1S-880

OIL CONSERVATION
ARTESIA DISTRICT
MAY 16 2016
RECEIVED

OCD Artesia

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☑ DRILL ☐ REENTER	5. Lease Serial No. SHL: NMNM092177 BHL: NMNM054291
	6. If Indian, Allotee or Tribe Name
	7. If Unit or CA Agreement, Name and No.
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone	8. Lease Name and Well No. JR's Horz Federal Com #17H
2. Name of Operator COG Operating LLC	9. API Well No. 30-015-43790
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. *(include area code)* 575-748-6940
	10. Field and Pool, or Exploratory Corral Canyon; Bone Spring, South
4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface 380' FNL & 350' FWL UL D (NWNW) SHL: Sec 10-26S-T29E At proposed prod. Zone 330' FSL & 380' FWL UL M (SWSW) BHL: Sec 10-T26S-R29E	11. Sec., T.R.M. or Blk and Survey or Area Sec 10-T26S-R29E
14. Distance in miles and direction from nearest town or post office* Approximately 11 miles from Malaga	12. County or Parish Eddy County / 13. State NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any)	330'	16. No. of acres in lease NMNM092177: 160 NMNM054291: 560	17. Spacing Unit dedicated to this well 160
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.	SHL: 30' BHL: 112'	19. Proposed Depth TVD: 8,731' MD: 13,142'	20. BLM/BIA Bond No. on file NMB000740 & NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2994.9' GL		22. Approximate date work will start* 9/1/2015	23. Estimated duration 30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

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 shall 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 required by the authorized officer.

25. Signature Mayte Reyes	Name *(Printed/Typed)* Mayte Reyes	Date 7-6-15
Title Regulatory Analyst		
Approved by *(Signature)* /s/George MacDonell	Name *(Printed/Typed)*	Date MAY - 5 2016
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legan or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations theron.
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.

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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 RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 16 2016
RECEIVED

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 43790	13354	CORRAL CANYON;BONE SPRING, SOUTH

Property Code	Property Name	Well Number
308280	JR'S HORZ FEDERAL COM	17H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	2994.9

Surface Location

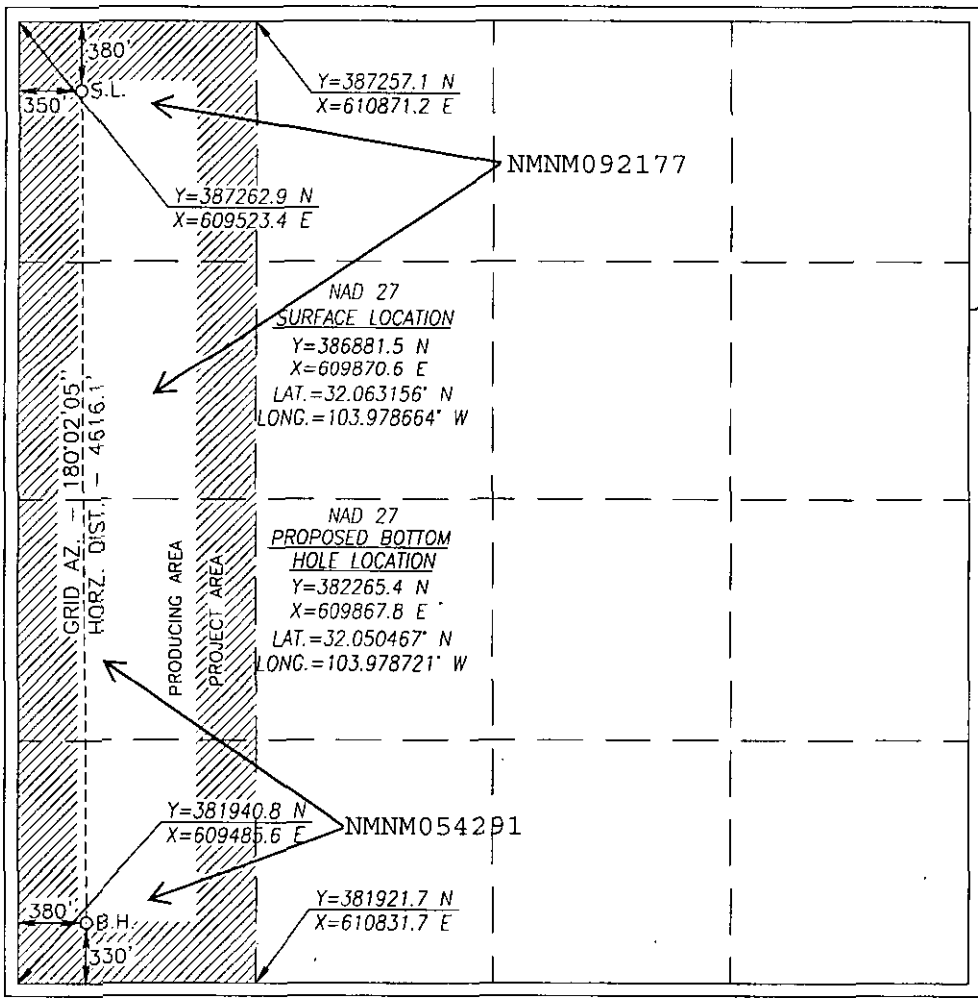
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	10	26-S	29-E		380'	NORTH	350'	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	10	26-S	29-E		330'	SOUTH	380'	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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

Melanie J Wilson 7/6/15
Signature Date

Melanie J Wilson
Printed Name

mwilson@concho.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.

DECEMBER 2, 2014
Date of Survey

Signature & Seal of Professional Surveyor

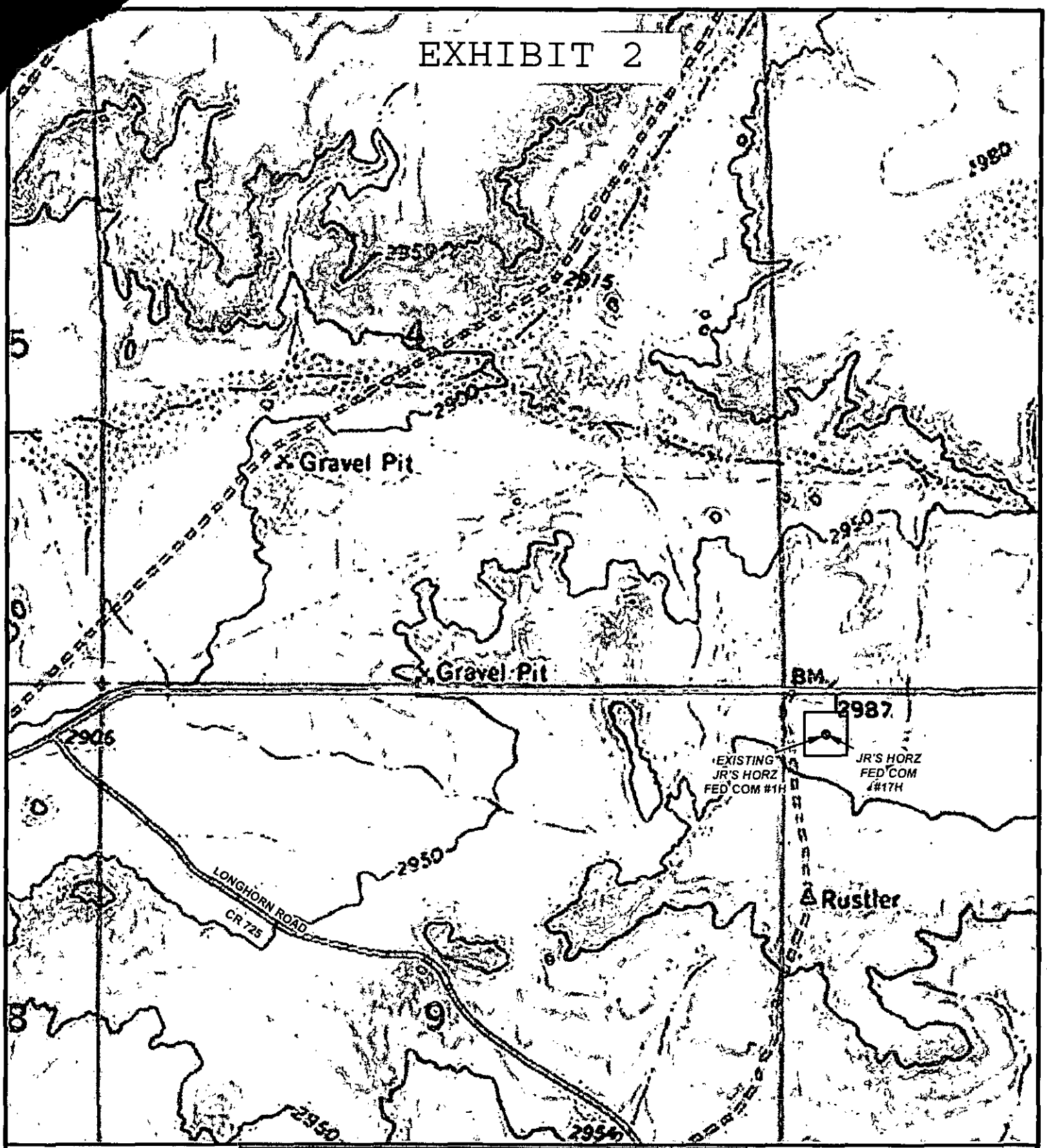
CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 1/13/15

Certificate No. CHAD HARCROW 17777

W.O. # 14-1150 DRAWN BY: AF

EXHIBIT 2



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD

JR'S HORZ FEDERAL COM #17H			
SEC: 10	TWP: 26 S.	RGE: 29 E.	ELEVATION: 2994.9'
STATE: NEW MEXICO	COUNTY: EDDY		380' FNL & 350' FWL
W.O. # 14-1150	LEASE: JR'S HORZ FED COM		SURVEY: N.M.P.M

0 2,500 FEET

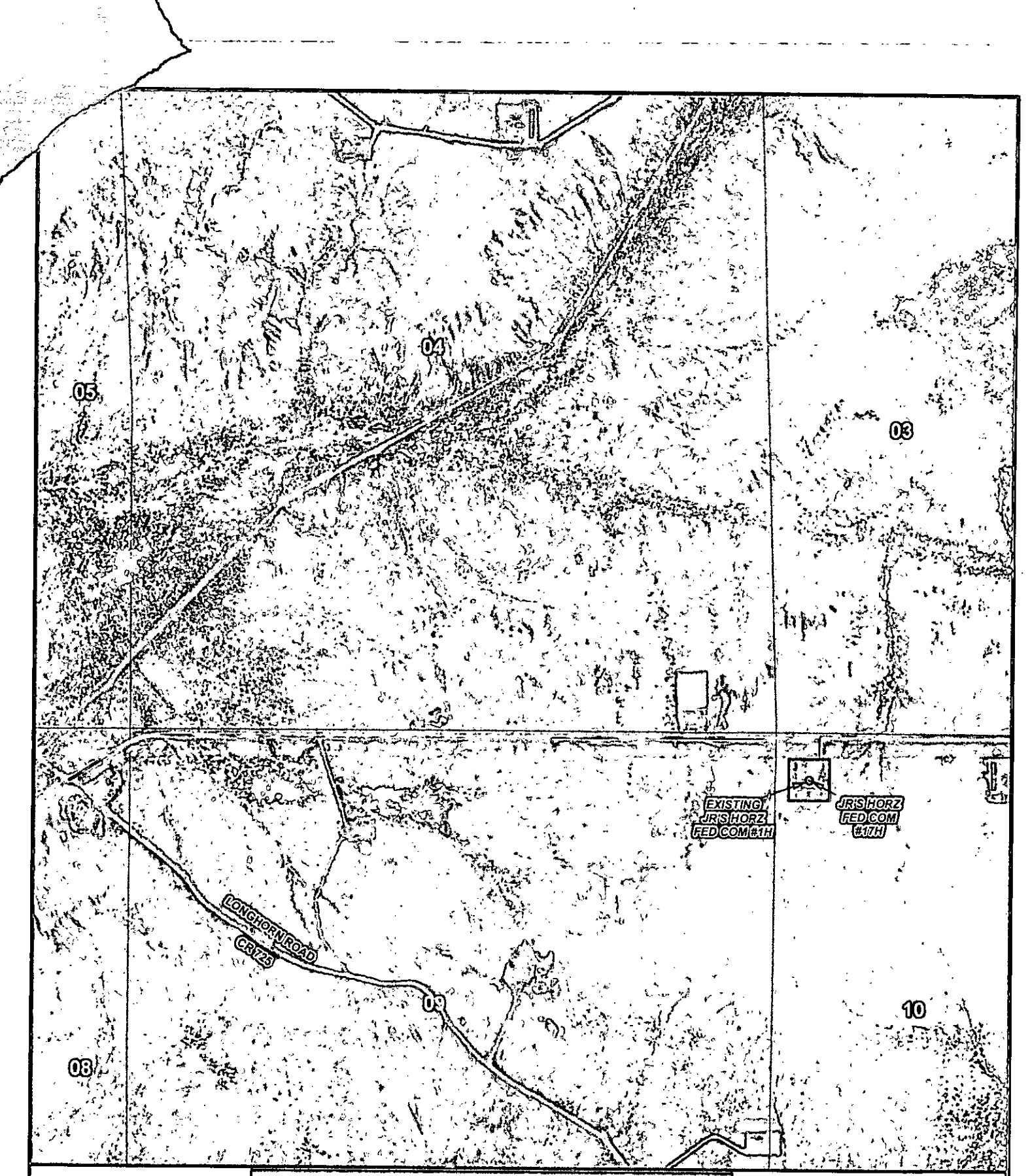
0 0.05 0.1 0.2 Miles 1 IN = 1,000 FT

LOCATION MAP TOPO ROAD 01/05/2015 A.F

CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com



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- EXISTING ROAD

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STATE: NEW MEXICO	COUNTY: EDDY		380' FNL & 350' FWL
W.O. # 14-1150	LEASE: JR'S HORZ FED COM	SURVEY: N.M.P.M	

