

25 - 44061

HOBBS OCD

JAN 31 2018

RECEIVED



Lea County, NM (NAD 83 NME)

Ruby 2 State Com #603H

HP 620

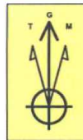
Plan #2

PROJECT DETAILS: Lea County, NM (NAD 83 NME)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

WELL DETAILS: #603H

KB = 25' @ 3320.0usft (HP 620) 3295.0
Northing 393653.00 Easting 817377.00 Latitude 32° 4' 44.750 N Longitude 103° 26' 31.556 W



Azimuths to Grid North
True North: -0.47°
Magnetic North: 6.38°
Magnetic North
Strength: 47838.3nT
Dip Angle: 59.95°
Date: 9/25/2017
Model: IGRF2015

To convert a Magnetic Direction to a Grid Direction, Add 6.38°
To convert a Magnetic Direction to a True Direction, Add 6.85° East
To convert a True Direction to a Grid Direction, Subtract 0.47°

SECTION DETAILS

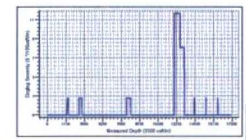
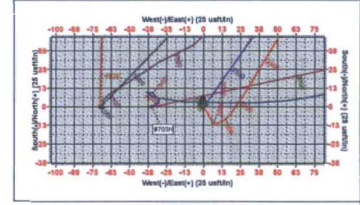
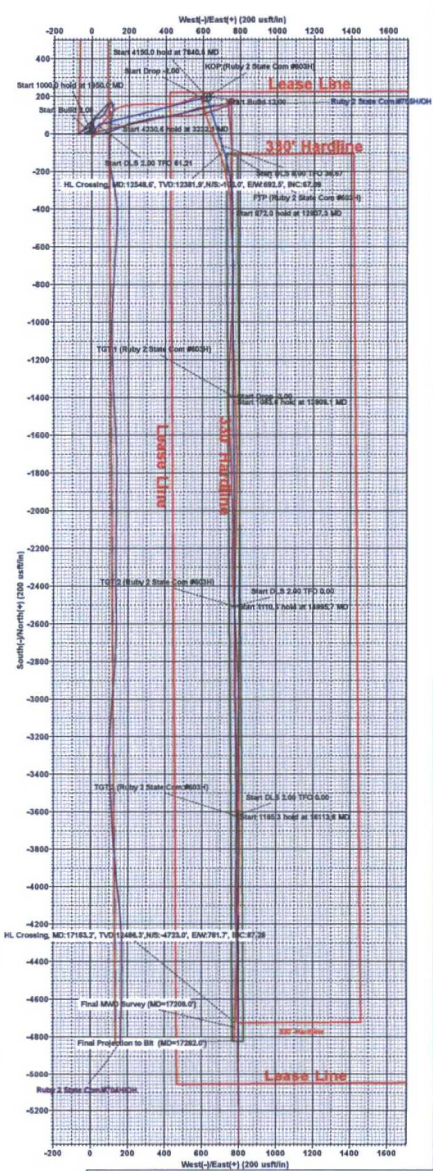
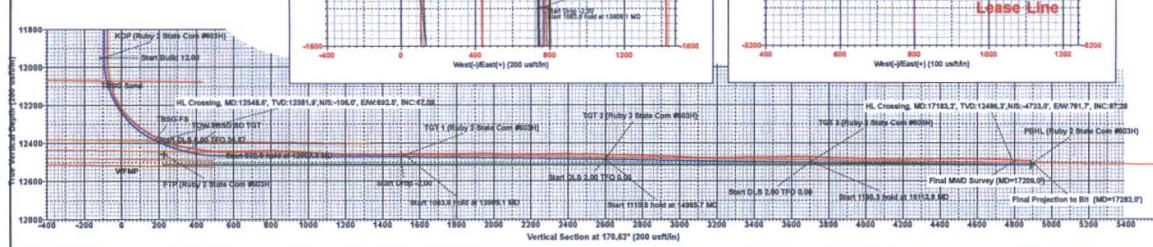
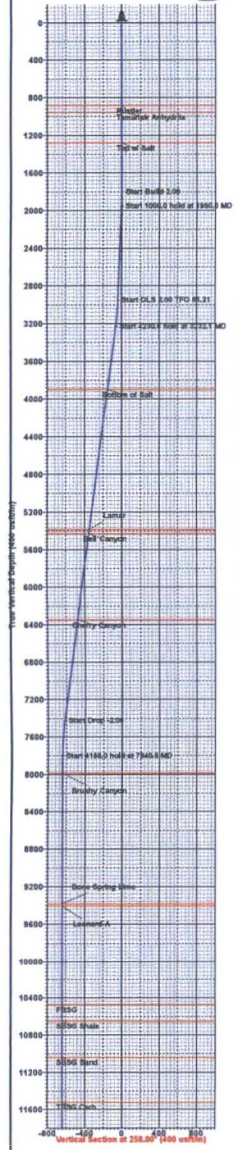
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	
1950.0	3.00	35.00	1949.9	3.2	2.3	2.00	35.00	-2.8	
2950.0	3.00	35.00	2948.6	46.1	32.3	0.00	0.00	-40.2	
3232.1	7.56	75.93	3229.4	56.7	54.5	2.00	61.21	-47.0	
7462.6	7.56	75.93	7423.3	191.9	594.2	0.00	0.00	-92.5	
7840.5	0.00	0.00	7800.0	198.0	618.3	2.00	180.00	-94.5	KOP (Ruby 2 State Com #603H)
11990.5	0.00	0.00	11950.0	198.0	618.3	0.00	0.00	-94.5	
12529.2	64.67	161.98	12381.4	-61.7	702.8	12.00	161.98	175.5	
12907.3	89.76	179.50	12465.0	-421.6	758.6	8.00	36.67	539.7	TGT 1 (Ruby 2 State Com #603H)
13879.3	89.76	179.50	12469.0	-1393.6	767.1	0.00	0.00	1500.0	
13909.1	89.17	179.50	12469.3	-1423.4	767.3	2.00	-180.00	1529.5	TGT 2 (Ruby 2 State Com #603H)
14992.7	89.17	179.50	12485.0	-2506.9	776.8	0.00	0.00	2600.0	
14995.7	89.23	179.50	12485.0	-2509.9	776.8	0.00	0.00	2602.9	TGT 3 (Ruby 2 State Com #603H)
16106.2	89.23	179.50	12500.0	-3620.2	786.5	0.00	0.00	3700.0	
16113.8	89.38	179.50	12500.1	-3627.9	786.6	2.00	0.00	3707.6	
17309.1	89.38	179.50	12513.0	-4823.0	797.0	0.00	0.00	4888.4	PBHL (Ruby 2 State Com #603H)

