

HOBBS OCD

SEP 15 2015

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UNORTHODOX
LOCATION

OCD Hobbs

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

1a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. SHL: State, BHL: NMLC0063645	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator COG Operating LLC		7. If Unit or CA Agreement, Name and No.	
3a. Address 2208 West Main Street Artesia, NM 88210		8. Lease Name and Well No. (40465) Scooter Federal Com #2H	
3b. Phone No. (include area code) 575-748-6940		9. API Well No. 30-025-42788	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FNL & 1650' FWL Unit Letter C (NENW) SHL Sec. 23-18S-T33E At proposed prod. Zone 330' FSL & 1650' FWL Unit Letter N (SESW) BHL: Sec 23-T18S-R33E		10. Field and Pool, or Exploratory Corbin; Bone Spring, South	
14. Distance in miles and direction from nearest town or post office* Approximately 8 miles from Maljamar		11. Sec., T.R.M. or Blk and Survey or Area Sec 23-T18S-R33E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 190'		12. County or Parish Lea County	
16. No. of acres in lease 800		13. State NM	
17. Spacing Unit dedicated to this well 160		18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 574' BHL: 2438'	
19. Proposed Depth TVD: 9,698' MD: 14,130'		20. BLM/BIA Bond No. on file NMB000740 & NMB000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3898.4' GL		22. Approximate date work will start* 8/1/2015	
23. Estimated duration 30 days		24. Attachments	

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

- | | |
|---|--|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan | 5. Operator certification |
| 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). | 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 4-27-15
Title Regulatory Analyst		
Approved by (Signature) /s/ JEANETTE MARTINEZ	Name (Printed/Typed)	Date SEP 14 2015
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 thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEP 16 2015

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

FID	Shape *	OPERATOR	WELL_NAME	LATITUDE	LONGITUD	API	SECTION	TOWNSHIP	RANGE	FTG_NS	NS_CD	FTG_EW	EW_CD	TVD_DEPT	COMPL_STAT
0	Point	LEGACY RESERVES OPERATING, LP	STATE E 744-15 002	32.74124	-103.643	3E+09	15	18.05	33E	330 S		330 E		6035	New (Not drilled or co
1	Point	MOBIL PROD TX & NM	E K QUEEN UNIT 004	32.7422	-103.622	3E+09	13	18.05	33E	660 S		990 W		4355	Plugged
2	Point	SEELY OIL CO	E-K QUEEN UNIT 613	32.74583	-103.623	3E+09	13	18.05	33E	1980 S		660 W		4340	Active
3	Point	SEELY OIL CO	E-K QUEEN UNIT 021	32.74218	-103.627	3E+09	14	18.05	33E	660 S		660 E		0	Plugged
4	Point	SOCONY MOBIL OIL CO INC	E K QUEEN UNIT 002	32.74217	-103.632	3E+09	14	18.05	33E	660 S		1980 E		4340	Plugged
5	Point	MOBIL OIL CORP	E K QUEEN UNIT 007	32.74581	-103.627	3E+09	14	18.05	33E	1980 S		660 E		4351	Plugged
6	Point	MOBIL PROD TX & NM	CARPER SIVLEY A FEDE 008	32.74945	-103.627	3E+09	14	18.05	33E	1980 N		660 E		4335	Plugged
7	Point	MOBIL OIL CORP	E K QUEEN UNIT 001	32.74579	-103.636	3E+09	14	18.05	33E	1980 S		1980 W		4313	Plugged
8	Point	MOBIL OIL CORP	E K QUEEN UNIT 002	32.74669	-103.64	3E+09	14	18.05	33E	2310 S		660 W		4284	Plugged
9	Point	MOBIL OIL CORP	E K QUEEN UNIT 001	32.74943	-103.636	3E+09	14	18.05	33E	1980 N		1980 W		4330	Plugged
10	Point	MOBIL PROD TX & NM	E K QUEEN UNIT 002	32.74942	-103.64	3E+09	14	18.05	33E	1980 N		660 W		4356	Plugged
11	Point	MOBIL PROD TX & NM	E K QUEEN UNIT 009	32.7458	-103.632	3E+09	14	18.05	33E	1980 S		1980 E		4314	Plugged
12	Point	MOBIL PROD TX & NM	E K QUEEN UNIT 010	32.75034	-103.633	3E+09	14	18.05	33E	1650 N		2310 E		4318	Plugged
13	Point	JOSEPH I ONEILL JR	STATE H 001	32.7421	-103.653	3E+09	15	18.05	33E	660 S		1980 W		4271	Plugged
14	Point	MOBIL OIL CORP	E K QUEEN UNIT 001	32.73856	-103.627	3E+09	23	18.05	33E	660 N		660 E		4356	Plugged
15	Point	MOBIL PROD TX & NM	E K QUEEN UNIT 002	32.73493	-103.627	3E+09	23	18.05	33E	1980 N		660 E		4347	Plugged
16	Point	SEELY OIL CO	E-K QUEEN UNIT 013	32.73855	-103.632	3E+09	23	18.05	33E	660 N		1980 E		0	Plugged
17	Point	MOBIL OIL CORP	E K QUEEN UNIT 005	32.73854	-103.636	3E+09	23	18.05	33E	660 N		1980 W		4338	Plugged
18	Point	ARCO OIL & GAS	STATE G TG 002	32.73948	-103.622	3E+09	24	18.05	33E	330 N		990 W		4382	Plugged
19	Point	MOBIL OIL CORP	E K QUEEN UNIT 003	32.73585	-103.622	3E+09	24	18.05	33E	1650 N		990 W		4383	Plugged
20	Point	TEXAS GULF INC	STATE G 004	32.73223	-103.622	3E+09	24	18.05	33E	2310 S		990 W		4638	Plugged
21	Point	SOUTHERN UNION GAS CO	ENGLISH 001	32.71674	-103.64	3E+09	26	18.05	33E	1980 S		660 W		745	Plugged
22	Point	SOUTHERN UNION GAS CO	ENGLISH 001Y	32.71674	-103.64	3E+09	26	18.05	33E	1980 S		710 W		5323	Plugged
23	Point	ROY H SMITH DRLG	FEDERAL ADX 002	32.72759	-103.653	3E+09	22	18.05	33E	660 S		1980 W		4300	Plugged
24	Point	EOG RESOURCES INC	FEDERAL MA 001	32.72035	-103.649	3E+09	27	18.05	33E	1980 N		1980 E		13510	Plugged
25	Point	MOBIL OIL CORP	E K QUEEN UNIT 006	32.73222	-103.624	3E+09	24	18.05	33E	2310 S		330 W		4450	Plugged
26	Point	F W ESTILL	FEDERAL 001	32.71312	-103.64	3E+09	26	18.05	33E	660 S		660 W		5298	Plugged
27	Point	EOG RESOURCES INC	AZTEC 22 FEDERAL 001	32.73485	-103.653	3E+09	22	18.05	33E	1980 N		1980 W		13610	Active
28	Point	FASKEN OIL & RANCH LTD	FEDERAL 26 A 001	32.71313	-103.636	3E+09	26	18.05	33E	660 S		1980 W		10600	Active
29	Point	CHEVRON U S A INC	EDITH FEDERAL 003	32.72002	-103.623	3E+09	25	18.05	33E	2130 N		660 W		10500	Active
30	Point	ECHO PRODUCTION INC	TEXACO 14 FEDERAL 001	32.75305	-103.636	3E+09	14	18.05	33E	660 N		1980 W		9500	Active
31	Point	CHEVRON U S A INC	M T KEOHANE FEDERAL 003	32.75395	-103.639	3E+09	14	18.05	33E	330 N		990 W		9050	Active
32	Point	EOG RESOURCES INC	FEDERAL MA 003	32.72396	-103.653	3E+09	27	18.05	33E	660 N		1980 W		12500	Active
33	Point	SANTA FE EXPLORATION CO	SUN FEDERAL COM 001	32.7213	-103.636	3E+09	26	18.05	33E	1650 N		1980 W		13515	Plugged
34	Point	LEGACY RESERVES OPERATING, LP	STATE E 744-15 001	32.74606	-103.644	3E+09	15	18.05	33E	2086 S		544 E		11496	Active
35	Point	BURLINGTON RESOURCES OIL & GAS CO	PERCHA 15 STATE 002	32.7421	-103.653	3E+09	15	18.05	33E	660 S		1880 W		2912	Plugged
36	Point	EOG RESOURCES INC	PERCHA 15 STATE 002Y	32.7421	-103.654	3E+09	15	18.05	33E	660 S		1830 W		11590	Plugged
37	Point	FASKEN OIL & RANCH LTD	FEDERAL 26 A 002	32.71676	-103.636	3E+09	26	18.05	33E	1980 S		1980 W		4750	Plugged
38	Point	CHEVRON U S A INC	ARCHIE FEDERAL 001	32.71995	-103.627	3E+09	26	18.05	33E	2150 N		530 E		5830	Active
39	Point	COG OPERATING LLC	SCOOCH STATE COM 001	32.73491	-103.636	3E+09	23	18.05	33E	1980 N		1980 W		13650	Active
40	Point	COG OPERATING LLC	SCRATCH STATE COM 001	32.73494	-103.623	3E+09	24	18.05	33E	1980 N		660 W		13710	Active
41	Point	MARBOB ENERGY CORP	SCOOCH STATE COM 002	32.73855	-103.631	3E+09	23	18.05	33E	660 N		1650 E		0	New (Not drilled or co
42	Point	MARBOB ENERGY CORP	PICK STATE COM 001	32.73129	-103.632	3E+09	23	18.05	33E	1980 S		2130 E		0	New (Not drilled or co
43	Point	COG OPERATING LLC	ITCH STATE 001	32.73797	-103.637	3E+09	23	18.05	33E	865 N		1650 W		9200	Active
44	Point	COG OPERATING LLC	RASH STATE 001	32.73764	-103.633	3E+09	23	18.05	33E	990 N		2310 E		6130	Active
45	Point	COG OPERATING LLC	RHOID STATE 001	32.73947	-103.624	3E+09	24	18.05	33E	330 N		330 W		9200	Active
46	Point	COG OPERATING LLC	ITCH STATE 003	32.7358	-103.641	3E+09	23	18.05	33E	1650 N		330 W		6022	Active
47	Point	COG OPERATING LLC	ITCH STATE 002	32.73943	-103.641	3E+09	23	18.05	33E	330 N		330 W		6050	Active
48	Point	COG OPERATING LLC	RUGBURN STATE 001	32.73217	-103.641	3E+09	23	18.05	33E	2310 S		330 W		6113	Active
49	Point	COG OPERATING LLC	RUGBURN STATE 002	32.73218	-103.637	3E+09	23	18.05	33E	2310 S		1650 W		6102	Active
50	Point	COG OPERATING LLC	PICK SWD 002	32.73219	-103.633	3E+09	23	18.05	33E	2310 S		2310 E		6503	TA
51	Point	SEELY OIL CO	FEDERAL 22 001	32.73579	-103.643	3E+09	22	18.05	33E	1650 N		330 E		999	Active
52	Point	COG OPERATING LLC	RASH STATE 002	32.73583	-103.628	3E+09	23	18.05	33E	1650 N		990 E		6100	Active
53	Point	SEELY OIL CO	CORBIN 22 FEDERAL 001I	32.73216	-103.645	3E+09	22	18.05	33E	2311 S		661 E		0	
54	Point	COG OPERATING LLC	SCAB FEDERAL 001	32.7376	-103.645	3E+09	22	18.05	33E	990 N		660 E		6102	Active
55	Point	COG OPERATING LLC	ITCH STATE 004	32.73581	-103.637	3E+09	23	18.05	33E	1650 N		1650 W		6105	Active
56	Point	FASKEN OIL & RANCH LTD	FEDERAL 26 A 004	32.71554	-103.626	3E+09	26	18.05	33E	1525 S		300 E		6000	New (Not drilled or co
57	Point	FASKEN OIL & RANCH LTD	FEDERAL 26 A 005	32.71648	-103.633	3E+09	26	18.05	33E	1875 S		2255 E		6000	New (Not drilled or co

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58 Point	FASKEN OIL & RANCH LTD	FEDERAL 26 A 006	32.71389	-103.632	3E+09	26 18.0S	33E	930 S	2120 E	6000 New (Not drilled or co
59 Point	DEVON ENERGY PRODUCTION COMPANY, LP	BROWN BEAR 14 STATE 001	32.74215	-103.641	3E+09	14 18.0S	33E	660 S	330 W	9685 New (Not drilled or co
60 Point	DEVON ENERGY PRODUCTION COMPANY, LP	SCRATCH BEAR 24 FEDERAL COM 001H	32.73131	-103.624	3E+09	24 18.0S	33E	1980 S	330 W	0 Active
61 Point	SEELY OIL CO	KSI 22 FEDERAL 001H	32.7267	-103.649	3E+09	22 18.0S	33E	330 S	1980 E	13949 New (Not drilled or co
62 Point	SEELY OIL CO	KSI 22 FEDERAL 002H	32.72637	-103.645	3E+09	22 18.0S	33E	205 S	785 E	0 New (Not drilled or co
63 Point	COG OPERATING LLC	SCOOTER FEDERAL COM 001H	32.73982	-103.641	3E+09	23 18.0S	33E	190 N	460 W	0 New (Not drilled or co

COG Operating LLC – Scooter Federal Com 2H

1. Geologic Formations

TVD of target	9698'	Pilot hole depth	NA
MD at TD:	14,130'	Deepest expected fresh water:	250

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1485	Water	
Top of Salt	1562	Salt	Poss Losses
Base of Salt	2825	Salt	
Yates	3008	Oil/Gas	
Seven Rivers	3391	Oil/Gas	
Delaware	5159	Barren	
Cherry Canyon	5164	Oil/Gas	
Brushy Canyon	6034	Oil/Gas	
Bone Spring Lime	7221	Barren	
U. Avalon Shale	7553	Oil/Gas	
L. Avalon Shale	8022	Oil/Gas	
1 st Bone Spring Sand	8596	Oil/Gas	
2 nd Bone Spring Sand	9304	Oil/Gas – Target Zone	
3 rd Bone Spring Sand	9981	Oil/Gas – Not Penetrated	
Wolfcamp	10136	Oil/Gas – Not Penetrated	

See COA

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1525 / 1670	13.375"	54.5	J55	STC	1.18	1.88	6.18
12.25"	0	3100	9.625"	36	J55	LTC	1.39	1.06	3.53
8.75"	0	14,130	5.5"	17	P110	LTC	1.68	3.22	2.91
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h
 All casing string will be kept a minimum of 1/3 full with fluid at all time while running in the hole to avoid approaching collapse limits of the casing.

COG Operating LLC – Scooter Federal Com 2H

	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).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	700	13.5	1.75	9	12	Lead: Class C + 4% Gel + 2% CaCl ₂
	250	14.8	1.34	4.8	8	Tail: Class C + 2% CaCl ₂
Inter.	710	13.5	1.75	9	12	1 st stage Lead: Class C + 4% Gel + 1% CaCl ₂
	250	14.8	1.34	6.4	8	1 st stage Tail: Class C + 1% CaCl
Prod.	1050	11.9	2.51	14.1	72	1 st Lead: Halliburton Tune Lite Blend
	1200	14.4	1.24	5.7	20	1 st Tail: Versacem 50:50:2 Class H + 1% Salt

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

Casing String	TOC	% Excess
Surface	0'	50% (Based on Scooter Fed Com 1H)
Intermediate	0'	100% (Based on Scooter Fed Com 1H)
Production	2600'	17% OH in Lateral (KOP to EOL) – 40% OH in Vertical (to KOP) - Tie In 500' Inside 9-5/8" Casing Shoe @ 3100' + 50 sx Lead

COG Operating LLC – Scooter Federal Com 2H

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	x	2000 psi
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	11"	3M	Annular	x	50% testing pressure
			Blind Ram	x	3M
			Pipe Ram	x	
			Double Ram		
			Other*		

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.

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

COG Operating LLC – Scooter Federal Com 2H

5. Mud Program

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

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
Y	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.
N	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain
N	Coring? If yes, explain

Additional logs planned	Interval
N Resistivity	
N Density	
Y CBL	Production casing (If cement not circulated to surface)
Y Mud log	Intermediate shoe to TD
N PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4267 psi at 9698' TVD
Abnormal Temperature	NO – 152 deg F

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

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

N	H ₂ S is present
Y	H ₂ S Plan attached

See
COA

COG Operating LLC – Scooter Federal Com 2H

8. Other facets of operation

Is this a walking operation? NO If yes, describe.

Will be pre-setting casing? NO If yes, describe.

