

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTOIL CONSERVATION
NMNM DISTRICT
APR 04 2016FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other		5. Lease Serial No. NMNM113398	
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____		6. If Indian, Allottee or Tribe Name	
2. Name of Operator COG OPERATING LLC		7. Unit or CA Agreement Name and No. NM 135296	
Contact: STORMI DAVIS E-Mail: sdavis@concho.com		8. Lease Name and Well No. GLACIER FEDERAL COM 1H	
3. Address 2208 WEST MAIN ARTESIA, NM 88210		9. API Well No. 30-015-43131	
3a. Phone No. (include area code) Ph: 575-748-6946		10. Field and Pool, or Exploratory WILDCAT; WOLFCAMP	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* Sec 24 T26S R25E Mer At surface NENE 330FNL 560FEL At top prod interval reported below Sec 12 T26S R25E Mer At total depth NENE 669FNL 710FEL		11. Sec., T., R., M., or Block and Survey or Area Sec 24 T26S R25E Mer	
14. Date Spudded 08/01/2015		15. Date T.D. Reached 08/23/2015	
16. Date Completed ☐ D & A ☒ Ready to Prod. 09/18/2015		17. Elevations (DF, KB, RT, GL)* 3545 GL	
18. Total Depth: MD 18266 TVD 8355		19. Plug Back T.D.: MD 18155 TVD 8353	
20. Depth Bridge Plug Set: MD 18155 TVD 8353		21. Type Electric & Other Mechanical Logs Run (Submit copy of each) NONE	
22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)			
23. Casing and Liner Record (Report all strings set in well)			

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 J55	54.5	0	440		410		0	
12.250	9.625 J55	36.0	0	1550		560		0	
8.750	5.500 P110	17.0	0	18258		3330		0	

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	7565							

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) WOLFCAMP	13570	18135	13570 TO 18135	0.430	810	OPEN
B)			18185 TO 18195		60	UNDER CBP @ 18155
C)						
D)						

Depth Interval	Amount and Type of Material
13570 TO 18135	SEE IN REMARKS

28. Production - Interval A									
Date First Produced 09/25/2015	Test Date 10/27/2015	Hours Tested 24	Test Production →	Oil BBL 383.0	Gas MCF 1196.0	Water BBL 1996.0	Oil Gravity Corr. API	Gas Gravity	Production Method ELECTRIC PUMP SUB-SURFACE
Choke Size 34/64	Tbg. Press. Flwg. 475 SI	Csg. Press.	24 Hr. Rate →	Oil BBL 383	Gas MCF 1196	Water BBL 1996	Gas:Oil Ratio	Well Status POW	MAR 25 2016 D. H. H. H.
28a. Production - Interval B									
Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #327982 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

Reclamation Due: 4/27/16

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	

29. Disposition of Gas(Sold, used for fuel, vented, etc.)
SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
LAMAR	1623	1664		TOP OF SALT	447
BELL CANYON	1665	2521		BOTTOM OF SALT	1433
CHERRY CANYON	2522	3588		LAMAR	1623
BRUSHY CANYON	3589	5084		BELL CANYON	1665
BONE SPRING LM	5085	5952		CHERRY CANYON	2522
1ST BONE SPRING	5953	6766		BRUSHY CANYON	3589
2ND BONE SPRING	6767	7702		BONE SPRING LM	5085
3RD BONE SPRING	7703	8113		1ST BONE SPRING	5953

32. Additional remarks (include plugging procedure):

Perfs 7 1/2% Sand# Fluid (Gal)
 18135 18084 18032 1512 227796 213192
 17981 17930 17879 2982 225726 217938
 17827 17779 17725 3024 224846 211932
 17673 17622 17571 3024 227770 211680
 17522 17466 17417 3066 226258 210882
 17366 17314 17263 3024 224143 211050
 17217 17160 17111 3024 226639 212520

33. Circle enclosed attachments:

- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7 Other: | |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #327982 Verified by the BLM Well Information System.
 For COG OPERATING LLC, sent to the Carlsbad
 Committed to AFMSS for processing by DEBORAH HAM on 01/20/2016 ()

Name (please print) STORMI DAVIS

Title PREPARER

Signature (Electronic Submission)

Date 01/07/2016

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.

** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL **

Additional data for transaction #327982 that would not fit on the form

32. Additional remarks, continued

17058	17007	16955	3108	225544	208824
16904	16853	16801	3066	226448	211218
16755	16699	16648	3024	223723	235326
16596	16545	16492	3024	226156	207900
16442	16391	16340	3024	225666	207018
16289	16232	16186	3066	225200	207564
16135	16083	16032	3024	226576	207228
15981	15927	15878	3024	225210	205590
15827	15776	15724	2982	224444	204246
15676	15622	15571	3150	224182	203742
15519	15468	15417	3864	225304	203910
15363	15314	15263	3024	225170	191268
15211	15161	15107	3024	226675	204540
15058	15006	14955	3024	225766	202356
14904	14852	14801	3024	224702	200466
14750	14699	14647	3024	227051	200844
14600	14545	14493	2982	226094	199920
14442	14391	14345	3024	225016	200676
14288	14237	14186	3024	227173	200592
14134	14080	14032	3024	226336	201978
13981	13929	13878	3024	226403	199584
13823	13775	13724	3024	225942	198408
13673	13625	13570	3024	233893	202272
Totals				90258	6781852 6194664

Additional Tops:

2nd Bone Spring 6767
3rd Bone Spring 7703
Wolfcamp 8114

Surveys are attached.