0 2,500 FEET

0 0.05 0.1 0.2 Miles

1 IN = 1,000 FT

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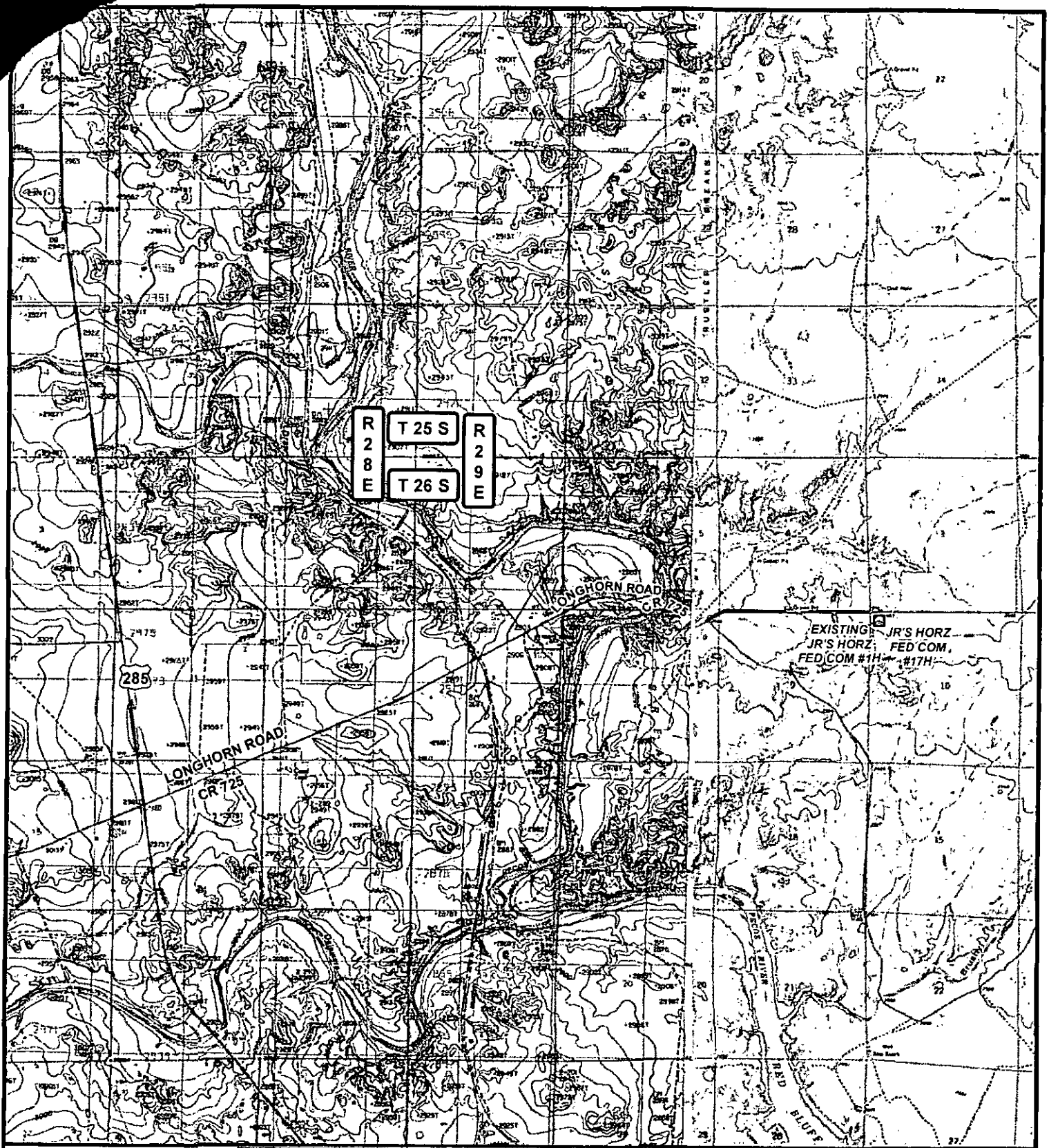

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD

JR'S HORZ FEDERAL COM #17H

SEC: 10	TWP: 26 S.	RGE: 29 E.	ELEVATION: 2994.9'
STATE: NEW MEXICO	COUNTY: EDDY		380' FNL & 350' FWL
W.O. # 14-1150	LEASE: JR'S HORZ FED COM	SURVEY: N.M.P.M.	

0 2,500 5,000 7,500 10,000 FEET

0 0.3 0.6 1.2 Miles

1 IN = 4,500 FT

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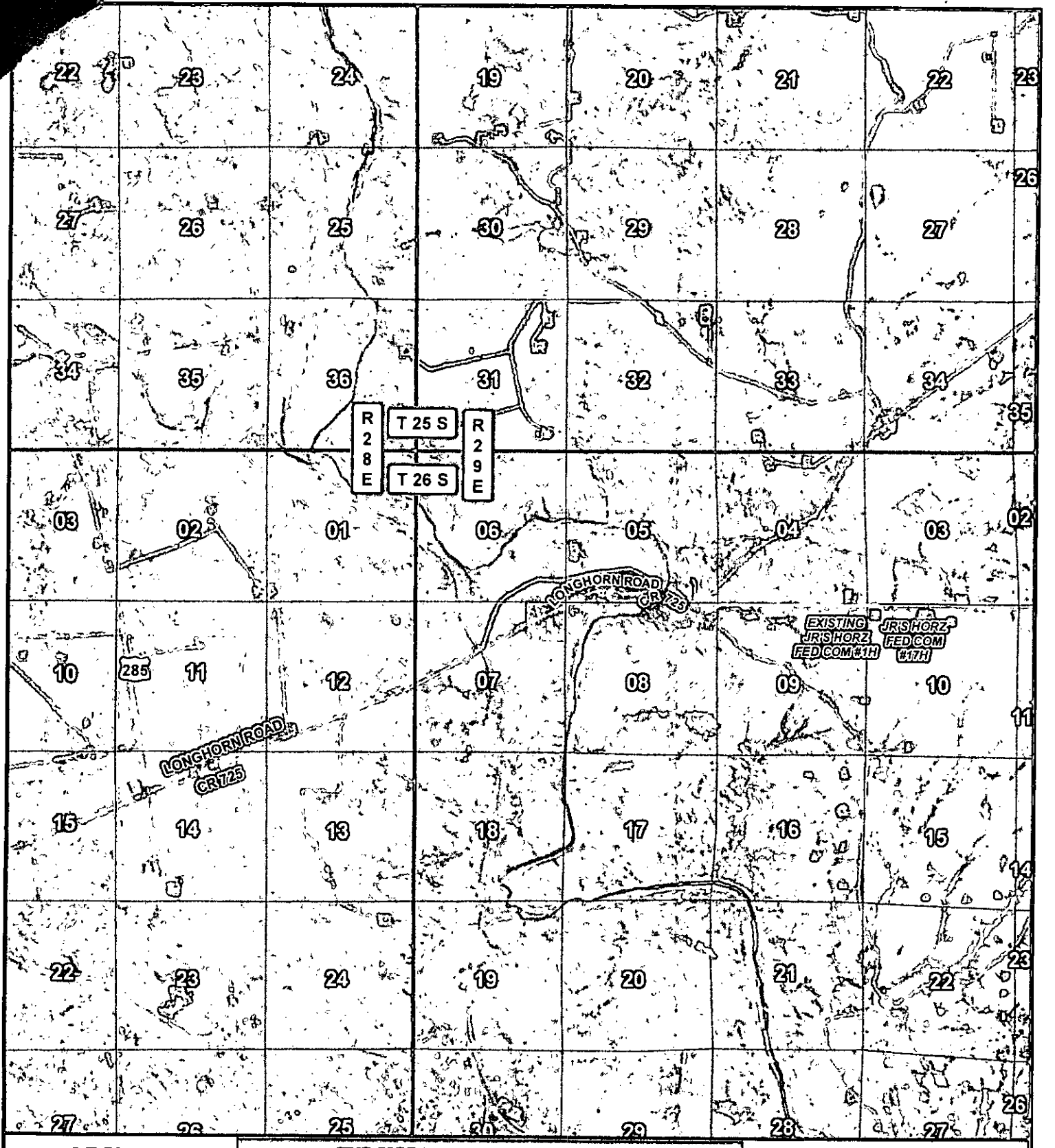

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD

JR'S HORZ FEDERAL COM #17H

SEC: 10	TWP: 26 S.	RGE: 29 E.	ELEVATION: 2994.9'
STATE: NEW MEXICO	COUNTY: EDDY		380' FNL & 350' FWL
W.O. # 14-1150	LEASE: JR'S HORZ FED COM	SURVEY: N.M.P.M	

0 2,500 5,000 7,500 10,000 FEET

0 0.3 0.6 1.2 Miles 1 IN = 4,500 FT

CONCHO

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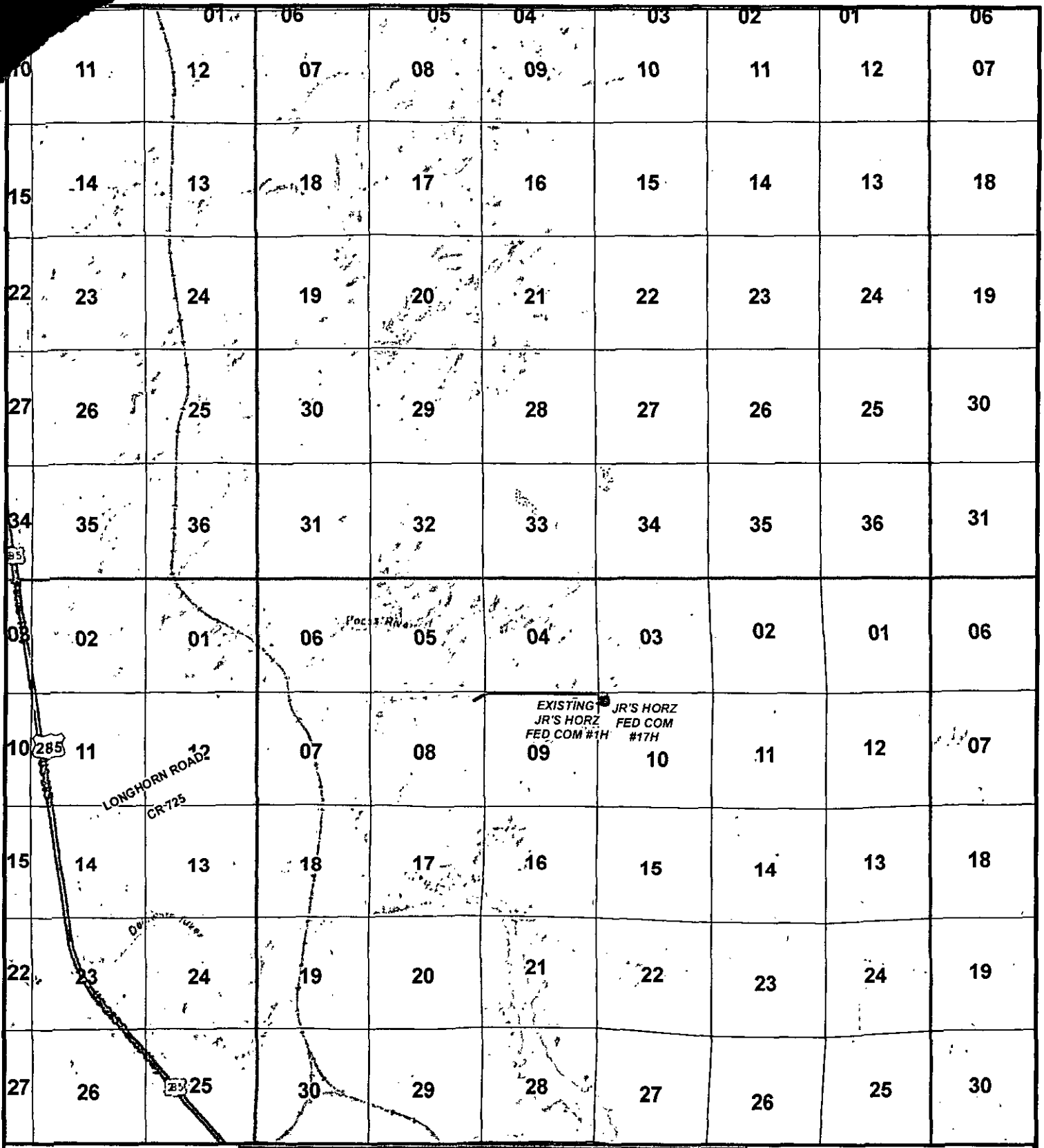

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD

JR'S HORZ FEDERAL COM #17H

SEC: 10 TWP: 26 S. RGE: 29 E. ELEVATION: 2994.9'

STATE: NEW MEXICO COUNTY: EDDY 380' FNL & 350' FWL

W.O. # 14-1150 LEASE: JR'S HORZ FED COM SURVEY: N.M.P.M

0 2,500 5,000 7,500 10,000 12,500 15,000 FEET

0 0.4 0.8 1.6 Miles

1 IN = 6,000 FT

VICINITY MAP 01/07/2015

CONCHO

COG OPERATING, LLC

N

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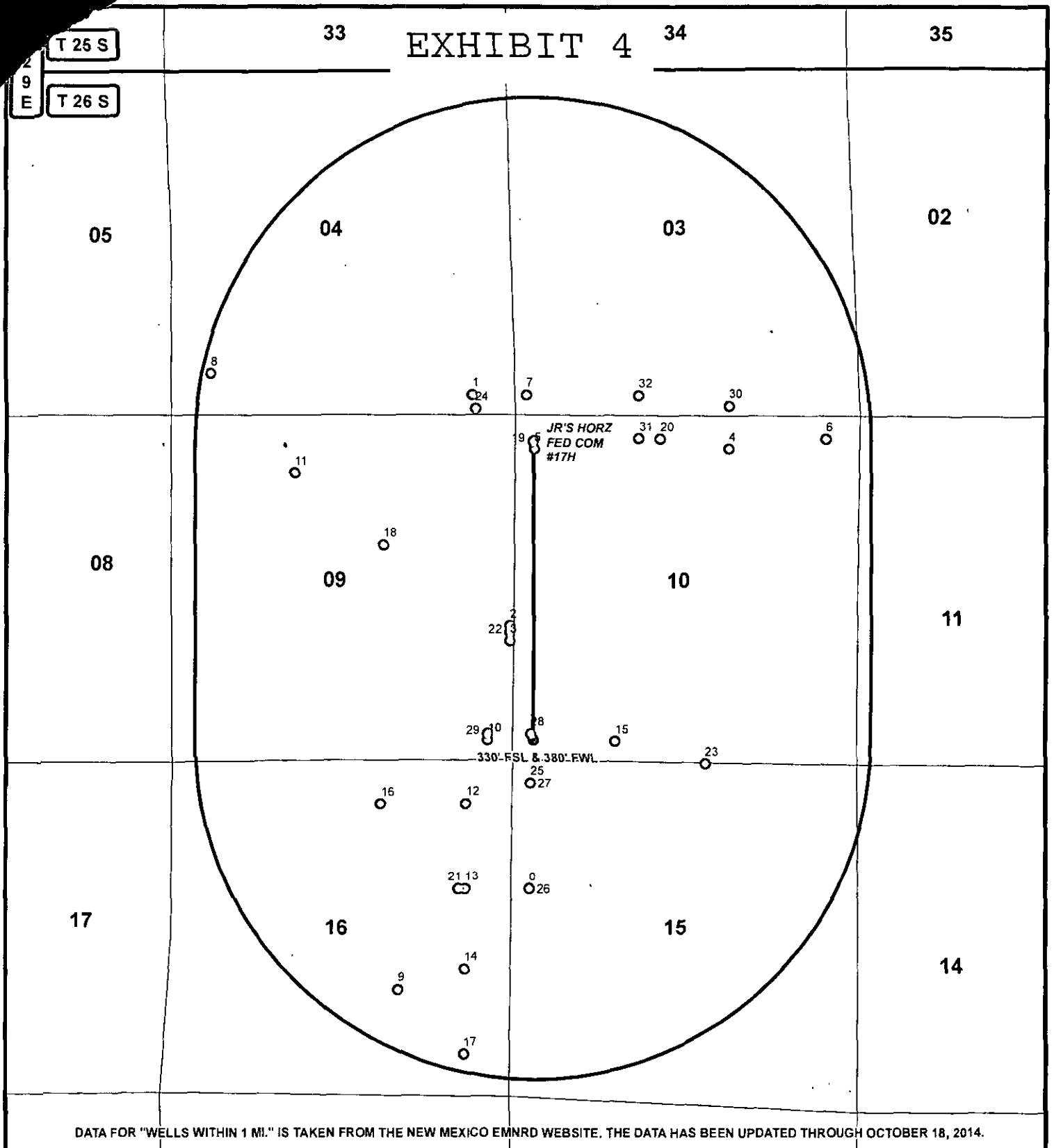
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com

