

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office

Operator Copy

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM124664

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
GUNNER 8 FEDERAL COM 604H9. API Well No.
30-025-46758-00-X110. Field and Pool or Exploratory Area
RATTLESNAKE FLAT11. County or Parish, State
LEA COUNTY, NM

SUBMIT IN TRIPLICATE - Other instructions on page 2

RECEIVED
FEB 27 20201. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
COG OPERATING LLC
Contact: STAN WAGNER
E-Mail: swagner@concho.com3a. Address
ONE CONCHO CENTER 600 W ILLINOIS AVENUE
MIDLAND, TX 79701-4287
3b. Phone No. (include area code)
Ph: 432.253.9685

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

Sec 5 T26S R34E NWNW 250FNL 560FWL
32.079044 N Lat, 103.498665 W Lon

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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

COG Operating requests an amendment to our approved APD for this well to reflect changes in BHL and well number.

Change BHL from 50' FSL & 495' FWL TO: 50' FSL & 825' FWL 8-26S-34E

Change well number from 301H TO: 604H

Revised plats and directional plan attached.

All previous Conditions of Approval still apply. DR

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #500582 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 02/03/2020 (20PP1176SE)

Name (Printed/Typed) STAN WAGNER

Title REGULATORY ADVISOR

Signature (Electronic Submission)

Date 01/24/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By DYLAN ROSSMANGQ

Title PETROLEUM ENGINEER

Date 02/18/2020

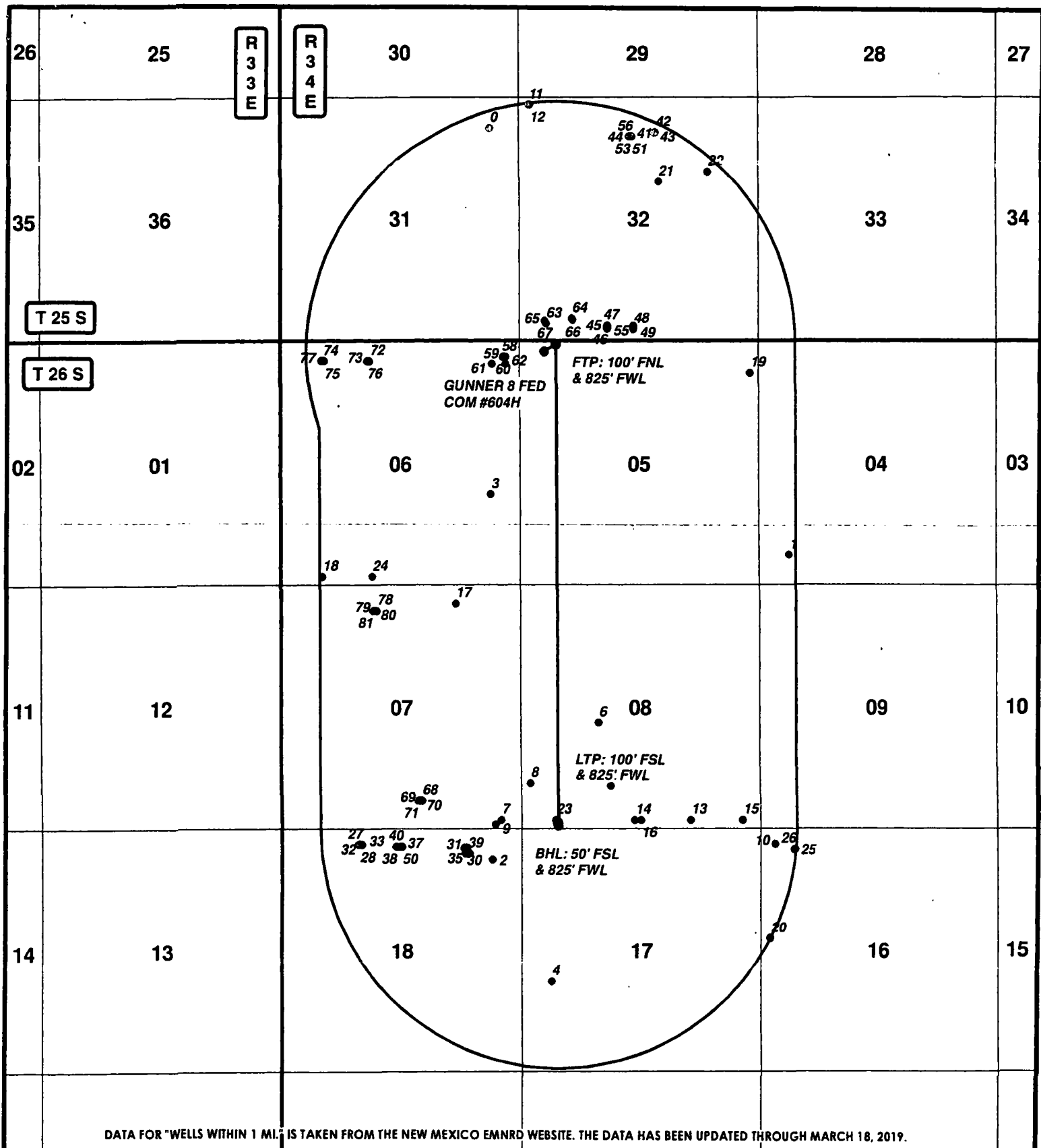
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

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

(Instructions on page 2)

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



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH MARCH 18, 2019.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

GUNNER 8 FED COM #604H

SEC: 5	TWP: 26 S.	RGE: 34 E.	ELEVATION: 3333.4'
STATE: NEW MEXICO	COUNTY: LEA	250' FNL & 560' FWL	
W.O. # 19-2055	LEASE: GUNNER	SURVEY: N.M.P.M	

0 2,500 5,000 7,500 FEET

0 0.175 0.35 0.7 Miles 1 IN = 2,750 FT

1 MILE MAP

11/19/2019

W.N.

CONCHO

COG OPERATING, LLC



HARCROW SURVEYING, LLC.
2316 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158
c.harcrow@harcrowsurveying.com

GUNNER 8 FEDERAL COM #604H 1 MILE DATA (19-2055)