NM OIL CONSERVATION
ARTESIA DISTRICT
APR 04 2016
RECEIVED

COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 24, T26S, R25E

Glacier Federal Com #1H

Wellbore #1

Survey: MWD

Survey Report - Geographic

02 September, 2015





HP
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Glacier Federal Com #1H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	Well @ 3571.0usft (Scandril Freedom)
Site:	Sec 24, T26S, R25E	MD Reference:	Well @ 3571.0usft (Scandril Freedom)
Well:	Glacier Federal Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Project	Eddy County, NM (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec 24 T26S, R25E				
Site Position:	From: Map	Northing:	376 145 00 usft	Latitude:	32° 2' 2 893 N
		Easting:	497 293 00 usft	Longitude:	104° 20' 31 448 W
Position Uncertainty:	0 0 usft	Slot Radius:	13.316 "	Grid Convergence:	0 00 "

Well	Glacier Federal Com #1H					
Well Position	+N-S	0 0 usft	Northing:	376 145 00 usft	Latitude:	32° 2' 2 893 N
	+E-W	0 0 usft	Easting:	497 293 00 usft	Longitude:	104° 20' 31 448 W
Position Uncertainty	0 0 usft	Wellhead Elevation:	0 0 usft	Ground Level:	3 545.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	GRF2015	7/30/2015	7 49	59 78	47 533

Design	Wellbore #1				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0 0	0 0	0 0	359 14	

Survey Program	Date	8/26/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
153 0	18 266 0	MWD (Wellbore #1)	MWD default	MWD - Standard

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0 0	0 00	0 00	0 0	0 0	0 0	376 145 00	497 293 00	32° 2' 2 893 N	104° 20' 31 448 W
153 0	0 30	264 10	153 0	0 0	-0 4	376 144 96	497 292 60	32° 2' 2 892 N	104° 20' 31 453 W
Tie-in @ 153' MD / 153' TVD									
244 0	0 30	173 30	244 0	-0 3	-0 6	376 144 70	497 292 39	32° 2' 2 890 N	104° 20' 31 455 W
375 0	0 70	175 70	375 0	-1 4	-0 5	376 143 56	497 292 49	32° 2' 2 878 N	104° 20' 31 454 W
487 0	0 70	187 90	487 0	-2 8	-0 6	376 142 20	497 292 45	32° 2' 2 865 N	104° 20' 31 455 W
579 0	0 90	206 50	579 0	-4 0	-0 9	376 140 99	497 292 05	32° 2' 2 853 N	104° 20' 31 459 W
637 0	1 00	189 10	637 0	-4 9	-1 2	376 140 09	497 291 77	32° 2' 2 844 N	104° 20' 31 463 W
699 0	1 10	136 10	699 0	-6 0	-1 5	376 139 00	497 291 52	32° 2' 2 833 N	104° 20' 31 466 W
791 0	1 10	186 80	790 9	-7 7	-1 8	376 137 25	497 291 17	32° 2' 2 816 N	104° 20' 31 470 W
883 0	1 20	186 80	882 9	-9 5	-2 1	376 135 42	497 290 95	32° 2' 2 798 N	104° 20' 31 472 W
975 0	1 40	206 30	974 9	-11 5	-2 7	376 133 46	497 290 34	32° 2' 2 778 N	104° 20' 31 479 W