EXHIBIT 4



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH OCTOBER 18, 2014.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

JR'S HORZ FEDERAL COM #17H			
SEC: 10	TWP: 26 S.	RGE: 29 E.	ELEVATION: 2994.9'
STATE: NEW MEXICO	COUNTY: EDDY		380' FNL & 350' FWL
W.O. # 14-1150	LEASE: JR'S HORZ FED COM		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

1 MILE MAP 01/07/2015

CONCHO

COG OPERATING, LLC

N

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FID	Shape *	OPERATOR	WELL_NAME	LATITUDE	LONGITUDE	API	SECTION	TOWNSHIP	RANGE	FTG_NS	NS_CD	FTG_EW	EW_CD	TVD_DEPTH	COMPL_STAT
0	Point	YATES PETROLEUM CORPORATION	SOSA FEDERAL 004H	32.044225	-103.97945	3001537579	15	26.0S	29E	1980	N	330	W	0	New (Not drilled or compl)
1	Point	COG OPERATING LLC	ROCKET FEDERAL 002	32.065215	-103.98224	3001537835	4	26.0S	29E	330	S	600	E	0	New (Not drilled or compl)
2	Point	COG OPERATING LLC	GEHRIG FEDERAL 003	32.055401	-103.980403	3001537839	9	26.0S	29E	2080	S	10	E	0	New (Not drilled or compl)
3	Point	COG OPERATING LLC	GEHRIG FEDERAL COM 004	32.054769	-103.98041	3001537834	9	26.0S	29E	1850	S	10	E	0	New (Not drilled or compl)
4	Point	COG OPERATING LLC	JR'S HORZ FEDERAL COM 003	32.06291	-103.969319	3001537842	10	26.0S	29E	480	N	1980	E	8766	New (Not drilled or compl)
5	Point	COG OPERATING LLC	JR'S HORZ FEDERAL COM 005	32.06292	-103.979144	3001537844	10	26.0S	29E	500	N	350	W	0	New (Not drilled or compl)
6	Point	COG OPERATING LLC	JR'S HORZ FEDERAL COM 004H	32.06329	-103.964443	3001537843	10	26.0S	29E	330	N	480	E	0	New (Not drilled or compl)
7	Point	COG OPERATING LLC	ROCKET FEDERAL 003H	32.065205	-103.979545	3001538436	3	26.0S	29E	330	S	230	W	0	New (Not drilled or compl)
8	Point	PETERING LG-SCU	FED GORMAN 001	32.066151	-103.995448	3001503725	4	26.0S	29E	660	S	660	W	0	Plugged
9	Point	OXY USA INC	DIMAGGIO 001	32.039945	-103.986075	3001526930	16	26.0S	29E	1650	S	1693	E	0	Active
10	Point	COG OPERATING LLC	GEHRIG FEDERAL 002	32.050591	-103.981499	3001526995	9	26.0S	29E	330	S	330	E	5425	Active
11	Point	OXY USA INC	MARIS FEDERAL 001	32.061939	-103.991186	3001527011	9	26.0S	29E	870	N	1980	W	6700	Active
12	Point	OXY USA INC	DIMAGGIO 002	32.04787	-103.982607	3001527892	16	26.0S	29E	660	N	660	E	5425	Active
13	Point	OXY USA INC	DIMAGGIO 008	32.044242	-103.982661	3001528174	16	26.0S	29E	1980	N	660	E	5200	TA
14	Point	OXY USA INC	DIMAGGIO 009	32.040811	-103.982712	3001528175	16	26.0S	29E	1980	S	660	E	5210	Active
15	Point	OXY USA INC	AFC FEDERAL 001	32.050509	-103.975077	3001528192	10	26.0S	29E	330	S	1650	W	5500	Active
16	Point	OXY USA INC	DIMAGGIO 003	32.047873	-103.986888	3001528266	16	26.0S	29E	660	N	1980	E	5170	Active
17	Point	OXY USA INC	DIMAGGIO 010	32.037183	-103.982766	3001528450	16	26.0S	29E	660	S	660	E	5230	Active
18	Point	OXY USA INC	ROBINSON 9 FEDERAL 001	32.058878	-103.986751	3001529826	9	26.0S	29E	1980	N	1980	E	5453	Active
19	Point	COG OPERATING LLC	JR'S HORZ FEDERAL 001	32.063251	-103.979205	3001533066	10	26.0S	29E	380	N	330	W	6812	Active
20	Point	COG OPERATING LLC	JR'S HORZ FEDERAL 002	32.063346	-103.972781	3001533417	10	26.0S	29E	330	N	2310	W	6899	Active
21	Point	OXY USA INC	DIMAGGIO 011	32.044242	-103.982985	3001533557	16	26.0S	29E	1980	N	760	E	6405	Active
22	Point	COG OPERATING LLC	GEHRIG FEDERAL 001	32.055126	-103.980406	3001533600	9	26.0S	29E	1980	S	10	E	7091	Active
23	Point	OXY USA INC	AFC FEDERAL 004	32.049574	-103.970564	3001533819	10	26.0S	29E	15	S	2310	E	0	New (Not drilled or compl)
24	Point	COG OPERATING LLC	ROCKET FEDERAL 001	32.064627	-103.982104	3001534795	4	26.0S	29E	116	S	564	E	7064	Active
25	Point	YATES PETROLEUM CORPORATION	SOSA FEDERAL 003H	32.04876	-103.979383	3001535000	15	26.0S	29E	330	N	330	W	0	New (Not drilled or compl)
26	Point	YATES PETROLEUM CORPORATION	SOSA FEDERAL 004C	32.044225	-103.97945	3001535167	15	26.0S	29E	1980	N	330	W	0	New (Not drilled or compl)
27	Point	YATES PETROLEUM CORPORATION	SOSA FEDERAL 003H	32.04876	-103.979383	3001537210	15	26.0S	29E	330	N	330	W	0	New (Not drilled or compl)
28	Point	COG OPERATING LLC	GEHRIG FEDERAL COM 006H	32.050849	-103.979355	3001537664	10	26.0S	29E	430	S	330	W	0	Active
29	Point	COG OPERATING LLC	GEHRIG FEDERAL COM 005H	32.050866	-103.981496	3001537678	9	26.0S	29E	430	S	330	E	7445	New (Not drilled or compl)
30	Point	COG OPERATING LLC	ROCKET FEDERAL COM 005H	32.064725	-103.969324	3001537778	3	26.0S	29E	180	S	1980	E	7456	New (Not drilled or compl)
31	Point	COG OPERATING LLC	JR'S HORZ FEDERAL COM 006H	32.063353	-103.973851	3001537904	10	26.0S	29E	330	N	1980	W	7459	New (Not drilled or compl)
32	Point	COG OPERATING LLC	ROCKET FEDERAL 004	32.065167	-103.973864	3001537963	3	26.0S	29E	330	S	1980	W	0	New (Not drilled or compl)

COG Operating LLC, JR's Horz Federal Com 17H

1. Geologic Formations

TVD of target	8,731'	Pilot hole depth	-
MD at TD:	13,142'	Deepest expected fresh water:	78'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	504	Water	
Top of Salt	660	Salt	
Fletcher Anhydrite	2796		
Lamar	3003	Barren	
Delaware Group	3049	Oil/Gas	
Bone Spring	6758	Oil/Gas	
2nd Bone Spring Lime	8559	Target Zone	
3rd Bone Spring Lime	9494	Oil/Gas	

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	540'	13.375"	54.5	J55	STC	4.47	1.73	17.47
12.25"	0	3030'	9.625"	40	J55	LTC	1.63	0.87	4.29
8.75"	0	13,142'	5.5"	17	P110	BTC	1.64	2.34	2.54
				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

- 9-5/8" 40# J-55: Pi = 3950; Pi/D = 3950 psi/3030ft = 0.86, above the fracture gradient of 0.7 psi/ft at the shoe.

Must have table for contingency casing

	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.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). (Assumption bulleted above)	N
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?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
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.	150	13.5	1.75	9.4	10	Lead: Class C + 4% Gel + 2% CaCl2
	250	14.8	1.34	6.4	8	Tail: Class C + 2% CaCl2
Inter.	550	13.5	1.75	9.4	11	Lead: Class C + 4% Gel + 2% CaCl2
	250	14.8	1.34	6.4	10	Tail: Class C + 2% CaCl2
Prod.	800	11.9	2.5	13.9	12	Lead: 50:50:10 H Blend
	1350	14.4	1.25	6.34	10	Tail: 50:50:2 Class H + 1% Salt + 0.5% Halad-9 + 0.05% SA-1015

Casing String	TOC	% Excess
Surface	0'	50%
Intermediate	0'	35%
Production	2600' See COA's	35%

Include Pilot Hole Cementing specs:

Pilot hole depth NA'

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

No Pilot Hole planned

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	x	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	11"	3M	Annular	x	50% testing pressure
			Blind Ram	x	3M
			Pipe Ram	x	
			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.

N	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.
N	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.
	N — Are anchors required by manufacturer?
N	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.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6-8.8	28-34	N/C
Surf csg	Int shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int shoe	TD	Cut Brine	8.5-9.3	28-34	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/Pason/Visual Monitoring

6. Logging and Testing Procedures

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

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
	CBL	Production casing
	Mud log	Intermediate shoe to TD
	PEX	Intermediate shoe to TD

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4222 psi
Abnormal Temperature	No

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

Is this a walking operation? If yes, describe. No
Will be pre-setting casing? If yes, describe. No

Attachments

- Directional Plan
- BOP & Choke Schematics
- C102 and supporting maps
- Rig plat
- H2S schematic
- H2S contingency plan
- Interim reclamation plat

COG Operating LLC

Eddy County, NM
JR's Horz Federal Com
#17H

OH

Plan: Design #1

Standard Planning Report

06 May, 2015

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #17H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3012.9usft (Original Well Elev)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3012.9usft (Original Well Elev)
Site:	JR's Horz Federal Com	**North Reference:**	Grid
Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Project Eddy County, NM

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

Site JR's Horz Federal Com

Site Position:		**Northing:**	386,801.50 usft	**Latitude:**	32° 3' 46.418 N
From:	Map	**Easting:**	614,487.90 usft	**Longitude:**	103° 57' 49.535 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.20 °

Well #17H

Well Position	**+N/-S**	80.0 usft	**Northing:**	386,881.50 usft	**Latitude:**	32° 3' 47.363 N
	+E/-W	-4,617.3 usft	**Easting:**	609,870.60 usft	**Longitude:**	103° 58' 43.189 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	2,994.9 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/6/2015	7.28	59.87	48,090

Design Design #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.0	0.0	0.0	180.03	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,253.5	0.00	0.00	8,253.5	0.0	0.0	0.00	0.00	0.00	0.00	
9,004.2	90.08	180.03	8,731.0	-478.2	-0.3	12.00	12.00	0.00	180.03	
13,142.2	90.08	180.03	8,725.2	-4,616.1	-2.4	0.00	0.00	0.00	0.00	PBHL(JRHZ#17H)

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #17H
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Project:	Eddy County, NM	**MD Reference:**	WELL @ 3012.9usft (Original Well Elev)
Site:	JR's Horz Federal Com	**North Reference:**	Grid
Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00

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Wellbore:	OH		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,253.5	0.00	0.00	8,253.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 8253.5 'MD, 0.00° INC, 0.00° AZI									
8,275.0	2.58	180.03	8,275.0	-0.5	0.0	0.5	12.00	12.00	0.00
8,300.0	5.58	180.03	8,299.9	-2.3	0.0	2.3	12.00	12.00	0.00
8,325.0	8.58	180.03	8,324.7	-5.3	0.0	5.3	12.00	12.00	0.00
8,350.0	11.58	180.03	8,349.3	-9.7	0.0	9.7	12.00	12.00	0.00
8,375.0	14.58	180.03	8,373.7	-15.4	0.0	15.4	12.00	12.00	0.00
8,400.0	17.58	180.03	8,397.7	-22.3	0.0	22.3	12.00	12.00	0.00
8,425.0	20.58	180.03	8,421.3	-30.5	0.0	30.5	12.00	12.00	0.00
8,450.0	23.58	180.03	8,444.5	-39.9	0.0	39.9	12.00	12.00	0.00
8,475.0	26.58	180.03	8,467.1	-50.5	0.0	50.5	12.00	12.00	0.00
8,500.0	29.58	180.03	8,489.2	-62.2	0.0	62.2	12.00	12.00	0.00
8,525.0	32.58	180.03	8,510.6	-75.1	0.0	75.1	12.00	12.00	0.00
8,550.0	35.58	180.03	8,531.3	-89.1	0.0	89.1	12.00	12.00	0.00
8,575.0	38.58	180.03	8,551.3	-104.2	-0.1	104.2	12.00	12.00	0.00
8,600.0	41.58	180.03	8,570.4	-120.3	-0.1	120.3	12.00	12.00	0.00
8,625.0	44.58	180.03	8,588.6	-137.4	-0.1	137.4	12.00	12.00	0.00
8,650.0	47.58	180.03	8,606.0	-155.4	-0.1	155.4	12.00	12.00	0.00
8,675.0	50.58	180.03	8,622.4	-174.3	-0.1	174.3	12.00	12.00	0.00
8,700.0	53.58	180.03	8,637.7	-194.0	-0.1	194.0	12.00	12.00	0.00
8,725.0	56.58	180.03	8,652.0	-214.5	-0.1	214.5	12.00	12.00	0.00
8,750.0	59.58	180.03	8,665.2	-235.7	-0.1	235.7	12.00	12.00	0.00
8,775.0	62.58	180.03	8,677.3	-257.6	-0.1	257.6	12.00	12.00	0.00
8,800.0	65.58	180.03	8,688.3	-280.1	-0.1	280.1	12.00	12.00	0.00

