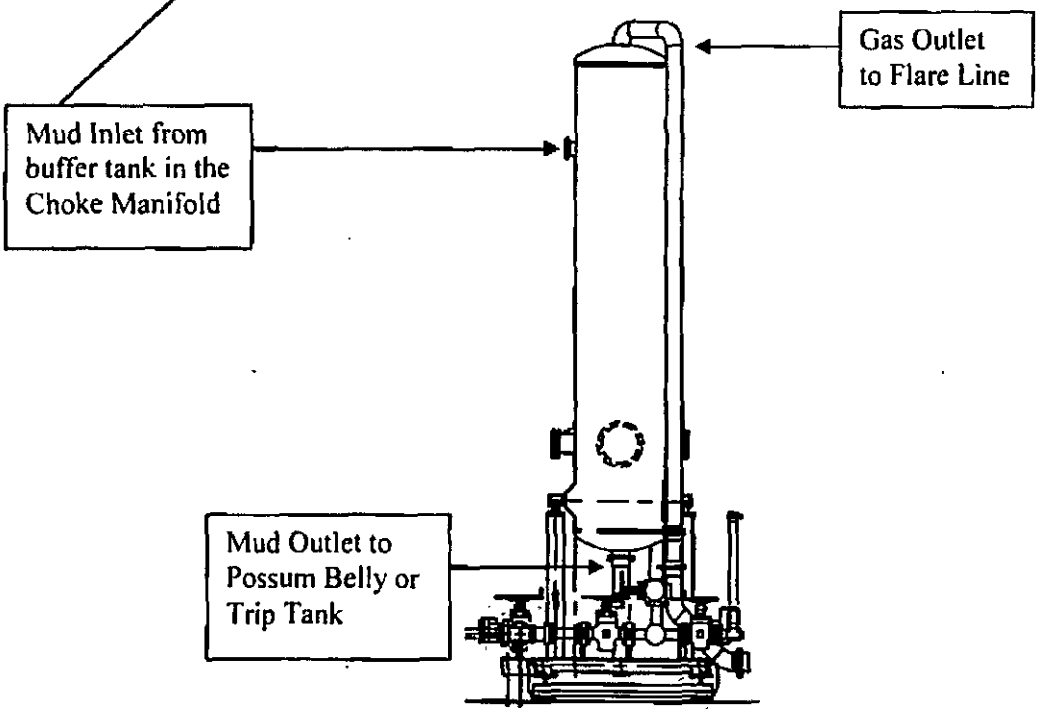
10M REMOTE KILL LINE SCHEMATIC



Choke Manifold – Gas Separator (Top View)

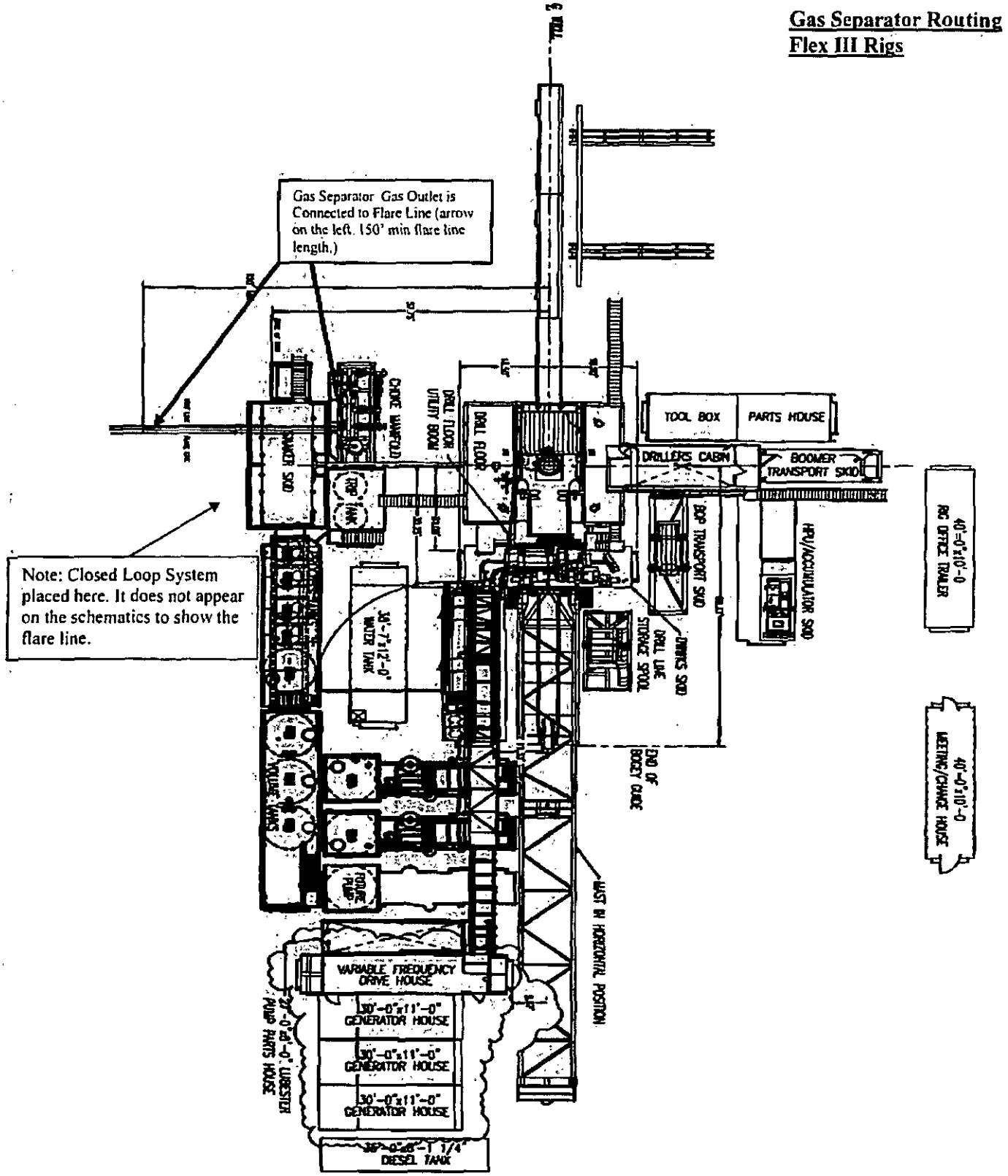


Choke Manifold – Gas Separator (Side View)

