

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 RT			
⁴ API Number 30-015-46788		⁵ Pool Name Willow Lake Bone Spring ; Southeast			⁶ Pool Code 96217	
⁷ Property Code 313927		⁸ Property Name Admiral Federal Com			⁹ Well Number 504H	

II. ¹⁰ Surface Location

Ul or lot no. P	Section 28	Township 25S	Range 29E	Lot Idn	Feet from the 300	North/South Line South	Feet from the 1040	East/West line East	County Eddy
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¹¹ Bottom Hole Location

Ul or lot no. B	Section 21	Township 25S	Range 29E	Lot Idn	Feet from the 53	North/South Line North	Feet from the 1506	East/West line East	County Eddy
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	ETC	G
278421	Holly Refining and Marketing PO Box 159 Artesia, NM 88210	O

IV. Well Completion Data

²¹ Spud Date 3/28/20	²² Ready Date 3/16/21	²³ TD 18,610’	²⁴ PBTD 18,420’	²⁵ Perforations 9,104-18,404’	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size		²⁹ Depth Set	³⁰ Sacks Cement
17 1/2”		13 3/8”		715’	750
12 1/4”		9 5/8”		3,002’	1025
8 3/4”		5 1/2”		18,610’	3425
		2 7/8”		7,719’	

V. Well Test Data

³¹ Date New Oil	³² Gas Delivery Date	³³ Test Date	³⁴ Test Length	³⁵ Tbg. Pressure	³⁶ Csg. Pressure
³⁷ Choke Size	³⁸ Oil	³⁹ Water	⁴⁰ Gas		⁴¹ Test Method
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: <i>KURT SIMMONS</i> Title: <i>NMOCD, SANTA FE</i> Approval Date: <i>04/15/2021</i> <i>RT C-104 EXPIRES 07/14/2021 (90 DAYS)</i>		
Printed name: Amanda Avery					
Title: Regulatory Analyst					
E-mail Address:					
Date: 3 /16/21		Phone: 575-748-6962			

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

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

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

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

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

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

☒ AMENDED REPORT

As Drilled

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-46788		Pool Code 96217	Pool Name Willow Lake; Bone Spring, Southeast
Property Code 313927	Property Name ADMIRAL FEDERAL COM		Well Number 504H
OGRID No. 229137	Operator Name COG OPERATING, LLC		Elevation 2980.8'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	28	25-S	29-E		300	SOUTH	1040	EAST	EDDY

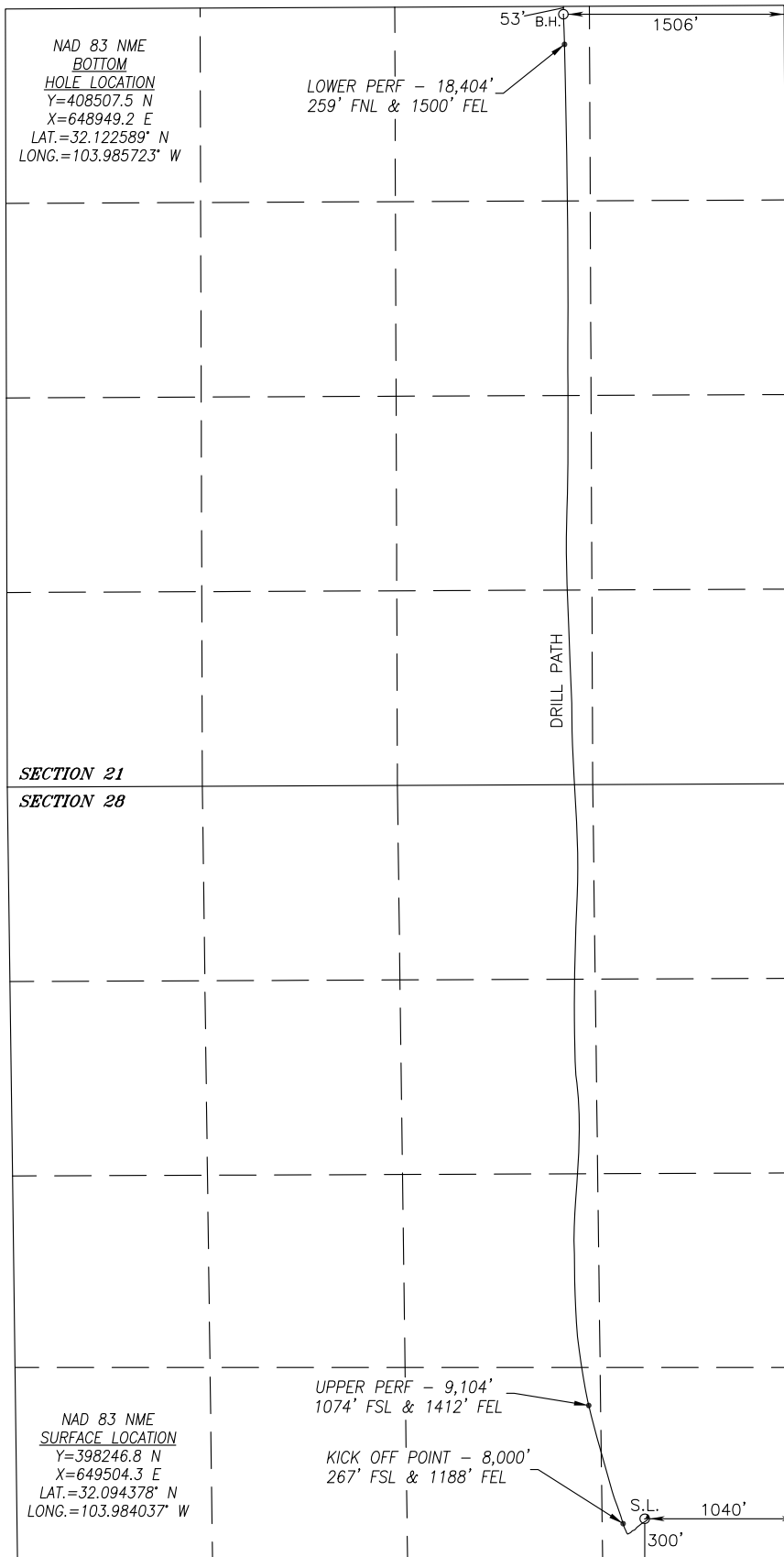
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	21	25-S	29-E		53	NORTH	1506	EAST	EDDY
Dedicated Acres 1280	Joint or Infill	Consolidation Code	Order No.						