HP
Survey Report - Geographic



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 24, T26S, R25E
Well: Glacier Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well: Glacier Federal Com #1H
Well @ 3571 0usft (Scandnii Freedom)
Well @ 3571 0usft (Scandnii Freedom)
Grid
Minimum Curvature
Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,067.0	0.30	95.40	1,066.9	-12.6	-2.9	376,132.43	497,290.08	32° 2' 2.768 N	104° 20' 31.482 W
1,160.0	0.90	57.40	1,159.9	-12.2	-2.1	376,132.80	497,290.94	32° 2' 2.772 N	104° 20' 31.472 W
1,252.0	1.40	63.20	1,251.9	-11.3	-0.5	376,133.69	497,292.55	32° 2' 2.781 N	104° 20' 31.454 W
1,344.0	0.40	70.60	1,343.9	-10.7	0.9	376,134.31	497,293.85	32° 2' 2.787 N	104° 20' 31.438 W
1,436.0	0.30	19.60	1,435.9	-10.4	1.2	376,134.64	497,294.24	32° 2' 2.790 N	104° 20' 31.434 W
1,495.0	0.30	61.30	1,494.9	-10.1	1.4	376,134.86	497,294.43	32° 2' 2.792 N	104° 20' 31.432 W
1,602.0	1.80	30.00	1,601.8	-8.5	2.5	376,136.45	497,295.51	32° 2' 2.808 N	104° 20' 31.419 W
1,697.0	1.10	246.20	1,696.8	-7.6	2.4	376,137.37	497,295.42	32° 2' 2.817 N	104° 20' 31.420 W
1,792.0	1.10	243.40	1,791.8	-8.4	0.8	376,136.63	497,293.77	32° 2' 2.809 N	104° 20' 31.439 W
1,887.0	1.10	241.10	1,886.8	-9.2	-0.8	376,135.75	497,292.16	32° 2' 2.801 N	104° 20' 31.458 W
1,982.0	1.40	248.00	1,981.8	-10.1	-2.7	376,134.87	497,290.29	32° 2' 2.792 N	104° 20' 31.480 W
2,077.0	1.40	248.30	2,076.7	-11.0	-4.9	376,134.01	497,288.13	32° 2' 2.784 N	104° 20' 31.505 W
2,171.0	1.50	240.40	2,170.7	-12.0	-7.0	376,132.98	497,285.99	32° 2' 2.774 N	104° 20' 31.530 W
2,266.0	1.70	237.30	2,265.7	-13.4	-9.3	376,131.60	497,283.73	32° 2' 2.760 N	104° 20' 31.556 W
2,360.0	0.60	204.90	2,359.6	-14.6	-10.7	376,130.40	497,282.35	32° 2' 2.748 N	104° 20' 31.572 W
2,455.0	0.50	222.50	2,454.6	-15.4	-11.1	376,129.65	497,281.86	32° 2' 2.741 N	104° 20' 31.578 W
2,551.0	0.70	217.20	2,550.6	-16.1	-11.8	376,128.87	497,281.22	32° 2' 2.733 N	104° 20' 31.585 W
2,646.0	0.80	218.60	2,645.6	-17.1	-12.5	376,127.89	497,280.46	32° 2' 2.723 N	104° 20' 31.594 W
2,740.0	0.60	207.00	2,739.6	-18.1	-13.2	376,126.94	497,279.82	32° 2' 2.714 N	104° 20' 31.601 W
2,835.0	0.60	224.20	2,834.6	-18.9	-13.8	376,126.14	497,279.25	32° 2' 2.706 N	104° 20' 31.608 W
2,930.0	0.50	208.80	2,929.6	-19.6	-14.3	376,125.42	497,278.70	32° 2' 2.699 N	104° 20' 31.614 W
3,025.0	0.70	222.50	3,024.6	-20.4	-14.9	376,124.63	497,278.11	32° 2' 2.691 N	104° 20' 31.621 W
3,120.0	0.90	195.90	3,119.6	-21.5	-15.5	376,123.48	497,277.52	32° 2' 2.680 N	104° 20' 31.628 W
3,214.0	1.10	223.70	3,213.6	-22.9	-16.3	376,122.12	497,276.69	32° 2' 2.666 N	104° 20' 31.638 W
3,309.0	1.30	215.30	3,308.6	-24.4	-17.6	376,120.58	497,275.44	32° 2' 2.651 N	104° 20' 31.652 W
3,404.0	1.10	205.40	3,403.5	-25.1	-18.6	376,118.88	497,274.42	32° 2' 2.634 N	104° 20' 31.664 W
