Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM94651

6. If Indian, Allottee or Tribe Name

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

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

8. Well Name and No.
CEDAR CANYON 29 FEDERAL 3H

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

9. API Well No.
30-015-42993-00-X1

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

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

10. Field and Pool, or Exploratory
PIERCE CROSSING

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 29 T24S R29E SENE 1980FNL 150FEL
32.190111 N Lat, 103.998072 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

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

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

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

OXY USA Inc. respectfully requests approval for the following changes to the approved APD:

1. Move Surface Location to a multi-well pad to accommodate skidding the rig.
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

Proposed TD - 13460'M 8554'V

1. Amended C-102 and plats attached
New - SL-1990'FNL-210'FEL;SENE-Sec-29---BHL-2219-FNL-160-FWL;SWNW;Sec 29>

SEE ATTACHED FOR CONDITIONS OF APPROVAL

12/2/15
Accepted for record
NMOCD

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 18 2015
RECEIVED

Eng okay 12/4/15 CRW Surface okay 12-4-15 JS

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

Electronic Submission #323010 verified by the BLM Well Information System
For OXY USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by JENNIFER SANCHEZ on 11/13/2015 (16JAS1142SE)

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

Signature (Electronic Submission) — Date 11/09/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Joseph J Cally — Title — Date 12/15/15

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

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

Additional data for EC transaction #323010 that would not fit on the form

32. Additional remarks, continued

Old - SL 1980 FNL 150 FEL SENE Sec 29 - BHL 1980 FNL 180 FWL SWNW Sec 29

2. Amended Directional Plan attached

3. Amended casing/cementing/mud programs

a.Surface Casing
10-3/4" 45.5# J-55 BT&C new csg @ 0-400', 14-3/4" hole w/ 8.4# mud
Coll Rating (psi)-2090 Burst Rating (psi)-3580
SF Coll-10.94 SF Burst-1.40 SF Ten-6.11

b.Intermediate Casing - Deep
7-5/8" 29.7# L80 BT&C new csg @ 0-8011', 9-7/8" hole w/ 9.4# mud
Coll Rating (psi)-4790 Burst Rating (psi)-6890
SF Coll-5.00 SF Burst-1.31 SF Ten-2.19
Setting depth will be +/- 100' of approved depending on how formation tops affect planned KOP. DVT/ACP to be set @ +/-2900', if cement circulates to surface on 1st stage, cancelation cone will be dropped.

c.Production Casing
5-1/2" 20# P-110 USF new csg @ 0-8700'M, 6-3/4" hole w/ 9.2# mud
Coll Rating (psi)-11100 Burst Rating (psi)-12600
SF Coll-2.69 SF Burst-1.22 SF Ten-2.05
4-1/2" 13.5# P-110 DQX new csg @ 8700-13460'M, 6-3/4" hole w/ 9.2# mud
Coll Rating (psi)-10670 Burst Rating (psi)-12410
SF Coll-2.42 SF Burst-1.23 SF Ten-2.15

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

Cement program modifications detailed below.

a. Surface - Circulate cement to surface w/ 412sx PP cmt w/ 2% CaCl2, 14.8ppg 1.35 yield, 500# CS in 6.50hr, 150% Excess.

b. Intermediate - Circulate cement to surface w/ 1078sx Tuned Light (TM) system cmt w/ 3#/sx Kol-Seal + .125#/sx Poly-E-Flake + .8% HR-601, 10.2ppg 3.05 yield, 500# CS in 15.07hr, 125% Excess followed by 150sx Super H cmt w/ 3#/sx salt + .1% HR-800 + .3% CFR-3 + .5% Halad(R)-344 + 2#/sx Kol-Seal, 13.2ppg 1.65 yield, 500# CS in 12.57hr, 15% Excess.

Contingency 2nd Stage - Circulate cement to surface w/ 477sx HES light PP cmt w/ 5% Salt + .1% HR-800, 12.9ppg 1.87 yield, 500# CS in 12.44hr, 75% Excess followed by 182sx PP cmt, 14.8ppg 1.33 yield, 500# CS in 6.31hr,125% Excess.

c. Production - Cement w/ 726sx Super H cmt w/ 3#/sx salt + .1% HR-800 + .3% CFR-3 + .5% Halad(R)-344 + 2#/sx Kol-Seal, 13.2ppg 1.65 yield, 500# CS in 12.57hr, 50% Excess. Estimated TOC @ 7011'.

Description of Cement Additives: Calcium Chloride, Salt (Accelerator); CFR-3 (Dispersant); Kol-Seal, Poly-E-Flake (Lost Circulation Additive); Halad-344 (Low Fluid Loss Control); HR-601, HR-800 (Retarder)
The above cement volumes could be revised pending the caliper measurement.

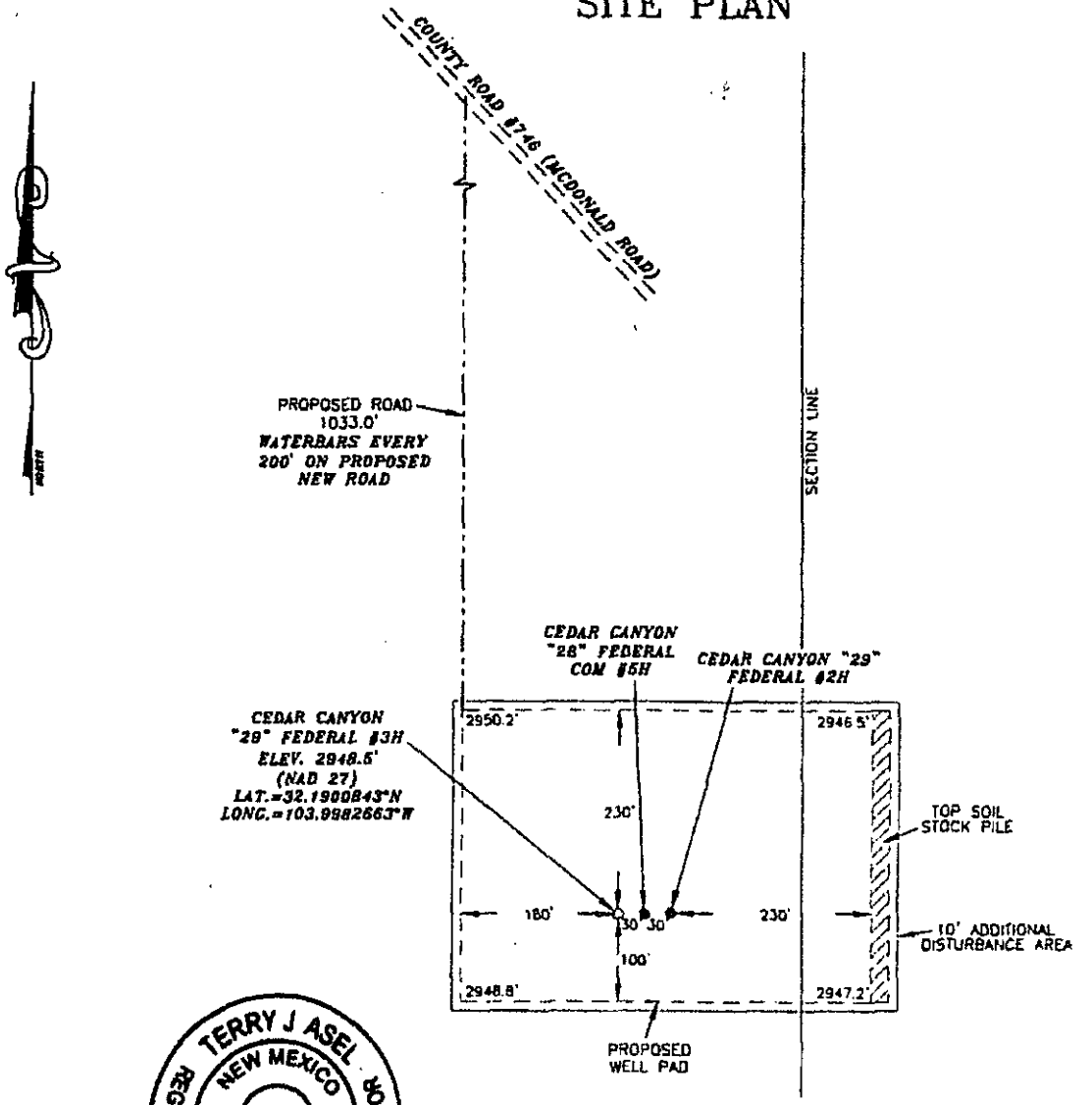
Mud Program

Depth	Mud WT	Vis Sec	Fluid Loss	Type
0-400'	8.4-8.8	28-38	NC	FW Gel
440-2900'	9.8-10	28-32	NC	NaCl Brine
2900-8011'	8.8-9.6	38-50	50-75cc/30min	EnerSeal (MMH)
8011'-TD	8.8-9.4	28-100	NC	Oil Based Mud

Remarks: 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. Oxy proposes to drill out the 10-3/4" surface casing shoe with a saturated brine system from 400-2900', which is the base of the salt system. At this point we will swap fluid systems to a high viscosity mixed metal hydroxide system and will drill with this system to the intermediate TD @ 8011'. We are also proposing to change the production mud system back to a oil based mud system.

Site Plan -1

OXY USA INC.
CEDAR CANYON "29" FEDERAL #3H
SITE PLAN



TERRY J ASEL · NEW MEXICO · 15079 · REGISTERED PROFESSIONAL LAND SURVEYOR

LEGEND

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

200' 0 200' 400' FEET

SCALE: 1"=200'

SURVEYORS CERTIFICATE

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

Terry J. Asel 10/27/2015

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.

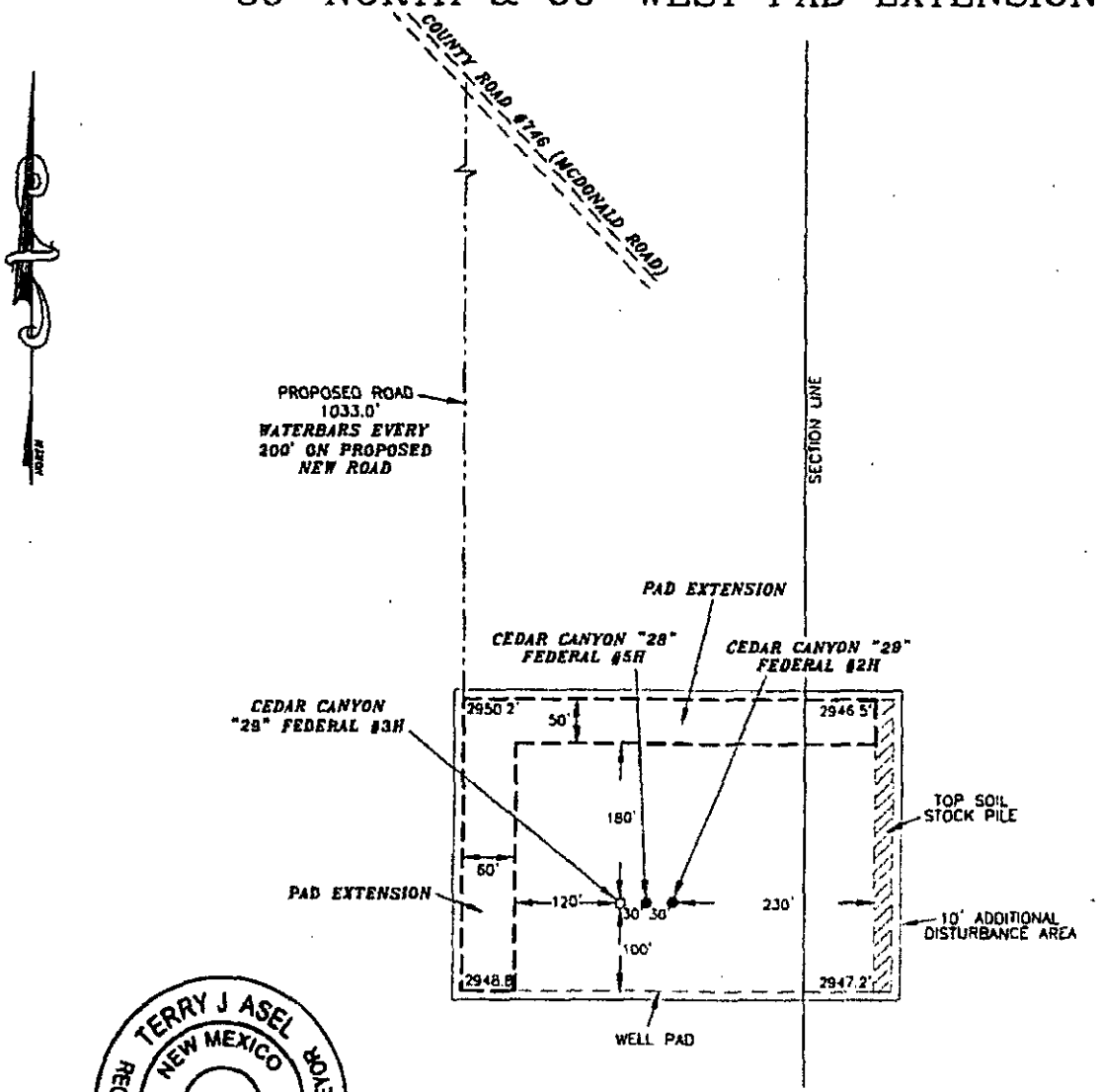
CEDAR CANYON "29" FEDERAL #3H LOCATED AT 1990' FNL & 210' FEL IN SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 10/19/15	Sheet 1 of 1 Sheets	
W.O. Number: 151019WL-a	Drawn By: KA	Rev:
Date: 10/22/15	151019WL-a	Scale:1"=200'