WELL NAME	OPERATOR	AP	SECTION	TOWNSHIP	RANGE	FTG	NS	NS	CD	FTG	EW	EW	CD	LATITUDE	LONGITUDE	COMPL STAT
0 CONTINENTAL FEDERAL 001	D W WESTBROOK	3002508499	31	25.05	34E	660	N				660	E		32.092376	-103.502589	Plugged
1 YATES 4 FEDERAL 001	HILL & MEEKER	3002508502	4	26.05	34E	660	S				660	W		32.066958	-103.481228	Plugged
2 GULF FEDERAL 001	KIRKLIN DRILLING CO	3002508503	18	26.05	34E	660	N				660	E		32.048839	-103.502572	Plugged
3 FEDERAL K 001	AMERICAN PETROFINA	3002520385	6	26.05	34E	1980	S				660	E		32.070605	-103.502578	Plugged
4 FEDERAL 53 COM 001	POGO PRODUCING CO	3002528402	17	26.05	34E	1980	S				660	W		32.041592	-103.498288	Plugged
5 ZYSK FEDERAL 001	GULF OIL CORP	3002528650	8	26.05	34E	925	S				1980	W		32.05319	-103.494011	Plugged
6 SALADO FEDERAL 001	CHI OPERATING INC	3002538402	8	26.05	34E	2310	S				1850	W		32.056991	-103.494841	Plugged
7 ICHABOD 7 FEDERAL 001H	DEVON ENERGY PRODUCTION COMPANY, LP	3002540043	7	26.05	34E	195	S				330	E		32.051175	-103.501939	New (Not drilled or compl)
8 GUNNER 8 FEDERAL 008H	COG OPERATING LLC	3002540309	8	26.05	34E	990	S				330	W		32.053359	-103.499788	New (Not drilled or compl)
9 ICHABOD 7 FEDERAL 004H	DEVON ENERGY PRODUCTION COMPANY, LP	3002540574	7	26.05	34E	108	S				455	E		32.050937	-103.502345	New (Not drilled or compl)
10 GUNNER 16 STATE SWD 001	COG OPERATING LLC	3002540890	16	26.05	34E	330	N				330	W		32.049737	-103.482312	New (Not drilled or compl)
11 CONDOR 32 STATE 001C	EOG RESOURCES INC	3002540958	32	25.05	34E	161	N				280	W		32.093766	-103.499769	New (Not drilled or compl)
12 CONDOR 32 STATE 002C	EOG RESOURCES INC	3002540959	32	25.05	34E	161	N				310	W		32.093765	-103.499672	New (Not drilled or compl)
13 GUNNER 8 FEDERAL 005H	COG OPERATING LLC	3002541180	8	26.05	34E	190	S				1520	E		32.051168	-103.488313	New (Not drilled or compl)
14 GUNNER 8 FEDERAL COM 006H	COG OPERATING LLC	3002541181	8	26.05	34E	190	S				2625	W		32.051165	-103.492354	New (Not drilled or compl)
15 GUNNER 8 FEDERAL COM 004H	COG OPERATING LLC	3002541187	8	26.05	34E	190	S				380	E		32.05117	-103.484615	New (Not drilled or compl)
16 GUNNER 8 FEDERAL COM 007H	COG OPERATING LLC	3002541211	8	26.05	34E	190	S				2625	E		32.051165	-103.491897	New (Not drilled or compl)
17 ICHABOD 7 FEDERAL 002H	DEVON ENERGY PRODUCTION COMPANY, LP	3002541239	7	26.05	34E	380	N				1336	E		32.064077	-103.505142	New (Not drilled or compl)
18 SALADO DRAW 6 FEDERAL 001H	DEVON ENERGY PRODUCTION COMPANY, LP	3002541293	6	26.05	34E	200	S				875	W		32.065706	-103.514651	New (Not drilled or compl)
19 GUNNER 5 FEE 001C	COG OPERATING LLC	3002541401	5	26.05	34E	661	N				190	E		32.077781	-103.483977	New (Not drilled or compl)
20 RATTLESNAKE 16 SWD 001	DEVON ENERGY PRODUCTION COMPANY, LP	3002542355	16	26.05	34E	2375	N				210	W		32.044117	-103.482692	New (Not drilled or compl)
21 CONDOR 32 STATE SWD 001C	EOG RESOURCES INC	3002542466	32	25.05	34E	1824	N				2200	E		32.089147	-103.490532	New (Not drilled or compl)
22 CONDOR 32 STATE 002C	EOG RESOURCES INC	3002542621	32	25.05	34E	1601	N				1100	E		32.089742	-103.486965	New (Not drilled or compl)
23 GUNNER 8 FEDERAL COM 009H	COG OPERATING LLC	3002542905	8	26.05	34E	200	S				890	W		32.051188	-103.497982	New (Not drilled or compl)
24 SALADO DRAW 6 FEDERAL 002H	DEVON ENERGY PRODUCTION COMPANY, LP	3002542919	6	26.05	34E	200	S				1980	W		32.065693	-103.511067	New (Not drilled or compl)
25 NAUTILUS 16 STATE COM 703H	EOG RESOURCES INC	3002543129	16	26.05	34E	439	N				751	W		32.049432	-103.480946	New (Not drilled or compl)
26 NAUTILUS 16 STATE COM 704H	EOG RESOURCES INC	3002543130	16	26.05	34E	440	N				782	W		32.049429	-103.480846	New (Not drilled or compl)
27 FIGHTING OKRA 18 19 FEDERAL 002H	DEVON ENERGY PRODUCTION COMPANY, LP	3002543991	18	26.05	34E	330	N				1665	W		32.04975	-103.512138	New (Not drilled or compl)
28 FIGHTING OKRA 18 19 FEDERAL 014H	DEVON ENERGY PRODUCTION COMPANY, LP	3002543992	18	26.05	34E	330	N				1695	W		32.04975	-103.51204	New (Not drilled or compl)
29 JAYHAWK 7 6 FEDERAL FEE COM 084H	DEVON ENERGY PRODUCTION COMPANY, LP	3002543993	18	26.05	34E	400	N				1140	E		32.049544	-103.504569	New (Not drilled or compl)
30 JAYHAWK 7 6 FEDERAL FEE COM 085H	DEVON ENERGY PRODUCTION COMPANY, LP	3002543994	18	26.05	34E	400	N				1110	E		32.049544	-103.504472	New (Not drilled or compl)
31 JAYHAWK 7 6 FEDERAL FEE COM 086H	DEVON ENERGY PRODUCTION COMPANY, LP	3002543995	18	26.05	34E	400	N				1080	E		32.049544	-103.504375	New (Not drilled or compl)
32 FIGHTING OKRA 18 19 FEDERAL 007H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544093	18	26.05	34E	330	N				1725	W		32.04975	-103.511943	New (Not drilled or compl)
33 FIGHTING OKRA 18 19 FEDERAL 003H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544172	18	26.05	34E	330	N				1755	W		32.04975	-103.511846	New (Not drilled or compl)
34 FIGHTING OKRA 18 19 FEDERAL 084H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544173	18	26.05	34E	526	N				1025	E		32.049197	-103.504197	New (Not drilled or compl)
35 FIGHTING OKRA 18 19 FEDERAL 085H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544174	18	26.05	34E	526	N				1055	E		32.049197	-103.504294	New (Not drilled or compl)
36 FIGHTING OKRA 18 19 FEDERAL 086H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544176	18	26.05	34E	525	N				1115	E		32.0492	-103.504489	New (Not drilled or compl)
37 FIGHTING OKRA 18 19 FEDERAL 005H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544427	18	26.05	34E	375	N				2605	W		32.049621	-103.509089	New (Not drilled or compl)
38 FIGHTING OKRA 18 19 FEDERAL 004H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544444	18	26.05	34E	375	N				2631	E		32.049622	-103.509405	New (Not drilled or compl)
39 FIGHTING OKRA 18 19 FEDERAL 006H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544445	18	26.05	34E	526	N				1085	E		32.049197	-103.504392	New (Not drilled or compl)
40 FIGHTING OKRA 18 19 FEDERAL 015H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544498	18	26.05	34E	375	N				2575	W		32.049621	-103.509186	New (Not drilled or compl)
41 CONDOR 32 STATE 603C	EOG RESOURCES INC	3002544573	32	25.05	34E	844	N				2523	W		32.091851	-103.4925	New (Not drilled or compl)
42 CONDOR 32 STATE 710C	EOG RESOURCES INC	3002544574	32	25.05	34E	746	N				2257	E		32.092111	-103.490726	New (Not drilled or compl)
43 CONDOR 32 STATE 711C	EOG RESOURCES INC	3002544575	32	25.05	34E	746	N				2290	E		32.092112	-103.490833	New (Not drilled or compl)
44 CONDOR 32 STATE 712C	EOG RESOURCES INC	3002544576	32	25.05	34E	844	N				2490	W		32.091852	-103.492607	New (Not drilled or compl)
45 CONDOR 32 STATE COM 713H	EOG RESOURCES INC	3002544577	32	25.05	34E	260	S				2027	W		32.080395	-103.494163	New (Not drilled or compl)
46 CONDOR 32 STATE COM 714C	EOG RESOURCES INC	3002544578	32	25.05	34E	294	S				2027	W		32.080489	-103.494163	New (Not drilled or compl)
47 CONDOR 32 STATE COM 715C	EOG RESOURCES INC	3002544579	32	25.05	34E	328	S				2027	W		32.080582	-103.494162	New (Not drilled or compl)
48 CONDOR 32 STATE COM 740H	EOG RESOURCES INC	3002544580	32	25.05	34E	259	S				2597	W		32.080378	-103.492314	New (Not drilled or compl)
49 CONDOR 32 STATE COM 712C	EOG RESOURCES INC	3002544581	32	25.05	34E	292	S				2597	W		32.080468	-103.492314	New (Not drilled or compl)
50 FIGHTING OKRA 18 19 FEDERAL 008H	DEVON ENERGY PRODUCTION COMPANY, LP	3002544642	18	26.05	34E	375	N				2635	W		32.049621	-103.508991	New (Not drilled or compl)
51 CONDOR 32 STATE 603H	EOG RESOURCES INC	3002544670	32	25.05	34E	843	N				2557	W		32.091853	-103.49239	New (Not drilled or compl)
52 CONDOR 32 STATE COM 615	EOG RESOURCES INC	3002544671	32	25.05	34E	293	S				2027	W		32.080486	-103.494163	Plugged