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Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,825.0	68.57	180.03	8,698.0	-303.1	-0.2	303.1	12.00	12.00	0.00
8,850.0	71.57	180.03	8,706.5	-326.6	-0.2	326.6	12.00	12.00	0.00
8,875.0	74.57	180.03	8,713.8	-350.5	-0.2	350.5	12.00	12.00	0.00
8,900.0	77.57	180.03	8,719.8	-374.8	-0.2	374.8	12.00	12.00	0.00
8,925.0	80.57	180.03	8,724.6	-399.3	-0.2	399.3	12.00	12.00	0.00
8,950.0	83.57	180.03	8,728.0	-424.1	-0.2	424.1	12.00	12.00	0.00
8,975.0	86.57	180.03	8,730.1	-449.0	-0.2	449.0	12.00	12.00	0.00
9,000.0	89.57	180.03	8,731.0	-473.9	-0.2	473.9	12.00	12.00	0.00
9,004.2	90.08	180.03	8,731.0	-478.2	-0.3	478.2	12.00	12.00	0.00
EOC- 9004.2 'MD, 90.08° INC, 180.03° AZI									
9,100.0	90.08	180.03	8,730.9	-573.9	-0.3	573.9	0.00	0.00	0.00
9,200.0	90.08	180.03	8,730.7	-673.9	-0.4	673.9	0.00	0.00	0.00
9,300.0	90.08	180.03	8,730.6	-773.9	-0.4	773.9	0.00	0.00	0.00
9,400.0	90.08	180.03	8,730.4	-873.9	-0.5	873.9	0.00	0.00	0.00
9,500.0	90.08	180.03	8,730.3	-973.9	-0.5	973.9	0.00	0.00	0.00
9,600.0	90.08	180.03	8,730.2	-1,073.9	-0.6	1,073.9	0.00	0.00	0.00
9,700.0	90.08	180.03	8,730.0	-1,173.9	-0.6	1,173.9	0.00	0.00	0.00
9,800.0	90.08	180.03	8,729.9	-1,273.9	-0.7	1,273.9	0.00	0.00	0.00
9,900.0	90.08	180.03	8,729.7	-1,373.9	-0.7	1,373.9	0.00	0.00	0.00
10,000.0	90.08	180.03	8,729.6	-1,473.9	-0.8	1,473.9	0.00	0.00	0.00
10,100.0	90.08	180.03	8,729.5	-1,573.9	-0.8	1,573.9	0.00	0.00	0.00
10,200.0	90.08	180.03	8,729.3	-1,673.9	-0.9	1,673.9	0.00	0.00	0.00
10,300.0	90.08	180.03	8,729.2	-1,773.9	-0.9	1,773.9	0.00	0.00	0.00
10,400.0	90.08	180.03	8,729.1	-1,873.9	-1.0	1,873.9	0.00	0.00	0.00
10,500.0	90.08	180.03	8,728.9	-1,973.9	-1.0	1,973.9	0.00	0.00	0.00
10,600.0	90.08	180.03	8,728.8	-2,073.9	-1.1	2,073.9	0.00	0.00	0.00
10,700.0	90.08	180.03	8,728.6	-2,173.9	-1.1	2,173.9	0.00	0.00	0.00
10,800.0	90.08	180.03	8,728.5	-2,273.9	-1.2	2,273.9	0.00	0.00	0.00
10,900.0	90.08	180.03	8,728.4	-2,373.9	-1.2	2,373.9	0.00	0.00	0.00
11,000.0	90.08	180.03	8,728.2	-2,473.9	-1.3	2,473.9	0.00	0.00	0.00
11,100.0	90.08	180.03	8,728.1	-2,573.9	-1.3	2,573.9	0.00	0.00	0.00
11,200.0	90.08	180.03	8,727.9	-2,673.9	-1.4	2,673.9	0.00	0.00	0.00
11,300.0	90.08	180.03	8,727.8	-2,773.9	-1.5	2,773.9	0.00	0.00	0.00
11,400.0	90.08	180.03	8,727.7	-2,873.9	-1.5	2,873.9	0.00	0.00	0.00
11,500.0	90.08	180.03	8,727.5	-2,973.9	-1.6	2,973.9	0.00	0.00	0.00
11,600.0	90.08	180.03	8,727.4	-3,073.9	-1.6	3,073.9	0.00	0.00	0.00
11,700.0	90.08	180.03	8,727.2	-3,173.9	-1.7	3,173.9	0.00	0.00	0.00
11,800.0	90.08	180.03	8,727.1	-3,273.9	-1.7	3,273.9	0.00	0.00	0.00
11,900.0	90.08	180.03	8,727.0	-3,373.9	-1.8	3,373.9	0.00	0.00	0.00
12,000.0	90.08	180.03	8,726.8	-3,473.9	-1.8	3,473.9	0.00	0.00	0.00
12,100.0	90.08	180.03	8,726.7	-3,573.9	-1.9	3,573.9	0.00	0.00	0.00
12,200.0	90.08	180.03	8,726.5	-3,673.9	-1.9	3,673.9	0.00	0.00	0.00
12,300.0	90.08	180.03	8,726.4	-3,773.9	-2.0	3,773.9	0.00	0.00	0.00
12,400.0	90.08	180.03	8,726.3	-3,873.9	-2.0	3,873.9	0.00	0.00	0.00
12,500.0	90.08	180.03	8,726.1	-3,973.9	-2.1	3,973.9	0.00	0.00	0.00
12,600.0	90.08	180.03	8,726.0	-4,073.9	-2.1	4,073.9	0.00	0.00	0.00
12,700.0	90.08	180.03	8,725.8	-4,173.9	-2.2	4,173.9	0.00	0.00	0.00
12,800.0	90.08	180.03	8,725.7	-4,273.9	-2.2	4,273.9	0.00	0.00	0.00
12,900.0	90.08	180.03	8,725.6	-4,373.9	-2.3	4,373.9	0.00	0.00	0.00
13,000.0	90.08	180.03	8,725.4	-4,473.9	-2.3	4,473.9	0.00	0.00	0.00
13,100.0	90.08	180.03	8,725.3	-4,573.9	-2.4	4,573.9	0.00	0.00	0.00
13,142.2	90.08	180.03	8,725.2	-4,616.1	-2.4	4,616.1	0.00	0.00	0.00
TD at 13142.2 - PBHL(JRHZ#17H)									

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #17H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3012.9usft (Original Well Elev)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3012.9usft (Original Well Elev)
Site:	JR's Horz Federal Com	**North Reference:**	Grid
Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL(JRHZ#17H)	0.00	0.00	8,725.0	-4,616.1	-2.8	382,265.40	609,867.80	32° 3' 1.680 N	103° 58' 43.398 W
- plan misses target center by 0.4usft at 13142.2usft MD (8725.2 TVD, -4616.1 N, -2.4 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
8,253.5	8,253.5	0.0	0.0	KOP - 8253.5 'MD, 0.00° INC, 0.00° AZI
9,004.2	8,731.0	-478.2	-0.3	EOC- 9004.2 'MD, 90.08° INC, 180.03° AZI
13,142.2	8,725.2	-4,616.1	-2.4	TD at 13142.2

CONCHO

COG Operating LLC
oject: Eddy County, NM
e: JR's Horz Federal Com
Well: #17H
Wellbore: OH
an: Design #1 (#17H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	8253.5	0.00	0.00	8253.5	0.0	0.0	0.00	0.00	0.0	
3	9004.2	90.08	180.03	8731.0	-478.2	-0.3	12.00	180.03	478.2	
4	13142.2	90.08	180.03	8725.2	-4616.1	-2.4	0.00	0.00	4616.1	PBHL(JRHZ#17H)

WELL DETAILS: #17H

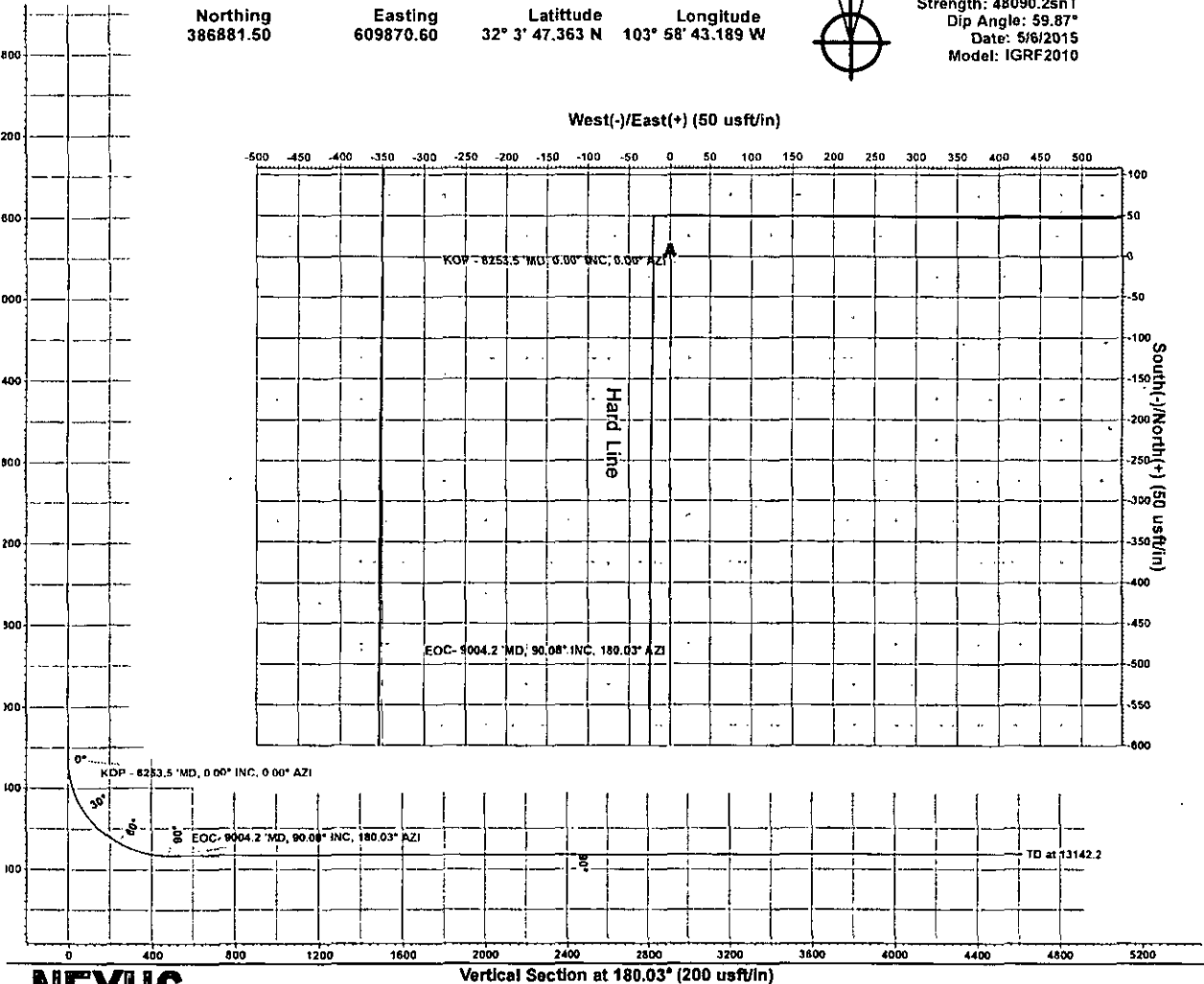
Ground Elevation:: 2994.9
RKB Elevation: WELL @ 3012.9usft (Original Well Elev)
Rig Name: Original Well Elev

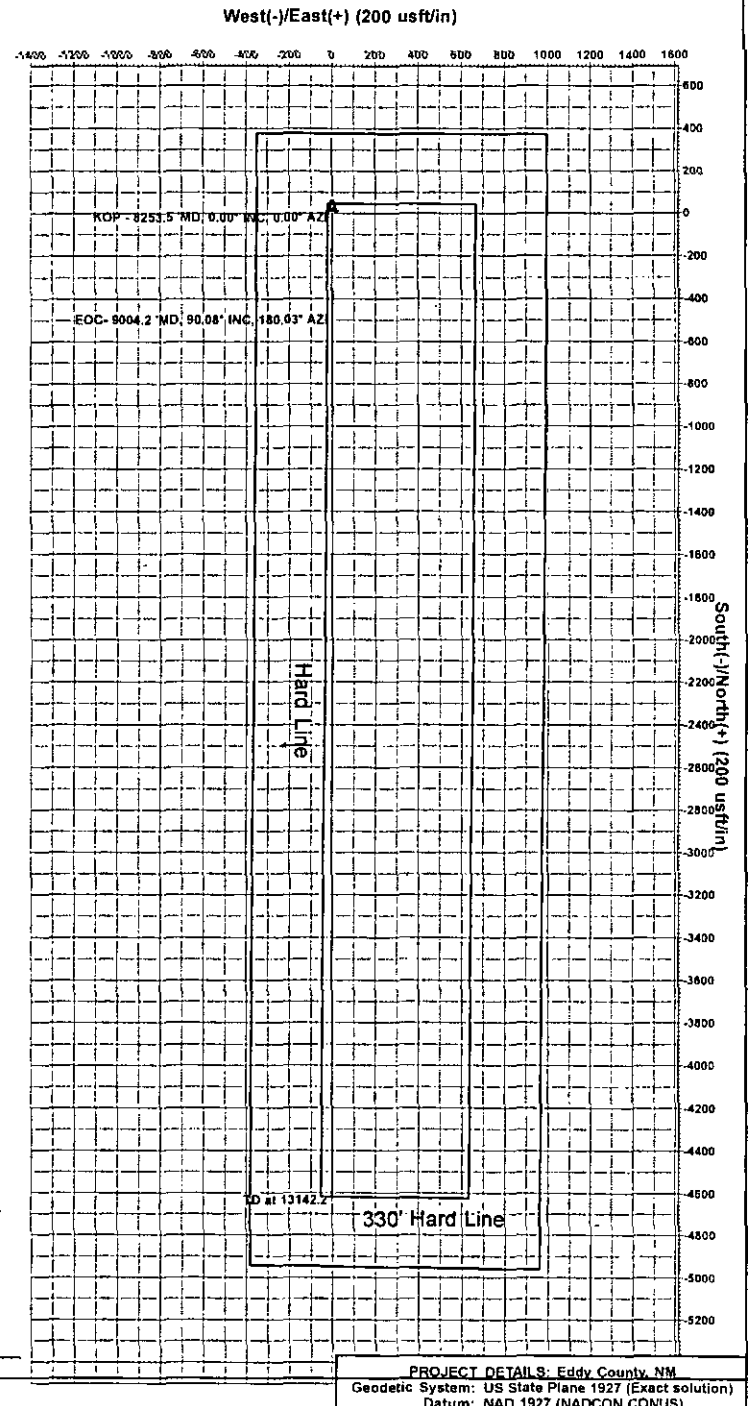
Northing	Easting	Latitude	Longitude
386881.50	609870.60	32° 3' 47.363 N	103° 58' 43.189 W

