

Submit 1 Copy To Appropriate District
Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM
87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-015-43999
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Bone Yard 11 Fee
8. Well Number 16H
9. OGRID Number 229137
10. Pool name or Wildcat N. Seven Rivers; Glorieta-Yeso 97565

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐

2. Name of Operator
COG Operating LLC

3. Address of Operator 600 W. Illinois Ave.,
Midland, TX 79701

4. Well Location
Unit Letter K : 2375 feet from the South line and 2310 feet from the West line
Section 2 Township 20S Range 25E NMPM County EDDY

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3425' GR

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☒	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
CLOSED-LOOP SYSTEM ☐			
OTHER: ☐		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

COG Operating LLC requests to change the surface hole location:

FROM: 2375 FSL 2310 FWL, Sec 2, 20S, 25E, Unit K

TO: 2373 FSL 2110 FWL, Sec 2, 20S, 25E, Unit K

Attached is a revised plat and directional plan.

NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 05 2017
RECEIVED

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Regulatory Analyst DATE 09/01/17

Type or print name Robyn M. Russell E-mail address: Russell@concho.com PHONE: 432-685-4385

For State Use Only

APPROVED BY: [Signature] TITLE Geologist DATE 1-16-18

Conditions of Approval (if any):

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 Road, 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 **NM OIL CONSERVATION**
Energy, Minerals & Natural Resources Department **DISTRICT**
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-43999		² Pool Code 97565		³ Pool Name N. Seven Rivers; Glorieta-Yeso	
⁴ Property Code 315130		⁵ Property Name BONE YARD 11 FEE			⁶ Well Number 16H
⁷ OGRID NO. 229137		⁸ Operator Name COG OPERATING, LLC			⁹ Elevation 3423'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	2	20S	25E		2373	SOUTH	2110	WEST	EDDY

¹¹ 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
N	11	20S	25E		10	SOUTH	2310	WEST	EDDY

¹² Dedicated Acres 240	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

	GEODETIC DATA NAD 27 GRID - NM EAST SURFACE LOCATION N: 582630.5 - E: 462005.3 LAT: 32.6016956° N LONG: 104.4567114° W BOTTOM HOLE N: 574930.4 - E: 462152.7 LAT: 32.58052997° N LONG: 104.45620390° W CORNER DATA NAD 27 GRID - NM EAST A: FOUND BRASS CAP "1947" N: 574906.7 - E: 459843.2 B: FOUND BRASS CAP "1947" N: 577592.0 - E: 459864.9 C: FOUND BRASS CAP "1947" N: 580276.9 - E: 459887.3 D: FOUND BRASS CAP "1947" N: 582882.5 - E: 459896.7 E: FOUND BRASS CAP "1947" N: 585504.1 - E: 459906.0 F: FOUND BRASS CAP "1947" N: 585511.7 - E: 462548.4 G: FOUND BRASS CAP "1947" N: 585520.8 - E: 465190.9 H: FOUND BRASS CAP "1947" N: 582674.9 - E: 465184.7 I: FOUND BRASS CAP "1947" N: 580229.1 - E: 465177.8 J: FOUND BRASS CAP "1947" N: 577584.2 - E: 465171.8 K: CALCULATED CORNER N: 574939.6 - E: 465164.4 L: FOUND BRASS CAP "1947" N: 574922.5 - E: 462503.3 M: FOUND BRASS CAP "1947" N: 580253.1 - E: 462532.6 CALCULATED POINTS 1. N: 582880.6 - E: 461218.6 2. N: 582878.7 - E: 462540.5 3. N: 574914.6 - E: 461173.3	GEODETIC DATA NAD 83 GRID - NM EAST SURFACE LOCATION N: 582691.1 - E: 503183.9 LAT: 32.6018090° N LONG: 104.4572301° W BOTTOM HOLE N: 574990.8 - E: 503331.4 LAT: 32.58064341° N LONG: 104.45672233° W CORNER DATA NAD 83 GRID - NM EAST A: FOUND BRASS CAP "1947" N: 574967.1 - E: 501021.9 B: FOUND BRASS CAP "1947" N: 577652.5 - E: 501043.6 C: FOUND BRASS CAP "1947" N: 580337.4 - E: 501065.9 D: FOUND BRASS CAP "1947" N: 582943.1 - E: 501075.3 E: FOUND BRASS CAP "1947" N: 585564.8 - E: 501084.6 F: FOUND BRASS CAP "1947" N: 585572.4 - E: 503727.0 G: FOUND BRASS CAP "1947" N: 585581.6 - E: 506369.6 H: FOUND BRASS CAP "1947" N: 582935.6 - E: 506363.4 I: FOUND BRASS CAP "1947" N: 580289.7 - E: 506356.6 J: FOUND BRASS CAP "1947" N: 577644.7 - E: 506350.6 K: CALCULATED CORNER N: 575000.1 - E: 506343.1 L: FOUND BRASS CAP "1947" N: 574982.9 - E: 503682.0 M: FOUND BRASS CAP "1947" N: 580313.6 - E: 503711.3 CALCULATED POINTS 1. N: 582941.2 - E: 502397.2 2. N: 582939.3 - E: 503719.4 3. N: 574975.0 - E: 502351.9	17 OPERATOR CERTIFICATION I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: Date: 09/01/17 Printed Name: Robyn M. Russell E-mail Address: Rrussell@concho.com
	18 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. 3-08-2017 Date of Survey Signature and Seal of Professional Surveyor: 19680 Certificate Number S.L. CHANGE 8-10-17		
	Job No.: LS1601028RA		