SP-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

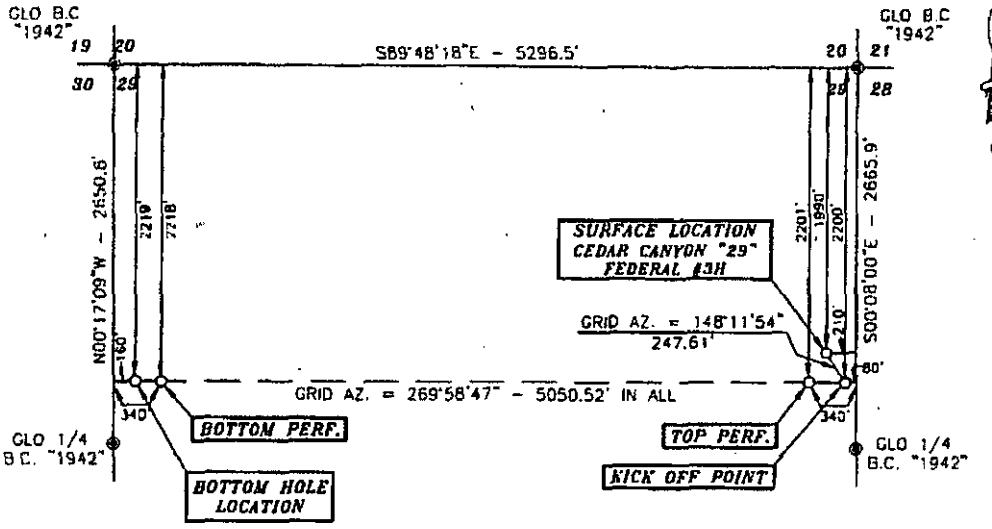
OXY USA INC.

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'

Location

SECTION 29, 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.

10/27/2015

Terry J. Asel, A.S.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

1000' 0 1000' 2000' FEET

SCALE: 1"=1000'

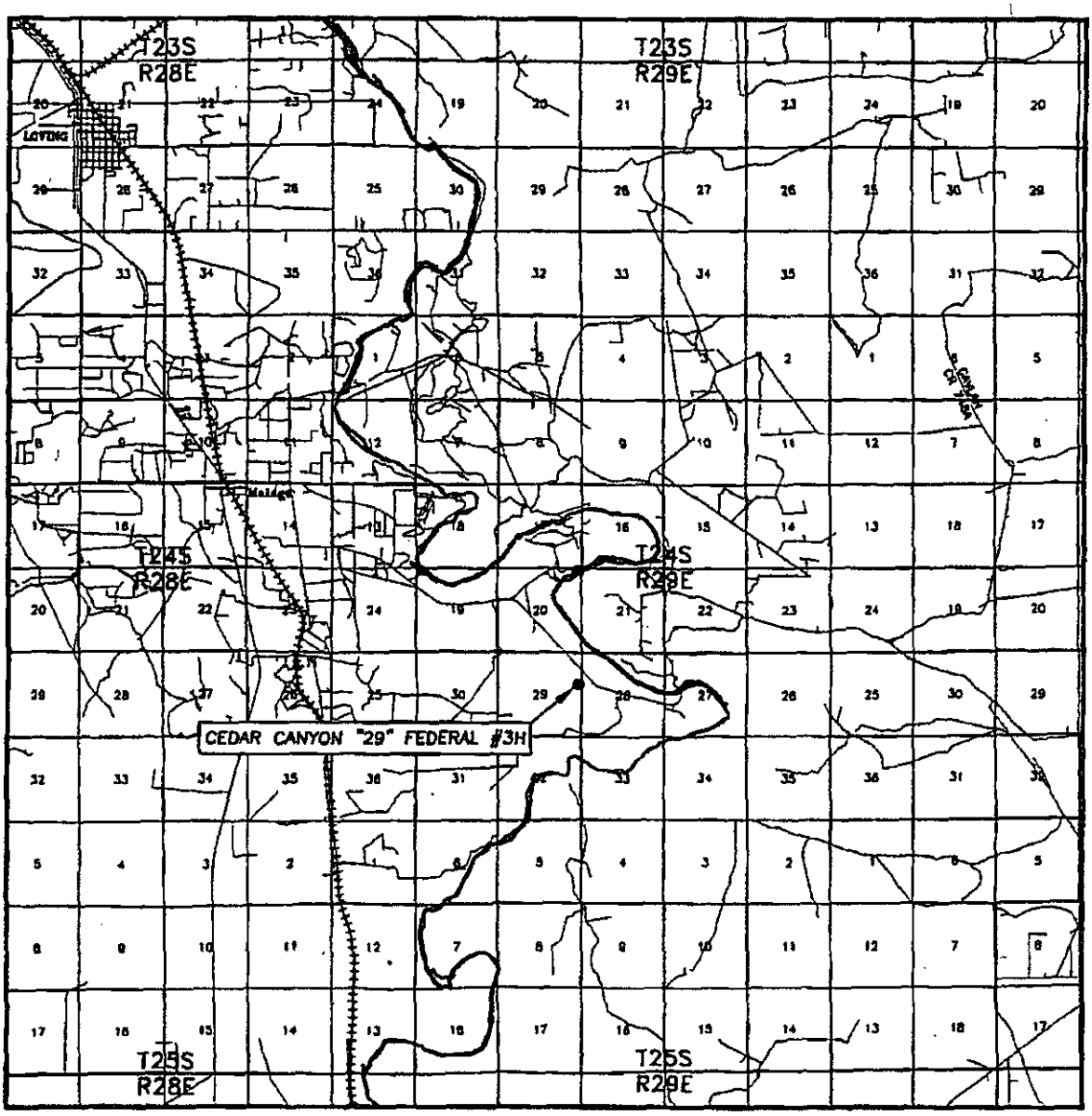
OXY USA INC.

CEDAR CANYON "29" FEDERAL #3H LOCATED AT 1990' FNL & 210' 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-a	Drawn By: KA	Rev:
Date: 10/22/15	151019WL-a	Scale: 1"=1000'

VM

VICINITY MAP



SCALE: 1" = 2 MILES

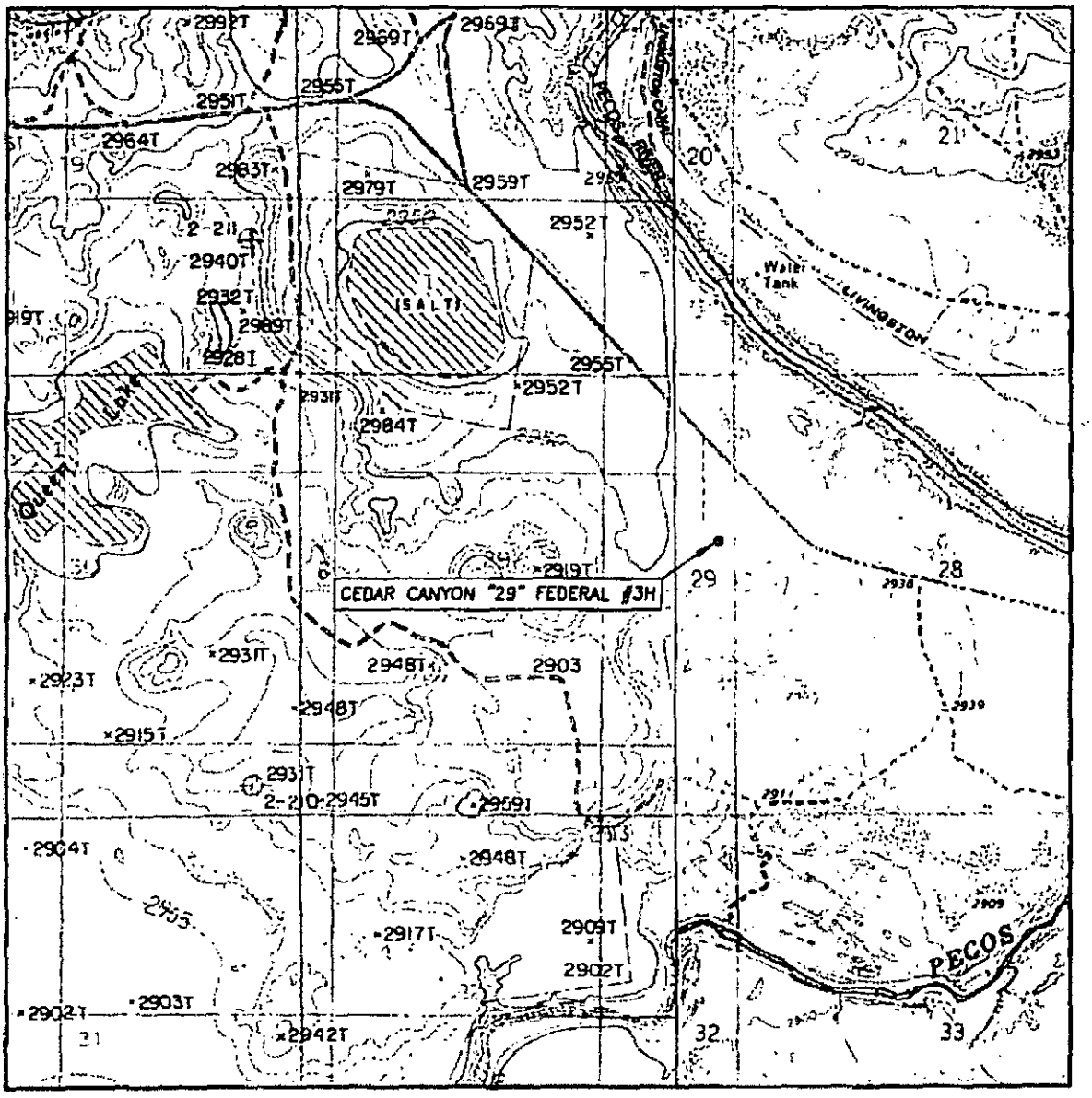
SEC. 29 TWP. 24-S RGE. 29-E
SURVEY N.M.P.M.
COUNTY EDDY
DESCRIPTION 1990' FNL & 210' FEL
ELEVATION 2948.5'
OPERATOR OXY USA INC.
LEASE CEDAR CANYON "29" FEDERAL #3H

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.

