OCD Artesia

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 11 2017
RECEIVED
1-11-2017

ATS-16-1000

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMNM012211
NMNM012210, NMNM0014102

6. If Indian, Allotee or Tribe Name

1a. Type of Work: [✓] DRILL [ ] REENTER

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. 317291
Gray Squirrel Federal Com #1H

2. Name of Operator
COG Operating LLC. (229137)

9. API Well No.
30-015-44036

3a. Address
2208 West Main Street
Artesia, NM 88210

3b. Phone No. *(include area code)*
575-748-6940

10. Field and Pool, or Exploratory
56405
Shugart; Bone Spring, North

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 1980' FSL & 190' FWL Unit Letter L (NWSW) Section 20-T18S-R31E
At proposed prod. Zone 1780' FSL & 330' FEL Unit Letter I (NESE) Section 20-T18S-R31E

11. Sec., T.R.M. or Blk and Survey or Area
Section 20 - T18S - R31E

14. Distance in miles and direction from nearest town or post office*
Approximately 11 miles Southwest from Maljamar

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)
190'

16. No. of acres in lease
NMNM012211: 680
NMNM012210: 80
NMNM0014102: 80

17. Spacing Unit dedicated to this well
320.04

18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.
SHL: 1820'
BHL: 530'

19. Proposed Depth
TVD: 8,733' MD: 13,291'

20. BLM/BIA Bond No. on file
NMB000740 & NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3633.1' GL

22. Approximate date work will start*
6/1/2016

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: 4-15-16

Title: Regulatory Analyst

Approved by *(Signature)*: /s/Cody Layton
Name *(Printed/Typed)*:
Date: DEC 22 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)
Carlsbad Controlled Water Basin

*(Instructions on page 2)

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

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-	56405	Shugart; Bone Spring, North

Property Code	Property Name	Well Number
317291	GRAY SQUIRREL FEDERAL COM	1H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3633.1'

Surface Location

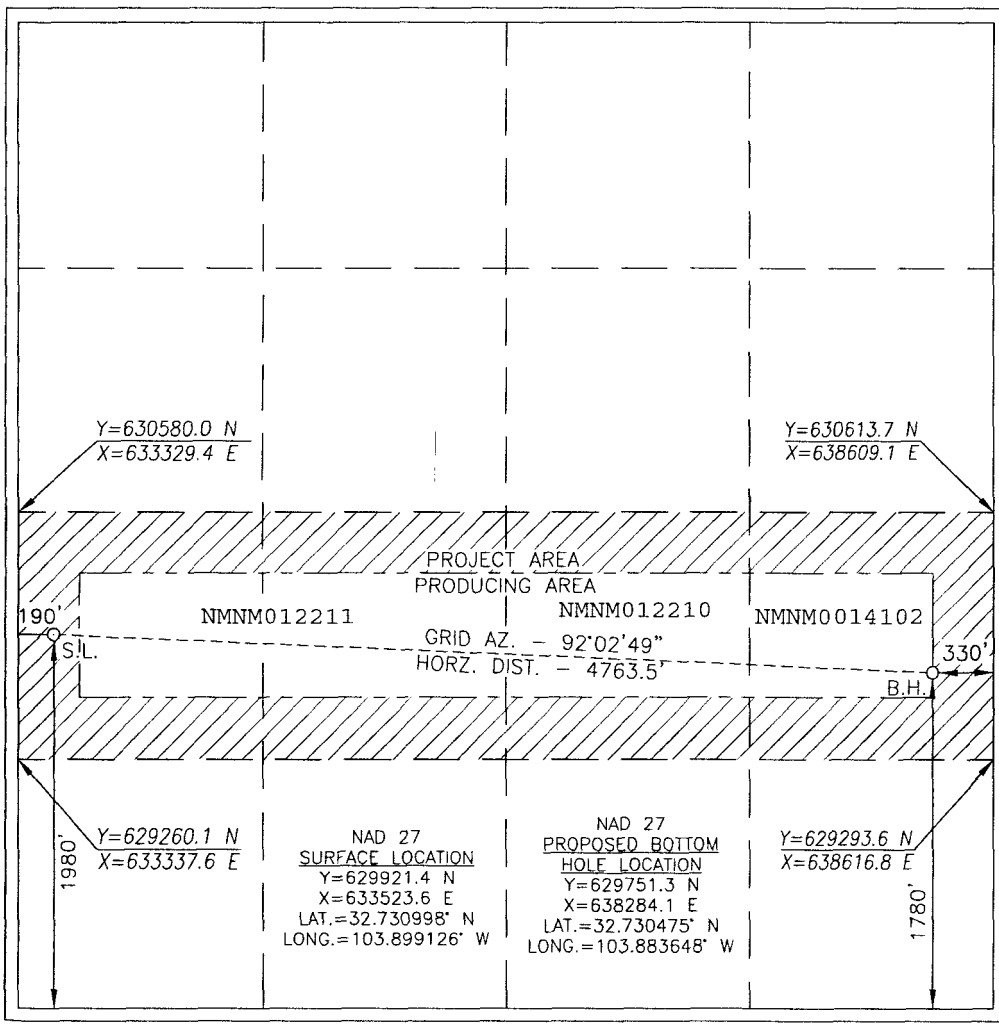
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	20	18-S	31-E		1980	SOUTH	190	WEST	EDDY

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
I	20	18-S	31-E		1780	SOUTH	330	EAST	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 4/11/16
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.

FEBRUARY 12, 2016
Date of Survey

Signature & Seal of Professional Surveyor

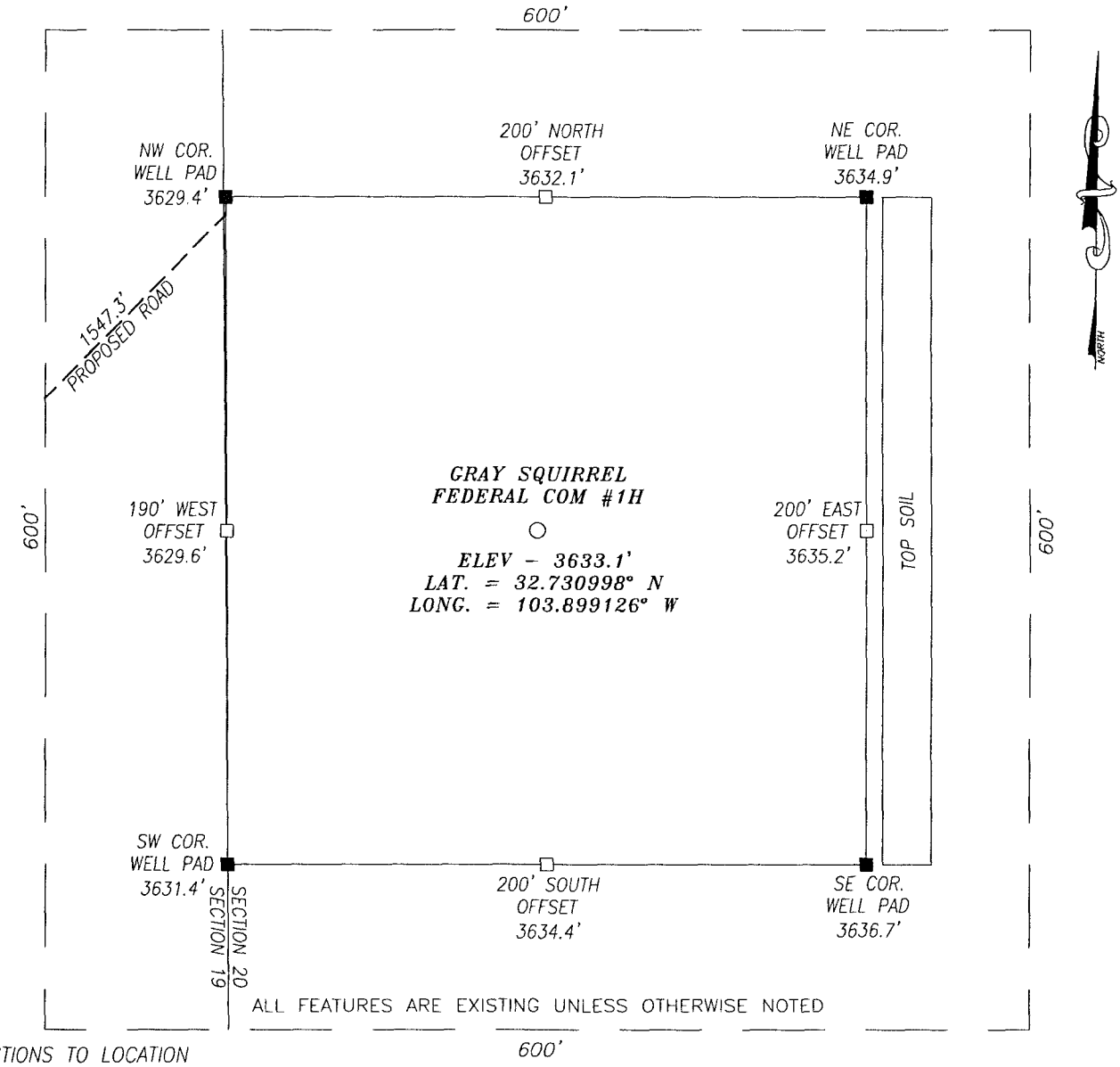
CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 2/22/16
Certificate No. CHAD HARCROW 17777

W.O. # 16-93 DRAWN BY: SP

SECTION 20, TOWNSHIP 18 SOUTH, RANGE 31 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION
FROM THE INTERSECTION OF SHUGART RD. (CR-222) & GRUBBS RD. (CR-250); GO WEST ON GRUBBS RD. FOR APPROX. 1.5 MILES; THEN TURN RIGHT (NORTH) ONTO A CALICHE RD AND GO APPROX. .7 MILES; THEN TURN LEFT (WEST) AND GO APPROX. 440 FEET; THEN TURN RIGHT (NORTH) AND GO APPROX. .4 MILES; THEN TURN RIGHT (NORTHEAST) AND GO APPROX. .2 MILES; THEN TURN LEFT (NORTH) ONTO A TWO TRACK ROAD AND GO APPROX. .2 MILES TO PROPOSED ROAD; THEN PROPOSED WELL IS APPROX. 0.3 MILES EASTNORTHEAST

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

100 0 100 200 Feet

Scale: 1"=100'

CERTIFICATION
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

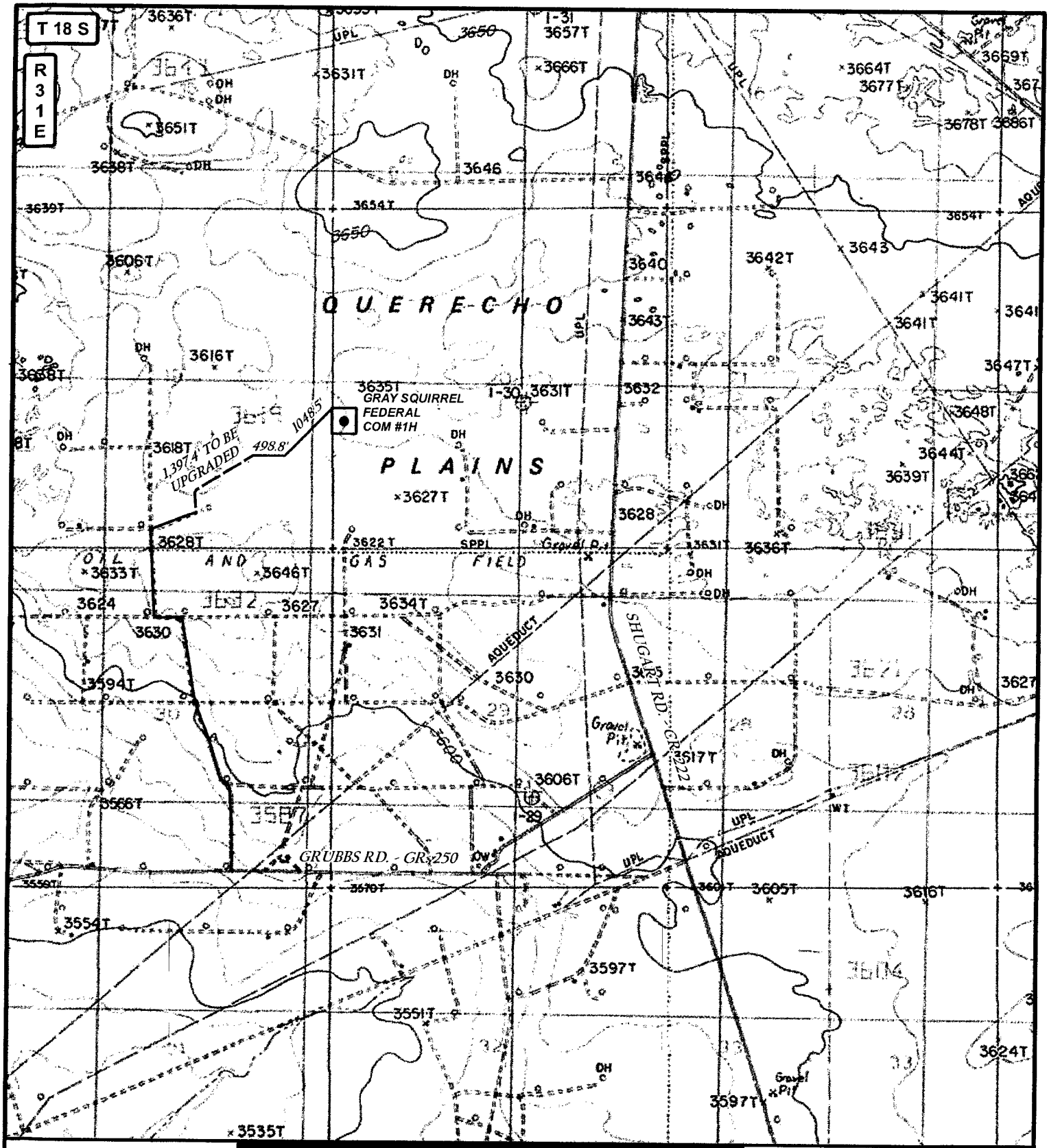
CHAD HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 3/7/16
CHAD HARCROW N.M.P.S. NO. 17777 DATE

COG OPERATING, LLC

GRAY SQUIRREL FEDERAL COM #1H WELL
LOCATED 1980 FEET FROM THE SOUTH LINE
AND 190 FEET FROM THE WEST LINE OF SECTION 20,
TOWNSHIP 18 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

SURVEY DATE: FEBRUARY 12, 2016		PAGE: 1 OF 1
DRAFTING DATE: FEBRUARY 17, 2016		
APPROVED BY: CH	DRAWN BY: SP	FILE: 16-93



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

GRAY SQUIRREL FED COM #1H

SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO	COUNTY: EDDY	1980' FSL & 190' FWL	
W.O. #16-93	LEASE: GRAY SQUIRREL 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

LOCATION MAP TOPO 02/18/2016 S.P.

N

CONCHO

COG OPERATING, LLC

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

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

GRAY SQUIRREL FED COM #1H

SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO		COUNTY: EDDY	1980' FSL & 190' FWL
W.O. #16-93	LEASE: GRAY SQUIRREL 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

N

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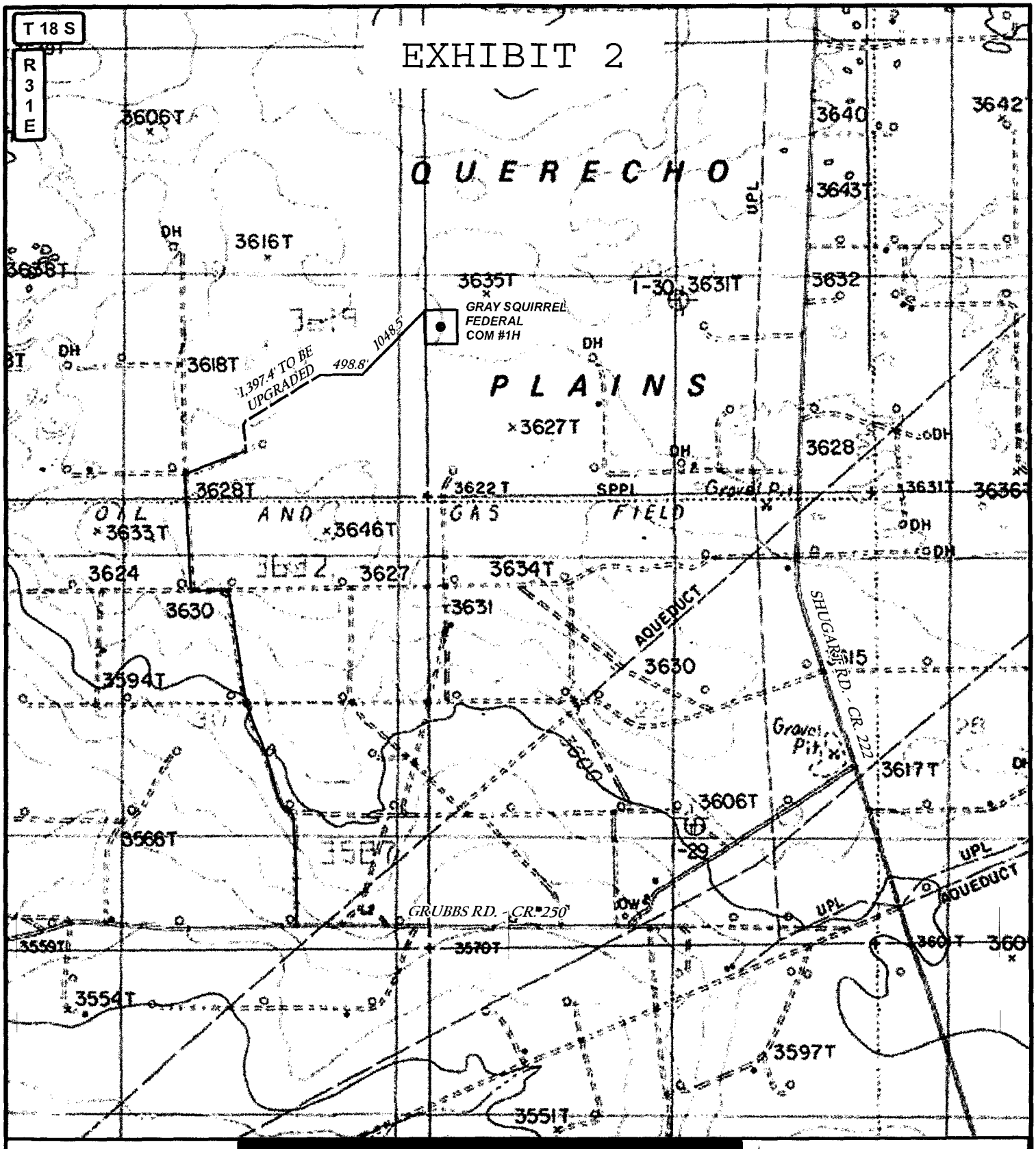

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

GRAY SQUIRREL FED COM #1H			
SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO		COUNTY: EDDY	1980' FSL & 190' FWL
W.O. #16-93	LEASE: GRAY SQUIRREL FED COM		SURVEY: N.M.P.M

0 2,500 FEET

0 0.1 0.2 0.4 Miles

1 IN = 1,500 FT

N

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LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

GRAY SQUIRREL FED COM #1H

SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO		COUNTY: EDDY	1980' FSL & 190' FWL
W.O. #16-93	LEASE: GRAY SQUIRREL FED COM		SURVEY: N.M.P.M

0 2,500 FEET

0 0.05 0.1 0.2 Miles

1 IN = 1,000 FT

N

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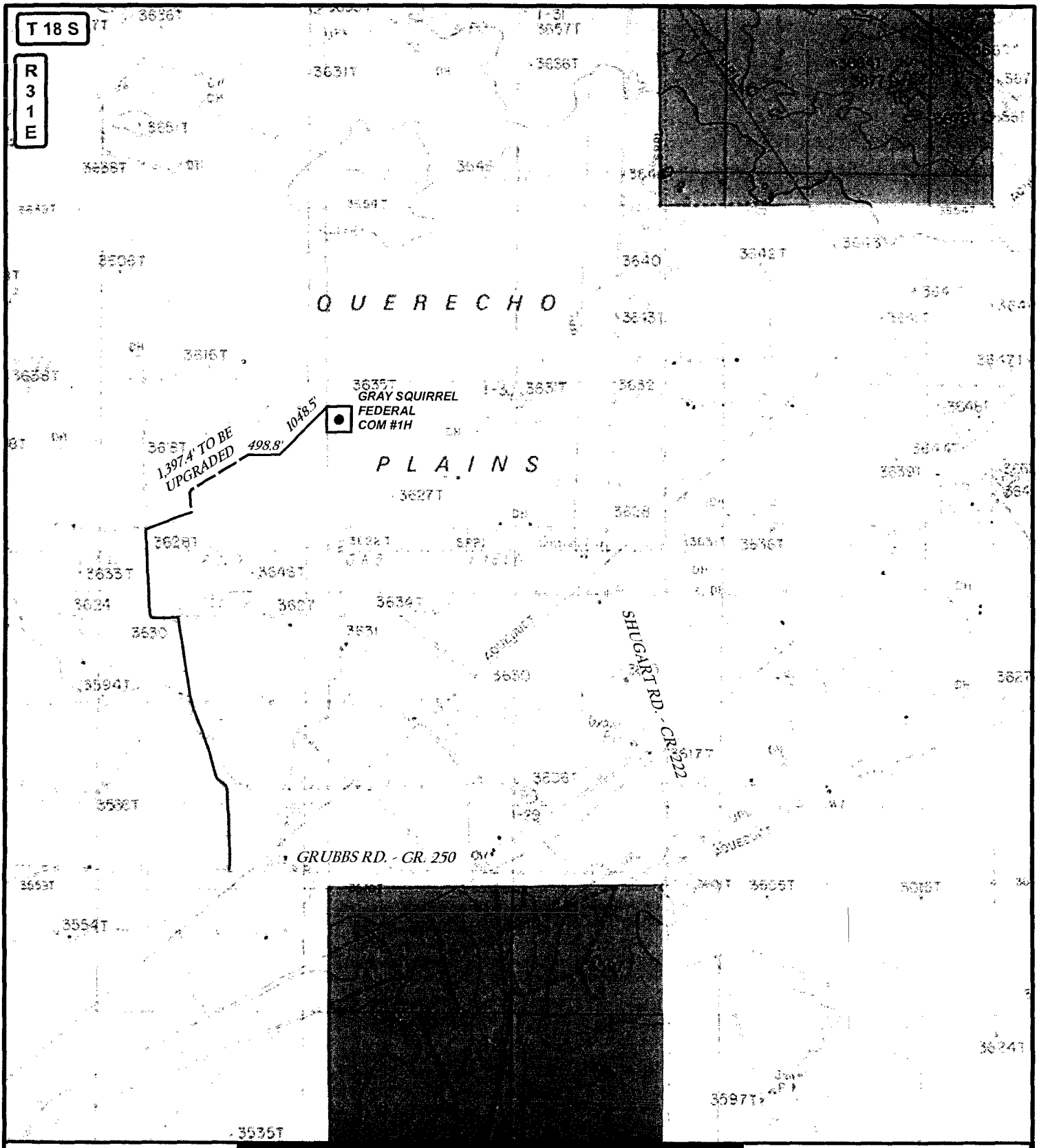