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
KOP (Ruby 2 State Com #603H)	11950.0	198.0	618.3	393651.00	817395.30
TGT 1 (Ruby 2 State Com #603H)	12469.0	-1393.6	767.1	392258.40	818144.67
TGT 2 (Ruby 2 State Com #603H)	12485.0	-2506.9	776.8	391146.10	818153.79
TGT 3 (Ruby 2 State Com #603H)	12500.0	-3620.2	786.5	390032.80	818163.50
PBHL (Ruby 2 State Com #603H)	12513.0	-4823.0	797.0	388830.00	818174.00
FTP (Ruby 2 State Com #603H)	12458.0	-106.0	756.0	393547.00	818133.00



30-025-44061

Doc 81-E-1

EOG Resources - Midland

Lea County, NM (NAD 83 NME)

Ruby 2 State Com

#603H

OH

Design: OH

PVA Report

06 November, 2017

PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #603H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3320.0usft (HP 620)
Site:	Ruby 2 State Com	MD Reference:	KB = 25' @ 3320.0usft (HP 620)
Well:	#603H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Project		Lea County, NM (NAD 83 NME)	
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Ruby 2 State Com							
Site Position:		Northing:		393,589.99	usft	Latitude:		32° 4' 47.315 N	
From:	Map	Easting:		775,148.00	usft	Longitude:		103° 34' 42.355 W	
Position Uncertainty:		0.0	usft	Slot Radius:		13-3/16	"	Grid Convergence:	0.40 °