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 & 210' FEL

ELEVATION 2948.5'

OPERATOR OXY USA INC.

LEASE CEDAR CANYON "29" FEDERAL #3H

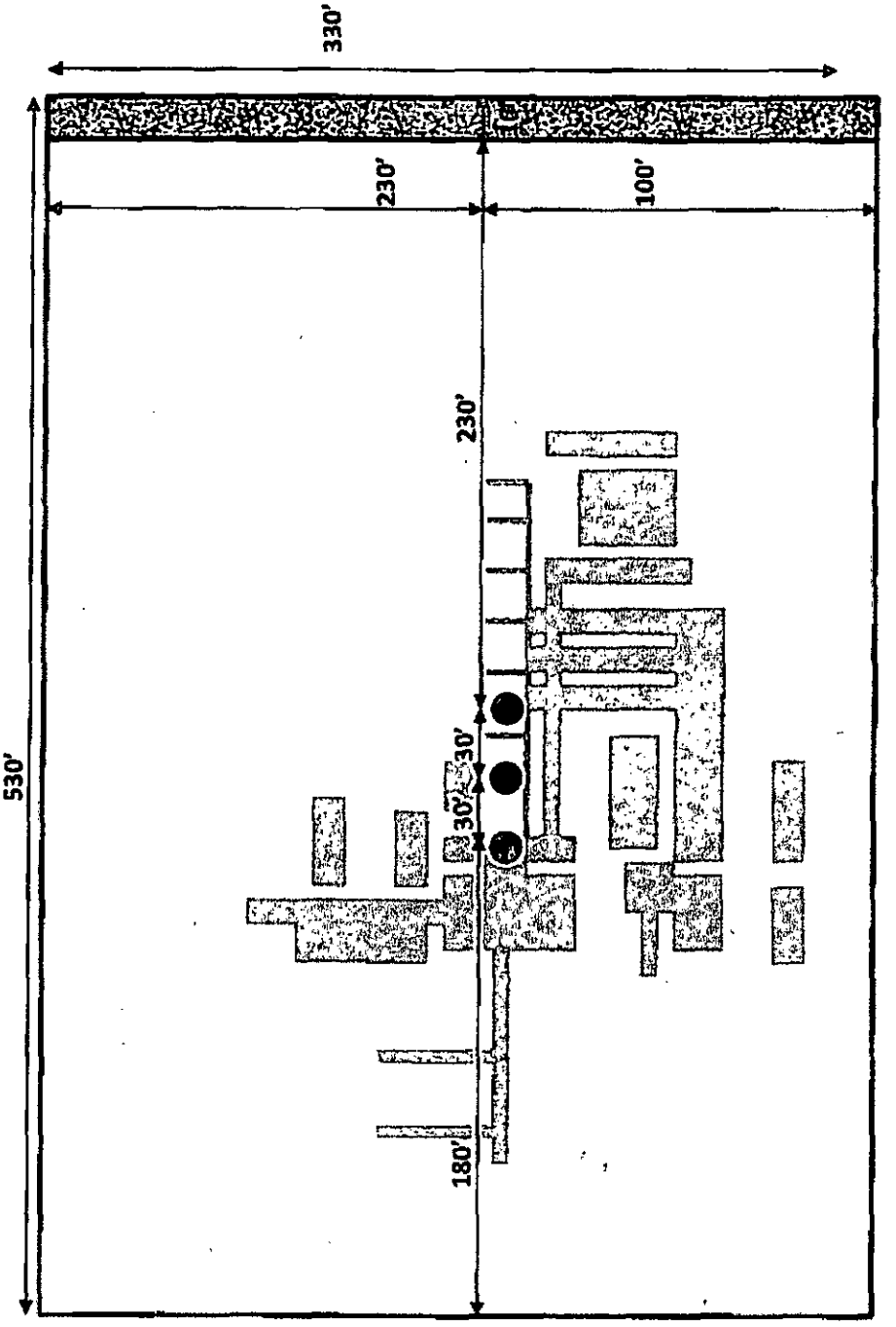
U.S.G.S. TOPOGRAPHIC MAP
PIERCE CANYON, N.M.

Asel Surveying

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

Pad Layout

Pad Site Overall Rig Layout
3 Well Pad Site



Directional Svy - 1

Schlumberger Plan Rev0 **OXY**

Borehole:	Well:	Field:	Structure:
Cedar Canyon 29 Fed. 3H - Orig. Borehole	Oxy Cedar Canyon 29 Fed. 3H	NM Eddy County (NAD 27)	H&P 615

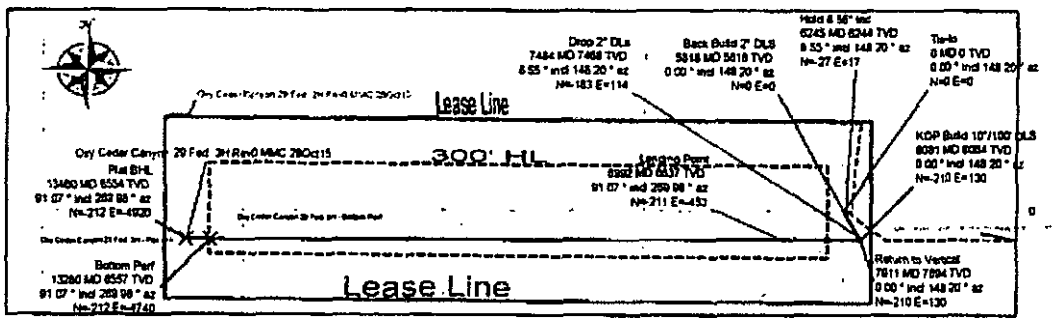
Gravity & Magnetic Parameters

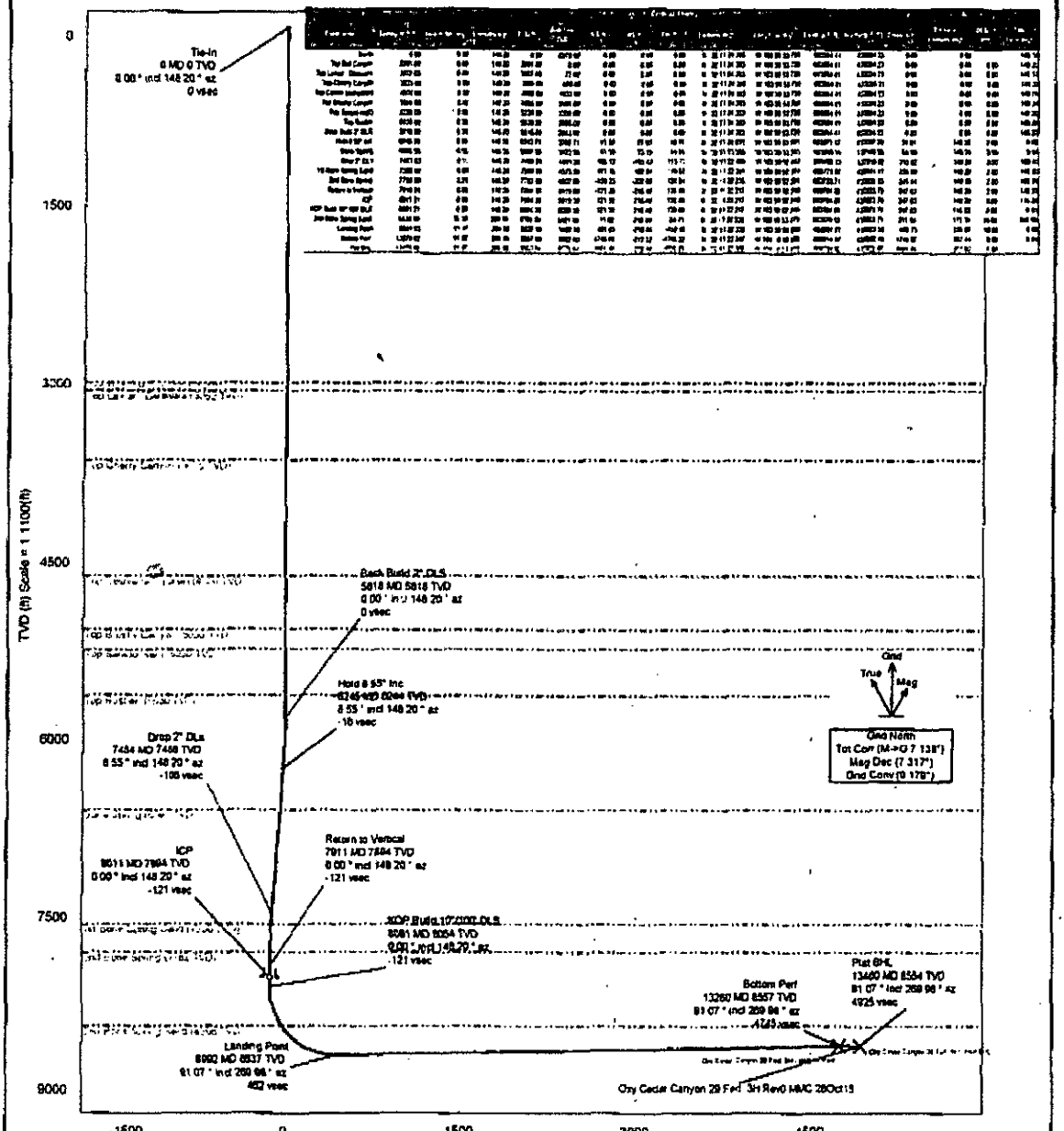
Surface: NAD27 New Mexico State Plane, Eastern Zone, US Feet

Location

Miscellaneous

EW (ft) Scale = 1:1050(ft)





Vertical Section (ft) Azm = 267.531° Scale = 1:1100(ft) Origin = 0N/-S, 0E/-W

DS-2

Schlumberger

Oxy Cedar Canyon 29 Fed. 3H Rev0 MMC 28Oct15 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 28, 2015 - 02:31 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	267.531 ° (Grid North)
Field:	NM Eddy County (NAD 27)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Cedar Canyon 29 Fed. 3H / Oxy Cedar Canyon 29 Fed. 3H	**TVD Reference Datum:**	RKB
Well:	Oxy Cedar Canyon 29 Fed. 3H	**TVD Reference Elevation:**	2975.000 ft above MSL
Borehole:	Oxy Cedar Canyon 29 Fed. 3H - Orig. Borehole	**Seabed / Ground Elevation:**	2948.500 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7.317 °
Survey Name:	Oxy Cedar Canyon 29 Fed. 3H Rev0 MMC 28Oct15	**Total Gravity Field Strength:**	998.4540mgn (9.80665 Based)
Survey Date:	October 28, 2015	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	169.163 ° / 5294.410 ft / 5.851 / 0.613	**Total Magnetic Field Strength:**	48286.492 nT
Coordinate Reference System:	NAD27 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.040 °
Location Lat / Long:	N 32° 11' 24.30343", W 103° 59' 53.75863"	**Declination Date:**	October 28, 2015
Location Grid N/E Y/X:	N 433034.230 ftUS, E 603654.410 ftUS	**Magnetic Declination Model:**	HDGM 2015
CRS Grid Convergence Angle:	0.1785 °	**North Reference:**	Grid North
Grid Scale Factor:	0.9999214	**Grid Convergence Used:**	0.1785 °
Version / Patch:	2.8.572.0	**Total Corr Mag North->Grid North:**	7.1383 °
		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	148.20	0.00	-2975.00	0.00	0.00	0.00	N/A	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Back Build 2° DLS	5818.00	0.00	148.20	5818.00	2843.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Hold 8.55° Inc	6245.29	8.55	148.20	6243.71	3268.71	-15.58	-27.03	16.76	2.00	433007.20	603671.17	N 32 11 24.04	W 103 59 53.56
Drop 2° DLs	7483.83	8.55	148.20	7468.29	4493.29	-105.72	-183.43	113.73	0.00	432850.82	603768.13	N 32 11 22.48	W 103 59 52.44
Return to Vertical	7910.91	0.00	148.20	7894.00	4919.00	-121.30	-210.48	130.49	2.00	432823.79	603784.89	N 32 11 22.22	W 103 59 52.25
KOP Build 10°/100' DLS	8081.21	0.00	148.20	8064.30	5089.30	-121.30	-210.48	130.49	0.00	432823.79	603784.89	N 32 11 22.22	W 103 59 52.25
Landing Point	8991.93	91.07	269.98	8637.16	5662.16	461.63	-210.58	-453.18	12.00	432823.58	603201.27	N 32 11 22.23	W 103 59 59.04
Bottom Perf	13279.62	91.07	269.98	8557.00	5582.00	4745.06	-212.12	-4740.32	0.00	432822.13	598914.47	N 32 11 22.35	W 104 0 48.82
Plat BHL	13459.62	91.07	269.98	8553.84	5578.84	4924.88	-212.16	-4920.29	0.00	432822.07	598734.52	N 32 11 22.35	W 104 0 51.02