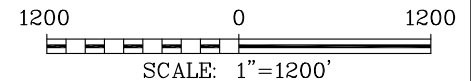
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

Property Code 313927	Property Name ADMIRAL FEDERAL COM	Well Number 504H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 2980.8'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE ADMIRAL FEDERAL COM 504H SUPPLIED TO HARCROW SURVEYING, LLC ON FEBRUARY 16, 2021



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 3/15/21

Signature

Date

Amanda Avery

Printed Name

amanda.lavery@conocophillips.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.

AUG. 23, 2019/APR. 25, 2020

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Harcrow 2/22/21

Certificate No. CHAD HARCROW 17777

PAGE 2 OF 2

W.O. #21-192

DRAWN BY: WN

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018



COG Operating LLC

Eddy Co., NM

Admiral Fed Com

Admiral Fed 504H

Wellbore #3 - ST02

Design: Wellbore #3 - ST02

Standard Survey Report

25 April, 2020





Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
Project:	Eddy Co., NM	TVD Reference:	RT=27 Nabors 893 @ 3007.80ft
Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	Database:	RyanUSA_32Bit

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

Site	Admiral Fed Com		
Site Position:		Northing:	398,188.800 usft
From:	Map	Easting:	608,319.300 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32° 5' 39.314570 N
		Longitude:	103° 59' 0.790506 W
		Grid Convergence:	0.19 °

Well	Admiral Fed 504H		
Well Position	+N/-S	0.00 ft	Northing: 398,188.800 usft
	+E/-W	0.00 ft	Easting: 608,319.300 usft
Position Uncertainty		2.00 ft	Wellhead Elevation: ft
			Ground Level: 2,980.80 ft

Wellbore	Wellbore #3 - ST02				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	4/16/2020	6.73	59.72	47,747.10000000

Design	Wellbore #3 - ST02				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	357.02	

Survey Program	Date	4/25/2020			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
139.00	13,810.00	Survey #1 ST01 Surveys Nabors (Wellbor	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction	
13,810.00	18,610.00	Survey #2 ST02 Surveys Gordon (Wellbor	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	
139.00	0.54	167.22	139.00	-0.64	0.14	-0.65	0.39	0.39	0.00	
317.00	0.65	96.19	316.99	-1.57	1.33	-1.63	0.39	0.06	-39.90	
501.00	2.63	78.38	500.91	-0.83	6.51	-1.17	1.10	1.08	-9.68	
653.00	3.57	63.05	652.69	2.02	14.14	1.28	0.82	0.62	-10.09	
779.00	3.14	54.19	778.47	5.82	20.44	4.75	0.53	-0.34	-7.03	
869.00	2.37	51.39	868.37	8.42	23.89	7.17	0.87	-0.86	-3.11	
961.00	2.69	246.38	960.33	8.74	23.40	7.51	5.45	0.35	-179.36	
1,053.00	3.27	256.26	1,052.21	7.25	18.87	6.26	0.84	0.63	10.74	
1,147.00	2.92	264.71	1,146.07	6.40	13.88	5.67	0.61	-0.37	8.99	



