

District I
1625 N. French Dr., Hobbs, NM 88240

District II
811 S. First St., Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-104
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address COG Operating LLC 2208 W. Main Street Artesia, NM 88210			² OGRID Number 229137			
			³ Reason for Filing Code/ Effective Date NW			
⁴ API Number 30-025-45658		⁵ Pool Name Fairview Mills; Bone Spring			⁶ Pool Code 96340 KZ	
⁷ Property Code 326533		⁸ Property Name Pitchblende 19 30 Federal			⁹ Well Number 358H	

II. ¹⁰ Surface Location

Ul or lot no. A	Section 19	Township 25S	Range 35E	Lot Idn	Feet from the 450	North/South Line North	Feet from the 610	East/West line East	County Lea
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¹¹ Bottom Hole Location SL

Ul or lot no. H	Section 30	Township 25S	Range 35E	Lot Idn	Feet from the 2590	North/South Line North	Feet from the 341	East/West line East	County Lea
¹² Lse Code F	¹³ Producing Method Code		¹⁴ Gas Connection Date		¹⁵ C-129 Permit Number	¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date	

III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
	ACC	O
298751	Lucid 3100 McKinnon Ste 800 Dallas, TX 75201	G
278421	Holly Refining and Marketing PO Box 159 Artesia, NM 88210	O

IV. Well Completion Data 12,580-19,865

²¹ Spud Date 1/8/20	²² Ready Date 10/25/20	²³ TD 19,975'	²⁴ PBTD 19,890'	²⁵ Perforations 12,865-20,105'	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size		²⁹ Depth Set	³⁰ Sacks Cement
14 3/4"		10 3/4"		1029'	793
8 3/4"		7 5/8"		11,834'	1615
6 3/4"		5 1/2"		19,960'	1615
		2 7/8"		11,566'	

V. Well Test Data

³¹ Date New Oil 11/14/20	³² Gas Delivery Date 11/14/20	³³ Test Date 11/14/20	³⁴ Test Length 24 Hrs	³⁵ Tbg. Pressure 2526#	³⁶ Csg. Pressure 3471#
³⁷ Choke Size 20/64	³⁸ Oil 818	³⁹ Water 3782	⁴⁰ Gas 1389		⁴¹ Test Method Flowing
⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature: Amanda Avery			OIL CONSERVATION DIVISION Approved by: PATRICIA MARTINEZ Title: LM II Approval Date: 3/18/2021		
Printed name: Amanda Avery					
Title: Regulatory Analyst					
E-mail Address:					
Date: 11/30/2020		Phone: 575-748-6962			

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
511 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 746-1283 Fax: (575) 746-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

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

☒ AMENDED REPORT

As Drilled

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-45658		Pool Code 96340	Pool Name Fairview Mills; Bone Spring KZ
Property Code 326533	Property Name PITCHBLEND FEDERAL 19-30		Well Number 358H
OGRID No. 229137	Operator Name COG OPERATING, LLC		Elevation 3330.4'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	19	25-S	35-E		450	NORTH	610	EAST	LEA

Bottom Hole Location If Different From Surface

SL

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	30	25-S	35		2590	NORTH	341	EAST	LEA
Dedicated Acres 240	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

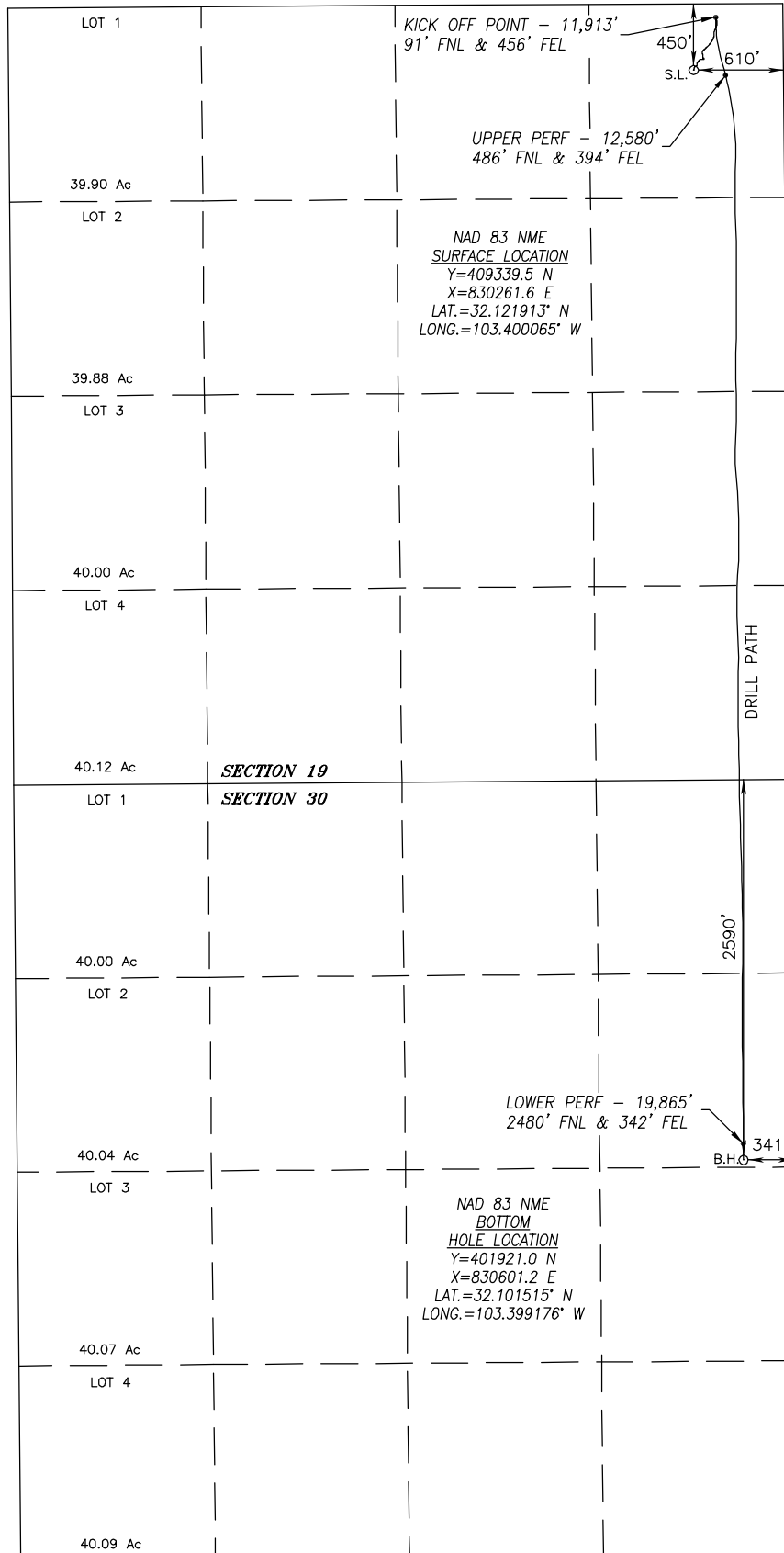
SEE PAGE 2

PAGE 1 OF 2

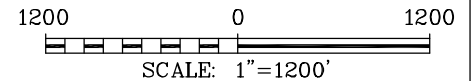
W.O. #20-1339

DRAWN BY: WN

Property Code 326533	Property Name PITCHBLEND FEDERAL 19-30	Well Number 358H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3330.4'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE PITCHBLEND FEDERAL 19-30 #358H SUPPLIED TO HARCROW SURVEYING, LLC ON OCTOBER 7, 2020



OPERATOR CERTIFICATION

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

Amanda Avery 11/16/20

Signature

Date

Amanda Avery

Printed Name

avery@concho.com

E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

DEC. 5, 2019/MAR. 16, 2020

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Harcrow 10/8/20

Certificate No. CHAD HARCROW 17777

PAGE 2 OF 2

W.O. #20-1339

DRAWN BY: WN



COG Operating LLC

**Lea County, NM (NAD27 NME)
Pitchblende Federal Com 19-30
358H**

OH / 66081

Design: Surveys (McVay 8)

Standard Survey Report

16 March, 2020





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Pitchblende Federal Com 19-30		
Site Position:		Northing:	409,281.10 usft
From:	Map	Easting:	789,024.90 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 18.437355 N
		Longitude:	103° 23' 59.139439 W
		Grid Convergence:	0.50 °

Well	358H		
Well Position	+N/-S	0.00 usft	Northing: 409,281.40 usft
	+E/-W	0.00 usft	Easting: 789,074.90 usft
Position Uncertainty	1.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 7' 18.436037 N
		Longitude:	103° 23' 58.558061 W
		Ground Level:	3,330.40 usft

Wellbore	OH / 66081		
Magnetics	Model Name	Sample Date	Declination (°)
	User Defined	2/26/2020	6.53
			Dip Angle (°) 59.74
			Field Strength (nT) 47,673.50000000

Design	Surveys (McVay 8)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 177.27

Survey Program	Date	3/16/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	11,913.28	SDI Gyro Surveys (OH / 66081)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper
11,853.00	19,975.00	Gordon MWD Surveys (OH / 66081)	MWD+HRGM	OWSG MWD + HRGM