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD
- PRIVATE
- STATE OF NM

GRAY SQUIRREL FED COM #1H

SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO		COUNTY: EDDY	1980' FSL & 190' FWL
W.O. #16-93	LEASE: GRAY SQUIRREL 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

N

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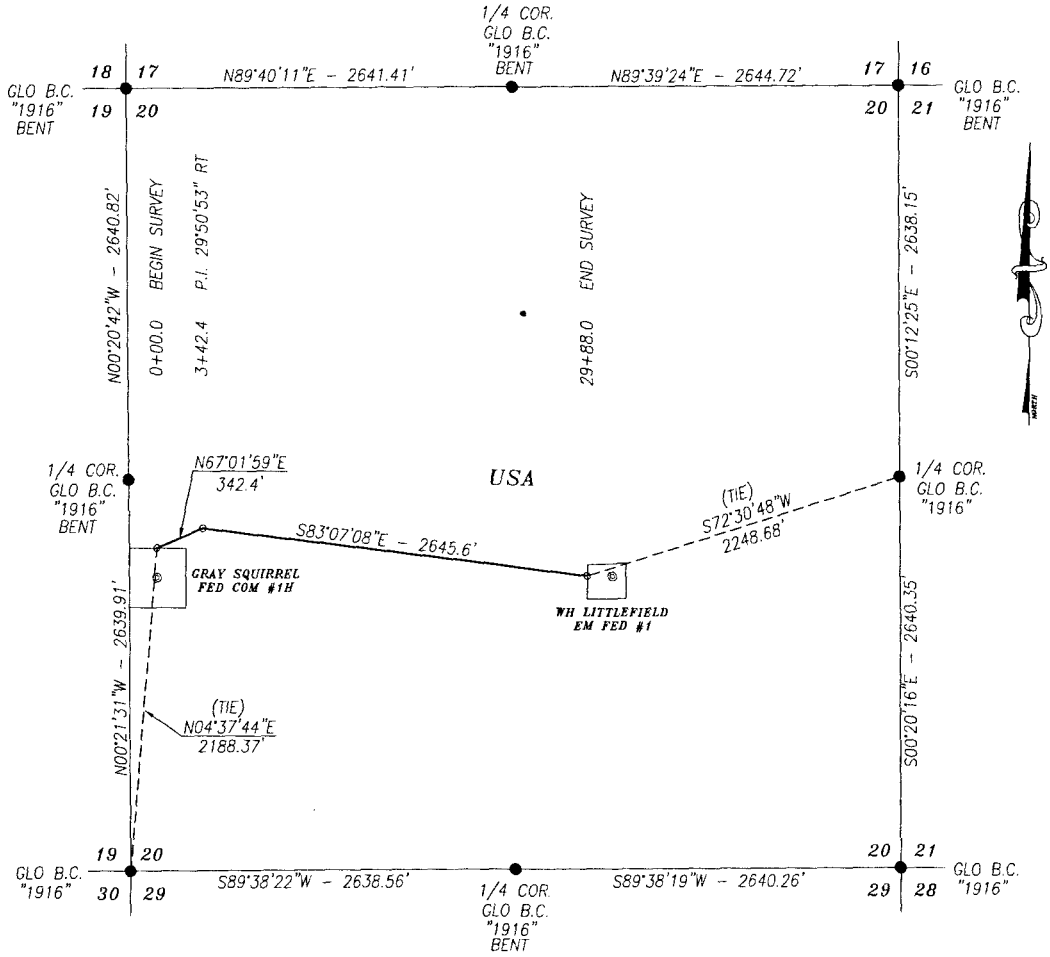
c.harcrow@harcrowsurvevina.com

FLOW LINE PLAT
COG OPERATING, LLC

4'' SURFACE POLY GAS LINE FROM THE GRAY SQUIRREL FED COM #1H
TO THE LITTLEFIELD EM FED # 1

SECTION 20, TOWNSHIP 18 SOUTH, RANGE 31 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE AND 2988.0 FEET OR 181.09 RODS OR 0.566 MILES IN LENGTH CROSSING USA LAND IN SECTION 20, TOWNSHIP 18 SOUTH, RANGE 31 EAST, EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

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

CERTIFICATION
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHAD L. HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 3/10/16
CHAD HARCROW N.M.P.S. NO. 17777 DATE

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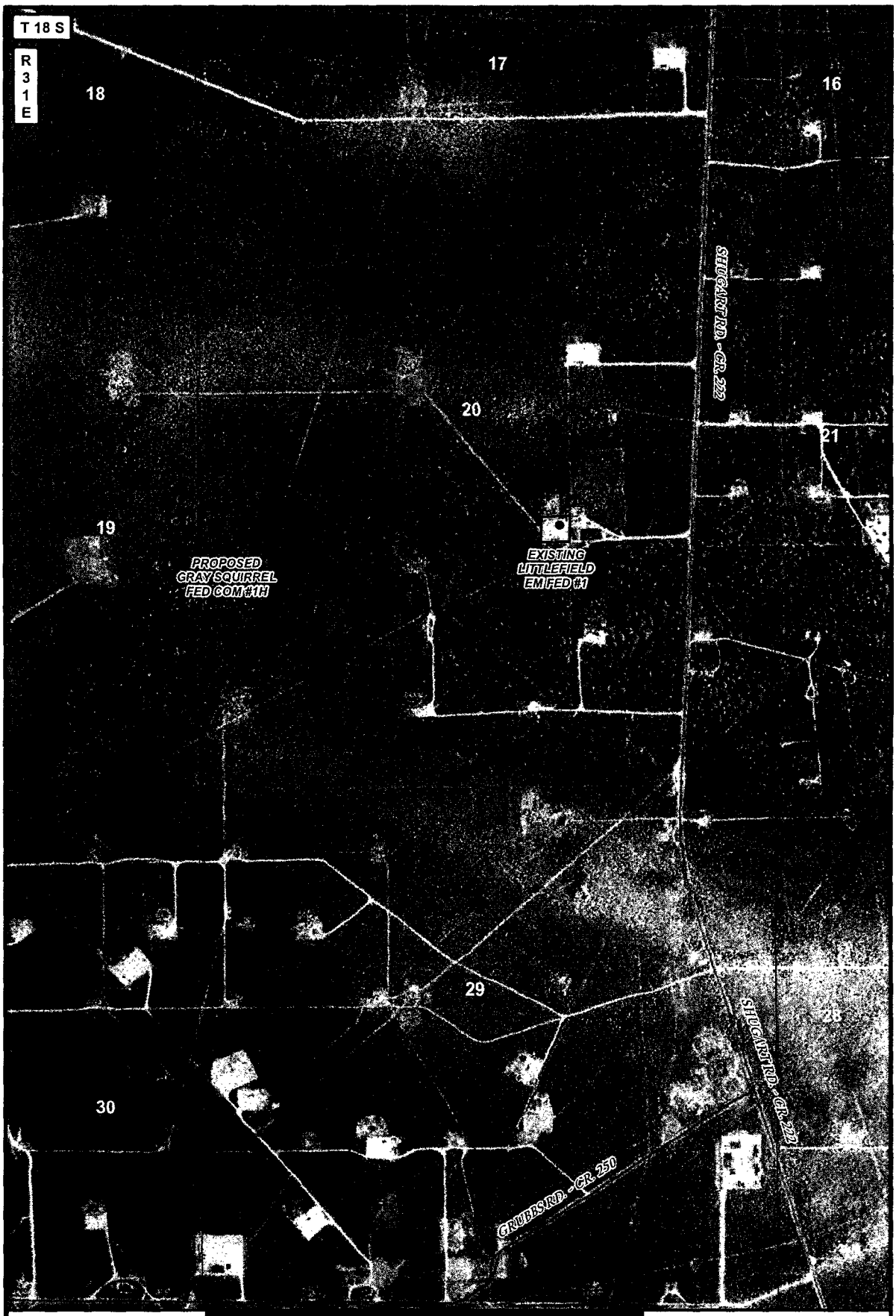
1000 0 1000 2000 FEET
SCALE: 1"=1000'

COG OPERATING, LLC

SURVEY OF A PROPOSED PIPELINE LOCATED IN SECTION 20, TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM, EDDY COUNTY, NEW MEXICO

SURVEY DATE: MARCH 8, 2016		
DRAFTING DATE: MARCH 10, 2016		PAGE 1 OF 1
APPROVED BY: CH	DRAWN BY: VD	FILE: 16-165



LEGEND

- WELL
- WELLPAD
- PIPELINE

GRAY SQUIRREL FED COM #1H GAS LINE

SECTION: 20	TOWNSHIP: 18 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-165	LEASE: GRAY SQUIRREL FED COM	

0 2,500 FEET

0 0.05 0.1 0.2 Miles

1 IN = 1,000 FT

N

CONCHO

COG OPERATING, LLC

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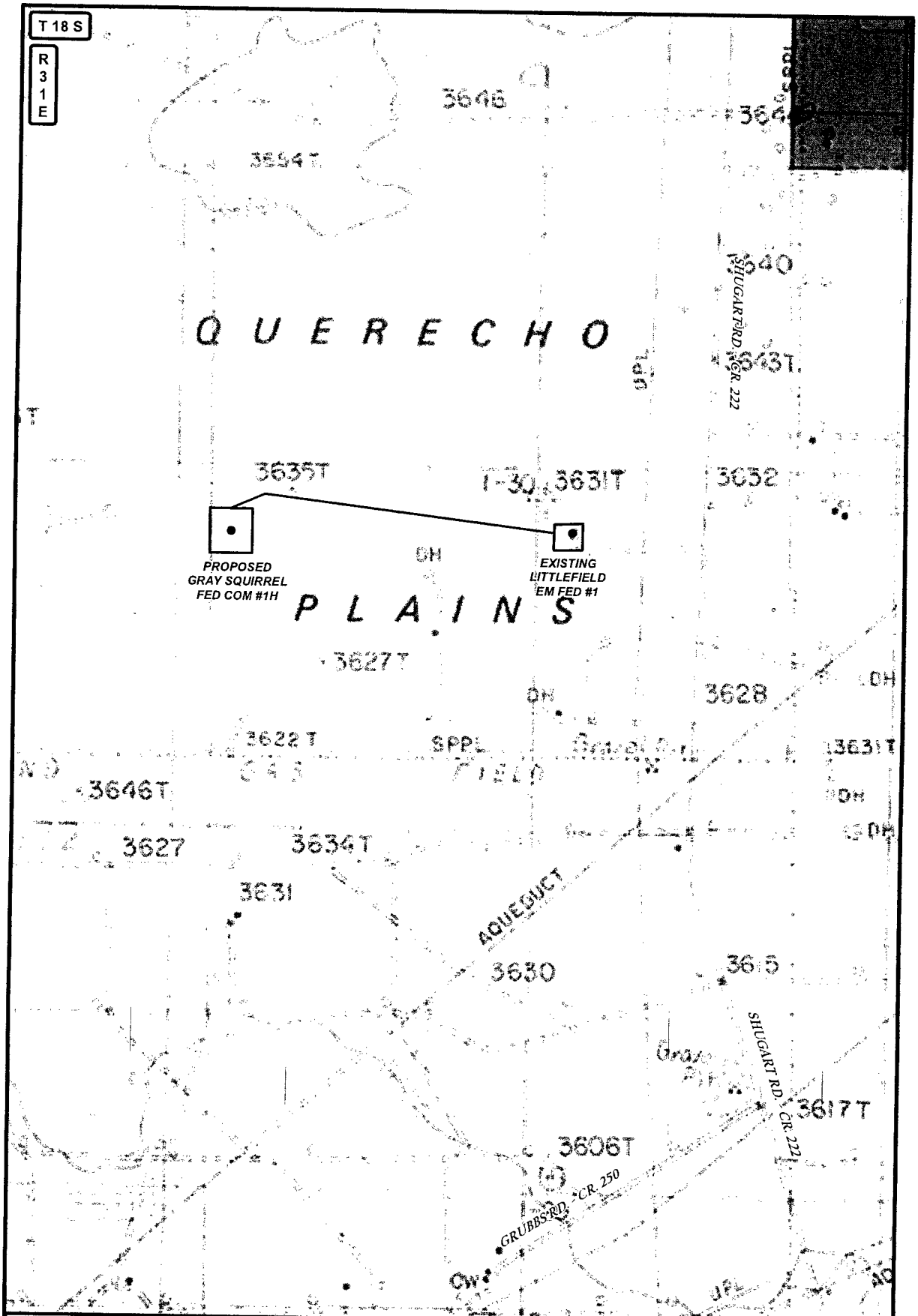

LEGEND

- WELL
- WELLPAD
- PIPELINE
- PRIVATE
- STATE OF NM

GRAY SQUIRREL FED COM #1H GAS LINE

SECTION: 20	TOWNSHIP: 18 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-165	LEASE: GRAY SQUIRREL FED COM	

0 2,500 FEET

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

N

CONCHO
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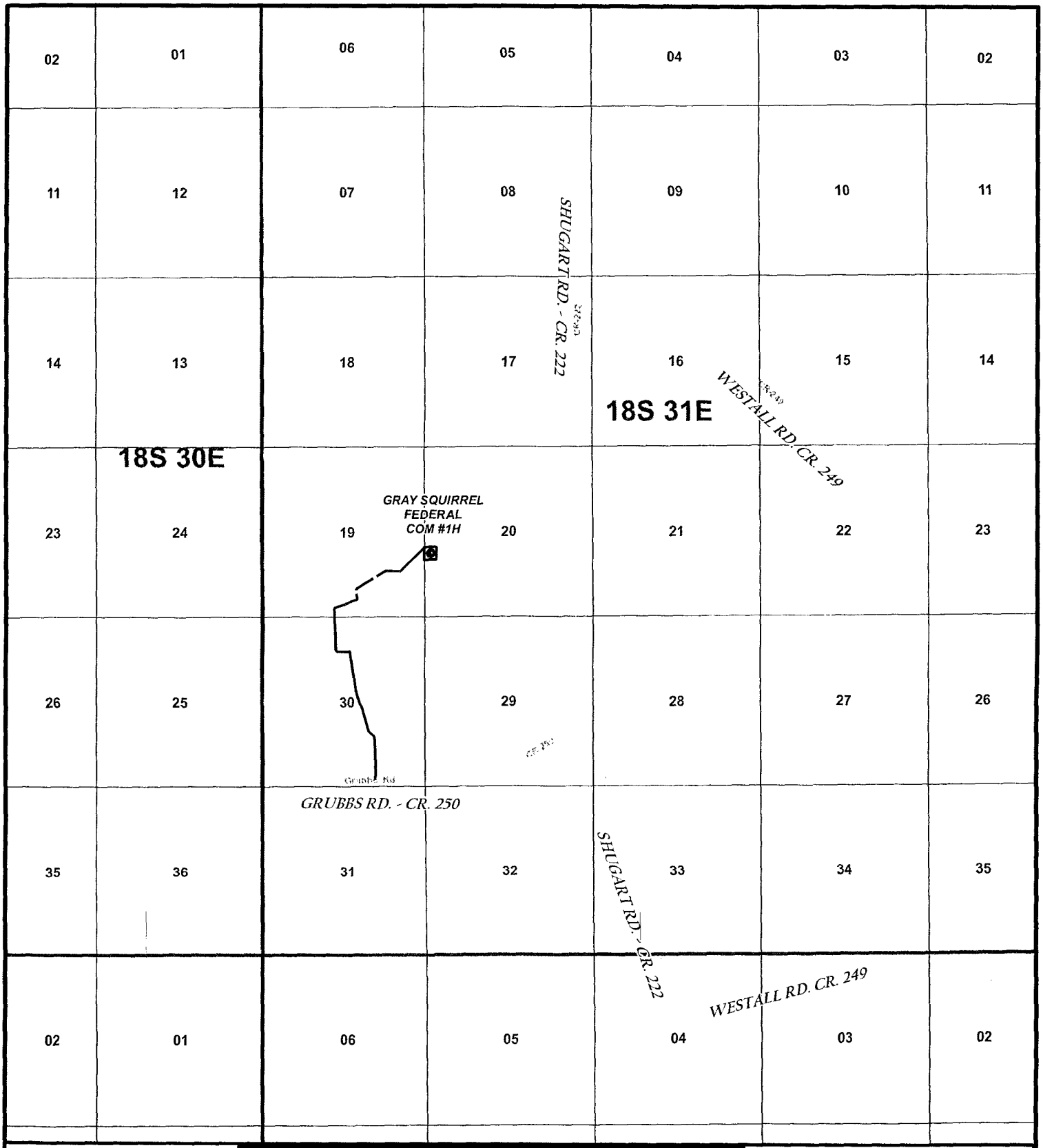

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

GRAY SQUIRREL FED COM #1H

SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO	COUNTY: EDDY		1980' FSL & 190' FWL
W.O. #16-93	LEASE: GRAY SQUIRREL FED COM		SURVEY: N.M.P.M.

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

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

N

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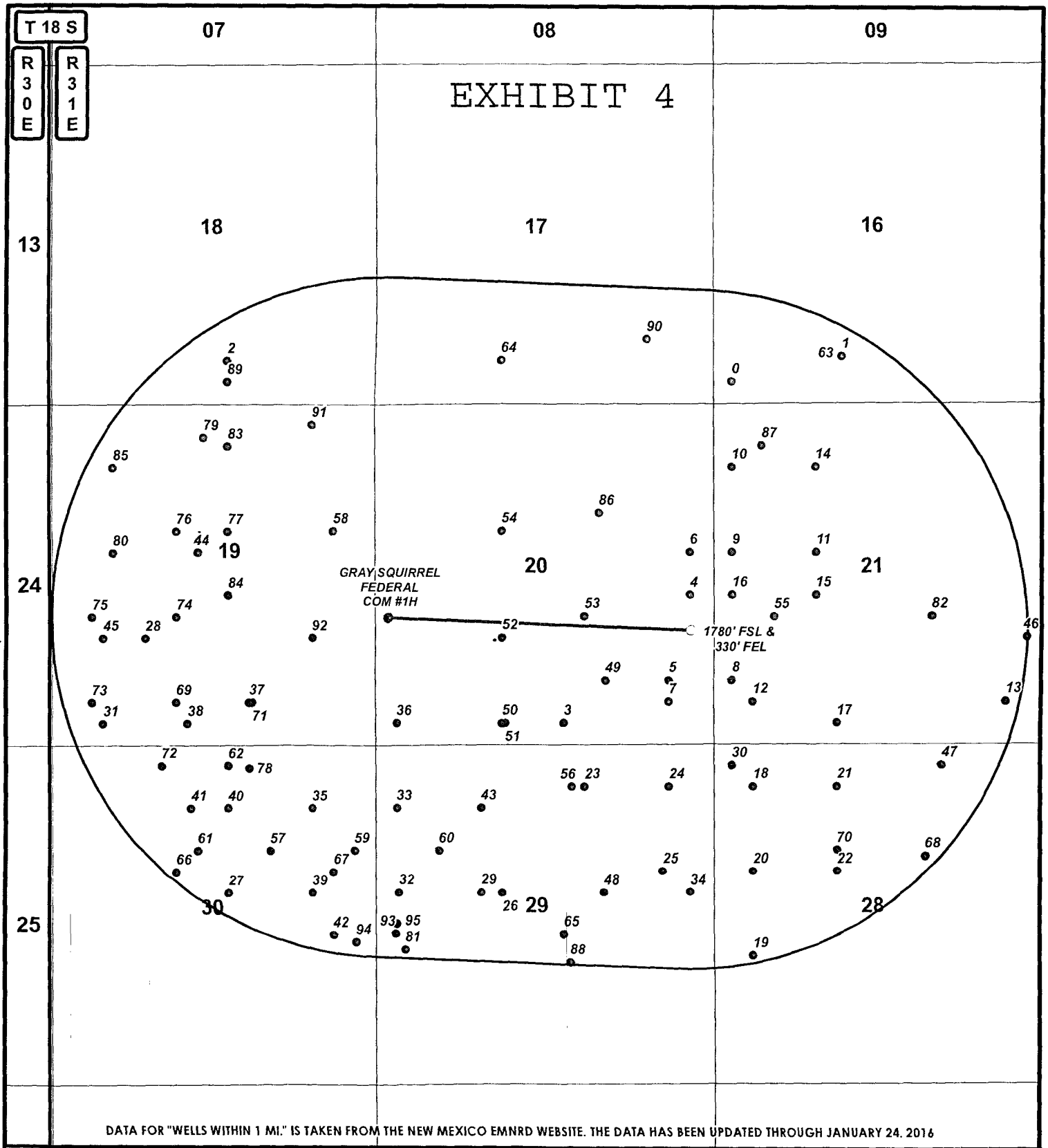
EXHIBIT 4



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH JANUARY 24, 2016

LEGEND

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

GRAY SQUIRREL FED COM #1H

SEC: 20	TWP: 18 S.	RGE: 31 E.	ELEVATION: 3633.1'
STATE: NEW MEXICO		COUNTY: EDDY	1980' FSL & 190' FWL
W.O. #16-93	LEASE: GRAY SQUIRREL 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

N

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c.harcrow@harcrowsurveying.com

GRAY SQUIRREL FEDERAL COM #1H (16-93)