3,499.0	1.20	207.20	3,498.5	-27.8	-19.4	376,117.17	497,273.58	32° 2' 2.617 N	104° 20' 31.674 W
3,593.0	1.10	210.70	3,592.5	-29.5	-20.3	376,115.52	497,272.67	32° 2' 2.601 N	104° 20' 31.685 W
3,687.0	1.40	221.10	3,686.5	-31.1	-21.5	376,113.88	497,271.45	32° 2' 2.585 N	104° 20' 31.699 W
3,780.0	0.30	59.00	3,779.5	-31.9	-22.1	376,113.15	497,270.91	32° 2' 2.577 N	104° 20' 31.705 W
3,875.0	0.40	73.10	3,874.5	-31.6	-21.6	376,113.37	497,271.44	32° 2' 2.580 N	104° 20' 31.699 W
3,968.0	0.30	128.30	3,967.5	-31.7	-21.1	376,113.31	497,271.95	32° 2' 2.579 N	104° 20' 31.693 W
4,062.0	0.30	87.30	4,061.5	-31.8	-20.6	376,113.17	497,272.38	32° 2' 2.578 N	104° 20' 31.688 W
4,157.0	0.20	132.10	4,156.5	-31.9	-20.2	376,113.07	497,272.76	32° 2' 2.577 N	104° 20' 31.683 W
4,251.0	0.30	157.40	4,250.5	-32.3	-20.0	376,112.74	497,272.97	32° 2' 2.573 N	104° 20' 31.681 W
4,346.0	0.60	207.50	4,345.5	-32.9	-20.2	376,112.07	497,272.84	32° 2' 2.567 N	104° 20' 31.683 W
4,440.0	0.50	212.80	4,439.5	-33.7	-20.6	376,111.28	497,272.39	32° 2' 2.559 N	104° 20' 31.688 W
4,535.0	0.50	196.80	4,534.5	-34.5	-21.0	376,110.54	497,272.04	32° 2' 2.552 N	104° 20' 31.692 W
4,628.0	0.70	197.50	4,627.5	-35.4	-21.2	376,109.61	497,271.76	32° 2' 2.542 N	104° 20' 31.695 W
4,722.0	1.10	202.30	4,721.4	-36.8	-21.8	376,108.23	497,271.24	32° 2' 2.529 N	104° 20' 31.701 W
4,815.0	1.00	195.60	4,814.4	-38.4	-22.3	376,106.62	497,270.68	32° 2' 2.513 N	104° 20' 31.708 W
4,909.0	1.10	201.00	4,908.4	-40.0	-22.9	376,104.99	497,270.14	32° 2' 2.497 N	104° 20' 31.714 W
5,004.0	1.00	203.70	5,003.4	-41.6	-23.5	376,103.38	497,269.48	32° 2' 2.481 N	104° 20' 31.722 W
5,098.0	1.30	210.20	5,097.4	-43.3	-24.4	376,101.70	497,268.61	32° 2' 2.464 N	104° 20' 31.732 W
5,193.0	1.30	236.20	5,192.3	-44.8	-25.8	376,100.17	497,267.18	32° 2' 2.449 N	104° 20' 31.748 W
5,286.0	0.90	256.40	5,285.3	-45.6	-27.4	376,099.41	497,265.59	32° 2' 2.441 N	104° 20' 31.767 W
5,382.0	1.70	265.70	5,381.3	-45.9	-29.6	376,099.13	497,263.44	32° 2' 2.439 N	104° 20' 31.792 W
5,477.0	3.20	280.50	5,476.2	-45.5	-33.6	376,099.51	497,259.42	32° 2' 2.442 N	104° 20' 31.838 W
5,507.0	2.80	279.60	5,506.2	-45.2	-35.1	376,099.78	497,257.88	32° 2' 2.445 N	104° 20' 31.856 W
5,520.0	2.40	280.80	5,519.2	-45.1	-35.7	376,099.89	497,257.30	32° 2' 2.446 N	104° 20' 31.863 W
5,539.0	1.90	283.80	5,538.1	-45.0	-36.4	376,100.04	497,256.60	32° 2' 2.448 N	104° 20' 31.871 W
5,570.0	0.90	268.00	5,569.1	-44.8	-37.1	376,100.15	497,255.86	32° 2' 2.449 N	104° 20' 31.880 W
5,665.0	1.10	281.20	5,664.1	-44.7	-38.8	376,100.30	497,254.22	32° 2' 2.450 N	104° 20' 31.899 W
5,759.0	1.50	282.10	5,758.1	-44.3	-40.9	376,100.73	497,252.13	32° 2' 2.454 N	104° 20' 31.923 W
5,853.0	0.30	158.30	5,852.1	-44.2	-42.0	376,100.76	497,251.02	32° 2' 2.455 N	104° 20' 31.936 W