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	0.48	47.82	100.00	0.28	0.31	-0.27	0.48	0.48	0.00	
125.00	0.60	37.25	125.00	0.46	0.47	-0.43	0.62	0.48	-42.28	
150.00	0.63	23.20	150.00	0.69	0.60	-0.66	0.61	0.12	-56.20	
175.00	0.67	20.57	174.99	0.95	0.71	-0.91	0.20	0.16	-10.52	
200.00	0.69	31.71	199.99	1.21	0.84	-1.17	0.53	0.08	44.56	
225.00	0.62	34.46	224.99	1.45	0.99	-1.41	0.31	-0.28	11.00	
250.00	0.69	44.90	249.99	1.67	1.18	-1.61	0.55	0.28	41.76	
275.00	0.67	37.77	274.99	1.89	1.37	-1.83	0.35	-0.08	-28.52	
300.00	0.73	27.60	299.99	2.15	1.53	-2.08	0.55	0.24	-40.68	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
325.00	0.75	24.79	324.98	2.44	1.68	-2.36	0.17	0.08	-11.24
350.00	0.74	23.06	349.98	2.74	1.81	-2.65	0.10	-0.04	-6.92
375.00	0.76	18.03	374.98	3.04	1.92	-2.95	0.28	0.08	-20.12
400.00	0.78	15.18	399.98	3.37	2.02	-3.27	0.17	0.08	-11.40
425.00	0.80	15.02	424.98	3.70	2.11	-3.59	0.08	0.08	-0.64
450.00	0.80	11.14	449.97	4.04	2.19	-3.93	0.22	0.00	-15.52
475.00	0.82	9.54	474.97	4.39	2.25	-4.27	0.12	0.08	-6.40
500.00	0.82	13.65	499.97	4.74	2.32	-4.62	0.24	0.00	16.44
525.00	0.78	14.66	524.97	5.07	2.41	-4.95	0.17	-0.16	4.04
550.00	0.85	13.08	549.96	5.42	2.49	-5.30	0.29	0.28	-6.32
575.00	0.95	6.30	574.96	5.81	2.56	-5.68	0.58	0.40	-27.12
600.00	0.87	8.68	599.96	6.20	2.61	-6.07	0.35	-0.32	9.52
625.00	0.83	12.28	624.95	6.56	2.68	-6.43	0.27	-0.16	14.40
650.00	0.83	13.25	649.95	6.92	2.76	-6.78	0.06	0.00	3.88
675.00	0.90	7.36	674.95	7.29	2.82	-7.15	0.45	0.28	-23.56
700.00	0.83	12.16	699.95	7.66	2.89	-7.51	0.40	-0.28	19.20
725.00	0.81	3.63	724.94	8.01	2.94	-7.87	0.49	-0.08	-34.12
750.00	0.80	3.62	749.94	8.36	2.96	-8.21	0.04	-0.04	-0.04
775.00	0.74	4.16	774.94	8.70	2.98	-8.55	0.24	-0.24	2.16
800.00	0.80	0.89	799.94	9.04	2.99	-8.88	0.30	0.24	-13.08
825.00	0.80	0.55	824.93	9.38	3.00	-9.23	0.02	0.00	-1.36
850.00	0.87	351.45	849.93	9.75	2.97	-9.59	0.60	0.28	-36.40
875.00	0.80	359.96	874.93	10.11	2.94	-9.96	0.57	-0.28	34.04
900.00	0.79	356.71	899.93	10.46	2.93	-10.30	0.18	-0.04	-13.00
925.00	0.79	358.00	924.92	10.80	2.92	-10.65	0.07	0.00	5.16
950.00	0.75	3.96	949.92	11.14	2.92	-10.98	0.36	-0.16	23.84
975.00	0.73	357.87	974.92	11.46	2.93	-11.30	0.32	-0.08	-24.36
1,000.00	0.72	358.20	999.92	11.77	2.92	-11.62	0.04	-0.04	1.32
1,025.00	0.70	3.16	1,024.92	12.08	2.92	-11.93	0.26	-0.08	19.84
1,050.00	0.63	17.68	1,049.91	12.37	2.97	-12.21	0.73	-0.28	58.08
1,075.00	0.55	7.70	1,074.91	12.62	3.03	-12.46	0.52	-0.32	-39.92
1,100.00	0.41	32.29	1,099.91	12.81	3.09	-12.65	0.98	-0.56	98.36
1,125.00	0.43	26.41	1,124.91	12.97	3.18	-12.80	0.19	0.08	-23.52
1,150.00	0.39	27.42	1,149.91	13.13	3.26	-12.96	0.16	-0.16	4.04
1,175.00	0.42	38.47	1,174.91	13.28	3.36	-13.10	0.33	0.12	44.20
1,200.00	0.47	12.34	1,199.91	13.45	3.44	-13.27	0.83	0.20	-104.52
1,225.00	0.48	26.17	1,224.91	13.64	3.51	-13.46	0.46	0.04	55.32
1,250.00	0.50	20.52	1,249.91	13.84	3.59	-13.65	0.21	0.08	-22.60
1,275.00	0.53	28.53	1,274.91	14.04	3.69	-13.85	0.31	0.12	32.04
1,300.00	0.52	24.55	1,299.90	14.25	3.79	-14.05	0.15	-0.04	-15.92
1,325.00	0.55	15.24	1,324.90	14.47	3.87	-14.27	0.37	0.12	-37.24
1,350.00	0.55	20.07	1,349.90	14.70	3.94	-14.49	0.19	0.00	19.32
1,375.00	0.61	14.67	1,374.90	14.94	4.01	-14.73	0.32	0.24	-21.60



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
1,400.00	0.59	19.32	1,399.90	15.19	4.09	-14.98	0.21	-0.08	18.60
1,425.00	0.63	12.75	1,424.90	15.44	4.16	-15.23	0.32	0.16	-26.28
1,450.00	0.60	8.29	1,449.90	15.71	4.21	-15.49	0.23	-0.12	-17.84
1,475.00	0.62	8.57	1,474.90	15.97	4.25	-15.75	0.08	0.08	1.12
1,500.00	0.60	11.88	1,499.89	16.23	4.30	-16.01	0.16	-0.08	13.24
1,525.00	0.62	9.72	1,524.89	16.49	4.35	-16.27	0.12	0.08	-8.64
1,550.00	0.62	9.74	1,549.89	16.76	4.39	-16.53	0.00	0.00	0.08
1,575.00	0.58	13.19	1,574.89	17.02	4.45	-16.78	0.22	-0.16	13.80
1,600.00	0.64	6.64	1,599.89	17.28	4.49	-17.04	0.37	0.24	-26.20
1,625.00	0.60	8.88	1,624.89	17.55	4.53	-17.31	0.19	-0.16	8.96
1,650.00	0.59	7.41	1,649.89	17.80	4.56	-17.57	0.07	-0.04	-5.88
1,675.00	0.58	17.12	1,674.88	18.05	4.62	-17.81	0.40	-0.04	38.84
1,700.00	0.64	7.99	1,699.88	18.31	4.67	-18.07	0.46	0.24	-36.52
1,725.00	0.63	6.47	1,724.88	18.59	4.71	-18.34	0.08	-0.04	-6.08
1,750.00	0.63	8.64	1,749.88	18.86	4.75	-18.61	0.10	0.00	8.68
1,775.00	0.65	1.49	1,774.88	19.14	4.77	-18.89	0.33	0.08	-28.60
1,800.00	0.61	11.04	1,799.88	19.41	4.80	-19.16	0.45	-0.16	38.20
1,825.00	0.58	4.57	1,824.88	19.66	4.83	-19.41	0.29	-0.12	-25.88
1,850.00	0.62	0.16	1,849.87	19.93	4.84	-19.67	0.24	0.16	-17.64
1,875.00	0.57	4.24	1,874.87	20.19	4.85	-19.93	0.26	-0.20	16.32
1,900.00	0.56	7.21	1,899.87	20.43	4.88	-20.17	0.12	-0.04	11.88
1,925.00	0.53	21.25	1,924.87	20.66	4.94	-20.40	0.55	-0.12	56.16
1,950.00	0.43	8.66	1,949.87	20.86	4.99	-20.60	0.58	-0.40	-50.36
1,975.00	0.44	12.61	1,974.87	21.05	5.03	-20.78	0.13	0.04	15.80
2,000.00	0.38	54.55	1,999.87	21.19	5.12	-20.92	1.20	-0.24	167.76
2,025.00	0.32	20.79	2,024.87	21.30	5.21	-21.03	0.84	-0.24	-135.04
2,050.00	0.37	39.54	2,049.87	21.43	5.28	-21.15	0.49	0.20	75.00
2,075.00	0.34	30.33	2,074.87	21.56	5.37	-21.27	0.26	-0.12	-36.84
2,100.00	0.34	30.02	2,099.87	21.68	5.45	-21.40	0.01	0.00	-1.24
2,125.00	0.41	39.65	2,124.87	21.82	5.54	-21.53	0.38	0.28	38.52
2,150.00	0.41	45.73	2,149.87	21.95	5.66	-21.65	0.17	0.00	24.32
2,175.00	0.42	39.96	2,174.86	22.08	5.79	-21.78	0.17	0.04	-23.08
2,200.00	0.47	41.96	2,199.86	22.23	5.91	-21.92	0.21	0.20	8.00
2,225.00	0.42	57.52	2,224.86	22.35	6.06	-22.04	0.52	-0.20	62.24
2,250.00	0.44	45.72	2,249.86	22.47	6.21	-22.15	0.36	0.08	-47.20
2,275.00	0.44	54.19	2,274.86	22.59	6.35	-22.26	0.26	0.00	33.88
2,300.00	0.40	59.42	2,299.86	22.69	6.50	-22.36	0.22	-0.16	20.92
2,325.00	0.41	53.57	2,324.86	22.79	6.65	-22.45	0.17	0.04	-23.40
2,350.00	0.43	59.50	2,349.86	22.89	6.80	-22.54	0.19	0.08	23.72
2,375.00	0.39	59.57	2,374.86	22.98	6.96	-22.62	0.16	-0.16	0.28
2,400.00	0.44	57.28	2,399.86	23.08	7.11	-22.71	0.21	0.20	-9.16
2,425.00	0.43	60.39	2,424.86	23.17	7.28	-22.80	0.10	-0.04	12.44
2,450.00	0.46	60.64	2,449.86	23.27	7.44	-22.89	0.12	0.12	1.00