Well	#603H					
Well Position	+N/-S	0.0 usft	Northing:	393,653.00 usft	Latitude:	32° 4' 44.750 N
	+E/-W	0.0 usft	Easting:	817,377.00 usft	Longitude:	103° 26' 31.556 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,295.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/25/2017	6.85	59.95	47,838.33470964

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	170.62

Survey Program		Date	11/6/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
200.0	17,282.0	Intrepid MWD (OH)	MWD	MWD - Standard	

PVA Report

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Site:	Ruby 2 State Com	MD Reference:	KB = 25' @ 3320.0usft (HP 620)
Well:	#603H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.0	0.0	
200.0	0.79	138.83	200.0	-1.0	0.9	0.39	0.39	0.00	-1.4	0.0	
392.0	0.92	148.50	392.0	-3.3	2.6	0.10	0.07	5.04	-4.2	0.5	
566.0	1.05	158.52	565.9	-6.0	3.9	0.12	0.07	5.76	-7.0	1.4	
690.0	1.05	146.83	689.9	-8.0	4.9	0.17	0.00	-9.43	-9.4	-0.3	
879.0	0.57	184.36	878.9	-10.4	5.8	0.37	-0.25	19.86	-9.9	6.6	
933.0	0.97	82.14	932.9	-10.6	6.2	2.27	0.74	-189.30	-4.7	-11.4	
1,076.0	0.40	162.83	1,075.9	-10.9	7.6	0.69	-0.40	56.43	-12.7	4.0	
1,265.0	1.32	65.62	1,264.9	-10.7	9.8	0.75	0.49	-51.43	-4.5	-13.7	
1,454.0	1.49	67.46	1,453.8	-8.8	14.0	0.09	0.09	0.97	-9.6	-13.5	
1,643.0	1.89	33.63	1,642.7	-5.3	18.0	0.56	0.21	-17.90	-5.6	-17.9	
1,832.0	1.76	34.07	1,831.6	-0.3	21.4	0.07	-0.07	0.23	-11.6	-17.9	
2,021.0	2.15	37.49	2,020.5	4.9	25.2	0.22	0.21	1.81	-11.6	-17.3	
2,211.0	4.09	30.11	2,210.2	13.6	30.7	1.04	1.02	-3.88	-9.7	-18.2	
2,400.0	4.35	28.97	2,398.7	25.7	37.6	0.14	0.14	-0.60	-13.4	-17.5	
2,589.0	4.35	33.54	2,587.2	38.0	45.0	0.18	0.00	2.42	-19.2	-15.6	
2,778.0	4.53	32.84	2,775.6	50.2	53.0	0.10	0.10	-0.37	-23.7	-15.5	
2,967.0	5.32	36.61	2,963.9	63.5	62.3	0.45	0.42	1.99	-31.0	-13.7	
3,157.0	5.93	38.99	3,153.0	78.2	73.7	0.34	0.32	1.25	-36.2	-6.4	
3,346.0	7.03	42.59	3,340.8	94.3	87.7	0.62	0.58	1.90	-37.6	9.4	
3,535.0	7.38	46.99	3,528.3	111.1	104.4	0.35	0.19	2.33	-38.7	25.2	
3,725.0	7.87	47.25	3,716.6	128.3	122.9	0.26	0.26	0.14	-41.8	37.4	
3,914.0	8.31	69.75	3,903.8	141.8	145.2	1.68	0.23	11.90	-25.4	58.2	
4,103.0	8.57	80.74	4,090.8	148.8	171.9	0.86	0.14	5.81	-16.7	62.4	
4,292.0	8.00	77.57	4,277.8	153.9	198.6	0.39	-0.30	-1.68	-22.5	59.9	
4,481.0	8.35	86.27	4,464.9	157.6	225.2	0.68	0.19	4.60	-15.5	60.1	
4,641.0	8.22	88.21	4,623.2	158.7	248.2	0.19	-0.08	1.21	-16.0	56.5	

PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #603H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3320.0usft (HP 620)
Site:	Ruby 2 State Com	MD Reference:	KB = 25' @ 3320.0usft (HP 620)
Well:	#603H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
4,860.0	8.18	86.71	4,840.0	160.1	279.4	0.10	-0.02	-0.68	-20.4	50.3	
5,049.0	8.70	89.96	5,026.9	160.9	307.1	0.37	0.28	1.72	-21.2	46.1	
5,239.0	8.09	90.93	5,214.9	160.7	334.9	0.33	-0.32	0.51	-24.0	40.2	
5,386.0	7.69	91.72	5,360.5	160.2	355.0	0.28	-0.27	0.54	-25.1	35.4	
5,574.0	6.99	88.82	5,546.9	160.1	379.0	0.42	-0.37	-1.54	-26.7	28.0	
5,761.0	6.95	91.55	5,732.6	160.0	401.7	0.18	-0.02	1.46	-24.3	23.1	
5,949.0	6.51	90.05	5,919.3	159.7	423.8	0.25	-0.23	-0.80	-22.9	16.2	
6,136.0	6.24	88.47	6,105.1	159.9	444.5	0.17	-0.14	-0.84	-20.1	9.9	
6,324.0	6.07	74.58	6,292.0	162.8	464.3	0.80	-0.09	-7.39	-17.0	3.0	
6,512.0	5.80	74.76	6,479.0	168.0	483.1	0.14	-0.14	0.10	-11.6	3.5	
6,699.0	5.58	74.41	6,665.1	172.9	500.9	0.12	-0.12	-0.19	-5.6	4.1	
6,887.0	5.41	68.17	6,852.3	178.7	518.0	0.33	-0.09	-3.32	0.6	5.8	
7,075.0	5.05	69.66	7,039.5	184.8	534.0	0.20	-0.19	0.79	8.2	8.7	
7,263.0	4.84	67.46	7,226.8	190.8	549.0	0.15	-0.11	-1.17	16.2	12.3	
7,450.0	4.48	69.92	7,413.1	196.3	563.2	0.22	-0.19	1.32	26.0	14.5	
7,638.0	3.56	68.87	7,600.7	200.9	575.5	0.49	-0.49	-0.56	31.9	17.3	
7,826.0	3.47	81.09	7,788.3	203.9	586.6	0.40	-0.05	6.50	30.4	10.8	
8,013.0	2.81	95.15	7,975.1	204.4	596.7	0.54	-0.35	7.52	22.0	4.4	
8,200.0	1.93	116.68	8,161.9	202.5	604.1	0.66	-0.47	11.51	14.7	-2.3	
8,387.0	1.36	116.16	8,348.8	200.1	608.9	0.30	-0.30	-0.28	9.4	-2.2	
8,575.0	1.23	137.51	8,536.8	197.7	612.3	0.26	-0.07	11.36	3.8	-4.6	
8,762.0	1.36	141.91	8,723.7	194.4	615.0	0.09	0.07	2.35	-0.8	-4.8	
8,950.0	0.97	113.87	8,911.7	192.0	617.9	0.36	-0.21	-14.91	-2.0	-5.6	
9,138.0	0.88	115.72	9,099.7	190.8	620.6	0.05	-0.05	0.98	-5.2	-5.5	
9,325.0	0.66	141.29	9,286.6	189.3	622.6	0.22	-0.12	13.67	-9.5	-2.1	
9,513.0	0.26	187.96	9,474.6	188.0	623.2	0.28	-0.21	24.82	-9.2	6.2	
9,701.0	0.92	210.11	9,662.6	186.3	622.4	0.37	0.35	11.78	-8.1	9.4	