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 29 Fed. 3H Orig. Borehole / Oxy Cedar Canyon 29 Fed. 3H Rev0 MMC
	1	26.500	13459.619	1/100.000	30.000	30.000	SLB_MWD-STD_HDGM	Oxy Cedar Canyon 29 Fed. 3H - Orig. Borehole / Oxy Cedar

DS-3

Schlumberger

Oxy Cedar Canyon 29 Fed. 3H Rev0 MMC 28Oct15 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 28, 2015 - 02:32 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	267.531 ° (Grid North)
Field:	NM Eddy County (NAD 27)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Cedar Canyon 29 Fed. 3H / Oxy Cedar Canyon 29 Fed. 3H	**TVD Reference Datum:**	RKB
Well:	Oxy Cedar Canyon 29 Fed. 3H	**TVD Reference Elevation:**	2975.000 ft above MSL
Borehole:	Oxy Cedar Canyon 29 Fed. 3H - Orig. Borehole	**Seabed / Ground Elevation:**	2948.500 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7.317 °
Survey Name:	Oxy Cedar Canyon 29 Fed. 3H Rev0 MMC 28Oct15	**Total Gravity Field Strength:**	998.4640mgn (9.80665 Based)
Survey Date:	October 28, 2015	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	108.163 ° / 5298.410 ft / 5.951 / 0.613	**Total Magnetic Field Strength:**	48286.493 nT
Coordinate Reference System:	NAD27 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.040 °
Location Lat / Long:	N 32° 11' 24.30343", W 103° 59' 53.75863"	**Declination Date:**	October 28, 2015
Location Grid N/E Y/X:	N 433034.230 ftUS, E 603654.410 ftUS	**Magnetic Declination Model:**	HDGM 2015
CRS Grid Convergence Angle:	0.1785 °	**North Reference:**	Grid North
Grid Scale Factor:	0.9998214	**Grid Convergence Used:**	0.1785 °
Version / Patch:	2.8.572.0	**Total Corr Mag North->Grid North:**	7.1383 °
		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	148.20	0.00	-2975.00	0.00	0.00	0.00	N/A	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	100.00	0.00	148.20	100.00	-2875.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	200.00	0.00	148.20	200.00	-2775.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	300.00	0.00	148.20	300.00	-2675.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	400.00	0.00	148.20	400.00	-2575.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	500.00	0.00	148.20	500.00	-2475.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	600.00	0.00	148.20	600.00	-2375.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	700.00	0.00	148.20	700.00	-2275.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	800.00	0.00	148.20	800.00	-2175.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	900.00	0.00	148.20	900.00	-2075.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1000.00	0.00	148.20	1000.00	-1975.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1100.00	0.00	148.20	1100.00	-1875.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1200.00	0.00	148.20	1200.00	-1775.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1300.00	0.00	148.20	1300.00	-1675.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1400.00	0.00	148.20	1400.00	-1575.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1500.00	0.00	148.20	1500.00	-1475.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1600.00	0.00	148.20	1600.00	-1375.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1700.00	0.00	148.20	1700.00	-1275.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1800.00	0.00	148.20	1800.00	-1175.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	1900.00	0.00	148.20	1900.00	-1075.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2000.00	0.00	148.20	2000.00	-975.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2100.00	0.00	148.20	2100.00	-875.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2200.00	0.00	148.20	2200.00	-775.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2300.00	0.00	148.20	2300.00	-675.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2400.00	0.00	148.20	2400.00	-575.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2500.00	0.00	148.20	2500.00	-475.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2600.00	0.00	148.20	2600.00	-375.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2700.00	0.00	148.20	2700.00	-275.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2800.00	0.00	148.20	2800.00	-175.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	2900.00	0.00	148.20	2900.00	-75.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Bell Canyon	*2981.00*	*0.00*	*148.20*	*2981.00*	*6.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	3000.00	0.00	148.20	3000.00	25.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Lamar / Delaware	*3052.00*	*0.00*	*148.20*	*3052.00*	*77.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	3100.00	0.00	148.20	3100.00	125.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3200.00	0.00	148.20	3200.00	225.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3300.00	0.00	148.20	3300.00	325.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3400.00	0.00	148.20	3400.00	425.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3500.00	0.00	148.20	3500.00	525.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3600.00	0.00	148.20	3600.00	625.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Cherry Canyon	*3635.00*	*0.00*	*148.20*	*3635.00*	*660.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	3700.00	0.00	148.20	3700.00	725.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3800.00	0.00	148.20	3800.00	825.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	3900.00	0.00	148.20	3900.00	925.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4000.00	0.00	148.20	4000.00	1025.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4100.00	0.00	148.20	4100.00	1125.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4200.00	0.00	148.20	4200.00	1225.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4300.00	0.00	148.20	4300.00	1325.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4400.00	0.00	148.20	4400.00	1425.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4500.00	0.00	148.20	4500.00	1525.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4600.00	0.00	148.20	4600.00	1625.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Castile (anhydrite)	*4608.00*	*0.00*	*148.20*	*4608.00*	*1633.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	4700.00	0.00	148.20	4700.00	1725.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4800.00	0.00	148.20	4800.00	1825.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	4900.00	0.00	148.20	4900.00	1925.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5000.00	0.00	148.20	5000.00	2025.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Brushy Canyon	*5058.00*	*0.00*	*148.20*	*5058.00*	*2083.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	5100.00	0.00	148.20	5100.00	2125.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5200.00	0.00	148.20	5200.00	2225.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Salado (salt)	*5230.00*	*0.00*	*148.20*	*5230.00*	*2255.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	5300.00	0.00	148.20	5300.00	2325.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5400.00	0.00	148.20	5400.00	2425.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5500.00	0.00	148.20	5500.00	2525.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5600.00	0.00	148.20	5600.00	2625.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Top Rustler	*5630.00*	*0.00*	*148.20*	*5630.00*	*2655.00*	*0.00*	*0.00*	*0.00*	*0.00*	*433034.23*	*603654.41*	*N 32 11 24.30*	*W 103 59 53.76*
	5700.00	0.00	148.20	5700.00	2725.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5800.00	0.00	148.20	5800.00	2825.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
Back Build 2° DLS	5818.00	0.00	148.20	5818.00	2843.00	0.00	0.00	0.00	0.00	433034.23	603654.41	N 32 11 24.30	W 103 59 53.76
	5900.00	1.64	148.20	5899.99	2924.99	-0.57	-1.00	0.82	2.00	433033.23	603655.03	N 32 11 24.29	W 103 59 53.75