FID	OPERATOR	WELL_NAME	LATITUDE	LONGITUDE	API	SECTION	TOWNSHIP	RANGE	FTG_NS	NS_CD	FTG_EW	EW_CD	TVD_DEPTH	COMPL_STAT
0	CAMERON OIL & GAS INC	MAGNOLIA STATE 002	32.741183	-103.882	3001505561	16	18.0S	31E	330	S	330	W	0	Active
1	MARATHON OIL CO	SHUGART STATE COM 001	32.742245	-103.8764	3001505564	16	18.0S	31E	714	S	2062	W	0	Plugged
2	RAY SMITH DRILLING CO	WATSON FED 001	32.742064	-103.9079	3001505582	18	18.0S	31E	660	S	2310	E	0	Plugged
3	SHENANDOAH OIL CORP	GULF FED 001	32.726657	-103.8907	3001505585	20	18.0S	31E	330	S	2310	E	0	Plugged
4	TOM R CONE	NORTH SHUGART QUEEN UNIT 008	32.732107	-103.8842	3001505586	20	18.0S	31E	2310	S	330	E	3265	TA
5	TOM R CONE	NORTH SHUGART QUEEN UNIT 009	32.728478	-103.8853	3001505587	20	18.0S	31E	990	S	660	E	3750	Active
6	TOM R CONE	NORTH SHUGART QUEEN UNIT 003	32.733925	-103.8842	3001505588	20	18.0S	31E	2310	N	330	E	0	Active
7	SUNSET PETOLEUM CORP	LITTLE B 001	32.727571	-103.8853	3001505589	20	18.0S	31E	660	S	660	E	0	Plugged
8	TOM R CONE	NORTH SHUGART QUEEN UNIT 010	32.728482	-103.882	3001505590	21	18.0S	31E	990	S	330	W	0	Active
9	TOM R CONE	NORTH SHUGART QUEEN UNIT 004	32.733927	-103.882	3001505591	21	18.0S	31E	2310	N	330	W	3710	TA
10	TOM R CONE	NORTH SHUGART QUEEN UNIT 002	32.737555	-103.882	3001505592	21	18.0S	31E	990	N	330	W	0	Active
11	TOM R CONE	NORTH SHUGART QUEEN UNIT 005	32.733931	-103.8777	3001505593	21	18.0S	31E	2310	N	1650	W	3560	Active
12	FULLERTON OIL CO	LITTLE 003	32.727576	-103.881	3001505594	21	18.0S	31E	660	S	660	W	0	Plugged
13	SWR OPERATING CO	KEOHANE ET AL C FEDERAL 001	32.72759	-103.8681	3001505595	21	18.0S	31E	660	S	660	E	0	Plugged
14	TOM R CONE	NORTH SHUGART QUEEN UNIT 001	32.73756	-103.8777	3001505597	21	18.0S	31E	990	N	1650	W	0	Active
15	TOM R CONE	NORTH SHUGART QUEEN UNIT 006	32.732115	-103.8777	3001505598	21	18.0S	31E	2310	S	1650	W	0	Active
16	TOM R CONE	NORTH SHUGART QUEEN UNIT 007	32.73211	-103.882	3001505599	21	18.0S	31E	2310	S	330	W	0	Active
17	TOM R CONE	NORTH SHUGART QUEEN UNIT 011	32.726674	-103.8766	3001505600	21	18.0S	31E	330	S	1980	W	3621	Active
18	G B SUPPES	LITTLE A 001	32.723948	-103.8809	3001505619	28	18.0S	31E	660	N	660	W	0	Plugged
19	CIMAREX ENERGY CO. OF COLORADO	KEOHANE ETAL A FEDERAL 002	32.716689	-103.8809	3001505621	28	18.0S	31E	1980	S	660	W	3682	Plugged
20	XERIC OIL & GAS CORP	KEOHANE ET AL B FEDERAL 001	32.720319	-103.8809	3001505623	28	18.0S	31E	1980	N	660	W	3650	Plugged
21	LG&S OIL COMPANY, LLC	KEOHANE B FEDERAL 002	32.723952	-103.8766	3001505624	28	18.0S	31E	660	N	1980	W	3650	Active
22	LG&S OIL COMPANY, LLC	KEOHANE B FEDERAL 003	32.720324	-103.8766	3001505625	28	18.0S	31E	1980	N	1980	W	3650	Active
23	CIMAREX ENERGY CO. OF COLORADO	SHUGART APCO A 002	32.723938	-103.8896	3001505628	29	18.0S	31E	660	N	1980	E	3729	Plugged
24	CIMAREX ENERGY CO. OF COLORADO	SHUGART APCO A 001	32.723943	-103.8853	3001505629	29	18.0S	31E	660	N	660	E	3576	Plugged
25	CIMAREX ENERGY CO. OF COLORADO	SHUGART APCO A 003	32.720314	-103.8856	3001505630	29	18.0S	31E	1980	N	760	E	4150	Plugged
26	SOUTHLAND ROYALTY CO	SHUGART (APCO) A 004	32.719397	-103.8938	3001505631	29	18.0S	31E	2310	N	1980	W	0	Plugged
27	SDX RESOURCES INC	SHUGART D 001	32.719381	-103.9078	3001505645	30	18.0S	31E	2310	N	2310	E	3829	Plugged
28	XERIC OIL & GAS CORP	KENWOOD FEDERAL 003	32.73026	-103.9121	3001510089	19	18.0S	31E	1650	S	1490	W	0	Plugged
29	MOMENTUM OPERATING CO INC	KENWOOD 003	32.719396	-103.8949	3001510095	29	18.0S	31E	2310	N	1650	W	3854	Active
30	CHEMICAL EXPRESS	TEXACO FED 002	32.724853	-103.882	3001510113	28	18.0S	31E	330	N	330	W	0	Plugged
31	XERIC OIL & GAS CORP	KENWOOD FEDERAL 002	32.726629	-103.9142	3001510126	19	18.0S	31E	330	S	834	W	0	Plugged
32	MOMENTUM OPERATING CO INC	KENWOOD 001Y	32.719391	-103.8991	3001510130	29	18.0S	31E	2310	N	360	W	3839	Active
33	MOMENTUM OPERATING CO INC	KENWOOD 002	32.723019	-103.8992	3001510133	29	18.0S	31E	990	N	330	W	3870	Active
34	V S WELCH	KENWOOD 001	32.719409	-103.8842	3001510141	29	18.0S	31E	2310	N	330	E	0	Plugged
35	SOUTHLAND ROYALTY CO	SHUGART D 008	32.723014	-103.9035	3001510171	30	18.0S	31E	990	N	990	E	0	Plugged
36	SOUTHLAND ROYALTY CO	SHUGART D 009	32.726647	-103.8992	3001510173	20	18.0S	31E	330	S	330	W	3961	Plugged
37	SOUTHLAND ROYALTY CO	KEOHANE ET AL D FED 001	32.727546	-103.9068	3001510175	19	18.0S	31E	660	S	1980	E	0	Plugged
38	XERIC OIL & GAS CORP	KENWOOD FEDERAL 001	32.726635	-103.9099	3001510192	19	18.0S	31E	330	S	2154	W	0	Plugged
39	SOUTHLAND ROYALTY CO	SHUGART D 004	32.719386	-103.9035	3001510210	30	18.0S	31E	2310	N	990	E	0	Plugged
40	MOMENTUM OPERATING CO INC	SHUGART D 005	32.723009	-103.9078	3001510224	30	18.0S	31E	990	N	2310	E	3865	Active
41	MOMENTUM OPERATING CO INC	SHUGART D 006	32.723007	-103.9097	3001510225	30	18.0S	31E	990	N	2210	W	3857	Active
42	SDX RESOURCES INC	SHUGART C 005	32.717567	-103.9024	3001510315	30	18.0S	31E	2310	S	660	E	0	Plugged
43	SOUTHLAND ROYALTY CO	KENWOOD 004	32.723024	-103.8949	3001510417	29	18.0S	31E	990	N	1650	W	0	Plugged
44	V S WELCH	SHUGART E 001	32.733898	-103.9094	3001510418	19	18.0S	31E	2310	N	2310	W	0	Plugged
45	SOUTHLAND ROYALTY CO	KENWOOD FED 004	32.730257	-103.9142	3001510464	19	18.0S	31E	1650	S	830	W	0	Plugged
46	GULF OIL CORP	KEOHANE ET AL C FEDERAL 003	32.730313	-103.867	3001520090	21	18.0S	31E	1650	S	330	E	0	Plugged
47	J M WELCH	GULF "B" 001	32.724866	-103.8713	3001520223	28	18.0S	31E	330	N	1650	E	0	Plugged
48	SOUTHLAND ROYALTY CO	SHUGART (APCO) A 005	32.719404	-103.8886	3001520329	29	18.0S	31E	2310	N	1680	E	0	Plugged
49	MOMENTUM OPERATING CO INC	GULF FEDERAL 002	32.728474	-103.8885	3001521694	20	18.0S	31E	990	S	1650	E	0	Active
50	HONEYSUCKLE EXPL CO	FEDERAL 20 001	32.726654	-103.8938	3001521695	20	18.0S	31E	330	S	1980	W	0	Plugged
51	PRIDE ENERGY COMPANY	FEDERAL 20 001Y	32.726654	-103.8936	3001521752	20	18.0S	31E	330	S	2030	W	0	Active
52	HONEYSUCKLE EXPL CO	FEDERAL 20 002	32.730282	-103.8938	3001521857	20	18.0S	31E	1650	S	1980	W	0	Plugged
53	DEVON ENERGY PRODUCTION COMPANY, LP	LITTLEFIELD EM FEDERAL 001	32.731194	-103.8896	3001521996	20	18.0S	31E	1980	S	1980	E	13165	Active
54	DEVON LOUISIANA CORPORATION	EDDY D FEDERAL 001	32.734822	-103.8938	3001522130	20	18.0S	31E	1980	N	1980	W	11795	Plugged

55	DEVON ENERGY PRODUCTION COMPANY, LP	KEOHANE ETAL C FEDERAL 001	32.731205	-103.8799	3001522131	21	18.0S	31E	1980	S	990	W	11983 Active
56	CHEVRON U S A INC	N SHUGART DEEP 001	32.723937	-103.8902	3001522151	29	18.0S	31E	660	N	2180	E	0 Plugged
57	MOMENTUM OPERATING CO INC	SHUGART D 010	32.721198	-103.9057	3001522199	30	18.0S	31E	1650	N	1650	E	3840 Active
58	GULF OIL CORP	KEOHANE ET AL FED 001	32.734813	-103.9024	3001522237	19	18.0S	31E	1980	N	660	E	0 Plugged
59	MOMENTUM OPERATING CO INC	SHUGART D 011	32.721203	-103.9014	3001522357	30	18.0S	31E	1650	N	330	E	3840 Active
60	MOMENTUM OPERATING CO INC	KENWOOD 005	32.721208	-103.897	3001522431	29	18.0S	31E	1650	N	990	W	3855 Active
61	MOMENTUM OPERATING CO INC	SHUGART D 012	32.721193	-103.9094	3001522432	30	18.0S	31E	1650	N	2310	W	3839 Active
62	MOMENTUM OPERATING CO INC	SHUGART D 013	32.724823	-103.9078	3001522436	30	18.0S	31E	330	N	2310	E	3850 Active
63	MARATHON OIL CO	SHUGART A ST COM 001	32.742245	-103.8764	3001522756	16	18.0S	31E	714	S	2062	W	0 Plugged
64	EOG RESOURCES INC	CANADIAN KENWOOD FEDERAL 001	32.742078	-103.8938	3001523069	17	18.0S	31E	660	S	1980	W	0 Plugged
65	CIMAREX ENERGY CO. OF COLORADO	SHUGART A 010	32.717584	-103.8906	3001526666	29	18.0S	31E	2310	S	2310	E	4010 Plugged
66	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 30 FEDERAL 001	32.720284	-103.9105	3001529166	30	18.0S	31E	1980	N	1980	W	12250 Active
67	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 30 FEDERAL 010	32.720294	-103.9024	3001529487	30	18.0S	31E	1980	N	660	E	12250 Active
68	DEVON ENERGY PRODUCTION COMPANY, LP	SHUGART 28 FEDERAL 001	32.720962	-103.8721	3001530137	28	18.0S	31E	1750	N	1900	E	11990 Active
69	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 001	32.727541	-103.9105	3001530149	19	18.0S	31E	660	S	1980	W	10275 Active
70	DEVON ENERGY PRODUCTION COMPANY, LP	SHUGART 28 FEDERAL 002	32.721231	-103.8766	3001530363	28	18.0S	31E	1650	N	1980	W	12050 Active
71	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 002	32.727546	-103.9066	3001530501	19	18.0S	31E	660	S	1930	E	12130 Active
72	MERIT ENERGY COMPANY, LLC	SHUGART WEST 30C FEDERAL 001	32.724819	-103.9112	3001530533	30	18.0S	31E	330	N	1750	W	8450 Active
73	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 004	32.727535	-103.9148	3001530647	19	18.0S	31E	660	S	660	W	8500 Active
74	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 003	32.731169	-103.9105	3001530648	19	18.0S	31E	1980	S	1980	W	9850 Active
75	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 007	32.731163	-103.9148	3001530686	19	18.0S	31E	1980	S	660	W	8404 Active
76	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 005	32.734804	-103.9105	3001530688	19	18.0S	31E	1980	N	1980	W	8500 Active
77	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 006	32.734807	-103.9078	3001530689	19	18.0S	31E	1980	N	2310	E	8350 Active
78	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 30 FEDERAL 003	32.724742	-103.9067	3001530776	30	18.0S	31E	360	N	1980	E	8420 Active
79	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 19 FEDERAL 002	32.738806	-103.9091	3001530780	19	18.0S	31E	510	N	2310	W	8346 Active
80	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 19 FEDERAL 001	32.733893	-103.9137	3001530797	19	18.0S	31E	2310	N	990	W	8409 Active
81	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 29 FEDERAL 002	32.71694	-103.8988	3001530798	29	18.0S	31E	2080	S	460	W	5350 Active
82	DEVON LOUISIANA CORPORATION	SHUGART 21 FEDERAL 001	32.731214	-103.8718	3001530906	21	18.0S	31E	1980	S	1800	E	12100 Plugged
83	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 008	32.738435	-103.9078	3001530923	19	18.0S	31E	660	N	2310	E	0 Active
84	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 009	32.732079	-103.9078	3001530924	19	18.0S	31E	2310	S	2310	E	8400 Active
85	MERIT ENERGY COMPANY, LLC	SHUGART WEST 19 FEDERAL 010	32.737521	-103.9137	3001530946	19	18.0S	31E	990	N	990	W	8360 Active
86	DEVON ENERGY PRODUCTION COMPANY, LP	SHUGART 20 FEDERAL 001	32.735597	-103.8888	3001530982	20	18.0S	31E	1700	N	1750	E	11850 Active
87	DEVON ENERGY PRODUCTION COMPANY, LP	SHUGART 21 FEDERAL 002	32.738464	-103.8805	3001531013	21	18.0S	31E	660	N	800	W	0
88	DEVON ENERGY PRODUCTION COMPANY, LP	WEST SHUGART 29 FEDERAL 005	32.716402	-103.8903	3001531221	29	18.0S	31E	1880	S	2210	E	5300 Plugged
89	MEWBOURNE OIL CO	SHUGART 18 FEDERAL 002	32.741157	-103.9079	3001531407	18	18.0S	31E	330	S	2310	E	8296 Active
90	CIMAREX ENERGY CO. OF COLORADO	NORTH SHUGART FEDERAL 002	32.742993	-103.8864	3001531459	17	18.0S	31E	990	S	990	E	11919 Plugged
91	KCS RESOURCES LLC	SHUGART WEST 19 FEDERAL 011	32.739347	-103.9035	3001531546	19	18.0S	31E	330	N	990	E	8278 Plugged
92	KCS RESOURCES LLC	SHUGART WEST 19 FEDERAL 012	32.730271	-103.9035	3001531634	19	18.0S	31E	1650	S	990	E	8400 Plugged
93	DEVON ENERGY PRODUCTION COMPANY, LP	SHAULA 30 FEDERAL COM 003H	32.717624	-103.8993	3001541553	29	18.0S	31E	2310	S	275	W	8782 New (Not drilled or compl)
94	COG OPERATING LLC	FLYING SQUIRREL FEDERAL 001H	32.717262	-103.9013	3001542608	30	18.0S	31E	2179	S	342	E	0 New (Not drilled or compl)
95	DEVON ENERGY PRODUCTION COMPANY, LP	SHAULA 30 FEDERAL COM 007H	32.718037	-103.8992	3001542915	29	18.0S	31E	2460	S	295	W	0 New (Not drilled or compl)

COG Operating LLC, Gray Squirrel Federal Com #1H

1. Geologic Formations

TVD of target	8733'	Pilot hole depth	NA
MD at TD:	13291'	Deepest expected fresh water:	300'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	501'	Water	
Top of Salt	573'	Salt	
Yates	2069'		
Delaware Group(7 Rivers)	2431'	Oil/Gas	
Bone Spring	5956'	Oil/Gas	
2nd Bone Spring Sand	8379'	Target Zone	
3rd BSS	9159'	Oil/Gas	
Wolfcamp	9474'	Oil/Gas	

2. Casing Program → See COA

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0'	~~525~~ 580	13.375"	54.5	J55	STC	4.60	1.63	17.96
12.25"	0'	2500'	9.625"	36	J55	BTC	1.20	2.23	5.64
8.75"	0'	13291	5-1/2"	17	P110	LTC	1.65	1.25	3.00
				BLM Minimum Safety Factor			1.125	1.00	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
- BLM standard formulas where used on all SF calculations.
- Used 9 PPG for pore pressure calculations

COG Operating LLC, Gray Squirrel Federal Com #1H

	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).	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?	

2. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	300	13.5	1.7	9.4	10-13	Lead: 4% gel w/ 2% CaCl2
	225	14.8	1.34	6.4	7	Tail: Class C + 2% CaCl2
Inter	365	13.5	1.7	9.4	10	Lead: Class C + 4% Gel + 1% CaCl2
	200	14.8	1.34	6.6	5	Tail: Class C + 1% CaCl2
Prod.	1275	11.9	2.5	14.3	50	Lead: HES Econochem H. 50:50 poz w/ 10% gel, 8lbm salt, 5 lbm kol-seal, 0.5% Halad -322, 0.25 lbm D-air 500
	1225	14.40	1.23	5.7	20	Tail:50:50:2 H blend (FR, Retarder, FL adds as necessary)

Low Cement See COA

COG Operating LLC, Gray Squirrel Federal Com #1H

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	75%
Intermediate	0'	108%
Production	2000' (500' into INT)	102%

Pilot hole depth: NA
KOP: 8255'

4. Pressure Control Equipment - See COA

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"	13 5/8"	3M	Annular	x	50% testing pressure
			Blind Ram	X	3M
			Pipe Ram	X	
			Double Ram		
			Other *		

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.

Y	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.
	Are anchors required by manufacturer? No.

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 – 9.0	28-34	N/C
Surf csg	Int shoe	Saturated Brine	10.0 - 10.2	28-34	N/C
Int shoe	TD	Cut Brine	8.6 - 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?	Pason/ PVT/ Visual monitoring

6. Logging and Testing Procedures – See COA

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

Additional logs planned		Interval

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4060 psi – 2nd Bone Spring Sand (8733' TVD) 9 ppg equiv
Abnormal Temperature	No

Mitigation measure for abnormal conditions.

- Lost circulation material/sweeps/mud scavengers.
- Maintain stock of LCM and weighting materials onsite.

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.	
	H2S is present
	H2S Plan attached

8. Other facets of operation

Is this a walking operation? No.
Will be pre-setting casing? No.