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
Project:	Eddy Co., NM	TVD Reference:	RT=27 Nabors 893 @ 3007.80ft
Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	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)
1,240.00	1.19	349.85	1,239.02	7.13	11.35	6.53	3.29	-1.86	91.55
1,334.00	2.00	31.20	1,332.99	9.49	12.03	8.85	1.44	0.86	43.99
1,428.00	1.80	24.46	1,426.94	12.24	13.49	11.52	0.32	-0.21	-7.17
1,523.00	1.71	17.60	1,521.89	14.95	14.54	14.17	0.24	-0.09	-7.22
1,617.00	1.38	20.00	1,615.86	17.35	15.35	16.53	0.36	-0.35	2.55
1,711.00	1.14	19.13	1,709.84	19.30	16.04	18.44	0.26	-0.26	-0.93
1,805.00	0.81	12.91	1,803.82	20.83	16.50	19.94	0.37	-0.35	-6.62
1,899.00	0.66	349.18	1,897.82	22.01	16.55	21.12	0.36	-0.16	-25.24
1,993.00	0.61	348.56	1,991.81	23.03	16.34	22.15	0.05	-0.05	-0.66
2,087.00	0.62	13.53	2,085.80	24.01	16.36	23.13	0.28	0.01	26.56
2,181.00	0.61	25.85	2,179.80	24.96	16.70	24.06	0.14	-0.01	13.11
2,276.00	0.85	68.71	2,274.79	25.67	17.58	24.72	0.61	0.25	45.12
2,370.00	2.08	91.40	2,368.76	25.88	19.93	24.81	1.42	1.31	24.14
2,464.00	1.42	124.01	2,462.72	25.19	22.60	23.98	1.24	-0.70	34.69
2,559.00	1.84	183.44	2,557.69	23.01	23.49	21.75	1.74	0.44	62.56
2,653.00	1.80	169.92	2,651.64	20.05	23.66	18.79	0.46	-0.04	-14.38
2,747.00	2.12	182.52	2,745.58	16.86	23.84	15.59	0.57	0.34	13.40
2,841.00	2.28	160.03	2,839.52	13.36	24.40	12.08	0.93	0.17	-23.93
2,935.00	2.05	162.22	2,933.45	10.00	25.55	8.66	0.26	-0.24	2.33
3,124.00	1.64	174.55	3,122.35	4.09	26.84	2.69	0.30	-0.22	6.52
3,218.00	1.80	211.95	3,216.31	1.50	26.19	0.14	1.18	0.17	39.79
3,311.00	2.15	227.29	3,309.26	-0.92	24.13	-2.18	0.68	0.38	16.49
3,406.00	2.11	220.81	3,404.19	-3.45	21.68	-4.58	0.26	-0.04	-6.82
3,500.00	1.87	224.48	3,498.14	-5.86	19.48	-6.86	0.29	-0.26	3.90
3,594.00	1.71	227.75	3,592.09	-7.90	17.36	-8.79	0.20	-0.17	3.48
3,688.00	1.65	226.84	3,686.05	-9.76	15.34	-10.55	0.07	-0.06	-0.97
3,782.00	1.71	229.28	3,780.01	-11.60	13.29	-12.28	0.10	0.06	2.60
3,876.00	1.35	234.49	3,873.98	-13.16	11.32	-13.73	0.41	-0.38	5.54
3,970.00	1.17	237.21	3,967.95	-14.33	9.62	-14.81	0.20	-0.19	2.89
4,064.00	1.15	234.75	4,061.93	-15.39	8.04	-15.79	0.06	-0.02	-2.62
4,158.00	1.10	232.63	4,155.91	-16.48	6.55	-16.80	0.07	-0.05	-2.26
4,252.00	1.12	236.92	4,249.90	-17.53	5.06	-17.77	0.09	0.02	4.56
4,346.00	1.18	236.67	4,343.88	-18.56	3.49	-18.72	0.06	0.06	-0.27
4,441.00	1.30	234.64	4,438.86	-19.73	1.79	-19.79	0.13	0.13	-2.14
4,535.00	1.23	238.73	4,532.83	-20.87	0.06	-20.84	0.12	-0.07	4.35
4,629.00	1.23	241.01	4,626.81	-21.88	-1.69	-21.76	0.05	0.00	2.43
4,723.00	1.39	239.60	4,720.79	-22.94	-3.55	-22.73	0.17	0.17	-1.50
4,817.00	1.50	236.89	4,814.76	-24.19	-5.57	-23.87	0.14	0.12	-2.88
4,912.00	1.69	238.98	4,909.72	-25.60	-7.81	-25.15	0.21	0.20	2.20
5,006.00	1.80	235.58	5,003.68	-27.14	-10.22	-26.58	0.16	0.12	-3.62
5,101.00	2.10	242.28	5,098.62	-28.80	-12.99	-28.08	0.40	0.32	7.05
5,194.00	2.03	236.99	5,191.56	-30.49	-15.88	-29.62	0.22	-0.08	-5.69
5,288.00	2.35	238.06	5,285.49	-32.41	-18.91	-31.39	0.34	0.34	1.14



