

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 30-025-45662		⁵ Pool Name Dogie Draw; Wolfcamp			⁶ Pool Code 17980	
⁷ Property Code 326533		⁸ Property Name Pitchblende 19 30 Federal			⁹ Well Number 457H	

II. ¹⁰ Surface Location

Ul or lot no. B	Section 19	Township 25S	Range 35E	Lot Idn	Feet from the 250	North/South Line North	Feet from the 1955	East/West line East	County Lea
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¹¹ Bottom Hole Location

Ul or lot no. G	Section 30	Township 25S	Range 35E	Lot Idn	Feet from the 2583	North/South Line North	Feet from the 1569	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

²¹ Spud Date 1/4/20	²² Ready Date 10/29/20	²³ TD 20,195’	²⁴ PBTD 20,030’	²⁵ Perforations 12,844-19,991’	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size		²⁹ Depth Set	³⁰ Sacks Cement
14 3/4”		10 3/4”		1030’	793
8 3/4”		7 5/8”		12,000’	1825
6 3/4”		5 1/2”		20,180’	1625
		2 7/8”		11,765’	

V. Well Test Data

³¹ Date New Oil 11/12/20	³² Gas Delivery Date 11/12/20	³³ Test Date 11/12/20	³⁴ Test Length 24 Hrs	³⁵ Tbg. Pressure 4087#	³⁶ Csg. Pressure 2200#
³⁷ Choke Size 20/64	³⁸ Oil 214	³⁹ Water 1355	⁴⁰ Gas 968		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: <i>Amanda Avery</i>			OIL CONSERVATION DIVISION Approved by: KURT SIMMONS		
Printed name: Amanda Avery			Title: NMOCD, SANTA FE		
Title: Regulatory Analyst			Approval Date: 04/15/2021		
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 30-025-45662	Pool Code 17980	Pool Name Dogie Draw; Wolfcamp
Property Code 326533	Property Name PITCHBLEND FEDERAL 19-30	
Well Number 457H		
OGRID No. 229137	Operator Name COG OPERATING, LLC	
	Elevation 3337.7'	

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	19	25-S	35-E		250	NORTH	1955	EAST	LEA

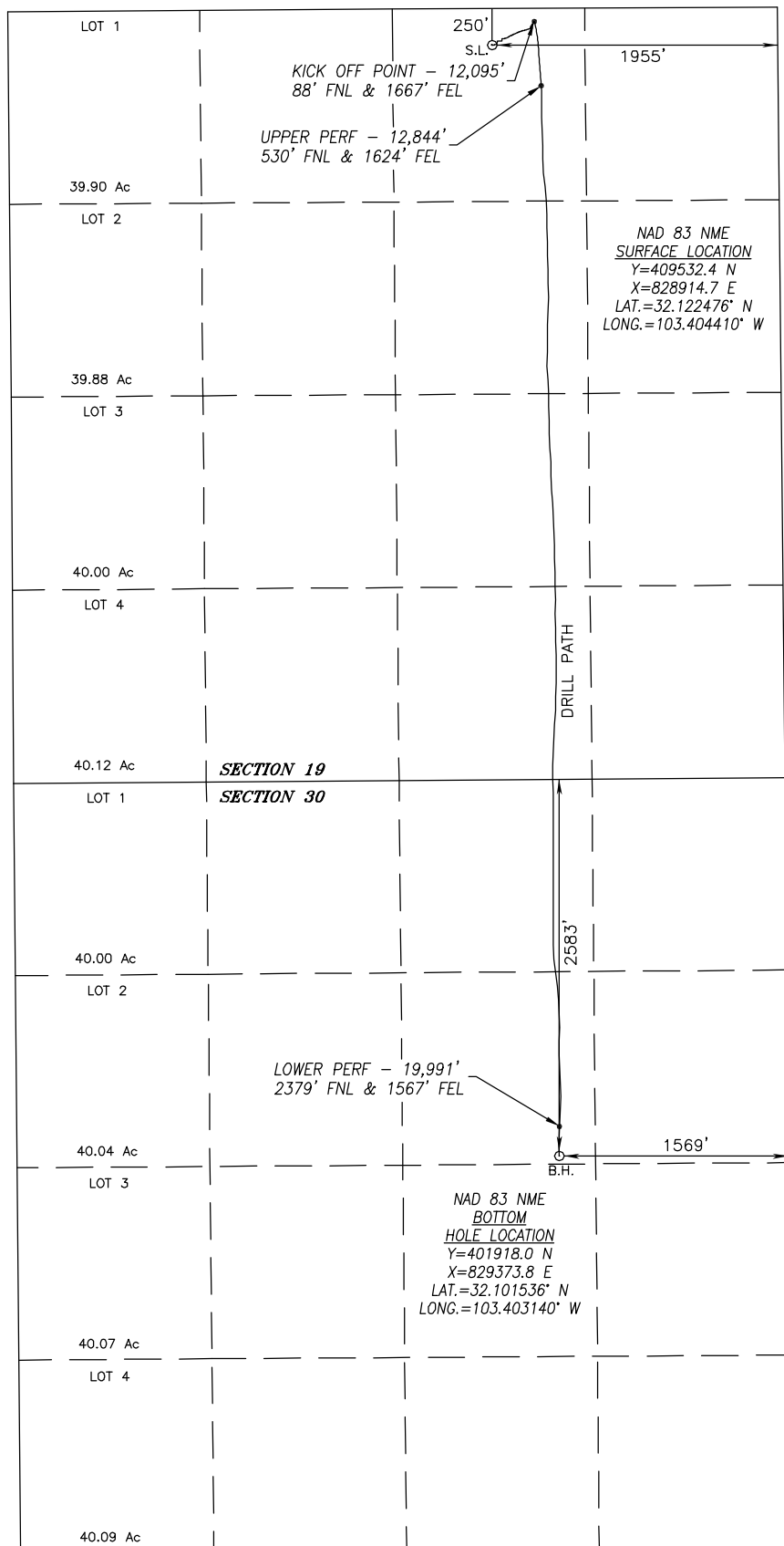
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	30	25-S	35-E		2583	NORTH	1569	EAST	LEA
Dedicated Acres 240	Joint or Infill	Consolidation Code	Order No.						

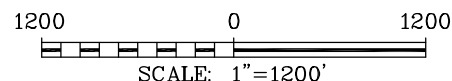
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

Property Code 326533	Property Name PITCHBLENDE FEDERAL 19-30	Well Number 457H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3337.7'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE PITCHBLENDE FEDERAL 19-30 #457H SUPPLIED TO HARCROW SURVEYING, LLC ON OCTOBER 22, 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 11/11/20

Signature Date

Amanda Avery

Printed Name

aavery@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. 30, 2020

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Harcrow 10/26/20

Certificate No. CHAD HARCROW 17777

PAGE 2 OF 2

W.O. #20-1393

DRAWN BY: WN



COG Operating LLC

**Lea Co., NM
Pitchblende Federal
19-30 457H**

Wellbore #1

Design: Wellbore #1

Standard Survey Report

30 March, 2020





Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Project	Lea Co., NM, Test		
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		
Site Position:		Northing:	409,474.100 usft
From:	Map	Easting:	787,678.000 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 20.462348 N
		Longitude:	103° 24' 14.780437 W
		Grid Convergence:	0.49 °

Well	19-30 457H		
Well Position	+N/-S	0.00 ft	Northing: 409,474.400 usft
	+E/-W	0.00 ft	Easting: 787,728.000 usft
Position Uncertainty	2.00 ft	Wellhead Elevation:	ft
		Latitude:	32° 7' 20.461049 N
		Longitude:	103° 24' 14.199055 W
		Ground Level:	3,337.70 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM_FILE	12/31/2019	6.55
			Dip Angle (°) 59.75
			Field Strength (nT) 47,676.20000000

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)
	0.00	0.00	0.00
			Direction (°) 176.71

Survey Program	Date	3/30/2020		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	11,887.00	Survey #2 Gyro (Wellbore #1)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,887.00	20,195.00	Survey #3 C \ L (Wellbore #1)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.37	310.29	100.00	0.21	-0.25	-0.22	0.37	0.37	0.00
125.00	0.30	323.93	125.00	0.31	-0.35	-0.33	0.42	-0.28	54.56
150.00	0.55	301.75	150.00	0.43	-0.49	-0.46	1.18	1.00	-88.72
175.00	0.40	323.16	175.00	0.56	-0.64	-0.60	0.92	-0.60	85.64
200.00	0.50	316.12	200.00	0.71	-0.77	-0.75	0.46	0.40	-28.16
225.00	0.56	303.87	225.00	0.86	-0.95	-0.91	0.51	0.24	-49.00
250.00	0.46	307.54	249.99	0.99	-1.13	-1.05	0.42	-0.40	14.68
275.00	0.46	305.24	274.99	1.11	-1.29	-1.18	0.07	0.00	-9.20
300.00	0.47	309.94	299.99	1.23	-1.45	-1.31	0.16	0.04	18.80