53 CONDOR 32 STATE 511H	EOG RESOURCES INC	3002544672	32 25.05	34E	843 N	2523 W	32.091854	-103.4925 New (Not drilled or compl)
54 CONDOR 32 STATE COM 712	EOG RESOURCES INC	3002544673	32 25.05	34E	292 S	2597 W	32.080468	-103.492314 Plugged
55 CONDOR 32 STATE COM 614H	EOG RESOURCES INC	3002544674	32 25.05	34E	326 S	2027 W	32.080577	-103.494162 New (Not drilled or compl)
56 CONDOR 32 STATE 310H	EOG RESOURCES INC	3002544675	32 25.05	34E	843 N	2490 W	32.091854	-103.492607 New (Not drilled or compl)
57 CONDOR 32 STATE COM 712Y	EOG RESOURCES INC	3002544904	32 25.05	34E	325 S	2597 W	32.080559	-103.492313 New (Not drilled or compl)
58 JAYHAWK 6 7 FEDERAL FEE COM 001H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545173	6 26.05	34E	365 N	230 E	32.078733	-103.501493 New (Not drilled or compl)
59 JAYHAWK 6 7 FEDERAL FEE COM 002H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545174	6 26.05	34E	365 N	260 E	32.078733	-103.501591 New (Not drilled or compl)
60 JAYHAWK 6 7 FEDERAL FEE COM 003H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545175	6 26.05	34E	365 N	290 E	32.078733	-103.501688 New (Not drilled or compl)
61 JAYHAWK 6 7 FEDERAL FEE COM 004H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545176	6 26.05	34E	515 N	530 E	32.078322	-103.502468 New (Not drilled or compl)
62 JAYHAWK 6 7 FEDERAL FEE COM 005H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545177	6 26.05	34E	515 N	230 E	32.07832	-103.501495 New (Not drilled or compl)
63 CONDOR 32 STATE COM 616H	EOG RESOURCES INC	3002545364	32 25.05	34E	361 S	679 W	32.080708	-103.498536 New (Not drilled or compl)
64 CONDOR 32 STATE COM 714H	EOG RESOURCES INC	3002545365	32 25.05	34E	476 S	1252 W	32.081009	-103.496675 New (Not drilled or compl)
65 CONDOR 32 STATE COM 715H	EOG RESOURCES INC	3002545366	32 25.05	34E	389 S	661 W	32.080786	-103.498594 New (Not drilled or compl)
66 CONDOR 32 STATE COM 741H	EOG RESOURCES INC	3002545367	32 25.05	34E	448 S	1269 W	32.080932	-103.49662 New (Not drilled or compl)
67 CONDOR 32 STATE COM 718H	EOG RESOURCES INC	3002545368	32 25.05	34E	417 S	643 W	32.080863	-103.498652 New (Not drilled or compl)
68 JAYHAWK 7 6 FEDERAL FEE COM 006H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545532	7 26.05	34E	615 S	2060 E	32.05234	-103.507545 New (Not drilled or compl)
69 JAYHAWK 7 6 FEDERAL FEE COM 007H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545538	7 26.05	34E	615 S	2090 E	32.05234	-103.507642 New (Not drilled or compl)
70 JAYHAWK 7 6 FEDERAL FEE COM 008H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545539	7 26.05	34E	615 S	2120 E	32.05234	-103.507739 New (Not drilled or compl)
71 JAYHAWK 7 6 FEDERAL FEE COM 016H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545540	7 26.05	34E	615 S	2150 E	32.05234	-103.507837 New (Not drilled or compl)
72 JAYHAWK 6 7 FEDERAL 009H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545541	6 26.05	34E	450 N	1940 W	32.07851	-103.511211 New (Not drilled or compl)
73 JAYHAWK 6 7 FEDERAL 010H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545542	6 26.05	34E	450 N	1910 W	32.07851	-103.511308 New (Not drilled or compl)
74 JAYHAWK 6 7 FEDERAL 011H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545543	6 26.05	34E	450 N	900 W	32.078514	-103.514584 New (Not drilled or compl)
75 JAYHAWK 6 7 FEDERAL 012H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545544	6 26.05	34E	450 N	930 W	32.078514	-103.514487 New (Not drilled or compl)
76 JAYHAWK 6 7 FEDERAL 013H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545545	6 26.05	34E	450 N	1880 W	32.07851	-103.511405 New (Not drilled or compl)
77 JAYHAWK 6 7 FEDERAL 014H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545546	6 26.05	34E	450 N	870 W	32.078514	-103.514682 New (Not drilled or compl)
78 JAYHAWK 7 FEDERAL 009H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545547	7 26.05	34E	540 N	2075 W	32.063658	-103.510771 New (Not drilled or compl)
79 JAYHAWK 7 FEDERAL 010H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545548	7 26.05	34E	540 N	2045 W	32.063658	-103.510869 New (Not drilled or compl)
80 JAYHAWK 7 FEDERAL 013H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545551	7 26.05	34E	540 N	2015 W	32.063659	-103.510966 New (Not drilled or compl)
81 JAYHAWK 7 FEDERAL 017H	DEVON ENERGY PRODUCTION COMPANY, LP	3002545552	7 26.05	34E	540 N	1985 W	32.063659	-103.511063 New (Not drilled or compl)



COG Operating LLC

Lea Co., NM

Gunner 8 Fed Com

604H

Wellbore #1

Plan: Design #1

Standard Planning Report

15 January, 2020





Nabors Drilling Solutions
Planning Report



Database: RyanUSA_32Bit
Company: COG Operating LLC

Local Co-ordinate Reference: Well 604H
TVD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)

Project: Lea Co., NM

MD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)

Site: Gunner 8 Fed Com

North Reference: Grid

Well: 604H

Survey Calculation Method: Minimum Curvature

Wellbore: Wellbore #1

Design: Design #1

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	Gunner 8 Fed Com			
Site Position:		Northing:	393,435.800 usft	Latitude: 32° 4' 44.108031 N
From:	Map	Easting:	758,640.500 usft	Longitude: 103° 29' 53.850459 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.44 °