PVA Report

Company: EOG Resources - Midland
 Project: Lea County, NM (NAD 83 NME)
 Site: Ruby 2 State Com
 Well: #603H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well #603H
 TVD Reference: KB = 25' @ 3320.0usft (HP 620)
 MD Reference: KB = 25' @ 3320.0usft (HP 620)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
9,889.0	1.36	233.84	9,850.6	183.7	619.8	0.34	0.23	12.62	-7.2	12.4	
10,076.0	2.59	264.08	10,037.5	182.0	613.8	0.84	0.66	16.17	-6.1	15.5	
10,263.0	1.45	306.00	10,224.4	182.9	607.7	0.96	-0.61	22.42	0.3	18.4	
10,451.0	0.13	103.32	10,412.4	184.3	606.0	0.84	-0.70	83.68	8.8	-16.2	
10,637.0	0.97	260.91	10,598.3	184.0	604.6	0.59	0.45	84.73	-15.7	11.7	
10,824.0	1.67	259.86	10,785.3	183.2	600.4	0.37	0.37	-0.56	-20.2	11.4	
11,013.0	0.79	252.21	10,974.2	182.3	596.4	0.47	-0.47	-4.05	-25.6	8.2	
11,200.0	1.45	215.91	11,161.2	180.0	593.8	0.50	0.35	-19.41	-28.9	-9.3	
11,388.0	1.49	165.02	11,349.2	175.7	593.1	0.67	0.02	-27.07	-15.0	-30.1	
11,576.0	1.14	164.41	11,537.1	171.6	594.2	0.19	-0.19	-0.32	-19.0	-30.3	
11,763.0	0.66	330.70	11,724.1	170.7	594.2	0.96	-0.26	88.93	12.0	34.4	
11,844.0	0.88	324.10	11,805.1	171.6	593.6	0.29	0.27	-8.15	6.9	35.5	
11,960.0	0.88	357.06	11,921.1	173.3	593.0	0.43	0.00	28.41	23.4	26.5	
12,006.0	2.11	125.56	11,967.1	173.1	593.7	5.97	2.67	279.35	5.8	-34.4	
12,054.0	8.40	157.20	12,014.9	169.4	595.8	13.95	13.10	65.92	-13.1	-31.5	
12,100.0	11.38	160.89	12,060.2	162.0	598.6	6.62	6.48	8.02	-14.3	-30.2	
12,147.0	16.26	162.39	12,105.8	151.3	602.1	10.41	10.38	3.19	-12.7	-29.8	
12,193.0	21.98	163.53	12,149.2	136.9	606.5	12.46	12.43	2.48	-10.6	-29.9	
12,241.0	31.34	162.91	12,192.1	116.3	612.7	19.51	19.50	-1.29	-9.0	-30.5	
12,287.0	39.78	162.39	12,229.5	90.8	620.7	18.36	18.35	-1.13	-10.1	-30.9	
12,334.0	45.76	163.09	12,264.0	60.3	630.1	12.76	12.72	1.49	-12.9	-31.2	
12,380.0	50.02	161.33	12,294.8	27.9	640.6	9.69	9.26	-3.83	-14.3	-31.6	
12,428.0	55.30	158.78	12,323.9	-8.0	653.6	11.78	11.00	-5.31	-14.8	-30.6	
12,474.0	59.65	157.90	12,348.6	-44.0	667.9	9.59	9.46	-1.91	-15.2	-28.2	
12,522.0	64.66	158.17	12,371.0	-83.4	683.8	10.45	10.44	0.56	-14.9	-25.1	
12,548.6	67.09	159.92	12,381.9	-106.0	692.5	10.95	9.15	6.59	-15.2	-23.2	