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
325.00	0.42	312.05	324.99	1.36	-1.60	-1.45	0.21	-0.20	8.44
350.00	0.42	323.15	349.99	1.49	-1.72	-1.59	0.32	0.00	44.40
375.00	0.51	318.87	374.99	1.65	-1.85	-1.75	0.39	0.36	-17.12
400.00	0.46	316.12	399.99	1.81	-1.99	-1.92	0.22	-0.20	-11.00
425.00	0.59	300.76	424.99	1.94	-2.17	-2.06	0.76	0.52	-61.44
450.00	0.51	301.99	449.99	2.07	-2.38	-2.20	0.32	-0.32	4.92
475.00	0.42	308.16	474.99	2.18	-2.54	-2.33	0.41	-0.36	24.68
500.00	0.39	303.81	499.99	2.29	-2.68	-2.44	0.17	-0.12	-17.40
525.00	0.38	294.04	524.99	2.37	-2.83	-2.53	0.27	-0.04	-39.08
550.00	0.41	294.97	549.98	2.44	-2.99	-2.61	0.12	0.12	3.72
575.00	0.39	297.90	574.98	2.52	-3.14	-2.69	0.11	-0.08	11.72
600.00	0.32	295.31	599.98	2.59	-3.28	-2.77	0.29	-0.28	-10.36
625.00	0.29	312.05	624.98	2.66	-3.39	-2.85	0.37	-0.12	66.96
650.00	0.35	312.24	649.98	2.75	-3.50	-2.95	0.24	0.24	0.76
675.00	0.40	314.45	674.98	2.87	-3.61	-3.07	0.21	0.20	8.84
700.00	0.43	307.62	699.98	2.98	-3.75	-3.19	0.23	0.12	-27.32
725.00	0.43	313.14	724.98	3.11	-3.89	-3.32	0.17	0.00	22.08
750.00	0.45	305.32	749.98	3.23	-4.04	-3.45	0.25	0.08	-31.28
775.00	0.45	301.12	774.98	3.33	-4.21	-3.57	0.13	0.00	-16.80
800.00	0.37	298.39	799.98	3.42	-4.36	-3.67	0.33	-0.32	-10.92
825.00	0.37	287.75	824.98	3.49	-4.51	-3.74	0.27	0.00	-42.56
850.00	0.31	290.06	849.98	3.53	-4.65	-3.80	0.25	-0.24	9.24
875.00	0.32	311.69	874.98	3.60	-4.77	-3.87	0.47	0.04	86.52
900.00	0.42	298.18	899.98	3.69	-4.90	-3.97	0.53	0.40	-54.04
925.00	0.35	300.66	924.98	3.78	-5.04	-4.06	0.29	-0.28	9.92
950.00	0.43	287.50	949.98	3.84	-5.20	-4.13	0.48	0.32	-52.64
975.00	0.41	279.63	974.98	3.89	-5.38	-4.19	0.24	-0.08	-31.48
1,000.00	0.30	277.75	999.97	3.91	-5.53	-4.22	0.44	-0.44	-7.52
1,025.00	0.24	284.55	1,024.97	3.93	-5.65	-4.25	0.27	-0.24	27.20
1,050.00	0.38	281.95	1,049.97	3.96	-5.78	-4.29	0.56	0.56	-10.40
1,075.00	0.33	284.01	1,074.97	4.00	-5.93	-4.33	0.21	-0.20	8.24
1,100.00	0.21	267.11	1,099.97	4.01	-6.04	-4.35	0.57	-0.48	-67.60
1,125.00	0.23	214.18	1,124.97	3.97	-6.12	-4.31	0.79	0.08	-211.72
1,150.00	0.35	163.60	1,149.97	3.85	-6.13	-4.20	1.08	0.48	-202.32
1,175.00	0.40	155.35	1,174.97	3.70	-6.07	-4.04	0.29	0.20	-33.00
1,200.00	0.42	154.78	1,199.97	3.54	-5.99	-3.88	0.08	0.08	-2.28
1,225.00	0.38	159.90	1,224.97	3.38	-5.92	-3.71	0.21	-0.16	20.48
1,250.00	0.42	153.03	1,249.97	3.22	-5.85	-3.55	0.25	0.16	-27.48
1,275.00	0.35	158.61	1,274.97	3.07	-5.78	-3.39	0.32	-0.28	22.32
1,300.00	0.37	155.35	1,299.97	2.92	-5.72	-3.24	0.11	0.08	-13.04
1,325.00	0.29	162.31	1,324.97	2.79	-5.67	-3.11	0.36	-0.32	27.84
1,350.00	0.35	152.64	1,349.97	2.66	-5.62	-2.98	0.32	0.24	-38.68
1,375.00	0.36	161.60	1,374.97	2.52	-5.56	-2.83	0.23	0.04	35.84



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,400.00	0.36	157.56	1,399.97	2.37	-5.50	-2.68	0.10	0.00	-16.16
1,425.00	0.42	150.48	1,424.97	2.22	-5.43	-2.53	0.31	0.24	-28.32
1,450.00	0.36	137.59	1,449.97	2.08	-5.33	-2.38	0.42	-0.24	-51.56
1,475.00	0.38	124.76	1,474.97	1.97	-5.21	-2.27	0.34	0.08	-51.32
1,500.00	0.21	113.92	1,499.97	1.91	-5.10	-2.20	0.71	-0.68	-43.36
1,525.00	0.34	102.94	1,524.97	1.87	-4.98	-2.16	0.56	0.52	-43.92
1,550.00	0.37	95.07	1,549.97	1.85	-4.83	-2.12	0.23	0.12	-31.48
1,575.00	0.35	91.79	1,574.96	1.84	-4.67	-2.11	0.11	-0.08	-13.12
1,600.00	0.36	81.23	1,599.96	1.85	-4.52	-2.11	0.26	0.04	-42.24
1,625.00	0.31	73.89	1,624.96	1.88	-4.38	-2.13	0.26	-0.20	-29.36
1,650.00	0.31	72.77	1,649.96	1.92	-4.25	-2.16	0.02	0.00	-4.48
1,675.00	0.27	75.12	1,674.96	1.95	-4.13	-2.19	0.17	-0.16	9.40
1,700.00	0.26	94.22	1,699.96	1.97	-4.01	-2.19	0.35	-0.04	76.40
1,725.00	0.22	81.79	1,724.96	1.97	-3.91	-2.19	0.26	-0.16	-49.72
1,750.00	0.27	98.32	1,749.96	1.97	-3.80	-2.18	0.34	0.20	66.12
1,775.00	0.44	94.89	1,774.96	1.95	-3.65	-2.16	0.68	0.68	-13.72
1,800.00	0.43	91.08	1,799.96	1.94	-3.46	-2.14	0.12	-0.04	-15.24
1,825.00	0.32	86.64	1,824.96	1.94	-3.30	-2.13	0.45	-0.44	-17.76
1,850.00	0.46	86.65	1,849.96	1.95	-3.13	-2.13	0.56	0.56	0.04
1,875.00	0.43	87.66	1,874.96	1.96	-2.93	-2.13	0.12	-0.12	4.04
1,900.00	0.36	77.74	1,899.96	1.98	-2.76	-2.14	0.39	-0.28	-39.68
1,925.00	0.44	81.75	1,924.96	2.01	-2.59	-2.16	0.34	0.32	16.04
1,950.00	0.36	80.76	1,949.96	2.04	-2.42	-2.17	0.32	-0.32	-3.96
1,975.00	0.45	83.73	1,974.96	2.06	-2.24	-2.19	0.37	0.36	11.88
2,000.00	0.42	93.31	1,999.96	2.07	-2.05	-2.18	0.31	-0.12	38.32
2,025.00	0.35	93.47	2,024.96	2.06	-1.89	-2.16	0.28	-0.28	0.64
2,050.00	0.37	95.97	2,049.96	2.04	-1.73	-2.14	0.10	0.08	10.00
2,075.00	0.43	94.08	2,074.95	2.03	-1.55	-2.12	0.25	0.24	-7.56
2,100.00	0.48	97.77	2,099.95	2.01	-1.36	-2.08	0.23	0.20	14.76
2,125.00	0.53	93.40	2,124.95	1.99	-1.14	-2.05	0.25	0.20	-17.48
2,150.00	0.52	98.96	2,149.95	1.96	-0.91	-2.01	0.21	-0.04	22.24
2,175.00	0.57	99.83	2,174.95	1.92	-0.68	-1.96	0.20	0.20	3.48
2,200.00	0.75	100.40	2,199.95	1.87	-0.39	-1.89	0.72	0.72	2.28
2,225.00	0.67	99.96	2,224.95	1.82	-0.09	-1.82	0.32	-0.32	-1.76
2,250.00	0.69	103.12	2,249.95	1.76	0.20	-1.74	0.17	0.08	12.64
2,275.00	0.72	100.99	2,274.94	1.70	0.50	-1.66	0.16	0.12	-8.52
2,300.00	0.72	99.93	2,299.94	1.64	0.81	-1.59	0.05	0.00	-4.24
2,325.00	0.75	98.80	2,324.94	1.59	1.13	-1.52	0.13	0.12	-4.52
2,350.00	0.82	96.95	2,349.94	1.54	1.47	-1.45	0.30	0.28	-7.40
2,375.00	0.86	94.88	2,374.93	1.50	1.83	-1.39	0.20	0.16	-8.28
2,400.00	0.77	95.37	2,399.93	1.47	2.19	-1.34	0.36	-0.36	1.96
2,425.00	0.90	90.02	2,424.93	1.45	2.55	-1.31	0.61	0.52	-21.40
2,450.00	0.82	89.71	2,449.93	1.46	2.93	-1.29	0.32	-0.32	-1.24