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
2,475.00	0.44	49.28	2,474.86	23.38	7.60	-22.99	0.37	-0.08	-45.44
2,500.00	0.46	63.44	2,499.86	23.49	7.77	-23.09	0.45	0.08	56.64
2,525.00	0.48	65.82	2,524.85	23.58	7.95	-23.17	0.11	0.08	9.52
2,550.00	0.47	56.48	2,549.85	23.68	8.13	-23.26	0.31	-0.04	-37.36
2,575.00	0.54	60.19	2,574.85	23.79	8.32	-23.37	0.31	0.28	14.84
2,600.00	0.57	65.61	2,599.85	23.90	8.54	-23.47	0.24	0.12	21.68
2,625.00	0.69	70.03	2,624.85	24.00	8.79	-23.56	0.52	0.48	17.68
2,650.00	0.65	59.77	2,649.85	24.13	9.06	-23.67	0.51	-0.16	-41.04
2,675.00	0.74	67.40	2,674.85	24.26	9.33	-23.79	0.52	0.36	30.52
2,700.00	0.86	68.79	2,699.84	24.39	9.65	-23.90	0.49	0.48	5.56
2,725.00	0.88	66.04	2,724.84	24.54	10.00	-24.03	0.19	0.08	-11.00
2,750.00	0.92	70.31	2,749.84	24.68	10.37	-24.16	0.31	0.16	17.08
2,775.00	0.98	68.55	2,774.83	24.83	10.75	-24.29	0.27	0.24	-7.04
2,800.00	0.95	64.68	2,799.83	24.99	11.14	-24.44	0.29	-0.12	-15.48
2,825.00	1.03	68.35	2,824.83	25.17	11.54	-24.59	0.41	0.32	14.68
2,850.00	1.01	71.84	2,849.82	25.32	11.95	-24.72	0.26	-0.08	13.96
2,875.00	1.10	68.35	2,874.82	25.48	12.39	-24.86	0.44	0.36	-13.96
2,900.00	1.23	71.07	2,899.81	25.65	12.86	-25.01	0.56	0.52	10.88
2,925.00	1.31	73.02	2,924.81	25.82	13.39	-25.15	0.36	0.32	7.80
2,950.00	1.35	77.29	2,949.80	25.97	13.95	-25.28	0.43	0.16	17.08
2,975.00	1.27	67.99	2,974.79	26.14	14.50	-25.42	0.91	-0.32	-37.20
3,000.00	1.41	63.36	2,999.79	26.38	15.03	-25.63	0.71	0.56	-18.52
3,025.00	1.57	60.34	3,024.78	26.69	15.60	-25.91	0.71	0.64	-12.08
3,050.00	1.53	58.40	3,049.77	27.03	16.18	-26.23	0.26	-0.16	-7.76
3,075.00	1.55	58.55	3,074.76	27.38	16.75	-26.55	0.08	0.08	0.60
3,100.00	1.78	59.79	3,099.75	27.75	17.38	-26.90	0.93	0.92	4.96
3,125.00	1.79	60.36	3,124.74	28.14	18.05	-27.25	0.08	0.04	2.28
3,150.00	1.76	59.19	3,149.73	28.53	18.72	-27.61	0.19	-0.12	-4.68
3,175.00	1.80	59.75	3,174.71	28.93	19.39	-27.97	0.17	0.16	2.24
3,200.00	1.87	61.68	3,199.70	29.32	20.09	-28.33	0.37	0.28	7.72
3,225.00	1.70	44.50	3,224.69	29.78	20.71	-28.76	2.24	-0.68	-68.72
3,250.00	1.77	0.12	3,249.68	30.43	20.97	-29.39	5.25	0.28	-177.52
3,275.00	2.04	351.41	3,274.67	31.25	20.90	-30.22	1.58	1.08	-34.84
3,300.00	2.19	348.38	3,299.65	32.16	20.74	-31.14	0.75	0.60	-12.12
3,325.00	2.15	350.56	3,324.63	33.09	20.57	-32.07	0.37	-0.16	8.72
3,350.00	2.23	351.06	3,349.61	34.03	20.42	-33.02	0.33	0.32	2.00
3,375.00	2.32	359.96	3,374.59	35.02	20.34	-34.01	1.46	0.36	35.60
3,400.00	2.51	3.26	3,399.57	36.07	20.37	-35.06	0.94	0.76	13.20
3,425.00	2.61	7.94	3,424.55	37.18	20.48	-36.17	0.93	0.40	18.72
3,450.00	2.65	10.44	3,449.52	38.32	20.66	-37.29	0.49	0.16	10.00
3,475.00	2.79	11.85	3,474.49	39.48	20.89	-38.44	0.62	0.56	5.64
3,500.00	2.76	13.74	3,499.46	40.66	21.16	-39.61	0.39	-0.12	7.56
3,525.00	2.83	15.89	3,524.43	41.84	21.47	-40.77	0.50	0.28	8.60
3,550.00	2.89	19.90	3,549.40	43.02	21.86	-41.93	0.84	0.24	16.04



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,575.00	2.86	24.01	3,574.37	44.19	22.32	-43.07	0.83	-0.12	16.44
3,600.00	2.95	21.20	3,599.34	45.36	22.81	-44.22	0.67	0.36	-11.24
3,625.00	2.95	26.05	3,624.30	46.53	23.33	-45.37	1.00	0.00	19.40
3,650.00	3.00	26.20	3,649.27	47.70	23.90	-46.51	0.20	0.20	0.60
3,675.00	2.96	27.65	3,674.24	48.86	24.49	-47.64	0.34	-0.16	5.80
3,700.00	2.93	30.70	3,699.20	49.98	25.11	-48.73	0.64	-0.12	12.20
3,725.00	3.02	30.65	3,724.17	51.10	25.77	-49.81	0.36	0.36	-0.20
3,750.00	3.01	30.41	3,749.14	52.23	26.44	-50.91	0.06	-0.04	-0.96
3,775.00	2.97	32.87	3,774.10	53.34	27.13	-51.99	0.54	-0.16	9.84
3,800.00	2.93	33.52	3,799.07	54.41	27.83	-53.03	0.21	-0.16	2.60
3,825.00	2.87	35.85	3,824.04	55.45	28.55	-54.03	0.53	-0.24	9.32
3,850.00	2.78	35.58	3,849.01	56.45	29.27	-55.00	0.36	-0.36	-1.08
3,875.00	2.70	35.46	3,873.98	57.43	29.96	-55.94	0.32	-0.32	-0.48
3,900.00	2.61	37.23	3,898.95	58.36	30.65	-56.83	0.49	-0.36	7.08
3,925.00	2.61	36.80	3,923.92	59.27	31.33	-57.71	0.08	0.00	-1.72
3,950.00	2.58	36.87	3,948.90	60.18	32.01	-58.58	0.12	-0.12	0.28
3,975.00	2.59	35.14	3,973.87	61.09	32.68	-59.46	0.31	0.04	-6.92
4,000.00	2.41	34.37	3,998.85	61.98	33.30	-60.33	0.73	-0.72	-3.08
4,025.00	2.28	33.37	4,023.83	62.83	33.87	-61.15	0.55	-0.52	-4.00
4,050.00	2.17	37.56	4,048.81	63.62	34.43	-61.91	0.79	-0.44	16.76
4,075.00	2.08	43.49	4,073.79	64.33	35.03	-62.59	0.95	-0.36	23.72
4,100.00	1.99	30.66	4,098.78	65.03	35.56	-63.26	1.85	-0.36	-51.32
4,125.00	1.95	34.28	4,123.76	65.75	36.02	-63.96	0.52	-0.16	14.48
4,150.00	1.98	32.52	4,148.75	66.47	36.50	-64.66	0.27	0.12	-7.04
4,175.00	1.94	33.38	4,173.73	67.19	36.96	-65.35	0.20	-0.16	3.44
4,200.00	1.96	37.87	4,198.72	67.88	37.46	-66.02	0.62	0.08	17.96
4,225.00	1.92	38.35	4,223.70	68.54	37.98	-66.66	0.17	-0.16	1.92
4,250.00	1.92	38.24	4,248.69	69.20	38.50	-67.29	0.01	0.00	-0.44
4,275.00	1.92	36.22	4,273.68	69.87	39.00	-67.93	0.27	0.00	-8.08
4,300.00	1.79	33.31	4,298.66	70.53	39.47	-68.57	0.64	-0.52	-11.64
4,325.00	1.83	39.05	4,323.65	71.17	39.93	-69.19	0.74	0.16	22.96
4,350.00	1.72	41.00	4,348.64	71.76	40.43	-69.76	0.50	-0.44	7.80
4,375.00	1.55	45.70	4,373.63	72.28	40.92	-70.25	0.87	-0.68	18.80
4,400.00	1.38	46.59	4,398.62	72.72	41.38	-70.67	0.69	-0.68	3.56
4,425.00	1.40	54.37	4,423.61	73.11	41.85	-71.03	0.76	0.08	31.12
4,450.00	1.24	52.82	4,448.61	73.45	42.31	-71.35	0.66	-0.64	-6.20
4,475.00	1.23	59.23	4,473.60	73.75	42.76	-71.63	0.55	-0.04	25.64
4,500.00	1.28	62.60	4,498.59	74.02	43.23	-71.87	0.36	0.20	13.48
4,525.00	1.30	67.33	4,523.59	74.26	43.74	-72.09	0.43	0.08	18.92
4,550.00	1.61	73.63	4,548.58	74.46	44.34	-72.27	1.39	1.24	25.20
4,575.00	2.09	83.22	4,573.57	74.62	45.13	-72.38	2.28	1.92	38.36
4,600.00	2.51	85.52	4,598.55	74.71	46.13	-72.43	1.72	1.68	9.20
4,625.00	3.01	86.41	4,623.52	74.80	47.33	-72.46	2.01	2.00	3.56