HP
Survey Report - Geographic



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 24 T26S, R25E
Well: Glacier Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Glacier Federal Com #1H
TVD Reference: Well @ 3571.0usft (Scandrl Freedom)
MD Reference: Well @ 3571.0usft (Scandrl Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,948.0	0.30	120.20	5,947.1	-44.6	-41.7	376,100.41	497,251.33	32° 2' 2.45" N	104° 20' 31.932 W
6,043.0	0.10	142.33	6,042.1	-44.8	-41.4	376,100.22	497,251.59	32° 2' 2.445 N	104° 20' 31.929 W
6,138.0	0.40	329.90	6,137.1	-44.6	-41.5	376,100.44	497,251.48	32° 2' 2.452 N	104° 20' 31.931 W
6,232.0	0.80	339.70	6,231.1	-43.7	-41.9	376,101.34	497,251.08	32° 2' 2.460 N	104° 20' 31.935 W
6,328.0	0.90	319.20	6,327.1	-42.5	-42.6	376,102.54	497,250.36	32° 2' 2.472 N	104° 20' 31.944 W
6,421.0	0.50	291.40	6,420.1	-41.8	-43.5	376,103.24	497,249.50	32° 2' 2.479 N	104° 20' 31.954 W
6,516.0	0.40	259.00	6,515.1	-41.7	-44.2	376,103.32	497,248.79	32° 2' 2.480 N	104° 20' 31.962 W
6,611.0	0.90	199.60	6,610.1	-42.4	-44.8	376,102.56	497,248.22	32° 2' 2.473 N	104° 20' 31.969 W
6,705.0	2.20	162.20	6,705.0	-44.9	-44.5	376,100.12	497,248.52	32° 2' 2.448 N	104° 20' 31.985 W
6,801.0	1.00	145.70	6,800.0	-47.3	-43.5	376,097.70	497,249.55	32° 2' 2.424 N	104° 20' 31.953 W
6,896.0	1.00	164.60	6,895.0	-48.8	-42.8	376,096.21	497,250.24	32° 2' 2.410 N	104° 20' 31.945 W
6,991.0	1.60	168.90	6,989.9	-50.9	-42.3	376,094.11	497,250.71	32° 2' 2.389 N	104° 20' 31.940 W
7,083.0	1.40	217.20	7,081.9	-53.0	-42.7	376,091.96	497,250.28	32° 2' 2.368 N	104° 20' 31.945 W
7,178.0	0.20	352.70	7,176.9	-53.8	-43.4	376,091.20	497,249.56	32° 2' 2.360 N	104° 20' 31.953 W
7,272.0	0.80	180.10	7,270.9	-54.3	-43.5	376,090.70	497,249.53	32° 2' 2.355 N	104° 20' 31.953 W
7,367.0	1.50	194.90	7,365.9	-56.2	-43.8	376,088.84	497,249.21	32° 2' 2.337 N	104° 20' 31.957 W
7,462.0	0.30	168.70	7,460.9	-57.6	-44.1	376,087.39	497,248.94	32° 2' 2.322 N	104° 20' 31.960 W
7,484.0	0.30	195.40	7,482.9	-57.7	-44.1	376,087.28	497,248.94	32° 2' 2.321 N	104° 20' 31.960 W
7,516.0	0.60	318.60	7,514.9	-57.7	-44.2	376,087.33	497,248.80	32° 2' 2.322 N	104° 20' 31.962 W
7,547.0	3.90	330.40	7,545.8	-56.6	-44.8	376,088.37	497,248.18	32° 2' 2.332 N	104° 20' 31.969 W
7,578.0	6.90	331.30	7,576.7	-54.1	-46.2	376,090.92	497,246.76	32° 2' 2.357 N	104° 20' 31.985 W
7,610.0	8.40	335.30	7,608.4	-50.3	-48.1	376,094.73	497,244.86	32° 2' 2.395 N	104° 20' 32.008 W
7,641.0	10.50	343.40	7,639.0	-45.5	-49.9	376,099.49	497,243.11	32° 2' 2.442 N	104° 20' 32.028 W
7,673.0	12.20	348.90	7,670.4	-39.4	-51.4	376,105.60	497,241.62	32° 2' 2.503 N	104° 20' 32.045 W
7,704.0	14.10	352.90	7,700.6	-32.4	-52.5	376,112.57	497,240.53	32° 2' 2.572 N	104° 20' 32.058 W
7,736.0	16.50	352.60	7,731.4	-24.1	-53.5	376,120.94	497,239.46	32° 2' 2.654 N	104° 20' 32.070 W
7,767.0	18.70	349.40	7,761.0	-14.8	-55.0	376,130.19	497,237.98	32° 2' 2.746 N	104° 20' 32.088 W
7,799.0	21.80	350.80	7,791.0	-3.9	-56.9	376,141.10	497,236.08	32° 2' 2.854 N	104° 20' 32.110 W
7,831.0	25.30	347.60	7,820.3	8.7	-59.3	376,153.65	497,233.66	32° 2' 2.978 N	104° 20' 32.138 W
7,862.0	28.40	345.40	7,848.0	22.3	-62.6	376,167.26	497,230.38	32° 2' 3.113 N	104° 20' 32.176 W
7,893.0	32.50	344.00	7,874.7	37.4	-66.8	376,182.41	497,226.23	32° 2' 3.263 N	104° 20' 32.224 W
7,925.0	35.90	344.00	7,901.2	54.7	-71.7	376,199.69	497,221.27	32° 2' 3.434 N	104° 20' 32.282 W
7,957.0	39.20	344.00	7,926.5	73.4	-77.1	376,218.44	497,215.90	32° 2' 3.619 N	104° 20' 32.344 W
7,989.0	42.60	344.10	7,950.7	93.6	-82.9	376,238.62	497,210.13	32° 2' 3.819 N	104° 20' 32.411 W
8,020.0	46.20	345.50	7,972.8	114.6	-88.6	376,259.59	497,204.44	32° 2' 4.027 N	104° 20' 32.477 W
8,051.0	49.70	346.00	7,993.5	138.9	-94.2	376,281.89	497,198.78	32° 2' 4.247 N	104° 20' 32.543 W
8,082.0	53.50	346.80	8,012.8	160.5	-99.9	376,305.50	497,193.07	32° 2' 4.481 N	104° 20' 32.609 W
8,114.0	57.70	346.20	8,033.9	186.2	-106.1	376,331.17	497,186.90	32° 2' 4.735 N	104° 20' 32.681 W
8,146.0	61.10	345.90	8,047.2	212.9	-112.7	376,357.90	497,180.26	32° 2' 4.999 N	104° 20' 32.758 W
8,177.0	64.60	345.00	8,061.3	239.6	-119.7	376,384.59	497,173.33	32° 2' 5.264 N	104° 20' 32.839 W
8,209.0	68.50	345.90	8,074.0	268.0	-127.0	376,413.00	497,165.96	32° 2' 5.545 N	104° 20' 32.924 W
8,240.0	72.20	347.50	8,084.5	296.4	-133.7	376,441.41	497,159.25	32° 2' 5.826 N	104° 20' 33.002 W
8,272.0	74.80	349.00	8,093.5	326.4	-140.0	376,471.45	497,153.01	32° 2' 6.123 N	104° 20' 33.075 W
8,275.7	75.27	349.23	8,094.5	330.0	-140.7	376,474.95	497,152.33	32° 2' 6.158 N	104° 20' 33.083 W
Crossed Lease Line @ 8276' MD / 8095' TVD									
8,304.0	78.90	351.00	8,100.8	357.1	-145.4	376,502.13	497,147.60	32° 2' 6.427 N	104° 20' 33.138 W
8,335.0	81.90	352.20	8,106.0	387.4	-149.9	376,532.36	497,143.14	32° 2' 6.726 N	104° 20' 33.190 W
8,367.0	86.40	354.10	8,109.2	419.0	-153.7	376,563.96	497,139.34	32° 2' 7.039 N	104° 20' 33.234 W
8,436.0	92.10	357.00	8,110.2	487.7	-159.5	376,632.71	497,134.00	32° 2' 7.719 N	104° 20' 33.296 W
8,531.0	90.10	358.90	8,108.3	582.6	-162.4	376,727.62	497,130.60	32° 2' 8.658 N	104° 20' 33.336 W
8,626.0	89.00	1.70	8,109.1	677.6	-161.9	376,822.60	497,131.10	32° 2' 9.598 N	104° 20' 33.330 W
8,721.0	89.30	2.20	8,110.5	772.5	-158.7	376,917.54	497,134.33	32° 2' 10.538 N	104° 20' 33.292 W
8,815.0	87.00	1.70	8,113.5	866.4	-155.5	377,011.43	497,137.52	32° 2' 11.467 N	104° 20' 33.255 W
8,910.0	87.30	2.00	8,118.2	961.3	-152.4	377,106.26	497,140.59	32° 2' 12.406 N	104° 20' 33.220 W