Attachments

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

COG Operating LLC

Eddy County, NM (NAD 27 NME)
Sec. 20, T18S, R31E
Gray Squirrel Federal Com #1H

Wellbore #1

Plan: Plan#1

Standard Survey Report

03 March, 2016

IDS
Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Well:	Gray Squirrel Federal Com #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Single User Db

Project Eddy County, NM (NAD 27 NME)

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 Sec. 20, T18S, R31E

Site Position:		**Northing:**	629,921.40 usft	**Latitude:**	32° 43' 51.591 N
From:	Map	**Easting:**	633,523.60 usft	**Longitude:**	103° 53' 56.855 W
Position Uncertainty:	5.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.23 °

Well Gray Squirrel Federal Com #1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	629,921.40 usft	**Latitude:**	32° 43' 51.591 N
	+E/-W	0.0 usft	**Easting:**	633,523.60 usft	**Longitude:**	103° 53' 56.855 W
Position Uncertainty		5.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	3,633.1 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/3/2016	7.19	60.48	48,412

Design Plan#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	92.05	

Survey Tool Program **Date** 3/3/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	8,249.0	Plan#1 (Wellbore #1)	VESSI_GYROFLEX	VESSI Gyroflex Gyro
8,249.0	13,291.7	Plan#1 (Wellbore #1)	MWD	MWD - Standard

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
504.1	0.00	0.00	504.1	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
576.1	0.00	0.00	576.1	0.0	0.0	0.0	0.00	0.00	0.00

IDS

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Well:	Gray Squirrel Federal Com #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Single User Db

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)
TOS									
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
1,789.1	0.00	0.00	1,789.1	0.0	0.0	0.0	0.00	0.00	0.00
BOS / Tansill									
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
2,072.1	0.00	0.00	2,072.1	0.0	0.0	0.0	0.00	0.00	0.00
Yates									
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
2,434.1	0.00	0.00	2,434.1	0.0	0.0	0.0	0.00	0.00	0.00
Seven Rivers									
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
3,187.1	0.00	0.00	3,187.1	0.0	0.0	0.0	0.00	0.00	0.00
Queen									
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
3,773.1	0.00	0.00	3,773.1	0.0	0.0	0.0	0.00	0.00	0.00
Grayburg									
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00

IDS

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Well:	Gray Squirrel Federal Com #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Single User Db

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)
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
4,458.1	0.00	0.00	4,458.1	0.0	0.0	0.0	0.00	0.00	0.00
CYCN									
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,572.1	0.00	0.00	4,572.1	0.0	0.0	0.0	0.00	0.00	0.00
BYCN									
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
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
5,959.1	0.00	0.00	5,959.1	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring (BSGL)									
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
7,572.1	0.00	0.00	7,572.1	0.0	0.0	0.0	0.00	0.00	0.00

IDS

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Well:	Gray Squirrel Federal Com #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Single User Db

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)
FBSG_sand									
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
8,255.6	0.00	0.00	8,255.6	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 12.00									
8,300.0	5.32	92.05	8,299.9	-0.1	2.1	2.1	12.00	12.00	0.00
8,383.6	15.36	92.05	8,382.1	-0.6	17.0	17.1	12.00	12.00	0.00
SBSG_sand									
8,400.0	17.32	92.05	8,397.8	-0.8	21.6	21.7	12.00	12.00	0.00
8,500.0	29.32	92.05	8,489.5	-2.2	61.1	61.2	12.00	12.00	0.00
8,600.0	41.32	92.05	8,570.9	-4.2	118.8	118.9	12.00	12.00	0.00
8,700.0	53.32	92.05	8,638.6	-6.9	192.2	192.3	12.00	12.00	0.00
8,800.0	65.32	92.05	8,689.5	-9.9	278.0	278.1	12.00	12.00	0.00
8,900.0	77.32	92.05	8,721.5	-13.3	372.5	372.7	12.00	12.00	0.00
9,000.0	89.32	92.05	8,733.1	-16.8	471.5	471.8	12.00	12.00	0.00
9,005.6	90.00	92.05	8,733.1	-17.0	477.2	477.5	12.00	12.00	0.00
Start 4286.1 hold at 9005.6 MD									
9,100.0	90.00	92.05	8,733.1	-20.4	571.5	571.8	0.00	0.00	0.00
9,200.0	90.00	92.05	8,733.1	-24.0	671.4	671.8	0.00	0.00	0.00
9,300.0	90.00	92.05	8,733.1	-27.6	771.3	771.8	0.00	0.00	0.00
9,400.0	90.00	92.05	8,733.1	-31.1	871.3	871.8	0.00	0.00	0.00
9,500.0	90.00	92.05	8,733.1	-34.7	971.2	971.8	0.00	0.00	0.00
9,600.0	90.00	92.05	8,733.1	-38.3	1,071.1	1,071.8	0.00	0.00	0.00
9,700.0	90.00	92.05	8,733.1	-41.8	1,171.1	1,171.8	0.00	0.00	0.00
9,800.0	90.00	92.05	8,733.1	-45.4	1,271.0	1,271.8	0.00	0.00	0.00
9,900.0	90.00	92.05	8,733.1	-49.0	1,371.0	1,371.8	0.00	0.00	0.00
10,000.0	90.00	92.05	8,733.1	-52.6	1,470.9	1,471.8	0.00	0.00	0.00
10,100.0	90.00	92.05	8,733.1	-56.1	1,570.8	1,571.8	0.00	0.00	0.00
10,200.0	90.00	92.05	8,733.1	-59.7	1,670.8	1,671.8	0.00	0.00	0.00
10,300.0	90.00	92.05	8,733.1	-63.3	1,770.7	1,771.8	0.00	0.00	0.00
10,400.0	90.00	92.05	8,733.1	-66.8	1,870.6	1,871.8	0.00	0.00	0.00
10,500.0	90.00	92.05	8,733.1	-70.4	1,970.6	1,971.8	0.00	0.00	0.00
10,600.0	90.00	92.05	8,733.1	-74.0	2,070.5	2,071.8	0.00	0.00	0.00
10,700.0	90.00	92.05	8,733.1	-77.6	2,170.4	2,171.8	0.00	0.00	0.00
10,800.0	90.00	92.05	8,733.1	-81.1	2,270.4	2,271.8	0.00	0.00	0.00
10,900.0	90.00	92.05	8,733.1	-84.7	2,370.3	2,371.8	0.00	0.00	0.00
11,000.0	90.00	92.05	8,733.1	-88.3	2,470.3	2,471.8	0.00	0.00	0.00
11,100.0	90.00	92.05	8,733.1	-91.8	2,570.2	2,571.8	0.00	0.00	0.00
11,200.0	90.00	92.05	8,733.1	-95.4	2,670.1	2,671.8	0.00	0.00	0.00

IDS

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
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11,300.0	90.00	92.05	8,733.1	-99.0	2,770.1	2,771.8	0.00	0.00	0.00
11,400.0	90.00	92.05	8,733.1	-102.5	2,870.0	2,871.8	0.00	0.00	0.00
11,500.0	90.00	92.05	8,733.1	-106.1	2,969.9	2,971.8	0.00	0.00	0.00
11,600.0	90.00	92.05	8,733.1	-109.7	3,069.9	3,071.8	0.00	0.00	0.00
11,700.0	90.00	92.05	8,733.1	-113.3	3,169.8	3,171.8	0.00	0.00	0.00
11,800.0	90.00	92.05	8,733.1	-116.8	3,269.7	3,271.8	0.00	0.00	0.00
11,900.0	90.00	92.05	8,733.1	-120.4	3,369.7	3,371.8	0.00	0.00	0.00
12,000.0	90.00	92.05	8,733.1	-124.0	3,469.6	3,471.8	0.00	0.00	0.00
12,100.0	90.00	92.05	8,733.1	-127.5	3,569.6	3,571.8	0.00	0.00	0.00
12,200.0	90.00	92.05	8,733.1	-131.1	3,669.5	3,671.8	0.00	0.00	0.00
12,300.0	90.00	92.05	8,733.1	-134.7	3,769.4	3,771.8	0.00	0.00	0.00
12,400.0	90.00	92.05	8,733.1	-138.3	3,869.4	3,871.8	0.00	0.00	0.00
12,500.0	90.00	92.05	8,733.1	-141.8	3,969.3	3,971.8	0.00	0.00	0.00
12,600.0	90.00	92.05	8,733.1	-145.4	4,069.2	4,071.8	0.00	0.00	0.00
12,700.0	90.00	92.05	8,733.1	-149.0	4,169.2	4,171.8	0.00	0.00	0.00
12,800.0	90.00	92.05	8,733.1	-152.5	4,269.1	4,271.8	0.00	0.00	0.00
12,900.0	90.00	92.05	8,733.1	-156.1	4,369.0	4,371.8	0.00	0.00	0.00
13,000.0	90.00	92.05	8,733.1	-159.7	4,469.0	4,471.8	0.00	0.00	0.00
13,100.0	90.00	92.05	8,733.1	-163.3	4,568.9	4,571.8	0.00	0.00	0.00
13,200.0	90.00	92.05	8,733.1	-166.8	4,668.9	4,671.8	0.00	0.00	0.00
13,291.7	90.00	92.05	8,733.1	-170.1	4,760.5	4,763.5	0.00	0.00	0.00

TD at 13291.7 - Gray Squirrel Federal Com #1H PBHL

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
Gray Squirrel Federal - plan hits target center - Point	0.00	0.00	8,733.1	-170.1	4,760.5	629,751.30	638,284.10	32° 43' 49.711 N	103° 53' 1.134 W

IDS

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Well:	Gray Squirrel Federal Com #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
504.1	504.1	Rustler		0.00	
576.1	576.1	TOS		0.00	
1,789.1	1,789.1	BOS / Tansill		0.00	
2,072.1	2,072.1	Yates		0.00	
2,434.1	2,434.1	Seven Rivers		0.00	
3,187.1	3,187.1	Queen		0.00	
3,773.1	3,773.1	Grayburg		0.00	
4,458.1	4,458.1	CYCN		0.00	
4,572.1	4,572.1	BYCN		0.00	
5,959.1	5,959.1	Bone Spring (BSGL)		0.00	
7,572.1	7,572.1	FBSG_sand		0.00	
8,383.6	8,382.1	SBSG_sand		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
8256	8256	0	0	Start Build 12.00
9006	8733	-17	477	Start 4286.1 hold at 9005.6 MD
13,292	8733	-170	4760	TD at 13291.7

Checked By: _____ Approved By: _____ Date: _____

CONCHO

COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Site: Sec. 20, T18S, R31E
Well: Gray Squirrel Federal Com #1H
Wellbore: Wellbore #1
Plan: Plan#1 (Gray Squirrel Federal Com #1H/Wellbore #1)

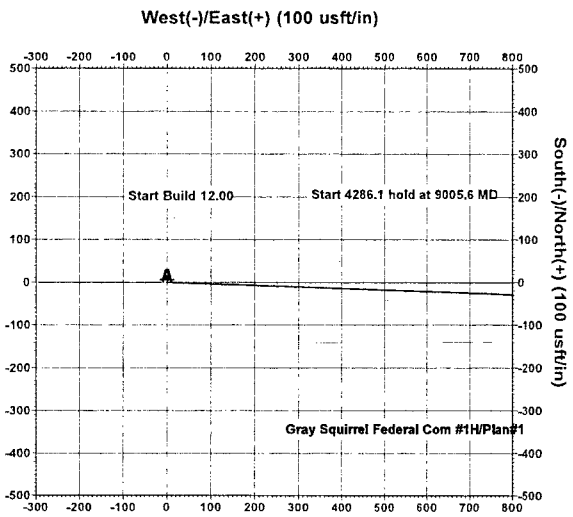
WELL DETAILS: Gray Squirrel Federal Com #1H

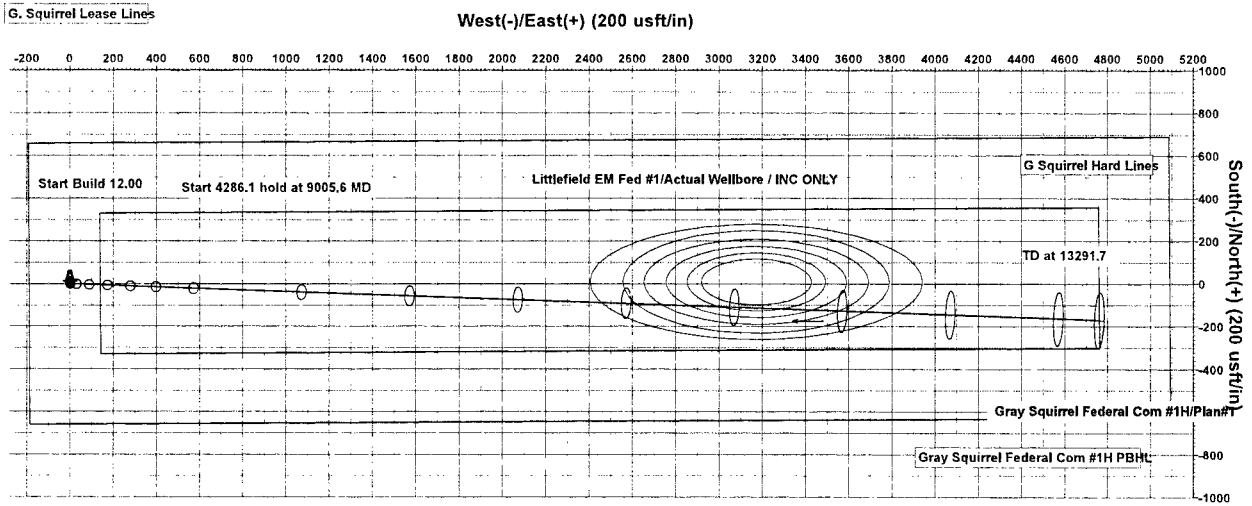
Ground Elevation:: 3633.1
RKB Elevation: KB=20' @ 3653.1usft
Rig Name:

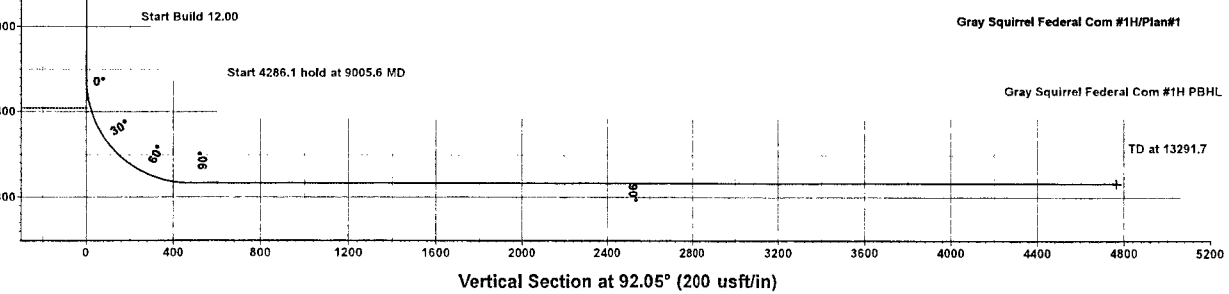
Northing	Easting	Latittude	Longitude
629921.40	633523.60	32° 43' 51.591 N	103° 53' 56.855 W

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	TFace	VSect	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	8255.6	0.00	0.00	8255.6	0.0	0.0	0.00	0.00	0.0	
3	9005.6	90.00	92.05	8733.1	-17.0	477.2	12.00	92.05	477.5	
4	13291.7	90.00	92.05	8733.1	-170.1	4760.5	0.00	0.00	4763.5	Gray Squirrel Federal Com #1H PBHL







Azimuths to Grid North
True North: -0.23°
Magnetic North: 6.96°

Magnetic Field
Strength: 48411.7snT
Dip Angle: 60.48°
Date: 3/3/2016
Model: IGRF2010

INTEGRITY Directional Services

Integrity Directional Services

PROJECT DETAILS: Eddy County, NM (NAD 27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

COG Operating LLC

Eddy County, NM (NAD 27 NME)
Sec. 20, T18S, R31E
Gray Squirrel Federal Com #1H

Wellbore #1
Plan#1

Anticollision Report

03 March, 2016

IDS

Anticollision Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Reference Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Gray Squirrel Federal Com #1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Reference	Plan#1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 us	**Error Surface:**	Circular Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 3/3/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	8,249.0	Plan#1 (Wellbore #1)	VESSI_GYROFLEX	VESSI Gyroflex Gyro
8,249.0	13,291.7	Plan#1 (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec. 20, T18S, R31E						
Littlefield EM Fed #1 - Actual Wellbore - Actual Wellbore	11,698.2	8,730.3	123.7	-424.9	0.225	Level 1, CC, SF
Littlefield EM Fed #1 - Actual Wellbore - Actual Wellbore	11,700.0	8,730.3	123.7	-424.9	0.225	Level 1, ES

Offset Design Sec. 20, T18S, R31E - Littlefield EM Fed #1 - Actual Wellbore - Actual Wellbore / INC ONLY — **Offset Site Error:** 0.0 usft

Survey Program: 177-INC — **Offset Well Error:** 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	5.0	5.0	89.81	10.4	3,172.4	3,172.5				
100.0	100.0	96.9	96.9	5.0	5.2	89.81	10.4	3,172.4	3,172.5	3,162.3	10.16	312.204	
200.0	200.0	196.9	196.9	5.0	5.9	89.81	10.4	3,172.4	3,172.5	3,161.6	10.87	291.908	
300.0	300.0	296.9	296.9	5.0	8.4	89.81	10.4	3,172.4	3,172.5	3,159.1	13.37	237.203	
400.0	400.0	396.9	396.9	5.0	11.5	89.81	10.4	3,172.4	3,172.5	3,155.9	16.51	192.109	
500.0	500.0	496.9	496.9	5.1	14.8	89.81	10.4	3,172.4	3,172.5	3,152.6	19.90	159.455	
600.0	600.0	596.9	596.9	5.1	19.1	89.81	10.4	3,172.4	3,172.5	3,148.3	24.19	131.131	
700.0	700.0	696.9	696.9	5.1	24.5	89.81	10.4	3,172.4	3,172.5	3,142.8	29.63	107.059	
800.0	800.0	796.9	796.9	5.2	30.2	89.81	10.4	3,172.4	3,172.5	3,137.1	35.36	89.711	
900.0	900.0	896.9	896.9	5.2	35.9	89.81	10.4	3,172.4	3,172.5	3,131.3	41.13	77.132	
1,000.0	1,000.0	996.9	996.9	5.3	41.6	89.81	10.4	3,172.4	3,172.5	3,125.5	46.92	67.612	
1,100.0	1,100.0	1,096.9	1,096.9	5.3	47.4	89.81	10.4	3,172.4	3,172.5	3,119.7	52.74	60.157	
1,200.0	1,200.0	1,196.9	1,196.9	5.4	53.4	89.81	10.4	3,172.4	3,172.5	3,113.7	58.79	53.965	
1,300.0	1,300.0	1,296.9	1,296.9	5.5	59.4	89.81	10.4	3,172.4	3,172.5	3,107.6	64.85	48.921	
1,400.0	1,400.0	1,396.9	1,396.9	5.5	65.4	89.81	10.4	3,172.4	3,172.5	3,101.5	70.92	44.733	
1,500.0	1,500.0	1,496.9	1,496.9	5.6	71.4	89.81	10.4	3,172.4	3,172.5	3,095.5	77.00	41.202	
1,600.0	1,600.0	1,596.9	1,596.9	5.7	77.4	89.81	10.4	3,172.4	3,172.5	3,089.4	83.08	38.184	
1,700.0	1,700.0	1,696.9	1,696.9	5.8	83.4	89.81	10.4	3,172.4	3,172.5	3,083.3	89.18	35.575	
1,800.0	1,800.0	1,796.9	1,796.9	5.9	89.4	89.81	10.4	3,172.4	3,172.5	3,077.2	95.27	33.298	
1,900.0	1,900.0	1,896.9	1,896.9	6.0	95.4	89.81	10.4	3,172.4	3,172.5	3,071.1	101.38	31.294	
2,000.0	2,000.0	1,996.9	1,996.9	6.1	101.4	89.81	10.4	3,172.4	3,172.5	3,065.0	107.48	29.516	
2,100.0	2,100.0	2,096.9	2,096.9	6.2	107.4	89.81	10.4	3,172.4	3,172.5	3,058.9	113.60	27.927	
2,200.0	2,200.0	2,196.9	2,196.9	6.3	113.4	89.81	10.4	3,172.4	3,172.5	3,052.7	119.71	26.501	
2,300.0	2,300.0	2,296.9	2,296.9	6.4	119.4	89.81	10.4	3,172.4	3,172.5	3,046.6	125.83	25.212	

IDS

Anticollision Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
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Reference Well:	Gray Squirrel Federal Com #1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 20, T18S, R31E - Littlefield EM Fed #1 - Actual Wellbore - Actual Wellbore / INC ONLY — **Offset Site Error:** 0.0 usft