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
4,650.00	3.39	87.47	4,648.48	74.87	48.72	-72.46	1.54	1.52	4.24	
4,675.00	3.84	90.71	4,673.43	74.89	50.30	-72.41	1.98	1.80	12.96	
4,700.00	4.10	91.66	4,698.37	74.86	52.03	-72.29	1.07	1.04	3.80	
4,725.00	4.09	91.90	4,723.31	74.80	53.82	-72.15	0.08	-0.04	0.96	
4,750.00	3.78	92.09	4,748.25	74.74	55.53	-72.01	1.24	-1.24	0.76	
4,775.00	2.96	91.09	4,773.20	74.70	57.00	-71.90	3.29	-3.28	-4.00	
4,800.00	2.76	87.61	4,798.17	74.71	58.25	-71.85	1.06	-0.80	-13.92	
4,825.00	2.58	85.42	4,823.14	74.78	59.41	-71.87	0.83	-0.72	-8.76	
4,850.00	2.08	68.81	4,848.12	74.99	60.39	-72.03	3.34	-2.00	-66.44	
4,875.00	1.98	42.04	4,873.11	75.48	61.10	-72.48	3.78	-0.40	-107.08	
4,900.00	2.08	36.72	4,898.09	76.16	61.66	-73.14	0.85	0.40	-21.28	
4,925.00	2.07	35.09	4,923.08	76.89	62.20	-73.84	0.24	-0.04	-6.52	
4,950.00	2.29	47.05	4,948.06	77.60	62.82	-74.52	2.02	0.88	47.84	
4,975.00	2.53	55.58	4,973.04	78.25	63.64	-75.13	1.72	0.96	34.12	
5,000.00	2.73	60.17	4,998.01	78.86	64.61	-75.70	1.16	0.80	18.36	
5,025.00	2.88	65.92	5,022.98	79.42	65.70	-76.20	1.27	0.60	23.00	
5,050.00	3.12	69.83	5,047.95	79.91	66.91	-76.63	1.26	0.96	15.64	
5,075.00	3.17	75.25	5,072.91	80.32	68.22	-76.98	1.21	0.20	21.68	
5,100.00	3.05	75.31	5,097.87	80.66	69.53	-77.26	0.48	-0.48	0.24	
5,125.00	2.80	77.22	5,122.84	80.97	70.77	-77.50	1.07	-1.00	7.64	
5,150.00	1.26	100.23	5,147.82	81.05	71.64	-77.55	6.85	-6.16	92.04	
5,175.00	0.69	192.50	5,172.82	80.86	71.88	-77.34	5.84	-2.28	369.08	
5,200.00	0.76	206.31	5,197.82	80.56	71.77	-77.05	0.75	0.28	55.24	
5,225.00	0.76	200.16	5,222.82	80.26	71.64	-76.75	0.33	0.00	-24.60	
5,250.00	0.79	199.81	5,247.81	79.94	71.52	-76.44	0.12	0.12	-1.40	
5,275.00	0.79	196.91	5,272.81	79.61	71.42	-76.12	0.16	0.00	-11.60	
5,300.00	0.77	197.51	5,297.81	79.29	71.31	-75.80	0.09	-0.08	2.40	
5,325.00	0.72	197.01	5,322.81	78.98	71.22	-75.49	0.20	-0.20	-2.00	
5,350.00	0.76	192.54	5,347.81	78.66	71.14	-75.19	0.28	0.16	-17.88	
5,375.00	0.80	191.33	5,372.80	78.33	71.07	-74.86	0.17	0.16	-4.84	
5,400.00	0.73	193.88	5,397.80	78.00	70.99	-74.53	0.31	-0.28	10.20	
5,425.00	0.68	199.02	5,422.80	77.71	70.91	-74.24	0.32	-0.20	20.56	
5,450.00	0.62	204.13	5,447.80	77.45	70.80	-73.99	0.33	-0.24	20.44	
5,475.00	0.59	201.39	5,472.80	77.20	70.70	-73.75	0.17	-0.12	-10.96	
5,500.00	0.63	196.67	5,497.79	76.95	70.61	-73.50	0.26	0.16	-18.88	
5,525.00	0.63	196.22	5,522.79	76.69	70.54	-73.24	0.02	0.00	-1.80	
5,550.00	0.62	211.38	5,547.79	76.44	70.43	-73.00	0.66	-0.04	60.64	
5,575.00	0.62	200.59	5,572.79	76.20	70.31	-72.76	0.47	0.00	-43.16	
5,600.00	0.69	204.85	5,597.79	75.93	70.20	-72.51	0.34	0.28	17.04	
5,625.00	0.62	213.79	5,622.79	75.69	70.06	-72.26	0.49	-0.28	35.76	
5,650.00	0.61	203.13	5,647.79	75.45	69.93	-72.03	0.46	-0.04	-42.64	
5,675.00	0.60	213.70	5,672.78	75.22	69.81	-71.81	0.45	-0.04	42.28	
5,700.00	0.64	223.54	5,697.78	75.01	69.64	-71.61	0.45	0.16	39.36	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
5,725.00	0.58	215.61	5,722.78	74.81	69.47	-71.41	0.41	-0.24	-31.72
5,750.00	0.59	219.85	5,747.78	74.60	69.31	-71.22	0.18	0.04	16.96
5,775.00	0.55	222.94	5,772.78	74.42	69.15	-71.04	0.20	-0.16	12.36
5,800.00	0.45	220.03	5,797.78	74.25	69.00	-70.88	0.41	-0.40	-11.64
5,825.00	0.37	235.23	5,822.78	74.13	68.88	-70.77	0.54	-0.32	60.80
5,850.00	0.38	213.71	5,847.78	74.02	68.76	-70.66	0.56	0.04	-86.08
5,875.00	0.23	217.05	5,872.78	73.91	68.69	-70.55	0.60	-0.60	13.36
5,900.00	0.27	223.06	5,897.78	73.83	68.62	-70.47	0.19	0.16	24.04
5,925.00	0.30	199.37	5,922.78	73.72	68.55	-70.37	0.48	0.12	-94.76
5,950.00	0.34	175.24	5,947.78	73.59	68.54	-70.24	0.56	0.16	-96.52
5,975.00	0.19	201.42	5,972.77	73.47	68.53	-70.13	0.76	-0.60	104.72
6,000.00	0.57	158.41	5,997.77	73.32	68.56	-69.97	1.80	1.52	-172.04
6,025.00	0.32	226.37	6,022.77	73.16	68.56	-69.81	2.16	-1.00	271.84
6,050.00	0.32	247.32	6,047.77	73.08	68.44	-69.74	0.47	0.00	83.80
6,075.00	0.28	255.29	6,072.77	73.04	68.32	-69.70	0.23	-0.16	31.88
6,100.00	0.22	243.73	6,097.77	73.00	68.21	-69.67	0.31	-0.24	-46.24
6,125.00	0.19	253.94	6,122.77	72.97	68.13	-69.64	0.19	-0.12	40.84
6,150.00	0.16	257.28	6,147.77	72.95	68.06	-69.62	0.13	-0.12	13.36
6,175.00	0.16	266.39	6,172.77	72.94	67.99	-69.62	0.10	0.00	36.44
6,200.00	0.20	286.70	6,197.77	72.95	67.91	-69.63	0.30	0.16	81.24
6,225.00	0.22	291.65	6,222.77	72.98	67.83	-69.67	0.11	0.08	19.80
6,250.00	0.20	290.82	6,247.77	73.01	67.74	-69.70	0.08	-0.08	-3.32
6,275.00	0.21	293.40	6,272.77	73.05	67.66	-69.74	0.05	0.04	10.32
6,300.00	0.17	287.32	6,297.77	73.08	67.58	-69.77	0.18	-0.16	-24.32
6,325.00	0.17	286.73	6,322.77	73.10	67.51	-69.80	0.01	0.00	-2.36
6,350.00	0.21	301.98	6,347.77	73.13	67.44	-69.84	0.26	0.16	61.00
6,375.00	0.19	304.14	6,372.77	73.18	67.36	-69.89	0.09	-0.08	8.64
6,400.00	0.15	294.90	6,397.77	73.22	67.30	-69.93	0.19	-0.16	-36.96
6,425.00	0.18	304.47	6,422.77	73.25	67.24	-69.97	0.16	0.12	38.28
6,450.00	0.24	310.40	6,447.77	73.31	67.16	-70.03	0.25	0.24	23.72
6,475.00	0.24	311.87	6,472.77	73.38	67.08	-70.10	0.02	0.00	5.88
6,500.00	0.23	308.26	6,497.77	73.44	67.01	-70.17	0.07	-0.04	-14.44
6,525.00	0.47	330.89	6,522.77	73.56	66.92	-70.29	1.09	0.96	90.52
6,550.00	0.76	341.04	6,547.77	73.81	66.81	-70.55	1.23	1.16	40.60
6,575.00	0.83	343.61	6,572.77	74.14	66.71	-70.88	0.31	0.28	10.28
6,600.00	0.79	341.79	6,597.76	74.48	66.60	-71.22	0.19	-0.16	-7.28
6,625.00	0.82	341.01	6,622.76	74.81	66.49	-71.56	0.13	0.12	-3.12
6,650.00	0.79	343.88	6,647.76	75.15	66.39	-71.90	0.20	-0.12	11.48
6,675.00	0.79	345.76	6,672.76	75.48	66.30	-72.24	0.10	0.00	7.52
6,700.00	0.82	344.08	6,697.75	75.82	66.20	-72.58	0.15	0.12	-6.72
6,725.00	0.76	344.29	6,722.75	76.15	66.11	-72.91	0.24	-0.24	0.84
6,750.00	0.76	345.23	6,747.75	76.47	66.02	-73.24	0.05	0.00	3.76
6,775.00	0.84	344.63	6,772.75	76.81	65.93	-73.58	0.32	0.32	-2.40
6,800.00	0.87	344.39	6,797.74	77.17	65.83	-73.94	0.12	0.12	-0.96