DS-4

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	3.84	148.20	5999.88	5024.88	-2.83	-4.91	3.09	2.00	433029.32	603657.46	N 32 11 24.25	W 103 59 53.72
	8100.00	5.84	148.20	6099.54	5124.54	-8.79	-11.78	7.31	2.00	433022.44	603661.72	N 32 11 24.18	W 103 59 53.67
	8200.00	7.84	148.20	6198.97	5223.97	-12.48	-21.91	13.40	2.00	433012.62	603667.81	N 32 11 24.09	W 103 59 53.60
Hold 8.55° Inc	8245.29	8.55	148.20	6243.71	5268.71	-15.58	-27.03	16.76	2.00	433007.20	603671.17	N 32 11 24.04	W 103 59 53.58
	8300.00	8.55	148.20	6297.81	5322.81	-19.58	-33.94	21.04	0.00	433000.29	603675.45	N 32 11 23.97	W 103 59 53.51
	8400.00	8.55	148.20	6396.70	5421.70	-26.64	-46.57	28.85	0.00	432987.68	603683.28	N 32 11 23.84	W 103 59 53.42
	8500.00	8.55	148.20	6495.59	5520.59	-33.72	-59.20	36.71	0.00	432975.03	603691.11	N 32 11 23.72	W 103 59 53.33
	8600.00	8.55	148.20	6594.48	5619.48	-40.80	-71.83	44.54	0.00	432962.41	603698.94	N 32 11 23.59	W 103 59 53.24
Bone Spring	8602.55	8.55	148.20	6597.00	5622.00	-40.98	-72.15	44.74	0.00	432962.08	603699.14	N 32 11 23.59	W 103 59 53.24
	8700.00	8.55	148.20	6693.37	5718.37	-47.88	-84.46	52.37	0.00	432949.78	603706.77	N 32 11 23.47	W 103 59 53.15
	8800.00	8.55	148.20	6792.26	5817.26	-54.96	-97.09	60.20	0.00	432937.15	603714.60	N 32 11 23.34	W 103 59 53.06
	8900.00	8.55	148.20	6891.15	5916.15	-62.04	-109.72	68.03	0.00	432924.52	603722.43	N 32 11 23.22	W 103 59 52.97
	9000.00	8.55	148.20	6990.04	6015.04	-69.12	-122.35	75.86	0.00	432911.89	603730.26	N 32 11 23.09	W 103 59 52.88
	9100.00	8.55	148.20	7088.93	6113.93	-76.20	-134.98	83.69	0.00	432899.26	603738.09	N 32 11 22.97	W 103 59 52.79
	9200.00	8.55	148.20	7187.82	6212.82	-83.28	-147.61	91.52	0.00	432886.64	603745.92	N 32 11 22.84	W 103 59 52.70
	9300.00	8.55	148.20	7286.71	6311.71	-90.36	-160.23	99.35	0.00	432874.01	603753.75	N 32 11 22.71	W 103 59 52.61
	9400.00	8.55	148.20	7385.60	6410.60	-97.43	-172.86	107.18	0.00	432861.38	603761.58	N 32 11 22.59	W 103 59 52.52
Drop 2° DLS	9463.83	6.55	148.20	7448.28	6473.28	-101.72	-183.43	113.73	0.00	432850.82	603768.13	N 32 11 22.48	W 103 59 52.44
	9500.00	6.22	148.20	7484.49	6509.49	-103.89	-189.45	114.99	2.00	432844.79	603769.39	N 32 11 22.48	W 103 59 52.43
1st Bone Spring Sand	9568.08	6.90	148.20	7550.00	6575.00	-111.15	-192.84	118.57	2.00	432841.41	603773.97	N 32 11 22.39	W 103 59 52.37
	9600.00	6.22	148.20	7583.70	6608.70	-113.05	-198.13	121.81	2.00	432836.11	603776.81	N 32 11 22.36	W 103 59 52.35
	9700.00	4.22	148.20	7683.28	6708.28	-117.90	-203.68	126.40	2.00	432830.39	603780.80	N 32 11 22.28	W 103 59 52.30
2nd Bone Spring	9798.89	2.24	148.20	7782.00	6807.00	-120.23	-208.60	129.34	2.00	432825.65	603783.74	N 32 11 22.24	W 103 59 52.26
	9800.00	2.22	148.20	7783.11	6808.11	-120.25	-208.63	129.36	2.00	432825.61	603783.76	N 32 11 22.23	W 103 59 52.26
	9900.00	0.22	148.20	7883.09	6908.09	-121.29	-210.44	130.48	2.00	432823.81	603784.88	N 32 11 22.22	W 103 59 52.25
Return to Vertical	9918.91	0.00	148.20	7902.00	6927.00	-121.30	-210.48	130.49	2.00	432823.78	603784.89	N 32 11 22.22	W 103 59 52.25
	9000.00	0.00	148.20	7983.09	6008.09	-121.30	-210.48	130.49	0.00	432823.78	603784.89	N 32 11 22.22	W 103 59 52.25
KOP	9011.21	0.00	148.20	7994.30	5019.30	-121.30	-210.48	130.49	0.00	432823.78	603784.89	N 32 11 22.22	W 103 59 52.25
KOP Build 10°/100' DLS	9081.21	0.00	148.20	8064.30	5089.30	-121.30	-210.48	130.49	0.00	432823.78	603784.89	N 32 11 22.22	W 103 59 52.25
	9100.00	1.88	269.98	8083.08	5108.08	-120.99	-210.46	130.18	10.00	432823.79	603784.58	N 32 11 22.22	W 103 59 52.25
	9200.00	11.88	269.98	8182.24	5207.24	-109.04	-210.46	118.22	10.00	432823.79	603772.62	N 32 11 22.22	W 103 59 52.39
	9300.00	21.88	269.98	8277.81	5302.81	-80.07	-210.47	89.22	10.00	432823.78	603743.63	N 32 11 22.22	W 103 59 52.73
	9400.00	31.88	269.98	9366.89	5391.89	-34.96	-210.49	44.07	10.00	432823.76	603698.48	N 32 11 22.22	W 103 59 53.25
2nd Bone Spring Sand	9434.95	35.38	269.98	8396.00	5421.00	-15.62	-210.49	24.71	10.00	432823.75	603678.12	N 32 11 22.22	W 103 59 53.48
	9500.00	41.88	269.98	8441.78	5471.78	24.82	-210.51	-15.67	10.00	432823.74	603638.55	N 32 11 22.22	W 103 59 53.95
	9600.00	51.88	269.98	8515.05	5547.05	97.75	-210.53	-88.76	10.00	432823.72	603565.65	N 32 11 22.22	W 103 59 54.80
	9700.00	61.88	269.98	8579.62	5611.62	181.32	-210.56	-172.41	10.00	432823.69	603482.01	N 32 11 22.23	W 103 59 55.77
	9800.00	71.88	269.98	8628.84	5660.84	273.09	-210.59	-264.26	10.00	432823.66	603390.17	N 32 11 22.23	W 103 59 56.84
	9850.00	76.88	269.98	8651.51	5683.51	320.26	-210.62	-311.53	10.00	432823.62	603282.81	N 32 11 22.23	W 103 59 57.97
Landing Point	9981.93	91.07	269.98	8667.16	5698.16	451.83	-210.68	-453.18	10.00	432823.58	603201.27	N 32 11 22.23	W 103 59 59.04
	9000.00	91.07	269.98	8667.01	5698.01	469.80	-210.68	-481.25	0.00	432823.58	603193.20	N 32 11 22.23	W 103 59 59.13
	9100.00	91.07	269.98	8665.14	5696.14	569.79	-210.69	-581.23	0.00	432823.55	603093.22	N 32 11 22.24	W 104 0 0.30
	9200.00	91.07	269.98	8663.27	5694.27	669.68	-210.73	-681.22	0.00	432823.52	602993.29	N 32 11 22.24	W 104 0 1.48
	9300.00	91.07	269.98	8661.40	5692.40	769.57	-210.78	-781.20	0.00	432823.49	602893.27	N 32 11 22.24	W 104 0 2.67
	9400.00	91.07	269.98	8659.53	5690.53	869.48	-210.79	-881.18	0.00	432823.45	602793.30	N 32 11 22.24	W 104 0 3.79
	9500.00	91.07	269.98	8657.66	5688.66	969.35	-210.83	-981.16	0.00	432823.42	602693.32	N 32 11 22.25	W 104 0 4.95
	9600.00	91.07	269.98	8655.79	5686.79	1069.25	-210.86	-1081.15	0.00	432823.38	602593.35	N 32 11 22.25	W 104 0 6.11
	9700.00	91.07	269.98	8653.92	5684.92	1169.14	-210.90	-1181.13	0.00	432823.35	602493.37	N 32 11 22.25	W 104 0 7.28
	9800.00	91.07	269.98	8652.05	5683.05	1269.03	-210.93	-1281.11	0.00	432823.32	602393.40	N 32 11 22.25	W 104 0 8.44
	9900.00	91.07	269.98	8650.18	5681.18	1368.92	-210.97	-1381.09	0.00	432823.28	602293.43	N 32 11 22.26	W 104 0 9.60
	10000.00	91.07	269.98	8648.31	5679.31	1468.81	-211.00	-1481.08	0.00	432823.25	602193.45	N 32 11 22.26	W 104 0 10.77
	10100.00	91.07	269.98	8646.44	5677.44	1568.70	-211.00	-1581.06	0.00	432823.21	602093.48	N 32 11 22.26	W 104 0 11.93
	10200.00	91.07	269.98	8644.57	5675.57	1668.59	-211.07	-1681.04	0.00	432823.18	601993.50	N 32 11 22.27	W 104 0 13.09
	10300.00	91.07	269.98	8642.70	5673.70	1768.48	-211.10	-1781.02	0.00	432823.15	601893.53	N 32 11 22.27	W 104 0 14.26
	10400.00	91.07	269.98	8640.84	5671.84	1868.38	-211.14	-1881.01	0.00	432823.11	601793.55	N 32 11 22.27	W 104 0 15.42
	10500.00	91.07	269.98	8638.97	5669.97	1968.27	-211.17	-1980.99	0.00	432823.08	601693.58	N 32 11 22.27	W 104 0 16.58
	10600.00	91.07	269.98	8637.10	5668.10	2068.16	-211.20	-2080.97	0.00	432823.04	601593.60	N 32 11 22.28	W 104 0 17.75
	10700.00	91.07	269.98	8635.23	5666.23	2168.05	-211.24	-2180.95	0.00	432823.01	601493.63	N 32 11 22.28	W 104 0 18.91
	10800.00	91.07	269.98	8633.36	5664.36	2267.94	-211.27	-2280.94	0.00	432822.97	601393.66	N 32 11 22.28	W 104 0 20.07
	10900.00	91.07	269.98	8631.49	5662.49	2367.83	-211.31	-2380.92	0.00	432822.94	601293.68	N 32 11 22.28	W 104 0 21.24
	11000.00	91.07	269.98	8629.62	5660.62	2467.72	-211.34	-2480.90	0.00	432822.91	601193.71	N 32 11 22.29	W 104 0 22.40
	11100.00	91.07	269.98	8627.75	5658.75	2567.61	-211.37	-2580.88	0.00	432822.87	601093.73	N 32 11 22.29	W 104 0 23.56
	11200.00	91.07	269.98	8625.88	5656.88	2667.50	-211.41	-2680.87	0.00	432822.84	600993.76	N 32 11 22.29	W 104 0 24.73
	11300.00	91.07	269.98	8624.01	5655.01	2767.40	-211.44	-2780.85	0.00	432822.80	600893.78	N 32 11 22.30	W 104 0 25.89
	11400.00	91.07	269.98	8622.14	5653.14	2867.29	-211.48	-2880.83	0.00	432822.77	600793.81	N 32 11 22.30	W 104 0 27.05
	11500.00	91.07	269.98	8620.27	5651.27	2967.18	-211.51	-2980.81	0.00	432822.74	600693.83	N 32 11 22.30	W 104 0 28.22
	11600.00	91.07	269.98	8618.40	5649.40	3067.07	-211.54	-3080.80	0.00	432822.70	600593.86	N 32 11 22.30	W 104 0 29.38
	11700.00	91.07	269.98	8616.53	5647.53	3166.96	-211.58	-3180.78	0.00	432822.67	600493.89	N 32 11 22.31	W 104 0 30.55
	11800.00	91.07	269.98	8614.66	5645.66	3266.85	-211.61	-3280.76	0.00	432822.63	600393.91	N 32 11 22.31	W 104 0 31.71
	11900.00	91.07	269.98	8612.79	5643.79	3366.74	-211.65	-3380.74	0.00	432822.60	600293.94	N 32 11 22.31	W 104 0 32.87
	12000.00	91.07	269.98	8610.92	5641.92	3466.63	-211.68	-3480.73	0.00	432822.57	600193.96	N 32 11 22.31	W 104 0 34.04
	12100.00	91.07	269.98	8609.06	5640.06	3566.52	-211.72	-3580.71	0.00	432822.53	600093.99	N 32 11 22.32	W 104 0 35.20
	12200.00	91.07	269.98	8607.19	5638.19	3666.42	-211.75	-3680.69	0.00	432822.50	599994.01	N 32 11 22.32	W 104 0 36.36
	12300.00	91.07	269.98	8605.32	5636.32	3766.31	-211.78	-3780.67	0.00	432822.46	599894.04	N 32 11 22.32	W 104 0 37.53
	12400.00	91.07	269.98	8603.45	5634.45	3866.20	-211.82	-3880.66	0.00	432822.43	599794.06	N 32 11 22.32	W 104 0 38.69
	12500.00	91.07	269.98	8601.58	5632.58	3966.09	-211.85	-3980.64	0.00	432822.40	599694.09	N 32 11 22.33	W 104 0 39.85
	12600.00	91.07	269.98	8599.71	5630.71	4065.98	-211.89	-4080.62	0.00	432822.36	599594.12	N 32 11 22.33	W 104 0 41.02
	12700.00	91.07	269.98	8597.84	5628.84	4165.87	-211.92	-4180.60	0.00	432822.33	599494.14	N 32 11 22.33	W 104 0 42.18
	12800.00	91.07	269.98	8595.97	5626.97	4265.76	-211.95	-4280.59	0.00	432822.29	599394.17	N 32 11 22.33	W 104 0 43.34
	12900.00	91.07	269.98	8594.10	5625.10	4365.65	-211.99	-4380.57	0.00	432822.26	599294.19	N 32 11 22.34	W 104 0 44.51
	13000.00	91.07	269.98	8592.23	5623.23	4465.55	-212.02	-4480.55	0.00	432822.23	599194.22	N 32 11 22.34	W 104 0 45.67
	13100.00	91.07	269.98	8590.36	5621.36	4565.44	-212.06	-4580.53	0.00	432822.19	599094.24	N 32 11 22.34	W 104 0 46.83
	13200.00	91.07	269.98	8588.49	5619.49	4665.33	-212.09	-4680.52	0.00	432822.16	598994.27	N 32 11 22.35	W 104 0 48.00
Bottom Perf	13278.82	91.07	269.98	8587.00	5618.00	4745.06	-212.12	-4760.33	0.00	432822.13	598914.47	N 32 11 22.35	W 104 0 48.92
	13300.00	91.07	269.98	8586.62	5618.62	4765.22	-212.12	-4780.50	0.00	432822.12	598894.29	N 32 11 22.35	W 104 0 49.16
	13400.00	91.07	269.98	8584.75	5579.75	4865.11	-212.16	-4880.48	0.00	432822.09	598794.32	N 32 11 22.35	W 104 0 50.32
Plat BHL	13459.82	91.07	269.98	8583.64	5578.64	4924.96	-212.18	-4940.29	0.00	432822.07	598734.52	N 32 11 22.35	W 104 0 51.02

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 29 Fed 3H - Orig, Borehole / Oxy Cedar Canyon 29 Fed 3H Rev0 MMC
	1	26.500	13459.819	1/100.000	30.000	30.000	SLB_MWD-STD_HDGM	Oxy Cedar Canyon 29 Fed 3H - Orig, Borehole / Oxy Cedar