Survey Program: 177-INC — **Offset Well Error:** 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,400.0	2,400.0	2,396.9	2,396.9	6.5	125.4	89.81	10.4	3,172.4	3,172.5	3,040.5	131.96	24.042	
2,500.0	2,500.0	2,496.9	2,496.9	6.6	131.5	89.81	10.4	3,172.4	3,172.5	3,034.4	138.08	22.975	
2,600.0	2,600.0	2,596.9	2,596.9	6.7	137.5	89.81	10.4	3,172.4	3,172.5	3,028.2	144.21	21.998	
2,700.0	2,700.0	2,696.9	2,696.9	6.9	143.5	89.81	10.4	3,172.4	3,172.5	3,022.1	150.35	21.101	
2,800.0	2,800.0	2,796.9	2,796.9	7.0	149.5	89.81	10.4	3,172.4	3,172.5	3,016.0	156.48	20.274	
2,900.0	2,900.0	2,896.9	2,896.9	7.1	155.5	89.81	10.4	3,172.4	3,172.5	3,009.8	162.62	19.509	
3,000.0	3,000.0	2,996.9	2,996.9	7.2	161.5	89.81	10.4	3,172.4	3,172.5	3,003.7	168.76	18.799	
3,100.0	3,100.0	3,096.9	3,096.9	7.4	167.5	89.81	10.4	3,172.4	3,172.5	2,997.6	174.90	18.138	
3,200.0	3,200.0	3,196.9	3,196.9	7.5	173.5	89.81	10.4	3,172.4	3,172.5	2,991.4	181.05	17.523	
3,300.0	3,300.0	3,296.9	3,296.9	7.6	179.6	89.81	10.4	3,172.4	3,172.5	2,985.3	187.19	16.947	
3,400.0	3,400.0	3,396.9	3,396.9	7.8	185.6	89.81	10.4	3,172.4	3,172.5	2,979.1	193.34	16.408	
3,500.0	3,500.0	3,496.9	3,496.9	7.9	191.6	89.81	10.4	3,172.4	3,172.5	2,973.0	199.50	15.902	
3,600.0	3,600.0	3,596.9	3,596.9	8.0	197.6	89.81	10.4	3,172.4	3,172.5	2,966.8	205.65	15.427	
3,700.0	3,700.0	3,696.9	3,696.9	8.2	203.6	89.81	10.4	3,172.4	3,172.5	2,960.7	211.80	14.978	
3,800.0	3,800.0	3,796.9	3,796.9	8.3	209.6	89.81	10.4	3,172.4	3,172.5	2,954.5	217.96	14.555	
3,900.0	3,900.0	3,896.9	3,896.9	8.5	215.6	89.81	10.4	3,172.4	3,172.5	2,948.3	224.12	14.155	
4,000.0	4,000.0	3,996.9	3,996.9	8.6	221.7	89.81	10.4	3,172.4	3,172.5	2,942.2	230.27	13.777	
4,100.0	4,100.0	4,096.9	4,096.9	8.8	227.7	89.81	10.4	3,172.4	3,172.5	2,936.0	236.43	13.418	
4,200.0	4,200.0	4,196.9	4,196.9	8.9	233.7	89.81	10.4	3,172.4	3,172.5	2,929.9	242.60	13.077	
4,300.0	4,300.0	4,296.9	4,296.9	9.1	239.7	89.81	10.4	3,172.4	3,172.5	2,923.7	248.76	12.753	
4,400.0	4,400.0	4,396.9	4,396.9	9.2	245.7	89.81	10.4	3,172.4	3,172.5	2,917.5	254.92	12.445	
4,500.0	4,500.0	4,496.9	4,496.9	9.4	251.7	89.81	10.4	3,172.4	3,172.5	2,911.4	261.09	12.151	
4,600.0	4,600.0	4,597.1	4,596.9	9.5	256.8	89.81	10.4	3,172.4	3,172.5	2,906.1	266.34	11.911	
4,700.0	4,700.0	4,697.1	4,696.9	9.7	260.0	89.81	10.4	3,172.4	3,172.5	2,902.8	269.69	11.763	
4,800.0	4,800.0	4,797.1	4,796.9	9.8	263.2	89.81	10.4	3,172.4	3,172.5	2,899.4	273.05	11.619	
4,900.0	4,900.0	4,897.1	4,896.9	10.0	266.4	89.81	10.4	3,172.4	3,172.5	2,896.1	276.40	11.478	
5,000.0	5,000.0	4,997.1	4,996.9	10.1	269.6	89.81	10.4	3,172.4	3,172.5	2,892.7	279.76	11.340	
5,100.0	5,100.0	5,097.1	5,096.9	10.3	272.8	89.81	10.4	3,172.4	3,172.5	2,889.3	283.12	11.206	
5,200.0	5,200.0	5,197.1	5,196.9	10.4	276.1	89.81	10.4	3,172.4	3,172.5	2,885.9	286.51	11.073	
5,300.0	5,300.0	5,297.1	5,296.9	10.6	279.3	89.81	10.4	3,172.4	3,172.5	2,882.5	289.91	10.943	
5,400.0	5,400.0	5,397.1	5,396.9	10.7	282.6	89.81	10.4	3,172.4	3,172.5	2,879.1	293.31	10.816	
5,500.0	5,500.0	5,497.1	5,496.9	10.9	285.8	89.81	10.4	3,172.4	3,172.5	2,875.7	296.71	10.692	
5,600.0	5,600.0	5,597.1	5,596.9	11.1	289.6	89.81	10.4	3,172.4	3,172.5	2,871.8	300.66	10.552	
5,700.0	5,700.0	5,697.1	5,696.9	11.2	293.9	89.81	10.4	3,172.4	3,172.5	2,867.4	305.09	10.398	
5,800.0	5,800.0	5,797.1	5,796.9	11.4	299.6	89.81	10.4	3,172.4	3,172.5	2,861.5	310.99	10.201	
5,900.0	5,900.0	5,897.1	5,896.9	11.5	305.3	89.81	10.4	3,172.4	3,172.5	2,855.6	316.88	10.011	
6,000.0	6,000.0	5,997.1	5,996.9	11.7	311.1	89.81	10.4	3,172.4	3,172.5	2,849.7	322.78	9.829	
6,100.0	6,100.0	6,097.1	6,096.9	11.9	316.8	89.81	10.4	3,172.4	3,172.5	2,843.8	328.68	9.652	
6,200.0	6,200.0	6,197.1	6,196.9	12.0	322.6	89.81	10.4	3,172.4	3,172.5	2,837.9	334.57	9.482	
6,300.0	6,300.0	6,297.1	6,296.9	12.2	328.3	89.81	10.4	3,172.4	3,172.5	2,832.0	340.46	9.318	
6,400.0	6,400.0	6,397.1	6,396.9	12.3	334.0	89.81	10.4	3,172.4	3,172.5	2,826.1	346.35	9.160	
6,500.0	6,500.0	6,497.2	6,496.9	12.5	339.7	89.81	10.4	3,172.4	3,172.5	2,820.2	352.25	9.006	
6,600.0	6,600.0	6,597.2	6,596.9	12.7	345.5	89.81	10.4	3,172.4	3,172.5	2,814.3	358.15	8.858	
6,700.0	6,700.0	6,697.2	6,696.9	12.8	351.2	89.81	10.4	3,172.4	3,172.5	2,808.4	364.05	8.714	
6,800.0	6,800.0	6,797.2	6,796.9	13.0	357.0	89.81	10.4	3,172.4	3,172.5	2,802.4	370.04	8.573	
6,900.0	6,900.0	6,897.2	6,896.9	13.2	363.4	89.81	10.4	3,172.4	3,172.5	2,795.9	376.58	8.424	
7,000.0	7,000.0	6,997.2	6,996.9	13.3	369.8	89.81	10.4	3,172.4	3,172.5	2,789.3	383.12	8.281	
7,100.0	7,100.0	7,097.2	7,096.9	13.5	376.2	89.81	10.4	3,172.4	3,172.5	2,782.8	389.67	8.141	
7,200.0	7,200.0	7,197.2	7,196.9	13.7	382.6	89.81	10.4	3,172.4	3,172.5	2,776.2	396.22	8.007	
7,300.0	7,300.0	7,297.2	7,296.9	13.8	388.9	89.81	10.4	3,172.4	3,172.5	2,769.7	402.77	7.877	
7,400.0	7,400.0	7,397.2	7,396.9	14.0	395.3	89.81	10.4	3,172.4	3,172.5	2,763.1	409.32	7.751	
7,500.0	7,500.0	7,497.2	7,496.9	14.2	401.7	89.81	10.4	3,172.4	3,172.5	2,756.6	415.87	7.628	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

IDS

Anticollision Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Reference Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Gray Squirrel Federal Com #1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 20, T18S, R31E - Littlefield EM Fed #1 - Actual Wellbore - Actual Wellbore / INC ONLY — **Offset Site Error:** 0.0 usft

Survey Program: 177-INC — **Offset Well Error:** 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,600.0	7,600.0	7,597.2	7,596.9	14.3	406.3	89.81	10.4	3,172.4	3,172.5	2,751.8	420.61	7.543	
7,700.0	7,700.0	7,697.2	7,696.9	14.5	410.8	89.81	10.4	3,172.4	3,172.5	2,747.2	425.29	7.460	
7,800.0	7,800.0	7,797.2	7,796.9	14.7	415.3	89.81	10.4	3,172.4	3,172.5	2,742.5	429.97	7.378	
7,900.0	7,900.0	7,897.2	7,896.9	14.8	419.2	89.81	10.4	3,172.4	3,172.5	2,738.4	434.06	7.309	
8,000.0	8,000.0	7,997.2	7,996.9	15.0	422.5	89.81	10.4	3,172.4	3,172.5	2,735.0	437.49	7.251	
8,100.0	8,100.0	8,097.2	8,096.9	15.2	425.8	89.81	10.4	3,172.4	3,172.5	2,731.5	440.93	7.195	
8,200.0	8,200.0	8,197.2	8,196.9	15.3	429.0	89.81	10.4	3,172.4	3,172.5	2,728.1	444.36	7.139	
8,255.6	8,255.6	8,252.9	8,252.5	15.4	430.9	89.81	10.4	3,172.4	3,172.5	2,726.2	446.23	7.110	
8,275.0	8,275.0	8,272.2	8,271.9	15.4	431.5	-2.24	10.4	3,172.4	3,172.1	2,725.2	446.86	7.099	
8,300.0	8,299.9	8,297.2	8,296.8	15.4	432.3	-2.25	10.4	3,172.4	3,170.4	2,722.7	447.67	7.082	
8,325.0	8,324.8	8,322.0	8,321.7	15.4	433.2	-2.26	10.4	3,172.4	3,167.4	2,718.8	448.61	7.061	
8,350.0	8,349.4	8,346.6	8,346.3	15.4	434.8	-2.29	10.4	3,172.4	3,163.2	2,713.0	450.19	7.026	
8,375.0	8,373.8	8,371.0	8,370.7	15.4	436.4	-2.32	10.4	3,172.4	3,157.6	2,705.9	451.76	6.990	
8,400.0	8,397.8	8,395.0	8,394.7	15.4	437.9	-2.36	10.4	3,172.4	3,150.8	2,697.5	453.30	6.951	
8,425.0	8,421.5	8,418.7	8,418.4	15.4	439.4	-2.41	10.4	3,172.4	3,142.8	2,687.9	454.83	6.910	
8,450.0	8,444.7	8,441.9	8,441.6	15.4	440.9	-2.46	10.4	3,172.4	3,133.5	2,677.1	456.33	6.867	
8,475.0	8,467.4	8,464.6	8,464.3	15.4	442.4	-2.53	10.4	3,172.4	3,123.0	2,665.2	457.79	6.822	
8,500.0	8,489.5	8,486.7	8,486.4	15.4	443.8	-2.61	10.4	3,172.4	3,111.3	2,652.1	459.23	6.775	
8,525.0	8,510.9	8,508.2	8,507.8	15.5	445.2	-2.71	10.4	3,172.4	3,098.5	2,637.9	460.63	6.727	
8,550.0	8,531.7	8,528.9	8,528.6	15.5	446.5	-2.82	10.4	3,172.4	3,084.6	2,622.6	462.00	6.677	
8,575.0	8,551.7	8,549.0	8,548.6	15.5	447.8	-2.94	10.4	3,172.4	3,069.7	2,606.3	463.32	6.625	
8,600.0	8,570.9	8,568.2	8,567.8	15.6	449.0	-3.09	10.4	3,172.4	3,053.7	2,589.0	464.61	6.573	
8,625.0	8,589.2	8,586.5	8,586.1	15.7	450.2	-3.26	10.4	3,172.4	3,036.7	2,570.8	465.85	6.519	
8,650.0	8,606.7	8,603.9	8,603.6	15.7	451.3	-3.46	10.4	3,172.4	3,018.8	2,551.7	467.05	6.463	
8,675.0	8,623.1	8,620.4	8,620.0	15.8	452.4	-3.70	10.4	3,172.4	3,000.0	2,531.8	468.21	6.407	
8,700.0	8,638.6	8,635.8	8,635.5	16.0	453.5	-3.98	10.4	3,172.4	2,980.3	2,510.9	469.43	6.349	
8,725.0	8,653.0	8,650.2	8,649.9	16.1	454.7	-4.31	10.4	3,172.4	2,959.9	2,489.1	470.77	6.287	
8,750.0	8,666.3	8,663.5	8,663.2	16.3	455.8	-4.72	10.4	3,172.4	2,938.8	2,466.7	472.04	6.226	
8,775.0	8,678.5	8,675.7	8,675.4	16.5	456.8	-5.22	10.4	3,172.4	2,917.0	2,443.7	473.24	6.164	
8,800.0	8,689.5	8,686.7	8,686.4	16.7	457.7	-5.85	10.4	3,172.4	2,894.6	2,420.2	474.37	6.102	
8,825.0	8,699.3	8,696.6	8,696.2	16.9	458.5	-6.66	10.4	3,172.4	2,871.6	2,396.2	475.43	6.040	
8,850.0	8,708.0	8,705.2	8,704.9	17.2	459.2	-7.73	10.4	3,172.4	2,848.2	2,371.7	476.41	5.978	
8,875.0	8,715.3	8,712.6	8,712.2	17.5	459.8	-9.22	10.4	3,172.4	2,824.3	2,347.0	477.32	5.917	
8,900.0	8,721.5	8,718.7	8,718.4	17.8	460.4	-11.39	10.4	3,172.4	2,800.1	2,321.9	478.14	5.856	
8,925.0	8,726.3	8,723.6	8,723.2	18.1	460.8	-14.87	10.4	3,172.4	2,775.6	2,296.7	478.88	5.796	
8,950.0	8,729.9	8,727.1	8,726.8	18.5	461.1	-21.17	10.4	3,172.4	2,750.9	2,271.3	479.53	5.737	
8,975.0	8,732.1	8,729.4	8,729.0	18.9	461.2	-35.32	10.4	3,172.4	2,726.0	2,245.9	480.10	5.678	
9,000.0	8,733.1	8,730.3	8,730.0	19.3	461.3	-75.56	10.4	3,172.4	2,701.0	2,220.5	480.58	5.620	
9,005.6	8,733.1	8,730.3	8,730.0	19.4	461.3	-90.00	10.4	3,172.4	2,695.4	2,214.7	480.67	5.608	
9,100.0	8,733.1	8,730.3	8,730.0	21.0	461.3	-90.00	10.4	3,172.4	2,601.2	2,118.8	482.32	5.393	
9,200.0	8,733.1	8,730.3	8,730.0	22.9	461.3	-90.00	10.4	3,172.4	2,501.3	2,017.0	484.27	5.165	
9,300.0	8,733.1	8,730.3	8,730.0	25.0	461.3	-90.00	10.4	3,172.4	2,401.4	1,915.0	486.36	4.937	
9,400.0	8,733.1	8,730.3	8,730.0	27.3	461.3	-90.00	10.4	3,172.4	2,301.5	1,813.0	488.58	4.711	
9,500.0	8,733.1	8,730.3	8,730.0	29.6	461.3	-90.00	10.4	3,172.4	2,201.7	1,710.8	490.89	4.485	
9,600.0	8,733.1	8,730.3	8,730.0	31.9	461.3	-90.00	10.4	3,172.4	2,101.9	1,608.6	493.27	4.261	
9,700.0	8,733.1	8,730.3	8,730.0	34.4	461.3	-90.00	10.4	3,172.4	2,002.0	1,506.3	495.71	4.039	
9,800.0	8,733.1	8,730.3	8,730.0	36.9	461.3	-90.00	10.4	3,172.4	1,902.2	1,404.0	498.20	3.818	
9,900.0	8,733.1	8,730.3	8,730.0	39.4	461.3	-90.00	10.4	3,172.4	1,802.5	1,301.7	500.72	3.600	
10,000.0	8,733.1	8,730.3	8,730.0	41.9	461.3	-90.00	10.4	3,172.4	1,702.7	1,199.4	503.27	3.383	
10,100.0	8,733.1	8,730.3	8,730.0	44.5	461.3	-90.00	10.4	3,172.4	1,603.0	1,097.1	505.85	3.169	
10,200.0	8,733.1	8,730.3	8,730.0	47.1	461.3	-90.00	10.4	3,172.4	1,503.3	994.9	508.45	2.957	
10,300.0	8,733.1	8,730.3	8,730.0	49.7	461.3	-90.00	10.4	3,172.4	1,403.7	892.6	511.07	2.747	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

IDS

Anticollision Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Reference Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Gray Squirrel Federal Com #1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 20, T18S, R31E - Littlefield EM Fed #1 - Actual Wellbore - Actual Wellbore / INC ONLY — **Offset Site Error:** 0.0 usft

Survey Program: 177-INC — **Offset Well Error:** 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,400.0	8,733.1	8,730.3	8,730.0	52.4	461.3	-90.00	10.4	3,172.4	1,304.1	790.4	513.70	2.539	
10,500.0	8,733.1	8,730.3	8,730.0	55.0	461.3	-90.00	10.4	3,172.4	1,204.6	688.2	516.34	2.333	
10,600.0	8,733.1	8,730.3	8,730.0	57.7	461.3	-90.00	10.4	3,172.4	1,105.2	586.2	519.00	2.129	
10,700.0	8,733.1	8,730.3	8,730.0	60.3	461.3	-90.00	10.4	3,172.4	1,005.8	484.2	521.66	1.928	
10,800.0	8,733.1	8,730.3	8,730.0	63.0	461.3	-90.00	10.4	3,172.4	906.7	382.4	524.34	1.729	
10,900.0	8,733.1	8,730.3	8,730.0	65.7	461.3	-90.00	10.4	3,172.4	807.7	280.7	527.02	1.533	
11,000.0	8,733.1	8,730.3	8,730.0	68.4	461.3	-90.00	10.4	3,172.4	709.1	179.4	529.71	1.339	Level 3
11,100.0	8,733.1	8,730.3	8,730.0	71.1	461.3	-90.00	10.4	3,172.4	610.9	78.5	532.40	1.147	Level 2
11,200.0	8,733.1	8,730.3	8,730.0	73.8	461.3	-90.00	10.4	3,172.4	513.3	-21.8	535.10	0.959	Level 1
11,300.0	8,733.1	8,730.3	8,730.0	76.5	461.3	-90.00	10.4	3,172.4	417.0	-120.8	537.81	0.775	Level 1
11,400.0	8,733.1	8,730.3	8,730.0	79.2	461.3	-90.00	10.4	3,172.4	322.9	-217.7	540.51	0.597	Level 1
11,500.0	8,733.1	8,730.3	8,730.0	81.9	461.3	-90.00	10.4	3,172.4	233.6	-309.6	543.23	0.430	Level 1
11,600.0	8,733.1	8,730.3	8,730.0	84.6	461.3	-90.00	10.4	3,172.4	158.0	-388.0	545.94	0.289	Level 1
11,698.2	8,733.1	8,730.3	8,730.0	87.3	461.3	-90.00	10.4	3,172.4	123.7	-424.9	548.61	0.225	Level 1, CC, SF
11,700.0	8,733.1	8,730.3	8,730.0	87.3	461.3	-90.00	10.4	3,172.4	123.7	-424.9	548.66	0.225	Level 1, ES
11,800.0	8,733.1	8,730.3	8,730.0	90.1	461.3	-90.00	10.4	3,172.4	160.2	-391.2	551.38	0.291	Level 1
11,900.0	8,733.1	8,730.3	8,730.0	92.8	461.3	-90.00	10.4	3,172.4	236.7	-317.4	554.11	0.427	Level 1
12,000.0	8,733.1	8,730.3	8,730.0	95.5	461.3	-90.00	10.4	3,172.4	326.2	-230.7	556.83	0.586	Level 1
12,100.0	8,733.1	8,730.3	8,730.0	98.2	461.3	-90.00	10.4	3,172.4	420.4	-139.2	559.56	0.751	Level 1
12,200.0	8,733.1	8,730.3	8,730.0	101.0	461.3	-90.00	10.4	3,172.4	516.8	-45.5	562.29	0.919	Level 1
12,300.0	8,733.1	8,730.3	8,730.0	103.7	461.3	-90.00	10.4	3,172.4	614.4	49.3	565.02	1.087	Level 2
12,400.0	8,733.1	8,730.3	8,730.0	106.4	461.3	-90.00	10.4	3,172.4	712.6	144.9	567.76	1.255	Level 3
12,500.0	8,733.1	8,730.3	8,730.0	109.2	461.3	-90.00	10.4	3,172.4	811.3	240.8	570.49	1.422	Level 3
12,600.0	8,733.1	8,730.3	8,730.0	111.9	461.3	-90.00	10.4	3,172.4	910.2	337.0	573.23	1.588	
12,700.0	8,733.1	8,730.3	8,730.0	114.6	461.3	-90.00	10.4	3,172.4	1,009.4	433.4	575.96	1.753	
12,800.0	8,733.1	8,730.3	8,730.0	117.4	461.3	-90.00	10.4	3,172.4	1,108.7	530.0	578.70	1.916	
12,900.0	8,733.1	8,730.3	8,730.0	120.1	461.3	-90.00	10.4	3,172.4	1,208.1	626.7	581.44	2.078	
13,000.0	8,733.1	8,730.3	8,730.0	122.9	461.3	-90.00	10.4	3,172.4	1,307.7	723.5	584.19	2.238	
13,100.0	8,733.1	8,730.3	8,730.0	125.6	461.3	-90.00	10.4	3,172.4	1,407.2	820.3	586.93	2.398	
13,200.0	8,733.1	8,730.3	8,730.0	128.3	461.3	-90.00	10.4	3,172.4	1,506.9	917.2	589.67	2.555	
13,291.7	8,733.1	8,730.3	8,730.0	130.9	461.3	-90.00	10.4	3,172.4	1,598.3	1,006.1	592.19	2.699	

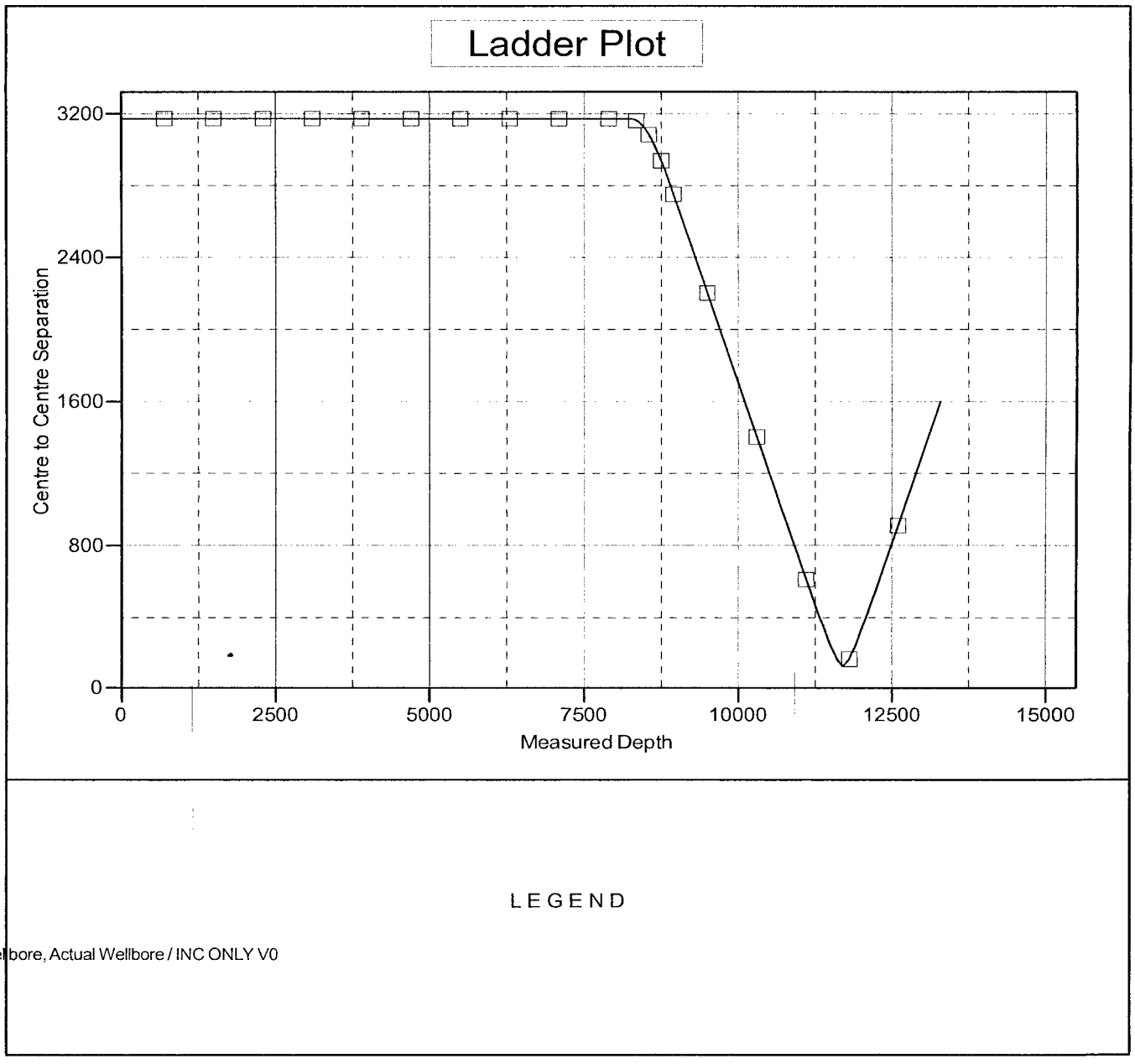
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