G T M

Azimuths to Grid North
True North: -0.19°
Magnetic North: 7.10°

Magnetic Field
Strength: 48090.2snT
Dip Angle: 59.87°
Date: 5/6/2015
Model: IGRF2010



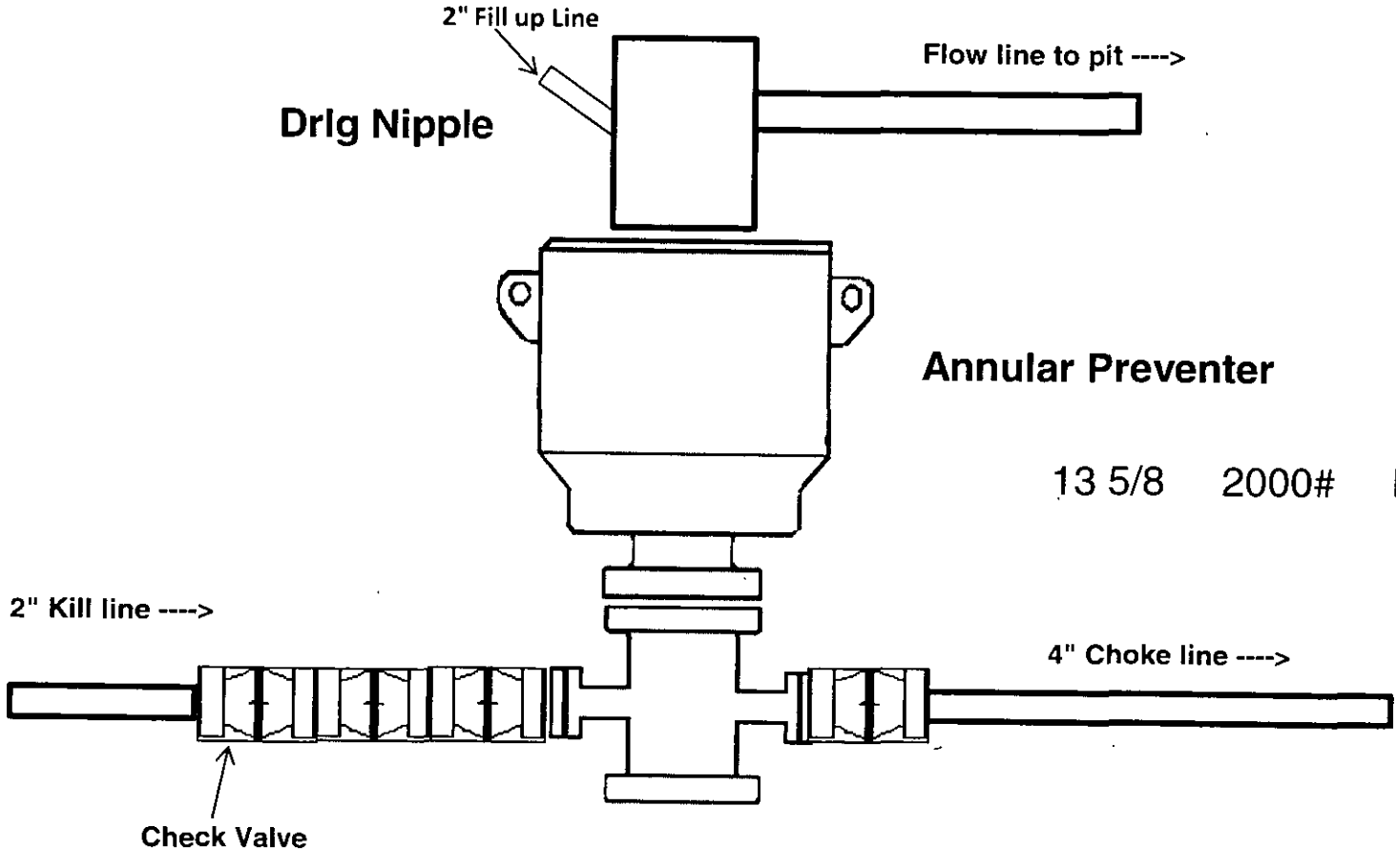


NEXUS
RECTIONAL SOLUTIONS, L.P.

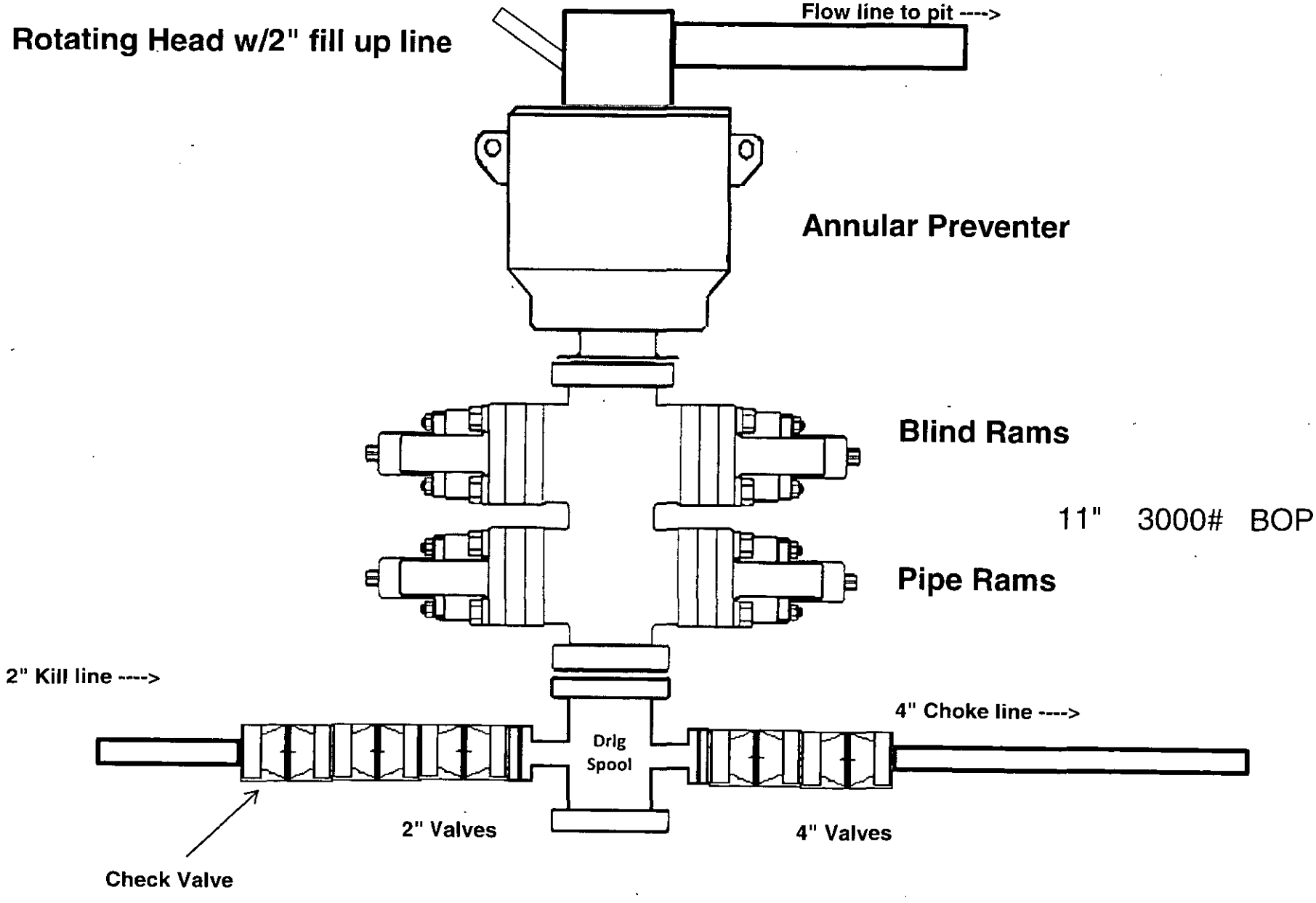
Nexus Directional Solutions

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

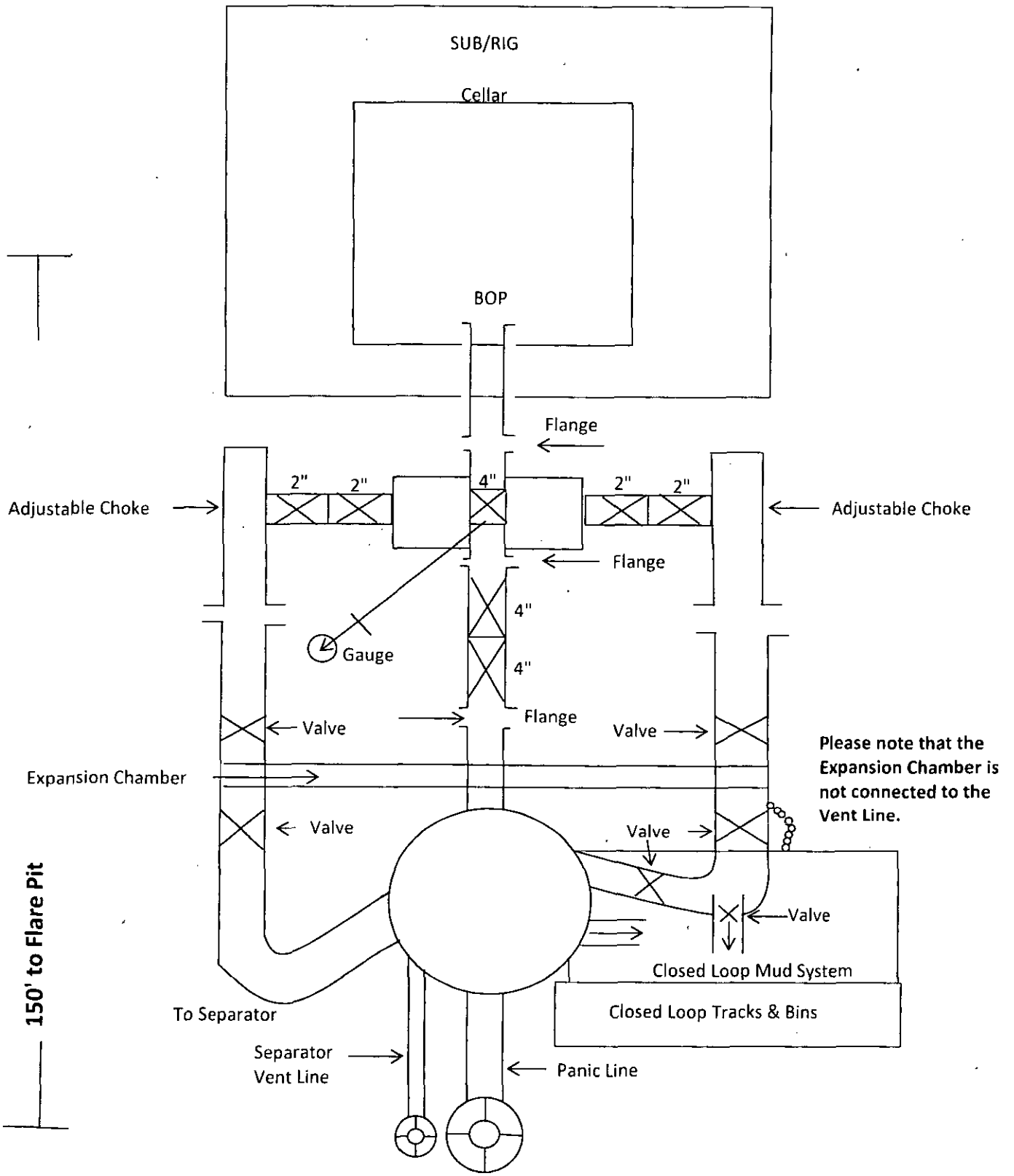
2,000 psi BOP Schematic



3,000 psi BOP Schematic

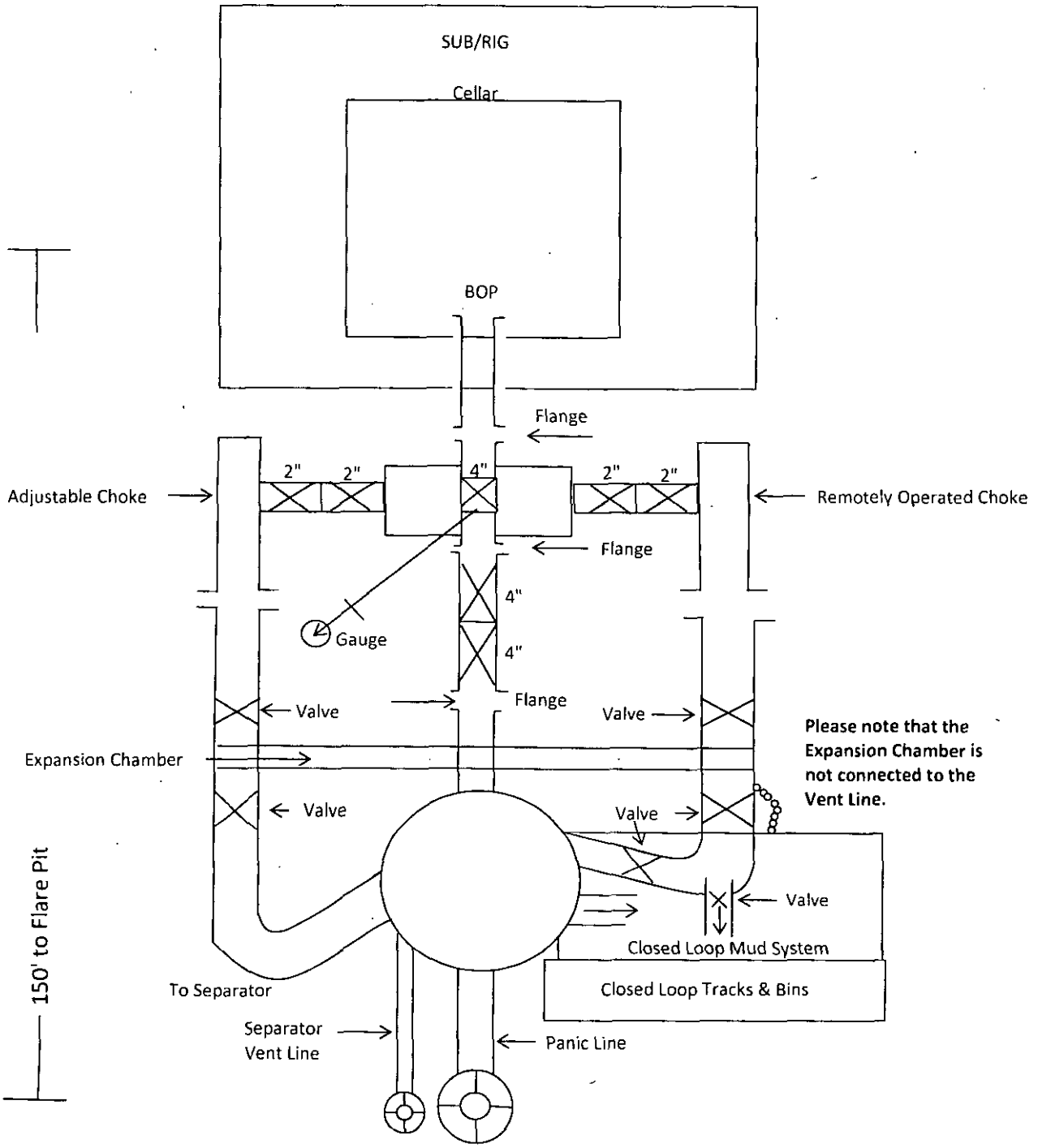


2M Choke Manifold Equipment



Please note that the Expansion Chamber is not connected to the Vent Line.