Attachments

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

COG OPERATING LLC

**Lea County, NM
Scooter Fed Com 2H
2H**

Lateral

Plan: Plan #1

Standard Planning Report

15 April, 2015

Section Distances

**Sec23,T18S,R33E
SHL - Unit C
190'FNL, 1650'FWL
PBHL - Unit N
330'FSL, 1650'FWL**

Archer

Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 2H
Company:	COG OPERATING, LLC	TVD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Site:	Scooter Fed Com 2H	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

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

Site	Scooter Fed Com 2H		
Site Position:	From: Map	Northing: 633,537.40 usft	Latitude: 32° 44' 23.11 N
		Easting: 714,269.40 usft	Longitude: 103° 38' 11.34 W
Position Uncertainty:	0.00 usft	Slot Radius: 13.200 in	Grid Convergence: 0.38 °

Well	2H		
Well Position	+N/-S 0.00 usft	Northing: 633,537.40 usft	Latitude: 32° 44' 23.11 N
	+E/-W 0.00 usft	Easting: 714,269.40 usft	Longitude: 103° 38' 11.34 W
Position Uncertainty	0.00 usft	Wellhead Elevation: 0.00 usft	Ground Level: 3,898.00 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/15/2015	7.03	60.85	48,603

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.60

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,092.75	0.00	0.00	9,092.75	0.00	0.00	0.00	0.00	0.00	0.00	
9,828.54	88.30	176.50	9,570.00	-462.40	28.28	12.00	12.00	0.00	176.50	
9,983.47	88.30	179.60	9,574.61	-617.15	33.55	2.00	0.00	2.00	90.05	
13,583.47	88.30	179.60	9,681.72	-4,215.47	58.67	0.00	0.00	0.00	0.00	
13,764.78	88.30	183.23	9,687.12	-4,396.61	54.20	2.00	0.00	2.00	90.04	
14,130.81	88.30	183.23	9,698.00	-4,761.90	33.60	0.00	0.00	0.00	0.00	Scooter Fed Com 2H

Archer

Planning Report

Database:	EDM R5000.1 MULTI	Local/Co-ordinate Reference:	Well 2H
Company:	COG OPERATING, LLC	TVD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Site:	Scooter Fed Com 2H	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00

Archer

Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 2H
Company:	COG OPERATING, LLC	TVD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Site:	Scooter Fed Com 2H	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9,092.75	0.00	0.00	9,092.75	0.00	0.00	0.00	0.00	0.00	0.00
9,100.00	0.87	176.50	9,100.00	-0.05	0.00	0.05	12.00	12.00	0.00
9,125.00	3.87	176.50	9,124.98	-1.09	0.07	1.09	12.00	12.00	0.00
9,150.00	6.87	176.50	9,149.86	-3.42	0.21	3.42	12.00	12.00	0.00
9,175.00	9.87	176.50	9,174.59	-7.05	0.43	7.06	12.00	12.00	0.00
9,200.00	12.87	176.50	9,199.10	-11.97	0.73	11.98	12.00	12.00	0.00
9,225.00	15.87	176.50	9,223.32	-18.16	1.11	18.17	12.00	12.00	0.00
9,250.00	18.87	176.50	9,247.17	-25.61	1.57	25.62	12.00	12.00	0.00
9,275.00	21.87	176.50	9,270.61	-34.30	2.10	34.31	12.00	12.00	0.00
9,300.00	24.87	176.50	9,293.55	-44.20	2.70	44.21	12.00	12.00	0.00
9,325.00	27.87	176.50	9,315.95	-55.28	3.38	55.30	12.00	12.00	0.00
9,350.00	30.87	176.50	9,337.73	-67.51	4.13	67.54	12.00	12.00	0.00
9,375.00	33.87	176.50	9,358.85	-80.87	4.95	80.91	12.00	12.00	0.00
9,400.00	36.87	176.50	9,379.23	-95.32	5.83	95.35	12.00	12.00	0.00
9,425.00	39.87	176.50	9,398.83	-110.80	6.78	110.85	12.00	12.00	0.00
9,450.00	42.87	176.50	9,417.59	-127.29	7.79	127.35	12.00	12.00	0.00
9,475.00	45.87	176.50	9,435.46	-144.74	8.85	144.80	12.00	12.00	0.00

Archer

Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 2H
Company:	COG OPERATING, LLC	TVD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Site:	Scooter Fed Com 2H	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,500.00	48.87	176.50	9,452.39	-163.10	9.98	163.16	12.00	12.00	0.00
9,525.00	51.87	176.50	9,468.33	-182.31	11.15	182.39	12.00	12.00	0.00
9,550.00	54.87	176.50	9,483.24	-202.34	12.38	202.42	12.00	12.00	0.00
9,575.00	57.87	176.50	9,497.09	-223.11	13.65	223.20	12.00	12.00	0.00
9,600.00	60.87	176.50	9,509.82	-244.58	14.96	244.68	12.00	12.00	0.00
9,625.00	63.87	176.50	9,521.42	-266.69	16.31	266.79	12.00	12.00	0.00
9,650.00	66.87	176.50	9,531.83	-289.37	17.70	289.48	12.00	12.00	0.00
9,675.00	69.87	176.50	9,541.05	-312.56	19.12	312.69	12.00	12.00	0.00
9,700.00	72.87	176.50	9,549.03	-336.20	20.56	336.34	12.00	12.00	0.00
9,725.00	75.87	176.50	9,555.77	-360.23	22.03	360.38	12.00	12.00	0.00
9,750.00	78.87	176.50	9,561.23	-384.58	23.52	384.73	12.00	12.00	0.00
9,775.00	81.87	176.50	9,565.42	-409.18	25.03	409.34	12.00	12.00	0.00
9,800.00	84.87	176.50	9,568.30	-433.96	26.54	434.14	12.00	12.00	0.00
9,825.00	87.87	176.50	9,569.89	-458.86	28.07	459.05	12.00	12.00	0.00
9,828.54	88.30	176.50	9,570.00	-462.40	28.28	462.58	12.00	12.00	0.00
9,900.00	88.29	177.93	9,572.13	-533.73	31.75	533.95	2.00	0.00	2.00
9,983.47	88.30	179.60	9,574.61	-617.15	33.55	617.37	2.00	0.00	2.00
10,000.00	88.30	179.60	9,575.11	-633.67	33.67	633.89	0.00	0.00	0.00
10,100.00	88.30	179.60	9,578.08	-733.62	34.36	733.85	0.00	0.00	0.00
10,200.00	88.30	179.60	9,581.06	-833.57	35.06	833.80	0.00	0.00	0.00
10,300.00	88.30	179.60	9,584.03	-933.53	35.76	933.76	0.00	0.00	0.00
10,400.00	88.30	179.60	9,587.01	-1,033.48	36.46	1,033.71	0.00	0.00	0.00
10,500.00	88.30	179.60	9,589.98	-1,133.43	37.15	1,133.67	0.00	0.00	0.00
10,600.00	88.30	179.60	9,592.96	-1,233.39	37.85	1,233.62	0.00	0.00	0.00
10,700.00	88.30	179.60	9,595.93	-1,333.34	38.55	1,333.58	0.00	0.00	0.00
10,800.00	88.30	179.60	9,598.91	-1,433.29	39.25	1,433.54	0.00	0.00	0.00
10,900.00	88.30	179.60	9,601.88	-1,533.25	39.95	1,533.49	0.00	0.00	0.00
11,000.00	88.30	179.60	9,604.86	-1,633.20	40.64	1,633.45	0.00	0.00	0.00
11,100.00	88.30	179.60	9,607.83	-1,733.15	41.34	1,733.40	0.00	0.00	0.00
11,200.00	88.30	179.60	9,610.81	-1,833.11	42.04	1,833.36	0.00	0.00	0.00
11,300.00	88.30	179.60	9,613.78	-1,933.06	42.74	1,933.31	0.00	0.00	0.00
11,400.00	88.30	179.60	9,616.76	-2,033.01	43.43	2,033.27	0.00	0.00	0.00
11,500.00	88.30	179.60	9,619.73	-2,132.97	44.13	2,133.23	0.00	0.00	0.00
11,600.00	88.30	179.60	9,622.71	-2,232.92	44.83	2,233.18	0.00	0.00	0.00
11,700.00	88.30	179.60	9,625.68	-2,332.87	45.53	2,333.14	0.00	0.00	0.00
11,800.00	88.30	179.60	9,628.66	-2,432.83	46.23	2,433.09	0.00	0.00	0.00
11,900.00	88.30	179.60	9,631.63	-2,532.78	46.92	2,533.05	0.00	0.00	0.00
12,000.00	88.30	179.60	9,634.61	-2,632.73	47.62	2,633.00	0.00	0.00	0.00
12,100.00	88.30	179.60	9,637.58	-2,732.69	48.32	2,732.96	0.00	0.00	0.00
12,200.00	88.30	179.60	9,640.56	-2,832.64	49.02	2,832.92	0.00	0.00	0.00
12,300.00	88.30	179.60	9,643.53	-2,932.59	49.72	2,932.87	0.00	0.00	0.00
12,400.00	88.30	179.60	9,646.51	-3,032.55	50.41	3,032.83	0.00	0.00	0.00
12,500.00	88.30	179.60	9,649.49	-3,132.50	51.11	3,132.78	0.00	0.00	0.00
12,600.00	88.30	179.60	9,652.46	-3,232.45	51.81	3,232.74	0.00	0.00	0.00
12,700.00	88.30	179.60	9,655.44	-3,332.41	52.51	3,332.69	0.00	0.00	0.00
12,800.00	88.30	179.60	9,658.41	-3,432.36	53.20	3,432.65	0.00	0.00	0.00
12,900.00	88.30	179.60	9,661.39	-3,532.31	53.90	3,532.61	0.00	0.00	0.00
13,000.00	88.30	179.60	9,664.36	-3,632.27	54.60	3,632.56	0.00	0.00	0.00
13,100.00	88.30	179.60	9,667.34	-3,732.22	55.30	3,732.52	0.00	0.00	0.00
13,200.00	88.30	179.60	9,670.31	-3,832.17	56.00	3,832.47	0.00	0.00	0.00
13,300.00	88.30	179.60	9,673.29	-3,932.13	56.69	3,932.43	0.00	0.00	0.00
13,400.00	88.30	179.60	9,676.26	-4,032.08	57.39	4,032.38	0.00	0.00	0.00
13,500.00	88.30	179.60	9,679.24	-4,132.03	58.09	4,132.34	0.00	0.00	0.00
13,583.47	88.30	179.60	9,681.72	-4,215.47	58.67	4,215.78	0.00	0.00	0.00

Archer

Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 2H
Company:	COG OPERATING, LLC	TVD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	3898' GL + 19' RKB @ 3917.00usft (McVay 6)
Site:	Scooter Fed Com 2H	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,600.00	88.29	179.93	9,682.21	-4,231.99	58.74	4,232.30	2.00	0.00	2.00
13,700.00	88.29	181.93	9,685.19	-4,331.92	57.12	4,332.22	2.00	0.00	2.00
13,764.78	88.30	183.23	9,687.12	-4,396.61	54.20	4,396.89	2.00	0.00	2.00
13,800.00	88.30	183.23	9,688.16	-4,431.76	52.22	4,432.02	0.00	0.00	0.00
13,900.00	88.30	183.23	9,691.14	-4,531.55	46.59	4,531.77	0.00	0.00	0.00
14,000.00	88.30	183.23	9,694.11	-4,631.35	40.96	4,631.53	0.00	0.00	0.00
14,100.00	88.30	183.23	9,697.08	-4,731.15	35.33	4,731.28	0.00	0.00	0.00
14,130.81	88.30	183.23	9,698.00	-4,761.90	33.60	4,762.02	0.00	0.00	0.00

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
Scooter Fed Com 2H SF - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	633,537.40	714,269.40	32° 44' 23.11 N	103° 38' 11.34 W
Scooter Fed Com 2H PE - plan hits target center - Point	0.00	0.00	9,698.00	-4,761.90	33.60	628,775.50	714,303.00	32° 43' 35.99 N	103° 38' 11.32 W

COG OPERATING, LLC

Field: Lea County, NM
Site: Scooter Fed Com 2H
Well: 2H
Wellbore: Lateral
Plan: Plan #1

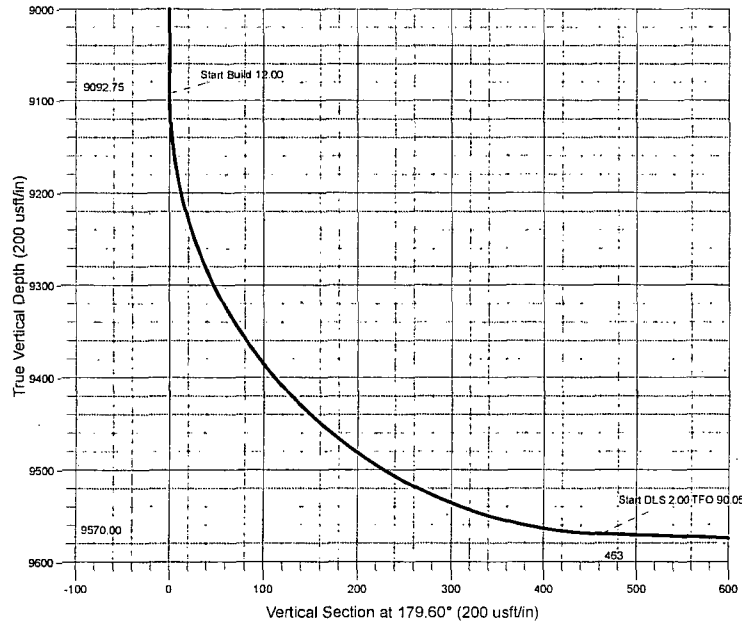
TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Scooter Fed Com 2H SHL	0.00	0.00	0.00	633537.40	714269.40	32° 44' 23.11 N	103° 38' 11.34 W
Scooter Fed Com 2H PBHL	9698.00	-4761.90	33.60	628775.50	714303.00	32° 43' 35.99 N	103° 38' 11.32 W



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	9092.75	0.00	0.00	9092.75	0.00	0.00	0.00	0.00	0.00	
3	9828.54	88.30	176.50	9570.00	-462.40	28.28	12.00	176.50	462.58	
4	9983.47	88.30	179.60	9574.61	-617.15	33.55	2.00	90.05	617.37	
5	13583.47	88.30	179.60	9681.72	-4215.47	58.67	0.00	0.00	4215.78	
6	13764.78	88.30	183.23	9687.12	-4396.61	54.20	2.00	90.04	4396.89	
7	14130.81	88.30	183.23	9698.00	-4761.90	33.60	0.00	0.00	4762.02	Scooter Fed Com 2H PBHL

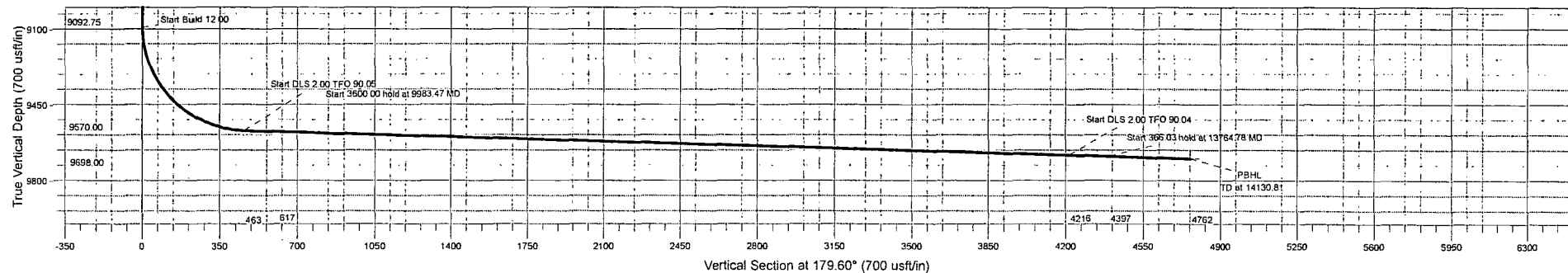
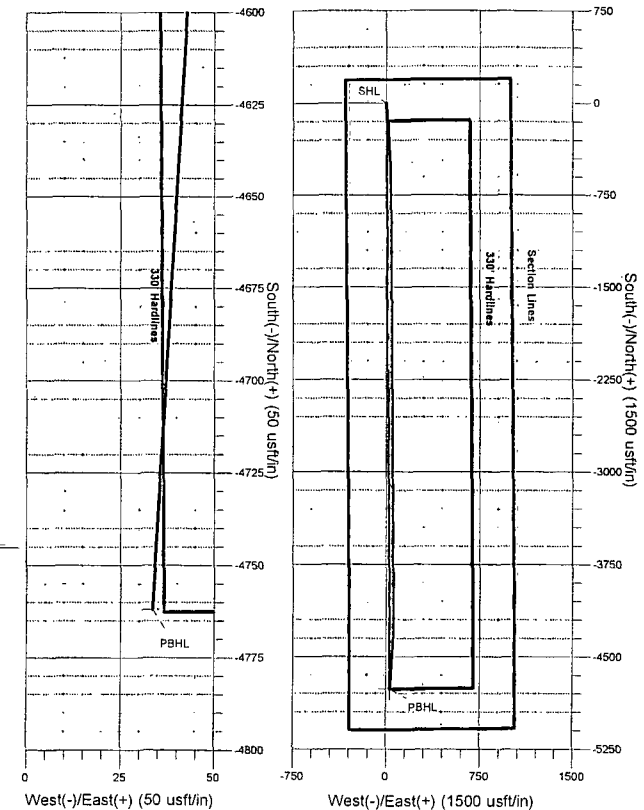


Azimuths to Grid North
True North: -0.38°
Magnetic North: 6.66°

Magnetic Field
Strength: 48603.0nT
Dip Angle: 60.85°
Date: 4/15/2015
Model: HDGM

Section Distances

Sec23, T18S, R33E
SHL - Unit C
190°FNL, 1650°FWL
PBHL - Unit N
330°FSL, 1650°FWL



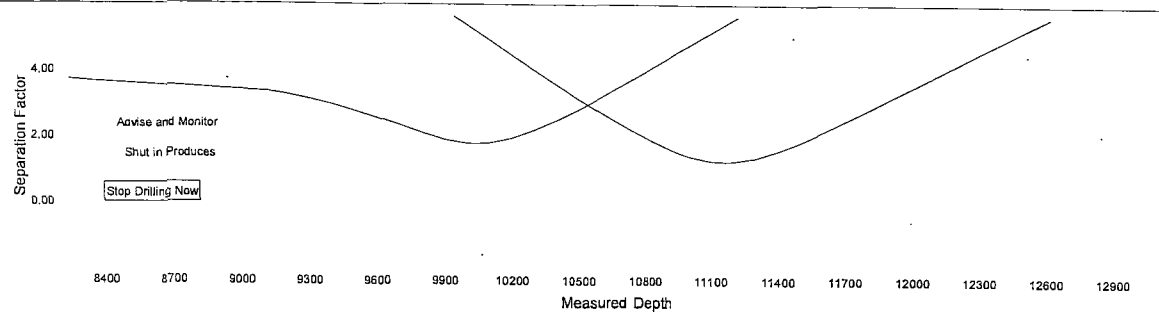
Archer

ARCHER DIRECTIONAL DRILLING SERVICES
12101 Cutten Rd. Houston, Texas 77066
Phone: 281-301-2600 Fax: 281-301-2795