Well	604H			
Well Position	+N/-S	0.20 ft	Northing:	393,436.000 usft
	+E/-W	30.10 ft	Easting:	758,670.600 usft
Position Uncertainty	2.00 ft	Wellhead Elevation:	Ground Level: 3,333.40 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	12/31/2019	6.55	59.72	47,650.10000000

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	179.52

Plan Survey Tool Program Date 1/15/2020

Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,928.34 Design #1 (Wellbore #1)	MWD+HRGM OWSG MWD + HRGM	



Nabors Drilling Solutions
Planning Report



Database: RyanUSA_32Bit
Company: COG Operating LLC

Project: Lea Co., NM

Site: Gunner 8 Fed Com
Well: 604H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 604H
TVD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
MD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,266.00	0.00	0.00	5,266.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,597.22	4.97	59.97	5,596.81	7.18	12.42	1.50	1.50	0.00	59.97	
8,781.57	4.97	59.97	8,769.19	145.22	251.18	0.00	0.00	0.00	0.00	
9,112.79	0.00	0.00	9,100.00	152.40	263.60	1.50	-1.50	0.00	180.00	
12,243.79	0.00	0.00	12,231.00	152.40	263.60	0.00	0.00	0.00	0.00	
12,992.76	89.88	179.52	12,708.46	-324.01	267.61	12.00	12.00	23.97	179.52	
22,928.34	89.88	179.52	12,730.00	-10,259.22	-351.30	0.00	0.00	0.00	0.00	Gunner 8 Fed Com 6t



Nabors Drilling Solutions
Planning Report



Database: RyanUSA_32Bit
Company: COG Operating LLC
Project: Lea Co., NM
Site: Gunner 8 Fed Com
Well: 604H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 604H
TVD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
MD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00



Nabors Drilling Solutions

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 Survey Calculation Method: Minimum Curvature

Planned 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)
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,266.00	0.00	0.00	5,266.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.51	59.97	5,300.00	0.08	0.13	-0.07	1.50	1.50	0.00
5,400.00	2.01	59.97	5,399.97	1.18	2.03	-1.16	1.50	1.50	0.00
5,500.00	3.51	59.97	5,499.85	3.59	6.20	-3.53	1.50	1.50	0.00
5,597.22	4.97	59.97	5,596.81	7.18	12.42	-7.08	1.50	1.50	0.00
5,600.00	4.97	59.97	5,599.57	7.30	12.63	-7.20	0.00	0.00	0.00
5,700.00	4.97	59.97	5,699.20	11.64	20.13	-11.47	0.00	0.00	0.00
5,800.00	4.97	59.97	5,798.82	15.97	27.63	-15.74	0.00	0.00	0.00
5,900.00	4.97	59.97	5,898.45	20.31	35.13	-20.01	0.00	0.00	0.00
6,000.00	4.97	59.97	5,998.07	24.64	42.62	-24.28	0.00	0.00	0.00
6,100.00	4.97	59.97	6,097.70	28.98	50.12	-28.56	0.00	0.00	0.00
6,200.00	4.97	59.97	6,197.32	33.31	57.62	-32.83	0.00	0.00	0.00
6,300.00	4.97	59.97	6,296.94	37.65	65.12	-37.10	0.00	0.00	0.00
6,400.00	4.97	59.97	6,396.57	41.98	72.61	-41.37	0.00	0.00	0.00
6,500.00	4.97	59.97	6,496.19	46.32	80.11	-45.64	0.00	0.00	0.00
6,600.00	4.97	59.97	6,595.82	50.65	87.61	-49.92	0.00	0.00	0.00
6,700.00	4.97	59.97	6,695.44	54.99	95.11	-54.19	0.00	0.00	0.00
6,800.00	4.97	59.97	6,795.07	59.32	102.60	-58.46	0.00	0.00	0.00
6,900.00	4.97	59.97	6,894.69	63.66	110.10	-62.73	0.00	0.00	0.00
7,000.00	4.97	59.97	6,994.31	67.99	117.60	-67.00	0.00	0.00	0.00
7,100.00	4.97	59.97	7,093.94	72.33	125.10	-71.27	0.00	0.00	0.00
7,200.00	4.97	59.97	7,193.56	76.66	132.60	-75.55	0.00	0.00	0.00
7,300.00	4.97	59.97	7,293.19	80.99	140.09	-79.82	0.00	0.00	0.00
7,400.00	4.97	59.97	7,392.81	85.33	147.59	-84.09	0.00	0.00	0.00
7,500.00	4.97	59.97	7,492.44	89.66	155.09	-88.36	0.00	0.00	0.00
7,600.00	4.97	59.97	7,592.06	94.00	162.59	-92.63	0.00	0.00	0.00
7,700.00	4.97	59.97	7,691.68	98.33	170.08	-96.91	0.00	0.00	0.00
7,800.00	4.97	59.97	7,791.31	102.67	177.58	-101.18	0.00	0.00	0.00
7,900.00	4.97	59.97	7,890.93	107.00	185.08	-105.45	0.00	0.00	0.00
8,000.00	4.97	59.97	7,990.56	111.34	192.58	-109.72	0.00	0.00	0.00
8,100.00	4.97	59.97	8,090.18	115.67	200.07	-113.99	0.00	0.00	0.00
8,200.00	4.97	59.97	8,189.81	120.01	207.57	-118.26	0.00	0.00	0.00
8,300.00	4.97	59.97	8,289.43	124.34	215.07	-122.54	0.00	0.00	0.00
8,400.00	4.97	59.97	8,389.05	128.68	222.57	-126.81	0.00	0.00	0.00
8,500.00	4.97	59.97	8,488.68	133.01	230.06	-131.08	0.00	0.00	0.00
8,600.00	4.97	59.97	8,588.30	137.35	237.56	-135.35	0.00	0.00	0.00
8,700.00	4.97	59.97	8,687.93	141.68	245.06	-139.62	0.00	0.00	0.00
8,781.57	4.97	59.97	8,769.19	145.22	251.18	-143.11	0.00	0.00	0.00
8,800.00	4.69	59.97	8,787.56	145.99	252.52	-143.87	1.50	-1.50	0.00
8,900.00	3.19	59.97	8,887.32	149.43	258.47	-147.26	1.50	-1.50	0.00
9,000.00	1.69	59.97	8,987.22	151.57	262.16	-149.37	1.50	-1.50	0.00
9,100.00	0.19	59.97	9,087.21	152.39	263.58	-150.18	1.50	-1.50	0.00
9,112.79	0.00	0.00	9,100.00	152.40	263.60	-150.19	1.50	-1.50	0.00
9,200.00	0.00	0.00	9,187.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,300.00	0.00	0.00	9,287.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,400.00	0.00	0.00	9,387.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,500.00	0.00	0.00	9,487.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,600.00	0.00	0.00	9,587.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,700.00	0.00	0.00	9,687.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,800.00	0.00	0.00	9,787.21	152.40	263.60	-150.19	0.00	0.00	0.00
9,900.00	0.00	0.00	9,887.21	152.40	263.60	-150.19	0.00	0.00	0.00