3M Choke Manifold Equipment



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 340' X 340' with cellar in center of pad

Flare Lines will be from both Choke Manifold & Separator to edge of location.

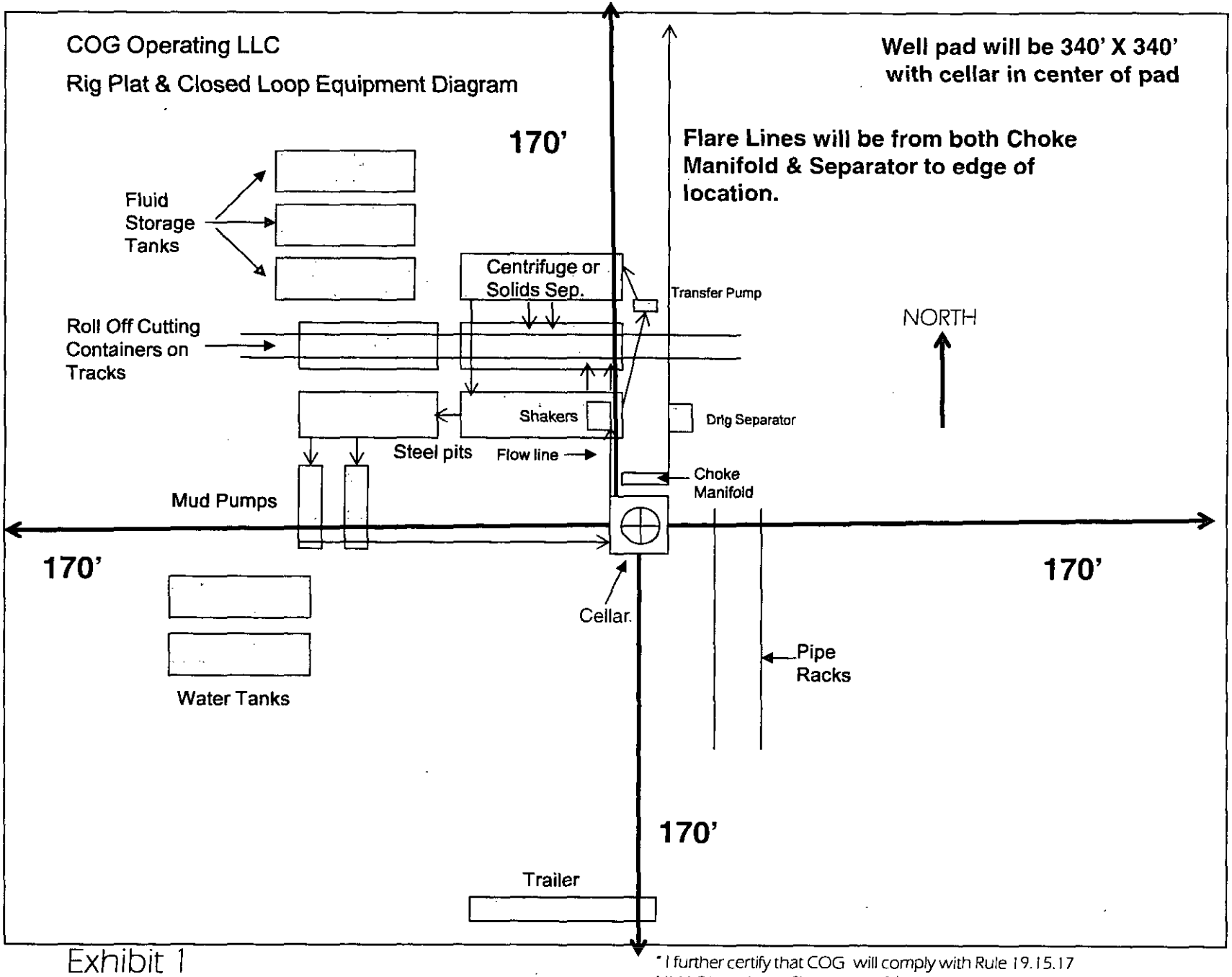
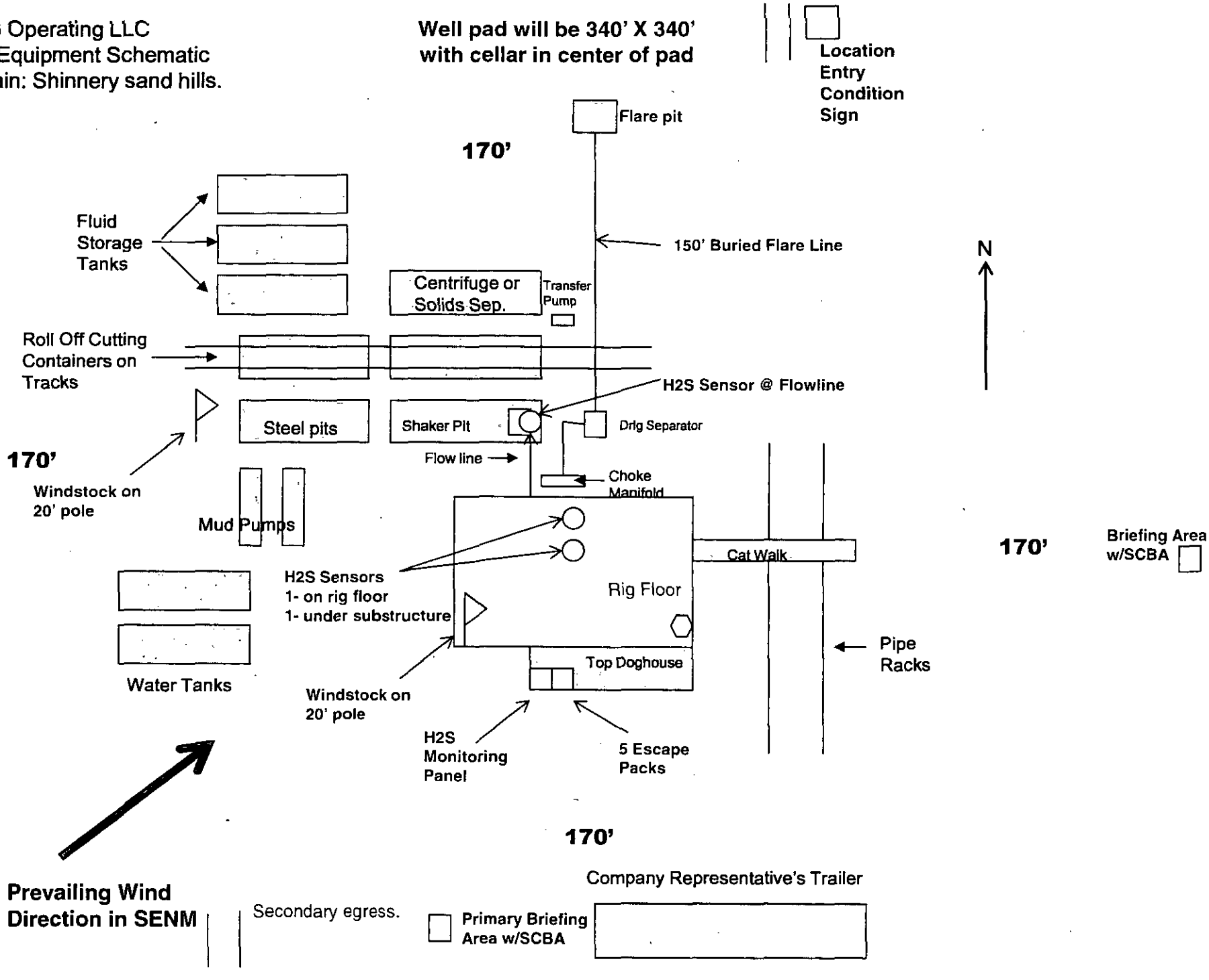


Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

COG Operating LLC
H_2S Equipment Schematic
Terrain: Shinnery sand hills.

Well pad will be 340' X 340' with cellar in center of pad



COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. 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 this well:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

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

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

W A R N I N G

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SHERYL BAKER	575-748-6940	432-934-1873
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

CONCHO

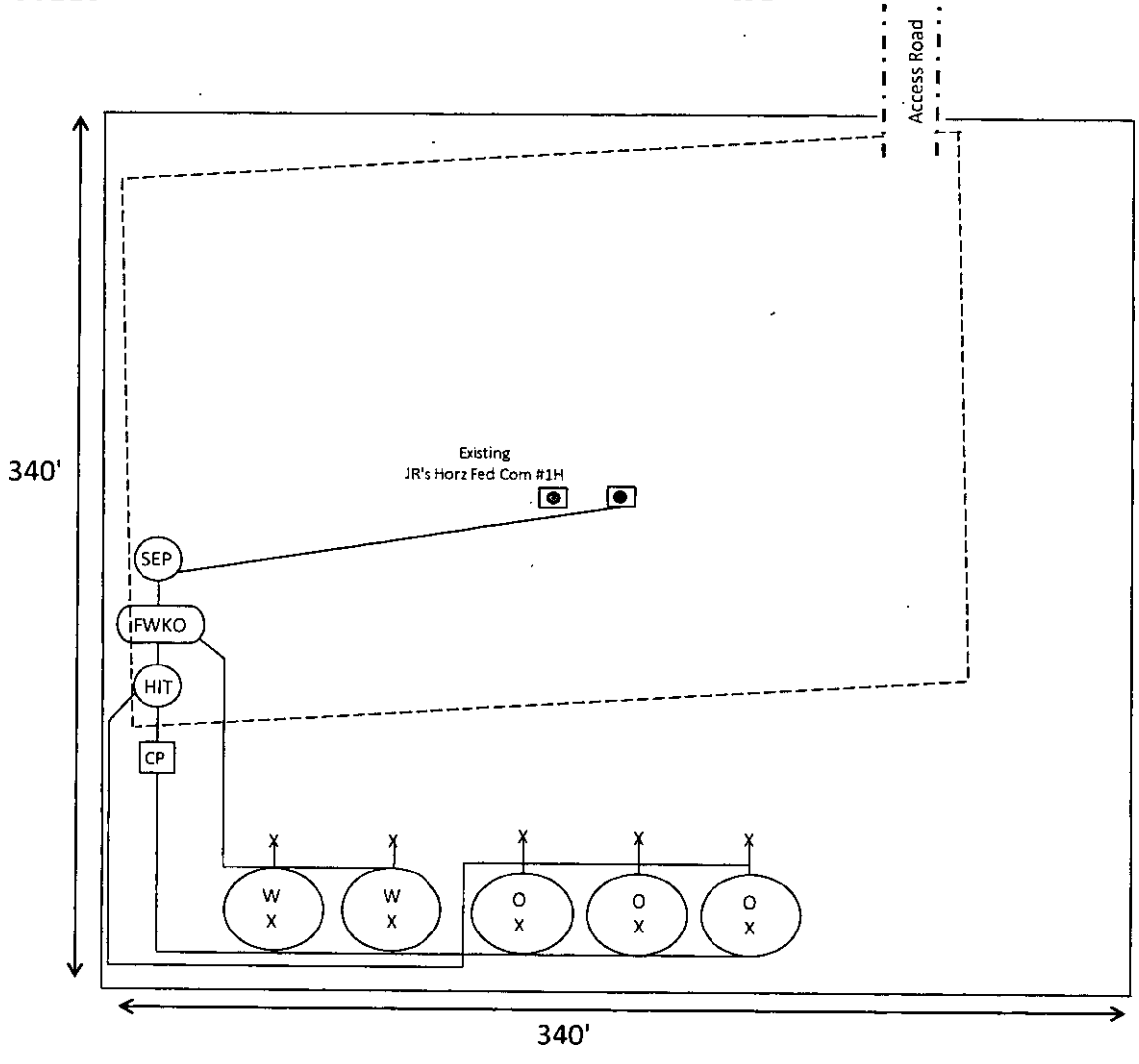
COG Operating LLC
2208 West Main
Artesia, NM 88210

Production Facility Layout

JR's Horz Federal Com #17H

Section 10 - T26S - R29E

Exhibit 3



North

Legend

o = 500 BBL Steel Oil Tank

w = 500 BBL Steel Water Tank

H = 6' x 20' Heater

Surface Use Plan of Operations

Introduction

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what was submitted in this surface use plan. If any other surface disturbance is needed after the APD is approved, a BLM approved sundry notice or right of way application will be acquired prior to any new surface disturbance.

Before any surface disturbance is created, stakes or flagging will be installed to mark boundaries of permitted areas of disturbance, including soils storage areas. As necessary, slope, grade, and other construction control stakes will be placed to ensure construction in accordance with the surface use plan. All boundary markers will be maintained in place until final construction cleanup is completed. If disturbance boundary markers are disturbed or knocked down, they will be replaced before construction proceeds.

If terms and conditions are attached to the approved APD and amend any of the proposed actions in this surface use plan, we will adhere to the terms and conditions.

1. Existing Roads

a. The existing access road route to the proposed project is depicted on Exhibit 2. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwise noted in the New or Reconstructed Access Roads section of this surface use plan..

b. The existing access road route to the proposed project does cross lease boundaries and a BLM road right-of-way will be acquired from the BLM prior to construction activities.

c. The operator will improve or maintain existing roads in a condition the same as or better than before operations begin. The operator will repair pot holes, clear ditches, repair the crown, etc. All existing structures on the entire access route such as cattleguards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use.

d. We will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or wind events. BLM written approval will be acquired before application of surfactants, binding agents, or other dust suppression chemicals on roadways.

2. New or Reconstructed Access Roads

a. No new road will be constructed for this project.

3. Location of Existing Wells

a. Exhibit 4 of the APD depicts all known wells within a one mile radius of the proposed well.

b. 1 mile well data

4. Location of Existing and/or Proposed Production Facilities

a. All permanent, lasting more than 6 months, above ground structures including but not limited to pumpjacks, storage tanks, barrels, pipeline risers, meter housing, etc. that are not subject to safety requirements will be painted a non-reflective paint color, Shale Green, from the BLM Standard Environmental Colors chart, unless another color is required in the APD Conditions of Approval.

b. If any type of production facilities are located on the well pad, they will be strategically placed to allow for maximum interim reclamation, recontouring, and revegetation of the well location.

c. A production facility is proposed to be installed on the proposed well location. Production from the well will be processed on site in the production facility. Exhibit 3 depicts the location of the production facilities as they relate to the well and well pad.

d. The proposed production facility will have a secondary containment structure that is constructed to hold the capacity of 1-1/2 times the largest tank, plus freeboard to account for percipitation, unless more stringent protective requirements are deemed necessary.

e. There is no other diagram that depicts production facilities.