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
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Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	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)
5,382.00	2.55	237.10	5,379.41	-34.57	-22.30	-33.36	0.22	0.21	-1.02
5,476.00	2.51	235.08	5,473.32	-36.88	-25.74	-35.49	0.10	-0.04	-2.15
5,569.00	2.32	231.06	5,566.23	-39.23	-28.88	-37.68	0.27	-0.20	-4.32
5,664.00	2.33	227.03	5,661.15	-41.76	-31.78	-40.05	0.17	0.01	-4.24
5,758.00	2.38	228.77	5,755.07	-44.35	-34.65	-42.48	0.09	0.05	1.85
5,852.00	2.76	232.83	5,848.98	-47.00	-37.92	-44.96	0.45	0.40	4.32
5,947.00	2.88	232.97	5,943.87	-49.82	-41.65	-47.59	0.13	0.13	0.15
6,040.00	2.87	233.87	6,036.75	-52.60	-45.40	-50.17	0.05	-0.01	0.97
6,135.00	2.88	231.06	6,131.63	-55.50	-49.17	-52.87	0.15	0.01	-2.96
6,229.00	2.76	226.61	6,225.51	-58.54	-52.65	-55.72	0.27	-0.13	-4.73
6,323.00	2.42	223.29	6,319.42	-61.54	-55.66	-58.56	0.40	-0.36	-3.53
6,417.00	2.46	220.11	6,413.33	-64.53	-58.32	-61.41	0.15	0.04	-3.38
6,511.00	2.35	216.49	6,507.25	-67.62	-60.77	-64.37	0.20	-0.12	-3.85
6,605.00	2.05	212.90	6,601.18	-70.58	-62.83	-67.22	0.35	-0.32	-3.82
6,699.00	2.81	230.14	6,695.10	-73.47	-65.51	-69.96	1.11	0.81	18.34
6,794.00	3.74	240.87	6,789.94	-76.47	-70.00	-72.73	1.17	0.98	11.29
6,887.00	3.71	250.02	6,882.75	-78.97	-75.48	-74.94	0.64	-0.03	9.84
6,981.00	2.86	248.59	6,976.59	-80.87	-80.52	-76.57	0.91	-0.90	-1.52
7,075.00	2.88	234.71	7,070.47	-83.09	-84.63	-78.58	0.74	0.02	-14.77
7,169.00	3.30	223.71	7,164.34	-86.41	-88.43	-81.69	0.77	0.45	-11.70
7,262.00	2.96	223.84	7,257.20	-90.08	-91.94	-85.17	0.37	-0.37	0.14
7,356.00	4.10	233.05	7,351.02	-93.85	-96.31	-88.71	1.35	1.21	9.80
7,450.00	2.54	238.10	7,444.86	-96.97	-100.76	-91.60	1.69	-1.66	5.37
7,544.00	2.44	248.39	7,538.77	-98.80	-104.39	-93.24	0.49	-0.11	10.95
7,638.00	4.56	238.94	7,632.59	-101.47	-109.45	-95.64	2.33	2.26	-10.05
7,725.00	4.97	244.96	7,719.29	-104.85	-115.83	-98.69	0.74	0.47	6.92
7,754.00	7.89	325.43	7,748.15	-103.74	-118.10	-97.46	29.63	10.07	277.48
7,785.00	12.40	330.77	7,778.66	-99.08	-120.94	-92.66	14.85	14.55	17.23
7,817.00	16.17	335.79	7,809.67	-92.02	-124.44	-85.42	12.39	11.78	15.69
7,848.00	19.04	336.60	7,839.21	-83.44	-128.22	-76.66	9.29	9.26	2.61
7,880.00	21.26	334.22	7,869.25	-73.42	-132.82	-66.42	7.39	6.94	-7.44
7,911.00	20.89	336.72	7,898.18	-63.28	-137.45	-56.05	3.14	-1.19	8.06
7,942.00	20.42	342.06	7,927.19	-53.06	-141.30	-45.64	6.26	-1.52	17.23
7,974.00	20.43	342.10	7,957.18	-42.43	-144.73	-34.85	0.05	0.03	0.13
8,005.00	21.46	342.13	7,986.13	-31.89	-148.14	-24.14	3.32	3.32	0.10
8,036.00	23.50	340.10	8,014.77	-20.68	-151.98	-12.75	7.04	6.58	-6.55
8,068.00	25.08	344.10	8,043.94	-8.15	-156.01	-0.03	7.13	4.94	12.50
8,099.00	27.13	343.92	8,071.78	4.96	-159.77	13.26	6.62	6.61	-0.58
8,131.00	30.68	342.55	8,099.79	19.76	-164.24	28.27	11.28	11.09	-4.28
8,162.00	34.68	342.62	8,125.87	35.73	-169.25	44.48	12.90	12.90	0.23
8,193.00	35.79	339.93	8,151.20	52.66	-174.99	61.69	6.15	3.58	-8.68
8,225.00	37.30	339.90	8,176.90	70.56	-181.54	79.90	4.72	4.72	-0.09
8,256.00	39.01	338.96	8,201.28	88.49	-188.27	98.15	5.83	5.52	-3.03