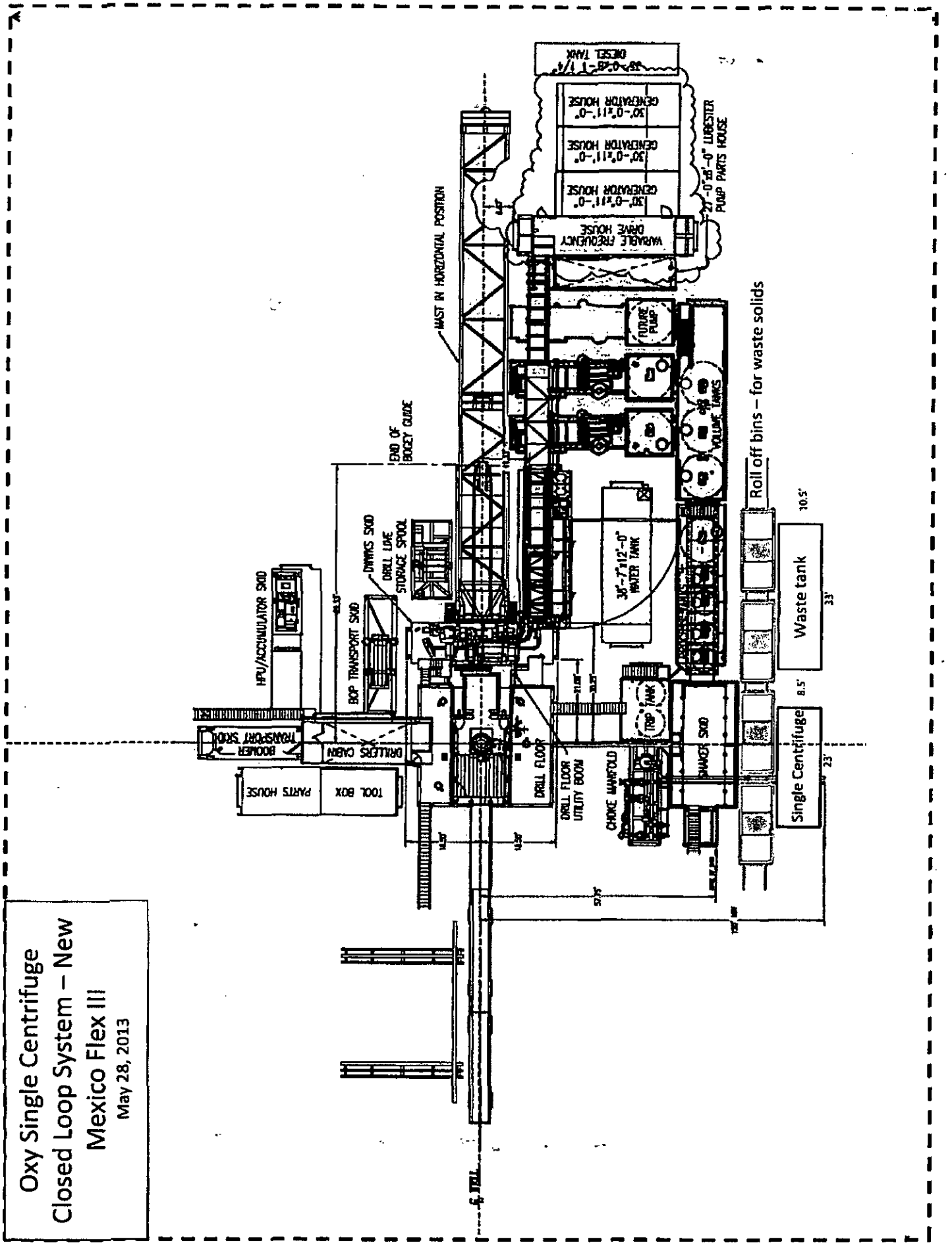


CM-4

Gas Separator Routing
Flex III Rigs

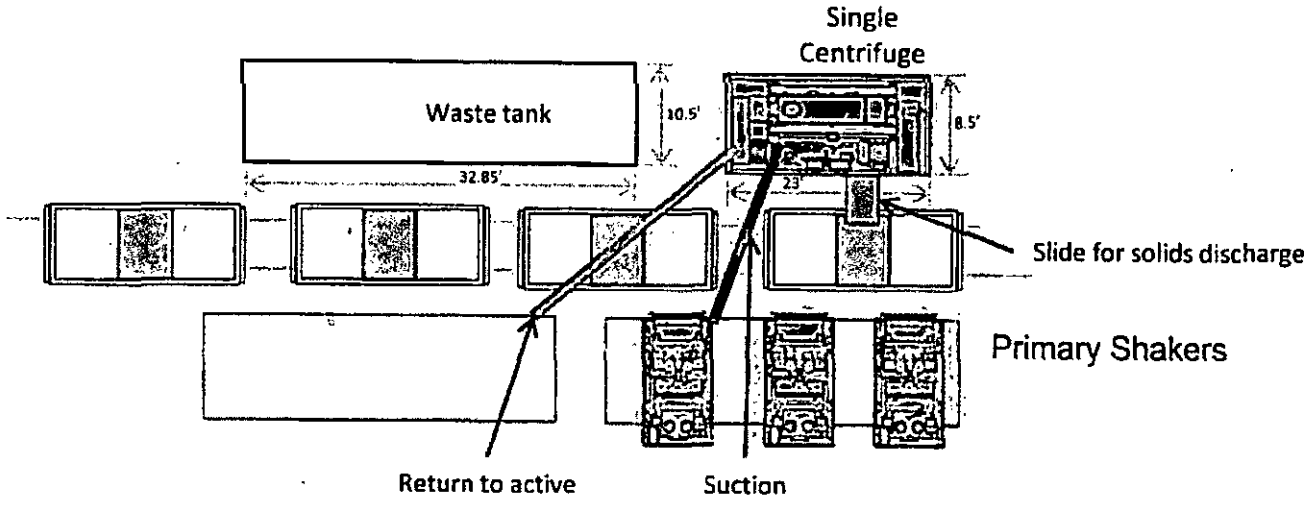


CL-1



Oxy Single Centrifuge
Closed Loop System – New Mexico Flex III
May 28, 2013

Oxy



Well Head

Oxy Single Centrifuge
Closed Loop System – New
Mexico Flex III
May 28, 2013

CL-2

Coflex Hose Certification

Continental CONTITECH

Fluid Technology

Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 746
PURCHASER: Phoenix Beattie Co.				P.O. N°: 002491
CONTITECH ORDER N°: 412638		HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 52777		NOMINAL / ACTUAL LENGTH:		10,67 m
W.P. 68,96 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60 ~ min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 25 MPa

COUPLINGS

Type	Serial N°	Quality	Heat N°
3" coupling with	917 913	AISI 4130	T7998A
4 1/16" Flange end		AISI 4130	26984

INFOCHIP INSTALLED

API Spec 16 C
Temperature rate:"B"