If any plans change regarding the production facility or other infrastructure (pipeline, electric line, etc.), we will submit a sundry notice or right of way (if applicable) prior to installation or construction.

Electric Line(s)

a. An electric line will be applied for through a sundry notice or BLM right of way at a later date.

5. Location and Types of Water

a. The location of the water well is as follows: Contractors water well.

b. The operator will use established or constructed oil and gas roads to transport water to the well site. The operator will try to utilize the identified access route in the surface use plan.

6. Construction Material

a. Caliche from an approved Federal or State pit

7. Methods for Handling Waste

a. Drilling fluids and produced oil and water from the well during drilling and completion operations will be stored safely and disposed of properly in an NMOCD approved disposal facility.

b. Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around the well site will be collected for disposal.

c. Human waste and grey water will be properly contained and disposed of properly at a state approved disposal facility.

d. After drilling and completion operations, trash, chemicals, salts, frac sand and other waste material will be removed and disposed of properly at a state approved disposal facility.

e. The well will be drilled utilizing a closed loop system. Drill cutting will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

8. Ancillary Facilities

a. No ancillary facilities will be needed for this proposed project.

9. Well Site Layout

a. The following information is presented in the well site survey plat or diagram:

i. reasonable scale (near 1":50')

ii. well pad dimensions

iii. well pad orientation

iv. drilling rig components

v. proposed access road

vi. elevations of all points

vii. topsoil stockpile

viii. reserve pit location/dimensions if applicable

ix. other disturbances needed (flare pit, stinger, frac farm pad, etc.)

x. existing structures within the 600' x 600' archaeoligical surveyed area (pipelines, electric lines, well pads, etc

b. The proposed drilling pad was staked and surveyed by a professional surveyor. The attached survey plat of the well site depicts the drilling pad layout as staked.

c. The submitted survey plat does depict all the necessary information required by Onshore Order No. 1.

d. Topsoil Salvaging

i. Grass, forbs, and small woody vegetation, such as mesquite will be excavated as the topsoil is removed. Large woody vegetation will be stripped and stored separately and respread evenly on the site following topsoil respreading. Topsoil depth is defined as the top layer of soil that contains 80% of the roots. In areas to be heavily disturbed, the top 6 inches of soil material, will be stripped and stockpiled on the perimeter of the well location and along the perimeter of the access road to control run-on and run-off, to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil should include vegetative material. Topsoil will be clearly segregated and stored separately from subsoils. Contaminated soil will not be stockpiled, but properly treated and handled prior to topsoil salvaging.

10. Plans for Surface Reclamation

Reclamation Objectives

i. The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities.

ii. The long-term objective of final reclamation is to return the land to a condition similar to what existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, actions will be taken to ensure standards are met for site stability, visual quality, hydrological functioning, and vegetative productivity.

iii. The BLM will be notified at least 3 days prior to commencement of any reclamation procedures.

iv. If circumstances allow, interim reclamation and/or final reclamation actions will be completed no later than 6 months from when the final well on the location has been completed or plugged. We will gain written permission from the BLM if more time is needed.

v. Interim reclamation will not be performed on the well site because as per onsite on December 1, 2014 with Don Peterson (BLM); Rand French (COG) and Gerald Herrera (COG) no Topsoil and reclamation necessary. Well shares well pad with existing JR's Horz Federal Com #1H..

Interim Reclamation Procedures (If performed)

1. Within 30 days of well completion, the well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production.

2. In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

3. The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.

4. Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations including cuts & fills. To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

5. Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area.

6. The interim reclamation will be monitored periodically to ensure that vegetation has reestablished and that erosion is controlled.

Final Reclamation (well pad, buried pipelines, etc.)

1. Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment.

2. All surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

3. All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be recontoured to the contour existing prior to initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.

4. After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture, free of noxious weeds. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

5. Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.

6. All unused equipment and structures including pipelines, electric line poles, tanks, etc. that serviced the well will be removed.

7. All reclaimed areas will be monitored periodically to ensure that revegetation occurs, that the area is not redisturbed, and that erosion is controlled.

11. Surface Ownership

a. The surface ownership of the proposed project is Federal.

12. Other Information

a. A.The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.
B.There is no permanent or live water in the immediate area.
C.There are no dwellings within 2 miles of this location.
D.If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of NM, LLC., 2030 North Canal, Carlsbad, New Mexico, 88220, phone # 575-885-1352 and the results will be forwarded to your office in the near future. Otherwise, COG will be participating in the Permian Basin MOA Program.

13. Maps and Diagrams

Exhibit 2 - Existing Road
Exhibit 4 - Wells Within One Mile
Exhibit 3 - Production Facilities Diagram

Surface Use Plan
COG Operating LLC
JR's Horz Federal Com #17H
SHL: 380' FNL & 350' FWL UL D
Section 10, T26S, R29E
BHL: 330' FSL & 380' FWL UL M
Section 10, T26S, R29E
Eddy County, New Mexico

OPERATOR CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road 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 COG Operating LLC, 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 16th day of July, 2015.

Signed: Melanie J. Wilson

Printed Name: Melanie J. Wilson
Position: Regulatory Coordinator
Address: 2208 W. Main Street, Artesia, NM 88210
Telephone: (575) 748-6940
Field Representative (if not above signatory): Rand French
E-mail: mwilson@concho.com

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

Run Date: 05/07/2015

01 02-25-1920;041STAT0437;30USC181ETSEQ

Case Type 311211: O&G LSE SIMO PUBLIC LAND
Commodity 459: OIL & GAS
Case Disposition: AUTHORIZED

Total Acres	Serial Number
560.000	NMNM-- - 054291

Serial Number: NMNM-- - 054291

Name & Address			Int Rel	% Interest
COG OPERATING LLC	600 W ILLINOIS AVE	MIDLAND TX 797014882	LESSEE	95.000000000
COG OPERATING LLC	600 W ILLINOIS AVE	MIDLAND TX 797014882	OPERATING RIGHTS	0.000000000
CONCHO OIL & GAS LLC	600 W ILLINOIS AVE, ONE CONCHO CENTE	MIDLAND TX 797014882	LESSEE	5.000000000
CONCHO OIL & GAS LLC	600 W ILLINOIS AVE, ONE CONCHO CENTE	MIDLAND TX 797014882	OPERATING RIGHTS	0.000000000
ELK OIL CO	PO BOX 310	ROSWELL NM 882020310	OPERATING RIGHTS	0.000000000
GRAY JOHN R TRUST	PO BOX 1182	ARTESIA NM 88210	OPERATING RIGHTS	0.000000000
HANAGAN HUGH E	PO BOX 329	ROSWELL NM 88202	OPERATING RIGHTS	0.000000000
HANAGAN MICHAEL G	PO BOX 1737	ROSWELL NM 882021737	OPERATING RIGHTS	0.000000000
LEONARD ROBERT J	BOX 400	ROSWELL NM 882020400	OPERATING RIGHTS	0.000000000
MORGAN TRUST	67 E BAFFERT DR	NOGALES AZ 85621	OPERATING RIGHTS	0.000000000
SLASH EXPLORATION LP	PO BOX 1973	ROSWELL NM 882021973	OPERATING RIGHTS	0.000000000
YATES PETRO CORP	105 S 4TH ST	ARTESIA NM 88210	OPERATING RIGHTS	0.000000000

Serial Number: NMNM-- - 054291

Mer Twp Rng. Sec	STyp	SNr Suff	Subdivision	District/Field Office	County	Mgmt Agency
23 026OS 029OE 009	ALIQ		S2;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT
23 026OS 029OE 010	ALIQ		NE,W2SW;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- - 054291

Act Date	Code	Action	Action Remark	Pending Office
08/17/1982	387	CASE ESTABLISHED	SPAR196;	
08/18/1982	888	DRAWING HELD		
12/07/1982	111	RENTAL RECEIVED	$0;83-84	
12/08/1982	237	LEASE ISSUED		
01/01/1983	496	FUND CODE	05;145003	
01/01/1983	530	RLTY RATE - 12 1/2%		
01/01/1983	868	EFFECTIVE DATE		
06/20/1983	140	ASGN FILED	BL MATHIS/POGO	
07/13/1983	139	ASGN APPROVED	EFF 07/01/83;	
12/07/1983	111	RENTAL RECEIVED	$0;84-84	
12/10/1984	111	RENTAL RECEIVED	$0;85-85	
12/23/1985	111	RENTAL RECEIVED	$0;86-86	
12/08/1986	111	RENTAL RECEIVED	$0;87-87	
07/01/1987	974	AUTOMATED RECORD VERIF	JA/JA	
12/21/1987	111	RENTAL RECEIVED	$560.00;1YR/88-88	
12/12/1988	111	RENTAL RECEIVED	$560.00;1YR/89-89	
12/11/1989	111	RENTAL RECEIVED	$560.00;21/558689	
12/07/1990	111	RENTAL RECEIVED	$560.00;21/559063	
12/09/1991	111	RENTAL RECEIVED	$560.00;21/559201	
03/31/1992	575	APD FILED	1)POGO PRODUCING	CE
03/31/1992	575	APD FILED	POGO PRODUCING	CE
04/28/1992	576	APD APPROVED	GEHRIG FED NO 1	
04/28/1992	576	APD APPROVED	GEHRIG FED NO 2	
08/11/1992	909	BOND ACCEPTED	EFF 08/10/92;NM2056	
11/30/1992	111	RENTAL RECEIVED	$560.00;21/102373	
12/31/1992	235	EXTENDED	THRU 12/31/1994;	
02/06/1993	650	HELD BY PROD - ACTUAL		

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

Run Date: 05/07/2015

02/22/1993	140	ASGN FILED	POGO/HANAGAN
03/12/1993	932	TRF OPER RGTS FILED	HANAGAN PETRO/HANAGAN
03/30/1993	139	ASGN APPROVED	EFF 03/01/93;
03/30/1993	974	AUTOMATED RECORD VERIF	MRR/KRP
04/05/1993	974	AUTOMATED RECORD VERIF	AT
04/19/1993	963	CASE MICROFILMED/SCANNED	CNUM 561,703 JS
06/14/1993	933	TRF OPER RGTS APPROVED	EFF 04/01/93;
06/14/1993	974	AUTOMATED RECORD VERIF	ST/JCV
09/27/1993	974	AUTOMATED RECORD VERIF	AR/MV
02/06/1995	140	ASGN FILED	HANAGAN PETRO/MARBOB
02/06/1995	932	TRF OPER RGTS FILED	(1)HANAGAN/MARBOB
02/06/1995	932	TRF OPER RGTS FILED	(2)HANAGAN/MARBOB
02/06/1995	932	TRF OPER RGTS FILED	(3)HANAGAN/MARBOB
02/06/1995	932	TRF OPER RGTS FILED	(4)HANAGAN/MARBOB
03/06/1995	899	TRF OF ORR FILED	
06/15/1995	139	ASGN APPROVED	EFF 03/01/95;
06/15/1995	933	TRF OPER RGTS APPROVED	(1)EFF 03/01/95;
06/15/1995	933	TRF OPER RGTS APPROVED	(2)EFF 03/01/95;
06/15/1995	933	TRF OPER RGTS APPROVED	(3)EFF 03/01/95;
06/15/1995	933	TRF OPER RGTS APPROVED	(4)EFF 03/01/95;
06/15/1995	974	AUTOMATED RECORD VERIF	TF/TF
06/15/1995	974	AUTOMATED RECORD VERIF	TF/MV
08/16/1995	899	TRF OF ORR FILED	
10/03/1995	932	TRF OPER RGTS FILED	LEONARD TR/MARBOB
10/03/1995	932	TRF OPER RGTS FILED	MORGAN TRUST/MARBOB
01/09/1996	933	TRF OPER RGTS APPROVED	(1)EFF 11/01/95;
01/09/1996	933	TRF OPER RGTS APPROVED	(2)EFF 11/01/95;
01/09/1996	974	AUTOMATED RECORD VERIF	LR
05/17/1996	932	TRF OPER RGTS FILED	ELK/MARBOB
08/13/1996	933	TRF OPER RGTS APPROVED	EFF 06/01/96;
08/13/1996	974	AUTOMATED RECORD VERIF	ANN
07/01/1999	932	TRF OPER RGTS FILED	GRAY/PITCH ENERGY
09/20/1999	933	TRF OPER RGTS APPROVED	EFF 08/01/99;
09/20/1999	974	AUTOMATED RECORD VERIF	MV/MV
04/01/2001	621	RLTY RED-STRIPPER WELL	5.3%;/1/
06/13/2001	625	RLTY REDUCTION APPV	/1/
02/21/2003	625	RLTY REDUCTION APPV	/2/
04/18/2003	974	AUTOMATED RECORD VERIF	ANN
06/01/2003	621	RLTY RED-STRIPPER WELL	5.3%/2/
10/01/2004	621	RLTY RED-STRIPPER WELL	5.3%;/3/
10/01/2004	621	RLTY RED-STRIPPER WELL	5.3%;/4/
12/14/2004	625	RLTY REDUCTION APPV	/3/
12/14/2004	625	RLTY REDUCTION APPV	/4/
12/20/2004	974	AUTOMATED RECORD VERIF	BCO
12/23/2004	974	AUTOMATED RECORD VERIF	BCO
06/26/2008	932	TRF OPER RGTS FILED	ELK OIL/SLASH EXPLO;1
07/24/2008	933	TRF OPER RGTS APPROVED	EFF 07/01/08;
07/24/2008	974	AUTOMATED RECORD VERIF	ANN
02/01/2011	246	LEASE COMMITTED TO CA	NMNM126441;
04/19/2011	140	ASGN FILED	MARBOB EN/COG OPERA;1
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;1
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;2
06/16/2011	933	TRF OPER RGTS APPROVED	1 EFF 05/01/11;
06/16/2011	933	TRF OPER RGTS APPROVED	2 EFF 05/01/11;
06/16/2011	974	AUTOMATED RECORD VERIF	RAYO/RAYO

07/12/2011	139	ASGN APPROVED	EFF 05/01/11;
07/12/2011	974	AUTOMATED RECORD VERIF	MV
02/01/2014	246	LEASE COMMITTED TO CA	NMNM133160;
06/14/2014	658	MEMO OF 1ST PROD-ACTUAL	/5/ NMNM133160;
08/21/2014	643	PRODUCTION DETERMINATION	/5/

Serial Number: NMNM-- - 054291

Line Nr	Remarks
0002	BONDED OPERATORS/LESSEES/TRANSFEREES:
0003	06/16/2011 - COG OPERATING LLC NMB000740 INDIV

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

Run Date: 05/07/2015

01 12-22-1987;101STAT1330;30USC181 ET SE | **Total Acres** 160.000 | **Serial Number** NMNM-- - 092177