HP
Survey Report - Geographic



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 24, T26S, R25E
Well: Glacier Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Glacier Federal Com #1H
TVD Reference: Well @ 3571 Dusst (Scandnl Freedom)
MD Reference: Well @ 3571 Dusst (Scandnl Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,938.8	87.27	2.18	8,119.6	990.0	-151.4	377,135.01	497,141.64	32° 2' 12.690 N	104° 20' 33.208 W
Crossed 660' Hard Line @ 8939' MD / 8120' TVD									
9,005.0	87.20	2.60	8,122.8	1,056.1	-148.6	377,201.08	497,144.40	32° 2' 13.344 N	104° 20' 33.176 W
9,100.0	86.78	0.30	8,127.9	1,150.9	-146.2	377,295.90	497,146.80	32° 2' 14.283 N	104° 20' 33.148 W
9,194.0	88.30	0.30	8,132.0	1,244.8	-145.7	377,389.81	497,147.29	32° 2' 15.212 N	104° 20' 33.142 W
9,288.0	88.60	0.50	8,134.5	1,338.8	-145.1	377,483.77	497,147.94	32° 2' 16.142 N	104° 20' 33.135 W
9,383.0	88.80	0.60	8,136.7	1,433.7	-144.1	377,578.74	497,148.85	32° 2' 17.082 N	104° 20' 33.124 W
9,478.0	89.10	1.50	8,138.4	1,528.7	-142.4	377,673.71	497,150.60	32° 2' 18.022 N	104° 20' 33.104 W
9,572.0	89.30	359.90	8,139.7	1,622.7	-141.3	377,767.69	497,151.75	32° 2' 18.952 N	104° 20' 33.091 W
9,667.0	89.80	0.10	8,140.5	1,717.7	-141.3	377,862.69	497,151.75	32° 2' 19.892 N	104° 20' 33.091 W
9,761.0	89.70	0.50	8,140.9	1,811.7	-140.8	377,956.69	497,152.24	32° 2' 20.822 N	104° 20' 33.085 W
9,854.0	88.60	359.20	8,142.2	1,904.7	-141.0	378,049.67	497,151.99	32° 2' 21.742 N	104° 20' 33.088 W
9,949.0	88.90	359.40	8,144.3	1,999.6	-142.2	378,144.64	497,150.83	32° 2' 22.682 N	104° 20' 33.102 W
10,044.0	89.30	359.20	8,145.8	2,094.6	-143.3	378,239.62	497,149.67	32° 2' 23.622 N	104° 20' 33.115 W
10,138.0	89.30	359.40	8,147.0	2,188.6	-144.5	378,333.61	497,148.52	32° 2' 24.552 N	104° 20' 33.129 W
10,232.0	88.60	359.80	8,148.7	2,282.6	-145.1	378,427.59	497,147.87	32° 2' 25.483 N	104° 20' 33.137 W
10,328.0	89.30	0.30	8,150.4	2,378.6	-145.0	378,523.57	497,147.95	32° 2' 26.432 N	104° 20' 33.136 W
10,422.0	89.50	0.30	8,151.4	2,472.6	-144.6	378,617.57	497,148.44	32° 2' 27.363 N	104° 20' 33.130 W
10,518.0	87.60	359.90	8,153.9	2,568.5	-144.4	378,713.53	497,148.61	32° 2' 28.312 N	104° 20' 33.128 W
10,612.0	87.80	359.80	8,157.6	2,662.5	-144.6	378,807.46	497,148.37	32° 2' 29.242 N	104° 20' 33.131 W
10,707.0	88.10	0.30	8,161.0	2,757.4	-144.6	378,902.39	497,148.45	32° 2' 30.182 N	104° 20' 33.130 W
10,800.0	88.70	1.00	8,163.6	2,850.4	-143.5	378,995.35	497,149.50	32° 2' 31.101 N	104° 20' 33.118 W
10,895.0	89.10	1.20	8,165.4	2,945.3	-141.7	379,090.32	497,151.33	32° 2' 32.041 N	104° 20' 33.097 W
10,990.0	89.30	359.80	8,166.8	3,040.3	-140.8	379,185.30	497,152.16	32° 2' 32.981 N	104° 20' 33.088 W
11,086.0	89.80	0.10	8,167.5	3,136.3	-140.9	379,281.30	497,152.07	32° 2' 33.931 N	104° 20' 33.089 W
11,180.0	90.40	0.50	8,167.4	3,230.3	-140.4	379,375.29	497,152.56	32° 2' 34.862 N	104° 20' 33.083 W