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
Project:	Eddy Co., NM	TVD Reference:	RT=27 Nabors 893 @ 3007.80ft
Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	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)
8,288.00	41.09	339.29	8,225.77	107.72	-195.60	117.75	6.53	6.50	1.03
8,319.00	42.92	339.66	8,248.81	127.15	-202.88	137.53	5.96	5.90	1.19
8,350.00	45.60	341.61	8,271.01	147.56	-210.04	158.28	9.70	8.65	6.29
8,381.00	48.47	342.73	8,292.14	169.16	-216.98	180.21	9.63	9.26	3.61
8,413.00	51.54	343.86	8,312.70	192.63	-224.02	204.02	9.97	9.59	3.53
8,444.00	53.71	343.99	8,331.52	216.31	-230.84	228.01	7.01	7.00	0.42
8,476.00	54.01	344.01	8,350.39	241.15	-237.96	253.19	0.94	0.94	0.06
8,507.00	55.66	343.91	8,368.24	265.50	-244.97	277.88	5.33	5.32	-0.32
8,538.00	57.31	344.27	8,385.36	290.36	-252.05	303.07	5.41	5.32	1.16
8,569.00	58.48	343.79	8,401.83	315.60	-259.28	328.65	4.00	3.77	-1.55
8,601.00	58.23	345.65	8,418.62	341.88	-266.45	355.27	5.01	-0.78	5.81
8,632.00	57.79	345.70	8,435.05	367.35	-272.96	381.05	1.43	-1.42	0.16
8,664.00	56.82	344.59	8,452.33	393.38	-279.86	407.40	4.21	-3.03	-3.47
8,695.00	57.86	343.96	8,469.06	418.50	-286.94	432.86	3.77	3.35	-2.03
8,727.00	59.26	343.78	8,485.75	444.73	-294.52	459.44	4.40	4.38	-0.56
8,758.00	59.58	343.78	8,501.52	470.36	-301.98	485.42	1.03	1.03	0.00
8,790.00	60.27	343.91	8,517.56	496.95	-309.68	512.38	2.18	2.16	0.41
8,821.00	60.12	343.93	8,532.97	522.80	-317.13	538.58	0.49	-0.48	0.06
8,853.00	61.81	343.98	8,548.50	549.69	-324.86	565.83	5.28	5.28	0.16
8,884.00	64.77	344.61	8,562.43	576.34	-332.36	592.84	9.72	9.55	2.03
8,915.00	65.88	345.69	8,575.37	603.57	-339.58	620.41	4.78	3.58	3.48
8,947.00	66.49	345.74	8,588.29	631.94	-346.80	649.12	1.91	1.91	0.16
8,978.00	66.25	345.46	8,600.72	659.45	-353.86	676.96	1.13	-0.77	-0.90
9,009.00	65.90	345.12	8,613.29	686.86	-361.06	704.70	1.51	-1.13	-1.10
9,041.00	66.68	345.38	8,626.16	715.19	-368.52	733.38	2.55	2.44	0.81
9,073.00	68.39	346.79	8,638.39	743.89	-375.63	762.42	6.72	5.34	4.41
9,104.00	71.75	347.57	8,648.95	772.31	-382.09	791.13	11.09	10.84	2.52
9,135.00	75.10	347.80	8,657.79	801.33	-388.42	820.44	10.83	10.81	0.74
9,167.00	76.79	347.60	8,665.57	831.66	-395.04	851.07	5.32	5.28	-0.63
9,198.00	80.00	348.90	8,671.80	861.39	-401.22	881.08	11.14	10.35	4.19
9,225.00	82.78	350.10	8,675.84	887.63	-406.08	907.54	11.19	10.30	4.44
9,301.00	90.84	350.39	8,680.07	962.35	-418.93	982.83	10.61	10.61	0.38
9,395.00	90.97	351.48	8,678.58	1,055.17	-433.74	1,076.29	1.17	0.14	1.16
9,489.00	89.82	352.13	8,677.94	1,148.20	-447.13	1,169.90	1.41	-1.22	0.69
9,583.00	88.78	353.61	8,679.08	1,241.47	-458.80	1,263.64	1.92	-1.11	1.57
9,677.00	88.77	357.18	8,681.09	1,335.13	-466.34	1,357.56	3.80	-0.01	3.80
9,771.00	88.77	357.10	8,683.11	1,428.99	-471.03	1,451.54	0.09	0.00	-0.09
9,865.00	90.12	358.31	8,684.02	1,522.90	-474.80	1,545.53	1.93	1.44	1.29
9,959.00	90.62	358.03	8,683.42	1,616.85	-477.80	1,639.51	0.61	0.53	-0.30
10,053.00	91.14	0.87	8,681.97	1,710.83	-478.70	1,733.40	3.07	0.55	3.02
10,147.00	89.84	357.57	8,681.17	1,804.80	-479.98	1,827.31	3.77	-1.38	-3.51
10,240.00	90.03	359.23	8,681.27	1,897.76	-482.58	1,920.28	1.80	0.20	1.78
10,334.00	89.59	2.36	8,681.58	1,991.74	-481.27	2,014.07	3.36	-0.47	3.33
10,428.00	90.30	3.00	8,681.68	2,085.64	-476.88	2,107.61	1.02	0.76	0.68