Case Type 312021: O&G LSE COMP PD -1987
Commodity 459: OIL & GAS
Case Disposition: AUTHORIZED

Serial Number: NMNM-- - 092177

Name & Address			Int Rel	% Interest
COG OPERATING LLC	600 W ILLINOIS AVE	MIDLAND TX 797014882	OPERATING RIGHTS	0.000000000
CONCHO OIL & GAS LLC	600 W ILLINOIS AVE. ONE CONCHO CENTE	MIDLAND TX 797014882	OPERATING RIGHTS	0.000000000
ELK OIL CO	PO BOX 310	ROSWELL NM 882020310	OPERATING RIGHTS	0.000000000
GRAY JOHN R TRUST	PO BOX 1182	ARTESIA NM 88210	OPERATING RIGHTS	0.000000000
HANAGAN HUGH E	PO BOX 329	ROSWELL NM 88202	OPERATING RIGHTS	0.000000000
HANAGAN MICHAEL G	PO BOX 1737	ROSWELL NM 882021737	OPERATING RIGHTS	0.000000000
HANAGAN PETROLEUM CORP	PO BOX 1737	ROSWELL CO 882021737	OPERATING RIGHTS	0.000000000
LEONARD ROBERT J	BOX 400	ROSWELL NM 882020400	OPERATING RIGHTS	0.000000000
MORGAN TRUST	67 E BAFFERT DR	NOGALES AZ 85621	OPERATING RIGHTS	0.000000000
OXY USA INC	PO BOX 27570	HOUSTON TX 772277570	OPERATING RIGHTS	0.000000000
OXY USA INC	PO BOX 27570	HOUSTON TX 772277570	LESSEE	100.000000000
OXY USA INC	5 GREENWAY PLZ #110	HOUSTON TX 770460521	OPERATING RIGHTS	0.000000000
SLASH EXPLORATION LP	PO BOX 1973	ROSWELL NM 882021973	OPERATING RIGHTS	0.000000000
YATES PETRO CORP	105 S 4TH ST	ARTESIA NM 88210	OPERATING RIGHTS	0.000000000

Serial Number: NMNM-- - 092177

Mer	Twp	Rng	Sec	STyp	SNr	Suff	Subdivision	District/Field Office	County	Mgmt Agency
23	026OS	029OE	010	ALIQ			NW;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- - 092177

Act Date	Code	Action	Action Remark	Pending Office
10/19/1993	387	CASE ESTABLISHED	9310078	
10/20/1993	191	SALE HELD		
10/20/1993	267	BID RECEIVED	$43200.00;	
10/20/1993	392	MONIES RECEIVED	$43200.00;	
11/03/1993	237	LEASE ISSUED		
11/03/1993	974	AUTOMATED RECORD VERIF	RAYO/MV	
11/22/1993	600	RECORDS NOTED		
11/23/1993	111	RENTAL RECEIVED	$240.00;21/MULTIPLE	
12/01/1993	496	FUND CODE	05;145003	
12/01/1993	530	RLTY RATE - 12 1/2%		
12/01/1993	868	EFFECTIVE DATE		
01/31/1994	963	CASE MICROFILMED/SCANNED	CNUM 570,089 PR	
02/07/1994	974	AUTOMATED RECORD VERIF	ANN	
11/07/1994	111	RENTAL RECEIVED	$240.00;21/0000000012	
11/14/1994	932	TRF OPER RGTS FILED	POGO/HANAGAN PETRO	
02/06/1995	932	TRF OPER RGTS FILED	HANAGAN H/MARBOB	
02/06/1995	932	TRF OPER RGTS FILED	HANAGAN M/MARBOB	
02/06/1995	932	TRF OPER RGTS FILED	HANAGAN PETRO/MARBOB	
02/07/1995	933	TRF OPER RGTS APPROVED	EFF 12/1/94;	
05/18/1995	933	TRF OPER RGTS APPROVED	(1)EFF 03/01/95;	
05/18/1995	933	TRF OPER RGTS APPROVED	(2)EFF 03/01/95;	
05/18/1995	933	TRF OPER RGTS APPROVED	(3)EFF 03/01/95;	
05/18/1995	974	AUTOMATED RECORD VERIF	MV/MV	
10/03/1995	932	TRF OPER RGTS FILED	LEONARD/MARBOB	
10/03/1995	932	TRF OPER RGTS FILED	MORGAN TRUST/MARBOB	
11/13/1995	084	RENTAL RECEIVED BY ONRR	$240.00;21/0000000014	
01/09/1996	933	TRF OPER RGTS APPROVED	01EFF 11/01/95;	

01/09/1996	933	TRF OPER RGTS APPROVED	EFF 11/01/95;
01/09/1996	974	AUTOMATED RECORD VERIF	LR
05/17/1996	932	TRF OPER RGTS FILED	ELK/MARBOB
08/13/1996	933	TRF OPER RGTS APPROVED	EFF 06/01/96;
08/13/1996	974	AUTOMATED RECORD VERIF	ANN
11/05/1996	084	RENTAL RECEIVED BY ONRR	$240.00;21/0000000002
11/10/1997	084	RENTAL RECEIVED BY ONRR	$240.00;21/0000000005
11/06/1998	084	RENTAL RECEIVED BY ONRR	$320.00;21/0000000007
07/01/1999	932	TRF OPER RGTS FILED	GRAY/PITCH ENERGY
09/20/1999	933	TRF OPER RGTS APPROVED	EFF 08/01/99;
09/20/1999	974	AUTOMATED RECORD VERIF	MV/MV
11/15/1999	084	RENTAL RECEIVED BY ONRR	$320.00;21/10
11/03/2000	084	RENTAL RECEIVED BY ONRR	$320.00;21/12
11/03/2000	084	RENTAL RECEIVED BY ONRR	$320.00;23/12
11/30/2003	235	EXTENDED	THRU 11/30/2005;
12/30/2003	650	HELD BY PROD - ACTUAL	/1/
02/04/2004	974	AUTOMATED RECORD VERIF	GSB
09/30/2004	643	PRODUCTION DETERMINATION	/1/
09/30/2004	658	MEMO OF 1ST PROD-ACTUAL	/1/
05/01/2008	140	ASGN FILED	POGO PRODUC/OXY USA;1
05/01/2008	932	TRF OPER RGTS FILED	POGO PRODUC/OXY USA;1
06/13/2008	139	ASGN APPROVED	EFF 06/01/08;
06/13/2008	933	TRF OPER RGTS APPROVED	EFF 06/01/08;
06/13/2008	974	AUTOMATED RECORD VERIF	LR
06/26/2008	932	TRF OPER RGTS FILED	ELK OIL/SLASH EXPLO;1
07/24/2008	933	TRF OPER RGTS APPROVED	EFF 07/01/08;
07/24/2008	974	AUTOMATED RECORD VERIF	ANN
01/08/2009	140	ASGN FILED	POGO PRODUC/OXY USA;1
01/08/2009	932	TRF OPER RGTS FILED	POGO PRODUC/OXY USA;1
03/25/2009	139	ASGN APPROVED	EFF 02/01/09;
03/25/2009	933	TRF OPER RGTS APPROVED	EFF 02/01/09;
03/25/2009	974	AUTOMATED RECORD VERIF	ANN
09/01/2010	246	LEASE COMMITTED TO CA	/2/NMNM127280;
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;1
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;2
06/16/2011	933	TRF OPER RGTS APPROVED	1 EFF 05/01/11;
06/16/2011	933	TRF OPER RGTS APPROVED	2 EFF 05/01/11;
06/16/2011	974	AUTOMATED RECORD VERIF	RAYO/RAYO

Serial Number: NMNM-- - 092177

Line Nr	Remarks
0002	BONDED OPERATORS/LESSEES/TRANSFEREES
0003	06/13/2008 - OXY USA INC - ES0136 - N/W;
0004	07/24/2008 - MARBOB ENERGY CORP - NMB000412 - S/W;
0005	03/25/2009 - OXY USA INC - ES0136 - N/W;
0006	06/16/2011 - COG OPERATING LLC NMB000740 INDIVD

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-basin	Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 01354 X-3		C	ED	2	1	3	23	26S	29E	598323	3543837	170		
C 02038		C	ED	3	2	4	26	26S	29E	599204	3541992*	200		
C 03507 POD1		C	ED	1	3	3	05	26S	29E	593064	3548313	140	78	62
C 03508 POD1		C	ED	1	3	3	05	26S	29E	593063	3548361	140	75	65
C 03605 POD1		CUB	ED	4	2	3	27	26S	29E	596990	3541983	45	0	45

Average Depth to Water: **51 feet**
Minimum Depth: **0 feet**
Maximum Depth: **78 feet**

Record Count: 5

PLSS Search:

Township: 26S **Range:** 29E

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 10 **Township:** 26S **Range:** 29E

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating, LLC**
LEASE NO.:	**NMNM-054291**
WELL NAME & NO.:	**JRs Horz Federal Com 17H**
SURFACE HOLE FOOTAGE:	**0380' FNL & 0350' FWL**
BOTTOM HOLE FOOTAGE	**0330' FSL & 0380' FWL**
LOCATION:	**Section 10, T. 26 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)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.

- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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.

Watershed

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

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.

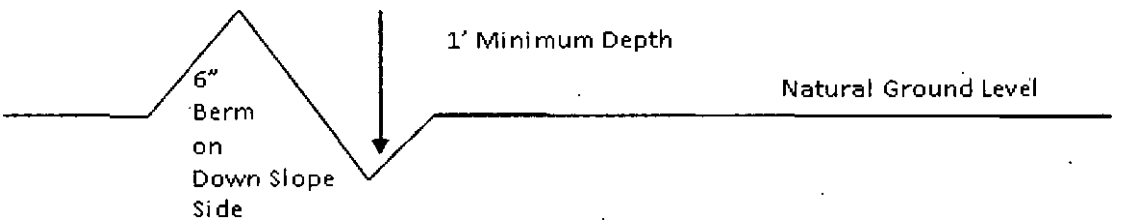
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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

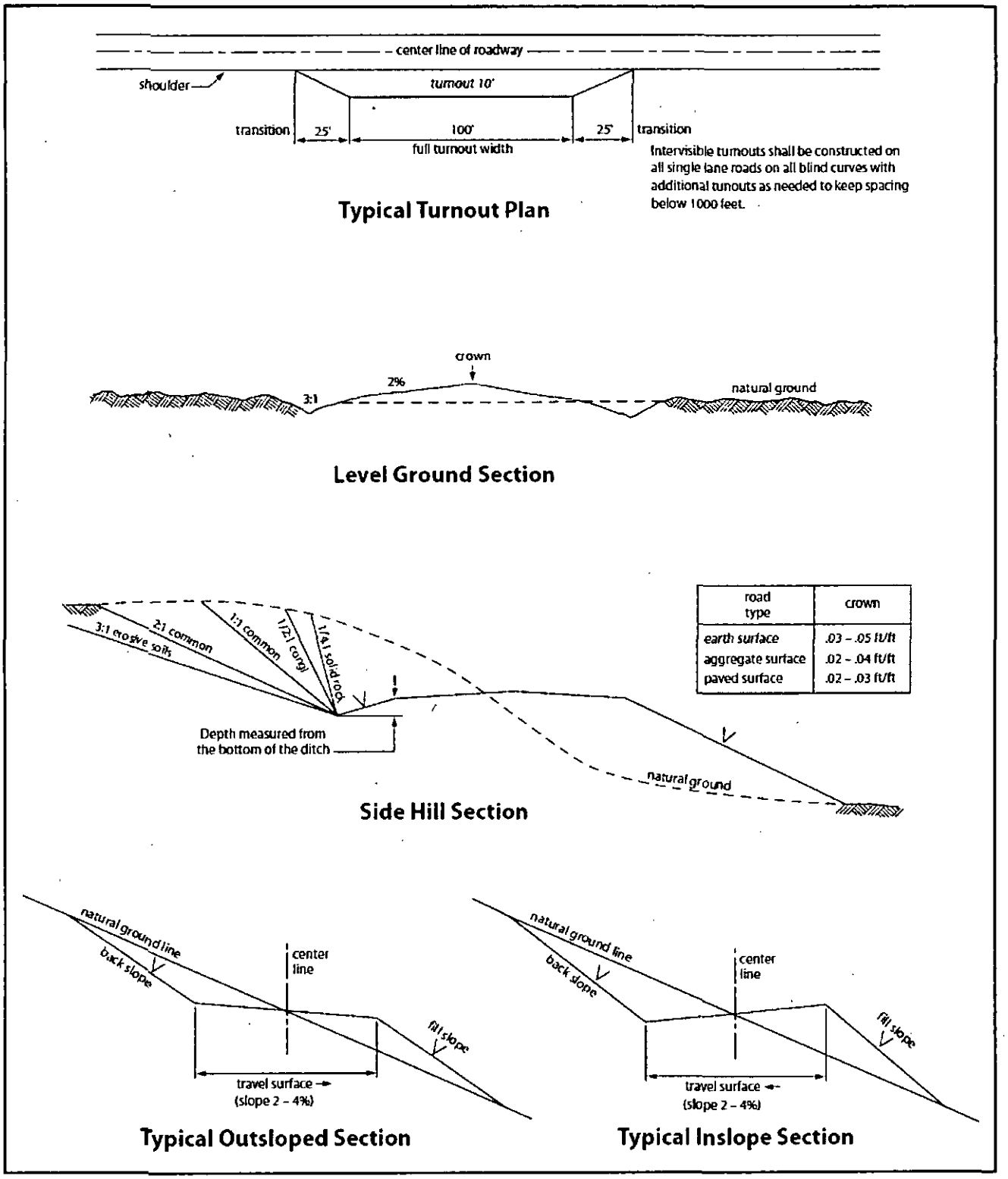


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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. 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 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.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

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

1. The **13-3/8** inch surface casing shall be set at approximately **540** 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.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **2980** feet (**Lamar Limestone**), is:

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

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

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

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
   ☒ Cement should tie-back at least 200 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 53.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

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

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

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

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

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

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

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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).

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).

Seed Mixture 3, for Shallow 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
Plains Bristlegrass (*Setaria macrostachya*)	1.0
Green Sprangletop (*Leptochloa dubia*)	2.0
Sideoats Grama (*Bouteloua curtipendula)*	5.0

*Pounds of pure live seed:

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

NMOCD CONDITION OF APPROVAL

The *New!* Gas Capture Plan (GCP) notice is posted on the NMOCD website under Announcements. The Plan became effective May 1, 2016. A copy of the GCP form is included with the NOTICE and is also in our FORMS section under Unnumbered Forms. Please review filing dates for all applicable activities currently approved or pending and submit accordingly. Failure to file a GCP may jeopardize the operator's ability to obtain C-129 approval to flare gas after the initial 60-day completion period.