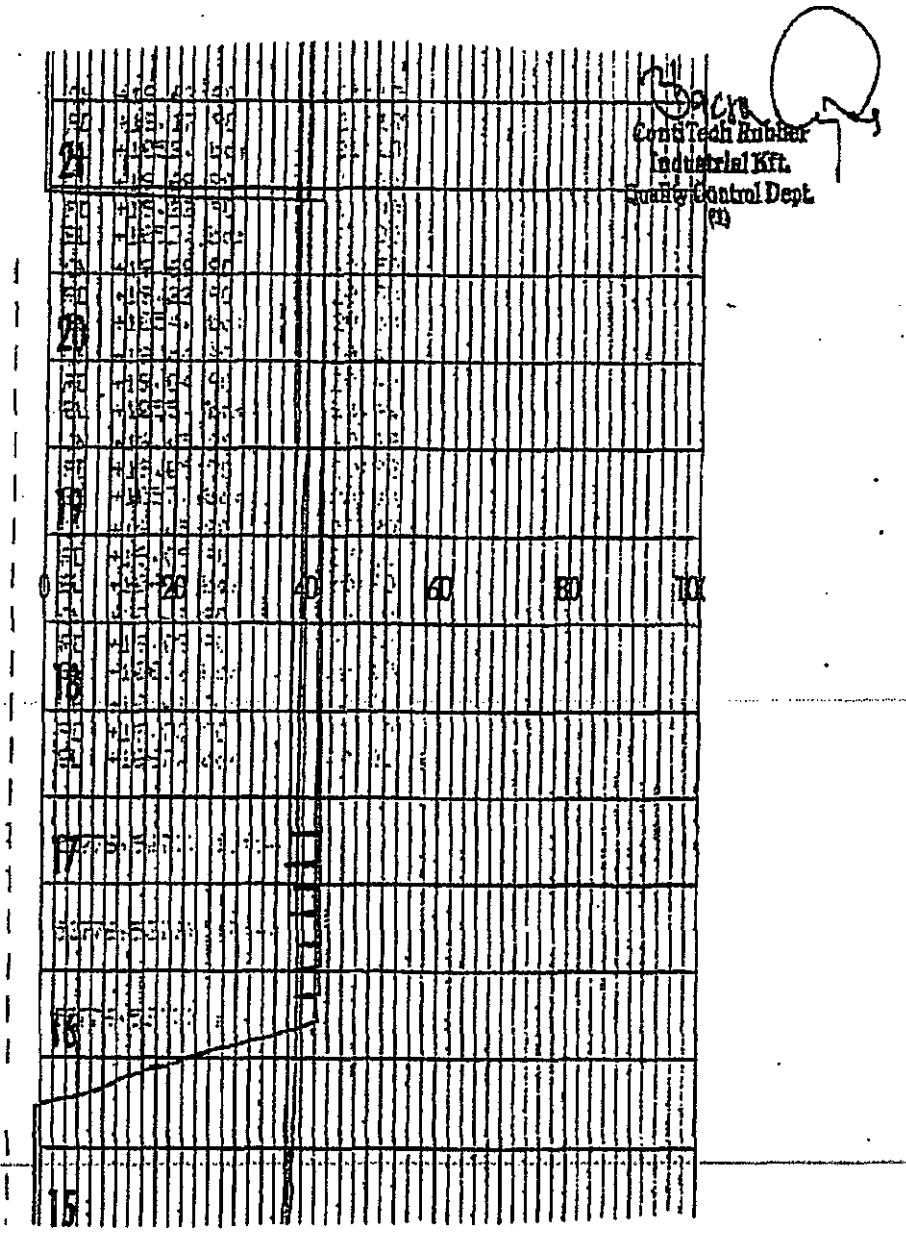
All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
04. April. 2008		ContiTech Rubber Industrial Kft. Quality Control Dept. (1)

FH-2

Coflex Hose Certification



FH-3

Coflex Hose Certification

Form No 100/12

PHOENIX Beattie

Phoenix Beattie Corp
11535 Brittmoore Park Drive
Houston, TX 77041
Tel: (832) 327-0141
Fax: (832) 327-0148
E-mail mail@phoenixbeattie.com
www.phoenixbeattie.com

Delivery Note

Customer Order Number	370-369-001	Delivery Note Number	003078	Page	1

Customer / Invoice Address
HELMERICH & PAYNE INT'L DRILLING CO
1437 SOUTH BOULDER
TULSA, OK
74119

Delivery / Address
HELMERICH & PAYNE IDC
ATTN: JOE STEPHENSON - RIG 370
13609 INDUSTRIAL ROAD
HOUSTON, TX
77015

Customer Acc No	Phoenix Beattie Contract Manager	Phoenix Beattie Reference	Date
H01	JJL	006330	05/23/2008

Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
1	HP10CK3A-35-4F1 3" 10K 16C C&K HOSE x 35ft OAL CW 4.1/16" API SPEC FLANGE E/ End 1: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange End 2: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange c/w BX155 Standard ring groove at each end Suitable for H2S Service Working pressure: 10,000psi Test pressure: 15,000psi Standard: API 16C Full specification Armor Guarding: Included Fire Rating: Not Included Temperature rating: -20 Deg C to +100 Deg C	1	1	0
2	SECK3-HPF3 LIFTING & SAFETY EQUIPMENT TO SUIT HP10CK3-35-F1 2 x 160mm ID Safety Clamps 2 x 244mm ID Lifting Collars & element C's 2 x 7ft Stainless Steel wire rope 3/4" OD 4 x 7.75t Shackles	1	1	0
3	SC725-200CS SAFETY CLAMP 200MM 7.25T C/S GALVANISED	1	1	0

Continued...

FH-4

Coflex Hose Certification

Form No 100/12

PHOENIX Beattie

Phoenix Beattie Corp
11535 Brittmoore Park Drive
Houston, TX 77041
Tel: (832) 327-0141
Fax: (832) 327-0148
E-mail mail@phoenixbeattie.com
www.phoenixbeattie.com

Delivery Note

Customer Order Number	370-369-001	Delivery Note Number	003078	Page	2
Customer / Invoice Address HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119		**Delivery / Address** HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015			

Customer Acc No	Phoenix Beattie Contract Manager	Phoenix Beattie Reference	Date
H01	JJL	006330	05/23/2008

Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
4	SC725-132CS SAFETY CLAMP 132MM 7.25T C/S GALVANIZED C/W BOLTS	1	1	0
5	00CERT-HYDRO HYDROSTATIC PRESSURE TEST CERTIFICATE	1	1	0
6	00CERT-LOAD LOAD TEST CERTIFICATES	1	1	0
7	00FREIGHT INBOUND / OUTBOUND FREIGHT PRE-PAY & ADD TO FINAL INVOICE NOTE: MATERIAL MUST BE ACCOMPANIED BY PAPERWORK INCLUDING THE PURCHASE ORDER, RIG NUMBER TO ENSURE PROPER PAYMENT	1	1	0

Phoenix Beattie Inspection Signature : _____

Received In Good Condition : Signature _____

Print Name _____

Date _____

All goods remain the property of Phoenix Beattie until paid for in full. Any damage or shortage on this delivery must be advised within 5 days. Returns may be subject to a handling charge.

PHOENIX Beattie

Material Identification Certificate

PA No	006330	Client	HELMERICH & PAYNE INT'L DRILLING	Client Ref	370-369-001	Page	1

Part No	Description	Material Desc	Material Spec	Qty	WO No	Batch No	Test Cert No	Bin No	Drg No	Issue No
HP10CC3A-3S-4F1	3" 10K 16C CLK HOSE x 35ft OAL			1	2491	52777/H884		MATER		
SECK3-HPF3	LIFTING & SAFETY EQUIPMENT TO			1	2440	002440		W/STK		
SC725-200CS	SAFETY CLAMP 200HH 7.25T	CARBON STEEL		1	2519	H665		22C		
SC725-132CS	SAFETY CLAMP 132HH 7.25T	CARBON STEEL		1	2242	H839		22		

We hereby certify that these goods have been inspected by our Quality Management System, and to the best of our knowledge are found to conform to relevant industry standards within the requirements of the purchase order as issued to Phoenix Beattie Corporation.