Nabors Drilling Solutions

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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)
10,000.00	0.00	0.00	9,987.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,100.00	0.00	0.00	10,087.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,200.00	0.00	0.00	10,187.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,300.00	0.00	0.00	10,287.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,400.00	0.00	0.00	10,387.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,500.00	0.00	0.00	10,487.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,600.00	0.00	0.00	10,587.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,700.00	0.00	0.00	10,687.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,800.00	0.00	0.00	10,787.21	152.40	263.60	-150.19	0.00	0.00	0.00
10,900.00	0.00	0.00	10,887.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,000.00	0.00	0.00	10,987.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,100.00	0.00	0.00	11,087.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,200.00	0.00	0.00	11,187.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,300.00	0.00	0.00	11,287.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,400.00	0.00	0.00	11,387.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,500.00	0.00	0.00	11,487.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,600.00	0.00	0.00	11,587.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,700.00	0.00	0.00	11,687.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,800.00	0.00	0.00	11,787.21	152.40	263.60	-150.19	0.00	0.00	0.00
11,900.00	0.00	0.00	11,887.21	152.40	263.60	-150.19	0.00	0.00	0.00
12,000.00	0.00	0.00	11,987.21	152.40	263.60	-150.19	0.00	0.00	0.00
12,100.00	0.00	0.00	12,087.21	152.40	263.60	-150.19	0.00	0.00	0.00
12,200.00	0.00	0.00	12,187.21	152.40	263.60	-150.19	0.00	0.00	0.00
12,243.79	0.00	0.00	12,231.00	152.40	263.60	-150.19	0.00	0.00	0.00
12,250.00	0.74	179.52	12,237.21	152.36	263.60	-150.15	12.00	12.00	0.00
12,275.00	3.74	179.52	12,262.18	151.38	263.61	-149.17	12.00	12.00	0.00
12,300.00	6.74	179.52	12,287.08	149.10	263.63	-146.88	12.00	12.00	0.00
12,325.00	9.74	179.52	12,311.81	145.51	263.66	-143.30	12.00	12.00	0.00
12,350.00	12.74	179.52	12,336.33	140.64	263.70	-138.42	12.00	12.00	0.00
12,375.00	15.74	179.52	12,360.56	134.49	263.75	-132.27	12.00	12.00	0.00
12,400.00	18.74	179.52	12,384.43	127.08	263.81	-124.86	12.00	12.00	0.00
12,425.00	21.74	179.52	12,407.89	118.43	263.89	-116.21	12.00	12.00	0.00
12,450.00	24.74	179.52	12,430.86	108.56	263.97	-106.35	12.00	12.00	0.00
12,475.00	27.74	179.52	12,453.28	97.51	264.05	-95.29	12.00	12.00	0.00
12,500.00	30.74	179.52	12,475.09	85.30	264.17	-83.08	12.00	12.00	0.00
12,525.00	33.74	179.52	12,496.23	71.96	264.28	-69.74	12.00	12.00	0.00
12,550.00	36.74	179.52	12,516.64	57.54	264.40	-55.32	12.00	12.00	0.00
12,575.00	39.74	179.52	12,536.28	42.06	264.53	-39.85	12.00	12.00	0.00
12,600.00	42.74	179.52	12,555.07	25.58	264.67	-23.37	12.00	12.00	0.00
12,621.07	45.27	179.52	12,570.22	10.95	264.79	-8.73	12.00	12.00	0.00
Gunner 8 Fed Com 604H - FTP									
12,625.00	45.74	179.52	12,572.98	8.14	264.82	-5.92	12.00	12.00	0.00
12,650.00	48.74	179.52	12,589.95	-10.21	264.97	12.43	12.00	12.00	0.00
12,675.00	51.74	179.52	12,605.93	-29.43	265.13	31.65	12.00	12.00	0.00
12,700.00	54.74	179.52	12,620.89	-49.45	265.30	51.68	12.00	12.00	0.00
12,725.00	57.74	179.52	12,634.78	-70.24	265.48	72.46	12.00	12.00	0.00
12,750.00	60.74	179.52	12,647.56	-91.72	265.66	93.94	12.00	12.00	0.00
12,775.00	63.74	179.52	12,659.21	-113.84	265.84	116.06	12.00	12.00	0.00
12,800.00	66.74	179.52	12,669.67	-136.54	266.03	138.76	12.00	12.00	0.00
12,825.00	69.74	179.52	12,678.94	-159.75	266.23	161.98	12.00	12.00	0.00
12,850.00	72.74	179.52	12,686.98	-183.42	266.43	185.65	12.00	12.00	0.00
12,875.00	75.74	179.52	12,693.76	-207.48	266.63	209.71	12.00	12.00	0.00



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MD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
12,900.00	78.74	179.52	12,699.28	-231.86	266.84	234.09	12.00	12.00	0.00
12,925.00	81.74	179.52	12,703.52	-256.49	267.04	258.72	12.00	12.00	0.00
12,950.00	84.74	179.52	12,706.46	-281.32	267.25	283.55	12.00	12.00	0.00
12,975.00	87.74	179.52	12,708.10	-306.26	267.46	308.49	12.00	12.00	0.00
12,992.76	89.88	179.52	12,708.46	-324.01	267.61	326.24	12.00	12.00	0.00
13,000.00	89.88	179.52	12,708.48	-331.25	267.67	333.48	0.00	0.00	0.00
13,100.00	89.88	179.52	12,708.70	-431.25	268.52	433.48	0.00	0.00	0.00
13,200.00	89.88	179.52	12,708.91	-531.25	269.36	533.48	0.00	0.00	0.00
13,300.00	89.88	179.52	12,709.13	-631.24	270.20	633.48	0.00	0.00	0.00
13,400.00	89.88	179.52	12,709.35	-731.24	271.04	733.48	0.00	0.00	0.00
13,500.00	89.88	179.52	12,709.56	-831.23	271.89	833.48	0.00	0.00	0.00
13,600.00	89.88	179.52	12,709.78	-931.23	272.73	933.48	0.00	0.00	0.00
13,700.00	89.88	179.52	12,710.00	-1,031.23	273.57	1,033.48	0.00	0.00	0.00
13,800.00	89.88	179.52	12,710.21	-1,131.22	274.41	1,133.48	0.00	0.00	0.00
13,900.00	89.88	179.52	12,710.43	-1,231.22	275.26	1,233.48	0.00	0.00	0.00
14,000.00	89.88	179.52	12,710.65	-1,331.22	276.10	1,333.48	0.00	0.00	0.00
14,100.00	89.88	179.52	12,710.86	-1,431.21	276.94	1,433.48	0.00	0.00	0.00
14,200.00	89.88	179.52	12,711.08	-1,531.21	277.78	1,533.48	0.00	0.00	0.00
14,300.00	89.88	179.52	12,711.30	-1,631.20	278.62	1,633.48	0.00	0.00	0.00
14,400.00	89.88	179.52	12,711.51	-1,731.20	279.47	1,733.48	0.00	0.00	0.00
14,500.00	89.88	179.52	12,711.73	-1,831.20	280.31	1,833.48	0.00	0.00	0.00
14,600.00	89.88	179.52	12,711.95	-1,931.19	281.15	1,933.48	0.00	0.00	0.00
14,700.00	89.88	179.52	12,712.16	-2,031.19	281.99	2,033.48	0.00	0.00	0.00
14,800.00	89.88	179.52	12,712.38	-2,131.18	282.84	2,133.48	0.00	0.00	0.00
14,900.00	89.88	179.52	12,712.60	-2,231.18	283.68	2,233.48	0.00	0.00	0.00
15,000.00	89.88	179.52	12,712.81	-2,331.18	284.52	2,333.48	0.00	0.00	0.00
15,100.00	89.88	179.52	12,713.03	-2,431.17	285.36	2,433.48	0.00	0.00	0.00
15,200.00	89.88	179.52	12,713.25	-2,531.17	286.21	2,533.48	0.00	0.00	0.00
15,300.00	89.88	179.52	12,713.47	-2,631.17	287.05	2,633.48	0.00	0.00	0.00
15,400.00	89.88	179.52	12,713.68	-2,731.16	287.89	2,733.48	0.00	0.00	0.00
15,500.00	89.88	179.52	12,713.90	-2,831.16	288.73	2,833.48	0.00	0.00	0.00
15,600.00	89.88	179.52	12,714.12	-2,931.15	289.57	2,933.48	0.00	0.00	0.00
15,700.00	89.88	179.52	12,714.33	-3,031.15	290.42	3,033.48	0.00	0.00	0.00
15,800.00	89.88	179.52	12,714.55	-3,131.15	291.26	3,133.48	0.00	0.00	0.00
15,900.00	89.88	179.52	12,714.77	-3,231.14	292.10	3,233.48	0.00	0.00	0.00
16,000.00	89.88	179.52	12,714.98	-3,331.14	292.94	3,333.48	0.00	0.00	0.00
16,100.00	89.88	179.52	12,715.20	-3,431.14	293.79	3,433.48	0.00	0.00	0.00
16,200.00	89.88	179.52	12,715.42	-3,531.13	294.63	3,533.48	0.00	0.00	0.00
16,300.00	89.88	179.52	12,715.63	-3,631.13	295.47	3,633.48	0.00	0.00	0.00
16,400.00	89.88	179.52	12,715.85	-3,731.12	296.31	3,733.48	0.00	0.00	0.00
16,500.00	89.88	179.52	12,716.07	-3,831.12	297.15	3,833.48	0.00	0.00	0.00
16,600.00	89.88	179.52	12,716.28	-3,931.12	298.00	3,933.48	0.00	0.00	0.00
16,700.00	89.88	179.52	12,716.50	-4,031.11	298.84	4,033.48	0.00	0.00	0.00
16,800.00	89.88	179.52	12,716.72	-4,131.11	299.68	4,133.47	0.00	0.00	0.00
16,900.00	89.88	179.52	12,716.93	-4,231.11	300.52	4,233.47	0.00	0.00	0.00
17,000.00	89.88	179.52	12,717.15	-4,331.10	301.37	4,333.47	0.00	0.00	0.00
17,100.00	89.88	179.52	12,717.37	-4,431.10	302.21	4,433.47	0.00	0.00	0.00
17,200.00	89.88	179.52	12,717.58	-4,531.09	303.05	4,533.47	0.00	0.00	0.00
17,300.00	89.88	179.52	12,717.80	-4,631.09	303.89	4,633.47	0.00	0.00	0.00
17,400.00	89.88	179.52	12,718.02	-4,731.09	304.74	4,733.47	0.00	0.00	0.00
17,500.00	89.88	179.52	12,718.23	-4,831.08	305.58	4,833.47	0.00	0.00	0.00
17,600.00	89.88	179.52	12,718.45	-4,931.08	306.42	4,933.47	0.00	0.00	0.00