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
6,825.00	0.87	344.17	6,822.74	77.53	65.73	-74.31	0.01	0.00	-0.88
6,850.00	0.87	345.61	6,847.74	77.90	65.63	-74.68	0.09	0.00	5.76
6,875.00	0.91	344.24	6,872.74	78.27	65.53	-75.06	0.18	0.16	-5.48
6,900.00	0.90	342.47	6,897.73	78.65	65.42	-75.45	0.12	-0.04	-7.08
6,925.00	0.85	343.00	6,922.73	79.02	65.30	-75.82	0.20	-0.20	2.12
6,950.00	0.90	343.38	6,947.73	79.38	65.19	-76.19	0.20	0.20	1.52
6,975.00	0.92	342.62	6,972.72	79.76	65.08	-76.57	0.09	0.08	-3.04
7,000.00	0.89	340.82	6,997.72	80.14	64.95	-76.95	0.17	-0.12	-7.20
7,025.00	0.91	340.56	7,022.72	80.51	64.82	-77.33	0.08	0.08	-1.04
7,050.00	0.96	340.70	7,047.71	80.89	64.69	-77.72	0.20	0.20	0.56
7,075.00	1.14	341.20	7,072.71	81.32	64.54	-78.16	0.72	0.72	2.00
7,100.00	1.54	345.11	7,097.70	81.88	64.37	-78.73	1.64	1.60	15.64
7,125.00	2.00	348.25	7,122.69	82.64	64.20	-79.49	1.88	1.84	12.56
7,150.00	2.23	348.79	7,147.67	83.54	64.01	-80.40	0.92	0.92	2.16
7,175.00	2.21	349.55	7,172.65	84.49	63.83	-81.36	0.14	-0.08	3.04
7,200.00	2.20	350.83	7,197.64	85.44	63.67	-82.31	0.20	-0.04	5.12
7,225.00	2.21	350.94	7,222.62	86.39	63.51	-83.27	0.04	0.04	0.44
7,250.00	2.26	350.80	7,247.60	87.35	63.36	-84.23	0.20	0.20	-0.56
7,275.00	2.59	352.40	7,272.58	88.40	63.21	-85.29	1.35	1.32	6.40
7,300.00	2.87	353.51	7,297.55	89.58	63.06	-86.47	1.14	1.12	4.44
7,325.00	2.93	353.35	7,322.52	90.84	62.92	-87.74	0.24	0.24	-0.64
7,350.00	2.98	353.35	7,347.48	92.12	62.77	-89.02	0.20	0.20	0.00
7,375.00	2.97	352.93	7,372.45	93.40	62.61	-90.32	0.10	-0.04	-1.68
7,400.00	2.93	352.68	7,397.42	94.68	62.45	-91.60	0.17	-0.16	-1.00
7,425.00	2.86	353.84	7,422.38	95.94	62.30	-92.86	0.37	-0.28	4.64
7,450.00	2.87	354.00	7,447.35	97.18	62.17	-94.11	0.05	0.04	0.64
7,475.00	2.93	352.86	7,472.32	98.43	62.03	-95.37	0.33	0.24	-4.56
7,500.00	2.89	352.33	7,497.29	99.69	61.86	-96.63	0.19	-0.16	-2.12
7,525.00	2.89	352.07	7,522.26	100.94	61.69	-97.89	0.05	0.00	-1.04
7,550.00	2.83	351.37	7,547.23	102.18	61.51	-99.13	0.28	-0.24	-2.80
7,575.00	2.73	350.58	7,572.20	103.37	61.32	-100.34	0.43	-0.40	-3.16
7,600.00	2.67	349.46	7,597.17	104.53	61.12	-101.50	0.32	-0.24	-4.48
7,625.00	2.64	348.68	7,622.14	105.67	60.90	-102.65	0.19	-0.12	-3.12
7,650.00	2.55	348.34	7,647.12	106.78	60.67	-103.77	0.37	-0.36	-1.36
7,675.00	2.52	347.85	7,672.09	107.86	60.44	-104.86	0.15	-0.12	-1.96
7,700.00	2.51	348.57	7,697.07	108.94	60.22	-105.94	0.13	-0.04	2.88
7,725.00	2.42	349.72	7,722.04	109.99	60.02	-107.01	0.41	-0.36	4.60
7,750.00	2.37	350.29	7,747.02	111.02	59.84	-108.04	0.22	-0.20	2.28
7,775.00	2.39	350.33	7,772.00	112.04	59.66	-109.07	0.08	0.08	0.16
7,800.00	2.42	349.56	7,796.98	113.08	59.48	-110.12	0.18	0.12	-3.08
7,825.00	2.33	349.62	7,821.96	114.10	59.29	-111.14	0.36	-0.36	0.24
7,850.00	2.31	350.52	7,846.94	115.09	59.12	-112.15	0.17	-0.08	3.60
7,875.00	2.33	350.38	7,871.92	116.09	58.95	-113.15	0.08	0.08	-0.56



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
7,900.00	2.30	349.81	7,896.90	117.08	58.77	-114.15	0.15	-0.12	-2.28
7,925.00	2.25	349.22	7,921.88	118.06	58.59	-115.14	0.22	-0.20	-2.36
7,950.00	2.17	347.69	7,946.86	119.01	58.40	-116.09	0.40	-0.32	-6.12
7,975.00	2.05	347.14	7,971.84	119.90	58.20	-117.00	0.49	-0.48	-2.20
8,000.00	1.89	348.19	7,996.83	120.74	58.02	-117.84	0.66	-0.64	4.20
8,025.00	1.74	348.75	8,021.81	121.52	57.86	-118.63	0.60	-0.60	2.24
8,050.00	1.66	350.18	8,046.80	122.25	57.72	-119.36	0.36	-0.32	5.72
8,075.00	1.70	349.08	8,071.79	122.97	57.59	-120.09	0.21	0.16	-4.40
8,100.00	1.82	348.93	8,096.78	123.72	57.44	-120.85	0.48	0.48	-0.60
8,125.00	2.24	15.39	8,121.76	124.58	57.50	-121.70	4.06	1.68	105.84
8,150.00	3.47	37.75	8,146.73	125.65	58.09	-122.74	6.55	4.92	89.44
8,175.00	4.19	41.98	8,171.68	126.93	59.16	-123.97	3.09	2.88	16.92
8,200.00	4.29	42.47	8,196.61	128.30	60.41	-125.28	0.43	0.40	1.96
8,225.00	4.20	43.69	8,221.54	129.65	61.67	-126.57	0.51	-0.36	4.88
8,250.00	4.04	43.98	8,246.48	130.95	62.91	-127.80	0.65	-0.64	1.16
8,275.00	3.90	44.74	8,271.42	132.18	64.12	-128.98	0.60	-0.56	3.04
8,300.00	3.79	44.82	8,296.36	133.37	65.31	-130.11	0.44	-0.44	0.32
8,325.00	3.68	43.74	8,321.31	134.54	66.44	-131.22	0.52	-0.44	-4.32
8,350.00	3.59	44.31	8,346.26	135.68	67.54	-132.31	0.39	-0.36	2.28
8,375.00	3.53	45.13	8,371.21	136.78	68.64	-133.36	0.31	-0.24	3.28
8,400.00	3.46	47.58	8,396.16	137.83	69.74	-134.36	0.66	-0.28	9.80
8,425.00	3.40	48.15	8,421.12	138.84	70.85	-135.31	0.28	-0.24	2.28
8,450.00	3.27	54.15	8,446.07	139.75	71.98	-136.16	1.49	-0.52	24.00
8,475.00	3.24	45.65	8,471.03	140.66	73.06	-137.02	1.93	-0.12	-34.00
8,500.00	3.19	45.36	8,496.00	141.64	74.06	-137.96	0.21	-0.20	-1.16
8,525.00	3.21	44.54	8,520.96	142.63	75.05	-138.89	0.20	0.08	-3.28
8,550.00	3.21	43.88	8,545.92	143.63	76.02	-139.85	0.15	0.00	-2.64
8,575.00	3.26	44.51	8,570.88	144.65	77.01	-140.81	0.25	0.20	2.52
8,600.00	3.94	44.81	8,595.83	145.76	78.11	-141.88	2.72	2.72	1.20
8,625.00	4.56	45.32	8,620.76	147.07	79.42	-143.12	2.48	2.48	2.04
8,650.00	4.69	45.62	8,645.68	148.48	80.86	-144.46	0.53	0.52	1.20
8,675.00	4.71	46.47	8,670.59	149.91	82.33	-145.81	0.29	0.08	3.40
8,700.00	4.63	47.06	8,695.51	151.30	83.82	-147.14	0.37	-0.32	2.36
8,725.00	4.53	46.44	8,720.43	152.67	85.27	-148.43	0.45	-0.40	-2.48
8,750.00	4.41	46.17	8,745.35	154.01	86.68	-149.71	0.49	-0.48	-1.08
8,775.00	4.29	46.92	8,770.28	155.32	88.06	-150.95	0.53	-0.48	3.00
8,800.00	4.23	47.13	8,795.21	156.58	89.41	-152.15	0.25	-0.24	0.84
8,825.00	4.21	46.97	8,820.15	157.84	90.76	-153.34	0.09	-0.08	-0.64
8,850.00	4.19	47.08	8,845.08	159.09	92.10	-154.52	0.09	-0.08	0.44
8,875.00	4.25	47.43	8,870.01	160.33	93.45	-155.70	0.26	0.24	1.40
8,900.00	4.38	47.31	8,894.94	161.61	94.84	-156.91	0.52	0.52	-0.48
8,925.00	4.45	47.26	8,919.87	162.91	96.25	-158.14	0.28	0.28	-0.20
8,950.00	4.46	46.74	8,944.79	164.24	97.67	-159.40	0.17	0.04	-2.08