05/13/08

Coflex Hose Certification

FH-5

Continental CONTITECH

Fluid Technology

Quality Document

FH-6

CERTIFICATE OF CONFORMITY

Supplier : CONTITECH RUBBER INDUSTRIAL KFT.
Equipment : 6 pcs. Choke and Kill Hose with installed couplings
Type : **3" x 10,67 m WP: 10000 psi**
Supplier File Number : 412638
Date of Shipment : April. 2008
Customer : Phoenix Beattie Co.
Customer P.o. : 002491
Referenced Standards / Codes / Specifications : API Spec 16 C
Serial No.: 52754,52755,52776,52777,52778,52782

STATEMENT OF CONFORMITY

We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

Signed : .....

ContiTech Rubber Industrial Kft. Quality Control Dept.

Date: 04. April. 2008

Position: Q.C. Manager

H2S-1

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
Cedar Canyon 28 Federal Com. 5H

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 Northwest 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

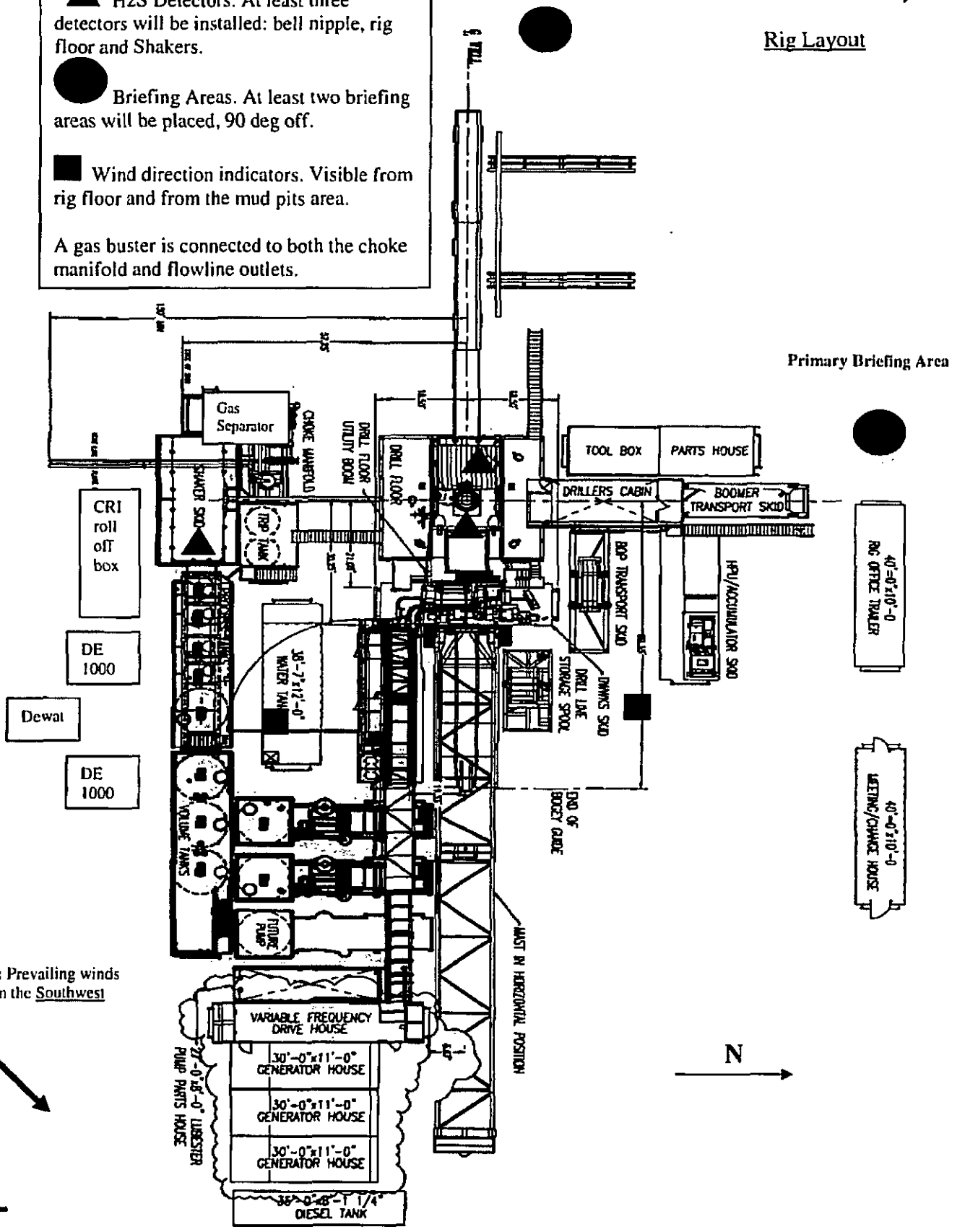
▲ H2S Detectors. At least three detectors will be installed: bell nipple, rig floor and Shakers.

● 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

H_2S-3

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
New Mexico

Scope

This contingency plan establishes guidelines for the public, all company employees, and contract employees who's work activities may involve exposure to hydrogen sulfide (H2S) gas.
While drilling this well, it is possible to encounter H2S bearing formations. At all times, the first barrier to control H2S emissions will be the drilling fluid, which will have a density high enough to control influx.

Objective

1. Provide an immediate and predetermined response plan to any condition when H2S is detected. All H2S detections in excess of 10 parts per million (ppm) concentration are considered an Emergency.

2. Prevent any and all accidents, and prevent the uncontrolled release of hydrogen sulfide into the atmosphere.

3. Provide proper evacuation procedures to cope with emergencies.

4. Provide immediate and adequate medical attention should an injury occur.

H2S-4

Discussion

Implementation:	This plan with all details is to be fully implemented before drilling to commence.
Emergency response Procedure:	This section outlines the conditions and denotes steps to be taken in the event of an emergency.
Emergency equipment Procedure:	This section outlines the safety and emergency equipment that will be required for the drilling of this well.
Training provisions:	This section outlines the training provisions that must be adhered to prior to drilling.
Drilling emergency call lists:	Included are the telephone numbers of all persons to be contacted should an emergency exist.
Briefing:	This section deals with the briefing of all people involved in the drilling operation.
Public safety:	Public safety personnel will be made aware of any potential evacuation and any additional support needed.
Check lists:	Status check lists and procedural check lists have been included to insure adherence to the plan.
General information:	A general information section has been included to supply support information.

Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on the well:

1. The hazards and characteristics of H2S.
2. Proper use and maintenance of personal protective equipment and life support systems.
3. H2S detection.
4. Proper use of H2S detectors, alarms, warning systems, briefing areas, evacuation procedures and prevailing winds.
5. Proper techniques for first aid and rescue procedures.
6. Physical effects of hydrogen sulfide on the human body.
7. Toxicity of hydrogen sulfide and sulfur dioxide.
8. Use of SCBA and supplied air equipment.
9. First aid and artificial respiration.
10. Emergency rescue.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H2S on metal components. If high tensile strength tubular is to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling a well, blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan.

H2S training refresher must have been taken within one year prior to drilling the well. Specifics on the well to be drilled will be discussed during the pre-spud meeting. H2S and well control (choke) drills will be performed while drilling the well, at least on a weekly basis. This plan shall be available in the well site. All personnel will be required to carry the documentation proving that the H2S training has been taken.

Service company and visiting personnel

A. Each service company that will be on this well will be notified if the zone contains H2S.

B. Each service company must provide for the training and equipment of their employees before they arrive at the well site.

C. Each service company will be expected to attend a well site briefing

H2S-6

Emergency Equipment Requirements

1. Well control equipment

The well shall have hydraulic BOP equipment for the anticipated pressures. Equipment is to be tested on installation and follow Oxy Well Control standard, as well as BLM Onshore Order #2.

Special control equipment:

A. Hydraulic BOP equipment with remote control on ground. Remotely operated choke.
B. Rotating head
C. Gas buster equipment shall be installed before drilling out of surface pipe.

2. Protective equipment for personnel

A. Four (4) 30-minute positive pressure air packs (2 at each briefing area) on location.

B. Adequate fire extinguishers shall be located at strategic locations.

C. Radio / cell telephone communication will be available at the rig.

- Rig floor and trailers.
- Vehicle.

3. Hydrogen sulfide sensors and alarms

A. H2S sensor with alarms will be located on the rig floor, at the bell nipple, and at the flow line. These monitors will be set to alarm at 10 ppm with strobe light, and audible alarm.
B. Hand operated detectors with tubes.
C. H2S monitor tester (to be provided by contract Safety Company.)
D. There shall be one combustible gas detector on location at all times.

4. Visual Warning Systems

A. One sign located at each location entrance with the following language:

Caution – potential poison gas
Hydrogen sulfide
No admittance without authorization

Wind sock – wind streamers:

A. One 36" (in length) wind sock located at protection center, at height visible from rig floor.
B. One 36" (in length) wind sock located at height visible from pit areas.

Condition flags

A. One each condition flag to be displayed to denote conditions.

green – normal conditions
yellow – potential danger
red – danger, H2S present

B. Condition flag shall be posted at each location sign entrance.

5. Mud Program

The mud program is designed to minimize the risk of having H2S and other formation fluids at surface. Proper mud weight and safe drilling practices will be applied. H2S scavengers will be used to minimize the hazards while drilling. Below is a summary of the drilling program.

Mud inspection devices:

Garrett gas train or hatch tester for inspection of sulfide concentration in mud system.

6. Metallurgy

A. Drill string, casing, tubing, wellhead, blowout preventers, drilling spools or adapters, kill lines, choke manifold, lines and valves shall be suitable for the H2S service.
B. All the elastomers, packing, seals and ring gaskets shall be suitable for H2S service.

7. Well Testing

No drill stem test will be performed on this well.

8. Evacuation plan

Evacuation routes should be established prior to well spud for each well and discussed with all rig personnel.

9. Designated area

   A. Parking and visitor area: all vehicles are to be parked at a predetermined safe distance from the wellhead.
   B. There will be a designated smoking area.
   C. Two briefing areas on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds perpendicularly, or at a 45-degree angle if wind direction tends to shift in the area.

Emergency procedures

A. In the event of any evidence of H2S level above 10 ppm, take the following steps:

   1. The Driller will pick up off bottom, shut down the pumps, slow down the pipe rotation.

   2. Secure and don escape breathing equipment, report to the upwind designated safe briefing / muster area.

   3. All personnel on location will be accounted for and emergency search should begin for any missing, the Buddy System will be implemented.

   4. Order non-essential personnel to leave the well site, order all essential personnel out of the danger zone and upwind to the nearest designated safe briefing / muster area.

   5. Entrance to the location will be secured to a higher level than our usual "Meet and Greet" requirement, and the proper condition flag will be displayed at the entrance to the location.

   6. Take steps to determine if the H2S level can be corrected or suppressed and, if so, proceed as required.

B. If uncontrollable conditions occur:

   1. Take steps to protect and/or remove any public in the down-wind area from the rig – partial evacuation and isolation. Notify necessary public safety personnel and appropriate regulatory entities (i.e. BLM) of the situation.

2. Remove all personnel to the nearest upwind designated safe briefing / muster area or off location.

3. Notify public safety personnel of safe briefing / muster area.

4. An assigned crew member will blockade the entrance to the location. No unauthorized personnel will be allowed entry to the location.

5. Proceed with best plan (at the time) to regain control of the well. Maintain tight security and safety procedures.

C. Responsibility:

1. Designated personnel.

a. Shall be responsible for the total implementation of this plan.
b. Shall be in complete command during any emergency.
c. Shall designate a back-up.

All personnel:	1.	On alarm, don escape unit and report to the nearest upwind designated safe briefing / muster area upw
	2.	Check status of personnel (buddy system).
	3.	Secure breathing equipment.
	4.	Await orders from supervisor.
Drill site manager:	1.	Don escape unit if necessary and report to nearest upwind designated safe briefing / muster area.
	2.	Coordinate preparations of individuals to return to point of release with tool pusher and driller (using the buddy system).
	3.	Determine H2S concentrations.
	4.	Assess situation and take control measures.
Tool pusher:	1.	Don escape unit Report to up nearest upwind designated safe briefing / muster area.
	2.	Coordinate preparation of individuals to return to point of release with tool pusher drill site manager (using the buddy system).
	3.	Determine H2S concentration.
	4.	Assess situation and take control measures.
Driller:	1.	Don escape unit, shut down pumps, continue

		rotating DP.
	2.	Check monitor for point of release.
	3.	Report to nearest upwind designated safe briefing / muster area.
	4.	Check status of personnel (in an attempt to rescue, use the buddy system).
	5.	Assigns least essential person to notify Drill Site Manager and tool pusher by quickest means in case of their absence.
	6.	Assumes the responsibilities of the Drill Site Manager and tool pusher until they arrive should they be absent.
Derrick man Floor man #1 Floor man #2	1.	Will remain in briefing / muster area until instructed by supervisor.
Mud engineer:	1.	Report to nearest upwind designated safe briefing / muster area.
	2.	When instructed, begin check of mud for ph and H2S level. (Garett gas train.)
Safety personnel:	1.	Mask up and check status of all personnel and secure operations as instructed by drill site manager.

Taking a kick

When taking a kick during an H2S emergency, all personnel will follow standard Well control procedures after reporting to briefing area and masking up.

Open-hole logging

All unnecessary personnel off floor. Drill Site Manager and safety personnel should monitor condition, advise status and determine need for use of air equipment.