11,274.0	88.80	359.40	8,168.0	3,324.3	-140.5	379,469.29	497,152.48	32° 2' 35.792 N	104° 20' 33.084 W
11,369.0	89.10	359.60	8,169.8	3,419.3	-141.3	379,564.27	497,151.65	32° 2' 36.732 N	104° 20' 33.094 W
11,462.0	89.60	359.80	8,170.8	3,512.3	-141.8	379,657.25	497,151.17	32° 2' 37.652 N	104° 20' 33.100 W
11,557.0	87.80	359.40	8,173.0	3,607.2	-142.5	379,752.23	497,150.50	32° 2' 38.592 N	104° 20' 33.107 W
11,652.0	88.40	359.90	8,176.1	3,702.2	-143.1	379,847.17	497,149.92	32° 2' 39.532 N	104° 20' 33.114 W
11,747.0	88.70	0.50	8,178.5	3,797.1	-142.7	379,942.14	497,150.26	32° 2' 40.472 N	104° 20' 33.110 W
11,843.0	87.30	359.20	8,181.9	3,893.1	-143.0	380,038.08	497,150.00	32° 2' 41.421 N	104° 20' 33.113 W
11,938.0	87.50	359.40	8,186.2	3,988.0	-144.2	380,132.98	497,148.85	32° 2' 42.360 N	104° 20' 33.127 W
12,033.0	87.50	359.90	8,190.3	4,082.9	-144.7	380,227.88	497,148.27	32° 2' 43.299 N	104° 20' 33.134 W
12,128.0	88.50	359.40	8,193.6	4,177.8	-145.3	380,322.82	497,147.69	32° 2' 44.239 N	104° 20' 33.141 W
12,223.0	89.60	359.40	8,195.2	4,272.8	-146.3	380,417.80	497,146.69	32° 2' 45.179 N	104° 20' 33.152 W
12,317.0	89.80	359.60	8,195.7	4,366.8	-147.1	380,511.80	497,145.87	32° 2' 46.109 N	104° 20' 33.162 W
12,413.0	90.10	359.90	8,195.8	4,462.8	-147.5	380,607.80	497,145.45	32° 2' 47.059 N	104° 20' 33.167 W
12,508.0	90.00	359.90	8,195.7	4,557.8	-147.7	380,702.80	497,145.29	32° 2' 47.999 N	104° 20' 33.169 W
12,603.0	88.60	359.40	8,196.9	4,652.8	-148.3	380,797.78	497,144.71	32° 2' 48.940 N	104° 20' 33.176 W
12,698.0	88.60	359.60	8,199.2	4,747.8	-149.1	380,892.75	497,143.88	32° 2' 49.879 N	104° 20' 33.185 W
12,793.0	86.20	358.90	8,203.5	4,842.6	-150.4	380,987.64	497,142.64	32° 2' 50.818 N	104° 20' 33.200 W
12,888.0	84.70	359.10	8,211.0	4,937.3	-152.0	381,082.32	497,140.98	32° 2' 51.756 N	104° 20' 33.219 W
12,983.0	85.40	358.20	8,219.2	5,031.9	-154.2	381,176.94	497,138.75	32° 2' 52.692 N	104° 20' 33.245 W
13,078.0	86.90	358.00	8,225.8	5,126.7	-157.4	381,271.67	497,135.61	32° 2' 53.629 N	104° 20' 33.282 W
13,173.0	87.70	358.40	8,230.1	5,221.5	-160.4	381,366.52	497,132.63	32° 2' 54.568 N	104° 20' 33.317 W
13,268.0	89.30	358.90	8,232.6	5,316.5	-162.6	381,461.45	497,130.39	32° 2' 55.508 N	104° 20' 33.343 W
13,363.0	89.60	359.60	8,233.5	5,411.4	-163.9	381,556.44	497,129.15	32° 2' 56.448 N	104° 20' 33.357 W
13,458.0	89.30	359.80	8,234.4	5,506.4	-164.3	381,651.44	497,128.65	32° 2' 57.388 N	104° 20' 33.363 W
13,552.0	88.70	359.90	8,236.0	5,600.4	-164.6	381,745.42	497,128.41	32° 2' 58.318 N	104° 20' 33.366 W
13,646.0	88.30	0.50	8,238.5	5,694.4	-164.3	381,839.39	497,128.73	32° 2' 59.248 N	104° 20' 33.362 W
13,743.0	88.00	0.50	8,239.4	5,721.4	-164.0	381,866.37	497,128.97	32° 2' 59.515 N	104° 20' 33.360 W
13,767.0	89.40	0.80	8,241.5	5,815.3	-163.0	381,960.34	497,130.03	32° 3' 0.445 N	104° 20' 33.347 W
13,862.0	90.00	0.80	8,242.0	5,910.3	-161.6	382,055.33	497,131.36	32° 3' 1.385 N	104° 20' 33.332 W