H2S-1

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
Cedar Canyon 29 Federal 3H

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

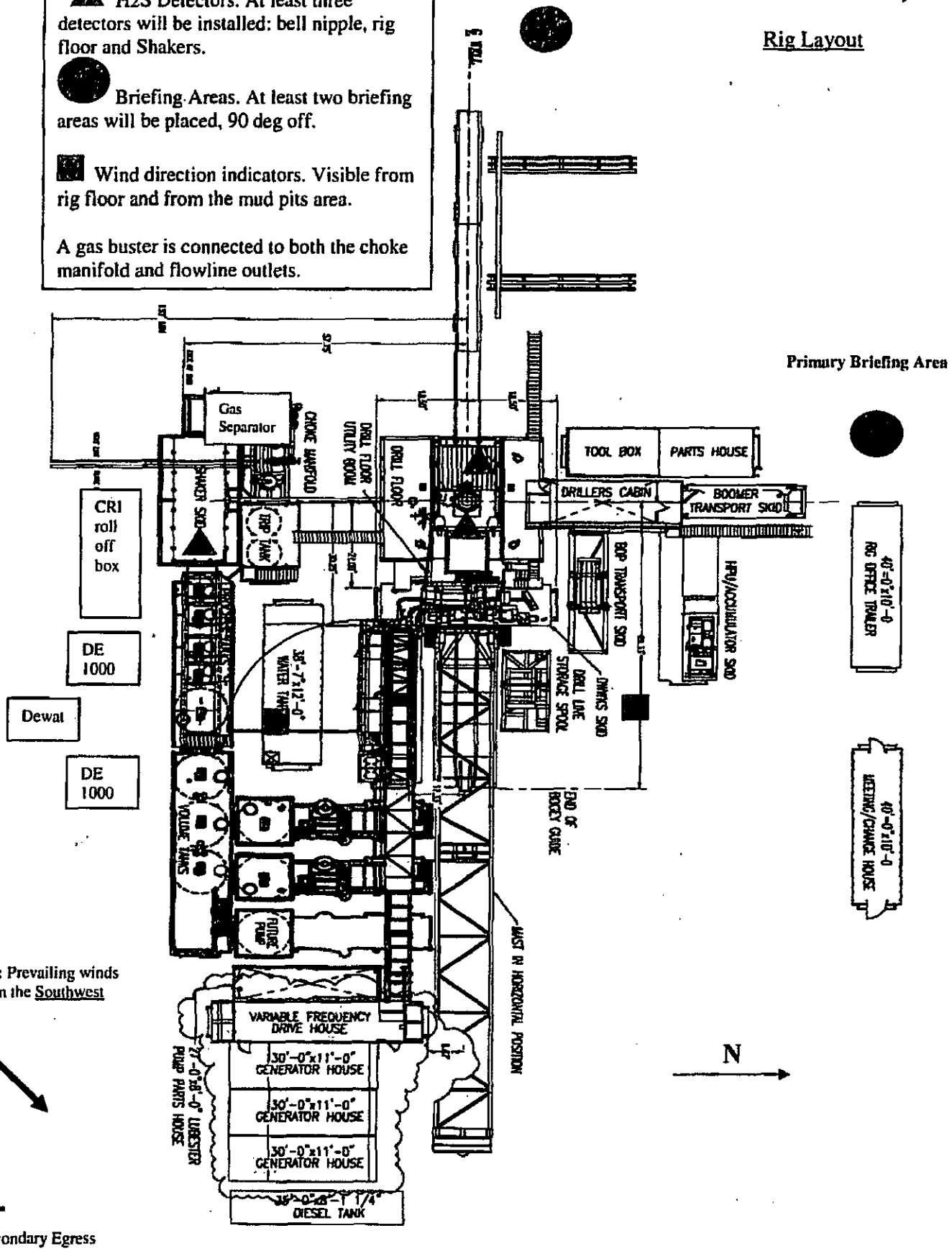
▲ H2S Detectors. At least three detectors will be installed: bell nipple, rig floor and Shakers.

● 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

OXY USA Inc.
Cedar Canyon 29 Federal

Casing Design Assumptions:

Burst Loads

CSG Test (Surface)

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

CSG Test (Intermediate)

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

CSG Test (Production)

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

Gas Kick (Surface/Intermediate)

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

Stimulation (Production)

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

Collapse Loads

Lost Circulation (Surface/Intermediate)

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

Cementing (Surface/Intermediate/Production)

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

Full Evacuation (Production)

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

Tension Loads

Running CSG (Surface/Intermediate/Production)

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

Green Cement (Surface/Intermediate/Production)

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

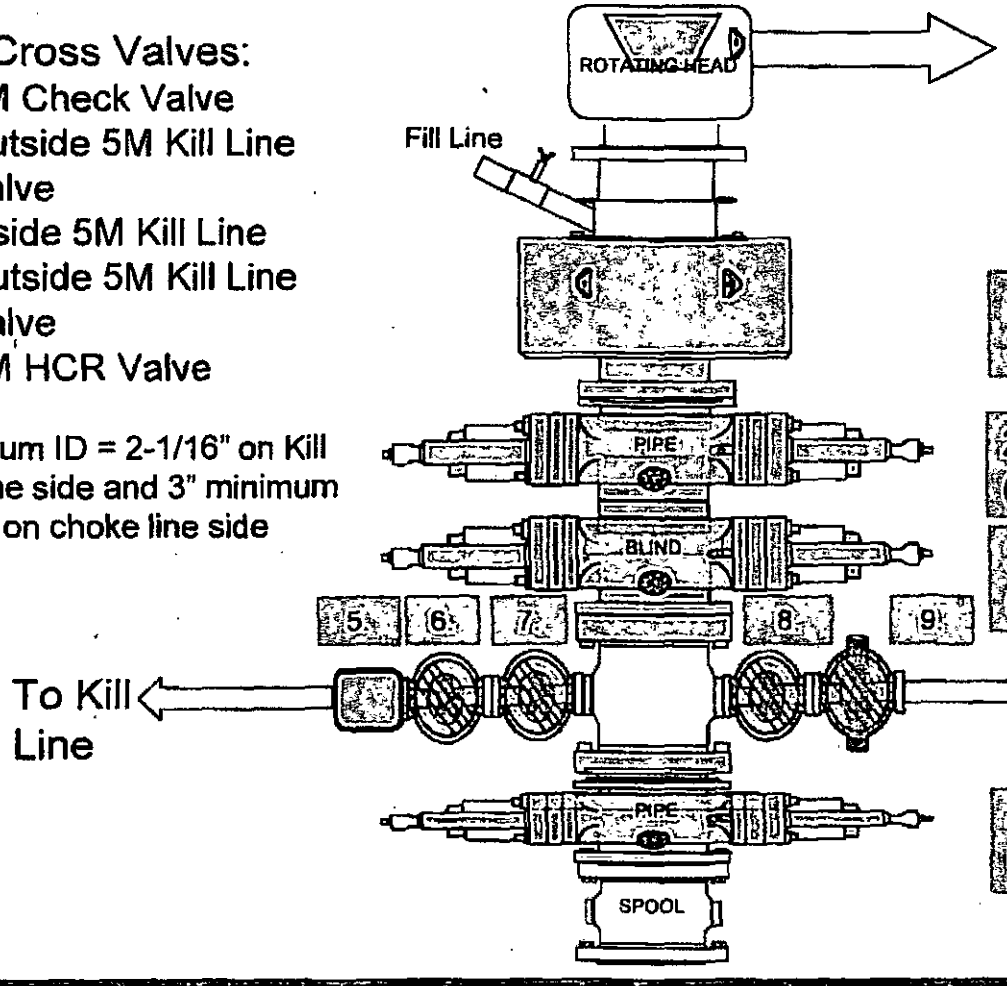
Burst, Collapse and Tensile SF are calculated using Landmark's Stress Check (Casing Design) software.

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



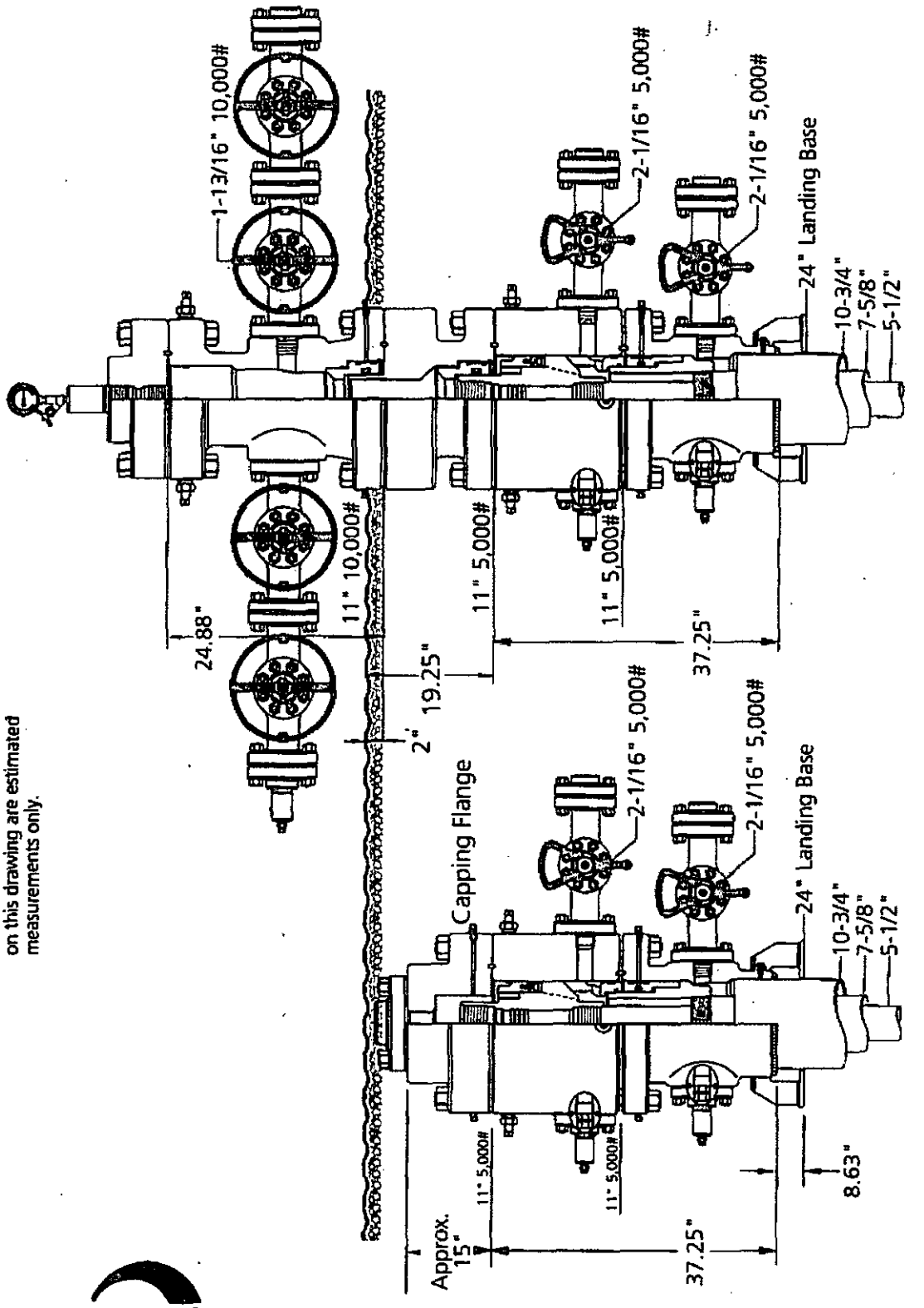
1. 5000 psi Annular (13-3/8" ID)
2. 5,000 psi Upper Pipe Ram (13-3/8" ID)
3. 5,000 psi Blind Ram (13-3/8" ID)
4. 5,000 psi Lower Pipe Ram (13-3/8" ID)