Running casing or plugging

Following the same "tripping" procedure as above. Drill Site Manager and safety personnel should determine if all personnel have access to protective equipment.

Ignition procedures

The decision to ignite the well is the responsibility of the operator (Oxy Drilling Management). The decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope controlling the blowout under the prevailing conditions at the well.

Instructions for igniting the well

1. Two people are required for the actual igniting operation. They must wear self-contained breathing units and have a safety rope attached. One man (tool pusher or safety engineer) will check the atmosphere for explosive gases with the gas monitor. The other man is responsible for igniting the well.
2. Primary method to ignite: 25 mm flare gun with range of approximately 500 feet.
3. Ignite upwind and do not approach any closer than is warranted.
4. Select the ignition site best for protection, and which offers an easy escape route.
5. Before firing, check for presence of combustible gas.
6. After lighting, continue emergency action and procedure as before.
7. All unassigned personnel will remain in briefing area until instructed by supervisor or directed by the Drill Site Manager.

Remember: After well is ignited, burning hydrogen sulfide will convert to sulfur dioxide, which is also highly toxic. **Do not assume the area is safe after the well is ignited.**

Status check list

Note: All items on this list must be completed before drilling to production casing point.

1. H2S sign at location entrance.
2. Two (2) wind socks located as required.
3. Four (4) 30-minute positive pressure air packs (2 at each Briefing area) on location for all rig personnel and mud loggers.
4. Air packs inspected and ready for use.
5. Cascade system and hose line hook-up as needed.
6. Cascade system for refilling air bottles as needed.
7. Condition flag on location and ready for use.
8. H2S detection system hooked up and tested.
9. H2S alarm system hooked up and tested.
10. Hand operated H2S detector with tubes on location.
11. 1 – 100' length of nylon rope on location.
12. All rig crew and supervisors trained as required.
13. All outside service contractors advised of potential H2S hazard on well.
14. No smoking sign posted and a designated smoking area identified.
15. Calibration of all H2S equipment shall be noted on the IADC report.

Checked by:_____ Date:_____

Procedural check list during H2S events

Perform each tour:

1. Check fire extinguishers to see that they have the proper charge.

2. Check breathing equipment to ensure that it in proper working order.

3. Make sure all the H2S detection system is operative.

Perform each week:

1. Check each piece of breathing equipment to make sure that demand or forced air regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you receive air or feel air flow.

2. BOP skills (well control drills).

3. Check supply pressure on BOP accumulator stand by source.

4. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.

5. Check pressure on breathing equipment air bottles to make sure they are charged to full volume. (Air quality checked for proper air grade "D" before bringing to location)

6. Confirm pressure on all supply air bottles.

7. Perform breathing equipment drills with on-site personnel.

8. Check the following supplies for availability.

   A. Emergency telephone list.
   B. Hand operated H2S detectors and tubes.

General evacuation plan

1. When the company approved supervisor (Drill Site Manager, consultant, rig pusher, or driller) determines the H2S gas cannot be limited to the well location and the public will be involved, he will activate the evacuation plan.

2. Drill Site Manager or designee will notify local government agency that a hazardous condition exists and evacuation needs to be implemented.

3. Company or contractor safety personnel that have been trained in the use of H2S detection equipment and self-contained breathing equipment will monitor H2S concentrations, wind directions, and area of exposure. They will delineate the outer perimeter of the hazardous gas area. Extension to the evacuation area will be determined from information gathered.

4. Law enforcement personnel (state police, police dept., fire dept., and sheriff's dept.) Will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

5. After the discharge of gas has been controlled, company safety personnel will determine when the area is safe for re-entry.

Important: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

Emergency actions

Well blowout – if emergency

1. Evacuate all personnel to "Safe Briefing / Muster Areas" or off location if needed.
2. If sour gas – evacuate rig personnel.
3. If sour gas – evacuate public within 3000 ft radius of exposure.
4. Don SCBA and shut well in if possible using the buddy system.
5. Notify Drilling Superintendent and call 911 for emergency help (fire dept and ambulance) if needed.
6. Implement the Blowout Contingency Plan, and Drilling Emergency Action Plan.
6. Give first aid as needed.

Person down location/facility

1. If immediately possible, contact 911. Give location and wait for confirmation.
2. Don SCBA and perform rescue operation using buddy system.

Toxic effects of hydrogen sulfide

Hydrogen sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 ppm, which is .001% by volume. Hydrogen sulfide is heavier than air (specific gravity – 1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen sulfide is almost as toxic as hydrogen cyanide and is between five and six times more toxic than carbon monoxide. Toxicity data for hydrogen sulfide and various other gases are compared in table i. Physical effects at various hydrogen sulfide exposure levels are shown in table ii.

Table i
Toxicity of various gases

Common name	Chemical formula	Specific gravity (sc=1)	Threshold limit (1)	Hazardous limit (2)	Lethal concentration (3)
Hydrogen Cyanide	Hcn	0.94	10 ppm	150 ppm/hr	300 ppm
Hydrogen Sulfide	H2S	1.18	10 ppm	250 ppm/hr	600 ppm
Sulfur Dioxide	So2	2.21	5 ppm	-	1000 ppm
Chlorine	Cl2	2.45	1 ppm	4 ppm/hr	1000 ppm
Carbon Monoxide	Co	0.97	50 ppm	400 ppm/hr	1000 ppm
Carbon Dioxide	Co2	1.52	5000 ppm	5%	10%
Methane	Ch4	0.55	90,000 ppm	Combustible above 5% in air	

1) threshold limit – concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.

2) hazardous limit – concentration that will cause death with short-term exposure.

3) lethal concentration – concentration that will cause death with short-term exposure.

Toxic effects of hydrogen sulfide

Table ii
Physical effects of hydrogen sulfide

Percent (%)	Ppm	Concentration Grains 100 std. Ft3*	Physical effects
0.001	<10	00.65	Obvious and unpleasant odor.

0.002	10	01.30	Safe for 8 hours of exposure.
0.010	100	06.48	Kill smell in 3 – 15 minutes. May sting eyes and throat.
0.020	200	12.96	Kills smell shortly; stings eyes and throat.
0.050	500	32.96	Dizziness; breathing ceases in a few minutes; needs prompt artificial respiration.
0.070	700	45.36	Unconscious quickly; death will result if not rescued promptly.
0.100	1000	64.30	Unconscious at once; followed by death within minutes.

*at 15.00 psia and 60'f.

Use of self-contained breathing equipment (SCBA)

1. Written procedures shall be prepared covering safe use of SCBA's in dangerous atmosphere, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available SCBA.

2 SCBA's shall be inspected frequently at random to insure that they are properly used, cleaned, and maintained.

3. Anyone who may use the SCBA's shall be trained in how to insure proper face-piece to face seal. They shall wear SCBA's in normal air and then wear them in a test atmosphere. (note: such items as facial hair {beard or sideburns} and eyeglasses will not allow proper seal.) Anyone that may be reasonably expected to wear SCBA's should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses or contact lenses.