IDS

Anticollision Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Reference Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Gray Squirrel Federal Com #1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=20' @ 3653.1usft	Coordinates are relative to: Sec. 20, T18S, R31E
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.23°

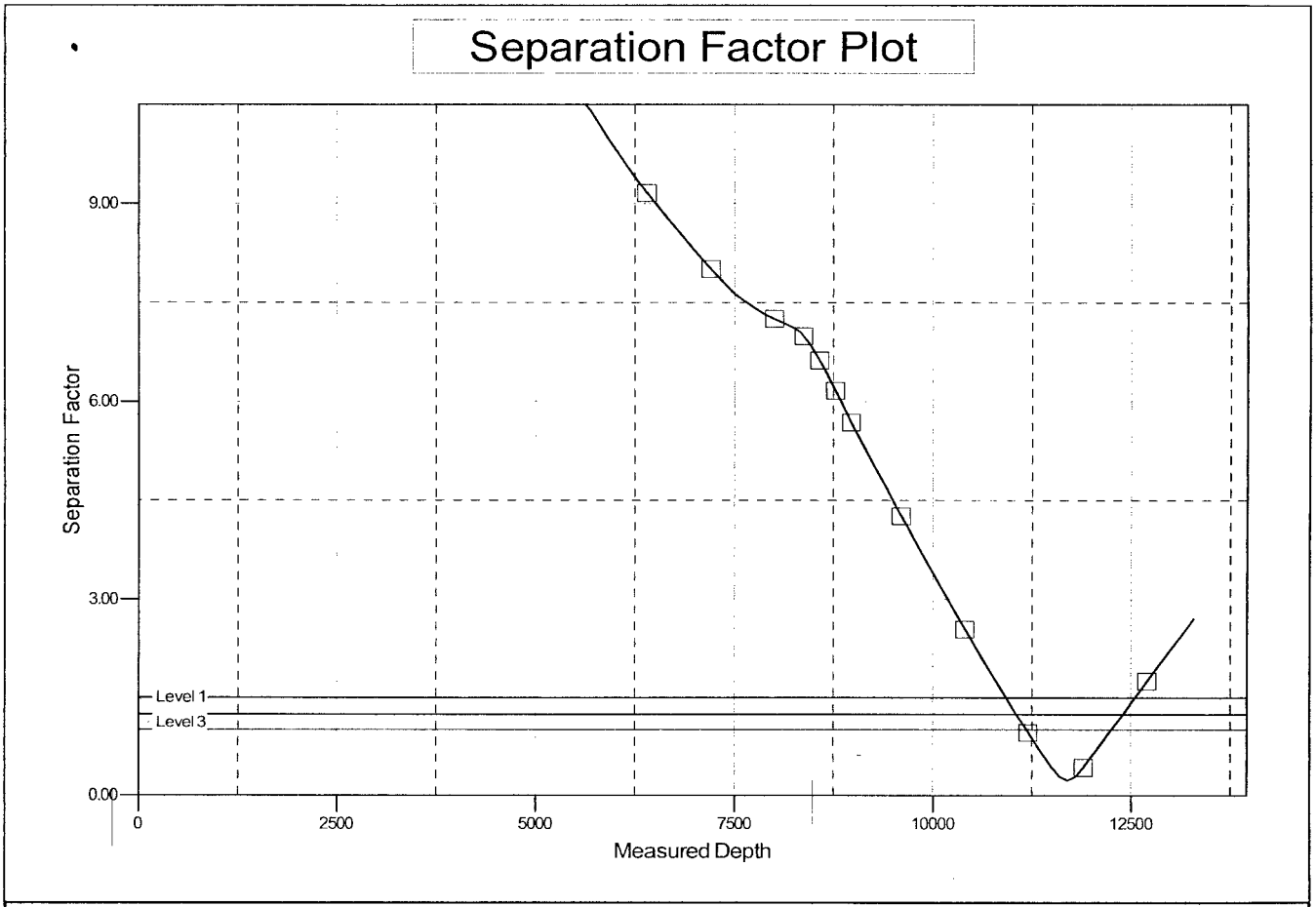


IDS

Anticollision Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Sec. 20, T18S, R31E
Project:	Eddy County, NM (NAD 27 NME)	**TVD Reference:**	KB=20' @ 3653.1usft
Reference Site:	Sec. 20, T18S, R31E	**MD Reference:**	KB=20' @ 3653.1usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Gray Squirrel Federal Com #1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

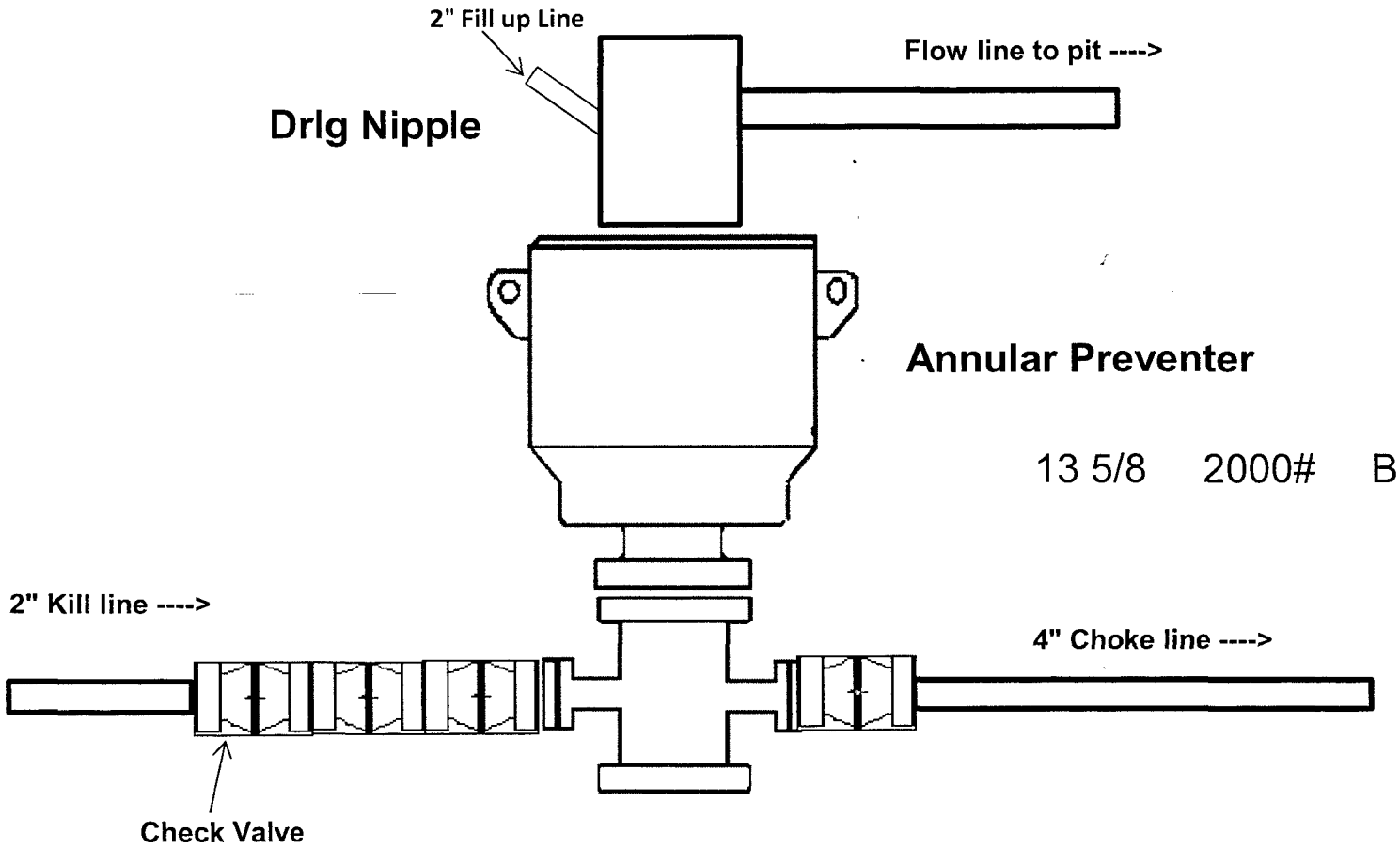
Reference Depths are relative to KB=20' @ 3653.1usft	Coordinates are relative to: Sec. 20, T18S, R31E
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.23°



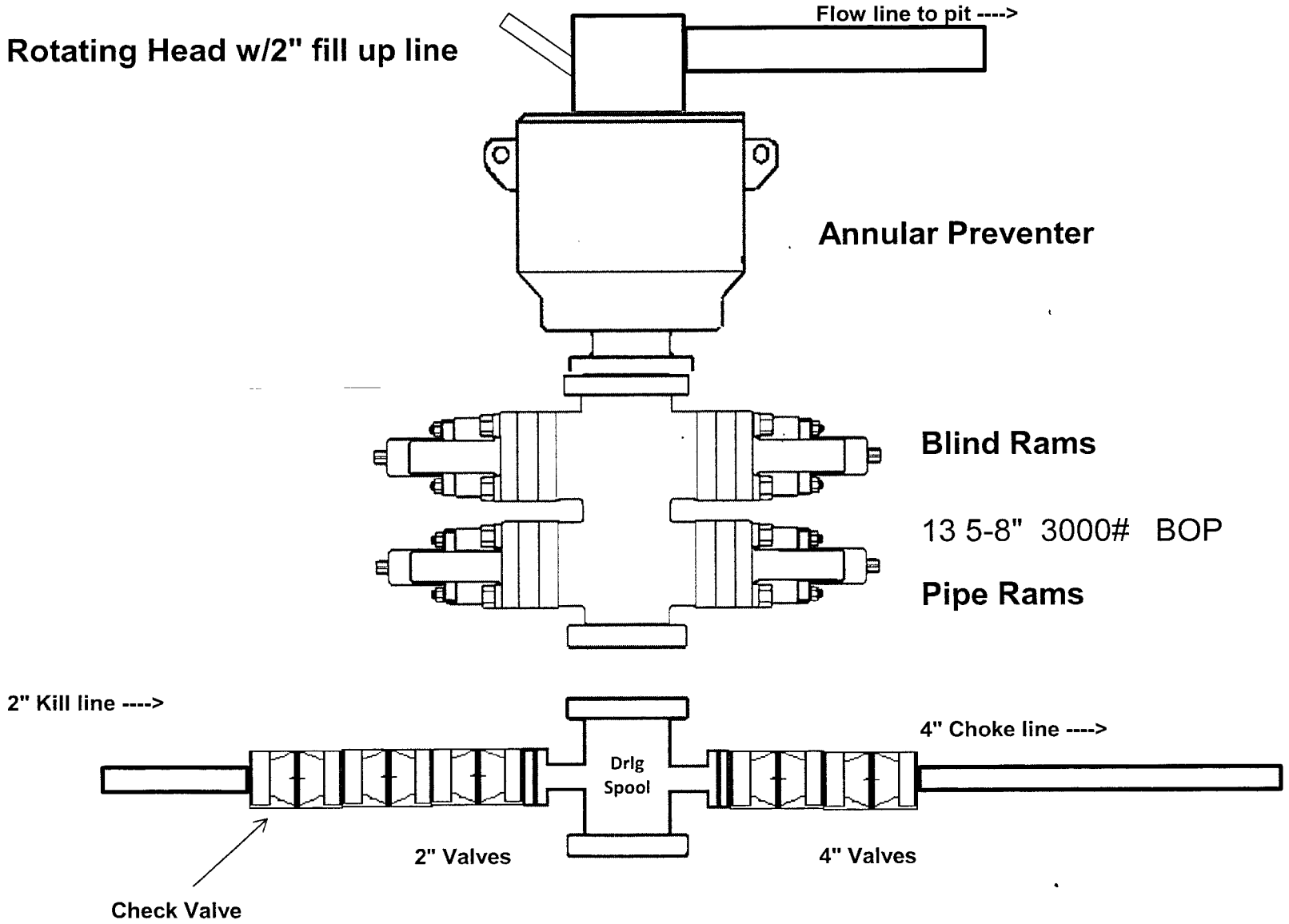
LEGEND

'ellbore, Actual Wellbore / INC ONLY V0

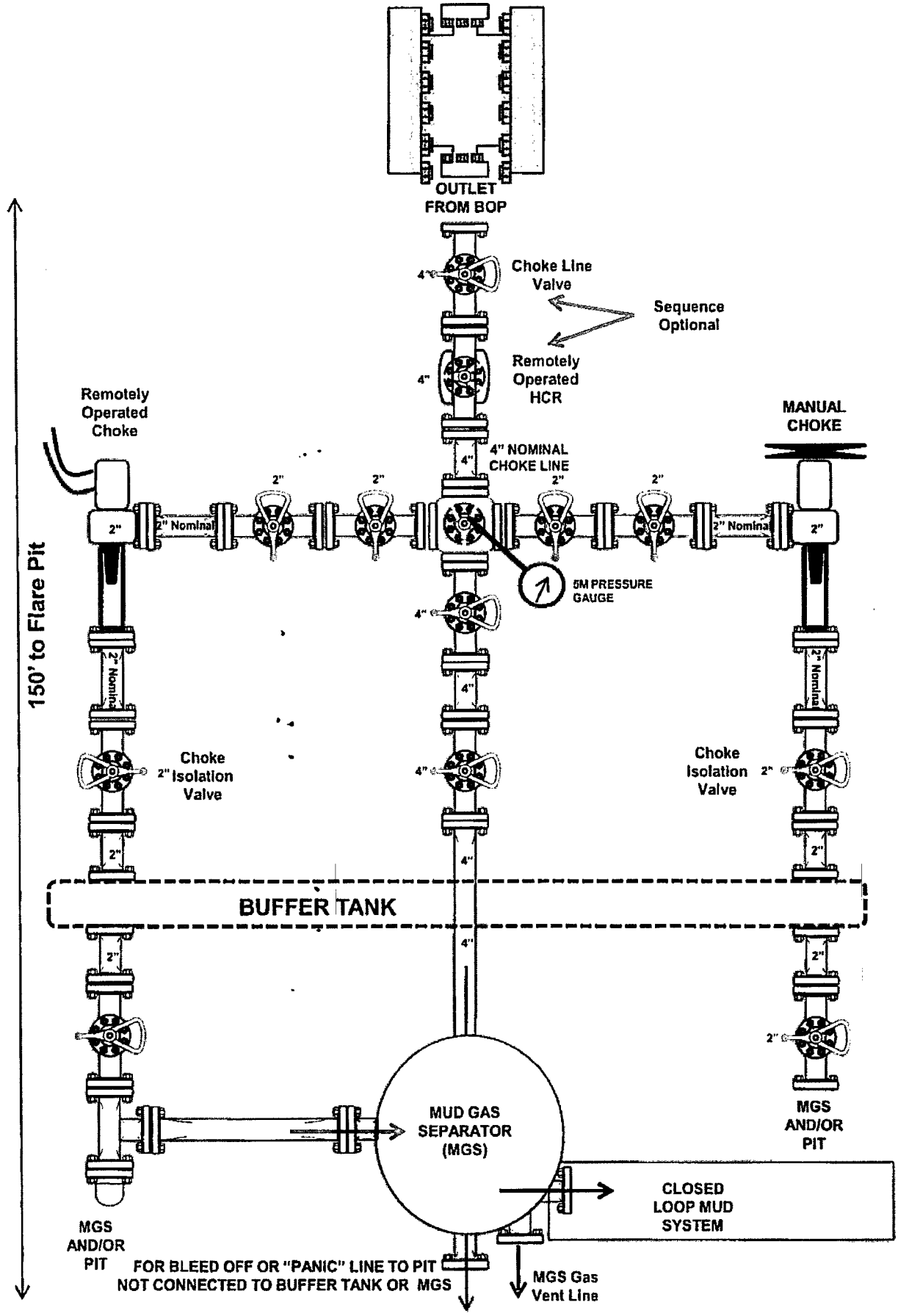
2,000 psi BOP Schematic



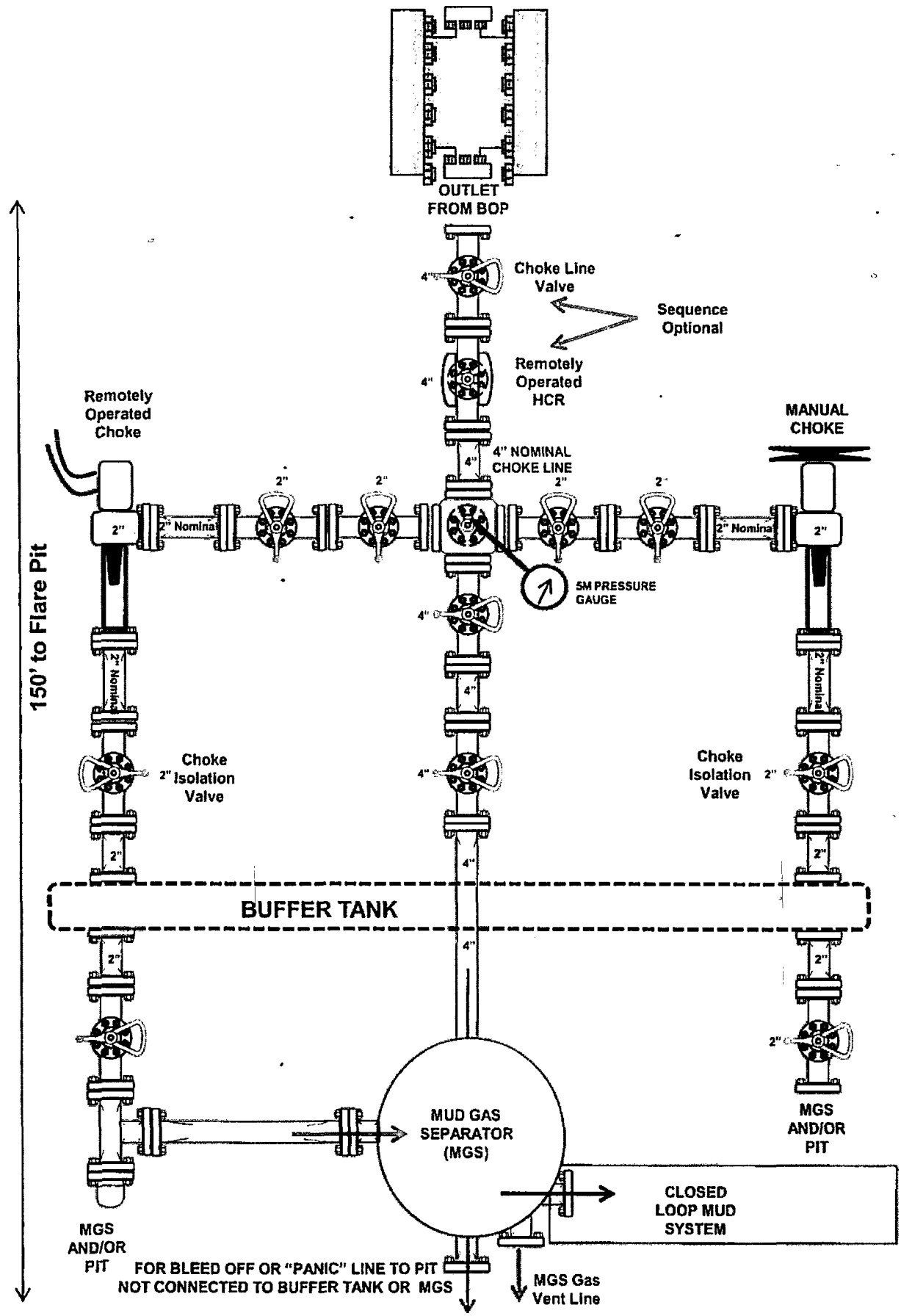
3,000 psi BOP Schematic



2M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



3M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 400' X 390' with cellar in center of pad