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,975.00	4.93	42.72	8,969.71	165.69	99.11	-160.78	2.29	1.88	-16.08	
9,000.00	5.44	39.76	8,994.60	167.39	100.59	-162.41	2.30	2.04	-11.84	
9,025.00	5.55	39.09	9,019.49	169.24	102.11	-164.19	0.51	0.44	-2.68	
9,050.00	5.59	38.41	9,044.37	171.14	103.63	-166.01	0.31	0.16	-2.72	
9,075.00	5.54	38.01	9,069.25	173.04	105.13	-167.84	0.25	-0.20	-1.60	
9,100.00	5.39	37.79	9,094.14	174.92	106.59	-169.64	0.61	-0.60	-0.88	
9,125.00	5.26	37.33	9,119.03	176.76	108.01	-171.41	0.55	-0.52	-1.84	
9,150.00	5.17	37.64	9,143.93	178.56	109.39	-173.15	0.38	-0.36	1.24	
9,175.00	5.03	38.35	9,168.83	180.31	110.76	-174.83	0.61	-0.56	2.84	
9,200.00	4.91	37.52	9,193.74	182.02	112.09	-176.48	0.56	-0.48	-3.32	
9,225.00	4.82	36.68	9,218.65	183.71	113.37	-178.10	0.46	-0.36	-3.36	
9,250.00	4.66	37.65	9,243.56	185.36	114.62	-179.69	0.72	-0.64	3.88	
9,275.00	4.49	38.27	9,268.48	186.93	115.84	-181.20	0.71	-0.68	2.48	
9,300.00	4.34	36.82	9,293.41	188.46	117.02	-182.67	0.75	-0.60	-5.80	
9,325.00	4.06	35.79	9,318.34	189.93	118.10	-184.09	1.16	-1.12	-4.12	
9,350.00	3.88	35.45	9,343.28	191.34	119.11	-185.45	0.73	-0.72	-1.36	
9,375.00	3.85	36.00	9,368.22	192.71	120.09	-186.77	0.19	-0.12	2.20	
9,400.00	3.92	36.09	9,393.16	194.08	121.09	-188.09	0.28	0.28	0.36	
9,425.00	3.97	35.74	9,418.11	195.47	122.10	-189.43	0.22	0.20	-1.40	
9,450.00	3.98	35.86	9,443.04	196.87	123.11	-190.79	0.05	0.04	0.48	
9,475.00	3.85	35.22	9,467.99	198.26	124.11	-192.13	0.55	-0.52	-2.56	
9,500.00	3.52	34.58	9,492.93	199.58	125.03	-193.40	1.33	-1.32	-2.56	
9,525.00	3.21	34.45	9,517.89	200.79	125.86	-194.57	1.24	-1.24	-0.52	
9,550.00	3.12	33.77	9,542.85	201.93	126.63	-195.67	0.39	-0.36	-2.72	
9,575.00	3.15	32.19	9,567.82	203.08	127.38	-196.78	0.37	0.12	-6.32	
9,600.00	3.17	32.33	9,592.78	204.24	128.11	-197.91	0.09	0.08	0.56	
9,625.00	3.16	33.10	9,617.74	205.41	128.86	-199.04	0.17	-0.04	3.08	
9,650.00	3.15	31.04	9,642.70	206.57	129.59	-200.17	0.46	-0.04	-8.24	
9,675.00	3.20	28.38	9,667.66	207.77	130.27	-201.33	0.62	0.20	-10.64	
9,700.00	3.23	25.97	9,692.62	209.02	130.91	-202.55	0.55	0.12	-9.64	
9,725.00	3.25	23.96	9,717.58	210.30	131.51	-203.80	0.46	0.08	-8.04	
9,750.00	3.30	22.53	9,742.54	211.61	132.07	-205.08	0.38	0.20	-5.72	
9,775.00	3.38	19.45	9,767.50	212.97	132.59	-206.42	0.79	0.32	-12.32	
9,800.00	3.49	16.60	9,792.46	214.40	133.06	-207.82	0.81	0.44	-11.40	
9,825.00	3.61	15.90	9,817.41	215.88	133.49	-209.28	0.51	0.48	-2.80	
9,850.00	3.69	15.80	9,842.36	217.42	133.92	-210.79	0.32	0.32	-0.40	
9,875.00	3.71	15.67	9,867.31	218.97	134.36	-212.32	0.09	0.08	-0.52	
9,900.00	3.70	15.76	9,892.25	220.52	134.80	-213.85	0.05	-0.04	0.36	
9,925.00	3.75	15.65	9,917.20	222.09	135.24	-215.39	0.20	0.20	-0.44	
9,950.00	3.79	14.97	9,942.15	223.67	135.67	-216.96	0.24	0.16	-2.72	
9,975.00	3.76	14.84	9,967.09	225.26	136.10	-218.52	0.12	-0.12	-0.52	
10,000.00	3.73	13.13	9,992.04	226.85	136.49	-220.09	0.46	-0.12	-6.84	
10,025.00	3.70	11.50	10,016.99	228.43	136.84	-221.65	0.44	-0.12	-6.52	
10,050.00	3.69	10.41	10,041.93	230.01	137.14	-223.22	0.28	-0.04	-4.36	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
10,075.00	3.65	8.98	10,066.88	231.59	137.41	-224.78	0.40	-0.16	-5.72
10,100.00	3.52	7.95	10,091.83	233.13	137.64	-226.31	0.58	-0.52	-4.12
10,125.00	3.41	7.10	10,116.79	234.63	137.84	-227.80	0.49	-0.44	-3.40
10,150.00	3.39	7.50	10,141.74	236.10	138.03	-229.26	0.12	-0.08	1.60
10,175.00	3.37	6.83	10,166.70	237.57	138.21	-230.71	0.18	-0.08	-2.68
10,200.00	3.30	6.00	10,191.66	239.01	138.38	-232.15	0.34	-0.28	-3.32
10,225.00	3.26	6.12	10,216.62	240.43	138.53	-233.56	0.16	-0.16	0.48
10,250.00	3.20	5.87	10,241.58	241.83	138.67	-234.95	0.25	-0.24	-1.00
10,275.00	3.20	5.46	10,266.54	243.22	138.81	-236.33	0.09	0.00	-1.64
10,300.00	3.20	5.24	10,291.50	244.61	138.94	-237.72	0.05	0.00	-0.88
10,325.00	3.19	4.44	10,316.46	246.00	139.06	-239.10	0.18	-0.04	-3.20
10,350.00	3.25	2.83	10,341.42	247.40	139.15	-240.49	0.43	0.24	-6.44
10,375.00	3.30	1.24	10,366.38	248.83	139.20	-241.92	0.41	0.20	-6.36
10,400.00	3.22	0.06	10,391.34	250.25	139.21	-243.34	0.42	-0.32	-4.72
10,425.00	3.14	359.66	10,416.30	251.64	139.21	-244.72	0.33	-0.32	-1.60
10,450.00	3.18	359.38	10,441.26	253.02	139.20	-246.10	0.17	0.16	-1.12
10,475.00	3.17	359.48	10,466.23	254.40	139.19	-247.48	0.05	-0.04	0.40
10,500.00	3.17	359.55	10,491.19	255.78	139.17	-248.86	0.02	0.00	0.28
10,525.00	3.24	359.55	10,516.15	257.18	139.16	-250.26	0.28	0.28	0.00
10,550.00	3.28	359.76	10,541.11	258.60	139.16	-251.68	0.17	0.16	0.84
10,575.00	3.36	3.81	10,566.07	260.05	139.20	-253.12	0.99	0.32	16.20
10,600.00	3.64	13.75	10,591.02	261.55	139.44	-254.61	2.67	1.12	39.76
10,625.00	3.87	17.71	10,615.97	263.12	139.88	-256.16	1.39	0.92	15.84
10,650.00	3.91	17.28	10,640.91	264.74	140.39	-257.75	0.20	0.16	-1.72
10,675.00	4.22	19.41	10,665.85	266.42	140.95	-259.41	1.38	1.24	8.52
10,700.00	4.72	22.46	10,690.77	268.24	141.65	-261.19	2.21	2.00	12.20
10,725.00	4.90	23.47	10,715.68	270.17	142.47	-263.08	0.80	0.72	4.04
10,750.00	5.02	23.03	10,740.59	272.16	143.32	-265.02	0.50	0.48	-1.76
10,775.00	5.15	22.87	10,765.49	274.20	144.19	-267.02	0.52	0.52	-0.64
10,800.00	5.19	23.27	10,790.39	276.27	145.07	-269.05	0.22	0.16	1.60
10,825.00	5.20	23.64	10,815.28	278.35	145.97	-271.08	0.14	0.04	1.48
10,850.00	5.23	22.99	10,840.18	280.43	146.87	-273.12	0.27	0.12	-2.60
10,875.00	5.25	21.65	10,865.08	282.55	147.74	-275.19	0.50	0.08	-5.36
10,900.00	5.22	20.63	10,889.97	284.67	148.56	-277.27	0.39	-0.12	-4.08
10,925.00	5.18	20.18	10,914.87	286.80	149.35	-279.36	0.23	-0.16	-1.80
10,950.00	5.13	20.37	10,939.77	288.90	150.13	-281.43	0.21	-0.20	0.76
10,975.00	5.00	20.43	10,964.67	290.97	150.90	-283.45	0.52	-0.52	0.24
11,000.00	4.75	20.39	10,989.58	292.96	151.64	-285.41	1.00	-1.00	-0.16
11,025.00	4.55	20.90	11,014.50	294.86	152.35	-287.27	0.82	-0.80	2.04
11,050.00	4.47	23.30	11,039.42	296.68	153.09	-289.05	0.82	-0.32	9.60
11,075.00	5.03	21.43	11,064.33	298.60	153.88	-290.93	2.32	2.24	-7.48
11,100.00	5.21	22.09	11,089.23	300.67	154.70	-292.96	0.76	0.72	2.64
11,125.00	5.02	22.36	11,114.14	302.73	155.55	-294.98	0.77	-0.76	1.08