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
Project:	Eddy Co., NM	TVD Reference:	RT=27 Nabors 893 @ 3007.80ft
Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	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)
10,522.00	90.29	4.08	8,681.19	2,179.45	-471.07	2,201.00	1.15	-0.01	1.15
10,617.00	89.80	4.13	8,681.12	2,274.21	-464.27	2,295.27	0.52	-0.52	0.05
10,711.00	89.39	3.92	8,681.78	2,367.98	-457.68	2,388.57	0.49	-0.44	-0.22
10,805.00	89.09	2.90	8,683.03	2,461.80	-452.09	2,481.97	1.13	-0.32	-1.09
10,899.00	88.55	1.33	8,684.96	2,555.71	-448.62	2,575.58	1.77	-0.57	-1.67
10,994.00	89.85	0.85	8,686.29	2,650.68	-446.81	2,670.33	1.46	1.37	-0.51
11,088.00	89.81	358.82	8,686.57	2,744.68	-447.08	2,764.21	2.16	-0.04	-2.16
11,182.00	89.90	356.54	8,686.81	2,838.59	-450.89	2,858.20	2.43	0.10	-2.43
11,276.00	88.79	352.54	8,687.88	2,932.14	-459.83	2,952.08	4.42	-1.18	-4.26
11,370.00	89.01	355.67	8,689.69	3,025.61	-469.48	3,045.93	3.34	0.23	3.33
11,465.00	90.83	358.37	8,689.82	3,120.47	-474.42	3,140.92	3.43	1.92	2.84
11,559.00	92.31	358.25	8,687.24	3,214.39	-477.19	3,234.86	1.58	1.57	-0.13
11,654.00	91.24	359.56	8,684.30	3,309.33	-479.00	3,329.76	1.78	-1.13	1.38
11,748.00	92.82	359.54	8,680.97	3,403.26	-479.74	3,423.60	1.68	1.68	-0.02
11,842.00	90.68	0.38	8,678.10	3,497.21	-479.80	3,517.43	2.45	-2.28	0.89
11,935.00	88.21	0.27	8,679.00	3,590.20	-479.28	3,610.26	2.66	-2.66	-0.12
12,030.00	89.30	0.74	8,681.07	3,685.17	-478.44	3,705.06	1.25	1.15	0.49
12,125.00	90.55	0.58	8,681.19	3,780.16	-477.35	3,799.87	1.33	1.32	-0.17
12,219.00	91.70	2.14	8,679.34	3,874.12	-475.12	3,893.58	2.06	1.22	1.66
12,313.00	91.36	2.29	8,676.84	3,968.01	-471.48	3,987.16	0.40	-0.36	0.16
12,406.00	90.97	1.98	8,674.94	4,060.93	-468.02	4,079.77	0.54	-0.42	-0.33
12,500.00	92.08	2.48	8,672.44	4,154.82	-464.36	4,173.34	1.30	1.18	0.53
12,594.00	88.51	2.03	8,671.96	4,248.73	-460.67	4,266.93	3.83	-3.80	-0.48
12,688.00	89.20	1.11	8,673.84	4,342.68	-458.09	4,360.62	1.22	0.73	-0.98
12,782.00	90.83	0.12	8,673.81	4,436.67	-457.08	4,454.43	2.03	1.73	-1.05
12,876.00	88.44	358.94	8,674.41	4,530.65	-457.85	4,548.33	2.84	-2.54	-1.26
12,970.00	89.50	358.91	8,676.10	4,624.62	-459.62	4,642.26	1.13	1.13	-0.03
13,064.00	88.76	357.33	8,677.53	4,718.55	-462.70	4,736.23	1.86	-0.79	-1.68
13,158.00	90.51	356.90	8,678.13	4,812.43	-467.43	4,830.22	1.92	1.86	-0.46
13,246.00	90.32	355.07	8,677.49	4,900.21	-473.59	4,918.20	2.09	-0.22	-2.08
13,340.00	90.65	357.66	8,676.69	4,994.01	-479.55	5,012.18	2.78	0.35	2.76
13,434.00	90.61	358.05	8,675.66	5,087.94	-483.07	5,106.17	0.42	-0.04	0.41
13,529.00	90.22	357.26	8,674.97	5,182.85	-486.95	5,201.16	0.93	-0.41	-0.83
13,623.00	90.07	356.18	8,674.73	5,276.70	-492.33	5,295.16	1.16	-0.16	-1.15
13,717.00	90.57	359.15	8,674.21	5,370.61	-496.16	5,389.14	3.20	0.53	3.16
13,810.00	92.51	0.09	8,671.71	5,463.57	-496.78	5,482.00	2.32	2.09	1.01
13,909.00	91.27	358.54	8,668.44	5,562.50	-497.96	5,580.86	2.00	-1.25	-1.57
14,003.00	92.25	357.38	8,665.56	5,656.39	-501.31	5,674.81	1.62	1.04	-1.23
14,097.00	90.12	357.07	8,663.61	5,750.26	-505.86	5,768.78	2.29	-2.27	-0.33
14,191.00	88.36	358.22	8,664.86	5,844.16	-509.72	5,862.76	2.24	-1.87	1.22
14,285.00	89.00	358.18	8,667.03	5,938.09	-512.67	5,956.71	0.68	0.68	-0.04
14,381.00	89.48	357.56	8,668.30	6,034.02	-516.24	6,052.69	0.82	0.50	-0.65
14,475.00	90.07	357.06	8,668.67	6,127.91	-520.65	6,146.69	0.82	0.63	-0.53