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
2,475.00	0.80	88.59	2,474.92	1.46	3.28	-1.27	0.10	-0.08	-4.48	
2,500.00	0.86	85.89	2,499.92	1.48	3.64	-1.27	0.29	0.24	-10.80	
2,525.00	1.03	86.68	2,524.92	1.50	4.05	-1.27	0.68	0.68	3.16	
2,550.00	1.04	84.95	2,549.91	1.54	4.50	-1.28	0.13	0.04	-6.92	
2,575.00	1.20	86.77	2,574.91	1.57	4.99	-1.28	0.66	0.64	7.28	
2,600.00	1.15	84.47	2,599.90	1.61	5.50	-1.29	0.27	-0.20	-9.20	
2,625.00	1.13	78.81	2,624.90	1.68	5.99	-1.34	0.46	-0.08	-22.64	
2,650.00	1.33	82.61	2,649.89	1.77	6.52	-1.39	0.86	0.80	15.20	
2,675.00	1.33	83.91	2,674.89	1.84	7.10	-1.43	0.12	0.00	5.20	
2,700.00	1.40	82.42	2,699.88	1.91	7.69	-1.46	0.31	0.28	-5.96	
2,725.00	1.34	82.36	2,724.87	1.99	8.28	-1.51	0.24	-0.24	-0.24	
2,750.00	1.32	87.12	2,749.87	2.04	8.86	-1.53	0.45	-0.08	19.04	
2,775.00	1.36	85.41	2,774.86	2.08	9.44	-1.53	0.23	0.16	-6.84	
2,800.00	1.42	86.22	2,799.85	2.12	10.05	-1.54	0.25	0.24	3.24	
2,825.00	1.48	86.60	2,824.84	2.16	10.68	-1.55	0.24	0.24	1.52	
2,850.00	1.50	86.41	2,849.83	2.20	11.33	-1.55	0.08	0.08	-0.76	
2,875.00	1.55	85.96	2,874.83	2.25	11.99	-1.55	0.21	0.20	-1.80	
2,900.00	1.53	84.40	2,899.82	2.30	12.66	-1.57	0.19	-0.08	-6.24	
2,925.00	1.64	84.17	2,924.81	2.37	13.35	-1.60	0.44	0.44	-0.92	
2,950.00	1.71	85.71	2,949.80	2.44	14.08	-1.62	0.33	0.28	6.16	
2,975.00	1.76	85.95	2,974.78	2.49	14.83	-1.64	0.20	0.20	0.96	
3,000.00	1.78	86.05	2,999.77	2.54	15.60	-1.64	0.08	0.08	0.40	
3,025.00	1.75	85.66	3,024.76	2.60	16.37	-1.66	0.13	-0.12	-1.56	
3,050.00	1.90	86.38	3,049.75	2.66	17.16	-1.67	0.61	0.60	2.88	
3,075.00	1.89	86.27	3,074.73	2.71	17.99	-1.67	0.04	-0.04	-0.44	
3,100.00	1.93	87.14	3,099.72	2.76	18.82	-1.67	0.20	0.16	3.48	
3,125.00	2.10	85.78	3,124.71	2.81	19.70	-1.68	0.71	0.68	-5.44	
3,150.00	2.20	85.69	3,149.69	2.88	20.63	-1.69	0.40	0.40	-0.36	
3,175.00	2.19	85.34	3,174.67	2.96	21.59	-1.71	0.07	-0.04	-1.40	
3,200.00	2.24	85.10	3,199.65	3.04	22.55	-1.74	0.20	0.20	-0.96	
3,225.00	2.25	84.19	3,224.63	3.13	23.53	-1.77	0.15	0.04	-3.64	
3,250.00	2.23	85.52	3,249.61	3.21	24.50	-1.80	0.22	-0.08	5.32	
3,275.00	2.19	83.98	3,274.59	3.30	25.46	-1.84	0.29	-0.16	-6.16	
3,300.00	2.18	84.03	3,299.58	3.40	26.41	-1.88	0.04	-0.04	0.20	
3,325.00	1.89	75.41	3,324.56	3.56	27.28	-1.98	1.68	-1.16	-34.48	
3,350.00	1.31	37.05	3,349.55	3.89	27.85	-2.28	4.74	-2.32	-153.44	
3,375.00	1.43	14.67	3,374.54	4.42	28.10	-2.80	2.18	0.48	-89.52	
3,400.00	1.64	8.33	3,399.53	5.07	28.23	-3.44	1.08	0.84	-25.36	
3,425.00	1.77	9.50	3,424.52	5.81	28.35	-4.17	0.54	0.52	4.68	
3,450.00	1.89	12.20	3,449.51	6.59	28.50	-4.95	0.59	0.48	10.80	
3,475.00	2.00	12.81	3,474.50	7.42	28.68	-5.76	0.45	0.44	2.44	
3,500.00	2.03	14.20	3,499.48	8.27	28.89	-6.60	0.23	0.12	5.56	
3,525.00	2.13	16.22	3,524.46	9.15	29.13	-7.46	0.50	0.40	8.08	
3,550.00	2.31	19.41	3,549.45	10.07	29.42	-8.37	0.87	0.72	12.76	



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,575.00	2.41	21.70	3,574.42	11.04	29.78	-9.31	0.55	0.40	9.16
3,600.00	2.42	21.01	3,599.40	12.02	30.17	-10.27	0.12	0.04	-2.76
3,625.00	2.40	19.58	3,624.38	13.00	30.53	-11.23	0.25	-0.08	-5.72
3,650.00	2.45	22.06	3,649.36	13.99	30.91	-12.19	0.46	0.20	9.92
3,675.00	2.34	21.54	3,674.34	14.96	31.30	-13.14	0.45	-0.44	-2.08
3,700.00	1.51	17.35	3,699.32	15.75	31.58	-13.91	3.37	-3.32	-16.76
3,725.00	1.08	18.80	3,724.32	16.29	31.76	-14.44	1.72	-1.72	5.80
3,750.00	0.99	20.39	3,749.31	16.71	31.91	-14.85	0.38	-0.36	6.36
3,775.00	0.90	10.34	3,774.31	17.11	32.02	-15.24	0.75	-0.36	-40.20
3,800.00	0.94	19.01	3,799.30	17.50	32.12	-15.62	0.58	0.16	34.68
3,825.00	0.96	24.46	3,824.30	17.88	32.27	-16.00	0.37	0.08	21.80
3,850.00	0.96	22.43	3,849.30	18.26	32.44	-16.37	0.14	0.00	-8.12
3,875.00	0.97	26.98	3,874.29	18.65	32.62	-16.74	0.31	0.04	18.20
3,900.00	0.99	22.43	3,899.29	19.03	32.80	-17.12	0.32	0.08	-18.20
3,925.00	0.98	23.22	3,924.29	19.43	32.96	-17.51	0.07	-0.04	3.16
3,950.00	0.97	18.57	3,949.28	19.83	33.11	-17.89	0.32	-0.04	-18.60
3,975.00	1.18	16.49	3,974.28	20.27	33.25	-18.33	0.85	0.84	-8.32
4,000.00	0.96	27.46	3,999.27	20.71	33.42	-18.76	1.20	-0.88	43.88
4,025.00	0.94	26.66	4,024.27	21.08	33.61	-19.11	0.10	-0.08	-3.20
4,050.00	0.99	26.19	4,049.27	21.45	33.80	-19.48	0.20	0.20	-1.88
4,075.00	0.97	24.96	4,074.26	21.84	33.98	-19.85	0.12	-0.08	-4.92
4,100.00	0.93	22.64	4,099.26	22.22	34.15	-20.22	0.22	-0.16	-9.28
4,125.00	1.09	14.61	4,124.26	22.64	34.29	-20.63	0.85	0.64	-32.12
4,150.00	1.05	12.80	4,149.25	23.09	34.40	-21.08	0.21	-0.16	-7.24
4,175.00	1.11	10.97	4,174.25	23.55	34.50	-21.53	0.28	0.24	-7.32
4,200.00	1.16	7.65	4,199.24	24.04	34.58	-22.01	0.33	0.20	-13.28
4,225.00	1.18	7.16	4,224.24	24.55	34.64	-22.52	0.09	0.08	-1.96
4,250.00	1.17	6.96	4,249.23	25.05	34.71	-23.02	0.04	-0.04	-0.80
4,275.00	1.19	6.77	4,274.23	25.57	34.77	-23.53	0.08	0.08	-0.76
4,300.00	1.19	7.18	4,299.22	26.08	34.83	-24.04	0.03	0.00	1.64
4,325.00	1.17	9.24	4,324.22	26.59	34.90	-24.54	0.19	-0.08	8.24
4,350.00	1.18	10.91	4,349.21	27.09	34.99	-25.04	0.14	0.04	6.68
4,375.00	0.74	70.54	4,374.21	27.40	35.19	-25.34	4.11	-1.76	238.52
4,400.00	0.72	71.56	4,399.21	27.50	35.50	-25.42	0.10	-0.08	4.08
4,425.00	0.73	71.89	4,424.20	27.60	35.80	-25.50	0.04	0.04	1.32
4,450.00	0.77	72.36	4,449.20	27.70	36.11	-25.59	0.16	0.16	1.88
4,475.00	0.81	75.62	4,474.20	27.80	36.44	-25.66	0.24	0.16	13.04
4,500.00	0.89	71.21	4,499.20	27.91	36.79	-25.75	0.41	0.32	-17.64
4,525.00	1.00	68.56	4,524.19	28.05	37.18	-25.87	0.47	0.44	-10.60
4,550.00	1.30	66.79	4,549.19	28.24	37.64	-26.03	1.21	1.20	-7.08
4,575.00	1.56	70.16	4,574.18	28.47	38.23	-26.23	1.09	1.04	13.48
4,600.00	1.79	78.11	4,599.17	28.66	38.93	-26.38	1.31	0.92	31.80
4,625.00	2.17	78.58	4,624.15	28.84	39.77	-26.51	1.52	1.52	1.88