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
11,150.00	4.99	21.26	11,139.04	304.76	156.36	-296.96	0.40	-0.12	-4.40	
11,175.00	5.17	19.02	11,163.94	306.83	157.12	-299.00	1.07	0.72	-8.96	
11,200.00	5.21	16.19	11,188.84	308.99	157.80	-301.12	1.04	0.16	-11.32	
11,225.00	5.25	13.89	11,213.74	311.19	158.39	-303.29	0.85	0.16	-9.20	
11,250.00	5.25	10.60	11,238.63	313.42	158.88	-305.50	1.20	0.00	-13.16	
11,275.00	5.15	4.71	11,263.53	315.67	159.18	-307.73	2.17	-0.40	-23.56	
11,300.00	5.03	359.42	11,288.43	317.88	159.26	-309.93	1.94	-0.48	-21.16	
11,325.00	5.05	355.81	11,313.33	320.07	159.17	-312.13	1.27	0.08	-14.44	
11,350.00	5.01	352.87	11,338.24	322.25	158.95	-314.32	1.04	-0.16	-11.76	
11,375.00	4.95	350.20	11,363.14	324.40	158.64	-316.48	0.96	-0.24	-10.68	
11,400.00	4.93	349.02	11,388.05	326.52	158.25	-318.61	0.41	-0.08	-4.72	
11,425.00	4.75	349.31	11,412.96	328.59	157.85	-320.70	0.73	-0.72	1.16	
11,450.00	4.68	349.65	11,437.88	330.61	157.48	-322.73	0.30	-0.28	1.36	
11,475.00	4.72	350.01	11,462.79	332.63	157.11	-324.77	0.20	0.16	1.44	
11,500.00	4.75	350.37	11,487.71	334.66	156.76	-326.81	0.17	0.12	1.44	
11,525.00	4.68	350.34	11,512.62	336.69	156.42	-328.85	0.28	-0.28	-0.12	
11,550.00	4.55	349.72	11,537.54	338.67	156.07	-330.85	0.56	-0.52	-2.48	
11,575.00	4.54	348.46	11,562.46	340.61	155.69	-332.81	0.40	-0.04	-5.04	
11,600.00	4.48	346.97	11,587.38	342.53	155.28	-334.75	0.53	-0.24	-5.96	
11,625.00	4.29	345.61	11,612.31	344.39	154.82	-336.63	0.87	-0.76	-5.44	
11,650.00	4.10	345.12	11,637.24	346.16	154.36	-338.41	0.77	-0.76	-1.96	
11,675.00	3.49	345.79	11,662.19	347.76	153.95	-340.03	2.45	-2.44	2.68	
11,700.00	3.71	345.01	11,687.14	349.28	153.55	-341.57	0.90	0.88	-3.12	
11,725.00	3.49	345.13	11,712.09	350.80	153.15	-343.10	0.88	-0.88	0.48	
11,742.00	3.55	345.14	11,729.06	351.81	152.88	-344.12	0.35	0.35	0.06	
11,853.00	2.78	340.33	11,839.89	357.66	151.09	-350.06	0.73	-0.69	-4.33	
First Gordon MWD Survey										
11,916.00	1.47	328.93	11,902.84	359.79	150.16	-352.23	2.17	-2.08	-18.10	
11,948.00	3.35	178.54	11,934.83	359.21	149.97	-351.66	14.64	5.88	-469.97	
11,980.00	8.10	171.63	11,966.66	356.04	150.32	-348.48	14.97	14.84	-21.59	
12,009.00	12.97	173.11	11,995.16	350.79	151.01	-343.20	16.83	16.81	5.10	
FTP: 12009' MD										
12,011.00	13.31	173.17	11,997.11	350.33	151.07	-342.74	16.83	16.82	3.12	
12,058.00	19.96	179.14	12,042.12	336.93	151.83	-329.31	14.59	14.15	12.70	
12,107.00	26.86	180.81	12,087.06	317.47	151.80	-309.88	14.15	14.08	3.41	
12,154.00	31.58	179.58	12,128.07	294.54	151.74	-286.97	10.12	10.04	-2.62	
12,201.00	37.47	177.32	12,166.78	267.92	152.50	-260.36	12.82	12.53	-4.81	
12,248.00	42.75	175.11	12,202.71	237.73	154.53	-230.10	11.63	11.23	-4.70	
12,296.00	47.99	171.45	12,236.43	203.83	158.57	-196.05	12.19	10.92	-7.63	
12,343.00	52.85	168.98	12,266.37	168.15	164.75	-160.12	11.10	10.34	-5.26	
12,391.00	57.93	166.88	12,293.62	129.54	173.03	-121.15	11.18	10.58	-4.38	
12,438.00	61.57	165.61	12,317.30	90.12	182.69	-81.31	8.09	7.74	-2.70	
12,486.00	64.12	164.02	12,339.20	48.91	193.88	-39.61	6.08	5.31	-3.31	
12,533.00	67.80	164.63	12,358.35	7.58	205.48	2.21	7.92	7.83	1.30	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
12,580.00	73.89	166.45	12,373.76	-35.39	216.54	45.66	13.46	12.96	3.87
12,627.00	79.57	167.67	12,384.55	-79.95	226.78	90.66	12.35	12.09	2.60
12,675.00	83.60	167.73	12,391.57	-126.34	236.89	137.48	8.40	8.40	0.13
12,722.00	87.12	169.45	12,395.37	-172.25	246.15	183.78	8.33	7.49	3.66
12,769.00	90.60	170.01	12,396.31	-218.48	254.53	230.35	7.50	7.40	1.19
12,865.00	89.81	172.32	12,395.96	-313.33	269.27	325.80	2.54	-0.82	2.41
12,959.00	90.23	176.12	12,395.93	-406.84	278.74	419.65	4.07	0.45	4.04
13,054.00	89.99	177.05	12,395.75	-501.67	284.40	514.64	1.01	-0.25	0.98
13,149.00	90.45	180.57	12,395.38	-596.63	286.37	609.59	3.74	0.48	3.71
13,243.00	92.01	182.22	12,393.37	-690.57	284.08	703.32	2.42	1.66	1.76
13,338.00	91.29	180.41	12,390.63	-785.51	281.90	798.04	2.05	-0.76	-1.91
13,432.00	90.31	179.40	12,389.32	-879.49	282.06	891.93	1.50	-1.04	-1.07
13,527.00	90.81	178.35	12,388.39	-974.47	283.93	986.89	1.22	0.53	-1.11
13,622.00	90.04	177.22	12,387.68	-1,069.39	287.60	1,081.88	1.44	-0.81	-1.19
13,717.00	90.48	180.19	12,387.25	-1,164.36	289.74	1,176.84	3.16	0.46	3.13
13,811.00	91.79	179.84	12,385.39	-1,258.34	289.72	1,270.71	1.44	1.39	-0.37
13,906.00	91.62	179.82	12,382.57	-1,353.29	290.00	1,365.57	0.18	-0.18	-0.02
14,001.00	90.71	180.08	12,380.63	-1,448.27	290.08	1,460.45	1.00	-0.96	0.27
14,095.00	90.87	180.05	12,379.34	-1,542.26	289.98	1,554.33	0.17	0.17	-0.03
14,190.00	90.68	179.41	12,378.05	-1,637.25	290.42	1,649.23	0.70	-0.20	-0.67
14,285.00	90.64	178.55	12,376.96	-1,732.23	292.12	1,744.18	0.91	-0.04	-0.91
14,380.00	91.40	182.26	12,375.27	-1,827.20	291.44	1,839.01	3.99	0.80	3.91
14,475.00	92.00	183.16	12,372.45	-1,922.05	286.96	1,933.53	1.14	0.63	0.95
14,569.00	90.72	179.16	12,370.22	-2,015.98	285.05	2,027.27	4.47	-1.36	-4.26
14,664.00	92.92	179.24	12,367.20	-2,110.92	286.38	2,122.16	2.32	2.32	0.08
14,759.00	88.88	178.40	12,365.71	-2,205.87	288.34	2,217.10	4.34	-4.25	-0.88
14,853.00	90.56	179.84	12,366.17	-2,299.85	289.78	2,311.04	2.35	1.79	1.53
14,948.00	88.69	180.67	12,366.79	-2,394.84	289.36	2,405.90	2.15	-1.97	0.87
15,043.00	89.14	181.68	12,368.59	-2,489.80	287.41	2,500.66	1.16	0.47	1.06
15,138.00	91.15	182.82	12,368.35	-2,584.72	283.68	2,595.30	2.43	2.12	1.20
15,233.00	90.51	176.67	12,366.97	-2,679.66	284.10	2,690.15	6.51	-0.67	-6.47
15,328.00	88.78	174.50	12,367.56	-2,774.37	291.41	2,785.10	2.92	-1.82	-2.28
15,423.00	90.19	177.60	12,368.41	-2,869.13	297.96	2,880.06	3.58	1.48	3.26
15,517.00	90.06	176.38	12,368.21	-2,963.00	302.89	2,974.06	1.31	-0.14	-1.30
15,611.00	89.30	180.03	12,368.73	-3,056.93	305.84	3,068.03	3.97	-0.81	3.88
15,705.00	87.46	179.74	12,371.39	-3,150.89	306.03	3,161.89	1.98	-1.96	-0.31
15,799.00	88.75	181.44	12,374.50	-3,244.83	305.06	3,255.68	2.27	1.37	1.81
15,894.00	87.32	179.41	12,377.76	-3,339.76	304.35	3,350.47	2.61	-1.51	-2.14
15,989.00	93.64	185.92	12,376.96	-3,434.56	299.94	3,444.95	9.55	6.65	6.85
16,083.00	89.08	181.75	12,374.73	-3,528.28	293.66	3,538.26	6.57	-4.85	-4.44
16,177.00	88.88	179.83	12,376.40	-3,622.25	292.37	3,632.06	2.05	-0.21	-2.04
16,272.00	86.51	178.11	12,380.22	-3,717.14	294.07	3,726.93	3.08	-2.49	-1.81
16,367.00	86.41	176.73	12,386.09	-3,811.86	298.34	3,821.75	1.45	-0.11	-1.45