Design: Plan #1 (2H/Lateral)
Created By: Keith Noack
Date: 9:46, April 15 2015

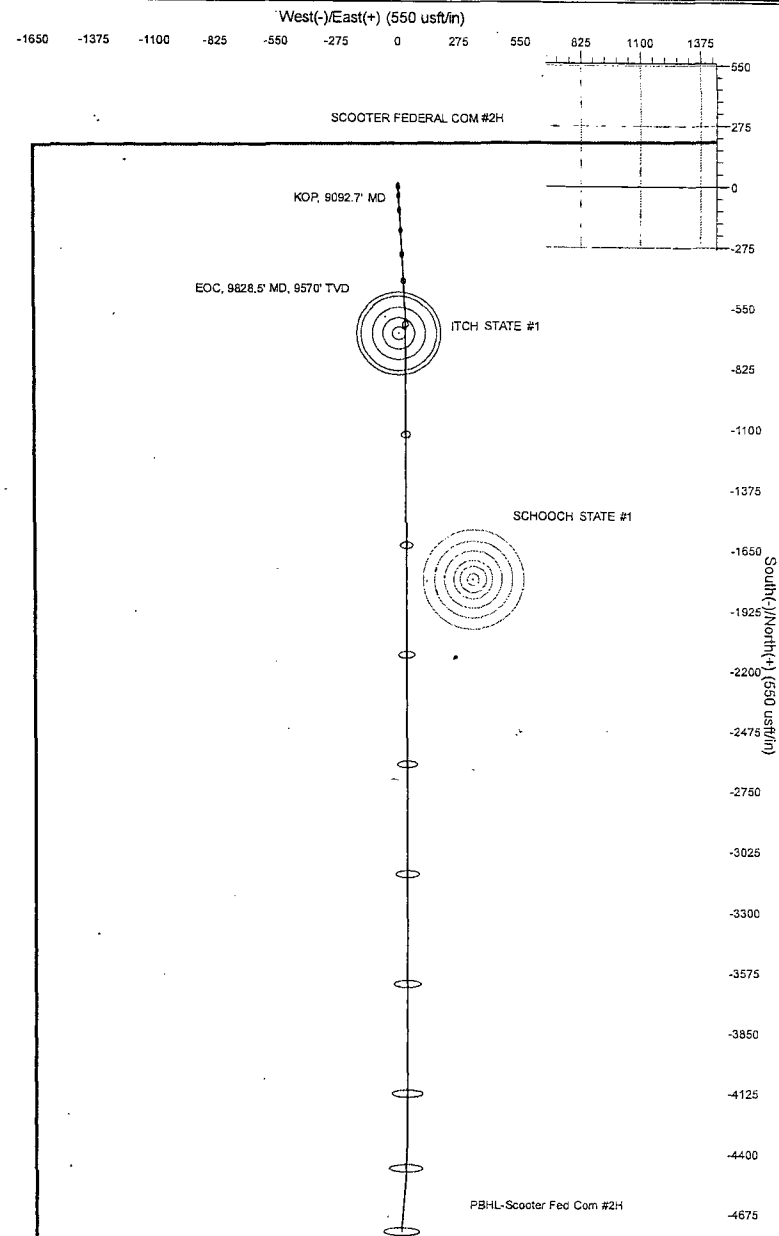
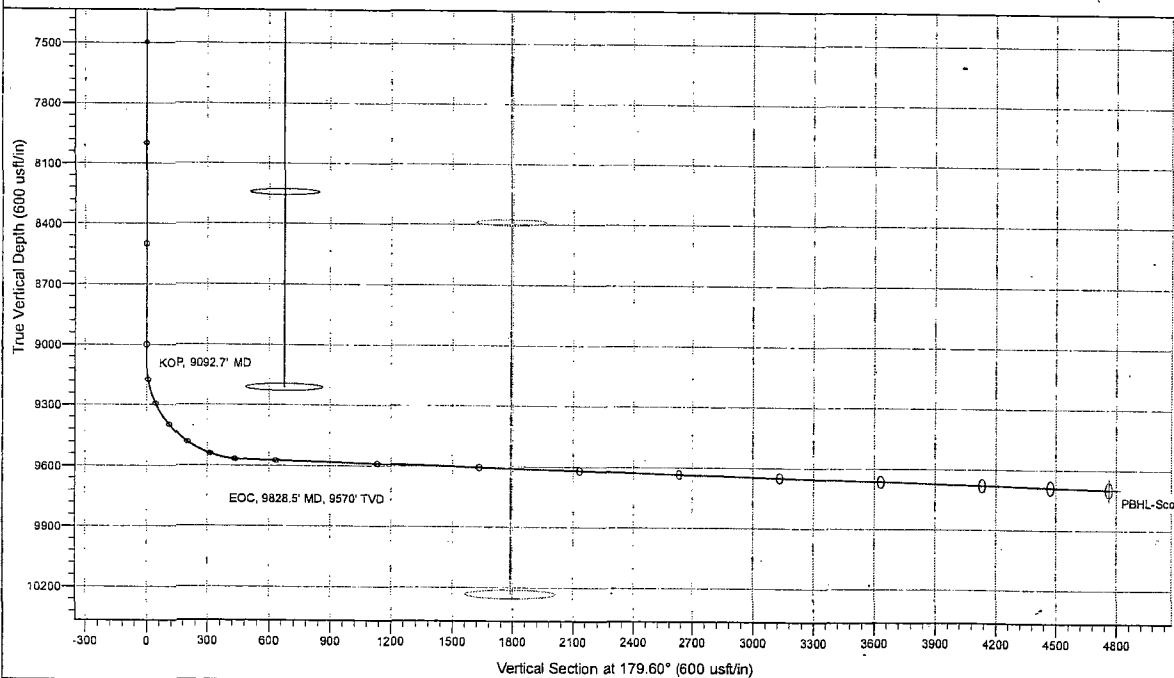


Project: LEA COUNTY, NM
Site: DEEP BSS
Well: SCOOTER FEDERAL COM #2H
Wellbore: OWB
Design: PWP0



LEGEND

ITCH STATE #1, OWB, ACTUAL WELLPATH V0
SCHOOCH STATE #1, OWB, ACTUAL WELLPATH V0
PWP0





NEW MEXICO BASIN

LEA COUNTY, NM

DEEP BSS

SCOOTER FEDERAL COM #2H

OWB

PWP0

Anticollision Report

15 July, 2015



COG Operating LLC

Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Reference	PWP0		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 2,151.5 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date 7/15/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	9,092.7	PWP0 (OWB)	VES GyroFlex	
9,092.7	14,130.9	PWP0 (OWB)	MWD	OWSG MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
DEEP BSS						
ITCH STATE #1 - OWB - ACTUAL WELLPATH	10,030.0	9,200.0	365.4	161.3	1.790	Advise and Monitor, CC, ES,
SCHOOCH STATE #1 - OWB - ACTUAL WELLPATH	11,155.6	9,584.6	300.4	60.5	1.252	Shut in Produces, CC, ES, S

Offset Design DEEP BSS - ITCH STATE #1 - OWB - ACTUAL WELLPATH													Offset Site Error: 0.0 usft	
Survey Program: 228-INC-ONLY													Offset Well Error: 3.0 usft	
Reference		Offset		Some Major Axis			Distance							
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth	Depth	Depth	Depth			Toolface	+N-S	+E-W	Centres	Ellipses	Separation	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)			
0.0	0.0	0.0	0.0	3.0	3.0	179.64	-674.7	4.2	674.8					
100.0	100.0	87.6	87.6	3.0	3.1	179.64	-674.7	4.2	674.7	668.6	6.09	110.798		
200.0	200.0	187.6	187.6	3.0	3.4	179.64	-674.7	4.2	674.7	668.3	6.40	105.484		
300.0	300.0	287.6	287.6	3.0	4.2	179.64	-674.7	4.2	674.7	667.5	7.24	93.130		
400.0	400.0	387.6	387.6	3.0	5.6	179.64	-674.7	4.2	674.7	666.0	8.67	77.853		
500.0	500.0	487.6	487.6	3.1	7.2	179.64	-674.7	4.2	674.7	664.4	10.29	65.600		
600.0	600.0	587.6	587.6	3.1	8.9	179.64	-674.7	4.2	674.7	662.7	11.99	56.256		
700.0	700.0	687.6	687.6	3.2	10.6	179.64	-674.7	4.2	674.7	660.9	13.79	48.943		
800.0	800.0	787.6	787.6	3.2	12.5	179.64	-674.7	4.2	674.7	659.0	15.71	42.953		
900.0	900.0	887.6	887.6	3.3	14.4	179.64	-674.7	4.2	674.7	657.0	17.65	38.217		
1,000.0	1,000.0	987.6	987.6	3.3	16.3	179.64	-674.7	4.2	674.7	655.1	19.62	34.390		
1,100.0	1,100.0	1,087.6	1,087.6	3.4	18.2	179.64	-674.7	4.2	674.7	653.1	21.60	31.240		
1,200.0	1,200.0	1,187.6	1,187.6	3.5	20.1	179.64	-674.7	4.2	674.7	651.1	23.62	28.561		
1,300.0	1,300.0	1,287.6	1,287.6	3.6	22.2	179.64	-674.7	4.2	674.7	648.9	25.77	26.185		
1,400.0	1,400.0	1,387.6	1,387.6	3.7	24.3	179.64	-674.7	4.2	674.7	646.8	27.92	24.167		
1,500.0	1,500.0	1,487.6	1,487.6	3.7	26.3	179.64	-674.7	4.2	674.7	644.6	30.08	22.432		
1,600.0	1,600.0	1,587.6	1,587.6	3.8	28.4	179.64	-674.7	4.2	674.7	642.5	32.24	20.926		
1,700.0	1,700.0	1,687.6	1,687.6	3.9	30.5	179.64	-674.7	4.2	674.7	640.3	34.43	19.599		
1,800.0	1,800.0	1,787.6	1,787.6	4.0	32.6	179.64	-674.7	4.2	674.7	638.1	36.62	18.422		
1,900.0	1,900.0	1,887.6	1,887.6	4.2	34.7	179.64	-674.7	4.2	674.7	635.9	38.83	17.376		
2,000.0	2,000.0	1,987.6	1,987.6	4.3	36.8	179.64	-674.7	4.2	674.7	633.7	41.04	16.442		
2,100.0	2,100.0	2,087.6	2,087.6	4.4	38.9	179.64	-674.7	4.2	674.7	631.5	43.25	15.601		
2,200.0	2,200.0	2,187.7	2,187.6	4.5	40.8	179.64	-674.7	4.2	674.7	629.4	45.31	14.892		
2,300.0	2,300.0	2,287.7	2,287.6	4.6	42.7	179.64	-674.7	4.2	674.7	627.4	47.32	14.258		

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



COG Operating LLC
Anticollision Report

Company:	NEW-MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM- Users
Reference Design:	PWPO	Offset TVD Reference:	Offset Datum

Offset Design DEEP BSS- ITCH STATE #1 - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey/Program: 228-INC-ONLY												Offset Well Error:	3.0 usft
Reference		Offset		Soml Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
2,400.0	2,400.0	2,387.7	2,387.6	4.7	44.6	179.64	-674.7	4.2	674.7	625.4	49.33	13.676	
2,500.0	2,500.0	2,487.7	2,487.6	4.8	46.5	179.64	-674.7	4.2	674.7	623.4	51.31	13.149	
2,600.0	2,600.0	2,587.7	2,587.6	5.0	48.3	179.64	-674.7	4.2	674.7	621.4	53.27	12.666	
2,700.0	2,700.0	2,687.7	2,687.6	5.1	50.1	179.64	-674.7	4.2	674.7	619.5	55.22	12.218	
2,800.0	2,800.0	2,787.7	2,787.6	5.2	52.0	179.64	-674.7	4.2	674.7	617.5	57.18	11.799	
2,900.0	2,900.0	2,887.7	2,887.6	5.4	53.8	179.64	-674.7	4.2	674.7	615.6	59.14	11.408	
3,000.0	3,000.0	2,987.7	2,987.6	5.5	55.7	179.64	-674.7	4.2	674.7	613.5	61.21	11.023	
3,100.0	3,100.0	3,087.7	3,087.6	5.6	57.8	179.64	-674.7	4.2	674.7	611.3	63.37	10.646	
3,200.0	3,200.0	3,187.7	3,187.6	5.7	59.8	179.64	-674.7	4.2	674.7	609.2	65.54	10.294	
3,300.0	3,300.0	3,287.7	3,287.6	5.9	61.8	179.64	-674.7	4.2	674.7	607.0	67.71	9.965	
3,400.0	3,400.0	3,387.7	3,387.6	6.0	63.9	179.64	-674.7	4.2	674.7	604.8	69.88	9.656	
3,500.0	3,500.0	3,487.7	3,487.6	6.2	65.9	179.64	-674.7	4.2	674.7	602.6	72.09	9.359	
3,600.0	3,600.0	3,587.7	3,587.6	6.3	68.0	179.64	-674.7	4.2	674.7	600.4	74.33	9.077	
3,700.0	3,700.0	3,687.7	3,687.6	6.4	70.2	179.64	-674.7	4.2	674.7	598.1	76.58	8.811	
3,800.0	3,800.0	3,787.7	3,787.6	6.6	72.3	179.64	-674.7	4.2	674.7	595.9	78.83	8.559	
3,900.0	3,900.0	3,887.7	3,887.6	6.7	74.4	179.64	-674.7	4.2	674.7	593.6	81.08	8.322	
4,000.0	4,000.0	3,987.7	3,987.6	6.8	76.5	179.64	-674.7	4.2	674.7	591.4	83.33	8.097	
4,100.0	4,100.0	4,087.7	4,087.6	7.0	78.6	179.64	-674.7	4.2	674.7	589.1	85.58	7.884	
4,200.0	4,200.0	4,187.7	4,187.6	7.1	80.7	179.64	-674.7	4.2	674.7	586.9	87.83	7.682	
4,300.0	4,300.0	4,287.7	4,287.6	7.3	82.8	179.64	-674.7	4.2	674.7	584.6	90.09	7.490	
4,400.0	4,400.0	4,387.7	4,387.6	7.4	84.9	179.64	-674.7	4.2	674.7	582.4	92.34	7.307	
4,500.0	4,500.0	4,487.7	4,487.6	7.6	87.0	179.64	-674.7	4.2	674.7	580.1	94.60	7.132	
4,600.0	4,600.0	4,587.7	4,587.6	7.7	89.2	179.64	-674.7	4.2	674.7	577.8	96.86	6.966	
4,700.0	4,700.0	4,687.8	4,687.6	7.8	91.3	179.64	-674.7	4.2	674.7	575.6	99.14	6.806	
4,800.0	4,800.0	4,787.8	4,787.6	8.0	93.5	179.64	-674.7	4.2	674.7	573.2	101.48	6.649	
4,900.0	4,900.0	4,887.8	4,887.6	8.1	95.7	179.64	-674.7	4.2	674.7	570.9	103.81	6.499	
5,000.0	5,000.0	4,987.8	4,987.6	8.3	97.9	179.64	-674.7	4.2	674.7	568.6	106.15	6.356	
5,100.0	5,100.0	5,087.8	5,087.6	8.4	100.1	179.64	-674.7	4.2	674.7	566.2	108.49	6.219	
5,200.0	5,200.0	5,187.8	5,187.6	8.6	102.3	179.64	-674.7	4.2	674.7	563.9	110.83	6.087	
5,300.0	5,300.0	5,287.8	5,287.6	8.7	104.5	179.64	-674.7	4.2	674.7	561.5	113.18	5.961	
5,400.0	5,400.0	5,387.8	5,387.6	8.9	106.7	179.64	-674.7	4.2	674.7	559.2	115.52	5.841	
5,500.0	5,500.0	5,487.8	5,487.6	9.0	108.9	179.64	-674.7	4.2	674.7	556.8	117.87	5.724	
5,600.0	5,600.0	5,587.8	5,587.6	9.2	111.1	179.64	-674.7	4.2	674.7	554.4	120.30	5.609	
5,700.0	5,700.0	5,687.8	5,687.6	9.3	113.4	179.64	-674.7	4.2	674.7	552.0	122.73	5.498	
5,800.0	5,800.0	5,787.8	5,787.6	9.5	115.7	179.64	-674.7	4.2	674.7	549.6	125.15	5.391	
5,900.0	5,900.0	5,887.8	5,887.6	9.6	118.0	179.64	-674.7	4.2	674.7	547.1	127.58	5.288	
6,000.0	6,000.0	5,987.8	5,987.6	9.7	120.3	179.64	-674.7	4.2	674.7	544.7	130.01	5.190	
6,100.0	6,100.0	6,087.8	6,087.6	9.9	122.6	179.64	-674.7	4.2	674.7	542.3	132.45	5.094	
6,200.0	6,200.0	6,187.8	6,187.6	10.0	124.8	179.64	-674.7	4.2	674.7	539.8	134.88	5.002	
6,300.0	6,300.0	6,287.8	6,287.6	10.2	127.1	179.64	-674.7	4.2	674.7	537.4	137.32	4.914	
6,400.0	6,400.0	6,387.8	6,387.6	10.3	129.4	179.64	-674.7	4.2	674.7	535.0	139.75	4.828	
6,500.0	6,500.0	6,487.8	6,487.6	10.5	131.6	179.64	-674.7	4.2	674.7	532.6	142.12	4.747	
6,600.0	6,600.0	6,587.9	6,587.6	10.6	133.8	179.64	-674.7	4.2	674.7	530.3	144.40	4.672	
6,700.0	6,700.0	6,687.9	6,687.6	10.8	135.9	179.64	-674.7	4.2	674.7	528.0	146.68	4.600	
6,800.0	6,800.0	6,787.9	6,787.6	10.9	138.0	179.64	-674.7	4.2	674.7	525.8	148.95	4.530	
6,900.0	6,900.0	6,887.9	6,887.6	11.1	140.1	179.64	-674.7	4.2	674.7	523.5	151.23	4.462	
7,000.0	7,000.0	6,987.9	6,987.6	11.2	142.3	179.64	-674.7	4.2	674.7	521.2	153.50	4.395	
7,100.0	7,100.0	7,087.9	7,087.6	11.4	144.4	179.64	-674.7	4.2	674.7	518.9	155.78	4.331	
7,200.0	7,200.0	7,187.9	7,187.6	11.5	146.5	179.64	-674.7	4.2	674.7	516.6	158.06	4.269	
7,300.0	7,300.0	7,287.9	7,287.6	11.7	148.6	179.64	-674.7	4.2	674.7	514.4	160.33	4.208	
7,400.0	7,400.0	7,387.9	7,387.6	11.8	150.8	179.64	-674.7	4.2	674.7	512.1	162.63	4.149	
7,500.0	7,500.0	7,487.9	7,487.6	12.0	153.1	179.64	-674.7	4.2	674.7	509.6	165.07	4.087	