CONCHO

NM OIL CONSERVATION
ARTESIA DISTRICT

SEP 05 2017

RECEIVED

COG OPERATING, LLC

Eddy /Lea County, NM (NAD27) NMEZ

Bone Yard 11 Fee 16H

16H : Slot 2373' FSL, 2110'FWL Sec2

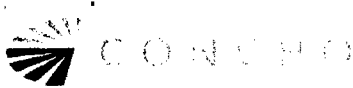
PP: 1868'FSL, 2309'FWL Sec2

Lateral

PLANNED BHL: 10'FSL, 2310'FWL Sec11



DIRECTIONAL SERVICES, LLC.



Planning Report

Database: VON_EDM
Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Site: Bone Yard 11 Fee 16H
Well: 16H
Wellbore: Lateral
Design: Plan #4

Local Co-ordinate Reference: Well 16H
TVD Reference: 3425+18 @ 3443.00ft (Planning)
MD Reference: 3425+18 @ 3443.00ft (Planning)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy /Lea County, NM (NAD27) NMEZ		
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		

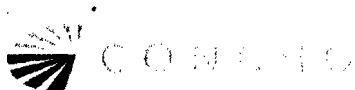
Site	Bone Yard 11 Fee 16H		
Site Position:		Northing:	582,630.50 ft
From:	Map	Easting:	462,005.30 ft
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in
		Latitude:	32° 36' 6.093 N
		Longitude:	104° 27' 24.172 W
		Grid Convergence:	-0.07 °

Well	16H		
Well Position	+N/-S	0.00 ft	Northing: 582,630.50 ft
	+E/-W	0.00 ft	Easting: 462,005.30 ft
Position Uncertainty	0.00 ft	Wellhead Elevation:	Latitude: 32° 36' 6.093 N
			Longitude: 104° 27' 24.172 W
			Ground Level: 3,425.00 ft

Wellbore	Lateral		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	06/11/17	7.39
			Dip Angle (°)
			60.27
			Field Strength (nT)
			48.068

Design	Plan #4		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)
	0.00	0.00	0.00
			Direction (°)
			180.39