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

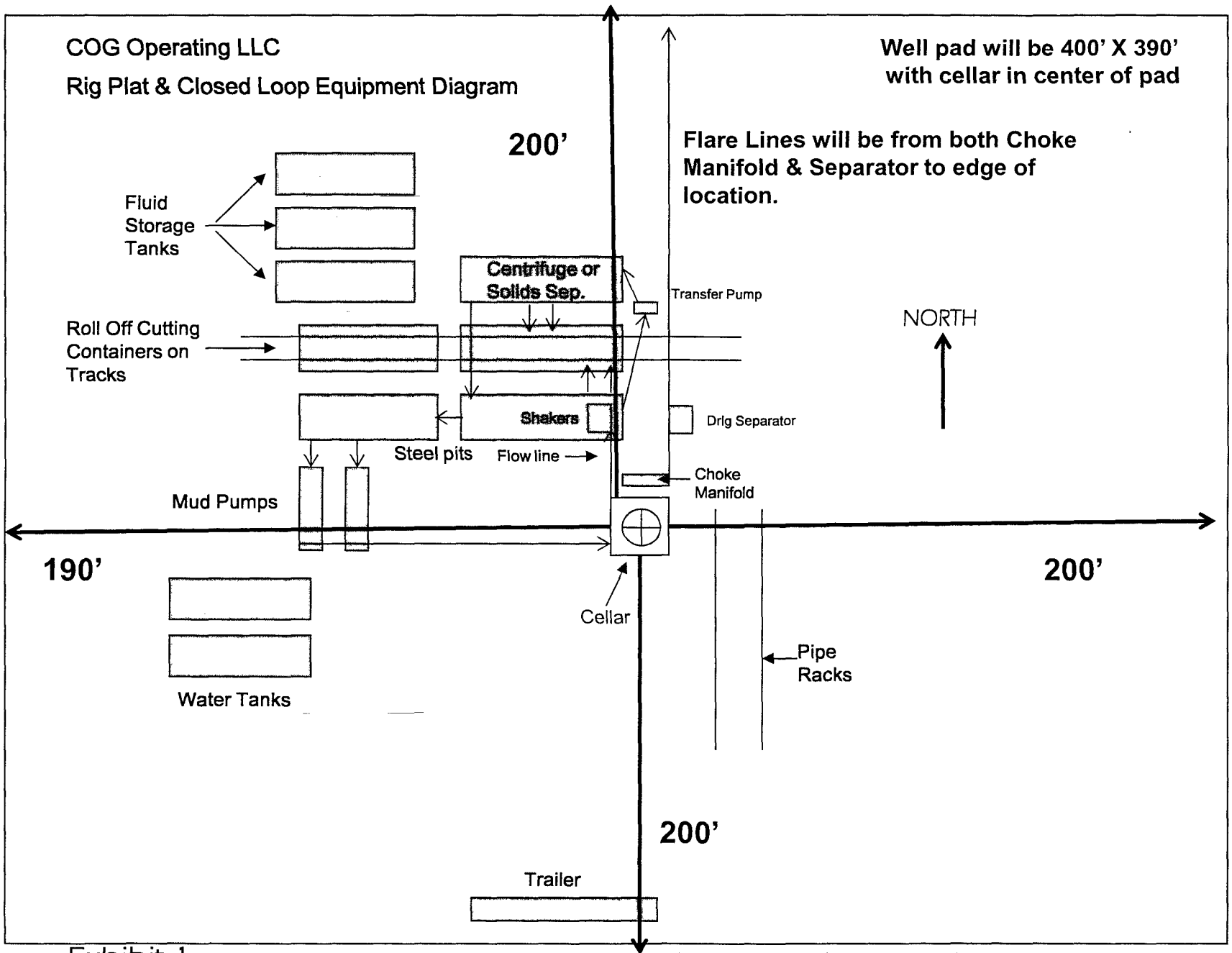
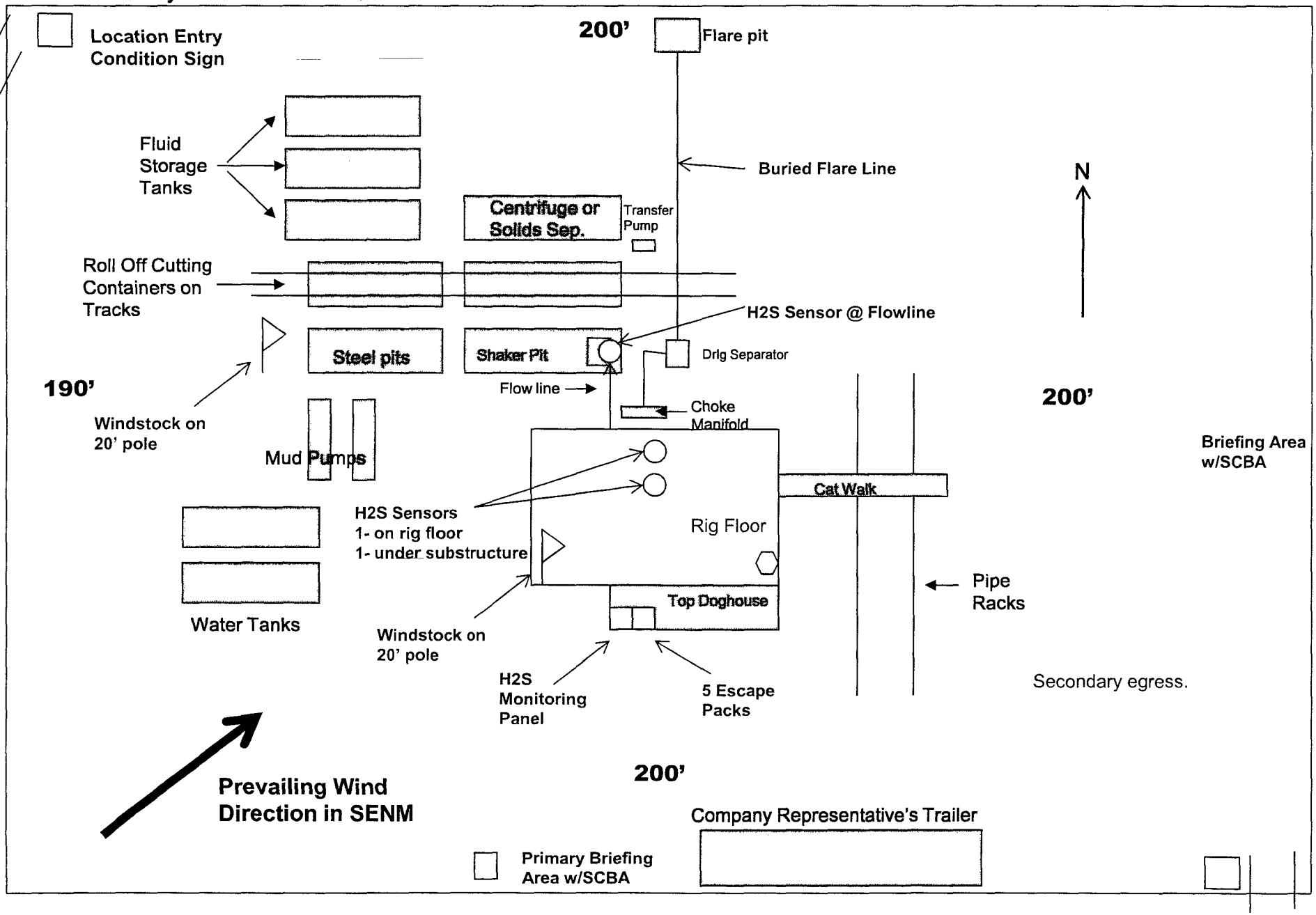


Exhibit 1

"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 400' X 390'
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

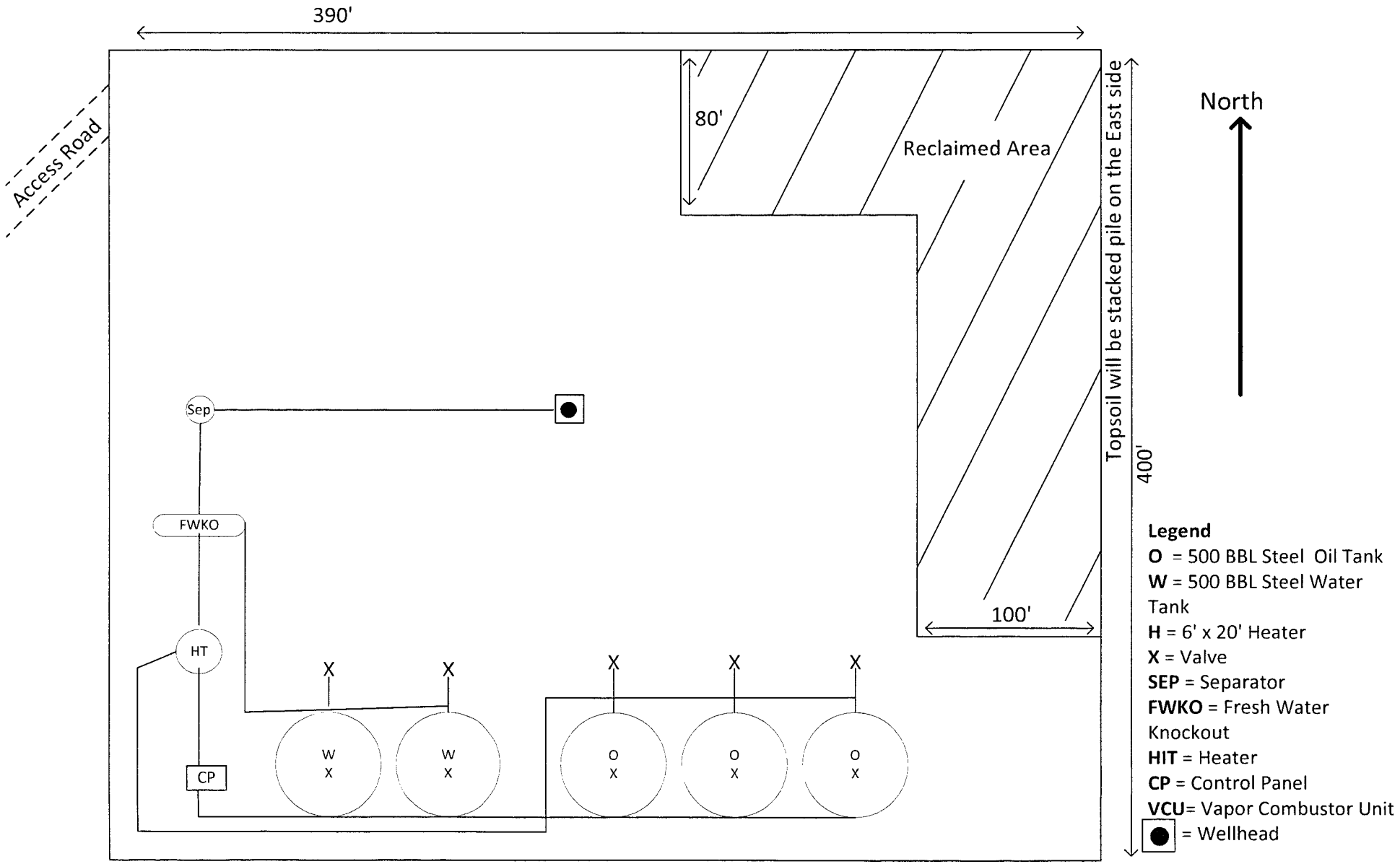
COG Operating LLC.
2208 W Main St.
Artesia, NM 88210

Well Site Layout

Production Facility Layout

Gray Squirrel Federal Com #1H
Section 20- 18S- 31E

Exhibit 3



Surface Use & Operating Plan

Gray Squirrel Federal Com #1H

- Surface Tenant: Richardson Cattle Co. P O Box 487, Carlsbad, NM 88221
- New Road: 1547.3' and 1397.4' of existing road will be upgraded
- Flow Line: On well pad
- Facilities: Will be constructed on well pad – see Exhibit 3

- **Well Site Information**

  V Door: East

  Topsoil: East

  Interim Reclamation: East, Northeast

Notes

Onsite: On-site was done by Nicholas Frankee (BLM); Rand French (COG) on February 11, 2016.

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Harcrow Surveying, Artesia, NM.

B. All roads to the location are shown on the Location Verification Map Exhibit 2. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in Exhibit #2. The road shown in Exhibit #2 will be used to access the well.

C. Directions to location: See 600 x 600 plat

D. Based on current road maintenance performed on other roads serving existing wells, we anticipate maintaining the lease roads leading to the proposed well pad at least once a year on dry conditions and twice a year in wetter conditions.

2. Proposed Access Road:

The Location Verification Map shows that 1547.3' of new access road was required for this location and 1397.4' of existing road will be upgraded. If any road is required it will be constructed as follows:

The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

A. The average grade will be less than 1%.

B. No turnouts are planned.

C. No cattleguard, culvert, gates, low water crossings or fence cuts are necessary.

D. Surfacing material consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit in Section 28, T18S, R31E.

3. Location of Existing Well:

The One-Mile Radius Map Exhibit 4 shows existing wells within a one-mile radius of the proposed wellbore.

4. Location of Existing and/or Proposed Facilities:

A. COG Operating LLC does not operate an oil production facility on this lease.

B. If the well is productive, contemplated facilities will be as follows:

1) A tank battery and facilities will be constructed as shown on Exhibit 3.
2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, caliche will be hauled from the nearest BLM approved caliche pit in Section 28, T18S, R31E.

4) Any additional construction materials were purchased from contractors.

5) It will be necessary to run electric power if this well is productive. Power will be provided by Xcel Energy and they will submit a separate plan and ROW for service to the well location.

6) If the well is productive, rehabilitation plans will include the following:

- The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from a private source Gregory Rockhouse Ranch, Inc. 1108 W. Pierce Street, Carlsbad, NM 88220. 575-885-6920. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: One primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. Amount will vary for each pad. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit in Section 28, T18S, R31E. The procedure below has been approved by BLM personnel:

A. Equipment that was needed to construct the proposed location was as follows: Two dozers to flip the site for caliche and to move topsoil, one blade to level the surface, one morograder to roll and compact this site, one backhoe to dig the cellar, one water truck to water location and dust abatement and two dump trucks to haul surface material. If caliche is not available onsite and have to haul caliche from a private pit, in addition to equipment mentioned above we will have 10 belly dumps and one front end loader.

B. The time line to complete construction was approximately 10 days.

C. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

D. An approximate 160' X 160' area is used within the proposed well site to remove caliche.

E. Subsoil is removed and stockpiled within the surveyed well pad.

F. When caliche is found, material will be stock piled within the pad site to build the location and road.

G. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

H. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced.

I. Neither caliche, nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat.

E. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit in Section 28, T18S, R31E.

7. Methods of Handling Water Disposal:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

B. Drilling fluids will be contained in steel mud pits and taken to R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility. R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

D. It is anticipated that the disposal of produced water will be trucked to Ray Westall's water gathering system tie-in Section 31-18S-31E or to a third party commercial SWD.

E. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill-Lea Landfill LLC. Located at Mile Marker 64, Highway 62-180 East, P O Box 3247, Carlsbad, NM 88221. No toxic waste or hazardous chemicals will be produced by this operation.

F. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

G. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Harcrow Surveying, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door direction is East. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Interim Reclamation will take place within six months after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible within six months. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders. When required by BLM, the well pad site will be restored to match pre-construction grades.

11. Sedimentation and Erosion Control

Approximately 380' of straw waddles will be placed on the West side and 390' on the South side to reduce sediment impacts to fragile/sensitive soils.

12. Surface Ownership:

A. The surface is owned by U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

B. The surface tenant is Richardson Cattle Co. P O Box 487, Carlsbad, NM 88221.

C. The proposed road routes and surface location will be restored as directed by the BLM.

13. Other Information:

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.**

14. Bond Coverage:

Bond Coverage is Statewide Bonds # NMB000740 and NMB000215

14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Sheryl Baker
Drilling Superintendent
COG Operating LLC
2208 West Main Street
Artesia, NM 88210
Phone (575) 748-6940 (office)
(432) 934-1873 (cell)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 818-2254 (business)

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 11th day of April, 2016.

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: 03/07/2016

01 02-25-1920;041STAT0437;30USC226
Case Type 310781: O&G RENEWAL LEASE - PD
Commodity 459: OIL & GAS
Case Disposition: AUTHORIZED

Total Acres	Serial Number
680.000	NMNM-- - 012211

Serial Number: NMNM-- - 012211

Name & Address			Int Rel	% Interest
18-31 INC	PO BOX 1120	ROSWELL NM 88201	LESSEE	100.000000000
CHI ENERGY INC	PO BOX 1799	MIDLAND TX 79702	OPERATING RIGHTS	0.000000000
COG OPERATING LLC	600 W ILLINOIS AVE	MIDLAND TX 797014882	OPERATING RIGHTS	0.000000000
CONCHO OIL & GAS LLC	600 W ILLINOIS AVE, ONE CONCHO CEI	MIDLAND TX 797014882	OPERATING RIGHTS	0.000000000
DEVON ENERGY PROD CO LP	333 W SHERIDAN AVE	OKLAHOMA CITY OK 731025010	OPERATING RIGHTS	0.000000000
ENERGEN RESOURCES CO	605 RICHARD ARRINGTON JR BLVD	BIRMINGHAM AL 352032707	OPERATING RIGHTS	0.000000000
FIDELITY EXPL & PROD CO	1700 LINCOLN ST STE 4600	DENVER CO 802034509	OPERATING RIGHTS	0.000000000
HEADINGTON PENN CORP	2711 N HASKELL AVE STE 2800	DALLAS TX 752042940	OPERATING RIGHTS	0.000000000
LEGACY RESERVES OPERATING LP	303 W WALL ST STE 1800	MIDLAND TX 797015106	OPERATING RIGHTS	0.000000000
MARBOB ENERGY CORP	PO BOX 227	ARTESIA NM 882110227	OPERATING RIGHTS	0.000000000
PRIDE ENERGY CO	PO BOX 701950	TULSA OK 741701950	OPERATING RIGHTS	0.000000000
SHUMATE GENE	BOX 2473	MIDLAND TX 797022473	OPERATING RIGHTS	0.000000000
SOUTHWEST RESERVES	200 CRESCENT CT 1310	DALLAS TX 75201	OPERATING RIGHTS	0.000000000
SOUTHWEST ROYALTIES INC	6 DESTA DR STE 3700	MIDLAND TX 797055516	OPERATING RIGHTS	0.000000000
WHITE T ALAN	3205 BOYD	MIDLAND TX 79705	OPERATING RIGHTS	0.000000000

Serial Number: NMNM-- - 012211

Mer Twp Rng Sec	STyp	SNr Suff	Subdivision	District/Field Office	County	Mgmt Agency
23 0180S 0310E 020	ALIQ		W2NE,N2SW,SESW;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT
23 0180S 0310E 033	ALIQ		W2,SE;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- - 012211

Act Date	Code	Action	Action Remark	Pending Office
12/04/1939	387	CASE ESTABLISHED		
12/04/1939	496	FUND CODE	05;145003	
12/04/1939	868	EFFECTIVE DATE		
07/01/1970	651	HELD BY PROD - ALLOCATED		
07/01/1970	660	MEMO OF 1ST PROD-ALLOC		
08/20/1970	209	CASE CREATED BY SEGR	OUT OF NMNM025778;	
03/01/1977	246	LEASE COMMITTED TO CA	SRM1165	
08/10/1977	396	TRF OF INTEREST FILED	V S WELCH/M C WELCH	
03/30/1978	246	LEASE COMMITTED TO CA	SRM1303	
11/13/1979	246	LEASE COMMITTED TO CA	SCR65	
12/01/1979	242	LEASE RENEWED	THRU 11/30/89;	
08/28/1980	932	TRF OPER RGTS FILED		
12/11/1980	932	TRF OPER RGTS FILED		
02/19/1982	246	LEASE COMMITTED TO CA	SCR403	
02/28/1982	522	CA TERMINATED	SRM-1303	
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05/17/1983	932	TRF OPER RGTS FILED	(2)	
05/17/1983	932	TRF OPER RGTS FILED	(3)	
05/17/1983	932	TRF OPER RGTS FILED	(4)	
09/20/1984	932	TRF OPER RGTS FILED		
08/09/1985	932	TRF OPER RGTS FILED		
09/09/1985	932	TRF OPER RGTS FILED		

09/20/1985	932	TRF OPER RGTS FILED	
10/04/1985	932	TRF OPER RGTS FILED	
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07/21/1986	933	TRF OPER RGTS APPROVED	EFF 11/01/85;
07/28/1986	963	CASE MICROFILMED/SCANNED	CNUM 100,702 DS
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12/07/1987	933	TRF OPER RGTS APPROVED	EFF 12/01/87;
12/07/1987	974	AUTOMATED RECORD VERIF	BTM/BTM
06/02/1989	314	RENEWAL APLN FILED	
12/01/1989	242	LEASE RENEWED	THRU 11/30/99;
12/01/1989	530	RLTY RATE - 12 1/2%	/A/
12/01/1989	868	EFFECTIVE DATE	
12/08/1989	974	AUTOMATED RECORD VERIF	TF/TF
02/16/1990	974	AUTOMATED RECORD VERIF	TF/TF
07/17/1990	817	MERGER RECOGNIZED	ENSOURCE ETAL/UMC
07/17/1990	974	AUTOMATED RECORD VERIF	GLC/GC
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09/25/1990	269	ASGN DENIED	MCRAE SLOAN/MCRAE
09/25/1990	974	AUTOMATED RECORD VERIF	GLC/MT
03/26/1991	909	BOND ACCEPTED	EFF 03/22/91;NM1865
04/16/1991	932	TRF OPER RGTS FILED	UMC PETRO/HEADINGTON
05/23/1991	932	TRF OPER RGTS FILED	POINT PETRO/SW RLTYS
06/20/1991	933	TRF OPER RGTS APPROVED	EFF 05/01/91;
06/20/1991	974	AUTOMATED RECORD VERIF	MRR/CG
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08/02/1991	974	AUTOMATED RECORD VERIF	MRR/AMR
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06/16/1997	932	TRF OPER RGTS FILED	HEADINGTON/PRIDE ENE
06/25/1997	933	TRF OPER RGTS APPROVED	EFF 06/01/97;

06/25/1997	974	AUTOMATED RECORD VERIF	MV/MV
07/15/1997	933	TRF OPER RGTS APPROVED	EFF 07/01/97;
07/15/1997	974	AUTOMATED RECORD VERIF	JLV
12/16/1997	817	MERGER RECOGNIZED	COENE ANADARKO/MIDCON
12/16/1997	940	NAME CHANGE RECOGNIZED	COENE MIDCON/MCNIC OG
12/16/1997	974	AUTOMATED RECORD VERIF	BTM
06/12/1998	817	MERGER RECOGNIZED	UMC PETRO/OCEAN ENE
06/12/1998	974	AUTOMATED RECORD VERIF	BTM
03/15/1999	103	ADDTL INFO RECD	STIPS:DUNE LIZARD
03/15/1999	103	ADDTL INFO RECD	STIPS:PRAIRIE CHICKEN
08/16/1999	932	TRF OPER RGTS FILED	OCEAN ENE/ENERGEN
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10/08/1999	933	TRF OPER RGTS APPROVED	EFF 09/01/99;
10/08/1999	974	AUTOMATED RECORD VERIF	JLV
12/01/1999	242	LEASE RENEWED	THRU 11/30/19;
12/01/1999	530	RLTY RATE - 12 1/2%	/A/
12/01/1999	868	EFFECTIVE DATE	LAST RENEWAL
01/11/2000	932	TRF OPER RGTS FILED	MARATHON/MORIAH
03/21/2000	140	ASGN FILED	OCEAN/OCEAN ENE RES
04/07/2000	933	TRF OPER RGTS APPROVED	EFF 02/01/00;
04/07/2000	974	AUTOMATED RECORD VERIF	JLV
10/06/2000	269	ASGN DENIED	
10/06/2000	974	AUTOMATED RECORD VERIF	ANN
11/01/2000	621	RLTY RED-STRIPPER WELL	1.3%;/2/
03/19/2001	625	RLTY REDUCTION APPV	/2/
09/28/2001	522	CA TERMINATED	SCR-65;
11/08/2001	817	MERGER RECOGNIZED	OCEAN ENE RES/ENE INC
02/27/2002	932	TRF OPER RGTS FILED	18-31 INC;1
06/12/2002	933	TRF OPER RGTS APPROVED	EFF 03/01/02;
06/12/2002	974	AUTOMATED RECORD VERIF	MV
06/17/2002	932	TRF OPER RGTS FILED	18-31 INC;1
07/18/2002	932	TRF OPER RGTS FILED	SHUMATE, GENE;1
08/02/2002	933	TRF OPER RGTS APPROVED	EFF 07/01/02;
08/02/2002	974	AUTOMATED RECORD VERIF	LR
09/17/2002	933	TRF OPER RGTS APPROVED	EFF 08/01/02;
09/17/2002	974	AUTOMATED RECORD VERIF	LR
11/25/2002	932	TRF OPER RGTS FILED	CHI ENE INC;1
12/10/2002	817	MERGER RECOGNIZED	FIDELITY OIL/EXPLPROD
03/04/2003	933	TRF OPER RGTS APPROVED	EFF 12/01/02;
03/04/2003	974	AUTOMATED RECORD VERIF	MV
06/01/2003	940	NAME CHANGE RECOGNIZED	CONCHO O&G/CONCHO RES
08/14/2003	940	NAME CHANGE RECOGNIZED	OCEAN ENE/DEVON LA
01/01/2004	621	RLTY RED-STRIPPER WELL	1.3%;/3/
01/30/2004	817	MERGER RECOGNIZED	CONCHO/CHESAPEAKE PER
06/15/2004	932	TRF OPER RGTS FILED	18-31 INC/MARBOB ENE
08/04/2004	933	TRF OPER RGTS APPROVED	EFF 07/01/04;
08/04/2004	974	AUTOMATED RECORD VERIF	JLV
08/09/2004	932	TRF OPER RGTS FILED	
08/09/2004	932	TRF OPER RGTS FILED	CHESAPEAKE/18-31 INC
09/22/2004	933	TRF OPER RGTS APPROVED	EFF 09/01/04;
09/22/2004	974	AUTOMATED RECORD VERIF	MV
11/02/2004	817	MERGER RECOGNIZED	CHESAPEAKE PER/LP
12/15/2004	625	RLTY REDUCTION APPV	/3/
12/23/2004	974	AUTOMATED RECORD VERIF	BCO
01/01/2005	621	RLTY RED-STRIPPER WELL	1.3%/4/