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



COG Operating LLC
Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OWB	Database:	EDM Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Offset Design DEEP BSS - ITCH STATE #1 - OWB - ACTUAL WELLPATH													Offset Site Error:
Survey Program: 228-INC-ONLY													0.0 usft
Reference		Offset		Soml Major Axis		Distance		Offset Wellbore Centre		Between		Minimum	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	N/S (usft)	E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Separation Factor	Warning:
7,600.0	7,600.0	7,587.9	7,587.6	12.1	155.4	179.64	-674.7	4.2	674.7	507.2	167.51	4.028	
7,700.0	7,700.0	7,687.9	7,687.6	12.3	157.7	179.64	-674.7	4.2	674.7	504.7	169.96	3.970	
7,800.0	7,800.0	7,787.9	7,787.6	12.5	160.0	179.64	-674.7	4.2	674.7	502.3	172.40	3.914	
7,900.0	7,900.0	7,888.0	7,887.6	12.6	162.2	179.64	-674.7	4.2	674.7	499.9	174.79	3.860	
8,000.0	8,000.0	7,988.0	7,987.6	12.8	164.4	179.64	-674.7	4.2	674.7	497.5	177.15	3.809	
8,100.0	8,100.0	8,088.0	8,087.6	12.9	166.6	179.64	-674.7	4.2	674.7	495.2	179.52	3.758	
8,200.0	8,200.0	8,188.0	8,187.6	13.1	168.8	179.64	-674.7	4.2	674.7	492.8	181.88	3.710	
8,300.0	8,300.0	8,288.0	8,287.6	13.2	170.9	179.64	-674.7	4.2	674.7	490.6	184.10	3.665	
8,400.0	8,400.0	8,388.0	8,387.6	13.4	172.9	179.64	-674.7	4.2	674.7	488.5	186.21	3.623	
8,500.0	8,500.0	8,488.0	8,487.6	13.5	174.8	179.64	-674.7	4.2	674.7	486.4	188.33	3.583	
8,600.0	8,600.0	8,588.0	8,587.6	13.7	176.8	179.64	-674.7	4.2	674.7	484.3	190.44	3.543	
8,700.0	8,700.0	8,688.0	8,687.6	13.8	178.7	179.64	-674.7	4.2	674.7	482.2	192.55	3.504	
8,800.0	8,800.0	8,788.0	8,787.6	14.0	180.8	179.64	-674.7	4.2	674.7	480.0	194.73	3.465	
8,900.0	8,900.0	8,888.0	8,887.6	14.1	182.8	179.64	-674.7	4.2	674.7	477.8	196.93	3.426	
9,000.0	9,000.0	8,988.0	8,987.6	14.3	184.8	179.64	-674.7	4.2	674.7	475.6	199.12	3.388	
9,100.0	9,100.0	9,088.0	9,087.6	14.4	186.9	3.14	-674.7	4.2	674.6	473.3	201.31	3.351	
9,200.0	9,199.1	9,187.1	9,186.7	14.4	188.9	3.28	-674.7	4.2	662.7	459.4	203.35	3.259	
9,300.0	9,293.5	9,200.0	9,199.6	14.5	189.2	3.49	-674.7	4.2	635.7	432.1	203.66	3.122	
9,400.0	9,379.2	9,200.0	9,199.6	14.5	189.2	3.76	-674.7	4.2	603.0	399.3	203.72	2.960	
9,500.0	9,452.4	9,200.0	9,199.6	14.6	189.2	4.09	-674.7	4.2	565.3	361.5	203.80	2.774	
9,600.0	9,509.8	9,200.0	9,199.6	14.7	189.2	4.51	-674.7	4.2	523.3	319.4	203.88	2.566	
9,700.0	9,549.0	9,200.0	9,199.6	14.8	189.2	5.01	-674.7	4.2	477.9	274.0	203.96	2.343	
9,800.0	9,568.3	9,200.0	9,199.6	14.8	189.2	5.61	-674.7	4.2	430.6	226.6	204.01	2.111	
9,900.0	9,572.1	9,200.0	9,199.6	14.9	189.2	5.11	-674.7	4.2	387.7	183.7	204.04	1.900 Advise and Monitor	
10,000.0	9,575.1	9,200.0	9,199.6	14.9	189.2	4.66	-674.7	4.2	366.6	162.5	204.07	1.797 Advise and Monitor	
10,030.0	9,576.0	9,200.0	9,199.6	14.9	189.2	4.66	-674.7	4.2	365.4	161.3	204.09	1.790 Advise and Monitor, CC, ES, SF	
10,100.0	9,578.1	9,200.0	9,199.6	15.0	189.2	4.66	-674.7	4.2	372.0	167.9	204.15	1.822 Advise and Monitor	
10,200.0	9,581.0	9,200.0	9,199.6	15.8	189.2	4.66	-674.7	4.2	403.0	198.0	205.02	1.966 Advise and Monitor	
10,300.0	9,584.0	9,200.0	9,199.6	17.3	189.2	4.66	-674.7	4.2	454.3	247.8	206.49	2.200	
10,400.0	9,587.0	9,200.0	9,199.6	18.8	189.2	4.66	-674.7	4.2	520.0	312.0	208.01	2.500	
10,500.0	9,589.9	9,200.0	9,199.6	20.4	189.2	4.66	-674.7	4.2	595.3	385.8	209.56	2.841	
10,600.0	9,592.9	9,200.0	9,199.6	22.0	189.2	4.66	-674.7	4.2	677.1	465.9	211.13	3.207	
10,700.0	9,595.9	9,200.0	9,199.6	23.5	189.2	4.66	-674.7	4.2	763.2	550.4	212.72	3.588	
10,800.0	9,598.8	9,200.0	9,199.6	25.1	189.2	4.66	-674.7	4.2	852.3	638.0	214.31	3.977	
10,900.0	9,601.8	9,200.0	9,199.6	26.7	189.2	4.66	-674.7	4.2	943.6	727.7	215.92	4.370	
11,000.0	9,604.8	9,200.0	9,199.6	28.4	189.2	4.66	-674.7	4.2	1,036.5	819.0	217.53	4.765	
11,100.0	9,607.7	9,200.0	9,199.6	30.0	189.2	4.66	-674.7	4.2	1,130.7	911.5	219.15	5.159	
11,200.0	9,610.7	9,200.0	9,199.6	31.6	189.2	4.66	-674.7	4.2	1,225.7	1,004.9	220.78	5.552	
11,300.0	9,613.7	9,200.0	9,199.6	33.2	189.2	4.66	-674.7	4.2	1,321.5	1,099.1	222.41	5.942	
11,400.0	9,616.6	9,200.0	9,199.6	34.9	189.2	4.66	-674.7	4.2	1,417.9	1,193.8	224.04	6.329	
11,500.0	9,619.6	9,200.0	9,199.6	36.5	189.2	4.66	-674.7	4.2	1,514.7	1,289.0	225.68	6.712	
11,600.0	9,622.6	9,200.0	9,199.6	38.1	189.2	4.66	-674.7	4.2	1,612.0	1,384.6	227.32	7.091	
11,700.0	9,625.5	9,200.0	9,199.6	39.8	189.2	4.66	-674.7	4.2	1,709.5	1,480.5	228.97	7.466	
11,800.0	9,628.5	9,200.0	9,199.6	41.4	189.2	4.66	-674.7	4.2	1,807.3	1,576.7	230.61	7.837	
11,900.0	9,631.5	9,200.0	9,199.6	43.1	189.2	4.66	-674.7	4.2	1,905.4	1,673.1	232.26	8.204	
12,000.0	9,634.4	9,200.0	9,199.6	44.7	189.2	4.66	-674.7	4.2	2,003.6	1,769.7	233.91	8.566	
12,100.0	9,637.4	9,200.0	9,199.6	46.4	189.2	4.66	-674.7	4.2	2,102.0	1,866.4	235.56	8.923	

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



COG Operating LLC
Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Offset Design: DEEP BSS - SCHOOCH STATE #1 - OWB - ACTUAL WELLPATH													Offset Site Error:
Survey Program: 141-INC-ONLY													0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		N-S (usft)	E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.0	0.0	0.0	0.0	3.0	3.0	169.16	-1,786.6	342.1	1,819.3				
100.0	100.0	74.6	74.6	3.0	3.1	169.16	-1,786.6	342.1	1,819.1	1,813.0	6.06	300.125	
200.0	200.0	174.6	174.6	3.0	3.5	169.16	-1,786.6	342.1	1,819.1	1,812.6	6.48	280.683	
300.0	300.0	274.6	274.6	3.0	4.6	169.16	-1,786.6	342.1	1,819.1	1,811.4	7.67	237.071	
400.0	400.0	374.6	374.6	3.0	6.1	169.16	-1,786.6	342.1	1,819.1	1,809.9	9.19	198.046	
500.0	500.0	474.6	474.6	3.1	7.8	169.16	-1,786.6	342.1	1,819.1	1,808.2	10.84	167.823	
600.0	600.0	574.6	574.6	3.1	9.6	169.16	-1,786.6	342.1	1,819.1	1,806.4	12.70	143.196	
700.0	700.0	674.6	674.6	3.2	11.5	169.16	-1,786.6	342.1	1,819.1	1,804.4	14.66	124.106	
800.0	800.0	783.0	783.0	3.2	13.6	169.16	-1,786.6	342.1	1,819.1	1,802.3	16.81	108.243	
836.4	836.4	811.0	811.0	3.2	14.2	169.16	-1,786.6	342.1	1,819.1	1,801.6	17.44	104.284	
900.0	900.0	874.6	874.6	3.3	15.6	169.16	-1,786.6	342.1	1,819.1	1,800.2	18.89	96.304	
1,000.0	1,000.0	974.6	974.6	3.3	17.8	169.16	-1,786.6	342.1	1,819.1	1,797.9	21.18	85.900	
1,100.0	1,100.0	1,074.6	1,074.6	3.4	20.1	169.16	-1,786.6	342.1	1,819.1	1,795.6	23.48	77.478	
1,200.0	1,200.0	1,174.6	1,174.6	3.5	22.3	169.16	-1,786.6	342.1	1,819.1	1,793.3	25.79	70.530	
1,300.0	1,300.0	1,274.6	1,274.6	3.6	24.5	169.16	-1,786.6	342.1	1,819.1	1,791.0	28.11	64.703	
1,400.0	1,400.0	1,375.0	1,374.9	3.7	28.8	169.16	-1,786.6	342.1	1,819.1	1,788.6	30.45	59.733	
1,433.4	1,433.4	1,408.1	1,408.0	3.7	27.5	169.16	-1,786.6	342.1	1,819.1	1,787.8	31.24	58.234	
1,500.0	1,500.0	1,474.7	1,474.6	3.7	29.1	169.16	-1,786.6	342.1	1,819.1	1,786.3	32.82	55.434	
1,600.0	1,600.0	1,574.7	1,574.6	3.8	31.3	169.16	-1,786.6	342.1	1,819.1	1,783.9	35.19	51.692	
1,700.0	1,700.0	1,674.7	1,674.6	3.9	33.6	169.16	-1,786.6	342.1	1,819.1	1,781.5	37.56	48.425	
1,800.0	1,800.0	1,774.7	1,774.6	4.0	35.8	169.16	-1,786.6	342.1	1,819.1	1,779.2	39.87	45.622	
1,900.0	1,900.0	1,874.7	1,874.6	4.2	38.0	169.16	-1,786.6	342.1	1,819.1	1,776.9	42.18	43.122	
2,000.0	2,000.0	1,974.7	1,974.6	4.3	40.1	169.16	-1,786.6	342.1	1,819.1	1,774.7	44.41	40.963	
2,100.0	2,100.0	2,074.7	2,074.6	4.4	42.2	169.16	-1,786.6	342.1	1,819.1	1,772.5	46.58	39.071	
2,200.0	2,200.0	2,174.7	2,174.6	4.5	44.2	169.16	-1,786.6	342.1	1,819.1	1,770.4	48.71	37.345	
2,300.0	2,300.0	2,274.7	2,274.6	4.6	46.2	169.16	-1,786.6	342.1	1,819.1	1,768.3	50.78	35.821	
2,400.0	2,400.0	2,374.7	2,374.6	4.7	48.1	169.16	-1,786.6	342.1	1,819.1	1,766.2	52.86	34.415	
2,500.0	2,500.0	2,474.7	2,474.6	4.8	50.1	169.16	-1,786.6	342.1	1,819.1	1,764.1	54.97	33.095	
2,600.0	2,600.0	2,574.7	2,574.6	5.0	52.2	169.16	-1,786.6	342.1	1,819.1	1,762.0	57.13	31.841	
2,700.0	2,700.0	2,674.7	2,674.6	5.1	54.2	169.16	-1,786.6	342.1	1,819.1	1,759.8	59.30	30.678	
2,800.0	2,800.0	2,774.7	2,774.6	5.2	56.2	169.16	-1,786.6	342.1	1,819.1	1,757.6	61.46	29.596	
2,900.0	2,900.0	2,874.7	2,874.6	5.4	58.3	169.16	-1,786.6	342.1	1,819.1	1,755.5	63.63	28.587	
3,000.0	3,000.0	2,974.7	2,974.6	5.5	60.4	169.16	-1,786.6	342.1	1,819.1	1,753.2	65.90	27.605	
3,100.0	3,100.0	3,090.0	3,089.8	5.6	63.1	169.16	-1,786.6	342.1	1,819.1	1,750.5	68.67	26.491	
3,139.3	3,139.3	3,114.1	3,113.9	5.7	63.6	169.16	-1,786.6	342.1	1,819.1	1,749.8	69.25	26.267	
3,200.0	3,200.0	3,174.8	3,174.6	5.7	64.9	169.16	-1,786.6	342.1	1,819.1	1,748.4	70.67	25.739	
3,300.0	3,300.0	3,274.8	3,274.6	5.9	67.1	169.16	-1,786.6	342.1	1,819.1	1,746.1	73.02	24.913	
3,400.0	3,400.0	3,374.8	3,374.6	6.0	69.3	169.16	-1,786.6	342.1	1,819.1	1,743.8	75.32	24.151	
3,500.0	3,500.0	3,474.8	3,474.6	6.2	71.3	169.16	-1,786.6	342.1	1,819.1	1,741.6	77.50	23.472	
3,600.0	3,600.0	3,574.8	3,574.6	6.3	73.4	169.16	-1,786.6	342.1	1,819.1	1,739.4	79.68	22.830	
3,700.0	3,700.0	3,674.8	3,674.6	6.4	75.3	169.16	-1,786.6	342.1	1,819.1	1,737.4	81.68	22.270	
3,800.0	3,800.0	3,774.8	3,774.6	6.6	77.1	169.16	-1,786.6	342.1	1,819.1	1,735.5	83.62	21.755	
3,900.0	3,900.0	3,874.8	3,874.6	6.7	78.8	169.16	-1,786.6	342.1	1,819.1	1,733.5	85.55	21.264	
4,000.0	4,000.0	3,974.8	3,974.6	6.8	80.6	169.16	-1,786.6	342.1	1,819.1	1,731.6	87.49	20.792	
4,100.0	4,100.0	4,074.8	4,074.6	7.0	82.4	169.16	-1,786.6	342.1	1,819.1	1,729.7	89.43	20.341	
4,200.0	4,200.0	4,174.8	4,174.6	7.1	84.2	169.16	-1,786.6	342.1	1,819.1	1,727.7	91.37	19.908	
4,300.0	4,300.0	4,274.8	4,274.6	7.3	86.0	169.16	-1,786.6	342.1	1,819.1	1,725.8	93.32	19.494	
4,400.0	4,400.0	4,374.8	4,374.6	7.4	87.9	169.16	-1,786.6	342.1	1,819.1	1,723.7	95.35	19.077	
4,500.0	4,500.0	4,474.8	4,474.6	7.6	90.0	169.16	-1,786.6	342.1	1,819.1	1,721.5	97.54	18.649	
4,600.0	4,600.0	4,574.8	4,574.6	7.7	92.0	169.16	-1,786.6	342.1	1,819.1	1,719.4	99.73	18.240	
4,700.0	4,700.0	4,674.8	4,674.6	7.8	94.1	169.16	-1,786.6	342.1	1,819.1	1,717.2	101.92	17.849	
4,800.0	4,800.0	4,774.8	4,774.6	8.0	96.1	169.16	-1,786.6	342.1	1,819.1	1,715.0	104.11	17.473	