HL Crossing, MD:12548.6', TVD:12381.9', N/S:-106.0', E/W:692.5', INC:67.09

PVA Report

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
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12,568.0	68.88	161.16	12,389.2	-123.0	698.5	10.95	9.21	6.38	-15.5	-21.8	
12,615.0	74.51	164.14	12,403.9	-165.6	711.7	13.40	11.98	6.34	-17.4	-18.8	
12,661.0	78.51	166.69	12,414.7	-208.8	723.0	10.23	8.70	5.54	-20.4	-16.2	
12,710.0	80.62	168.71	12,423.6	-255.9	733.3	5.91	4.31	4.12	-23.3	-13.5	
12,756.0	81.10	170.03	12,430.9	-300.6	741.6	3.02	1.04	2.87	-24.4	-10.5	
12,803.0	82.33	171.35	12,437.6	-346.5	749.2	3.82	2.62	2.81	-23.5	-6.8	
12,849.0	87.30	174.78	12,441.8	-391.9	754.7	13.11	10.80	7.46	-22.6	-3.4	
12,897.0	91.91	179.09	12,442.1	-439.8	757.2	13.15	9.60	8.98	-23.0	-1.5	
12,991.0	91.08	179.09	12,439.7	-533.8	758.7	0.88	-0.88	0.00	-25.8	-0.8	
13,090.0	90.11	179.79	12,438.6	-632.8	759.7	1.21	-0.98	0.71	-27.2	-0.7	
13,184.0	89.01	180.05	12,439.4	-726.8	759.8	1.20	-1.17	0.28	-26.9	-1.4	
13,278.0	86.95	179.70	12,442.7	-820.7	760.0	2.22	-2.19	-0.37	-24.0	-2.0	
13,372.0	85.98	178.82	12,448.5	-914.5	761.2	1.39	-1.03	-0.94	-18.6	-1.6	
13,466.0	86.64	178.03	12,454.5	-1,008.3	763.8	1.09	0.70	-0.84	-12.9	0.1	
13,559.0	90.24	177.94	12,457.1	-1,101.2	767.1	3.87	3.87	-0.10	-10.8	2.6	
13,653.0	89.41	176.71	12,457.3	-1,195.1	771.5	1.58	-0.88	-1.31	-10.9	6.1	
13,747.0	90.46	176.62	12,457.4	-1,288.9	776.9	1.12	1.12	-0.10	-11.1	10.8	
13,841.0	91.16	178.65	12,456.1	-1,382.8	780.8	2.28	0.74	2.16	-12.8	13.9	
13,935.0	90.42	178.73	12,454.8	-1,476.8	783.0	0.79	-0.79	0.09	-15.2	15.2	
14,029.0	89.54	178.29	12,454.9	-1,570.7	785.4	1.05	-0.94	-0.47	-16.6	16.8	
14,122.0	90.11	178.73	12,455.1	-1,663.7	787.8	0.77	0.61	0.47	-17.6	18.4	
14,216.0	91.47	180.40	12,453.8	-1,757.7	788.6	2.29	1.45	1.78	-20.3	18.3	
14,310.0	89.49	180.76	12,453.1	-1,851.7	787.6	2.14	-2.11	0.38	-22.4	16.5	
14,404.0	87.96	180.58	12,455.1	-1,945.6	786.5	1.64	-1.63	-0.19	-21.7	14.6	
14,498.0	88.88	180.14	12,457.7	-2,039.6	785.9	1.08	0.98	-0.47	-20.5	13.2	
14,591.0	91.56	181.46	12,457.4	-2,132.6	784.6	3.21	2.88	1.42	-22.2	11.1	
14,684.0	90.24	181.28	12,455.9	-2,225.5	782.4	1.43	-1.42	-0.19	-25.0	8.1	

PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #603H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3320.0usft (HP 620)
Site:	Ruby 2 State Com	MD Reference:	KB = 25' @ 3320.0usft (HP 620)
Well:	#603H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey										
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
14,778.0	89.49	181.19	12,456.1	-2,319.5	780.4	0.80	-0.80	-0.10	-26.1	5.2
14,872.0	89.27	181.72	12,457.2	-2,413.5	778.0	0.61	-0.23	0.56	-26.5	2.0
14,966.0	88.22	180.84	12,459.2	-2,507.4	775.9	1.46	-1.12	-0.94	-25.8	-0.9
15,060.0	89.41	180.67	12,461.2	-2,601.4	774.6	1.28	1.27	-0.18	-25.1	-3.0
15,154.0	88.66	179.96	12,462.7	-2,695.4	774.1	1.10	-0.80	-0.76	-24.8	-4.3
15,248.0	87.82	179.44	12,465.6	-2,789.3	774.6	1.05	-0.89	-0.55	-23.2	-4.6
15,342.0	88.00	179.96	12,469.1	-2,883.3	775.1	0.59	0.19	0.55	-21.0	-5.0
15,436.0	87.65	178.47	12,472.6	-2,977.2	776.4	1.63	-0.37	-1.59	-18.7	-4.5
15,530.0	88.22	177.24	12,476.0	-3,071.1	779.9	1.44	0.61	-1.31	-16.6	-1.8
15,624.0	91.74	177.24	12,476.0	-3,164.9	784.4	3.74	3.74	0.00	-17.8	1.9
15,718.0	91.38	176.98	12,473.5	-3,258.8	789.2	0.47	-0.38	-0.28	-21.6	5.8
15,812.0	90.24	176.98	12,472.2	-3,352.6	794.1	1.21	-1.21	0.00	-24.2	9.9
15,906.0	90.77	178.12	12,471.3	-3,446.6	798.1	1.34	0.56	1.21	-26.3	13.1
16,000.0	90.02	178.21	12,470.7	-3,540.5	801.2	0.80	-0.80	0.10	-28.2	15.3
16,093.0	88.48	179.00	12,471.9	-3,633.5	803.4	1.86	-1.66	0.85	-28.3	16.8
16,187.0	87.96	179.61	12,474.8	-3,727.4	804.6	0.85	-0.55	0.65	-26.3	17.1
16,281.0	89.10	180.49	12,477.2	-3,821.4	804.5	1.53	1.21	0.94	-25.0	16.2
16,375.0	87.87	180.58	12,479.7	-3,915.3	803.6	1.31	-1.31	0.10	-23.5	14.5
16,469.0	89.49	180.67	12,481.9	-4,009.3	802.6	1.73	1.72	0.10	-22.3	12.7
16,563.0	88.66	180.14	12,483.4	-4,103.3	801.9	1.05	-0.88	-0.56	-21.8	11.2
16,657.0	91.08	182.34	12,483.6	-4,197.3	799.9	3.48	2.57	2.34	-22.6	8.3
16,751.0	90.68	182.51	12,482.2	-4,291.2	795.9	0.46	-0.43	0.18	-25.1	3.5
16,845.0	90.02	182.51	12,481.6	-4,385.1	791.8	0.70	-0.70	0.00	-26.7	-1.4
16,938.0	90.29	182.25	12,481.3	-4,478.0	787.9	0.40	0.29	-0.28	-27.9	-6.1
17,032.0	89.41	181.72	12,481.6	-4,571.9	784.7	1.09	-0.94	-0.56	-28.7	-10.1
17,126.0	87.82	180.84	12,483.9	-4,665.9	782.6	1.93	-1.69	-0.94	-27.4	-13.1

PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #603H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3320.0usft (HP 620)
Site:	Ruby 2 State Com	MD Reference:	KB = 25' @ 3320.0usft (HP 620)
Well:	#603H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
17,183.2	87.28	180.90	12,486.3	-4,723.0	781.7	0.96	-0.95	0.11	-25.6	-14.4	
HL Crossing, MD:17183.2', TVD:12486.3',N/S:-4723.0', E/W:781.7', INC:87.28											
17,209.0	87.03	180.93	12,487.6	-4,748.8	781.3	0.96	-0.95	0.11	-24.6	-15.1	
Final MWD Survey (MD=17209.0')											
17,282.0	87.03	180.93	12,491.4	-4,821.7	780.1	0.00	0.00	0.00	-21.6	-16.9	
Final Projection to Bit (MD=17282.0')											

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
12,548.6	12,381.9	-106.0	692.5	HL Crossing, MD:12548.6', TVD:12381.9',N/S:-106.0', E/W:692.5', INC:67.09	
17,183.2	12,486.3	-4,723.0	781.7	HL Crossing, MD:17183.2', TVD:12486.3',N/S:-4723.0', E/W:781.7', INC:87.28	
17,209.0	12,487.6	-4,748.8	781.3	Final MWD Survey (MD=17209.0')	
17,282.0	12,491.4	-4,821.7	780.1	Final Projection to Bit (MD=17282.0')	

Checked By: _____ Approved By: _____ Date: _____