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BUREAU OF LAND MANAGEMENT
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Run Date: 03/07/2016

03/08/2006	817	MERGER RECOGNIZED	DEVON LA/DEVON ENE
05/09/2006	932	TRF OPER RGTS FILED	BROTHERS/LEGACY RE;1
05/09/2006	932	TRF OPER RGTS FILED	MORIAH RE/LEGACY RE;1
06/19/2006	625	RLTY REDUCTION APPV	/4/
10/05/2006	933	TRF OPER RGTS APPROVED	1EFF 06/01/06;
10/05/2006	933	TRF OPER RGTS APPROVED	2EFF 06/01/06;
10/05/2006	974	AUTOMATED RECORD VERIF	TF/TF
11/17/2006	974	AUTOMATED RECORD VERIF	ANN
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;1
07/12/2011	933	TRF OPER RGTS APPROVED	EFF 05/01/11;
07/12/2011	974	AUTOMATED RECORD VERIF	MV
01/07/2013	932	TRF OPER RGTS FILED	TOMMY PHI/PRIDE ENE;1
07/08/2013	933	TRF OPER RGTS APPROVED	EFF 02/01/13;
07/08/2013	974	AUTOMATED RECORD VERIF	ANN
03/10/2015	932	TRF OPER RGTS FILED	WHITE T/PRIDE ENERG;1
04/13/2015	933	TRF OPER RGTS APPROVED	EFF04/01/15;
04/13/2015	974	AUTOMATED RECORD VERIF	ANN
07/07/2015	899	TRF OF ORR FILED	3

Serial Number: NMNM-- - 012211

Line Nr	Remarks
0002	/A/AC 534 RLTY RATE SLIDING SCH D 12/4/1939 THRU
0003	11/30/1989. AC 530 RLTY RATE 12.50% EFF 12/01/1989
0004	THRU 11/30/1999. AC 530 RLTY RATE 12.50%
0005	EFF 12/01/1999 THRU 11/30/2019.

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BUREAU OF LAND MANAGEMENT
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(MASS) Serial Register Page

Run Date: 03/07/2016

01 02-25-1920;041STAT0437;30USC226

Case Type 311111: O&G LSE NONCOMP PUB LAND
Commodity 459: OIL & GAS
Case Disposition: AUTHORIZED

Total Acres	Serial Number
80.000	NMNM-- - 012210

Serial Number: NMNM-- - 012210

Name & Address			Int Rel	% Interest
DEVON ENERGY PROD CO LP	333 W SHERIDAN AVE	OKLAHOMA CITY OK 731025010	LESSEE	64.883480000
ENERGEN RESOURCES CO	605 RICHARD ARRINGTON JR BLVD	BIRMINGHAM AL 352032707	LESSEE	18.432200000
FIDELITY EXPL & PROD CO	1700 LINCOLN ST STE 4600	DENVER CO 802034509	LESSEE	16.684320000
MILL PETE	706 BOYD AVE	MIDLAND TX 79705	OPERATING RIGHTS	0.000000000
MOMENTUM OPERATING CO	224 S MAIN	ALBANY TX 76430	OPERATING RIGHTS	0.000000000
NORTEX CORP	1415 LOUISIANA #3100	HOUSTON TX 77002	OPERATING RIGHTS	0.000000000
POOL JOHN D	PO BOX 5441	MIDLAND TX 79704	OPERATING RIGHTS	0.000000000
SELL STEVE	PO BOX 5061	MIDLAND TX 79704	OPERATING RIGHTS	0.000000000

Serial Number: NMNM-- - 012210

Mer Twp Rng Sec	STyp	SNr Suff	Subdivision	District/Field Office	County	Mgmt Agency
23 0180S 0310E 020	ALIQ		W2SE;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- - 012210

Act Date	Code	Action	Action Remark	Pending Office
02/23/1954	387	CASE ESTABLISHED		
03/01/1954	496	FUND CODE	05;145003	
03/01/1954	530	RLTY RATE - 12 1/2%		
03/01/1954	868	EFFECTIVE DATE		
09/13/1968	909	BOND ACCEPTED	EFF 09/12/68;NM0043	
07/01/1970	209	CASE CREATED BY SEGR	OUT OF NMNM014102;	
07/01/1970	650	HELD BY PROD - ACTUAL		
07/01/1970	658	MEMO OF 1ST PROD-ACTUAL		
03/01/1977	246	LEASE COMMITTED TO CA	SRM-1165	
07/15/1986	817	MERGER RECOGNIZED	CHEVRON USA/GULF OIL	
07/15/1986	940	NAME CHANGE RECOGNIZED	GULF OIL/CHEVRON USA	
04/29/1987	974	AUTOMATED RECORD VERIF	ESO/VL	
05/20/1987	963	CASE MICROFILMED/SCANNED	CNUM 561,131 RW	
06/08/1992	974	AUTOMATED RECORD VERIF	BC/JLV	
10/01/1992	621	RLTY RED-STRIPPER WELL	1.3%;/1/	
10/02/1992	140	ASGN FILED	CHEVRON/CHEVRON PBC	
02/26/1993	139	ASGN APPROVED	EFF 11/01/92;	
02/26/1993	974	AUTOMATED RECORD VERIF	MRR/KRP	
03/01/1993	625	RLTY REDUCTION APPV	/1/	
05/25/1993	974	AUTOMATED RECORD VERIF	JLV	
03/24/1995	940	NAME CHANGE RECOGNIZED	CHEVRON PBC/PENNZOIL	
04/28/1995	932	TRF OPER RGTS FILED	SOUTHLAND RLTY/MILLS	
07/03/1995	933	TRF OPER RGTS APPROVED	EFF 05/01/95;	
07/03/1995	974	AUTOMATED RECORD VERIF	LR	
07/17/1995	932	TRF OPER RGTS FILED	PENNZOIL/NORTEX CORP	
09/05/1995	933	TRF OPER RGTS APPROVED	EFF 08/01/95;	
09/05/1995	974	AUTOMATED RECORD VERIF	ANN	
10/11/1995	140	ASGN FILED	PENNZOIL/UMC PETRO	
12/12/1995	139	ASGN APPROVED	EFF 11/01/95;	
12/12/1995	974	AUTOMATED RECORD VERIF	MV/MV	

07/08/1996	932	TRF OPER RGTS FILED	MILLS/SELL ETAL
10/17/1996	933	TRF OPER RGTS APPROVED	EFF 08/01/96;
10/17/1996	974	AUTOMATED RECORD VERIF	LR
06/12/1998	817	MERGER RECOGNIZED	UMC PETRO/OCEAN ENE
06/12/1998	974	AUTOMATED RECORD VERIF	BTM
08/16/1999	140	ASGN FILED	OCEAN ENE/ENERGEN
10/05/1999	139	ASGN APPROVED	EFF 09/01/99;
10/05/1999	974	AUTOMATED RECORD VERIF	MV/MV
03/21/2000	140	ASGN FILED	OCEAN/OCEAN ENE RES
09/22/2000	899	TRF OF ORR FILED	(1)
09/22/2000	899	TRF OF ORR FILED	(2)
09/22/2000	899	TRF OF ORR FILED	(3)
09/22/2000	899	TRF OF ORR FILED	(4)
10/06/2000	269	ASGN DENIED	
10/06/2000	974	AUTOMATED RECORD VERIF	ANN
01/10/2001	932	TRF OPER RGTS FILED	SELL/MOMENTUM
03/01/2001	933	TRF OPER RGTS APPROVED	EFF 02/01/01;
03/01/2001	974	AUTOMATED RECORD VERIF	LR
11/08/2001	817	MERGER RECOGNIZED	OCEAN ENE RES/ENE INC
12/10/2002	817	MERGER RECOGNIZED	FIDELITY OIL/EXPLPROD
08/14/2003	940	NAME CHANGE RECOGNIZED	OCEAN ENE/DEVON LA
03/08/2006	817	MERGER RECOGNIZED	DEVON LA/DEVON ENE

Serial Number: NMNM-- - 012210

Line Nr	Remarks
0002	BONDED OPERATOR FOR CA-1165
0003	02261993 - CHEVRON USA ES0022-NW
0004	BONDED OPERATOR -
0005	10/17/1996 - PENNZOIL EXPL & PROD CO - NM0043 - N/W
0006	BONDED OPERATOR - PER AFMSS
0007	03/01/2001 - READY OIL & GAS MGMT - NM2706 - S/W;

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

Run Date: 03/07/2016

01 02-25-1920;041STAT0437;30USC181ETSEQ
Case Type 312011: O&G LSE COMP PUBLIC
Commodity 459: OIL & GAS
Case Disposition: AUTHORIZED

Total Acres	Serial Number
80.000	NMNM-- 0 014102

Serial Number: NMNM-- 0 014102

Name & Address			Int Rel	% Interest
DEVON ENERGY PROD CO LP	333 W SHERIDAN AVE	OKLAHOMA CITY OK 731025010	LESSEE	64.883480000
ENERGEN RESOURCES CO	605 RICHARD ARRINGTON JR BLVD	BIRMINGHAM AL 352032707	LESSEE	18.432200000
FIDELITY EXPL & PROD CO	1700 LINCOLN ST STE 4600	DENVER CO 802034509	LESSEE	16.684320000
ROST ENERGY CO INC	PO BOX 5171	PITTSBURGH PA 15206	OPERATING RIGHTS	0.000000000

Serial Number: NMNM-- 0 014102

Mer Twp Rng Sec	STyp	SNr Suff	Subdivision	District/Field Office	County	Mgmt Agency
23 0180S 0310E 020	ALIQ		E2SE;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Relinquished/Withdrawn Lands **Serial Number: NMNM-- 0 014102**

23 0180S 0310E 720	FF	W2SE SEGR;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- 0 014102

Act Date	Code	Action	Action Remark	Pending Office
10/27/1953	387	CASE ESTABLISHED	PARCEL #2	
10/28/1953	196	BID ACCEPTED		
03/01/1954	237	LEASE ISSUED		
03/01/1954	496	FUND CODE	05;145003	
03/01/1954	532	RLTY RATE 12.5-25% SCH B		
03/01/1954	868	EFFECTIVE DATE		
05/19/1954	140	ASGN FILED	GEORGE W LITTLEFIELD/	
05/27/1954	139	ASGN APPROVED	EFF 06/01/54;	
05/23/1958	650	HELD BY PROD - ACTUAL		
06/30/1970	700	LEASE SEGREGATED	INTO NMNM12210;	
07/01/1970	232	LEASE COMMITTED TO UNIT	NMNM71000X;N SHUGART	
07/01/1970	500	GEOGRAPHIC NAME	N SHUGART QUEEN UA	
03/01/1977	246	LEASE COMMITTED TO CA	SRM-1165	
02/16/1979	932	TRF OPER RGTS FILED	(1)	
02/16/1979	932	TRF OPER RGTS FILED	(2)	
02/16/1979	932	TRF OPER RGTS FILED	(3)	
05/26/1982	932	TRF OPER RGTS FILED	(1)	
05/26/1982	932	TRF OPER RGTS FILED	(2)	
03/28/1986	933	TRF OPER RGTS APPROVED	(1)EFF 08/01/83;	
03/28/1986	933	TRF OPER RGTS APPROVED	(2)EFF 08/01/83;	
03/28/1986	933	TRF OPER RGTS APPROVED	(3)EFF 08/01/83;	
03/28/1986	933	TRF OPER RGTS APPROVED	(4)EFF 08/01/83;	
03/28/1986	933	TRF OPER RGTS APPROVED	(5)EFF 08/01/83;	
04/02/1986	963	CASE MICROFILMED/SCANNED	CNUM 100,154 EPR	
07/15/1986	817	MERGER RECOGNIZED	CHEVRON USA/GULF OIL	
07/15/1986	940	NAME CHANGE RECOGNIZED	GULF OIL/CHEVRON USA	
03/12/1987	932	TRF OPER RGTS FILED	(1)	
03/12/1987	932	TRF OPER RGTS FILED	(2)	
03/27/1987	933	TRF OPER RGTS APPROVED	(1)EFF 04/01/86;	
03/27/1987	933	TRF OPER RGTS APPROVED	(2)EFF 04/01/86;	
06/22/1988	974	AUTOMATED RECORD VERIF	AMR/JA	
10/02/1992	140	ASGN FILED	CHEVRON/CHEVRON PBC	

02/24/1993	139	ASGN APPROVED	EFF 11/01/92;
02/24/1993	974	AUTOMATED RECORD VERIF	MRR/KRP
12/30/1994	817	MERGER RECOGNIZED	PENNZOIL E&P/PENNZOIL
12/30/1994	940	NAME CHANGE RECOGNIZED	PENNZOIL/PENNZOIL E&P
03/24/1995	940	NAME CHANGE RECOGNIZED	CHEVRON PBC/PENNZOIL
10/11/1995	140	ASGN FILED	PENNZOIL/UMC PETRO
12/12/1995	139	ASGN APPROVED	EFF 12/01/95;
12/12/1995	974	AUTOMATED RECORD VERIF	MV/MV
07/17/1997	932	TRF OPER RGTS FILED	PENNZOIL/ROST ENE
08/18/1997	933	TRF OPER RGTS APPROVED	EFF 08/01/97;
08/18/1997	974	AUTOMATED RECORD VERIF	TF/TF
06/12/1998	817	MERGER RECOGNIZED	UMC PETRO/OCEAN ENE
06/12/1998	974	AUTOMATED RECORD VERIF	BTM
12/28/1998	817	MERGER RECOGNIZED	PENNZOIL E&P/PENNZENE
08/16/1999	140	ASGN FILED	OCEAN ENE/ENERGEN
10/05/1999	139	ASGN APPROVED	EFF 09/01/99;
10/05/1999	974	AUTOMATED RECORD VERIF	MV/MV
03/21/2000	140	ASGN FILED	OCEAN/OCEAN ENE RES
10/06/2000	269	ASGN DENIED	
10/06/2000	974	AUTOMATED RECORD VERIF	ANN
11/08/2001	817	MERGER RECOGNIZED	OCEAN ENE RES/ENE INC
12/10/2002	817	MERGER RECOGNIZED	FIDELITY OIL/EXPLPROD
08/14/2003	940	NAME CHANGE RECOGNIZED	OCEAN ENE/DEVON LA
03/08/2006	817	MERGER RECOGNIZED	DEVON LA/DEVON ENE

Serial Number: NMNM-- 0 014102

Line Nr	Remarks

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

No records found.

PLSS Search:

Section(s): 20 **Township:** 18S **Range:** 31E

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	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00849		LE	3	1	3	35	18S	31E	608012	3618757*	300		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 1

PLSS Search:

Township: 18S **Range:** 31E

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

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating, LLC
LEASE NO.:	NMNM132948
WELL NAME & NO.:	1H-Gray Squirrel Federal Com
SURFACE HOLE FOOTAGE:	1980'/S & 190'/W
BOTTOM HOLE FOOTAGE	1780'/S & 330'/E
LOCATION:	Section 8, T.18 S., R.31 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)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

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.

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.

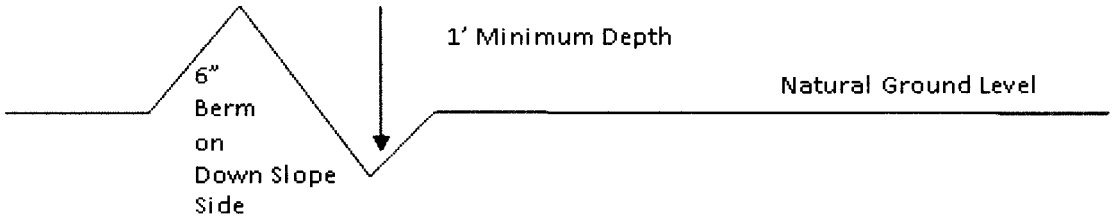
Ditching
Ditching shall be required on both sides of the road.

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:

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

Cattle guards
An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards 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 cattle guards 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

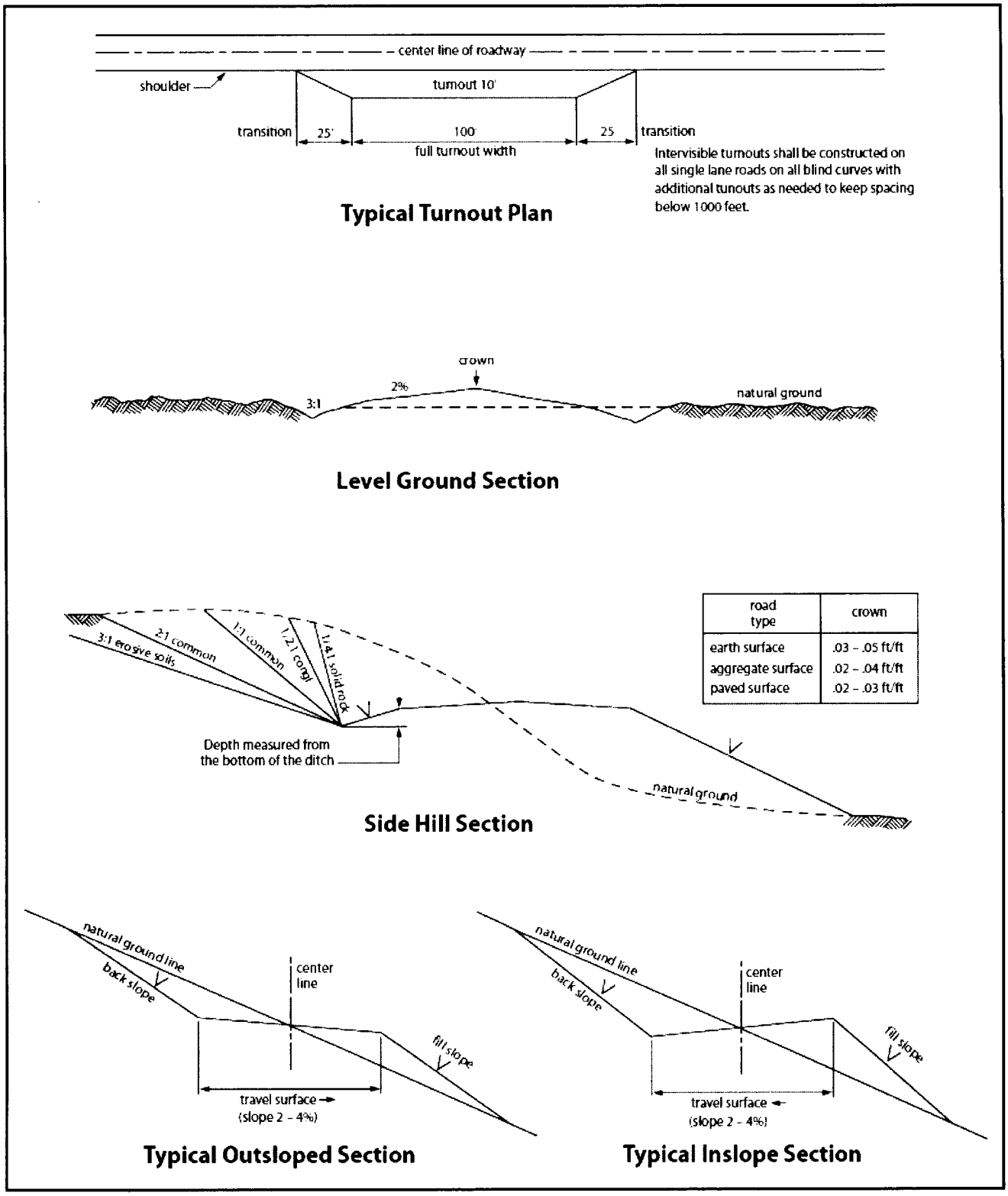


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Yates** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe. If Hydrogen Sulfide is encountered, please 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.).

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

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

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

Possibility of water flows in the Salado and Queen.
Possibility of lost circulation in the Artesia Group, Red Beds, Rustler, Grayburg, San Andres, and Delaware.

1. The **13-3/8** inch surface casing shall be set at approximately **580** feet (**in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface. **Fresh water mud to be used to setting depth.**
    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, is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to 7% - Additional cement will be required.**
3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
    ☒ Cement as proposed by operator. Operator shall provide method of verification.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. 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 (operator has proposed to use 2M annular preventer).
3. 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.
4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
    d. The results of the test shall be reported to the appropriate BLM office.
    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
    f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and

disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

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

MHH 12212016

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).

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

Seed Mixture for LPC Sand/Shinnery Sites

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 shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall 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). 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. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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