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,650.00	2.21	78.79	4,649.14	29.02	40.71	-26.64	0.16	0.16	0.84	
4,675.00	2.38	80.65	4,674.12	29.20	41.70	-26.76	0.74	0.68	7.44	
4,700.00	2.62	84.73	4,699.09	29.34	42.78	-26.84	1.19	0.96	16.32	
4,725.00	2.71	86.85	4,724.07	29.42	43.94	-26.85	0.53	0.36	8.48	
4,750.00	2.73	85.16	4,749.04	29.51	45.12	-26.87	0.33	0.08	-6.76	
4,775.00	2.73	86.95	4,774.01	29.59	46.31	-26.88	0.34	0.00	7.16	
4,800.00	2.76	87.50	4,798.98	29.65	47.50	-26.87	0.16	0.12	2.20	
4,825.00	2.55	84.99	4,823.95	29.72	48.66	-26.88	0.96	-0.84	-10.04	
4,850.00	1.06	87.81	4,848.94	29.78	49.44	-26.89	5.97	-5.96	11.28	
4,875.00	0.61	82.28	4,873.94	29.81	49.81	-26.90	1.83	-1.80	-22.12	
4,900.00	0.56	81.33	4,898.94	29.84	50.06	-26.92	0.20	-0.20	-3.80	
4,925.00	0.58	86.80	4,923.94	29.87	50.31	-26.93	0.23	0.08	21.88	
4,950.00	0.90	97.55	4,948.93	29.85	50.63	-26.89	1.39	1.28	43.00	
4,975.00	1.34	103.05	4,973.93	29.76	51.11	-26.77	1.81	1.76	22.00	
5,000.00	1.75	105.51	4,998.92	29.59	51.76	-26.57	1.66	1.64	9.84	
5,025.00	1.95	104.20	5,023.91	29.38	52.54	-26.32	0.82	0.80	-5.24	
5,050.00	2.23	105.58	5,048.89	29.15	53.42	-26.03	1.14	1.12	5.52	
5,075.00	2.56	107.56	5,073.87	28.85	54.42	-25.68	1.36	1.32	7.92	
5,100.00	2.75	106.20	5,098.84	28.51	55.53	-25.28	0.80	0.76	-5.44	
5,125.00	2.98	107.31	5,123.81	28.15	56.72	-24.85	0.95	0.92	4.44	
5,150.00	3.14	110.64	5,148.77	27.72	57.99	-24.34	0.96	0.64	13.32	
5,175.00	3.13	110.04	5,173.74	27.24	59.27	-23.80	0.14	-0.04	-2.40	
5,200.00	2.97	109.44	5,198.70	26.79	60.52	-23.27	0.65	-0.64	-2.40	
5,225.00	1.67	90.52	5,223.68	26.57	61.49	-23.00	5.97	-5.20	-75.68	
5,250.00	1.14	42.77	5,248.67	26.75	62.03	-23.15	4.94	-2.12	-191.00	
5,275.00	1.31	24.80	5,273.67	27.19	62.32	-23.57	1.67	0.68	-71.88	
5,300.00	1.46	19.51	5,298.66	27.75	62.54	-24.12	0.79	0.60	-21.16	
5,325.00	1.28	26.25	5,323.65	28.30	62.77	-24.66	0.97	-0.72	26.96	
5,350.00	1.29	22.24	5,348.65	28.82	63.00	-25.15	0.36	0.04	-16.04	
5,375.00	1.36	19.77	5,373.64	29.36	63.21	-25.68	0.36	0.28	-9.88	
5,400.00	1.22	20.87	5,398.63	29.88	63.41	-26.20	0.57	-0.56	4.40	
5,425.00	1.17	16.49	5,423.63	30.38	63.57	-26.68	0.42	-0.20	-17.52	
5,450.00	1.17	15.98	5,448.62	30.87	63.71	-27.16	0.04	0.00	-2.04	
5,475.00	1.10	16.05	5,473.62	31.34	63.85	-27.63	0.28	-0.28	0.28	
5,500.00	1.10	14.08	5,498.61	31.81	63.98	-28.08	0.15	0.00	-7.88	
5,525.00	1.09	13.42	5,523.61	32.27	64.09	-28.54	0.06	-0.04	-2.64	
5,550.00	0.99	13.07	5,548.61	32.71	64.19	-28.97	0.40	-0.40	-1.40	
5,575.00	1.11	8.63	5,573.60	33.16	64.28	-29.42	0.58	0.48	-17.76	
5,600.00	1.06	10.21	5,598.60	33.63	64.36	-29.88	0.23	-0.20	6.32	
5,625.00	0.99	10.31	5,623.59	34.07	64.44	-30.31	0.28	-0.28	0.40	
5,650.00	1.13	7.03	5,648.59	34.53	64.50	-30.77	0.61	0.56	-13.12	
5,675.00	1.02	7.93	5,673.58	34.99	64.57	-31.23	0.45	-0.44	3.60	
5,700.00	0.91	10.59	5,698.58	35.41	64.63	-31.64	0.47	-0.44	10.64	



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,725.00	1.15	5.18	5,723.58	35.85	64.69	-32.08	1.03	0.96	-21.64
5,750.00	1.03	8.93	5,748.57	36.32	64.75	-32.55	0.56	-0.48	15.00
5,775.00	0.92	11.53	5,773.57	36.74	64.82	-32.96	0.47	-0.44	10.40
5,800.00	1.06	6.78	5,798.56	37.17	64.89	-33.38	0.65	0.56	-19.00
5,825.00	1.03	11.65	5,823.56	37.62	64.96	-33.83	0.37	-0.12	19.48
5,850.00	0.94	11.37	5,848.56	38.04	65.05	-34.24	0.36	-0.36	-1.12
5,875.00	1.06	11.25	5,873.55	38.47	65.14	-34.67	0.48	0.48	-0.48
5,900.00	1.00	11.35	5,898.55	38.91	65.22	-35.10	0.24	-0.24	0.40
5,925.00	0.99	9.42	5,923.55	39.33	65.30	-35.52	0.14	-0.04	-7.72
5,950.00	1.01	9.21	5,948.54	39.76	65.37	-35.95	0.08	0.08	-0.84
5,975.00	0.96	10.10	5,973.54	40.19	65.44	-36.37	0.21	-0.20	3.56
6,000.00	1.01	8.77	5,998.53	40.61	65.52	-36.79	0.22	0.20	-5.32
6,025.00	0.89	13.57	6,023.53	41.02	65.59	-37.19	0.58	-0.48	19.20
6,050.00	0.88	14.81	6,048.53	41.39	65.69	-37.56	0.09	-0.04	4.96
6,075.00	0.82	25.73	6,073.52	41.74	65.82	-37.89	0.69	-0.24	43.68
6,100.00	0.64	51.94	6,098.52	41.99	66.00	-38.13	1.50	-0.72	104.84
6,125.00	0.71	60.52	6,123.52	42.15	66.25	-38.28	0.49	0.28	34.32
6,150.00	0.73	59.60	6,148.52	42.31	66.52	-38.42	0.09	0.08	-3.68
6,175.00	0.73	69.72	6,173.52	42.44	66.81	-38.54	0.52	0.00	40.48
6,200.00	0.75	64.44	6,198.52	42.57	67.10	-38.65	0.28	0.08	-21.12
6,225.00	0.76	62.86	6,223.51	42.71	67.40	-38.78	0.09	0.04	-6.32
6,250.00	0.74	65.69	6,248.51	42.86	67.69	-38.90	0.17	-0.08	11.32
6,275.00	0.79	59.59	6,273.51	43.01	67.99	-39.04	0.38	0.20	-24.40
6,300.00	1.22	70.39	6,298.50	43.19	68.39	-39.19	1.87	1.72	43.20
6,325.00	2.17	82.86	6,323.49	43.33	69.11	-39.30	4.05	3.80	49.88
6,350.00	2.99	81.99	6,348.47	43.48	70.22	-39.38	3.28	3.28	-3.48
6,375.00	3.22	82.61	6,373.43	43.67	71.57	-39.49	0.93	0.92	2.48
6,400.00	3.29	82.81	6,398.39	43.85	72.97	-39.59	0.28	0.28	0.80
6,425.00	3.26	83.07	6,423.35	44.02	74.39	-39.68	0.13	-0.12	1.04
6,450.00	3.27	81.95	6,448.31	44.21	75.80	-39.78	0.26	0.04	-4.48
6,475.00	3.29	80.74	6,473.27	44.42	77.22	-39.92	0.29	0.08	-4.84
6,500.00	3.21	80.24	6,498.23	44.66	78.62	-40.07	0.34	-0.32	-2.00
6,525.00	3.20	78.01	6,523.19	44.92	79.99	-40.26	0.50	-0.04	-8.92
6,550.00	3.12	78.17	6,548.15	45.20	81.34	-40.46	0.32	-0.32	0.64
6,575.00	3.12	78.92	6,573.11	45.47	82.67	-40.66	0.16	0.00	3.00
6,600.00	3.09	78.45	6,598.08	45.74	84.00	-40.84	0.16	-0.12	-1.88
6,625.00	3.09	77.18	6,623.04	46.02	85.31	-41.05	0.27	0.00	-5.08
6,650.00	3.08	77.20	6,648.00	46.32	86.63	-41.28	0.04	-0.04	0.08
6,675.00	3.01	76.07	6,672.97	46.63	87.92	-41.51	0.37	-0.28	-4.52
6,700.00	2.97	76.38	6,697.94	46.94	89.19	-41.74	0.17	-0.16	1.24
6,725.00	2.88	75.18	6,722.90	47.25	90.42	-41.99	0.44	-0.36	-4.80
6,750.00	2.82	73.86	6,747.87	47.59	91.62	-42.25	0.36	-0.24	-5.28
6,775.00	2.76	72.71	6,772.84	47.93	92.79	-42.53	0.33	-0.24	-4.60
6,800.00	2.75	72.83	6,797.81	48.29	93.93	-42.82	0.05	-0.04	0.48