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
Project:	Eddy Co., NM	TVD Reference:	RT=27 Nabors 893 @ 3007.80ft
Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	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)
14,569.00	88.92	358.24	8,669.50	6,221.83	-524.50	6,240.68	1.75	-1.22	1.26
14,663.00	89.96	358.25	8,670.42	6,315.78	-527.38	6,334.65	1.11	1.11	0.01
14,757.00	91.10	357.90	8,669.55	6,409.72	-530.54	6,428.63	1.27	1.21	-0.37
14,851.00	91.25	358.65	8,667.62	6,503.65	-533.37	6,522.59	0.81	0.16	0.80
14,945.00	90.12	359.82	8,666.49	6,597.64	-534.62	6,616.51	1.73	-1.20	1.24
15,040.00	88.44	0.66	8,667.69	6,692.62	-534.23	6,711.35	1.98	-1.77	0.88
15,134.00	90.32	1.37	8,668.71	6,786.60	-532.56	6,805.11	2.14	2.00	0.76
15,228.00	86.17	1.36	8,671.58	6,880.51	-530.32	6,898.77	4.41	-4.41	-0.01
15,322.00	85.98	1.33	8,678.02	6,974.26	-528.12	6,992.28	0.20	-0.20	-0.03
15,417.00	86.99	1.11	8,683.84	7,069.06	-526.10	7,086.85	1.09	1.06	-0.23
15,511.00	88.50	0.86	8,687.54	7,162.97	-524.49	7,180.55	1.63	1.61	-0.27
15,605.00	89.23	0.33	8,689.40	7,256.94	-523.51	7,274.35	0.96	0.78	-0.56
15,699.00	90.15	0.07	8,689.91	7,350.94	-523.18	7,368.20	1.02	0.98	-0.28
15,793.00	91.47	359.82	8,688.58	7,444.93	-523.28	7,462.07	1.43	1.40	-0.27
15,887.00	90.26	0.28	8,687.16	7,538.92	-523.19	7,555.92	1.38	-1.29	0.49
15,982.00	91.05	359.35	8,686.08	7,633.91	-523.50	7,650.80	1.28	0.83	-0.98
16,077.00	90.63	359.90	8,684.69	7,728.90	-524.12	7,745.69	0.73	-0.44	0.58
16,170.00	87.97	359.92	8,685.82	7,821.88	-524.27	7,838.56	2.86	-2.86	0.02
16,264.00	87.86	359.79	8,689.24	7,915.82	-524.51	7,932.38	0.18	-0.12	-0.14
16,358.00	89.26	0.22	8,691.60	8,009.79	-524.50	8,026.22	1.56	1.49	0.46
16,452.00	91.24	0.48	8,691.19	8,103.78	-523.92	8,120.06	2.12	2.11	0.28
16,546.00	91.61	0.36	8,688.86	8,197.75	-523.23	8,213.86	0.41	0.39	-0.13
16,640.00	90.04	359.53	8,687.50	8,291.73	-523.32	8,307.73	1.89	-1.67	-0.88
16,734.00	91.27	359.70	8,686.43	8,385.72	-523.96	8,401.62	1.32	1.31	0.18
16,828.00	92.51	359.84	8,683.33	8,479.67	-524.33	8,495.46	1.33	1.32	0.15
16,922.00	91.78	359.65	8,679.81	8,573.60	-524.75	8,589.29	0.80	-0.78	-0.20
17,016.00	90.24	0.24	8,678.15	8,667.58	-524.84	8,683.15	1.75	-1.64	0.63
17,110.00	88.02	0.21	8,679.58	8,761.57	-524.47	8,776.98	2.36	-2.36	-0.03