Nabors Drilling Solutions

Planning Report



Database: RyanUSA_32Bit
 Company: COG Operating LLC
 Project: Lea Co., NIM
 Site: Gunner 8 Fed Com
 Well: 604H
 Wellbore: Wellbore #1
 Design: Design #1

Local Co-ordinate Reference: Well 604H
 TVD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
 MD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned 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)
17,700.00	89.88	179.52	12,718.67	-5,031.08	307.26	5,033.47	0.00	0.00	0.00
17,800.00	89.88	179.52	12,718.88	-5,131.07	308.10	5,133.47	0.00	0.00	0.00
17,900.00	89.88	179.52	12,719.10	-5,231.07	308.95	5,233.47	0.00	0.00	0.00
18,000.00	89.88	179.52	12,719.32	-5,331.06	309.79	5,333.47	0.00	0.00	0.00
18,100.00	89.88	179.52	12,719.53	-5,431.06	310.63	5,433.47	0.00	0.00	0.00
18,200.00	89.88	179.52	12,719.75	-5,531.06	311.47	5,533.47	0.00	0.00	0.00
18,300.00	89.88	179.52	12,719.97	-5,631.05	312.32	5,633.47	0.00	0.00	0.00
18,400.00	89.88	179.52	12,720.18	-5,731.05	313.16	5,733.47	0.00	0.00	0.00
18,500.00	89.88	179.52	12,720.40	-5,831.05	314.00	5,833.47	0.00	0.00	0.00
18,600.00	89.88	179.52	12,720.62	-5,931.04	314.84	5,933.47	0.00	0.00	0.00
18,700.00	89.88	179.52	12,720.83	-6,031.04	315.69	6,033.47	0.00	0.00	0.00
18,800.00	89.88	179.52	12,721.05	-6,131.03	316.53	6,133.47	0.00	0.00	0.00
18,900.00	89.88	179.52	12,721.27	-6,231.03	317.37	6,233.47	0.00	0.00	0.00
19,000.00	89.88	179.52	12,721.49	-6,331.03	318.21	6,333.47	0.00	0.00	0.00
19,100.00	89.88	179.52	12,721.70	-6,431.02	319.05	6,433.47	0.00	0.00	0.00
19,200.00	89.88	179.52	12,721.92	-6,531.02	319.90	6,533.47	0.00	0.00	0.00
19,300.00	89.88	179.52	12,722.14	-6,631.01	320.74	6,633.47	0.00	0.00	0.00
19,400.00	89.88	179.52	12,722.35	-6,731.01	321.58	6,733.47	0.00	0.00	0.00
19,500.00	89.88	179.52	12,722.57	-6,831.01	322.42	6,833.47	0.00	0.00	0.00
19,600.00	89.88	179.52	12,722.79	-6,931.00	323.27	6,933.47	0.00	0.00	0.00
19,700.00	89.88	179.52	12,723.00	-7,031.00	324.11	7,033.47	0.00	0.00	0.00
19,800.00	89.88	179.52	12,723.22	-7,131.00	324.95	7,133.47	0.00	0.00	0.00
19,900.00	89.88	179.52	12,723.44	-7,230.99	325.79	7,233.47	0.00	0.00	0.00
20,000.00	89.88	179.52	12,723.65	-7,330.99	326.64	7,333.47	0.00	0.00	0.00
20,100.00	89.88	179.52	12,723.87	-7,430.98	327.48	7,433.47	0.00	0.00	0.00
20,200.00	89.88	179.52	12,724.09	-7,530.98	328.32	7,533.47	0.00	0.00	0.00
20,300.00	89.88	179.52	12,724.30	-7,630.98	329.16	7,633.47	0.00	0.00	0.00
20,400.00	89.88	179.52	12,724.52	-7,730.97	330.00	7,733.47	0.00	0.00	0.00
20,500.00	89.88	179.52	12,724.74	-7,830.97	330.85	7,833.47	0.00	0.00	0.00
20,600.00	89.88	179.52	12,724.95	-7,930.97	331.69	7,933.47	0.00	0.00	0.00
20,700.00	89.88	179.52	12,725.17	-8,030.96	332.53	8,033.47	0.00	0.00	0.00
20,800.00	89.88	179.52	12,725.39	-8,130.96	333.37	8,133.47	0.00	0.00	0.00
20,900.00	89.88	179.52	12,725.60	-8,230.95	334.22	8,233.47	0.00	0.00	0.00
21,000.00	89.88	179.52	12,725.82	-8,330.95	335.06	8,333.47	0.00	0.00	0.00
21,100.00	89.88	179.52	12,726.04	-8,430.95	335.90	8,433.46	0.00	0.00	0.00
21,200.00	89.88	179.52	12,726.25	-8,530.94	336.74	8,533.46	0.00	0.00	0.00
21,300.00	89.88	179.52	12,726.47	-8,630.94	337.59	8,633.46	0.00	0.00	0.00
21,400.00	89.88	179.52	12,726.69	-8,730.94	338.43	8,733.46	0.00	0.00	0.00
21,500.00	89.88	179.52	12,726.90	-8,830.93	339.27	8,833.46	0.00	0.00	0.00
21,600.00	89.88	179.52	12,727.12	-8,930.93	340.11	8,933.46	0.00	0.00	0.00
21,700.00	89.88	179.52	12,727.34	-9,030.92	340.95	9,033.46	0.00	0.00	0.00
21,800.00	89.88	179.52	12,727.55	-9,130.92	341.80	9,133.46	0.00	0.00	0.00
21,900.00	89.88	179.52	12,727.77	-9,230.92	342.64	9,233.46	0.00	0.00	0.00
22,000.00	89.88	179.52	12,727.99	-9,330.91	343.48	9,333.46	0.00	0.00	0.00
22,100.00	89.88	179.52	12,728.20	-9,430.91	344.32	9,433.46	0.00	0.00	0.00
22,200.00	89.88	179.52	12,728.42	-9,530.91	345.17	9,533.46	0.00	0.00	0.00
22,300.00	89.88	179.52	12,728.64	-9,630.90	346.01	9,633.46	0.00	0.00	0.00
22,400.00	89.88	179.52	12,728.86	-9,730.90	346.85	9,733.46	0.00	0.00	0.00
22,500.00	89.88	179.52	12,729.07	-9,830.89	347.69	9,833.46	0.00	0.00	0.00
22,600.00	89.88	179.52	12,729.29	-9,930.89	348.54	9,933.46	0.00	0.00	0.00
22,700.00	89.88	179.52	12,729.51	-10,030.89	349.38	10,033.46	0.00	0.00	0.00
22,800.00	89.88	179.52	12,729.72	-10,130.88	350.22	10,133.46	0.00	0.00	0.00