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,825.00	2.76	72.21	6,822.78	48.65	95.08	-43.12	0.13	0.04	-2.48
6,850.00	2.67	72.45	6,847.76	49.01	96.21	-43.41	0.36	-0.36	0.96
6,875.00	2.71	71.05	6,872.73	49.38	97.32	-43.71	0.31	0.16	-5.60
6,900.00	2.82	68.35	6,897.70	49.80	98.45	-44.07	0.68	0.44	-10.80
6,925.00	3.13	62.97	6,922.67	50.33	99.63	-44.53	1.67	1.24	-21.52
6,950.00	3.34	59.36	6,947.63	51.02	100.87	-45.14	1.17	0.84	-14.44
6,975.00	3.42	59.08	6,972.58	51.77	102.13	-45.82	0.33	0.32	-1.12
7,000.00	3.39	60.07	6,997.54	52.52	103.41	-46.50	0.26	-0.12	3.96
7,025.00	3.47	59.59	7,022.49	53.27	104.71	-47.18	0.34	0.32	-1.92
7,050.00	3.42	59.37	7,047.45	54.04	106.00	-47.86	0.21	-0.20	-0.88
7,075.00	3.41	59.40	7,072.40	54.80	107.28	-48.55	0.04	-0.04	0.12
7,100.00	3.42	58.02	7,097.36	55.57	108.55	-49.25	0.33	0.04	-5.52
7,125.00	3.34	57.65	7,122.32	56.35	109.80	-49.96	0.33	-0.32	-1.48
7,150.00	3.27	56.99	7,147.27	57.13	111.02	-50.67	0.32	-0.28	-2.64
7,175.00	3.21	57.52	7,172.24	57.90	112.20	-51.36	0.27	-0.24	2.12
7,200.00	3.19	58.22	7,197.20	58.64	113.39	-52.03	0.18	-0.08	2.80
7,225.00	3.19	56.79	7,222.16	59.39	114.56	-52.71	0.32	0.00	-5.72
7,250.00	3.22	56.67	7,247.12	60.15	115.73	-53.41	0.12	0.12	-0.48
7,275.00	3.23	57.11	7,272.08	60.92	116.91	-54.11	0.11	0.04	1.76
7,300.00	3.58	58.25	7,297.03	61.71	118.16	-54.83	1.43	1.40	4.56
7,325.00	5.29	66.29	7,321.96	62.59	119.88	-55.60	7.26	6.84	32.16
7,350.00	5.25	66.94	7,346.85	63.50	121.99	-56.39	0.29	-0.16	2.60
7,375.00	5.27	66.50	7,371.75	64.40	124.09	-57.18	0.18	0.08	-1.76
7,400.00	5.26	66.57	7,396.64	65.32	126.20	-57.97	0.05	-0.04	0.28
7,425.00	5.27	66.83	7,421.54	66.23	128.30	-58.75	0.10	0.04	1.04
7,450.00	5.32	65.96	7,446.43	67.15	130.42	-59.55	0.38	0.20	-3.48
7,475.00	5.29	66.84	7,471.32	68.08	132.54	-60.36	0.35	-0.12	3.52
7,500.00	5.22	66.42	7,496.22	68.98	134.64	-61.14	0.32	-0.28	-1.68
7,525.00	5.21	66.47	7,521.11	69.89	136.72	-61.93	0.04	-0.04	0.20
7,550.00	5.12	65.37	7,546.01	70.81	138.78	-62.73	0.54	-0.36	-4.40
7,575.00	4.93	65.99	7,570.92	71.71	140.77	-63.51	0.79	-0.76	2.48
7,600.00	4.82	65.85	7,595.83	72.58	142.71	-64.27	0.44	-0.44	-0.56
7,625.00	4.72	65.85	7,620.74	73.43	144.61	-65.01	0.40	-0.40	0.00
7,650.00	4.62	65.96	7,645.66	74.26	146.47	-65.73	0.40	-0.40	0.44
7,675.00	4.50	65.96	7,670.58	75.07	148.28	-66.44	0.48	-0.48	0.00
7,700.00	4.47	65.64	7,695.50	75.87	150.06	-67.13	0.16	-0.12	-1.28
7,725.00	4.40	65.13	7,720.43	76.68	151.82	-67.84	0.32	-0.28	-2.04
7,750.00	4.26	65.28	7,745.36	77.47	153.53	-68.53	0.56	-0.56	0.60
7,775.00	4.18	65.06	7,770.29	78.24	155.20	-69.20	0.33	-0.32	-0.88
7,800.00	4.11	64.70	7,795.22	79.01	156.84	-69.88	0.30	-0.28	-1.44
7,825.00	4.03	63.92	7,820.16	79.78	158.44	-70.55	0.39	-0.32	-3.12
7,850.00	3.94	63.49	7,845.10	80.55	160.00	-71.23	0.38	-0.36	-1.72
7,875.00	3.92	63.87	7,870.04	81.31	161.53	-71.90	0.13	-0.08	1.52



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,900.00	3.82	62.54	7,894.98	82.07	163.04	-72.57	0.54	-0.40	-5.32
7,925.00	3.81	62.36	7,919.93	82.84	164.51	-73.26	0.06	-0.04	-0.72
7,950.00	3.85	65.02	7,944.87	83.58	166.01	-73.91	0.73	0.16	10.64
7,975.00	4.11	64.78	7,969.81	84.31	167.58	-74.55	1.04	1.04	-0.96
8,000.00	5.05	66.65	7,994.73	85.13	169.40	-75.27	3.81	3.76	7.48
8,025.00	5.24	67.76	8,019.63	86.00	171.47	-76.01	0.86	0.76	4.44
8,050.00	5.32	66.91	8,044.52	86.88	173.59	-76.78	0.45	0.32	-3.40
8,075.00	5.26	66.40	8,069.42	87.80	175.71	-77.57	0.30	-0.24	-2.04
8,100.00	5.03	67.34	8,094.32	88.68	177.77	-78.33	0.98	-0.92	3.76
8,125.00	4.86	66.77	8,119.22	89.52	179.75	-79.05	0.71	-0.68	-2.28
8,150.00	4.78	68.01	8,144.14	90.33	181.69	-79.75	0.53	-0.32	4.96
8,175.00	4.63	68.32	8,169.05	91.09	183.60	-80.40	0.61	-0.60	1.24
8,200.00	4.43	68.30	8,193.97	91.82	185.43	-81.03	0.80	-0.80	-0.08
8,225.00	4.22	69.67	8,218.90	92.49	187.19	-81.60	0.94	-0.84	5.48
8,250.00	4.06	70.20	8,243.84	93.11	188.89	-82.12	0.66	-0.64	2.12
8,275.00	3.87	71.32	8,268.78	93.68	190.52	-82.60	0.82	-0.76	4.48
8,300.00	3.62	71.24	8,293.72	94.21	192.06	-83.03	1.00	-1.00	-0.32
8,325.00	3.59	71.70	8,318.67	94.71	193.56	-83.44	0.17	-0.12	1.84
8,350.00	3.53	71.90	8,343.63	95.19	195.03	-83.84	0.25	-0.24	0.80
8,375.00	3.44	72.48	8,368.58	95.66	196.48	-84.22	0.39	-0.36	2.32
8,400.00	3.29	72.41	8,393.54	96.10	197.88	-84.59	0.60	-0.60	-0.28
8,425.00	3.24	72.19	8,418.50	96.53	199.23	-84.94	0.21	-0.20	-0.88
8,450.00	3.16	72.44	8,443.46	96.96	200.56	-85.29	0.32	-0.32	1.00
8,475.00	3.12	73.70	8,468.42	97.36	201.87	-85.61	0.32	-0.16	5.04
8,500.00	3.15	74.27	8,493.38	97.73	203.19	-85.91	0.17	0.12	2.28
8,525.00	3.19	74.36	8,518.34	98.11	204.52	-86.21	0.16	0.16	0.36
8,550.00	3.37	76.25	8,543.30	98.47	205.90	-86.49	0.84	0.72	7.56
8,575.00	3.45	76.81	8,568.26	98.82	207.35	-86.75	0.35	0.32	2.24
8,600.00	3.69	75.62	8,593.21	99.19	208.86	-87.04	1.00	0.96	-4.76
8,625.00	3.66	76.62	8,618.16	99.57	210.41	-87.33	0.28	-0.12	4.00
8,650.00	3.68	76.08	8,643.11	99.95	211.97	-87.62	0.16	0.08	-2.16
8,675.00	3.48	76.37	8,668.06	100.32	213.48	-87.90	0.80	-0.80	1.16
8,700.00	3.26	76.23	8,693.02	100.67	214.91	-88.17	0.88	-0.88	-0.56
8,725.00	3.07	75.84	8,717.98	101.00	216.25	-88.42	0.76	-0.76	-1.56
8,750.00	2.94	79.16	8,742.94	101.29	217.53	-88.64	0.87	-0.52	13.28
8,775.00	2.82	78.79	8,767.91	101.53	218.76	-88.80	0.49	-0.48	-1.48
8,800.00	2.82	78.39	8,792.88	101.77	219.97	-88.98	0.08	0.00	-1.60
8,825.00	2.84	78.94	8,817.85	102.01	221.18	-89.15	0.13	0.08	2.20
8,850.00	3.36	75.50	8,842.81	102.31	222.50	-89.38	2.21	2.08	-13.76
8,875.00	4.59	71.21	8,867.75	102.82	224.15	-89.79	5.06	4.92	-17.16
8,900.00	4.84	71.05	8,892.67	103.48	226.10	-90.34	1.00	1.00	-0.64
8,925.00	4.85	71.14	8,917.58	104.17	228.10	-90.91	0.05	0.04	0.36
8,950.00	4.84	70.68	8,942.49	104.86	230.09	-91.48	0.16	-0.04	-1.84