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



COG Operating LLC

Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	North Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Databse:	EDM_Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Offset Design DEEP BSS - SCHOOCH STATE #1 - OWB - ACTUAL WELLPATH													Offset Site Error:	0.0 usft
Survey Program: 141-INC-ONLY													Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)						
4,900.0	4,900.0	4,874.8	4,874.6	8.1	98.2	169.16	-1,786.6	342.1	1,819.1	1,712.8	106.33	17.107		
5,000.0	5,000.0	4,974.8	4,974.6	8.3	100.3	169.16	-1,786.6	342.1	1,819.1	1,710.5	108.60	16.750		
5,100.0	5,100.0	5,074.8	5,074.6	8.4	102.5	169.16	-1,786.6	342.1	1,819.1	1,708.2	110.87	16.407		
5,200.0	5,200.0	5,174.8	5,174.6	8.6	104.8	169.16	-1,786.6	342.1	1,819.1	1,705.9	113.14	16.078		
5,300.0	5,300.0	5,274.8	5,274.6	8.7	106.7	169.16	-1,786.6	342.1	1,819.1	1,703.7	115.41	15.762		
5,400.0	5,400.0	5,374.8	5,374.6	8.9	108.8	169.16	-1,786.6	342.1	1,819.1	1,701.4	117.68	15.457		
5,500.0	5,500.0	5,474.8	5,474.6	9.0	110.9	169.16	-1,786.6	342.1	1,819.1	1,699.1	119.95	15.165		
5,600.0	5,600.0	5,574.8	5,574.6	9.2	113.1	169.16	-1,786.6	342.1	1,819.1	1,696.9	122.23	14.883		
5,700.0	5,700.0	5,674.8	5,674.6	9.3	115.2	169.16	-1,786.6	342.1	1,819.1	1,694.6	124.50	14.611		
5,800.0	5,800.0	5,774.8	5,774.6	9.5	117.3	169.16	-1,786.6	342.1	1,819.1	1,692.3	126.77	14.349		
5,900.0	5,900.0	5,874.9	5,874.6	9.6	119.4	169.16	-1,786.6	342.1	1,819.1	1,690.0	129.05	14.097		
6,000.0	6,000.0	5,974.9	5,974.6	9.7	121.6	169.16	-1,786.6	342.1	1,819.1	1,687.8	131.32	13.852		
6,100.0	6,100.0	6,074.9	6,074.6	9.9	123.7	169.16	-1,786.6	342.1	1,819.1	1,685.5	133.59	13.617		
6,200.0	6,200.0	6,174.9	6,174.6	10.0	125.9	169.16	-1,786.6	342.1	1,819.1	1,683.2	135.91	13.385		
6,300.0	6,300.0	6,274.9	6,274.6	10.2	128.1	169.16	-1,786.6	342.1	1,819.1	1,680.8	138.26	13.157		
6,400.0	6,400.0	6,374.9	6,374.6	10.3	130.3	169.16	-1,786.6	342.1	1,819.1	1,678.5	140.62	12.936		
6,500.0	6,500.0	6,474.9	6,474.6	10.5	132.5	169.16	-1,786.6	342.1	1,819.1	1,676.1	142.98	12.723		
6,600.0	6,600.0	6,574.9	6,574.6	10.6	134.7	169.16	-1,786.6	342.1	1,819.1	1,673.8	145.33	12.517		
6,700.0	6,700.0	6,674.9	6,674.6	10.8	136.9	169.16	-1,786.6	342.1	1,819.1	1,671.4	147.69	12.317		
6,800.0	6,800.0	6,774.9	6,774.6	10.9	139.1	169.16	-1,786.6	342.1	1,819.1	1,669.0	150.05	12.123		
6,900.0	6,900.0	6,874.9	6,874.6	11.1	141.3	169.16	-1,786.6	342.1	1,819.1	1,666.7	152.41	11.936		
7,000.0	7,000.0	6,974.9	6,974.6	11.2	143.5	169.16	-1,786.6	342.1	1,819.1	1,664.3	154.77	11.754		
7,100.0	7,100.0	7,074.9	7,074.6	11.4	145.7	169.16	-1,786.6	342.1	1,819.1	1,662.0	157.13	11.577		
7,200.0	7,200.0	7,174.9	7,174.6	11.5	147.9	169.16	-1,786.6	342.1	1,819.1	1,659.8	159.49	11.406		
7,300.0	7,300.0	7,274.9	7,274.6	11.7	150.2	169.16	-1,786.6	342.1	1,819.1	1,657.2	161.85	11.239		
7,400.0	7,400.0	7,374.9	7,374.6	11.8	152.4	169.16	-1,786.6	342.1	1,819.1	1,654.9	164.21	11.078		
7,500.0	7,500.0	7,474.9	7,474.6	12.0	154.6	169.16	-1,786.6	342.1	1,819.1	1,652.5	166.57	10.921		
7,600.0	7,600.0	7,574.9	7,574.6	12.1	156.8	169.16	-1,786.6	342.1	1,819.1	1,650.1	168.94	10.768		
7,700.0	7,700.0	7,674.9	7,674.6	12.3	159.0	169.16	-1,786.6	342.1	1,819.1	1,647.8	171.30	10.619		
7,800.0	7,800.0	7,774.9	7,774.6	12.5	161.2	169.16	-1,786.6	342.1	1,819.1	1,645.4	173.66	10.475		
7,900.0	7,900.0	7,875.0	7,874.6	12.6	163.4	169.16	-1,786.6	342.1	1,819.1	1,643.1	176.03	10.334		
8,000.0	8,000.0	8,011.0	8,010.6	12.8	166.4	169.16	-1,786.6	342.1	1,819.4	1,640.3	179.19	10.154		
8,052.1	8,052.1	8,027.1	8,026.7	12.8	166.8	169.16	-1,786.6	342.1	1,819.1	1,639.4	179.66	10.125		
8,100.0	8,100.0	8,075.0	8,074.6	12.9	168.0	169.16	-1,786.6	342.1	1,819.1	1,638.2	180.92	10.055		
8,200.0	8,200.0	8,175.0	8,174.6	13.1	170.5	169.16	-1,786.6	342.1	1,819.1	1,635.5	183.54	9.911		
8,300.0	8,300.0	8,275.0	8,274.6	13.2	172.9	169.16	-1,786.6	342.1	1,819.1	1,632.9	186.16	9.772		
8,400.0	8,400.0	8,375.0	8,374.6	13.4	175.4	169.16	-1,786.6	342.1	1,819.1	1,630.3	188.80	9.635		
8,500.0	8,500.0	8,475.0	8,474.6	13.5	178.1	169.16	-1,786.6	342.1	1,819.1	1,627.5	191.60	9.494		
8,600.0	8,600.0	8,575.0	8,574.6	13.7	180.7	169.16	-1,786.6	342.1	1,819.1	1,624.7	194.40	9.357		
8,700.0	8,700.0	8,675.0	8,674.6	13.8	183.4	169.16	-1,786.6	342.1	1,819.1	1,621.9	197.20	9.224		
8,800.0	8,800.0	8,775.0	8,774.6	14.0	186.0	169.16	-1,786.6	342.1	1,819.1	1,619.1	200.01	9.095		
8,900.0	8,900.0	8,875.1	8,874.6	14.1	188.7	169.16	-1,786.6	342.1	1,819.1	1,616.3	202.83	8.968		
9,000.0	9,000.0	8,975.1	8,974.6	14.3	191.6	169.16	-1,786.6	342.1	1,819.1	1,613.3	205.83	8.838		
9,100.0	9,100.0	9,075.1	9,074.6	14.4	194.4	-7.34	-1,786.6	342.1	1,819.0	1,610.2	208.82	8.711		
9,200.0	9,199.1	9,174.2	9,173.7	14.4	197.2	-7.58	-1,786.6	342.1	1,807.2	1,595.5	211.66	8.538		
9,300.0	9,293.5	9,268.7	9,268.1	14.5	199.9	-8.28	-1,786.6	342.1	1,775.2	1,560.8	214.39	8.280		
9,400.0	9,379.2	9,354.4	9,353.8	14.5	202.4	-9.65	-1,786.6	342.1	1,724.4	1,507.5	216.89	7.951		
9,500.0	9,452.4	9,427.6	9,427.0	14.6	204.4	-12.15	-1,786.6	342.1	1,657.1	1,438.1	219.07	7.564		
9,600.0	9,509.8	9,485.0	9,484.4	14.7	206.1	-17.02	-1,786.6	342.1	1,576.3	1,355.5	220.80	7.139		
9,700.0	9,549.0	9,524.2	9,523.6	14.8	207.2	-28.26	-1,786.6	342.1	1,485.6	1,263.6	222.00	6.692		
9,800.0	9,568.3	9,543.5	9,542.9	14.8	207.8	-62.20	-1,786.6	342.1	1,389.0	1,166.4	222.60	6.240		
9,900.0	9,572.1	9,547.3	9,546.7	14.9	207.9	-81.92	-1,786.6	342.1	1,290.7	1,068.0	222.74	5.795		

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



COG Operating LLC
Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Offset Design DEEP BSS - SCHOOCH STATE #1 - OWB - ACTUAL WELLPATH														Offset Site Error:
Survey Program: 141-INC-ONLY														0.0 usft
Reference: Offset														Offset Well Error:
Soml Major Axis														3.0 usft
Measured Depth (usft)	Vortical Depth (usft)	Measured Depth (usft)	Vortical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
10,000.0	9,575.1	9,550.3	9,549.7	14.9	208.0	-83.49	-1,786.6	342.1	1,193.5	970.6	222.86	5.355		
10,100.0	9,578.1	9,553.2	9,552.7	15.0	208.0	-84.05	-1,786.6	342.1	1,097.0	874.0	223.02	4.919		
10,200.0	9,581.0	9,556.2	9,555.6	15.8	208.1	-84.61	-1,786.6	342.1	1,001.3	777.3	223.97	4.470		
10,300.0	9,584.0	9,559.2	9,558.6	17.3	208.2	-85.17	-1,786.6	342.1	906.4	680.9	225.53	4.019		
10,400.0	9,587.0	9,562.1	9,561.6	18.8	208.3	-85.73	-1,786.6	342.1	812.8	585.6	227.13	3.578		
10,500.0	9,589.9	9,565.1	9,564.5	20.4	208.4	-86.30	-1,786.6	342.1	720.8	492.1	228.77	3.151		
10,600.0	9,592.9	9,568.1	9,567.5	22.0	208.5	-86.86	-1,786.6	342.1	631.4	400.9	230.43	2.740		
10,700.0	9,595.9	9,571.0	9,570.5	23.5	208.6	-87.42	-1,786.6	342.1	545.5	313.4	232.10	2.350		
10,800.0	9,598.8	9,574.0	9,573.4	25.1	208.6	-87.99	-1,786.6	342.1	465.3	231.6	233.78	1.991 Advise and Monitor		
10,900.0	9,601.8	9,577.0	9,576.4	26.7	208.7	-88.55	-1,786.6	342.1	394.3	158.8	235.47	1.675 Advise and Monitor		
11,000.0	9,604.8	9,579.9	9,579.4	28.4	208.8	-89.12	-1,786.6	342.1	338.2	101.1	237.17	1.426 Shut in Produces		
11,100.0	9,607.7	9,582.9	9,582.3	30.0	208.9	-89.69	-1,786.6	342.1	305.5	66.6	238.87	1.279 Shut in Produces		
11,155.6	9,609.4	9,584.6	9,584.0	30.9	208.9	-90.00	-1,786.6	342.1	300.4	60.5	239.82	1.252 Shut in Produces, CC, ES, SF		
11,200.0	9,610.7	9,585.9	9,585.3	31.6	209.0	-90.25	-1,786.6	342.1	303.6	63.0	240.58	1.262 Shut in Produces		
11,300.0	9,613.7	9,588.8	9,588.3	33.2	209.1	-90.82	-1,786.6	342.1	333.3	91.0	242.30	1.375 Shut in Produces		
11,400.0	9,616.6	9,591.8	9,591.2	34.9	209.2	-91.38	-1,786.6	342.1	387.2	143.2	244.02	1.587 Advise and Monitor		
11,500.0	9,619.6	9,594.8	9,594.2	36.5	209.2	-91.95	-1,786.6	342.1	456.9	211.1	245.74	1.859 Advise and Monitor		
11,600.0	9,622.6	9,597.7	9,597.2	38.1	209.3	-92.51	-1,786.6	342.1	536.2	288.8	247.47	2.167		
11,700.0	9,625.5	9,600.7	9,600.1	39.8	209.4	-93.08	-1,786.6	342.1	621.6	372.4	249.20	2.494		
11,800.0	9,628.5	9,603.7	9,603.1	41.4	209.5	-93.64	-1,786.6	342.1	710.7	459.8	250.93	2.832		
11,900.0	9,631.5	9,606.6	9,606.1	43.1	209.6	-94.20	-1,786.6	342.1	802.4	549.8	252.66	3.176		
12,000.0	9,634.4	9,609.6	9,609.0	44.7	209.7	-94.77	-1,786.6	342.1	895.9	641.5	254.39	3.522		
12,100.0	9,637.4	9,612.6	9,612.0	46.4	209.8	-95.33	-1,786.6	342.1	990.6	734.5	256.13	3.868		
12,200.0	9,640.4	9,615.5	9,615.0	48.0	209.8	-95.89	-1,786.6	342.1	1,088.3	828.4	257.87	4.213		
12,300.0	9,643.3	9,618.5	9,617.9	49.7	209.9	-96.45	-1,786.6	342.1	1,182.7	923.1	259.61	4.556		
12,400.0	9,646.3	9,621.5	9,620.9	51.3	210.0	-97.00	-1,786.6	342.1	1,279.6	1,018.3	261.35	4.896		
12,500.0	9,649.3	9,624.4	9,623.9	53.0	210.1	-97.56	-1,786.6	342.1	1,377.0	1,113.9	263.09	5.234		
12,600.0	9,652.2	9,627.4	9,626.8	54.7	210.2	-98.12	-1,786.6	342.1	1,474.7	1,209.9	264.83	5.568		
12,700.0	9,655.2	9,630.4	9,629.8	56.3	210.3	-98.67	-1,786.6	342.1	1,572.7	1,306.1	266.58	5.900		
12,800.0	9,658.2	9,633.3	9,632.8	58.0	210.3	-99.22	-1,786.6	342.1	1,670.9	1,402.6	268.32	6.227		
12,900.0	9,661.1	9,636.3	9,635.7	59.6	210.4	-99.77	-1,786.6	342.1	1,769.3	1,499.3	270.07	6.552		
13,000.0	9,664.1	9,639.3	9,638.7	61.3	210.5	-100.32	-1,786.6	342.1	1,867.9	1,596.1	271.81	6.872		
13,100.0	9,667.1	9,642.2	9,641.7	63.0	210.6	-100.87	-1,786.6	342.1	1,966.6	1,693.1	273.56	7.189		
13,200.0	9,670.0	9,645.2	9,644.6	64.6	210.7	-101.41	-1,786.6	342.1	2,065.5	1,790.2	275.30	7.503		

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



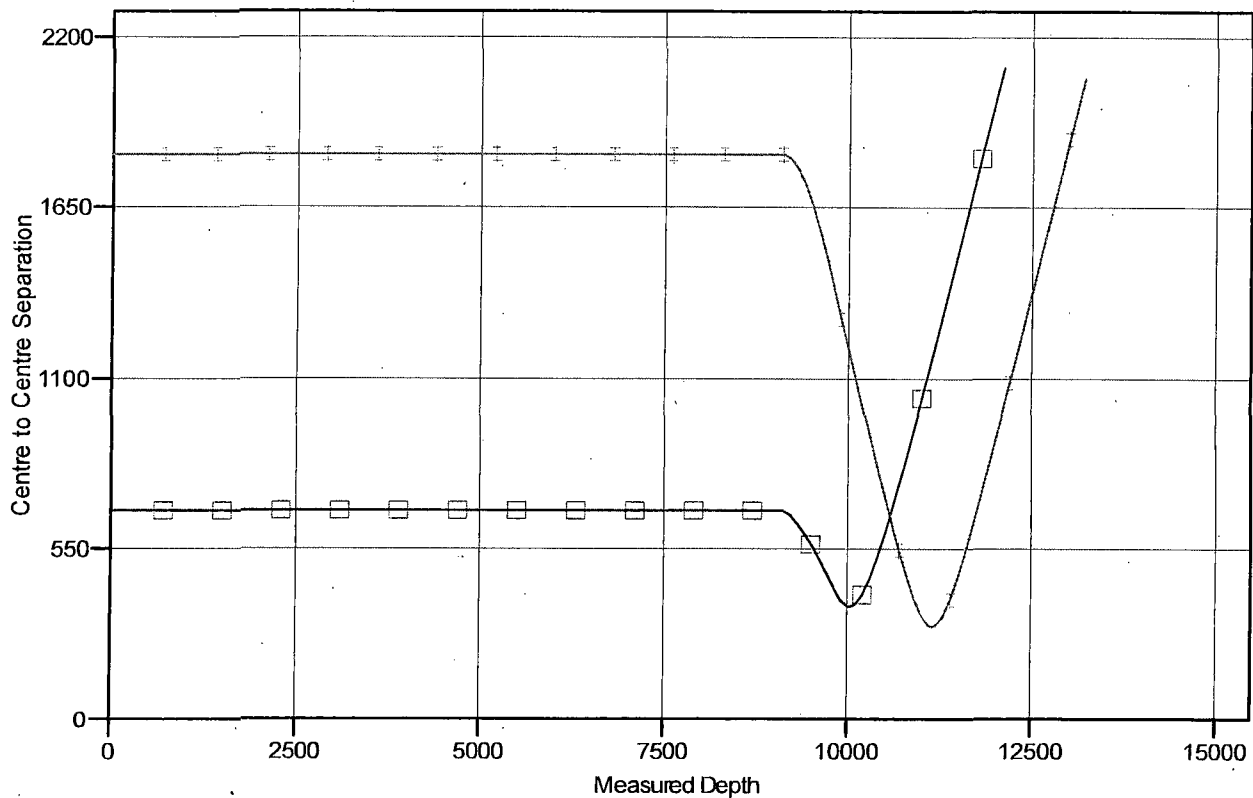
COG Operating LLC
Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB= @ 3917.4usft (MCVAY #6)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SCOOTER FEDERAL COM #2H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.38°