Nabors Drilling Solutions

Planning Report



Database: RyanUSA_32Bit
Company: COG Operating LLC
Project: Lea Co., NM
Site: Gunner 8 Fed Com
Well: 604H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 604H
TVD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
MD Reference: RT=27(Nabors 893) @ 3360.40ft (Nabors 893)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
22,878.34	89.88	179.52	12,729.89	-10,209.22	350.88	10,211.80	0.00	0.00	0.00
Gunner 8 Fed Com 604H - LTP									
22,900.00	89.88	179.52	12,729.94	-10,230.88	351.06	10,233.46	0.00	0.00	0.00
22,928.34	89.88	179.52	12,730.00	-10,259.22	351.30	10,261.80	0.00	0.00	0.00
Gunner 8 Fed Com 604H - BHL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Gunner 8 Fed Com 604H	0.00	0.00	12,708.00	152.40	263.60	393,588.400	758,934.200	32° 4' 45.595583 N	103° 29' 50.423384 W
- plan misses target center by 197.47ft at 12621.07ft MD (12570.22 TVD, 10.95 N, 264.79 E)									
- Point									
Gunner 8 Fed Com 604H	0.00	0.00	12,729.00	-10,209.22	350.90	383,226.800	759,021.500	32° 3' 3.054872 N	103° 29' 50.341672 W
- plan misses target center by 0.89ft at 22878.34ft MD (12729.89 TVD, -10209.22 N, 350.88 E)									
- Point									
Gunner 8 Fed Com 604H	0.00	0.00	12,730.00	-10,259.22	351.30	383,176.800	759,021.900	32° 3' 2.560061 N	103° 29' 50.341523 W
- plan hits target center									
- Point									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
842.00	842.00	Rustler			
1,198.00	1,198.00	TOS			
5,026.00	5,026.00	BOS			
5,266.00	5,266.00	LMAR (Top Delaware)			
5,292.00	5,292.00	BLCN			
6,356.27	6,353.00	CYCN			
7,990.41	7,981.00	BYCN			
9,502.79	9,490.00	Bone Sprg (BSGL)			
10,457.79	10,445.00	FBSG_sand			
11,066.79	11,054.00	SBSG_sand			
11,473.79	11,461.00	SBSG_sand_Base			
12,088.79	12,076.00	TBSG_sand			
12,603.94	12,557.96	WFMP		0.12	179.52

WELL DETAILS: 604H

Ground Elevation: 3335.40
 RKB Elevation: RT=27(Nabors 893) @ 3560.40ft (Nabors 893)
 Rig Name: Nabors 893
 Wellbore: Wellbore #1
 Plan: Design #1

Northing 393436.000 Easting 758670.600 Latitude 32° 4' 44.107705 N Longitude 103° 29' 53.800624 W

PROJECT DETAILS: Lea Co., NM
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1886
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level
 Local North: Grid
 Site: Gunner 8 Fed Com



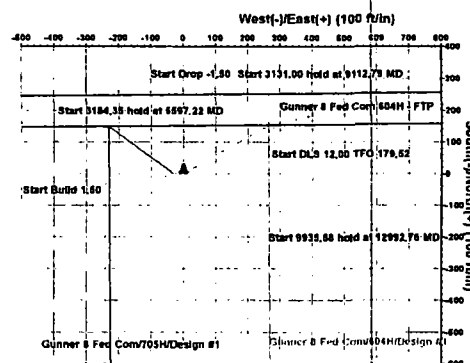
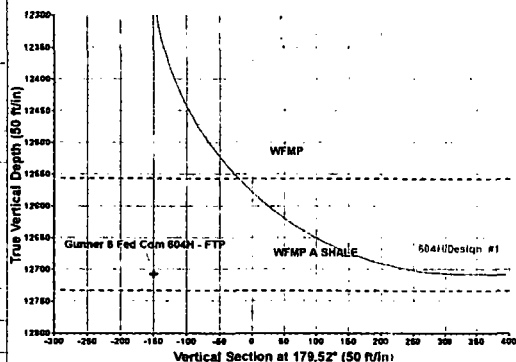
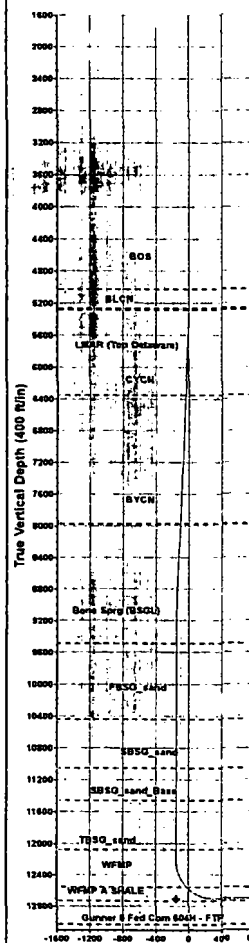
Azimuths to Grid North
 True North: -0.44°
 Magnetic North: 6.11°
 Magnetic Field
 Strength: 47860.1nT
 Dip Angle: 59.72°
 Date: 12/31/2013
 Model: HDQM_FILE