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,975.00	4.79	71.00	8,967.40	105.55	232.07	-92.06	0.23	-0.20	1.28	
9,000.00	4.62	72.59	8,992.32	106.19	234.02	-92.58	0.86	-0.68	6.36	
9,025.00	4.62	72.81	9,017.24	106.79	235.94	-93.07	0.07	0.00	0.88	
9,050.00	4.58	72.55	9,042.16	107.38	237.86	-93.56	0.18	-0.16	-1.04	
9,075.00	4.49	72.53	9,067.08	107.98	239.74	-94.04	0.36	-0.36	-0.08	
9,100.00	4.36	72.64	9,092.00	108.56	241.58	-94.51	0.52	-0.52	0.44	
9,125.00	4.31	71.78	9,116.93	109.13	243.38	-94.98	0.33	-0.20	-3.44	
9,150.00	4.12	72.35	9,141.86	109.70	245.13	-95.45	0.78	-0.76	2.28	
9,175.00	3.96	72.91	9,166.80	110.22	246.81	-95.88	0.66	-0.64	2.24	
9,200.00	3.81	71.83	9,191.74	110.74	248.43	-96.30	0.67	-0.60	-4.32	
9,225.00	3.68	71.41	9,216.69	111.25	249.98	-96.72	0.53	-0.52	-1.68	
9,250.00	3.50	71.53	9,241.64	111.75	251.46	-97.13	0.72	-0.72	0.48	
9,275.00	3.43	71.63	9,266.60	112.23	252.89	-97.53	0.28	-0.28	0.40	
9,300.00	3.40	72.35	9,291.55	112.69	254.31	-97.91	0.21	-0.12	2.88	
9,325.00	3.38	72.21	9,316.51	113.14	255.72	-98.28	0.09	-0.08	-0.56	
9,350.00	3.39	73.35	9,341.46	113.57	257.13	-98.63	0.27	0.04	4.56	
9,375.00	3.23	73.76	9,366.42	113.98	258.51	-98.96	0.65	-0.64	1.64	
9,400.00	3.09	72.34	9,391.38	114.38	259.83	-99.28	0.64	-0.56	-5.68	
9,425.00	2.93	75.00	9,416.35	114.75	261.09	-99.58	0.85	-0.64	10.64	
9,450.00	2.89	75.05	9,441.32	115.08	262.32	-99.84	0.16	-0.16	0.20	
9,475.00	2.85	76.35	9,466.29	115.39	263.53	-100.08	0.31	-0.16	5.20	
9,500.00	2.76	76.51	9,491.26	115.68	264.72	-100.30	0.36	-0.36	0.64	
9,525.00	2.77	77.85	9,516.23	115.95	265.89	-100.50	0.26	0.04	5.36	
9,550.00	2.66	80.67	9,541.20	116.17	267.06	-100.65	0.69	-0.44	11.28	
9,575.00	2.63	84.92	9,566.17	116.31	268.20	-100.73	0.79	-0.12	17.00	
9,600.00	2.54	89.32	9,591.15	116.37	269.33	-100.72	0.87	-0.36	17.60	
9,625.00	2.37	94.70	9,616.12	116.33	270.39	-100.62	1.14	-0.68	21.52	
9,650.00	2.23	97.43	9,641.10	116.23	271.39	-100.46	0.71	-0.56	10.92	
9,675.00	2.04	97.06	9,666.09	116.11	272.32	-100.29	0.76	-0.76	-1.48	
9,700.00	1.77	99.33	9,691.07	115.99	273.14	-100.13	1.12	-1.08	9.08	
9,725.00	1.30	102.07	9,716.06	115.87	273.80	-99.97	1.90	-1.88	10.96	
9,750.00	0.89	106.77	9,741.06	115.76	274.26	-99.83	1.68	-1.64	18.80	
9,775.00	0.41	105.42	9,766.06	115.68	274.53	-99.73	1.92	-1.92	-5.40	
9,800.00	0.07	316.09	9,791.06	115.66	274.61	-99.71	1.89	-1.36	-597.32	
9,825.00	0.50	296.26	9,816.06	115.72	274.50	-99.78	1.74	1.72	-79.32	
9,850.00	0.63	292.54	9,841.06	115.82	274.27	-99.89	0.54	0.52	-14.88	
9,875.00	0.68	290.27	9,866.05	115.93	274.01	-100.01	0.23	0.20	-9.08	
9,900.00	0.69	291.73	9,891.05	116.04	273.73	-100.13	0.08	0.04	5.84	
9,925.00	0.76	292.76	9,916.05	116.16	273.44	-100.27	0.28	0.28	4.12	
9,950.00	1.03	293.31	9,941.05	116.31	273.08	-100.44	1.08	1.08	2.20	
9,975.00	1.24	293.70	9,966.04	116.51	272.62	-100.67	0.84	0.84	1.56	
10,000.00	1.41	290.41	9,991.04	116.72	272.09	-100.91	0.74	0.68	-13.16	
10,025.00	1.57	289.31	10,016.03	116.94	271.48	-101.17	0.65	0.64	-4.40	
10,050.00	1.71	289.52	10,041.02	117.18	270.80	-101.45	0.56	0.56	0.84	



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,075.00	1.83	288.63	10,066.01	117.43	270.07	-101.74	0.49	0.48	-3.56
10,100.00	1.75	287.83	10,090.99	117.68	269.33	-102.03	0.34	-0.32	-3.20
10,125.00	1.81	288.06	10,115.98	117.92	268.59	-102.31	0.24	0.24	0.92
10,150.00	1.87	289.65	10,140.97	118.18	267.83	-102.61	0.32	0.24	6.36
10,175.00	1.87	289.04	10,165.95	118.45	267.06	-102.92	0.08	0.00	-2.44
10,200.00	1.93	286.91	10,190.94	118.70	266.27	-103.22	0.37	0.24	-8.52
10,225.00	1.89	287.20	10,215.93	118.95	265.48	-103.51	0.16	-0.16	1.16
10,250.00	1.87	286.18	10,240.91	119.18	264.69	-103.79	0.16	-0.08	-4.08
10,275.00	1.96	285.35	10,265.90	119.41	263.89	-104.07	0.38	0.36	-3.32
10,300.00	1.91	286.48	10,290.89	119.64	263.08	-104.34	0.25	-0.20	4.52
10,325.00	1.97	284.83	10,315.87	119.87	262.26	-104.62	0.33	0.24	-6.60
10,350.00	1.61	276.93	10,340.86	120.02	261.50	-104.81	1.74	-1.44	-31.60
10,375.00	1.43	265.07	10,365.85	120.04	260.84	-104.87	1.45	-0.72	-47.44
10,400.00	1.27	259.54	10,390.84	119.96	260.25	-104.82	0.82	-0.64	-22.12
10,425.00	1.16	258.22	10,415.84	119.86	259.73	-104.75	0.45	-0.44	-5.28
10,450.00	0.16	322.65	10,440.84	119.83	259.46	-104.74	4.40	-4.00	257.72
10,475.00	0.34	48.95	10,465.84	119.91	259.50	-104.82	1.47	0.72	345.20
10,500.00	0.40	47.41	10,490.84	120.02	259.62	-104.92	0.24	0.24	-6.16
10,525.00	0.39	35.23	10,515.83	120.15	259.73	-105.04	0.34	-0.04	-48.72
10,550.00	0.42	33.32	10,540.83	120.29	259.83	-105.18	0.13	0.12	-7.64
10,575.00	0.51	33.62	10,565.83	120.46	259.94	-105.34	0.36	0.36	1.20
10,600.00	0.67	28.10	10,590.83	120.68	260.07	-105.56	0.68	0.64	-22.08
10,625.00	0.83	25.34	10,615.83	120.97	260.22	-105.84	0.66	0.64	-11.04
10,650.00	1.03	16.99	10,640.83	121.35	260.36	-106.21	0.96	0.80	-33.40
10,675.00	1.07	22.00	10,665.82	121.78	260.52	-106.63	0.40	0.16	20.04
10,700.00	1.21	28.64	10,690.82	122.23	260.73	-107.07	0.77	0.56	26.56
10,725.00	1.28	36.51	10,715.81	122.69	261.02	-107.51	0.74	0.28	31.48
10,750.00	1.35	32.16	10,740.80	123.16	261.35	-107.96	0.49	0.28	-17.40
10,775.00	1.35	28.85	10,765.80	123.67	261.65	-108.45	0.31	0.00	-13.24
10,800.00	1.50	26.73	10,790.79	124.22	261.94	-108.98	0.64	0.60	-8.48
10,825.00	1.57	26.82	10,815.78	124.82	262.24	-109.56	0.28	0.28	0.36
10,850.00	1.74	24.72	10,840.77	125.47	262.55	-110.19	0.72	0.68	-8.40
10,875.00	1.90	19.54	10,865.76	126.20	262.85	-110.91	0.92	0.64	-20.72
10,900.00	2.05	20.93	10,890.74	127.01	263.15	-111.70	0.63	0.60	5.56
10,925.00	2.34	27.68	10,915.72	127.88	263.54	-112.55	1.55	1.16	27.00
10,950.00	2.67	33.20	10,940.70	128.82	264.10	-113.45	1.63	1.32	22.08
10,975.00	2.92	32.89	10,965.67	129.84	264.76	-114.43	1.00	1.00	-1.24
11,000.00	2.93	32.05	10,990.64	130.92	265.45	-115.47	0.18	0.04	-3.36
11,025.00	2.92	32.69	11,015.61	132.00	266.13	-116.51	0.14	-0.04	2.56
11,050.00	2.89	33.20	11,040.57	133.06	266.82	-117.53	0.16	-0.12	2.04
11,075.00	2.88	28.13	11,065.54	134.14	267.46	-118.57	1.02	-0.04	-20.28
11,100.00	2.94	26.73	11,090.51	135.27	268.05	-119.66	0.37	0.24	-5.60
11,125.00	2.91	26.27	11,115.48	136.41	268.61	-120.77	0.15	-0.12	-1.84



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,150.00	2.84	27.42	11,140.45	137.53	269.18	-121.85	0.36	-0.28	4.60	
11,175.00	2.92	33.94	11,165.41	138.61	269.82	-122.89	1.35	0.32	26.08	
11,200.00	2.82	37.30	11,190.38	139.62	270.55	-123.87	0.78	-0.40	13.44	
11,225.00	2.79	38.18	11,215.35	140.59	271.30	-124.79	0.21	-0.12	3.52	
11,250.00	2.85	39.30	11,240.32	141.55	272.07	-125.70	0.33	0.24	4.48	
11,275.00	2.93	40.06	11,265.29	142.52	272.87	-126.63	0.35	0.32	3.04	
11,300.00	2.83	40.73	11,290.26	143.48	273.69	-127.53	0.42	-0.40	2.68	
11,325.00	2.47	43.74	11,315.23	144.33	274.46	-128.34	1.54	-1.44	12.04	
11,350.00	2.22	41.08	11,340.21	145.09	275.15	-129.06	1.09	-1.00	-10.64	
11,375.00	2.30	29.67	11,365.19	145.89	275.72	-129.82	1.82	0.32	-45.64	
11,400.00	2.38	17.93	11,390.17	146.82	276.13	-130.73	1.94	0.32	-46.96	
11,425.00	2.37	12.96	11,415.15	147.82	276.40	-131.71	0.82	-0.04	-19.88	
11,450.00	2.52	13.30	11,440.13	148.85	276.65	-132.73	0.60	0.60	1.36	
11,475.00	2.59	12.97	11,465.10	149.94	276.90	-133.80	0.29	0.28	-1.32	
11,500.00	2.40	18.17	11,490.08	150.99	277.19	-134.83	1.18	-0.76	20.80	
11,525.00	2.24	23.52	11,515.06	151.93	277.55	-135.75	1.08	-0.64	21.40	
11,550.00	2.05	23.66	11,540.04	152.79	277.92	-136.59	0.76	-0.76	0.56	
11,575.00	1.79	28.62	11,565.03	153.54	278.29	-137.32	1.23	-1.04	19.84	
11,600.00	1.54	43.71	11,590.02	154.13	278.71	-137.88	2.01	-1.00	60.36	
11,625.00	1.54	57.76	11,615.01	154.55	279.22	-138.27	1.51	0.00	56.20	
11,650.00	1.57	62.69	11,640.00	154.89	279.81	-138.57	0.55	0.12	19.72	
11,675.00	1.26	46.10	11,664.99	155.23	280.31	-138.89	2.04	-1.24	-66.36	
11,700.00	1.06	16.48	11,689.99	155.65	280.58	-139.29	2.49	-0.80	-118.48	
11,725.00	1.18	7.87	11,714.98	156.12	280.68	-139.76	0.83	0.48	-34.44	
11,750.00	1.40	7.77	11,739.97	156.68	280.76	-140.31	0.88	0.88	-0.40	
11,775.00	1.56	11.60	11,764.97	157.32	280.87	-140.94	0.75	0.64	15.32	
11,800.00	1.79	7.81	11,789.96	158.04	280.99	-141.65	1.02	0.92	-15.16	
11,825.00	1.74	17.02	11,814.94	158.79	281.15	-142.39	1.15	-0.20	36.84	
11,850.00	1.75	29.86	11,839.93	159.48	281.45	-143.07	1.56	0.04	51.36	
11,875.00	1.70	30.76	11,864.92	160.13	281.83	-143.69	0.23	-0.20	3.60	
11,887.00	1.68	31.03	11,876.92	160.43	282.01	-143.99	0.18	-0.17	2.25	
12,033.00	1.81	41.67	12,022.85	163.99	284.65	-147.38	0.24	0.09	7.29	
12,118.00	3.01	142.97	12,107.80	163.21	286.89	-146.48	4.47	1.41	119.18	
12,149.00	8.52	162.28	12,138.63	160.37	288.08	-143.58	18.60	17.77	62.29	
12,181.00	13.88	165.77	12,170.01	154.39	289.74	-137.51	16.88	16.75	10.91	
12,190.91	15.42	166.17	12,179.60	151.96	290.35	-135.04	15.58	15.54	4.01	
FTP @ 12190.91' MD										
12,212.00	18.70	166.80	12,199.76	145.94	291.79	-128.96	15.58	15.55	3.00	
12,244.00	24.70	168.49	12,229.48	134.39	294.30	-117.27	18.85	18.75	5.28	
12,276.00	27.79	168.43	12,258.18	120.52	297.13	-103.27	9.66	9.66	-0.19	
12,307.00	27.81	167.86	12,285.60	106.37	300.10	-88.97	0.86	0.06	-1.84	
12,339.00	31.79	169.59	12,313.36	90.78	303.20	-73.23	12.72	12.44	5.41	
12,370.00	35.12	170.99	12,339.22	73.94	306.07	-56.25	11.03	10.74	4.52	