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	
2,385.34	0.00	0.00	2,385.34	0.00	0.00	0.00	0.00	0.00	0.00	
3,188.61	88.36	178.90	2,906.00	-505.87	9.68	11.00	11.00	22.27	178.90	
10,387.11	88.36	178.90	3,112.00	-7,700.10	147.40	0.00	0.00	0.00	0.00	BoneYard11Fee#16H



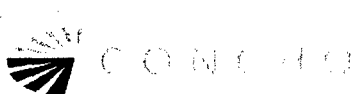
Planning Report

Database: VON_EDM
Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Site: Bone Yard 11 Fee 16H
Well: 16H
Wellbore: Lateral
Design: Plan #4

Local Co-ordinate Reference: Well 16H
TVD Reference: 3425+18 @ 3443.00ft (Planning)
MD Reference: 3425+18 @ 3443.00ft (Planning)
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
Grayburg									
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
875.00	0.00	0.00	875.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andres									
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
2,385.34	0.00	0.00	2,385.34	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	1.61	178.90	2,400.00	-0.21	0.00	0.21	11.00	11.00	0.00
2,450.00	7.11	178.90	2,449.83	-4.01	0.08	4.01	11.00	11.00	0.00
2,500.00	12.61	178.90	2,499.08	-12.57	0.24	12.57	11.00	11.00	0.00
2,500.95	12.72	178.90	2,500.00	-12.77	0.24	12.77	11.00	11.00	0.00
Glorieta									
2,550.00	18.11	178.90	2,547.27	-25.81	0.49	25.80	11.00	11.00	0.00
2,600.00	23.61	178.90	2,593.98	-43.60	0.83	43.60	11.00	11.00	0.00
2,606.59	24.34	178.90	2,600.00	-46.28	0.89	46.27	11.00	11.00	0.00
Paddock									
2,650.00	29.11	178.90	2,638.76	-65.79	1.26	65.78	11.00	11.00	0.00
2,700.00	34.61	178.90	2,681.21	-92.17	1.76	92.16	11.00	11.00	0.00
2,750.00	40.11	178.90	2,720.93	-122.50	2.34	122.48	11.00	11.00	0.00
2,800.00	45.61	178.90	2,757.57	-156.49	3.00	156.47	11.00	11.00	0.00
2,850.00	51.11	178.90	2,790.78	-193.84	3.71	193.81	11.00	11.00	0.00
2,900.00	56.61	178.90	2,820.25	-234.19	4.48	234.16	11.00	11.00	0.00
2,950.00	62.11	178.90	2,845.72	-277.19	5.31	277.15	11.00	11.00	0.00
3,000.00	67.61	178.90	2,866.95	-322.43	6.17	322.38	11.00	11.00	0.00
3,050.00	73.11	178.90	2,883.75	-369.49	7.07	369.44	11.00	11.00	0.00
3,100.00	78.61	178.90	2,895.96	-417.95	8.00	417.89	11.00	11.00	0.00
3,150.00	84.11	178.90	2,903.46	-467.36	8.95	467.29	11.00	11.00	0.00
3,188.61	88.36	178.90	2,906.00	-505.87	9.68	505.79	11.00	11.00	0.00
3,200.00	88.36	178.90	2,906.32	-517.25	9.90	517.17	0.00	0.00	0.00
3,300.00	88.36	178.90	2,909.19	-617.19	11.81	617.10	0.00	0.00	0.00
3,400.00	88.36	178.90	2,912.05	-717.13	13.73	717.02	0.00	0.00	0.00
3,500.00	88.36	178.90	2,914.91	-817.07	15.64	816.95	0.00	0.00	0.00
3,600.00	88.36	178.90	2,917.77	-917.01	17.55	916.87	0.00	0.00	0.00



Planning Report

Database:	VON_EDM	Local Co-ordinate Reference:	Well 16H
Company:	COG OPERATING, LLC	TVD Reference:	3425+18 @ 3443.00ft (Planning)
Project:	Eddy /Lea County, NM (NAD27) NMEZ	MD Reference:	3425+18 @ 3443.00ft (Planning)
Site:	Bone Yard 11 Fee 16H	North Reference:	Grid
Well:	16H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #4		

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)
3,700.00	88.36	178.90	2,920.63	-1,016.96	19.47	1,016.80	0.00	0.00	0.00
3,800.00	88.36	178.90	2,923.49	-1,116.90	21.38	1,116.72	0.00	0.00	0.00
3,900.00	88.36	178.90	2,926.36	-1,216.84	23.29	1,216.65	0.00	0.00	0.00
4,000.00	88.36	178.90	2,929.22	-1,316.78	25.21	1,316.58	0.00	0.00	0.00
4,100.00	88.36	178.90	2,932.08	-1,416.72	27.12	1,416.50	0.00	0.00	0.00
4,200.00	88.36	178.90	2,934.94	-1,516.66	29.03	1,516.43	0.00	0.00	0.00
4,300.00	88.36	178.90	2,937.80	-1,616.60	30.95	1,616.35	0.00	0.00	0.00
4,400.00	88.36	178.90	2,940.66	-1,716.54	32.86	1,716.28	0.00	0.00	0.00
4,500.00	88.36	178.90	2,943.53	-1,816.48	34.77	1,816.20	0.00	0.00	0.00
4,600.00	88.36	178.90	2,946.39	-1,916.42	36.69	1,916.13	0.00	0.00	0.00
4,700.00	88.36	178.90	2,949.25	-2,016.36	38.60	2,016.05	0.00	0.00	0.00
4,800.00	88.36	178.90	2,952.11	-2,116.30	40.51	2,115.98	0.00	0.00	0.00
4,900.00	88.36	178.90	2,954.97	-2,216.24	42.42	2,215.90	0.00	0.00	0.00
5,000.00	88.36	178.90	2,957.83	-2,316.18	44.34	2,315.83	0.00	0.00	0.00
5,100.00	88.36	178.90	2,960.70	-2,416.13	46.25	2,415.75	0.00	0.00	0.00
5,200.00	88.36	178.90	2,963.56	-2,516.07	48.16	2,515.68	0.00	0.00	0.00
5,300.00	88.36	178.90	2,966.42	-2,616.01	50.08	2,615.61	0.00	0.00	0.00
5,400.00	88.36	178.90	2,969.28	-2,715.95	51.99	2,715.53	0.00	0.00	0.00
5,500.00	88.36	178.90	2,972.14	-2,815.89	53.90	2,815.46	0.00	0.00	0.00
5,600.00	88.36	178.90	2,975.01	-2,915.83	55.82	2,915.38	0.00	0.00	0.00
5,700.00	88.36	178.90	2,977.87	-3,015.77	57.73	3,015.31	0.00	0.00	0.00
5,800.00	88.36	178.90	2,980.73	-3,115.71	59.64	3,115.23	0.00	0.00	0.00
5,900.00	88.36	178.90	2,983.59	-3,215.65	61.56	3,215.16	0.00	0.00	0.00
6,000.00	88.36	178.90	2,986.45	-3,315.59	63.47	3,315.08	0.00	0.00	0.00
6,100.00	88.36	178.90	2,989.31	-3,415.53	65.38	3,415.01	0.00	0.00	0.00
6,200.00	88.36	178.90	2,992.18	-3,515.47	67.30	3,514.93	0.00	0.00	0.00
6,300.00	88.36	178.90	2,995.04	-3,615.41	69.21	3,614.86	0.00	0.00	0.00
6,400.00	88.36	178.90	2,997.90	-3,715.36	71.12	3,714.78	0.00	0.00	0.00
6,500.00	88.36	178.90	3,000.76	-3,815.30	73.03	3,814.71	0.00	0.00	0.00
6,600.00	88.36	178.90	3,003.62	-3,915.24	74.95	3,914.64	0.00	0.00	0.00
6,700.00	88.36	178.90	3,006.48	-4,015.18	76.86	4,014.56	0.00	0.00	0.00
6,800.00	88.36	178.90	3,009.35	-4,115.12	78.77	4,114.49	0.00	0.00	0.00
6,900.00	88.36	178.90	3,012.21	-4,215.06	80.69	4,214.41	0.00	0.00	0.00
7,000.00	88.36	178.90	3,015.07	-4,315.00	82.60	4,314.34	0.00	0.00	0.00
7,100.00	88.36	178.90	3,017.93	-4,414.94	84.51	4,414.26	0.00	0.00	0.00
7,200.00	88.36	178.90	3,020.79	-4,514.88	86.43	4,514.19	0.00	0.00	0.00
7,300.00	88.36	178.90	3,023.65	-4,614.82	88.34	4,614.11	0.00	0.00	0.00
7,400.00	88.36	178.90	3,026.52	-4,714.76	90.25	4,714.04	0.00	0.00	0.00
7,500.00	88.36	178.90	3,029.38	-4,814.70	92.17	4,813.96	0.00	0.00	0.00
7,600.00	88.36	178.90	3,032.24	-4,914.64	94.08	4,913.89	0.00	0.00	0.00
7,700.00	88.36	178.90	3,035.10	-5,014.58	95.99	5,013.82	0.00	0.00	0.00
7,800.00	88.36	178.90	3,037.96	-5,114.53	97.91	5,113.74	0.00	0.00	0.00
7,900.00	88.36	178.90	3,040.83	-5,214.47	99.82	5,213.67	0.00	0.00	0.00
8,000.00	88.36	178.90	3,043.69	-5,314.41	101.73	5,313.59	0.00	0.00	0.00
8,100.00	88.36	178.90	3,046.55	-5,414.35	103.64	5,413.52	0.00	0.00	0.00
8,200.00	88.36	178.90	3,049.41	-5,514.29	105.56	5,513.44	0.00	0.00	0.00
8,300.00	88.36	178.90	3,052.27	-5,614.23	107.47	5,613.37	0.00	0.00	0.00
8,400.00	88.36	178.90	3,055.13	-5,714.17	109.38	5,713.29	0.00	0.00	0.00
8,500.00	88.36	178.90	3,058.00	-5,814.11	111.30	5,813.22	0.00	0.00	0.00
8,600.00	88.36	178.90	3,060.86	-5,914.05	113.21	5,913.14	0.00	0.00	0.00
8,700.00	88.36	178.90	3,063.72	-6,013.99	115.12	6,013.07	0.00	0.00	0.00
8,800.00	88.36	178.90	3,066.58	-6,113.93	117.04	6,112.99	0.00	0.00	0.00
8,900.00	88.36	178.90	3,069.44	-6,213.87	118.95	6,212.92	0.00	0.00	0.00
9,000.00	88.36	178.90	3,072.30	-6,313.81	120.86	6,312.85	0.00	0.00	0.00



Planning Report

Database: VON_EDM
Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Site: Bone Yard 11 Fee 16H
Well: 16H
Wellbore: Lateral
Design: Plan #4

Local Co-ordinate Reference: Well 16H
TVD Reference: 3425+18 @ 3443.00ft (Planning)
MD Reference: 3425+18 @ 3443.00ft (Planning)
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)
9,100.00	88.36	178.90	3,075.17	-6,413.75	122.78	6,412.77	0.00	0.00	0.00
9,200.00	88.36	178.90	3,078.03	-6,513.70	124.69	6,512.70	0.00	0.00	0.00
9,300.00	88.36	178.90	3,080.89	-6,613.64	126.60	6,612.62	0.00	0.00	0.00
9,400.00	88.36	178.90	3,083.75	-6,713.58	128.52	6,712.55	0.00	0.00	0.00
9,500.00	88.36	178.90	3,086.61	-6,813.52	130.43	6,812.47	0.00	0.00	0.00
9,600.00	88.36	178.90	3,089.48	-6,913.46	132.34	6,912.40	0.00	0.00	0.00
9,700.00	88.36	178.90	3,092.34	-7,013.40	134.25	7,012.32	0.00	0.00	0.00
9,800.00	88.36	178.90	3,095.20	-7,113.34	136.17	7,112.25	0.00	0.00	0.00
9,900.00	88.36	178.90	3,098.06	-7,213.28	138.08	7,212.17	0.00	0.00	0.00
10,000.00	88.36	178.90	3,100.92	-7,313.22	139.99	7,312.10	0.00	0.00	0.00
10,100.00	88.36	178.90	3,103.78	-7,413.16	141.91	7,412.02	0.00	0.00	0.00
10,200.00	88.36	178.90	3,106.65	-7,513.10	143.82	7,511.95	0.00	0.00	0.00
10,300.00	88.36	178.90	3,109.51	-7,613.04	145.73	7,611.88	0.00	0.00	0.00
10,387.11	88.36	178.90	3,112.00	-7,700.10	147.40	7,698.92	0.00	0.00	0.00

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
BoneYard11Fee#16H SL	0.00	0.00	0.00	0.00	0.00	582,630.50	462,005.30	32° 36' 6.093 N	104° 27' 24.172 W
- plan hits target center									
- Point									
BoneYard11Fee#16H LF	0.00	360.00	2,906.00	-505.95	196.54	582,124.55	462,201.84	32° 36' 1.088 N	104° 27' 21.867 W
- plan misses target center by 186.82ft at 3192.27ft MD (2906.10 TVD, -509.52 N, 9.75 E)									
- Point									
BoneYard11Fee#16H PE	0.00	360.00	3,112.00	-7,700.10	147.40	574,930.40	462,152.70	32° 34' 49.896 N	104° 27' 22.345 W
- plan hits target center									
- Point									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
500.00	500.00	Grayburg			
875.00	875.00	San Andres			
2,500.95	2,500.00	Glorieta			
2,606.59	2,600.00	Paddock			

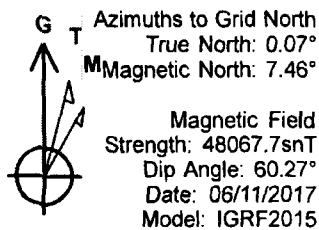
COG OPERATING, LLC

Project: Eddy /Lea County, NM (NAD27) NMEZ
 Site: Bone Yard 11 Fee 16H
 Well: 16H
 Wellbore: Lateral
 Design: Plan #4

3425+18 @ 3443.00ft (Planning)
 NAD 1927 (NADCON CONUS)

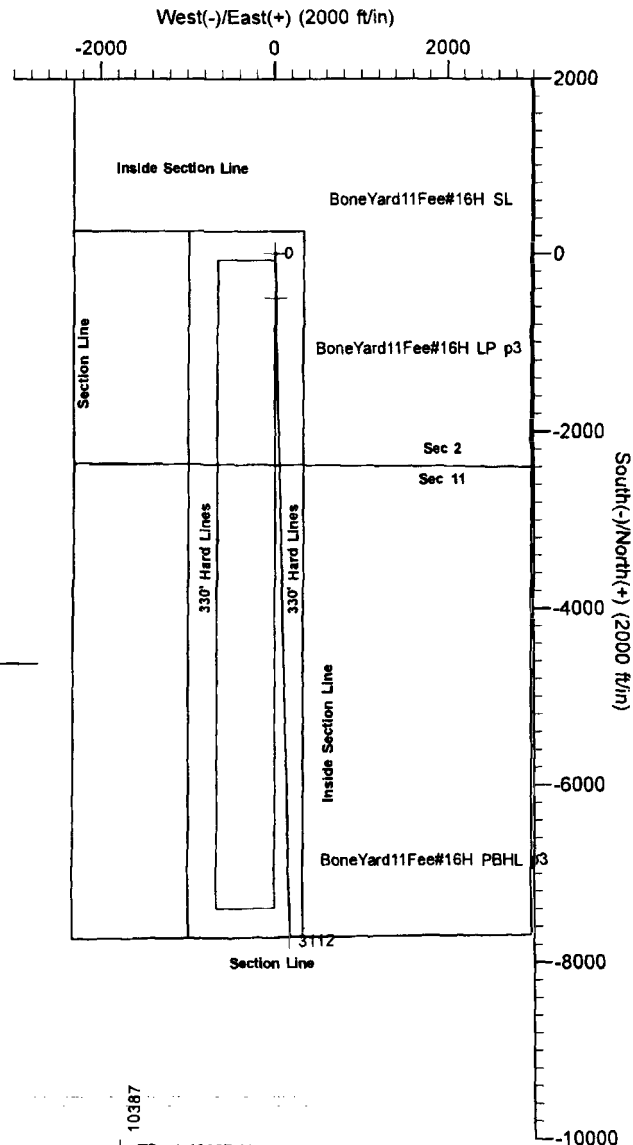
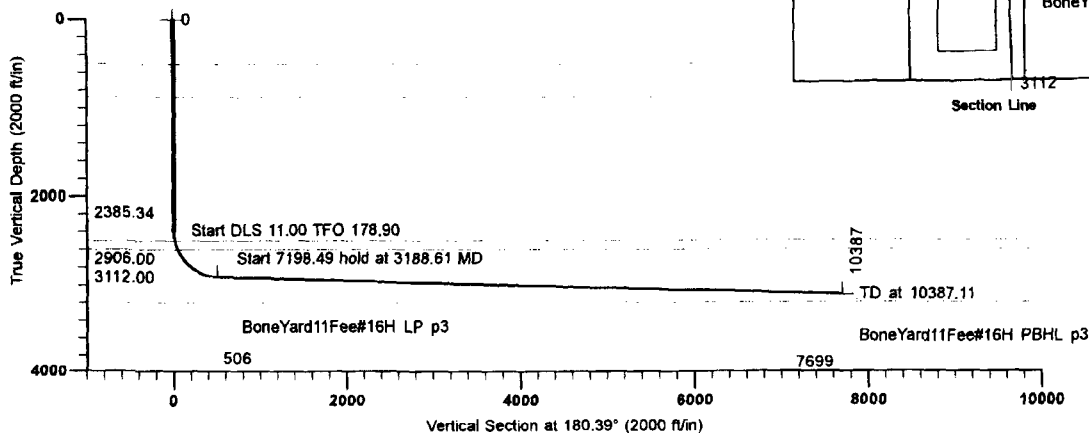


To convert a Magnetic Direction to a Grid Direction, Add 7.46°



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
500.00	500.00	Grayburg
875.00	875.00	San Andres
2500.00	2500.95	Glorieta
2600.00	2606.59	Paddock



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BoneYard11Fee#16H SL	0.00	0.00	0.00	582630.50	462005.30	Point
BoneYard11Fee#16H LP p3	2906.00	-505.87	9.68	582124.63	462014.98	Point
BoneYard11Fee#16H PBHL p3	3112.00	-7700.10	147.40	574930.40	462152.70	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2385.34	0.00	0.00	2385.34	0.00	0.00	0.00	0.00	0.00	
3188.61	88.36	178.90	2906.00	-505.87	9.68	11.00	178.90	505.79	
10387.11	88.36	178.90	3112.00	-7700.10	147.40	0.00	0.00	7698.49	BoneYard11Fee#16H PBHL p3

Plan: Plan #4 (16H/Lateral)
 Created By: Mekka Williams
 eSomina Well Design
 mekka@esominawell.com
 11:18, August 23 2017

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 936-756-2400

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 DIRECTIONAL SERVICES, LLC