SECTION DETAILS

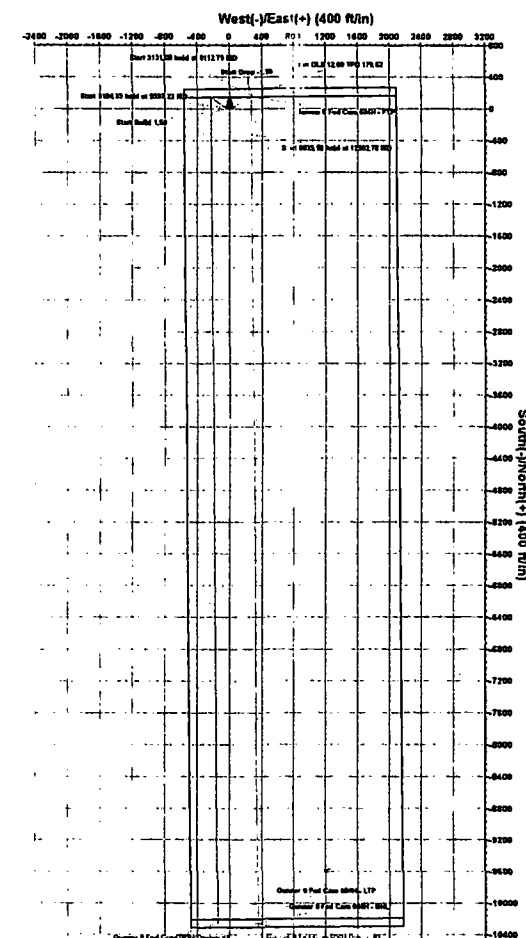
MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5268.00	0.00	0.00	5268.00	0.00	0.00	0.00	0.00	0.00
5597.22	4.97	59.97	5598.81	7.18	12.42	1.50	59.97	-7.08
8781.57	4.97	59.97	8769.19	145.22	251.18	0.00	0.00	-143.11
9112.79	0.00	0.00	9100.00	152.40	263.60	1.50	180.00	-150.19
12243.79	0.00	0.00	12231.00	152.40	263.60	0.00	0.00	-150.19
12992.76	89.88	179.52	12708.46	-324.01	267.61	12.00	179.52	328.24
22928.34	89.88	179.52	12730.00	-10259.22	351.30	0.00	0.00	10281.80

Project: Lea Co., NM
 Site: Gunner 8 Fed Com
 Well: 604H
 Wellbore: Wellbore #1
 Plan: Design #1 (604H/Wellbore #1)



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting
Gunner 8 Fed Com 604H - BHL	12730.00	-10259.22	351.30	383176.800	759021.900
Gunner 8 Fed Com 604H - FTP	12708.00	162.40	263.60	893588.400	758934.200
Gunner 8 Fed Com 604H - LTP	12729.00	-10208.22	350.90	383226.800	759021.500



DISTRICT I
1625 N. FRENCH DR., BOBBS, NM 88240
Phone: (505) 393-0181 Fax: (505) 393-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (505) 746-1212 Fax: (505) 746-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 478-3460 Fax: (505) 478-3462

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-46758	Pool Code 98094	Pool Name Bobcat Draw; Wolfcamp
Property Code	Property Name GUNNER 8 FEDERAL COM	Well Number 604H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3333.4'

Surface Location

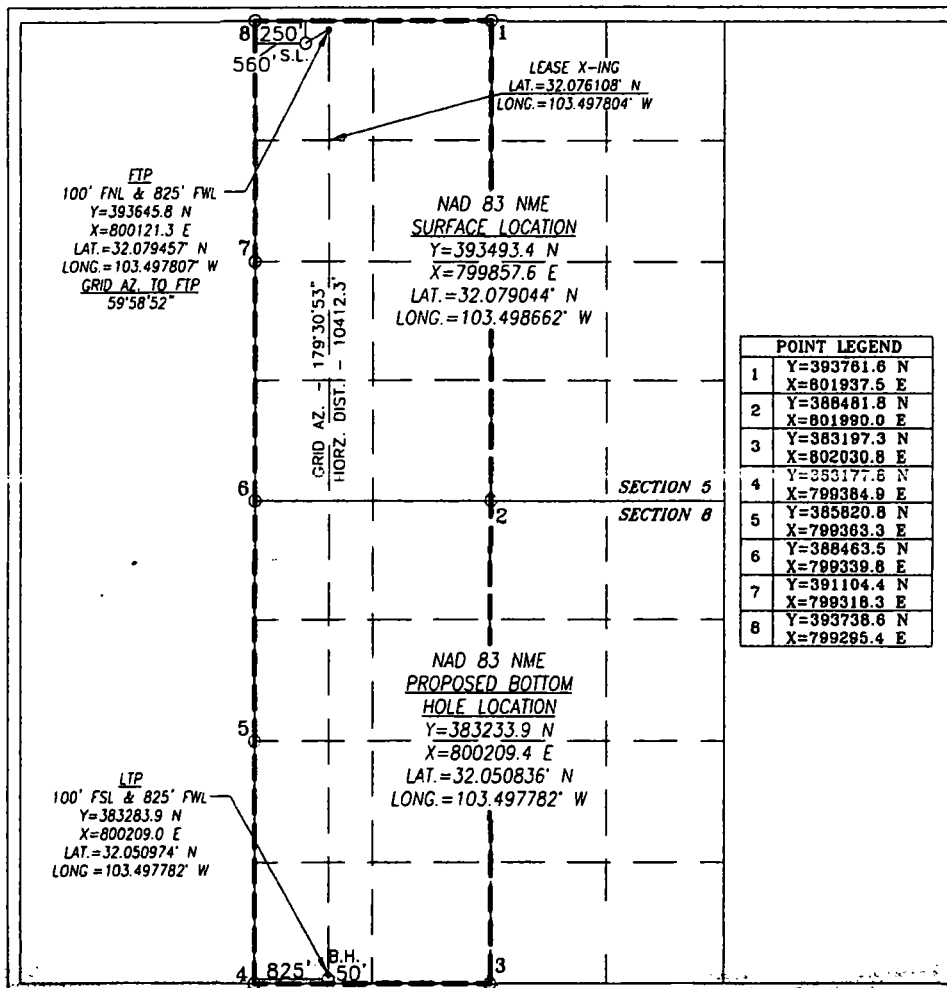
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	5	26-S	34-E		250	NORTH	560	WEST	LEA

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
M	8	26-S	34-E		50	SOUTH	825	WEST	LEA

Dedicated Acres 640	Joint or Infill	Consolidation Code	Order No.
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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



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.

Signature: *Stan Wagner* Date: 11/23/2020

Printed Name: Stan Wagner

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.

NOVEMBER 15, 2019

Date of Survey

Signature & Seal of Professional Surveyor



Certificate No. CHAD HARCROW 17777
W.O. # 19-2055 DRAWN BY: AH

Intent ☒ As Drilled ☐

API #
30-025-46758

Operator Name:	Property Name:	Well Number
COG Operating LLC	Gunner 8 Federal Com	604H

Kick Off Point (KOP)

UL D	Section 5	Township 26S	Range 34E	Lot	Feet	From N/S	Feet	From E/W	County Lea
Latitude					Longitude			NAD 83	

First Take Point (FTP)

UL D	Section 5	Township 26S	Range 34E	Lot	Feet 100	From N/S North	Feet 825	From E/W West	County Lea
Latitude 32.079457					Longitude -103.497807			NAD NAD 83	

Last Take Point (LTP)

UL M	Section 8	Township 26S	Range 34E	Lot	Feet 100	From N/S South	Feet 825	From E/W West	County Lea
Latitude 32.050974					Longitude -103.497782			NAD NAD 83	

Is this well the defining well for the Horizontal Spacing Unit? ☐ No

Is this well an infill well? ☐ Yes

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

API # 30-025-	Operator Name:	Property Name:	Well Number
	COG Operating LLC	Gunner 8 Federal Com	704H

KZ 06/29/2018