Ladder Plot



LEGEND

ISTATE #1, OWB, ACTUAL WELLPATH V0

—●— SCOOCH STATE #1, OWB, ACTUAL WELLPATH V0



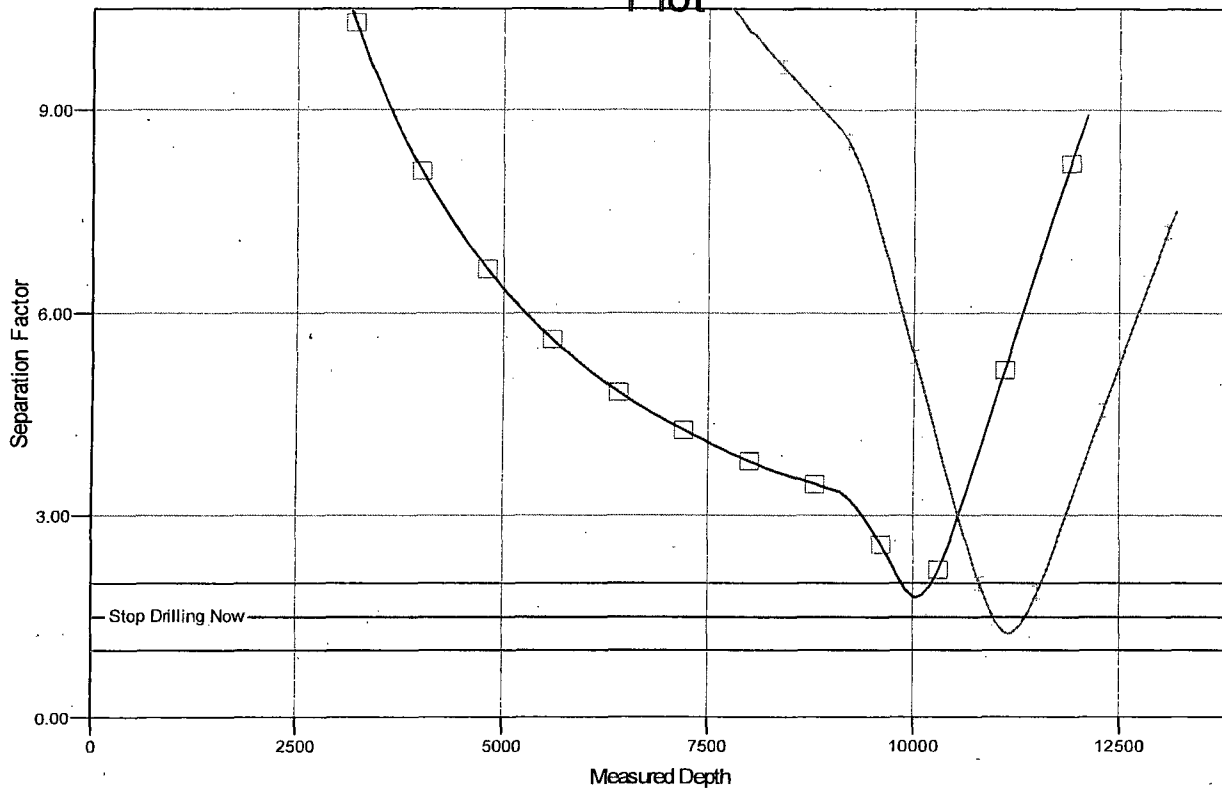
COG Operating LLC
Anticollision Report

Company:	NEW MEXICO BASIN	Local Co-ordinate Reference:	Well SCOOTER FEDERAL COM #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Reference Site:	DEEP BSS	MD Reference:	RKB= @ 3917.4usft (MCVAY #6)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SCOOTER FEDERAL COM #2H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OWB	Database:	EDM Users
Reference Design:	PWP0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB= @ 3917.4usft (MCVAY #6)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SCOOTER FEDERAL COM #2H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.38°

Separation Factor Plot



LEGEND

STATE #1, OWB, ACTUAL WELLPATH V0

—●— SCOOCH STATE #1, OWB, ACTUAL WELLPATH V0



COG Operating LLC
Project: Lea County, NM
Site: Scooter Fed Com
Well: 2H
Wellbore: OH
Plan: Plan #1 (2H/OH)

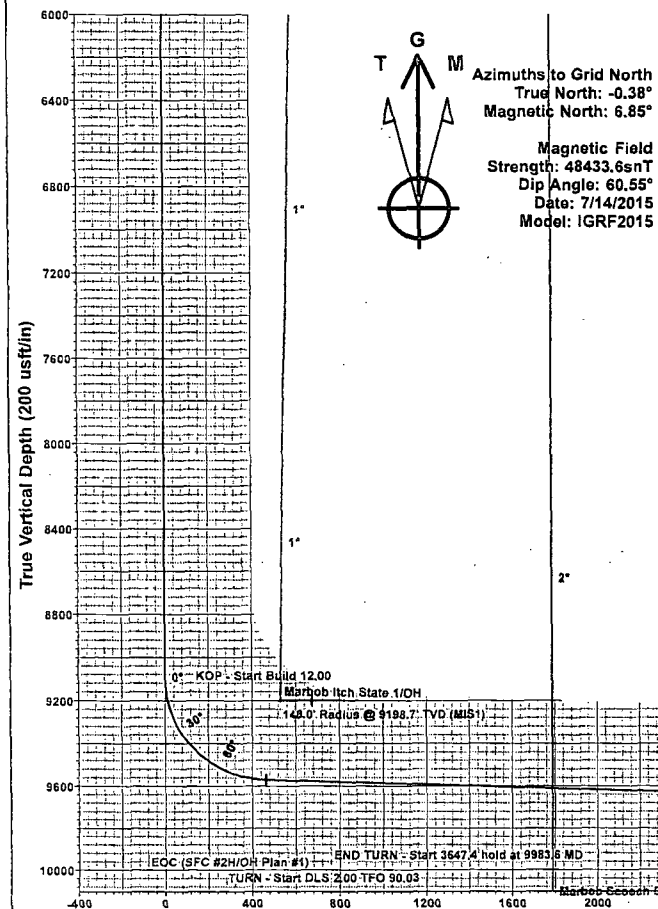
Section Details

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	9092.7	0.00	0.00	9092.7	0.0	0.0	0.00	0.00	0.0	
3	9828.5	88.29	176.50	9570.0	-462.4	28.3	12.00	176.50	462.6	
4	9983.6	88.29	179.60	9574.6	-617.3	33.6	2.00	90.03	617.5	
5	13630.9	88.29	179.60	9683.1	-4263.0	58.8	0.00	0.00	4263.3	
6	13838.4	88.29	183.75	9689.3	-4470.2	52.7	2.00	90.12	4470.4	
7	14130.9	88.29	183.75	9698.0	-4761.9	33.6	0.00	0.00	4762.0	PBHL (SFC #2H/OH)

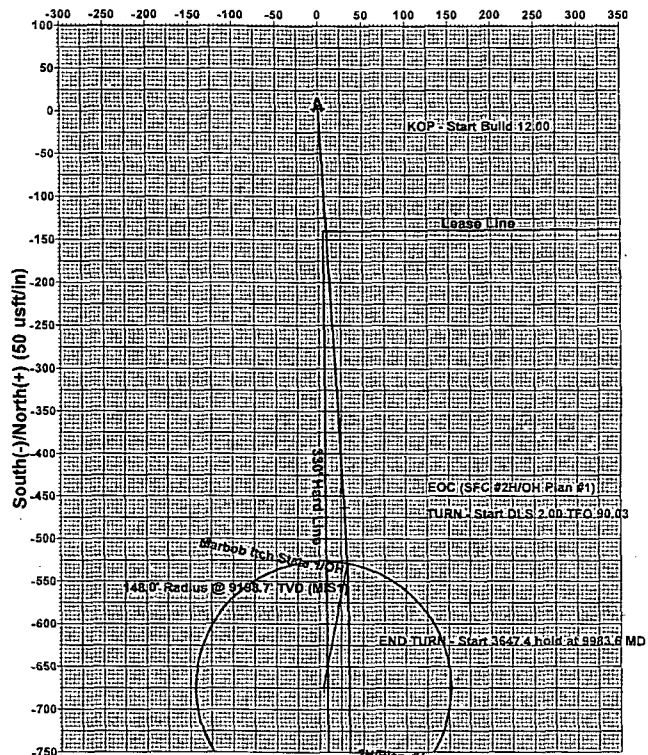
WELL DETAILS: 2H

Ground Elevation: 3898.4
RKB Elevation: KB @ 3916.4usft (McVay 6)
Rig Name: McVay 6

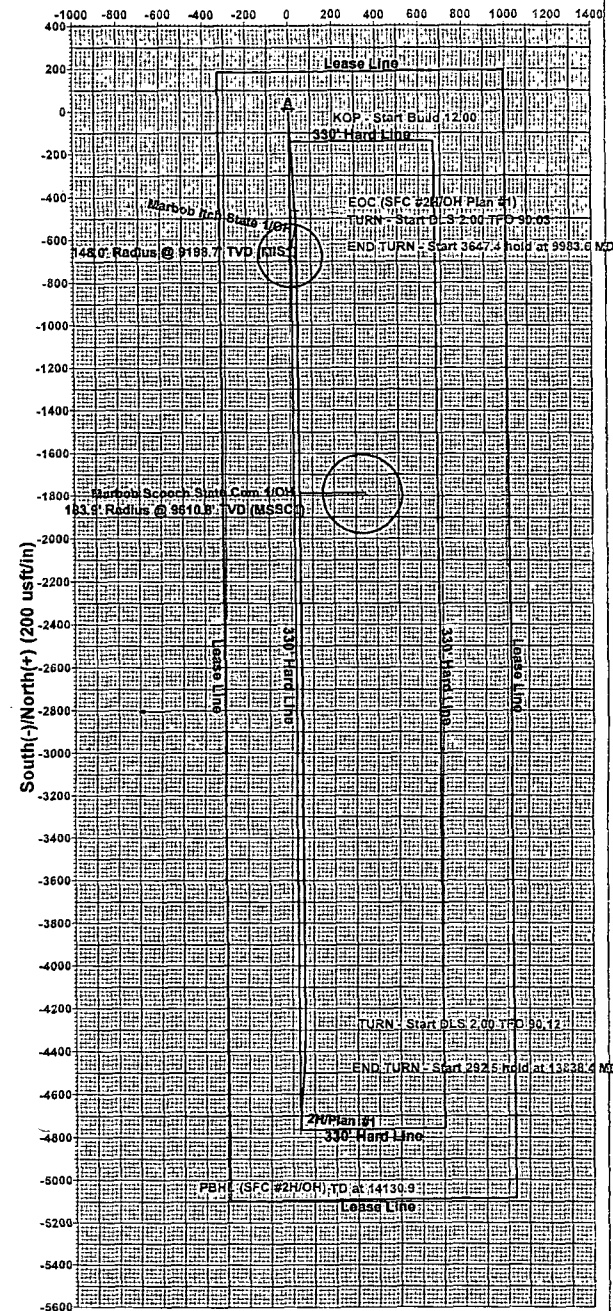
Northing 633537.40 Easting 714269.40 Latitude 32° 44' 23.107 N Longitude 103° 38' 11.344 W



West(-)/East(+) (50 usft/in)



West(-)/East(+) (200 usft/in)



Plan: Plan #1 (2H/OH)
Created By: Well Planner Date: 9:06, July 15 2015

Terra Directional Services
3705 South County Road 1210, Midland, TX 79706
Office: (432) 618-1210

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



COG Operating LLC

Lea County, NM

Scooter Fed Com

2H

OH

Plan: Plan #1

Standard Planning Report

15 July, 2015





TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3916.4usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3916.4usft (McVay 6)
Site:	Scooter Fed Com	North Reference:	Grid:
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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

Site Scooter Fed Com					
Site Position:		Northing:	633,537.40 usft	Latitude:	32° 44' 23.107 N
From:	Map	Easting:	714,269.40 usft	Longitude:	103° 38' 11.344 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38

Well:	2H					
Well Position	+N/-S	0.0 usft	Northing:	633,537.40 usft	Latitude:	32° 44' 23.107 N
	+E/-W	0.0 usft	Easting:	714,269.40 usft	Longitude:	103° 38' 11.344 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,898.4 usft

Wellbore:	OH				
Magnetics:	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/14/2015	7.23	60.55	48,434

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	179.60

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,092.7	0.00	0.00	9,092.7	0.0	0.0	0.00	0.00	0.00	0.00	
9,828.5	88.29	176.50	9,570.0	-462.4	28.3	12.00	12.00	0.00	176.50	
9,983.6	88.30	179.60	9,574.6	-617.3	33.6	2.00	0.00	2.00	90.03	
13,630.9	88.30	179.60	9,683.1	-4,263.0	58.8	0.00	0.00	0.00	0.00	
13,838.4	88.29	183.75	9,689.3	-4,470.2	52.7	2.00	0.00	2.00	90.12	
14,130.9	88.29	183.75	9,698.0	-4,761.9	33.6	0.00	0.00	0.00	0.00	PBHL (SFC #2H/OH)



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3916.4usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3916.4usft (McVay 6)
Site:	Scoter Fed.Com	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan.#1		

Planned Survey

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



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3916.4usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3916.4usft (McVay 6)
Site:	Scooter Fed Com	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,092.7	0.00	0.00	9,092.7	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 12.00									
9,100.0	0.88	176.50	9,100.0	-0.1	0.0	0.1	12.00	12.00	0.00
9,125.0	3.88	176.50	9,125.0	-1.1	0.1	1.1	12.00	12.00	0.00
9,150.0	6.88	176.50	9,149.9	-3.4	0.2	3.4	12.00	12.00	0.00
9,175.0	9.88	176.50	9,174.6	-7.1	0.4	7.1	12.00	12.00	0.00
9,200.0	12.88	176.50	9,199.1	-12.0	0.7	12.0	12.00	12.00	0.00
9,225.0	15.88	176.50	9,223.3	-18.2	1.1	18.2	12.00	12.00	0.00
9,250.0	18.88	176.50	9,247.2	-25.6	1.6	25.6	12.00	12.00	0.00
9,275.0	21.88	176.50	9,270.6	-34.3	2.1	34.3	12.00	12.00	0.00
9,300.0	24.88	176.50	9,293.5	-44.2	2.7	44.2	12.00	12.00	0.00
9,325.0	27.88	176.50	9,315.9	-55.3	3.4	55.3	12.00	12.00	0.00
9,350.0	30.88	176.50	9,337.7	-67.5	4.1	67.6	12.00	12.00	0.00
9,375.0	33.88	176.50	9,358.8	-80.9	4.9	80.9	12.00	12.00	0.00
9,400.0	36.88	176.50	9,379.2	-95.3	5.8	95.4	12.00	12.00	0.00
9,425.0	39.88	176.50	9,398.8	-110.8	6.8	110.9	12.00	12.00	0.00