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,402.00	35.05	171.50	12,365.41	55.76	308.87	-37.94	0.94	-0.22	1.59
12,433.00	37.55	174.31	12,390.39	37.55	311.12	-19.63	9.69	8.06	9.06
12,464.00	39.80	176.07	12,414.59	18.25	312.74	-0.27	8.08	7.26	5.68
12,496.00	39.73	175.96	12,439.19	-2.17	314.16	20.20	0.31	-0.22	-0.34
12,527.00	43.90	176.58	12,462.29	-22.79	315.50	40.86	13.52	13.45	2.00
12,559.00	47.06	177.31	12,484.72	-45.57	316.71	63.67	10.01	9.88	2.28
12,590.00	48.44	176.72	12,505.57	-68.49	317.91	86.62	4.67	4.45	-1.90
12,622.00	51.55	175.53	12,526.14	-92.94	319.57	111.13	10.13	9.72	-3.72
12,654.00	53.76	174.97	12,545.55	-118.29	321.68	136.56	7.04	6.91	-1.75
12,686.00	53.07	175.06	12,564.62	-143.89	323.91	162.24	2.17	-2.16	0.28
12,717.00	53.18	175.38	12,583.22	-168.60	325.98	187.03	0.90	0.35	1.03
12,749.00	55.42	175.59	12,601.89	-194.50	328.02	213.01	7.02	7.00	0.66
12,781.00	59.21	175.30	12,619.17	-221.35	330.16	239.93	11.87	11.84	-0.91
12,812.00	64.66	176.38	12,633.75	-248.62	332.14	267.27	17.85	17.58	3.48
12,844.00	68.50	176.48	12,646.47	-277.92	333.97	296.63	12.00	12.00	0.31
12,876.00	72.78	176.99	12,657.07	-308.05	335.68	326.81	13.46	13.38	1.59
12,971.00	88.12	179.74	12,672.79	-401.41	338.30	420.17	16.40	16.15	2.89
13,066.00	88.38	180.00	12,675.69	-496.37	338.51	514.98	0.39	0.27	0.27
13,162.00	87.28	178.48	12,679.33	-592.29	339.79	610.81	1.95	-1.15	-1.58
13,257.00	86.28	177.37	12,684.66	-687.07	343.22	705.64	1.57	-1.05	-1.17
13,352.00	89.72	178.77	12,687.98	-781.94	346.42	800.54	3.91	3.62	1.47
13,446.00	90.89	176.00	12,687.48	-875.83	350.70	894.52	3.20	1.24	-2.95
13,540.00	90.17	172.71	12,686.61	-969.36	359.95	988.42	3.58	-0.77	-3.50
13,635.00	88.15	176.87	12,688.00	-1,063.93	368.57	1,083.33	4.87	-2.13	4.38
13,730.00	87.74	178.64	12,691.41	-1,158.79	372.29	1,178.25	1.91	-0.43	1.86
13,825.00	85.98	177.90	12,696.61	-1,253.60	375.15	1,273.07	2.01	-1.85	-0.78
13,919.00	88.00	178.65	12,701.55	-1,347.43	377.98	1,366.90	2.29	2.15	0.80
14,014.00	90.69	180.06	12,702.63	-1,442.40	379.05	1,461.78	3.20	2.83	1.48
14,109.00	90.77	178.75	12,701.42	-1,537.39	380.04	1,556.66	1.38	0.08	-1.38
14,204.00	92.11	178.57	12,699.04	-1,632.33	382.26	1,651.58	1.42	1.41	-0.19
14,298.00	92.30	179.86	12,695.42	-1,726.25	383.54	1,745.41	1.39	0.20	1.37
14,393.00	92.23	182.43	12,691.66	-1,821.15	381.65	1,840.05	2.70	-0.07	2.71
14,488.00	91.32	181.37	12,688.72	-1,916.05	378.50	1,934.61	1.47	-0.96	-1.12
14,583.00	91.61	178.97	12,686.29	-2,011.01	378.22	2,029.40	2.54	0.31	-2.53
14,677.00	91.89	183.77	12,683.42	-2,104.91	375.97	2,123.02	5.11	0.30	5.11
14,772.00	88.89	177.65	12,682.77	-2,199.84	374.80	2,217.73	7.17	-3.16	-6.44
14,867.00	87.10	176.13	12,686.10	-2,294.64	379.95	2,312.66	2.47	-1.88	-1.60
14,955.00	89.09	179.42	12,689.02	-2,382.51	383.36	2,400.58	4.37	2.26	3.74
15,050.00	87.46	178.62	12,691.88	-2,477.45	384.98	2,495.46	1.91	-1.72	-0.84
15,145.00	86.65	178.40	12,696.76	-2,572.29	387.45	2,590.29	0.88	-0.85	-0.23
15,239.00	88.21	177.53	12,700.98	-2,666.13	390.78	2,684.16	1.90	1.66	-0.93
15,334.00	88.04	177.29	12,704.09	-2,760.98	395.07	2,779.11	0.31	-0.18	-0.25
15,430.00	89.72	177.63	12,705.96	-2,856.87	399.33	2,875.08	1.79	1.75	0.35
15,525.00	91.35	177.94	12,705.07	-2,951.79	403.00	2,970.05	1.75	1.72	0.33



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,620.00	92.48	177.28	12,701.90	-3,046.65	406.96	3,064.99	1.38	1.19	-0.69
15,714.00	92.71	177.34	12,697.64	-3,140.45	411.36	3,158.88	0.25	0.24	0.06
15,808.00	92.96	177.62	12,693.00	-3,234.25	415.49	3,252.76	0.40	0.27	0.30
15,903.00	93.69	177.78	12,687.49	-3,329.01	419.30	3,347.59	0.79	0.77	0.17
15,998.00	93.98	177.42	12,681.13	-3,423.71	423.27	3,442.36	0.49	0.31	-0.38
16,093.00	93.79	178.62	12,674.69	-3,518.44	426.54	3,537.12	1.28	-0.20	1.26
16,187.00	94.64	178.57	12,667.79	-3,612.15	428.84	3,630.81	0.91	0.90	-0.05
16,282.00	91.83	179.18	12,662.42	-3,706.97	430.70	3,725.58	3.03	-2.96	0.64
16,377.00	91.54	179.69	12,659.63	-3,801.93	431.64	3,820.43	0.62	-0.31	0.54
16,472.00	90.30	181.05	12,658.11	-3,896.91	431.03	3,915.22	1.94	-1.31	1.43
16,567.00	87.75	178.41	12,659.72	-3,991.88	431.47	4,010.06	3.86	-2.68	-2.78
16,662.00	90.22	179.08	12,661.41	-4,086.83	433.55	4,104.98	2.69	2.60	0.71
16,757.00	89.18	179.07	12,661.90	-4,181.82	435.09	4,199.89	1.09	-1.09	-0.01
16,852.00	88.66	179.71	12,663.69	-4,276.79	436.10	4,294.77	0.87	-0.55	0.67
16,947.00	91.23	180.44	12,663.78	-4,371.79	435.97	4,389.60	2.81	2.71	0.77
17,042.00	92.46	181.70	12,660.73	-4,466.72	434.20	4,484.27	1.85	1.29	1.33
17,137.00	92.94	182.00	12,656.25	-4,561.56	431.14	4,578.79	0.60	0.51	0.32
17,232.00	91.65	183.85	12,652.45	-4,656.35	426.29	4,673.14	2.37	-1.36	1.95
17,326.00	87.68	183.92	12,653.00	-4,750.12	419.92	4,766.39	4.22	-4.22	0.07
17,419.00	84.44	181.89	12,659.39	-4,842.76	415.22	4,858.61	4.11	-3.48	-2.18
17,514.00	85.54	179.71	12,667.68	-4,937.38	413.90	4,953.00	2.56	1.16	-2.29
17,607.00	87.18	179.73	12,673.59	-5,030.19	414.35	5,045.68	1.76	1.76	0.02
17,702.00	89.30	179.47	12,676.50	-5,125.14	415.02	5,140.51	2.25	2.23	-0.27
17,796.00	90.71	180.14	12,676.50	-5,219.13	415.34	5,234.37	1.66	1.50	0.71
17,891.00	90.31	179.93	12,675.65	-5,314.13	415.28	5,329.20	0.48	-0.42	-0.22
17,986.00	89.40	179.88	12,675.89	-5,409.13	415.44	5,424.06	0.96	-0.96	-0.05
18,080.00	88.25	179.49	12,677.82	-5,503.11	415.95	5,517.91	1.29	-1.22	-0.41
18,175.00	90.47	179.40	12,678.88	-5,598.09	416.87	5,612.79	2.34	2.34	-0.09
18,270.00	94.50	179.82	12,674.76	-5,692.98	417.52	5,707.56	4.27	4.24	0.44
18,365.00	92.92	180.01	12,668.62	-5,787.78	417.66	5,802.21	1.68	-1.66	0.20
18,462.00	92.82	179.86	12,663.76	-5,884.65	417.77	5,898.93	0.19	-0.10	-0.15
18,558.00	93.29	180.03	12,658.64	-5,980.52	417.86	5,994.64	0.52	0.49	0.18
18,652.00	91.56	178.77	12,654.66	-6,074.42	418.85	6,088.45	2.28	-1.84	-1.34
18,747.00	90.69	181.43	12,652.80	-6,169.39	418.68	6,183.25	2.95	-0.92	2.80
18,842.00	91.01	174.43	12,651.39	-6,264.26	422.11	6,278.16	7.38	0.34	-7.37
18,937.00	90.28	172.12	12,650.32	-6,358.60	433.23	6,372.98	2.55	-0.77	-2.43
19,030.00	88.17	173.36	12,651.58	-6,450.84	444.98	6,465.74	2.63	-2.27	1.33
19,125.00	89.13	176.95	12,653.82	-6,545.45	453.00	6,560.66	3.91	1.01	3.78
19,218.00	90.32	177.34	12,654.26	-6,638.33	457.63	6,653.66	1.35	1.28	0.42
19,312.00	91.26	180.42	12,652.97	-6,732.30	459.47	6,747.57	3.43	1.00	3.28
19,407.00	89.73	180.45	12,652.14	-6,827.29	458.75	6,842.36	1.61	-1.61	0.03
19,500.00	91.89	181.22	12,650.83	-6,920.26	457.40	6,935.11	2.47	2.32	0.83
19,595.00	90.10	176.67	12,649.18	-7,015.20	459.15	7,029.99	5.15	-1.88	-4.79