To Kill Line

To Co-Flex and Choke Manifold

B9

Wellhead



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

OXY

11" 10K MBS w/ 5.5" Mandrel

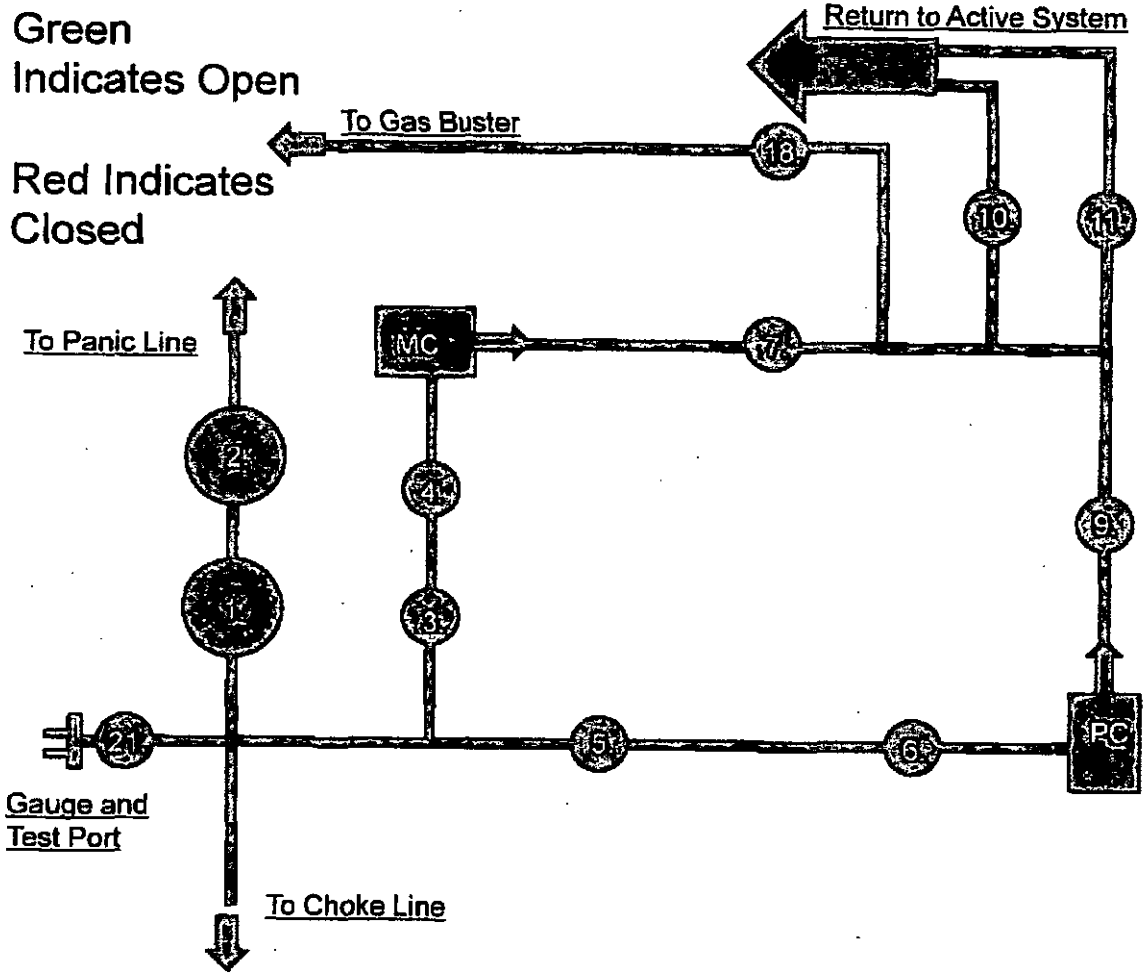
CAMERON

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

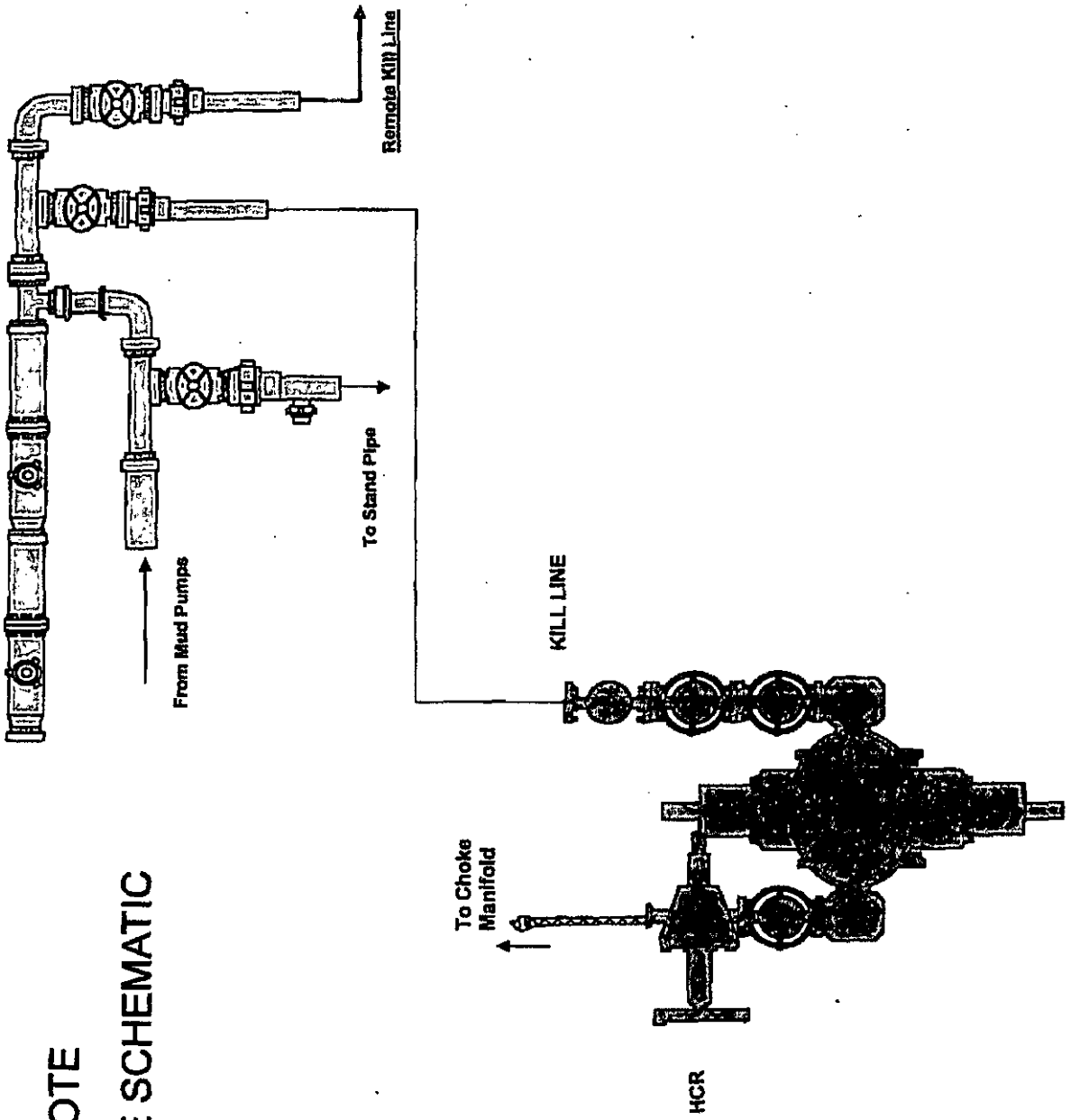
21. Vertical Choke Manifold Valve

***All Valves 3" minimum**

Choke Manifold - 1

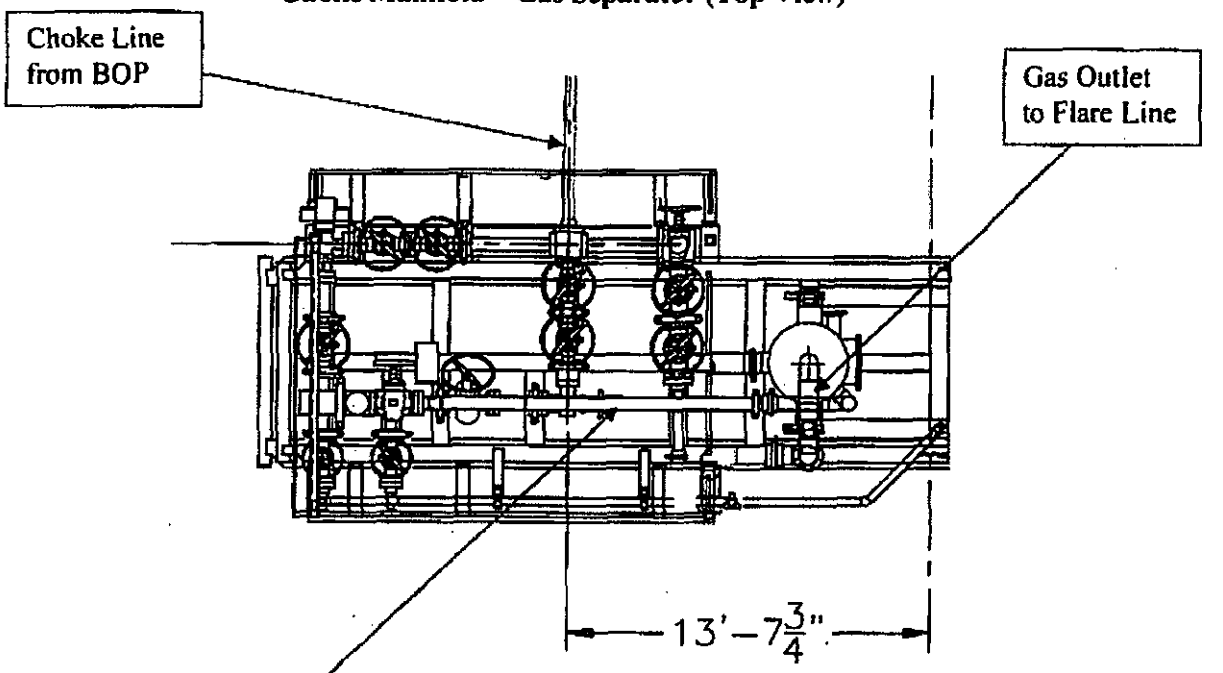
CM-2

10M REMOTE KILL LINE SCHEMATIC

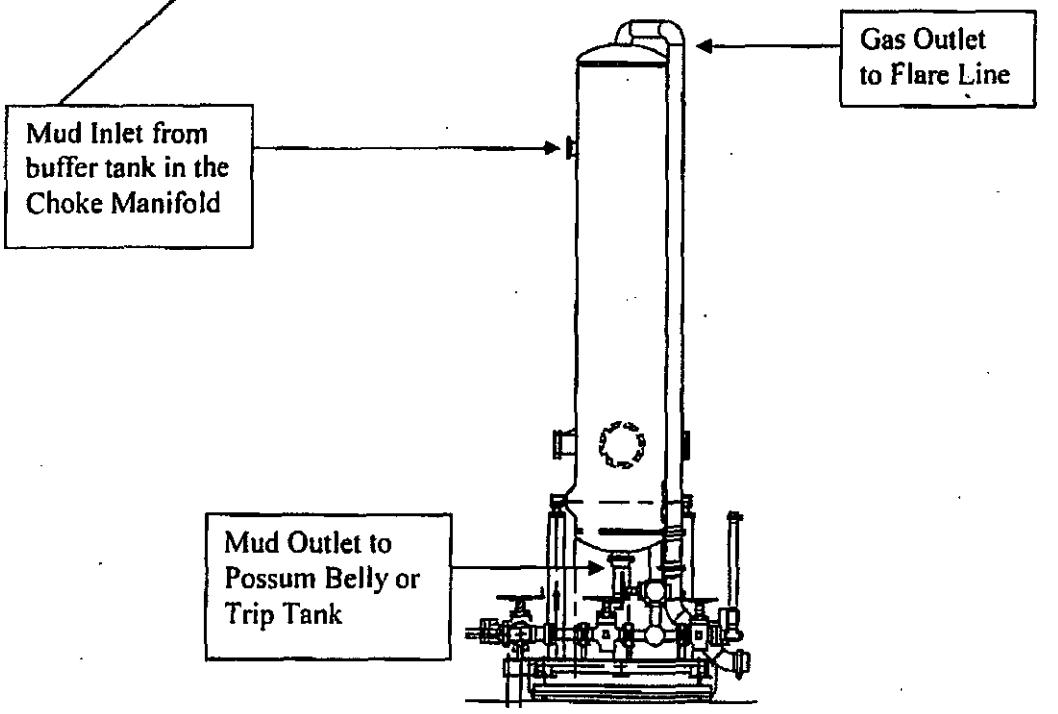


CM-3

Choke Manifold – Gas Separator (Top View)