HP
Survey Report - Geographic



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 24, T26S, R25E
Well: Glacier Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Glacier Federal Com #1H
TVD Reference: Well @ 3571.0usft (Scandril Freedom)
MD Reference: Well @ 3571.0usft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,956.0	87.80	0.30	8,243.8	6,004.3	-150.7	382,149.30	497,132.26	32° 3' 2.315 N	104° 20' 33.322 W
14,050.0	88.00	0.58	8,247.2	6,098.2	-160.1	382,243.24	497,132.92	32° 3' 3.245 N	104° 20' 33.314 W
14,143.0	87.60	0.50	8,250.8	6,191.2	-159.3	382,336.16	497,133.73	32° 3' 4.164 N	104° 20' 33.305 W
14,238.0	87.90	0.80	8,254.5	6,286.1	-158.2	382,431.08	497,134.81	32° 3' 5.104 N	104° 20' 33.292 W
14,332.0	86.60	0.30	8,259.1	6,380.0	-157.3	382,524.97	497,135.71	32° 3' 6.033 N	104° 20' 33.282 W
14,427.0	86.60	0.50	8,264.7	6,474.8	-156.6	382,619.80	497,136.37	32° 3' 6.971 N	104° 20' 33.274 W
14,522.0	86.40	0.50	8,270.5	6,569.6	-155.8	382,714.62	497,137.20	32° 3' 7.910 N	104° 20' 33.265 W
14,618.0	87.70	359.80	8,275.4	6,665.5	-155.6	382,810.49	497,137.45	32° 3' 8.859 N	104° 20' 33.262 W
14,712.0	89.20	359.20	8,278.0	6,759.4	-156.4	382,904.45	497,136.63	32° 3' 9.788 N	104° 20' 33.272 W
14,806.0	89.40	358.90	8,279.1	6,853.4	-157.9	382,998.43	497,135.07	32° 3' 10.719 N	104° 20' 33.290 W
14,900.0	89.10	358.90	8,280.4	6,947.4	-159.7	383,092.40	497,133.27	32° 3' 11.649 N	104° 20' 33.311 W
14,996.0	89.40	359.20	8,281.6	7,043.4	-161.3	383,188.38	497,131.67	32° 3' 12.598 N	104° 20' 33.330 W
15,091.0	89.30	359.40	8,282.7	7,138.4	-162.5	383,283.37	497,130.51	32° 3' 13.539 N	104° 20' 33.343 W
15,186.0	87.20	359.90	8,285.6	7,233.3	-163.1	383,378.31	497,129.93	32° 3' 14.478 N	104° 20' 33.350 W
15,281.0	87.10	359.90	8,290.3	7,328.2	-163.2	383,473.20	497,129.77	32° 3' 15.417 N	104° 20' 33.352 W
15,375.0	88.70	359.90	8,293.8	7,422.1	-163.4	383,567.13	497,129.60	32° 3' 16.347 N	104° 20' 33.354 W
15,470.0	88.60	0.30	8,296.0	7,517.1	-163.2	383,662.10	497,129.77	32° 3' 17.287 N	104° 20' 33.352 W
15,565.0	88.80	0.60	8,298.1	7,612.1	-162.5	383,757.08	497,130.52	32° 3' 18.227 N	104° 20' 33.344 W
15,659.0	88.60	0.60	8,300.3	7,706.0	-161.5	383,851.05	497,131.50	32° 3' 19.157 N	104° 20' 33.332 W
15,753.0	88.60	1.00	8,302.6	7,800.0	-160.2	383,945.01	497,132.81	32° 3' 20.087 N	104° 20' 33.317 W
15,848.0	88.60	0.80	8,304.9	7,895.0	-158.7	384,039.97	497,134.30	32° 3' 21.026 N	104° 20' 33.300 W
15,942.0	88.50	1.00	8,307.3	7,988.9	-157.2	384,133.93	497,135.78	32° 3' 21.956 N	104° 20' 33.283 W
16,036.0	88.50	1.00	8,309.7	8,082.9	-155.6	384,227.88	497,137.42	32° 3' 22.886 N	104° 20' 33.264 W
16,130.0	88.60	1.20	8,312.1	8,176.8	-153.8	384,321.83	497,139.22	32° 3' 23.816 N	104° 20' 33.243 W
16,224.0	88.40	1.20	8,314.6	8,270.8	-151.8	384,415.78	497,141.19	32° 3' 24.746 N	104° 20' 33.220 W
16,319.0	88.00	1.40	8,317.6	8,365.7	-149.7	384,510.71	497,143.35	32° 3' 25.685 N	104° 20' 33.195 W
16,414.0	87.60	1.50	8,321.2	8,460.6	-147.3	384,605.61	497,145.75	32° 3' 26.624 N	104° 20' 33.167 W
16,507.0	87.70	359.40	8,325.0	8,553.5	-146.5	384,698.52	497,146.48	32° 3' 27.544 N	104° 20' 33.159 W
16,601.0	88.90	359.10	8,327.8	8,647.5	-147.8	384,792.47	497,145.25	32° 3' 28.474 N	104° 20' 33.173 W
16,695.0	88.40	359.20	8,330.0	8,741.4	-149.1	384,886.43	497,143.85	32° 3' 29.404 N	104° 20' 33.190 W
16,789.0	89.60	358.70	8,331.7	8,835.4	-150.9	384,980.40	497,142.13	32° 3' 30.333 N	104° 20' 33.210 W
16,884.0	89.20	358.90	8,332.7	8,930.4	-152.9	385,075.38	497,140.14	32° 3' 31.273 N	104° 20' 33.233 W
16,978.0	88.60	358.70	8,334.5	9,024.3	-154.8	385,169.34	497,138.17	32° 3' 32.203 N	104° 20' 33.256 W
17,072.0	89.70	358.90	8,335.9	9,118.3	-156.8	385,263.31	497,136.21	32° 3' 33.133 N	104° 20' 33.279 W
17,166.0	88.60	359.10	8,337.3	9,212.3	-158.4	385,357.28	497,134.56	32° 3' 34.063 N	104° 20' 33.298 W
17,260.0	89.30	358.50	8,339.0	9,306.2	-160.4	385,451.24	497,132.60	32° 3' 34.993 N	104° 20' 33.321 W
17,354.0	89.80	359.10	8,339.7	9,400.2	-162.4	385,545.22	497,130.63	32° 3' 35.923 N	104° 20' 33.344 W
17,448.0	90.50	0.50	8,339.5	9,494.2	-162.7	385,639.21	497,130.30	32° 3' 36.853 N	104° 20' 33.348 W
17,542.0	88.60	1.00	8,340.2	9,588.2	-161.5	385,733.20	497,131.53	32° 3' 37.784 N	104° 20' 33.334 W
17,636.0	87.80	0.80	8,343.2	9,682.1	-160.0	385,827.14	497,133.01	32° 3' 38.713 N	104° 20' 33.317 W
17,730.0	87.90	1.90	8,346.7	9,776.0	-157.8	385,921.05	497,135.22	32° 3' 39.643 N	104° 20' 33.291 W
17,824.0	88.10	359.80	8,350.0	9,870.0	-156.4	386,014.97	497,136.61	32° 3' 40.572 N	104° 20' 33.275 W
17,918.0	90.00	359.60	8,351.5	9,964.0	-156.9	386,108.95	497,135.12	32° 3' 41.502 N	104° 20' 33.281 W
18,013.0	89.60	359.60	8,351.9	10,059.0	-157.5	386,203.95	497,135.46	32° 3' 42.442 N	104° 20' 33.289 W
18,108.0	89.40	0.60	8,352.7	10,153.9	-157.4	386,298.95	497,135.62	32° 3' 43.383 N	104° 20' 33.287 W
18,201.0	89.00	1.20	8,354.0	10,246.9	-155.9	386,391.92	497,137.08	32° 3' 44.303 N	104° 20' 33.270 W
18,266.0	89.00	1.20	8,355.1	10,311.9	-154.6	386,456.90	497,138.44	32° 3' 44.946 N	104° 20' 33.254 W

TD @ 18266' MD / 8355' TVD



HP
Survey Report - Geographic



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 24, T26S, R25E
Well: Glacier Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Glacier Federal Com #1H
TVD Reference: Well @ 3571.0usft (Scandrii Freedom)
MD Reference: Well @ 3571.0usft (Scandrii Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
153.0	153.0	0.0	-0.4	Tie-in @ 153' MD / 153' TVD
8 275.7	8 094.5	330.0	-140.7	Crossed Lease Line @ 8276' MD / 8095' TVD
8 938.8	8 119.6	990.0	-151.4	Crossed 660' Hard Line @ 8939' MD / 8120' TVD
18 266.0	8 355.1	10 311.9	-154.6	TD @ 18266' MD / 8355' TVD

Checked By _____

Approved By _____

Date _____