4. Maintenance and care of SCBA's:

   a. A program for maintenance and care of SCBA's shall include the following:
      1. Inspection for defects, including leak checks.
      2. Cleaning and disinfecting.
      3. Repair.
      4. Storage.

   b. Inspection, self-contained breathing apparatus for emergency use shall be inspected monthly.
      1. Fully charged cylinders.
      2. Regulator and warning device operation.
      3. Condition of face piece and connections.
      4. Rubber parts shall be maintained to keep them pliable and prevent deterioration.

   c. Routinely used SCBA's shall be collected, cleaned and disinfected as frequently as necessary to insure proper protection is provided.

5. Persons assigned tasks that requires use of self-contained breathing equipment shall be certified physically fit (medically cleared) for breathing equipment usage at least annually.

6. SCBA's should be worn when:

   A. Any employee works near the top or on top of any tank unless test reveals less than 10 ppm of H2S.

B. When breaking out any line where H2S can reasonably be expected.

C. When sampling air in areas to determine if toxic concentrations of H2S exists.

D. When working in areas where over 10 ppm H2S has been detected.

E. At any time there is a doubt as to the H2S level in the area to be entered.

Rescue
First aid for H2S poisoning

Do not panic!

Remain calm – think!

1. Don SCBA breathing equipment.

2. Remove victim(s) utilizing buddy system to fresh air as quickly as possible. (go up-wind from source or at right angle to the wind. Not down wind.)

3. Briefly apply chest pressure – arm lift method of artificial respiration to clean the victim's lungs and to avoid inhaling any toxic gas directly from the victim's lungs.

4. Provide for prompt transportation to the hospital, and continue giving artificial respiration if needed.

5. Hospital(s) or medical facilities need to be informed, before-hand, of the possibility of H2S gas poisoning – no matter how remote the possibility is.

6. Notify emergency room personnel that the victim(s) has been exposed to H2S gas.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration.

Revised CM 6/27/2012

Oxy U.S.A Inc.

New Mexico Staking Form

Date Staked: 11-9-15

Lease/Well Name: Cedar Canyon 28 Fed #5H

Legal Description: 1990 FNL 180 FEL Sec 29 T24S R29E

Latitude: 32.1900837 NAD 27

Longitude: -103.9951693

Move Information:

County: Eddy

Surface Owner/Tenant: BLM

Nearest Residence: 2 miles

Nearest Water Well:

V-Door: West

Road Description: Road into NW corner from North

New Road: 0

Upgrade Existing Road:

Interim Reclamation:

Source of Caliche:

Top Soil:

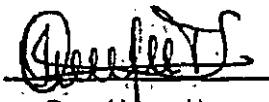
Onsite Date Performed:

Onsite Atiendees:

Special Notes:

OPERATOR CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 18th day of November, 2015.

Signature: 

Name: Omar Lisgurski

Position: Reservoir Management Team Leader

Address: 5 Greenway Plaza, Suite 110, Houston, TX 77046

Telephone: 713-215-7506

E-mail: (optional): omar_lisgurski@oxy.com

Company: Occidental Permian LP/OXY USA Inc./OXY USA WTP LP

Field Representative (if not above signatory): Dusty Weaver

Address (if different from above): P.O. Box 50250 Midland, TX 79710

Telephone (if different from above): 432-685-5723

E-mail (if different from above): calvin_weaver@oxy.com

APD Rec

United States Department of the Interior
Bureau of Land Management
CARLSBAD FIELD OFFICE
620 E. GREENE
CARLSBAD, NM 88220 -6292
Phone: (575) 234-5972

Receipt No: 3301120

Transaction #: 3398045
Date of Transaction: 05/20/2015

CUSTOMER:

OXY USA INC
PO BOX 50250
MIDLAND,TX 79710-0250 US

LINE #	QTY	DESCRIPTION	REMARKS	UNIT PRICE	TOTAL
1	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE	APD, CEDAR CANYON 28 FED 5H	6500.00	6500.00
				TOTAL:	**$6,500.00**

PAYMENT INFORMATION

NOTE: Items will appear on credit card statement as "Bureau of Land Mgmt CO".

1	AMOUNT:	6500.00	POSTMARKED:	N/A
	TYPE:	CREDIT CARD	RECEIVED:	05/20/2015
	NAME:	OXY USA INC PO BOX 50250 MIDLAND TX 79710-0250 US		
	CARD NO:	XXXXXXXXXXXX2380	AUTH CODE:	012200
	NAME ON CARD:	DAVID STEWART		
	EXPIRES:	07/2017		
	SIGNATURE:			

REMARKS

This receipt was generated by the automated BLM Collections and Billing System and is a paper representation of a portion of the official electronic record contained therein.

PBMOA Rec

United States Department of the Interior
Bureau of Land Management
CARLSBAD FIELD OFFICE
620 E. GREENE
CARLSBAD, NM 88220 -6292
Phone: (575) 234-5972

Receipt No: 3301118

Transaction #: 3398043
Date of Transaction: 05/20/2015

CUSTOMER:

OXY USA INC
PO BOX 50250
MIDLAND,TX 79710-0250 US

LINE #	QTY	DESCRIPTION	REMARKS	UNIT PRICE	TOTAL
1	1.00	CONTRIBUTED FUNDS-ALL OTHER / 7122 FLPMA / ALL OTHER RES DEV, PROTECT & MGMT **PROJECT:** LVTFG09G6180	MOA, CEDAR CANYON 28 FED #5H	3702.00	3702.00
				TOTAL:	**$3,702.00**

PAYMENT INFORMATION

NOTE: Items will appear on credit card statement as "Bureau of Land Mgmt CO".

1	AMOUNT:	3702.00	POSTMARKED:	N/A
	TYPE:	CREDIT CARD	RECEIVED:	05/20/2015
	NAME:	OXY USA INC PO BOX 50250 MIDLAND TX 79710-0250 US		
	CARD NO:	XXXXXXXXXXXX2380	AUTH CODE:	072390
	NAME ON CARD:	DAVID STEWART		
	EXPIRES:	07/2017		
	SIGNATURE:			

REMARKS

This receipt was generated by the automated BLM Collections and Billing System and is a paper representation of a portion of the official electronic record contained therein.

OXY USA Inc.

PO Box 50250
Midland, TX 79710-0250

December 10, 2015

United States Department of the Interior
Bureau of Land Management
620 E. Greene St.
Carlsbad, NM 88220

Attention: Duncan Whitlock

Re: ***Amend Application for Permit to Drill –***
Cedar Canyon 28 Federal #5H - Pierce Crossing Bone Spring, East
Surface Location - 1990 FNL 180 FEL SENE Sec 29 T24S R29E
Bottom Hole Location -2219 FNL 160 FEL SENE Sec 28 T24S R29E
Eddy County, New Mexico

Dear Mr. Whitlock:

OXY USA Inc. respectfully request approval for the following changes to the filed APD. This APD was originally filed 5/7/15, EC Transaction 300978, Serial Number 790-3361.