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 19-30 457H
Project:	Lea Co., NM	TVD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Site:	Pitchblende Federal	MD Reference:	RT=27(Nabors 893) @ 3364.70ft (Nabors 893)
Well:	19-30 457H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	RyanUSA_32Bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
19,691.00	88.63	175.48	12,650.24	-7,110.97	465.72	7,125.97	1.97	-1.53	-1.24
19,785.00	87.52	179.03	12,653.40	-7,204.79	470.22	7,219.90	3.95	-1.18	3.78
19,879.00	90.61	185.69	12,654.94	-7,298.63	466.35	7,313.37	7.81	3.29	7.09
19,974.00	91.01	182.70	12,653.59	-7,393.36	459.40	7,407.54	3.18	0.42	-3.15
20,069.00	89.50	179.70	12,653.17	-7,488.32	457.41	7,502.23	3.54	-1.59	-3.16
20,130.00	89.04	179.31	12,653.95	-7,549.31	457.93	7,563.15	0.99	-0.75	-0.64
20,152.80	89.04	179.31	12,654.33	-7,572.11	458.21	7,585.93	0.00	0.00	0.00
LTP @ 20152.80' MD									
20,195.00	89.04	179.31	12,655.04	-7,614.30	458.72	7,628.08	0.00	0.00	0.00
20195' MD PTB									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
12,190.91	12,179.60	151.96	290.35	FTP @ 12190.91' MD
20,152.80	12,654.33	-7,572.11	458.21	LTP @ 20152.80' MD
20,195.00	12,655.04	-7,614.30	458.72	20195' MD PTB

Checked By: _____ Approved By: _____ Date: _____

Form 3160-4
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No.	NMNM136223
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1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____						6. If Indian, Allottee or Tribe Name			
						7. Unit or CA Agreement Name and No.			
2. Name of Operator COG OPERATING LLC Contact: AMANDA AVERY E-Mail: aaavery@concho.com						8. Lease Name and Well No. PITCHBLEND FED 19-30 457H			
3. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701-4287				3a. Phone No. (include area code) Ph: 575-748-6940		9. API Well No. 30-025-45662-00-S1			
4. Location of Well (Report location clearly and in accordance with Federal requirements)* Sec 19 T25S R35E Mer NMP At surface NWNE 250FNL 1955FEL 32.122476 N Lat, 103.404410 W Lon Sec 19 T25S R35E Mer NMP At top prod interval reported below NWNE 250FNL 1955FEL 32.122476 N Lat, 103.404410 W Lon Sec 30 T25S R35E Mer NMP At total depth SWNE 2583FNL 1569FEL 32.101536 N Lat, 103.403140 W Lon						10. Field and Pool, or Exploratory WILDCAT;WOLFCAMP			
						11. Sec., T., R., M., or Block and Survey or Area Sec 19 T25S R35E Mer NMP			
						12. County or Parish LEA			
						13. State NM			
14. Date Spudded 01/04/2020		15. Date T.D. Reached 03/22/2020		16. Date Completed ☐ D & A ☒ Ready to Prod. 10/29/2020		17. Elevations (DF, KB, RT, GL)* 3338 GL			
18. Total Depth:		MD TVD		20195 12656		19. Plug Back T.D.: MD TVD 20030 12656		20. Depth Bridge Plug Set: MD TVD 20105 12656	
21. Type Electric & Other Mechanical Logs Run (Submit copy of each)						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)

[illegible]

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	11.765	11.755						

25. Producing Intervals

20. Producing Intervals			21. Perforation Record			
Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING			12844 TO 19991			OPEN
B) WOLFCAMP	12844	19991				
C)						
D)						

26. Perforation Record

20. Producing Intervals			21. Perforation Record			
Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING			12844 TO 19991			OPEN
B) WOLFCAMP	12844	19991				
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
12844 TO 19991	43848 GAL 7 1/2%; 14,503,780 # SAND; 14,297,665 GAL FLUID.

28. Production - Interval A

Date First Produced 11/12/2020	Test Date 11/12/2020	Hours Tested 24	Test Production 	Oil BBL 214.0	Gas MCF 968.0	Water BBL 1355.0	Oil Gravity Corr. API	Gas Gravity	Production Method GAS LIFT
Choke Size 13/64	Tbg. Press. Flwg. 4087 SI	Csg. Press. 2200.0	24 Hr. Rate 	Oil BBL 214	Gas MCF 968	Water BBL 1355	Gas:Oil Ratio 5	Well Status POW	

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	Production Method
11/12/2020	11/12/2020	24		214.0	968.0	1355.0			GAS LIFT
Choke Size	Tbg. Press. Flwg. 4087 SI	Csg. Press. 2200.0	24 Hr. Rate 	Oil BBL 214	Gas MCF 968	Water BBL 1355	Gas:Oil Ratio	Well Status	
13/64								POW	

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

ELECTRONIC SUBMISSION #539079 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

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

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
RUSTLER TOP OF SALT BASE OF SALT LAMAR BELL CANYON CHERRY CANYON BRUSHY CANYON AVALON	920 1455 5170 5478 5515 6471 7993 9684			RUSTLER TOP OF SALT BASE OF SALT LAMAR BELL CANYON CHERRY CANYON BRUSHY CANYON AVALON	920 1455 5170 5478 5515 6471 7993 9684

32. Additional remarks (include plugging procedure):

AVALON L 10086
FIRST BONE SPRING 10472
FIRST BONE SPRING SHALE 10644
SECOND BONE SPRING 11005
SECOND BONE SPRING BASE 11557
THIRD BONE SPRING 12098
THIRD BONE SPRING W 12450
WOLFCAMP 12652

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 #539079 Verified by the BLM Well Information System.

For COG OPERATING LLC, sent to the Hobbs

Committed to AFMSS for processing by DEBORAH HAM on 12/12/2020 (21DMH0040SE)

Name (*please print*) AMANDA AVERY

Title REGULATORY ANALYST

Signature _____ (Electronic Submission)

Date 12/02/2020

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.

**** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ****

Additional data for transaction #539079 that would not fit on the form

32. Additional remarks, continued

Revisions to Operator-Submitted EC Data for Well Completion #539079

	Operator Submitted	BLM Revised (AFMSS)
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
Well Name: Number:	PITCHBLENDE 19 30 FEDERAL 457H	PITCHBLENDE FED 19-30 457H
Location:		
State:	NM	NM
County:	LEA	LEA
S/T/R:	Sec 19 T25S R35E Mer NMP	Sec 19 T25S R35E Mer NMP
Surf Loc:	Lot B 250FNL 1955FEL 32.122476 N Lat, 103.404410 W Lon	Lot B 250FNL 1955FEL 32.122476 N Lat, 103.404410 W Lon
Field/Pool:	WILDCAT;WOLFCAMP	WILDCAT;WOLFCAMP
Logs Run:		
Producing Intervals - Formations:	WOLFCAMP	BONE SPRING WOLFCAMP
Porous Zones:	RUSTLER TOP OF SALT BOTTOM OF SALT LAMAR BELL CANYON CHERRY CANYON BRUSHY CANYON AVALON M	RUSTLER TOP OF SALT BASE OF SALT LAMAR BELL CANYON CHERRY CANYON BRUSHY CANYON AVALON
Markers:	RUSTLER TOP OF SALT BOTTOM OF SALT LAMAR BELL CANYON CHERRY CANYON BRUSHY CANYON AVALON M	RUSTLER TOP OF SALT BASE OF SALT LAMAR BELL CANYON CHERRY CANYON BRUSHY CANYON AVALON

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 21279

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	21279	Action Type:	C-104C
OCD Reviewer									Condition
ksimmons									None