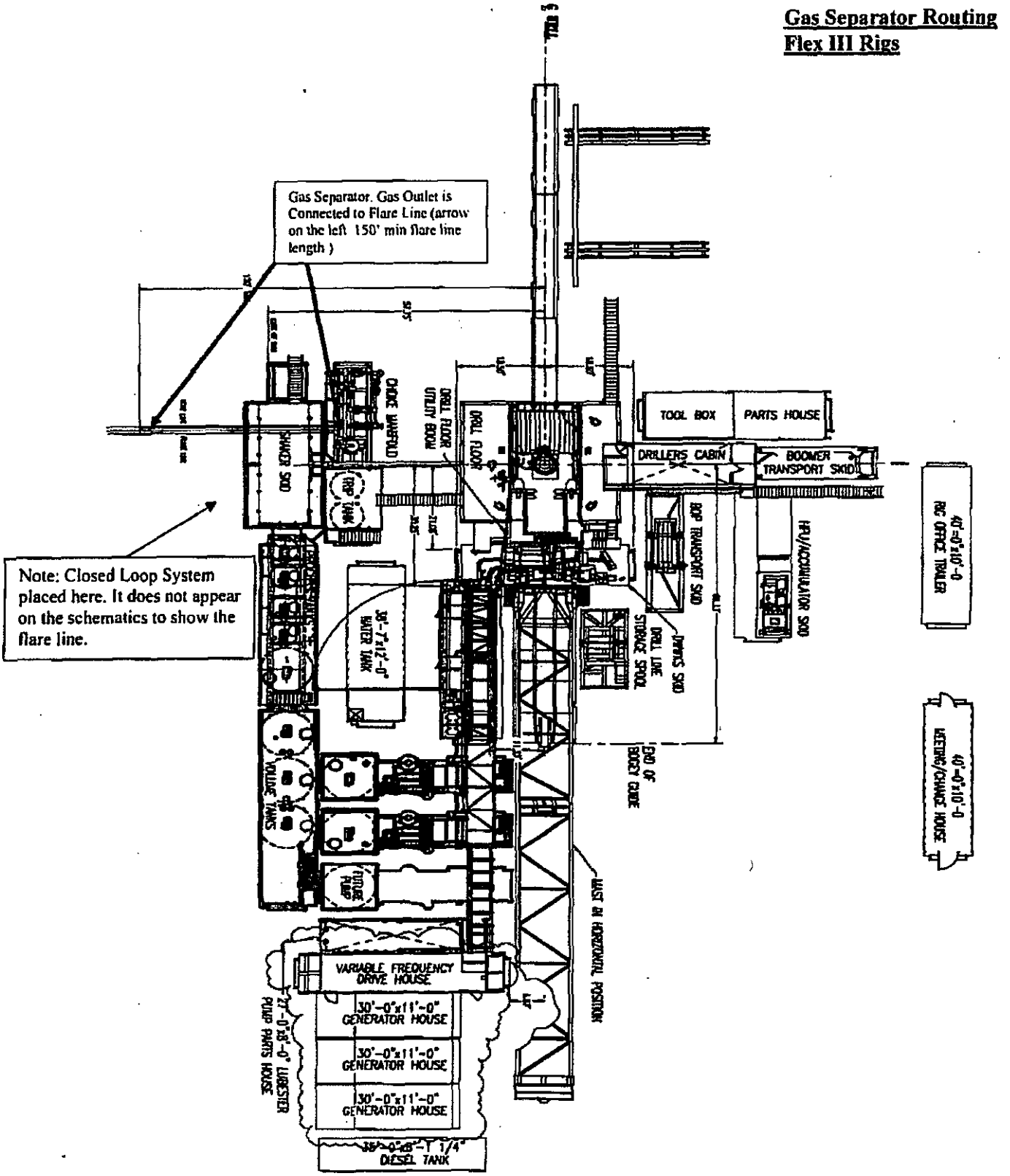


Choke Manifold – Gas Separator (Side View)

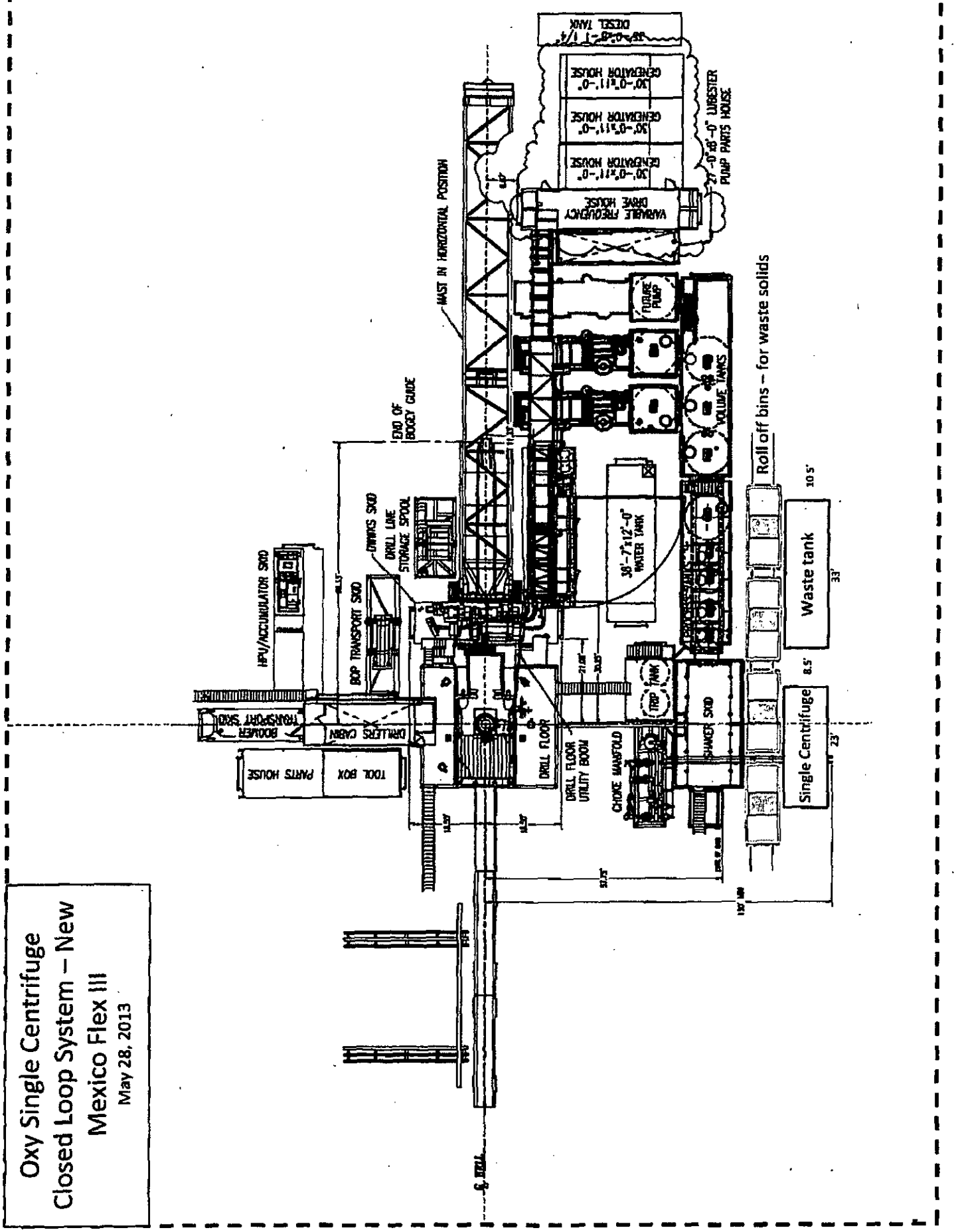


CM-4

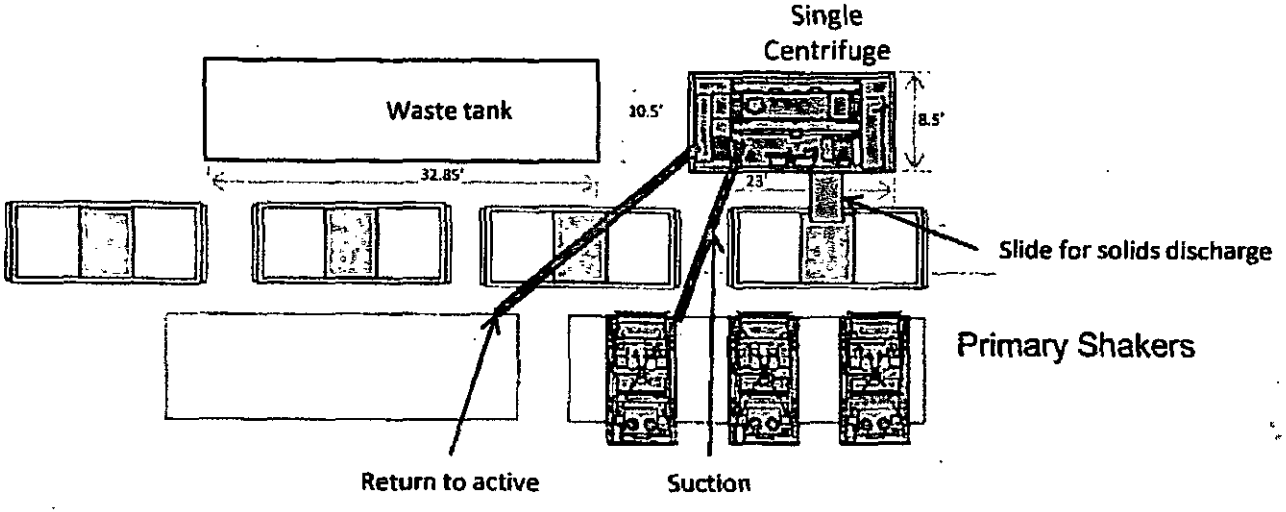
Gas Separator Routing
Flex III Rigs

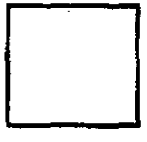


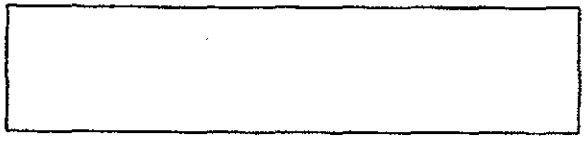
Closed Loop - 1



Oxy







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

CL-2

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA Inc
LEASE NO.:	NM94651
WELL NAME & NO.:	3H-Cedar Canyon 29 Federal
SURFACE HOLE FOOTAGE:	1990'/N & 210'/E
BOTTOM HOLE FOOTAGE	2219'/N & 160'/W
LOCATION:	Section 29, T.24 S., R. 29 E., NMPM
COUNTY:	Eddy County, New Mexico

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. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#).

Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented *under pressure until both of the following conditions have been met:* 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. (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.

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

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

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the **7-5/8** inch intermediate casing, which shall be set at approximately 8011 feet, 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 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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

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

☒ Cement as proposed by operator. Operator shall provide method of verification.

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.

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