17,203.00	86.93	359.41	8,683.68	8,854.47	-524.78	8,869.78	1.45	-1.17	-0.86
17,298.00	87.69	358.94	8,688.14	8,949.36	-526.15	8,964.61	0.94	0.80	-0.49
17,393.00	88.67	358.83	8,691.15	9,044.29	-527.99	9,059.51	1.04	1.03	-0.12
17,487.00	89.54	358.83	8,692.62	9,138.26	-529.91	9,153.45	0.93	0.93	0.00
17,581.00	90.85	358.92	8,692.30	9,232.24	-531.76	9,247.40	1.40	1.39	0.10
17,667.00	90.29	358.88	8,691.45	9,318.22	-533.41	9,333.35	0.65	-0.65	-0.05
17,761.00	89.69	359.17	8,691.46	9,412.20	-535.01	9,427.29	0.71	-0.64	0.31
17,855.00	90.66	359.28	8,691.17	9,506.19	-536.28	9,521.22	1.04	1.03	0.12
17,949.00	90.49	359.48	8,690.23	9,600.18	-537.30	9,615.13	0.28	-0.18	0.21
18,043.00	90.92	359.22	8,689.07	9,694.17	-538.36	9,709.05	0.53	0.46	-0.28
18,137.00	90.88	358.59	8,687.60	9,788.14	-540.16	9,802.99	0.67	-0.04	-0.67
18,231.00	91.46	358.51	8,685.68	9,882.09	-542.54	9,896.93	0.62	0.62	-0.09
18,325.00	91.75	358.50	8,683.05	9,976.02	-544.99	9,990.86	0.31	0.31	-0.01
18,419.00	92.80	358.14	8,679.31	10,069.91	-547.74	10,084.76	1.18	1.12	-0.38
18,513.00	93.16	357.81	8,674.43	10,163.72	-551.06	10,178.62	0.52	0.38	-0.35



Nabors Drilling Solutions

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Fed 504H
Project:	Eddy Co., NM	TVD Reference:	RT=27 Nabors 893 @ 3007.80ft
Site:	Admiral Fed Com	MD Reference:	RT=27 Nabors 893 @ 3007.80ft
Well:	Admiral Fed 504H	North Reference:	Grid
Wellbore:	Wellbore #3 - ST02	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #3 - ST02	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)
18,553.00	92.72	357.67	8,672.38	10,203.64	-552.64	10,218.57	1.15	-1.10	-0.35
18,562.89	92.72	357.67	8,671.91	10,213.51	-553.04	10,228.45	0.00	0.00	0.00
LTP Crossing PT @ 18562.89' MD									
18,610.00	92.72	357.67	8,669.67	10,260.52	-554.95	10,275.50	0.00	0.00	0.00
PTB @ 18610 MD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
18,562.89	8,671.91	10,213.51	-553.04	LTP Crossing PT @ 18562.89' MD
18,610.00	8,669.67	10,260.52	-554.95	PTB @ 18610 MD

Checked By: _____ Approved By: _____ Date: _____

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 20898

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	20898	Action Type:	C-104C
OCD Reviewer									Condition
ksimmons									None