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
16,462.00	86.51	177.79	12,391.95	-3,906.57	302.87	3,916.57	1.12	0.11	1.12	
16,557.00	90.39	180.37	12,394.52	-4,001.50	304.40	4,011.46	4.90	4.08	2.72	
16,651.00	92.49	180.81	12,392.16	-4,095.46	303.43	4,105.26	2.28	2.23	0.47	
16,745.00	91.31	180.25	12,389.05	-4,189.40	302.56	4,199.06	1.39	-1.26	-0.60	
16,840.00	91.03	179.75	12,387.11	-4,284.38	302.56	4,293.93	0.60	-0.29	-0.53	
16,935.00	89.06	180.39	12,387.03	-4,379.38	302.44	4,388.81	2.18	-2.07	0.67	
17,029.00	89.18	178.74	12,388.48	-4,473.36	303.16	4,482.72	1.76	0.13	-1.76	
17,123.00	88.27	179.18	12,390.57	-4,567.32	304.86	4,576.66	1.08	-0.97	0.47	
17,217.00	88.32	178.83	12,393.36	-4,661.26	306.49	4,670.57	0.38	0.05	-0.37	
17,312.00	88.12	178.92	12,396.31	-4,756.20	308.36	4,765.49	0.23	-0.21	0.09	
17,407.00	88.54	178.88	12,399.08	-4,851.14	310.18	4,860.41	0.44	0.44	-0.04	
17,501.00	89.74	179.07	12,400.49	-4,945.11	311.86	4,954.36	1.29	1.28	0.20	
17,596.00	90.33	178.58	12,400.44	-5,040.09	313.81	5,049.32	0.81	0.62	-0.52	
17,691.00	91.00	178.29	12,399.33	-5,135.05	316.41	5,144.29	0.77	0.71	-0.31	
17,786.00	92.38	178.33	12,396.53	-5,229.97	319.21	5,239.23	1.45	1.45	0.04	
17,880.00	90.47	178.46	12,394.19	-5,323.90	321.84	5,333.18	2.04	-2.03	0.14	
17,976.00	90.69	178.84	12,393.22	-5,419.86	324.10	5,429.15	0.46	0.23	0.40	
18,070.00	90.50	178.60	12,392.25	-5,513.84	326.20	5,523.11	0.33	-0.20	-0.26	
18,165.00	90.05	178.85	12,391.79	-5,608.81	328.31	5,618.08	0.54	-0.47	0.26	
18,261.00	90.02	177.97	12,391.73	-5,704.77	330.98	5,714.06	0.92	-0.03	-0.92	
18,355.00	89.85	180.00	12,391.84	-5,798.75	332.64	5,808.02	2.17	-0.18	2.16	
18,450.00	90.08	179.62	12,391.90	-5,893.75	332.96	5,902.92	0.47	0.24	-0.40	
18,544.00	89.57	178.97	12,392.18	-5,987.74	334.11	5,996.86	0.88	-0.54	-0.69	
18,639.00	89.82	181.29	12,392.69	-6,082.74	333.90	6,091.74	2.46	0.26	2.44	
18,733.00	89.46	181.11	12,393.28	-6,176.71	331.93	6,185.51	0.43	-0.38	-0.19	
18,827.00	89.32	180.56	12,394.28	-6,270.70	330.56	6,279.33	0.60	-0.15	-0.59	
18,922.00	89.35	180.27	12,395.38	-6,365.69	329.87	6,374.18	0.31	0.03	-0.31	
19,017.00	89.74	180.00	12,396.14	-6,460.69	329.65	6,469.05	0.50	0.41	-0.28	
19,111.00	89.99	179.34	12,396.36	-6,554.68	330.19	6,562.97	0.75	0.27	-0.70	
19,206.00	89.68	179.62	12,396.63	-6,649.68	331.05	6,657.90	0.44	-0.33	0.29	
19,301.00	90.22	179.09	12,396.72	-6,744.67	332.12	6,752.84	0.80	0.57	-0.56	
19,395.00	90.86	179.05	12,395.83	-6,838.65	333.65	6,846.78	0.68	0.68	-0.04	
19,490.00	90.27	179.86	12,394.89	-6,933.64	334.55	6,941.71	1.05	-0.62	0.85	
19,585.00	88.73	179.00	12,395.72	-7,028.63	335.49	7,036.63	1.86	-1.62	-0.91	
19,680.00	88.37	179.19	12,398.13	-7,123.59	336.99	7,131.56	0.43	-0.38	0.20	
19,774.00	88.12	179.73	12,401.00	-7,217.54	337.88	7,225.44	0.63	-0.27	0.57	
19,869.00	87.61	179.91	12,404.54	-7,312.47	338.18	7,320.28	0.57	-0.54	0.19	
19,912.00	86.54	179.28	12,406.74	-7,355.42	338.48	7,363.19	2.89	-2.49	-1.47	
Final Gordon MWD Survey										
19,975.00	86.54	179.28	12,410.54	-7,418.30	339.27	7,426.04	0.00	0.00	0.00	
Projection to TD										



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 358H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3356.40usft (McVay 8)
Site:	Pitchblende Federal Com 19-30	MD Reference:	RKB @ 3356.40usft (McVay 8)
Well:	358H	North Reference:	Grid
Wellbore:	OH / 66081	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,853.00	11,839.89	357.66	151.09	First Gordon MWD Survey
12,009.00	11,995.16	350.79	151.01	FTP: 12009' MD
19,912.00	12,406.74	-7,355.42	338.48	Final Gordon MWD Survey
19,975.00	12,410.54	-7,418.30	339.27	Projection to TD

Form 3160-5
(June 2015)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMNM136223

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
PITCHBLEND FED 19-30 358H9. API Well No.
30-025-45658-00-X110. Field and Pool or Exploratory Area
WILDCAT BONE SPRING11. County or Parish, State
LEA COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

COG OPERATING LLC

Contact: AMANDA AVERY

E-Mail: aaavery@concho.com

3a. Address

ONE CONCHO CENTER 600 W ILLINOIS AVENUE
MIDLAND, TX 79701-4287

3b. Phone No. (include area code)

Ph: 575-748-6940

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 19 T25S R35E 450FNL 610FEL
32.121914 N Lat, 103.400063 W Lon

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

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Hydraulic Fracture
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

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

Request for OCD extension of time to file BLM approved Form 3160-4

7/8/20 Test annulus to 1500# Set Composite Bridge plug @ 19,890' and test csg to 11,242#. Test Good.

9/11/20 to 9/25/20 Perf 12,580 -19,865' (870). Acdz w/ 45,448 gal 7 1/2%; frac w/ 14,722,290# sand & 14,245,094 gal fluid.

10/19/20 to 10/20/20 Drilled out CFP's. Clean down to PBTD @ 19,890'.

10/22/20 to 10/23/20 Set 2 7/8" 6.5# L-80 tbg @ 11,566' packer @ 11,556'. Install gas lift.

KZ

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

Electronic Submission #537966 verified by the BLM Well Information System

For COG OPERATING LLC, sent to the Hobbs

Committed to AFMSS for processing by PRISCILLA PEREZ on 11/19/2020 (21PP0593SE)

Name (Printed/Typed) AMANDA AVERY

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 11/18/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

ACCEPTED

JONATHON SHEPARD
Title PETROELUM ENGINEER

Date 12/10/2020

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

Office Hobbs

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.

(Instructions on page 2)

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

Additional data for EC transaction #537966 that would not fit on the form

32. Additional remarks, continued

11/14/20 Began flowing back & testing Date of first production

Revisions to Operator-Submitted EC Data for Sundry Notice #537966

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	HF SR	HF SR
Lease:	NMNM136223	NMNM136223
Agreement:		
Operator:	COG OPERATING LLC 2208 W MAIN STREET ARTESIA, NM 88210 Ph: 575-748-6940	COG OPERATING LLC ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701-4287 Ph: 432.685.4342
Admin Contact:	AMANDA AVERY REGULATORY ANALYST E-Mail: aavery@concho.com Ph: 575-748-6940	AMANDA AVERY REGULATORY ANALYST E-Mail: aavery@concho.com Ph: 575-748-6940
Tech Contact:	AMANDA AVERY REGULATORY ANALYST E-Mail: aavery@concho.com Ph: 575-748-6940	AMANDA AVERY REGULATORY ANALYST E-Mail: aavery@concho.com Ph: 575-748-6940
Location:		
State:	NM	NM
County:	LEA	LEA
Field/Pool:	FAIRVIEW MILLS; BONE SPRI	WILDCAT BONE SPRING
Well/Facility:	PITCHBLENDE 10 30 FEDERAL 358H Sec 19 T25S R35E Mer NMP 450FNL 610FEL	PITCHBLENDE FED 19-30 358H Sec 19 T25S R35E 450FNL 610FEL 32.121914 N Lat, 103.400063 W Lon

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 18518

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	18518	Action Type:	C-104C
OCD Reviewer	Condition								
plmartinez	None								