1. Move surface location to a multi-well pad to accommodate batch drilling with skidding operations. The multi-well pad is an existing well pad.
   Original Surface Location – 1154 FNL 150 FWL NWNW Sec 27 T24S R29E
   Original Bottom-hole location – 1700 FNL 180 FWL SWNW Sec 28 T24S R29E
2. Amend horizontal lateral
3. Amend casing/cementing/mud programs
4. Propose to run the wellhead through the rotary prior to cementing surface casing.
5. Pad extension was requested for well Cedar Canyon 29 Federal #311, API No. 30-015-42993 per sundry notice filed 11/9/15, EC Transaction 323010, Serial No. 852-841.

Please see attached for the following replacement pages to the original APD.

1. APD Drilling Plan
2. Surface Use Plan of Operation
3. Plats/Surveys/Diagrams
4. BOP/Choke Manifold/Closed Loop Diagrams
5. Flex Hose Information
6. H2S Plan
7. Staking Notice
8. Operator Certification
9. Original APD Fees Receipt

If you need any additional information, please call me at 432-685-5717.

Sincerely,

David Stewart
Sr. Regulatory Advisor
OXY USA Inc.

Attachments

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA Inc.
LEASE NO.:	NMNM094651
WELL NAME & NO.:	5H – Cedar Canyon 28 Federal
SURFACE HOLE FOOTAGE:	1990'/N & 180'/E
BOTTOM HOLE FOOTAGE	2219'/N & 160'/E SEC. 28
LOCATION:	Section 22, T 24 S., R 29 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

Tank Battery Liners and Berms:
Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

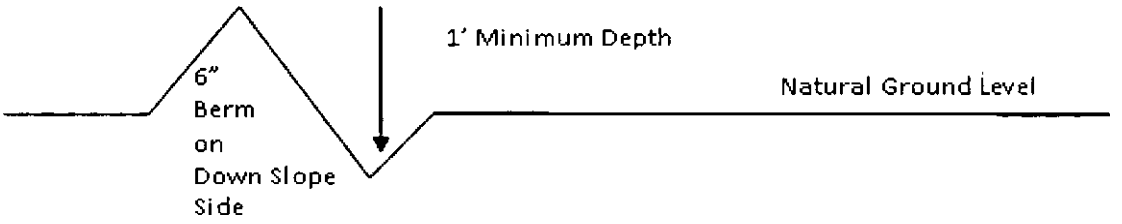
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

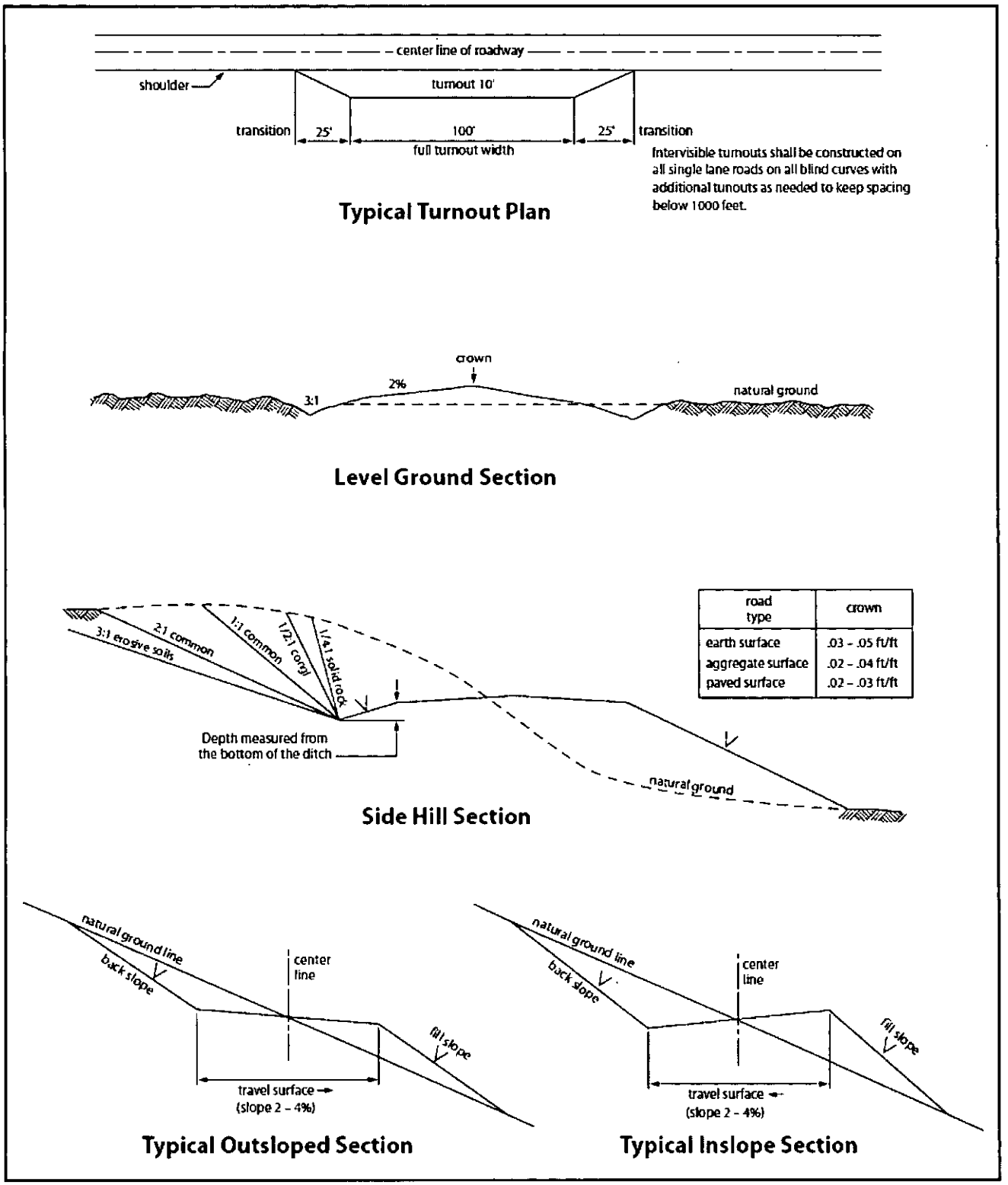


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. 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. **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 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. (For surface casing the BOP can be nippled up after the cement has reached 500 psi compressive strength.)

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

Medium cave/karst
Possible water flows in Castile and Salado.
Possible lost circulation in 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, the operator shall set the casing 25' 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.

The 7-5/8 inch intermediate casing must be kept liquid filled while running into hole to meet minimum BLM requirements for collapse.

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

   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.

Operator has proposed a contingency DV tool at 2900'. If operator circulates cement on the first stage, operator is approved to inflate the ACP and run the DV tool cancellation plug and cancel the second stage of the proposed cement plan. If cement does not circulate, operator will inflate ACP and proceed with the second 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.

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

   ☒ Cement should tie-back at least 500 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.

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).

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.

4. 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.

CRW 012916

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:
    (1) Land clearing.
    (2) Earth-disturbing and earth-moving work.
    (3) Blasting.
    (4) Vandalism and sabotage.
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation

measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed