



EOG Resources - Midland

Lea County, NM (NAD 27 NME)

Orrtanna 20 Fed

#701H

OH

Plan: Plan #0.1

Standard Planning Report

18 November, 2015

HOBBS OCD

FEB 16 2016

RECEIVED

FEB 17 2016



EOG Resources, Inc.

Planning Report

Database: EDM 5000.1 Single User Db
 Company: EOG Resources - Midland
 Project: Lea County, NM (NAD 27 NME)
 Site: Orttanna 20 Fed
 Well: #701H
 Wellbore: OH
 Design: Plan #0.1

Local Co-ordinate Reference: Well #701H
 TVD Reference: KB = 25 @ 3243.0usft (H&P 415)
 MD Reference: KB = 25 @ 3243.0usft (H&P 415)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Project	Lea County, NM (NAD 27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Orttanna 20 Fed				
Site Position:		Northing:	372,591.00 usft	Latitude:	32° 1' 20.073 N
From:	Map	Easting:	727,501.00 usft	Longitude:	103° 35' 57.401 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.39 °

Well	#701H					
Well Position	+N/-S	0.0 usft	Northing:	372,591.00 usft	Latitude:	32° 1' 20.073 N
	+E/-W	0.0 usft	Easting:	727,501.00 usft	Longitude:	103° 35' 57.401 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,218.0 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/1/2016	7.08	59.89	47.941

Design	Plan #0.1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	352.25

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,332.3	3.32	253.21	1,332.1	-2.8	-9.2	1.00	1.00	0.00	253.21	
11,716.2	3.32	253.21	11,698.6	-176.7	-585.4	0.00	0.00	0.00	0.00	
12,625.6	90.00	359.56	12,280.0	395.9	-622.2	10.00	9.53	11.70	106.33	
17,052.8	90.00	359.56	12,280.0	4,823.0	-656.0	0.00	0.00	0.00	0.00	PBHL(Ort 20 Fed #7)



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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	1.00	253.21	1,100.0	-0.3	-0.8	-0.1	1.00	1.00	0.00
1,200.0	2.00	253.21	1,200.0	-1.0	-3.3	-0.5	1.00	1.00	0.00
1,300.0	3.00	253.21	1,299.9	-2.3	-7.5	-1.2	1.00	1.00	0.00
1,332.3	3.32	253.21	1,332.1	-2.8	-9.2	-1.5	1.00	1.00	0.00
1,400.0	3.32	253.21	1,399.7	-3.9	-13.0	-2.1	0.00	0.00	0.00
1,500.0	3.32	253.21	1,499.5	-5.6	-18.5	-3.0	0.00	0.00	0.00
1,600.0	3.32	253.21	1,599.4	-7.3	-24.1	-4.0	0.00	0.00	0.00
1,700.0	3.32	253.21	1,699.2	-8.9	-29.6	-4.9	0.00	0.00	0.00
1,800.0	3.32	253.21	1,799.0	-10.6	-35.2	-5.8	0.00	0.00	0.00
1,900.0	3.32	253.21	1,898.9	-12.3	-40.7	-6.7	0.00	0.00	0.00
2,000.0	3.32	253.21	1,998.7	-14.0	-46.3	-7.6	0.00	0.00	0.00
2,100.0	3.32	253.21	2,098.5	-15.6	-51.8	-8.5	0.00	0.00	0.00
2,200.0	3.32	253.21	2,198.4	-17.3	-57.4	-9.4	0.00	0.00	0.00
2,300.0	3.32	253.21	2,298.2	-19.0	-62.9	-10.3	0.00	0.00	0.00
2,400.0	3.32	253.21	2,398.0	-20.7	-68.5	-11.2	0.00	0.00	0.00
2,500.0	3.32	253.21	2,497.9	-22.3	-74.0	-12.2	0.00	0.00	0.00
2,600.0	3.32	253.21	2,597.7	-24.0	-79.6	-13.1	0.00	0.00	0.00
2,700.0	3.32	253.21	2,697.5	-25.7	-85.1	-14.0	0.00	0.00	0.00
2,800.0	3.32	253.21	2,797.3	-27.4	-90.7	-14.9	0.00	0.00	0.00
2,900.0	3.32	253.21	2,897.2	-29.0	-96.2	-15.8	0.00	0.00	0.00
3,000.0	3.32	253.21	2,997.0	-30.7	-101.8	-16.7	0.00	0.00	0.00
3,100.0	3.32	253.21	3,096.8	-32.4	-107.3	-17.6	0.00	0.00	0.00
3,200.0	3.32	253.21	3,196.7	-34.1	-112.9	-18.5	0.00	0.00	0.00
3,300.0	3.32	253.21	3,296.5	-35.7	-118.4	-19.5	0.00	0.00	0.00
3,400.0	3.32	253.21	3,396.3	-37.4	-124.0	-20.4	0.00	0.00	0.00
3,500.0	3.32	253.21	3,496.2	-39.1	-129.5	-21.3	0.00	0.00	0.00
3,600.0	3.32	253.21	3,596.0	-40.8	-135.1	-22.2	0.00	0.00	0.00
3,700.0	3.32	253.21	3,695.8	-42.4	-140.6	-23.1	0.00	0.00	0.00
3,800.0	3.32	253.21	3,795.7	-44.1	-146.2	-24.0	0.00	0.00	0.00
3,900.0	3.32	253.21	3,895.5	-45.8	-151.7	-24.9	0.00	0.00	0.00
4,000.0	3.32	253.21	3,995.3	-47.5	-157.3	-25.8	0.00	0.00	0.00
4,100.0	3.32	253.21	4,095.2	-49.1	-162.8	-26.7	0.00	0.00	0.00
4,200.0	3.32	253.21	4,195.0	-50.8	-168.4	-27.7	0.00	0.00	0.00
4,300.0	3.32	253.21	4,294.8	-52.5	-173.9	-28.6	0.00	0.00	0.00
4,400.0	3.32	253.21	4,394.7	-54.2	-179.5	-29.5	0.00	0.00	0.00
4,500.0	3.32	253.21	4,494.5	-55.8	-185.0	-30.4	0.00	0.00	0.00
4,600.0	3.32	253.21	4,594.3	-57.5	-190.6	-31.3	0.00	0.00	0.00
4,700.0	3.32	253.21	4,694.2	-59.2	-196.1	-32.2	0.00	0.00	0.00
4,800.0	3.32	253.21	4,794.0	-60.9	-201.7	-33.1	0.00	0.00	0.00
4,900.0	3.32	253.21	4,893.8	-62.5	-207.2	-34.0	0.00	0.00	0.00
5,000.0	3.32	253.21	4,993.6	-64.2	-212.8	-35.0	0.00	0.00	0.00
5,100.0	3.32	253.21	5,093.5	-65.9	-218.3	-35.9	0.00	0.00	0.00
5,200.0	3.32	253.21	5,193.3	-67.6	-223.8	-36.8	0.00	0.00	0.00



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5,300.0	3.32	253.21	5,293.1	-69.2	-229.4	-37.7	0.00	0.00	0.00
5,400.0	3.32	253.21	5,393.0	-70.9	-234.9	-38.6	0.00	0.00	0.00
5,500.0	3.32	253.21	5,492.8	-72.6	-240.5	-39.5	0.00	0.00	0.00
5,600.0	3.32	253.21	5,592.6	-74.3	-246.0	-40.4	0.00	0.00	0.00
5,700.0	3.32	253.21	5,692.5	-75.9	-251.6	-41.3	0.00	0.00	0.00
5,800.0	3.32	253.21	5,792.3	-77.6	-257.1	-42.2	0.00	0.00	0.00
5,900.0	3.32	253.21	5,892.1	-79.3	-262.7	-43.2	0.00	0.00	0.00
6,000.0	3.32	253.21	5,992.0	-81.0	-268.2	-44.1	0.00	0.00	0.00
6,100.0	3.32	253.21	6,091.8	-82.6	-273.8	-45.0	0.00	0.00	0.00
6,200.0	3.32	253.21	6,191.6	-84.3	-279.3	-45.9	0.00	0.00	0.00
6,300.0	3.32	253.21	6,291.5	-86.0	-284.9	-46.8	0.00	0.00	0.00
6,400.0	3.32	253.21	6,391.3	-87.7	-290.4	-47.7	0.00	0.00	0.00
6,500.0	3.32	253.21	6,491.1	-89.3	-296.0	-48.6	0.00	0.00	0.00
6,600.0	3.32	253.21	6,591.0	-91.0	-301.5	-49.5	0.00	0.00	0.00
6,700.0	3.32	253.21	6,690.8	-92.7	-307.1	-50.5	0.00	0.00	0.00
6,800.0	3.32	253.21	6,790.6	-94.4	-312.6	-51.4	0.00	0.00	0.00
6,900.0	3.32	253.21	6,890.5	-96.0	-318.2	-52.3	0.00	0.00	0.00
7,000.0	3.32	253.21	6,990.3	-97.7	-323.7	-53.2	0.00	0.00	0.00
7,100.0	3.32	253.21	7,090.1	-99.4	-329.3	-54.1	0.00	0.00	0.00
7,200.0	3.32	253.21	7,189.9	-101.1	-334.8	-55.0	0.00	0.00	0.00
7,300.0	3.32	253.21	7,289.8	-102.7	-340.4	-55.9	0.00	0.00	0.00
7,400.0	3.32	253.21	7,389.6	-104.4	-345.9	-56.8	0.00	0.00	0.00
7,500.0	3.32	253.21	7,489.4	-106.1	-351.5	-57.7	0.00	0.00	0.00
7,600.0	3.32	253.21	7,589.3	-107.8	-357.0	-58.7	0.00	0.00	0.00
7,700.0	3.32	253.21	7,689.1	-109.4	-362.6	-59.6	0.00	0.00	0.00
7,800.0	3.32	253.21	7,788.9	-111.1	-368.1	-60.5	0.00	0.00	0.00
7,900.0	3.32	253.21	7,888.8	-112.8	-373.7	-61.4	0.00	0.00	0.00
8,000.0	3.32	253.21	7,988.6	-114.5	-379.2	-62.3	0.00	0.00	0.00
8,100.0	3.32	253.21	8,088.4	-116.1	-384.8	-63.2	0.00	0.00	0.00
8,200.0	3.32	253.21	8,188.3	-117.8	-390.3	-64.1	0.00	0.00	0.00
8,300.0	3.32	253.21	8,288.1	-119.5	-395.9	-65.0	0.00	0.00	0.00
8,400.0	3.32	253.21	8,387.9	-121.2	-401.4	-65.9	0.00	0.00	0.00
8,500.0	3.32	253.21	8,487.8	-122.8	-407.0	-66.9	0.00	0.00	0.00
8,600.0	3.32	253.21	8,587.6	-124.5	-412.5	-67.8	0.00	0.00	0.00
8,700.0	3.32	253.21	8,687.4	-126.2	-418.1	-68.7	0.00	0.00	0.00
8,800.0	3.32	253.21	8,787.3	-127.9	-423.6	-69.6	0.00	0.00	0.00
8,900.0	3.32	253.21	8,887.1	-129.5	-429.2	-70.5	0.00	0.00	0.00
9,000.0	3.32	253.21	8,986.9	-131.2	-434.7	-71.4	0.00	0.00	0.00
9,100.0	3.32	253.21	9,086.8	-132.9	-440.3	-72.3	0.00	0.00	0.00
9,200.0	3.32	253.21	9,186.6	-134.6	-445.8	-73.2	0.00	0.00	0.00
9,300.0	3.32	253.21	9,286.4	-136.2	-451.4	-74.2	0.00	0.00	0.00
9,400.0	3.32	253.21	9,386.2	-137.9	-456.9	-75.1	0.00	0.00	0.00
9,500.0	3.32	253.21	9,486.1	-139.6	-462.5	-76.0	0.00	0.00	0.00
9,600.0	3.32	253.21	9,585.9	-141.3	-468.0	-76.9	0.00	0.00	0.00
9,700.0	3.32	253.21	9,685.7	-142.9	-473.6	-77.8	0.00	0.00	0.00
9,800.0	3.32	253.21	9,785.6	-144.6	-479.1	-78.7	0.00	0.00	0.00
9,900.0	3.32	253.21	9,885.4	-146.3	-484.7	-79.6	0.00	0.00	0.00
10,000.0	3.32	253.21	9,985.2	-148.0	-490.2	-80.5	0.00	0.00	0.00
10,100.0	3.32	253.21	10,085.1	-149.6	-495.8	-81.4	0.00	0.00	0.00
10,200.0	3.32	253.21	10,184.9	-151.3	-501.3	-82.4	0.00	0.00	0.00
10,300.0	3.32	253.21	10,284.7	-153.0	-506.9	-83.3	0.00	0.00	0.00
10,400.0	3.32	253.21	10,384.6	-154.7	-512.4	-84.2	0.00	0.00	0.00
10,500.0	3.32	253.21	10,484.4	-156.3	-518.0	-85.1	0.00	0.00	0.00
10,600.0	3.32	253.21	10,584.2	-158.0	-523.5	-86.0	0.00	0.00	0.00



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10,700.0	3.32	253.21	10,684.1	-159.7	-529.1	-86.9	0.00	0.00	0.00
10,800.0	3.32	253.21	10,783.9	-161.4	-534.6	-87.8	0.00	0.00	0.00
10,900.0	3.32	253.21	10,883.7	-163.0	-540.2	-88.7	0.00	0.00	0.00
11,000.0	3.32	253.21	10,983.6	-164.7	-545.7	-89.7	0.00	0.00	0.00
11,100.0	3.32	253.21	11,083.4	-166.4	-551.3	-90.6	0.00	0.00	0.00
11,200.0	3.32	253.21	11,183.2	-168.1	-556.8	-91.5	0.00	0.00	0.00
11,300.0	3.32	253.21	11,283.1	-169.7	-562.4	-92.4	0.00	0.00	0.00
11,400.0	3.32	253.21	11,382.9	-171.4	-567.9	-93.3	0.00	0.00	0.00
11,500.0	3.32	253.21	11,482.7	-173.1	-573.5	-94.2	0.00	0.00	0.00
11,600.0	3.32	253.21	11,582.5	-174.8	-579.0	-95.1	0.00	0.00	0.00
11,700.0	3.32	253.21	11,682.4	-176.4	-584.5	-96.0	0.00	0.00	0.00
11,716.2	3.32	253.21	11,698.6	-176.7	-585.4	-96.2	0.00	0.00	0.00
11,750.0	4.02	307.03	11,732.3	-176.3	-587.3	-95.5	10.00	2.05	159.41
11,800.0	8.09	336.49	11,782.0	-172.0	-590.1	-90.9	10.00	8.15	58.93
11,850.0	12.84	345.41	11,831.2	-163.4	-592.9	-82.0	10.00	9.49	17.84
11,900.0	17.72	349.52	11,879.4	-150.5	-595.7	-68.8	10.00	9.77	8.22
11,950.0	22.65	351.89	11,926.3	-133.5	-598.5	-51.6	10.00	9.87	4.74
12,000.0	27.61	353.45	11,971.6	-112.4	-601.1	-30.4	10.00	9.91	3.11
12,050.0	32.58	354.56	12,014.8	-87.5	-603.7	-5.3	10.00	9.94	2.23
12,100.0	37.56	355.41	12,055.7	-58.9	-606.2	23.4	10.00	9.95	1.69
12,150.0	42.54	356.08	12,094.0	-26.8	-608.6	55.5	10.00	9.96	1.35
12,200.0	47.52	356.64	12,129.3	8.5	-610.9	90.7	10.00	9.97	1.11
12,250.0	52.51	357.11	12,161.4	46.7	-612.9	128.9	10.00	9.97	0.95
12,300.0	57.50	357.53	12,190.1	87.6	-614.9	169.7	10.00	9.98	0.83
12,350.0	62.49	357.90	12,215.1	130.9	-616.6	212.8	10.00	9.98	0.74
12,355.0	62.99	357.94	12,217.4	135.3	-616.7	217.2	10.00	9.98	0.70
FTP(Orrt 20 Fed #701H)									
12,400.0	67.48	358.24	12,236.2	176.1	-618.1	257.8	10.00	9.98	0.68
12,450.0	72.47	358.55	12,253.3	223.1	-619.4	304.5	10.00	9.98	0.63
12,500.0	77.46	358.85	12,266.3	271.3	-620.5	352.5	10.00	9.98	0.60
12,550.0	82.45	359.14	12,275.0	320.6	-621.4	401.4	10.00	9.98	0.57
12,600.0	87.45	359.42	12,279.4	370.3	-622.0	450.8	10.00	9.98	0.56
12,625.6	90.00	359.56	12,280.0	395.9	-622.2	476.2	10.00	9.98	0.56
12,700.0	90.00	359.56	12,280.0	470.3	-622.8	550.0	0.00	0.00	0.00
12,800.0	90.00	359.56	12,280.0	570.3	-623.5	649.2	0.00	0.00	0.00
12,900.0	90.00	359.56	12,280.0	670.3	-624.3	748.3	0.00	0.00	0.00
13,000.0	90.00	359.56	12,280.0	770.3	-625.1	847.5	0.00	0.00	0.00
13,100.0	90.00	359.56	12,280.0	870.3	-625.8	946.7	0.00	0.00	0.00
13,200.0	90.00	359.56	12,280.0	970.3	-626.6	1,045.9	0.00	0.00	0.00
13,300.0	90.00	359.56	12,280.0	1,070.3	-627.4	1,145.1	0.00	0.00	0.00
13,400.0	90.00	359.56	12,280.0	1,170.3	-628.1	1,244.3	0.00	0.00	0.00
13,500.0	90.00	359.56	12,280.0	1,270.3	-628.9	1,343.5	0.00	0.00	0.00
13,600.0	90.00	359.56	12,280.0	1,370.3	-629.6	1,442.7	0.00	0.00	0.00
13,700.0	90.00	359.56	12,280.0	1,470.3	-630.4	1,541.8	0.00	0.00	0.00
13,800.0	90.00	359.56	12,280.0	1,570.3	-631.2	1,641.0	0.00	0.00	0.00
13,900.0	90.00	359.56	12,280.0	1,670.3	-631.9	1,740.2	0.00	0.00	0.00
14,000.0	90.00	359.56	12,280.0	1,770.3	-632.7	1,839.4	0.00	0.00	0.00
14,100.0	90.00	359.56	12,280.0	1,870.3	-633.5	1,938.6	0.00	0.00	0.00
14,200.0	90.00	359.56	12,280.0	1,970.3	-634.2	2,037.8	0.00	0.00	0.00
14,300.0	90.00	359.56	12,280.0	2,070.3	-635.0	2,137.0	0.00	0.00	0.00
14,400.0	90.00	359.56	12,280.0	2,170.3	-635.8	2,236.2	0.00	0.00	0.00
14,500.0	90.00	359.56	12,280.0	2,270.3	-636.5	2,335.3	0.00	0.00	0.00
14,600.0	90.00	359.56	12,280.0	2,370.3	-637.3	2,434.5	0.00	0.00	0.00



EOG Resources, Inc.
Planning Report

Database: EDM 5000.1 Single User Db
Company: EOG Resources - Midland
Project: Lea County, NM (NAD 27 NME)
Site: Orrtanna 20 Fed
Well: #701H
Wellbore: OH
Design: Plan #0.1

Local Co-ordinate Reference: Well #701H
TVD Reference: KB = 25 @ 3243.0usft (H&P 415)
MD Reference: KB = 25 @ 3243.0usft (H&P 415)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,700.0	90.00	359.56	12,280.0	2,470.3	-638.0	2,533.7	0.00	0.00	0.00
14,800.0	90.00	359.56	12,280.0	2,570.3	-638.8	2,632.9	0.00	0.00	0.00
14,900.0	90.00	359.56	12,280.0	2,670.3	-639.6	2,732.1	0.00	0.00	0.00
15,000.0	90.00	359.56	12,280.0	2,770.3	-640.3	2,831.3	0.00	0.00	0.00
15,100.0	90.00	359.56	12,280.0	2,870.3	-641.1	2,930.5	0.00	0.00	0.00
15,200.0	90.00	359.56	12,280.0	2,970.3	-641.9	3,029.7	0.00	0.00	0.00
15,300.0	90.00	359.56	12,280.0	3,070.3	-642.6	3,128.8	0.00	0.00	0.00
15,400.0	90.00	359.56	12,280.0	3,170.2	-643.4	3,228.0	0.00	0.00	0.00
15,500.0	90.00	359.56	12,280.0	3,270.2	-644.1	3,327.2	0.00	0.00	0.00
15,600.0	90.00	359.56	12,280.0	3,370.2	-644.9	3,426.4	0.00	0.00	0.00
15,700.0	90.00	359.56	12,280.0	3,470.2	-645.7	3,525.6	0.00	0.00	0.00
15,800.0	90.00	359.56	12,280.0	3,570.2	-646.4	3,624.8	0.00	0.00	0.00
15,900.0	90.00	359.56	12,280.0	3,670.2	-647.2	3,724.0	0.00	0.00	0.00
16,000.0	90.00	359.56	12,280.0	3,770.2	-648.0	3,823.2	0.00	0.00	0.00
16,100.0	90.00	359.56	12,280.0	3,870.2	-648.7	3,922.3	0.00	0.00	0.00
16,200.0	90.00	359.56	12,280.0	3,970.2	-649.5	4,021.5	0.00	0.00	0.00
16,300.0	90.00	359.56	12,280.0	4,070.2	-650.3	4,120.7	0.00	0.00	0.00
16,400.0	90.00	359.56	12,280.0	4,170.2	-651.0	4,219.9	0.00	0.00	0.00
16,500.0	90.00	359.56	12,280.0	4,270.2	-651.8	4,319.1	0.00	0.00	0.00
16,600.0	90.00	359.56	12,280.0	4,370.2	-652.5	4,418.3	0.00	0.00	0.00
16,700.0	90.00	359.56	12,280.0	4,470.2	-653.3	4,517.5	0.00	0.00	0.00
16,800.0	90.00	359.56	12,280.0	4,570.2	-654.1	4,616.7	0.00	0.00	0.00
16,900.0	90.00	359.56	12,280.0	4,670.2	-654.8	4,715.9	0.00	0.00	0.00
17,000.0	90.00	359.56	12,280.0	4,770.2	-655.6	4,815.0	0.00	0.00	0.00
17,052.8	90.00	359.56	12,280.0	4,823.0	-656.0	4,867.4	0.00	0.00	0.00

PBHL(Orrt 20 Fed #701H)

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP(Orrt 20 Fed #701H) - plan misses target center by 69.2usft at 12355.0usft MD (12217.4 TVD, 135.3 N, -616.7 E) - Point	0.00	0.00	12,280.0	106.0	-620.0	372,697.00	726,881.00	32° 1' 21.163 N	103° 36' 4.594 W
PBHL(Orrt 20 Fed #701H) - plan hits target center - Point	0.00	0.00	12,280.0	4,823.0	-656.0	377,414.00	726,845.00	32° 2' 7.845 N	103° 36' 4.641 W

Orrtanna 20 Fed 702H
30-025-42938
EOG Resources, Inc
Surface Location: Sec. 20, T. 26S, R. 33E
Conditions of Approval

See below for the change in the Conditions of Approval for the Drilling Program.
Especially, see the addition of the Drilling Mud Section.

DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Lea County**

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H₂S) Drilling Plan shall be activated **500** feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. Option – Setting surface casing with Surface Rig
 - a. Notify the BLM when removing the Surface Rig.
 - b. Notify the BLM when moving in the Primary Rig. Rig to be moved in within 60 days of notification that Surface Rig has left the location. Failure to notify or have rig on location within 60 days will result in an Incident of Non-Compliance.
 - c. Once the Primary Rig is on location, it shall not be removed from over the hole without prior approval unless the production casing has been run and cemented or the well has been properly plugged. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**

- d. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as Primary Rig is rigged up on well. CIT for the surface casing shall be performed and results recorded on subsequent sundry – pressure to be 1200 psi.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. **DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.**

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Risks:

Medium Cave/ Karst Occurrence

Possibility of water flows in the Salado and in the Delaware.

Possibility of lost circulation in the Red Beds, in the Rustler and in the Delaware.

1. The **13 3/8 inch** surface casing shall be set at approximately **875 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Formation below the 13 3/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

2. The minimum required fill of cement behind the **9 5/8 inch** intermediate casing, which shall be set at approximately **4860 feet (in a competent bed above the Delaware Sands, which is the Lamar Limestone)**, is:

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

Formation below the 9 5/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the 5 1/2 inch production casing is:

☒ Cement should tie-back at least **500** feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi** **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
 - f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
 - g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the 3rd **Bone Spring Sandstone** if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **3rd Bone Spring Sandstone** and the **Wolfcamp formation**, and shall be used until production casing is run and cemented.

Proposed mud weight may not be adequate for drilling through the **3rd Bone Spring Sandstone** and the **Wolfcamp formation**

E. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

F. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

KGR 02072016