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3916.4usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3916.4usft (McVay 6)
Site:	Scooter Fed Com	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,450.0	42.88	176.50	9,417.6	-127.3	7.8	127.4	12.00	12.00	0.00
9,475.0	45.88	176.50	9,435.4	-144.8	8.9	144.8	12.00	12.00	0.00
9,500.0	48.88	176.50	9,452.4	-163.1	10.0	163.2	12.00	12.00	0.00
9,525.0	51.88	176.50	9,468.3	-182.4	11.2	182.4	12.00	12.00	0.00
9,550.0	54.88	176.50	9,483.2	-202.4	12.4	202.5	12.00	12.00	0.00
9,575.0	57.88	176.50	9,497.1	-223.2	13.6	223.2	12.00	12.00	0.00
9,600.0	60.88	176.50	9,509.8	-244.6	15.0	244.7	12.00	12.00	0.00
9,625.0	63.88	176.50	9,521.4	-266.7	16.3	266.8	12.00	12.00	0.00
9,650.0	66.88	176.50	9,531.8	-289.4	17.7	289.5	12.00	12.00	0.00
9,675.0	69.88	176.50	9,541.0	-312.6	19.1	312.7	12.00	12.00	0.00
9,700.0	72.88	176.50	9,549.0	-336.3	20.6	336.4	12.00	12.00	0.00
9,725.0	75.88	176.50	9,555.7	-360.3	22.0	360.4	12.00	12.00	0.00
9,750.0	78.88	176.50	9,561.2	-384.6	23.5	384.8	12.00	12.00	0.00
9,775.0	81.88	176.50	9,565.4	-409.2	25.0	409.4	12.00	12.00	0.00
9,800.0	84.88	176.50	9,568.3	-434.0	26.5	434.2	12.00	12.00	0.00
9,825.0	87.88	176.50	9,569.8	-458.9	28.1	459.1	12.00	12.00	0.00
9,828.5	88.29	176.50	9,570.0	-462.4	28.3	462.6	12.00	12.00	0.00
EOC/TURN - Start DLS 2.00 TFO 90.03									
9,900.0	88.29	177.93	9,572.1	-533.8	31.8	534.0	2.00	0.00	2.00
9,983.6	88.30	179.60	9,574.6	-617.3	33.6	617.5	2.00	0.00	2.00
END TURN - Start 3647.4 hold at 9983.6 MD									
10,000.0	88.30	179.60	9,575.1	-633.7	33.7	633.9	0.00	0.00	0.00
10,100.0	88.30	179.60	9,578.0	-733.7	34.4	733.9	0.00	0.00	0.00
10,200.0	88.30	179.60	9,581.0	-833.6	35.0	833.9	0.00	0.00	0.00
10,300.0	88.30	179.60	9,584.0	-933.6	35.7	933.8	0.00	0.00	0.00
10,400.0	88.30	179.60	9,587.0	-1,033.5	36.4	1,033.8	0.00	0.00	0.00
10,500.0	88.30	179.60	9,589.9	-1,133.5	37.1	1,133.7	0.00	0.00	0.00
10,600.0	88.30	179.60	9,592.9	-1,233.4	37.8	1,233.7	0.00	0.00	0.00
10,700.0	88.30	179.60	9,595.9	-1,333.4	38.5	1,333.6	0.00	0.00	0.00
10,800.0	88.30	179.60	9,598.9	-1,433.3	39.2	1,433.6	0.00	0.00	0.00
10,900.0	88.30	179.60	9,601.8	-1,533.3	39.9	1,533.5	0.00	0.00	0.00
11,000.0	88.30	179.60	9,604.8	-1,633.3	40.6	1,633.5	0.00	0.00	0.00
11,100.0	88.30	179.60	9,607.8	-1,733.2	41.3	1,733.5	0.00	0.00	0.00
11,200.0	88.30	179.60	9,610.8	-1,833.2	42.0	1,833.4	0.00	0.00	0.00
11,300.0	88.30	179.60	9,613.7	-1,933.1	42.7	1,933.4	0.00	0.00	0.00
11,400.0	88.30	179.60	9,616.7	-2,033.1	43.4	2,033.3	0.00	0.00	0.00
11,500.0	88.30	179.60	9,619.7	-2,133.0	44.1	2,133.3	0.00	0.00	0.00
11,600.0	88.30	179.60	9,622.7	-2,233.0	44.7	2,233.2	0.00	0.00	0.00
11,700.0	88.30	179.60	9,625.6	-2,332.9	45.4	2,333.2	0.00	0.00	0.00
11,800.0	88.30	179.60	9,628.6	-2,432.9	46.1	2,433.1	0.00	0.00	0.00
11,900.0	88.30	179.60	9,631.6	-2,532.8	46.8	2,533.1	0.00	0.00	0.00
12,000.0	88.30	179.60	9,634.6	-2,632.8	47.5	2,633.1	0.00	0.00	0.00
12,100.0	88.30	179.60	9,637.5	-2,732.7	48.2	2,733.0	0.00	0.00	0.00
12,200.0	88.30	179.60	9,640.5	-2,832.7	48.9	2,833.0	0.00	0.00	0.00
12,300.0	88.30	179.60	9,643.5	-2,932.6	49.6	2,932.9	0.00	0.00	0.00
12,400.0	88.30	179.60	9,646.5	-3,032.6	50.3	3,032.9	0.00	0.00	0.00
12,500.0	88.30	179.60	9,649.4	-3,132.6	51.0	3,132.8	0.00	0.00	0.00
12,600.0	88.30	179.60	9,652.4	-3,232.5	51.7	3,232.8	0.00	0.00	0.00
12,700.0	88.30	179.60	9,655.4	-3,332.5	52.4	3,332.7	0.00	0.00	0.00
12,800.0	88.30	179.60	9,658.4	-3,432.4	53.1	3,432.7	0.00	0.00	0.00
12,900.0	88.30	179.60	9,661.3	-3,532.4	53.7	3,532.7	0.00	0.00	0.00
13,000.0	88.30	179.60	9,664.3	-3,632.3	54.4	3,632.6	0.00	0.00	0.00
13,100.0	88.30	179.60	9,667.3	-3,732.3	55.1	3,732.6	0.00	0.00	0.00
13,200.0	88.30	179.60	9,670.3	-3,832.2	55.8	3,832.5	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3916.4usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3916.4usft (McVay 6)
Site:	Scooter Fed Com	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
13,300.0	88.30	179.60	9,673.2	-3,932.2	56.5	3,932.5	0.00	0.00	0.00	
13,400.0	88.30	179.60	9,676.2	-4,032.1	57.2	4,032.4	0.00	0.00	0.00	
13,500.0	88.30	179.60	9,679.2	-4,132.1	57.9	4,132.4	0.00	0.00	0.00	
13,600.0	88.30	179.60	9,682.2	-4,232.0	58.6	4,232.3	0.00	0.00	0.00	
13,630.9	88.30	179.60	9,683.1	-4,263.0	58.8	4,263.3	0.00	0.00	0.00	
TURN - Start DLS 2.00 TFO 90.12										
13,700.0	88.29	180.98	9,685.1	-4,332.0	58.5	4,332.3	2.00	0.00	2.00	
13,800.0	88.29	182.99	9,688.1	-4,431.9	55.0	4,432.2	2.00	0.00	2.00	
13,838.4	88.29	183.75	9,689.3	-4,470.2	52.7	4,470.4	2.00	0.00	2.00	
END TURN - Start 292.5 hold at 13838.4 MD										
13,900.0	88.29	183.75	9,691.1	-4,531.6	48.7	4,531.9	0.00	0.00	0.00	
14,000.0	88.29	183.75	9,694.1	-4,631.4	42.2	4,631.6	0.00	0.00	0.00	
14,100.0	88.29	183.75	9,697.1	-4,731.1	35.6	4,731.3	0.00	0.00	0.00	
14,130.9	88.29	183.75	9,698.0	-4,761.9	33.6	4,762.0	0.00	0.00	0.00	
TD at 14130.9										

Design Targets											
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude		
- hit/miss target											
- Shape											
183.9' Radius @ 9610.8	0.00	0.00	0.0	-1,790.0	330.0	631,747.40	714,599.40	32° 44' 5.374 N	103° 38' 7.619 W		
- plan misses target center by 1820.2usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)											
- Circle (radius 183.9)											
148.0' Radius @ 9198.7	0.00	0.01	9,198.7	-674.0	4.2	632,863.38	714,273.64	32° 44' 16.437 N	103° 38' 11.346 W		
- plan misses target center by 378.6usft at 10028.9usft MD (9575.9 TVD, -662.6 N, 33.9 E)											
- Circle (radius 148.0)											
EOC (SFC #2H/OH Plar	0.00	0.00	9,570.0	-462.4	28.3	633,075.00	714,297.68	32° 44' 18.530 N	103° 38' 11.048 W		
- plan hits target center											
- Point											
PBHL (SFC #2H/OH)	0.00	0.00	9,698.0	-4,761.9	33.6	628,775.50	714,303.00	32° 43' 35.986 N	103° 38' 11.317 W		
- plan hits target center											
- Point											

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
9,092.7	9,092.7	0.0	0.0	KOP - Start Build 12.00	
9,828.5	9,570.0	-462.4	28.3	EOC/TURN - Start DLS 2.00 TFO 90.03	
9,983.6	9,574.6	-617.3	33.6	END TURN - Start 3647.4 hold at 9983.6 MD	
13,630.9	9,683.1	-4,263.0	58.8	TURN - Start DLS 2.00 TFO 90.12	
13,838.4	9,689.3	-4,470.2	52.7	END TURN - Start 292.5 hold at 13838.4 MD	
14,130.9	9,698.0	-4,761.9	33.6	TD at 14130.9	



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

No records found.

PLSS Search:

Section(s): 23

Township: 18S

Range: 33E



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		Q Q Q									Depth Depth Water			
POD Number	Sub-Code	basin	County	64	16	4	Sec	Tws	Rng	X	Y	Well	Water	Column
CP 00623			LE	1	1	1	13	18S	33E	628895	3624852* 	82	60	22
CP 00689			LE		2	1	13	18S	33E	629243	3624542 	100		
CP 00691			LE	4	4	2	24	18S	33E	630327	3622662* 	215	195	20
CP 00701			LE		1	3	11	18S	33E	627373	3625534* 	100		
CP 00701 POD2			LE	4	1	3	11	18S	33E	627472	3625433* 	100		
CP 00758			LE			3	04	18S	33E	624345	3626886* 	250		
CP 00769			LE	1	1	2	13	18S	33E	629699	3624866* 	115	70	45
CP 00807			LE	1	1	1	14	18S	33E	627283	3624828* 	60		
CP 00813			LE			1	33	18S	33E	624441	3619644* 	300		
CP 01417 POD1			LE	4	3	2	10	18S	33E	626613	3625732 	120	54	66
CP 01417 POD2			LE	2	1	4	11	18S	33E	628219	3625573 	100	64	36
CP 01417 POD3			LE	2	4	4	11	18S	33E	628603	3625179 	100	61	39
L 02878	R	L	LE		4	4	12	18S	33E	628946	3736195 	205	150	55
L 02878 POD2		L	LE		4	4	12	18S	33E	630196	3625175 	220	220	0
L 03454		L	LE		2	2	30	18S	33E	622200	3621422* 	100	35	65
L 04649		L	LE	1	1	3	03	18S	33E	625644	3627213* 	100	45	55
L 06131		L	LE	3	1	2	08	18S	33E	623241	3626167* 	194	100	94
L 06347		L	LE		4	4	12	18S	33E	630196	3625175* 	170	130	40
L 08288		L	LE	3	3	3	12	18S	33E	628890	3625054* 	79	60	19
L 13406 POD1		L	LE	4	4	4	12	18S	33E	630279	3625061 	220		

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Average Depth to Water: 95 feet

Minimum Depth: 35 feet

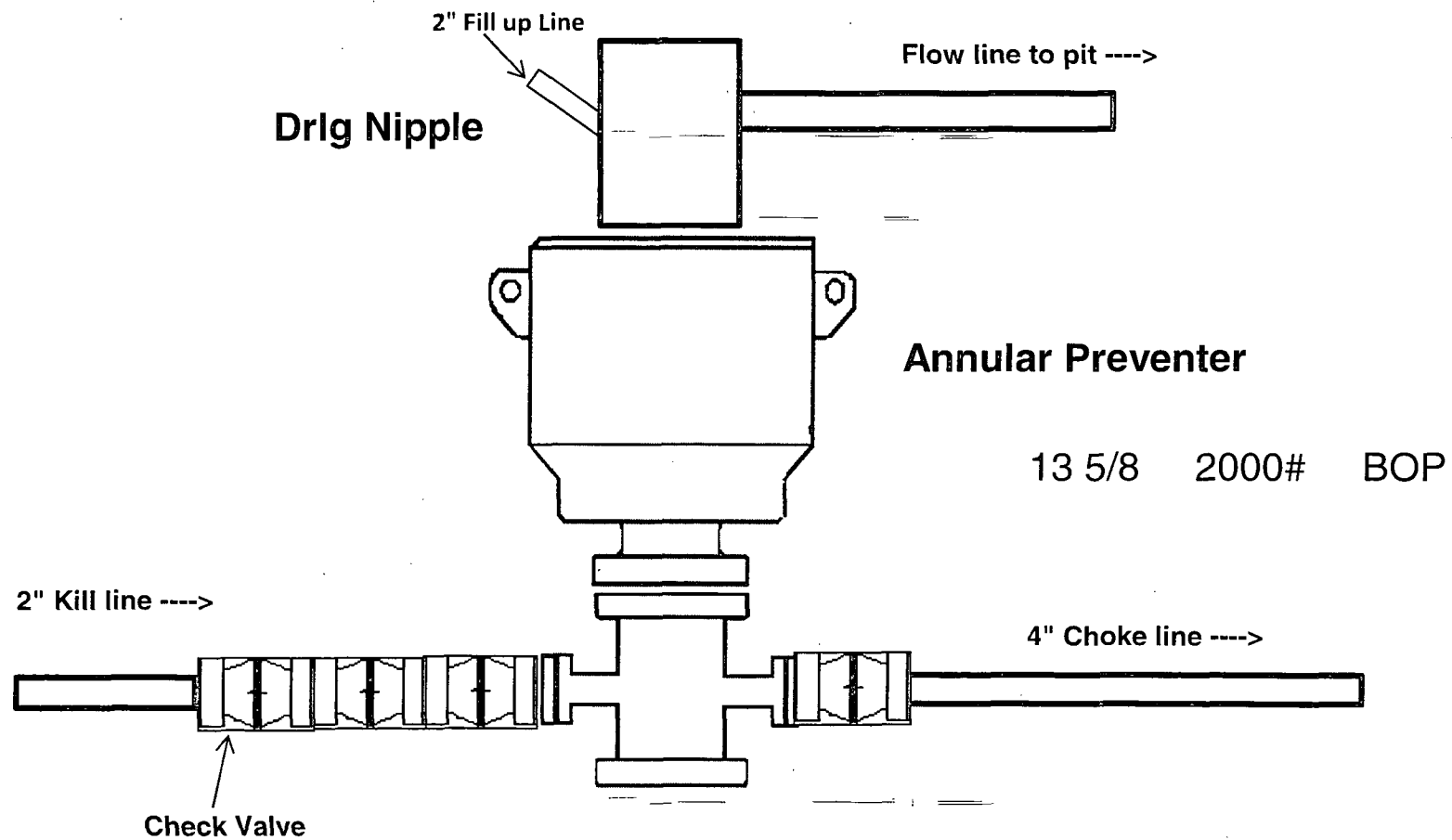
Maximum Depth: 220 feet

Record Count: 20

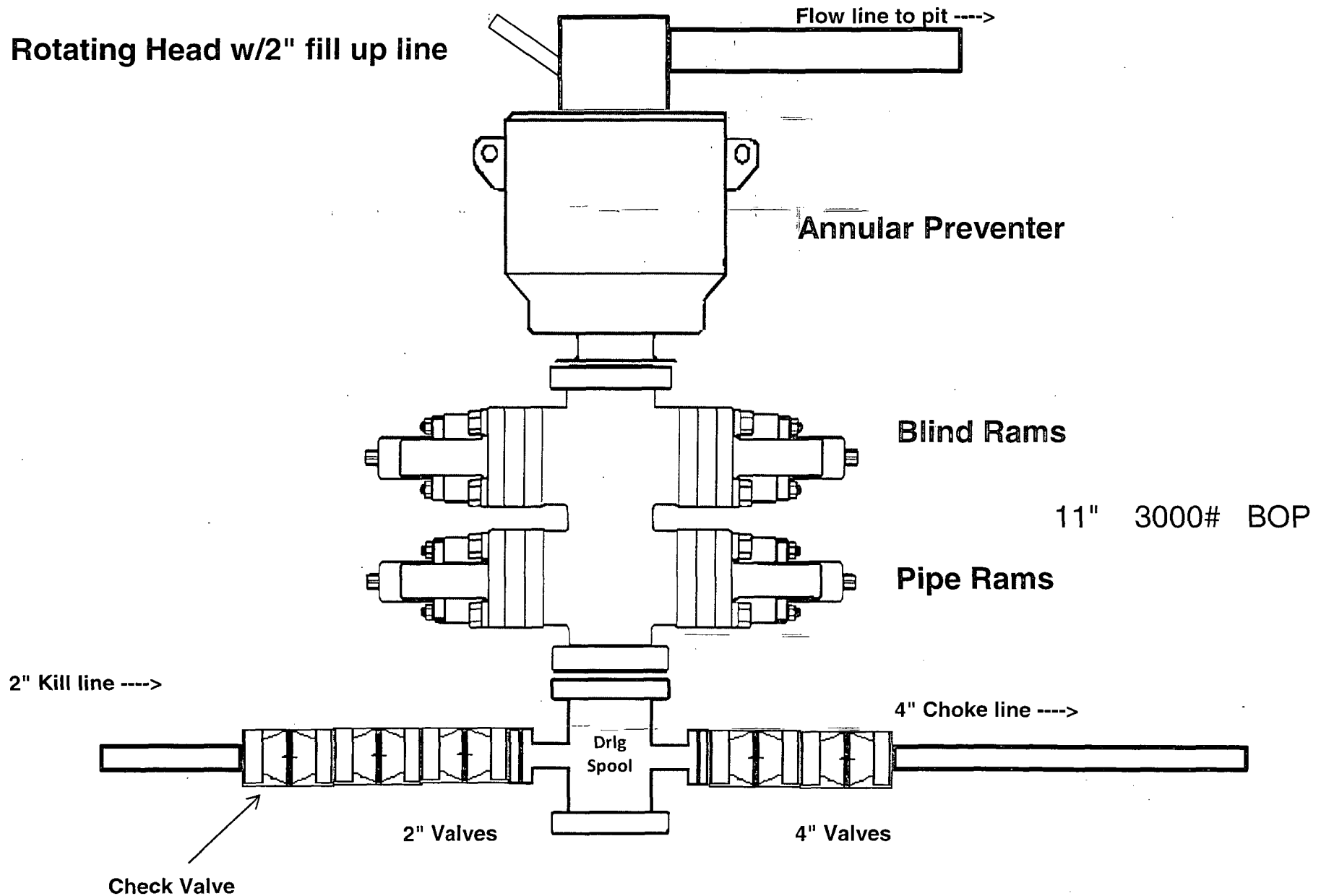
PLSS Search:

Township: 18S **Range:** 33E

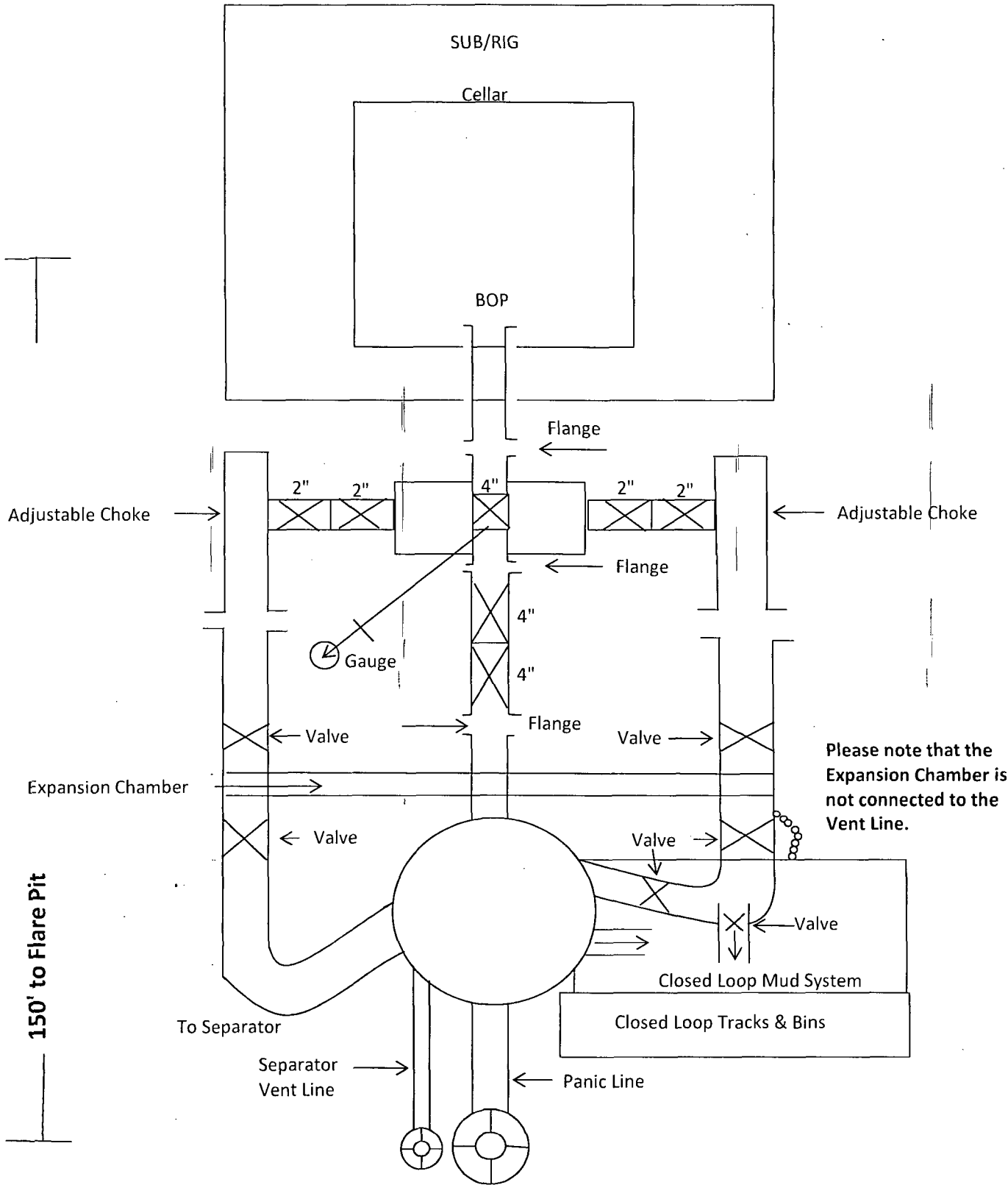
2,000 psi BOP Schematic



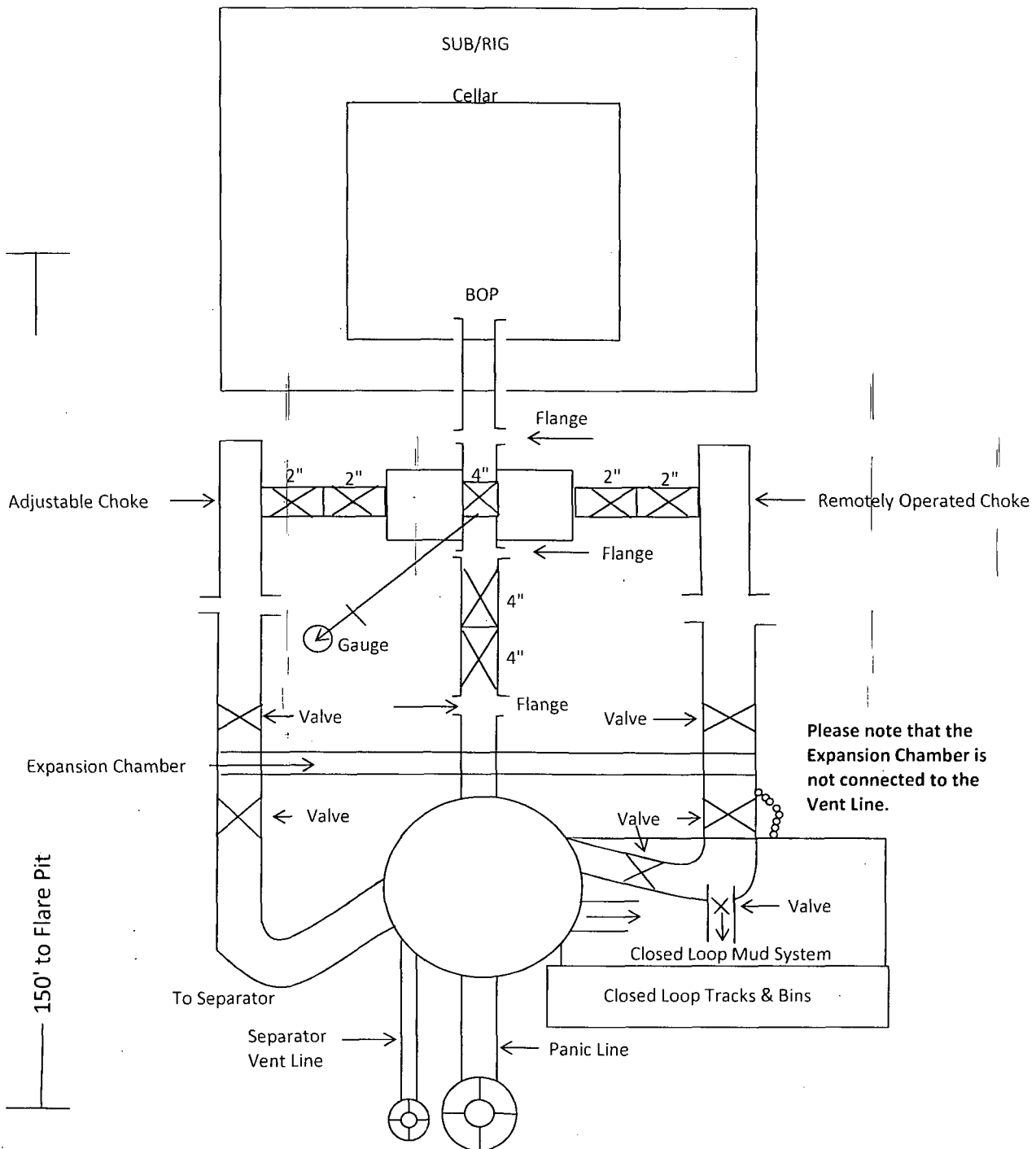
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



COG Operating LLC
Rig Plat & Closed Loop Equipment Diagram

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

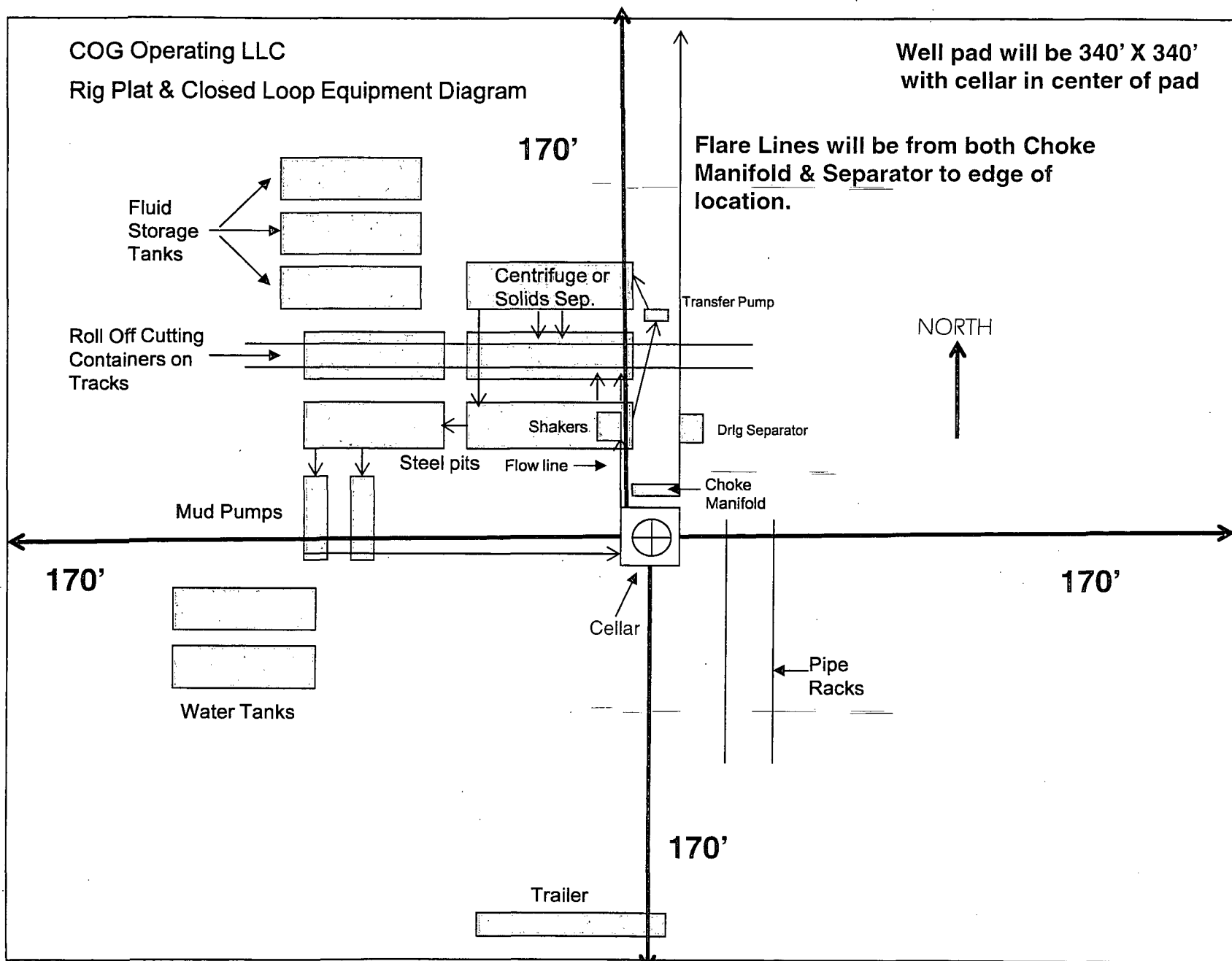


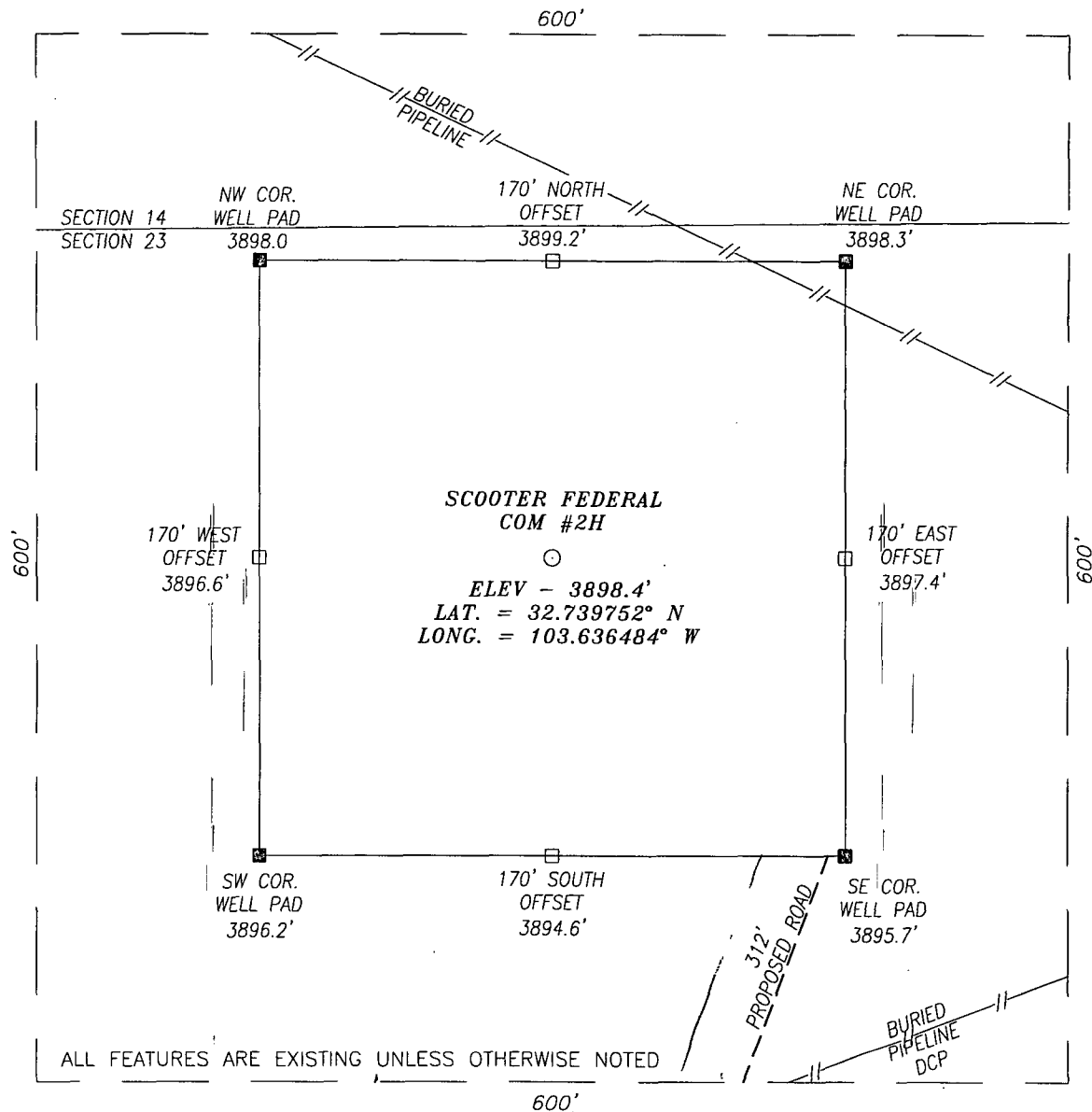
Exhibit 1

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

SECTION 23, TOWNSHIP 18 SOUTH, RANGE 33 EAST, N.M.P.M.,

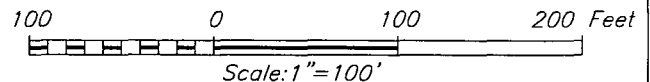
LEA COUNTY

NEW MEXICO



DIRECTIONS TO LOCATION

HEADING EAST ON HWY 529 TURN RIGHT (SOUTHWEST) .8 MILE PAST MM 16 AND GO APPROX. 700 FEET; THEN TURN LEFT (SOUTH) AND GO APPROX. 0.3 MILE; THEN TURN RIGHT (WEST) AND GO 0.6 MILE; THEN GO APPROX. .4 MILE; TURN LEFT (SOUTHWEST) AND GO APPROX. 0.6 MILE; THEN TURN RIGHT (WEST) AND GO 0.3 MILE; THEN TURN RIGHT (NORTHWEST) AND GO APPROX. 0.1 MILE; PROPOSED WELL IS APPROX. 470 FEET NORTH.



HARCROW SURVEYING, LLC

2314 W. MAIN ST, ARTESIA, N.M. 88210

PH: (575) 746-2158 FAX: (575) 746-2158

c.harcrow@harcrowsurveying.com



COG OPERATING, LLC

SCOOTER FEDERAL COM #2H WELL
LOCATED 190 FEET FROM THE NORTH LINE
AND 1650 FEET FROM THE WEST LINE OF SECTION 23,
TOWNSHIP 18 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO

SURVEY DATE: 04/01/2015

PAGE: 1 OF 1

DRAFTING DATE: 04/03/2015

APPROVED BY: CH

DRAWN BY: AF

FILE: 15-355