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**EOG Resources - Midland**

Lea County, NM (NAD 83 NME)

Nautilus 16 State Com

#602H

OH

Design: OH

**Final PVA Report**

14 May, 2018



Final PVA Report

<b>Company:</b>	EOG Resources - Midland			<b>Local Co-ordinate Reference:</b>	Well #602H
<b>Project:</b>	Lea County, NM (NAD 83 NME)			<b>TVD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Site:</b>	Nautilus 16 State Com			<b>MD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H			<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH			<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH			<b>Database:</b>	EDM 5000.14
<b>Project</b> Lea County, NM (NAD 83 NME)					
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level		
<b>Geo Datum:</b>	North American Datum 1983				
<b>Map Zone:</b>	New Mexico Eastern Zone				
<b>Site</b> Nautilus 16 State Com					
<b>Site Position:</b>		<b>Northing:</b>	383,047.00 usft	<b>Latitude:</b>	32° 3' 0.681 N
<b>From:</b>	Map	<b>Easting:</b>	806,402.00 usft	<b>Longitude:</b>	103° 28' 40.085 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.45 °
<b>Well</b> #602H					
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b>	383,080.00 usft	<b>Latitude:</b>
	+E/-W	0.0 usft	<b>Easting:</b>	808,399.00 usft	<b>Longitude:</b>
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>
					3,322.0 usft
<b>Wellbore</b> OH					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	4/18/2018	6.80	59.91	47,760.23796917
<b>Design</b> OH					
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	181.88	

Final PVA Report

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<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
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<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
108.0	812.0	Integrity MWD Cartel 41 8'kb + 17 (OH)	MWD	OWSG MWD - Standard
963.0	17,397.0	Drilltech MWD (OH)	MWD	OWSG MWD - Standard

MD (usft)	Inc (")	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (*/100usft)	Bulid (*/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
108.0	0.70	239.50	108.0	-0.3	-0.6	0.65	0.65	0.00	0.0	0.0
224.0	0.90	210.10	224.0	-1.5	-1.6	0.39	0.17	-25.34	0.0	0.0
348.0	0.80	221.00	348.0	-3.0	-2.7	0.15	-0.08	8.79	0.0	0.0
475.0	0.60	237.70	475.0	-4.0	-3.8	0.22	-0.16	13.15	0.0	0.0
602.0	0.10	254.10	602.0	-4.4	-4.5	0.40	-0.39	12.91	0.0	0.0
728.0	0.30	299.10	728.0	-4.3	-4.9	0.19	0.16	35.71	0.0	0.0
812.0	0.30	307.30	812.0	-4.0	-5.3	0.05	0.00	9.76	0.0	0.0
963.0	0.62	19.79	963.0	-3.0	-5.3	0.40	0.21	48.01	-0.7	-0.4
1,055.0	0.70	348.15	1,054.9	-2.0	-5.3	0.40	0.09	-34.39	-1.0	-1.3
1,148.0	1.49	308.07	1,147.9	-0.7	-6.3	1.13	0.85	-43.10	-1.1	-2.0
1,240.0	1.32	310.97	1,239.9	0.7	-8.1	0.20	-0.18	3.15	-3.0	-1.9
1,334.0	1.14	312.29	1,333.9	2.1	-9.6	0.19	-0.19	1.40	-4.6	-1.9
1,427.0	0.97	318.35	1,426.9	3.3	-10.8	0.22	-0.18	6.52	-6.0	-1.4
1,520.0	0.97	312.73	1,519.9	4.4	-11.9	0.10	0.00	-6.04	-6.9	-2.1
1,613.0	0.88	306.84	1,612.8	5.4	-13.0	0.14	-0.10	-6.33	-7.7	-2.8
1,706.0	0.88	309.21	1,705.8	6.3	-14.2	0.04	0.00	2.55	-8.7	-2.5
1,800.0	1.06	327.58	1,799.8	7.4	-15.2	0.38	0.19	19.54	-10.1	0.4
1,895.0	0.97	326.88	1,894.8	8.9	-16.1	0.10	-0.09	-0.74	-11.4	0.1
1,988.0	1.06	341.38	1,987.8	10.3	-16.8	0.29	0.10	15.59	-12.2	2.9
2,082.0	1.06	335.14	2,081.8	11.9	-17.4	0.12	0.00	-6.64	-13.7	1.2

Final PVA Report

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<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>TVD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Site:</b>	Nautilus 16 State Com	<b>MD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

Survey												
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (*100usft)	Build (*100usft)	Turn (*100usft)	High to Plan (usft)	Right to Plan (usft)		
2,176.0	0.79	340.15	2,175.8	13.3	-18.0	0.30	-0.29	5.33	-14.7	2.2		
2,269.0	0.70	328.81	2,268.8	14.4	-18.5	0.19	-0.10	-12.19	-15.6	-1.0		
2,363.0	1.14	274.85	2,362.7	15.0	-19.8	0.98	0.47	-57.40	-9.2	-13.4		
2,457.0	0.79	265.80	2,456.7	15.0	-21.3	0.40	-0.37	-9.63	-8.2	-14.5		
2,552.0	0.53	289.00	2,551.7	15.1	-22.4	0.39	-0.27	24.42	-13.8	-9.7		
2,645.0	0.44	299.98	2,644.7	15.5	-23.1	0.14	-0.10	11.81	-15.7	-6.7		
2,739.0	0.44	325.47	2,738.7	15.9	-23.6	0.21	0.00	27.12	-17.3	0.7		
2,832.0	0.62	356.32	2,831.7	16.7	-23.9	0.36	0.19	33.17	-15.0	9.3		
2,925.0	1.06	2.56	2,924.7	18.1	-23.9	0.48	0.47	6.71	-14.9	10.5		
3,019.0	1.06	345.86	3,018.7	19.8	-24.0	0.33	0.00	-17.77	-18.6	5.2		
3,113.0	1.49	312.90	3,112.7	21.5	-25.2	0.89	0.46	-35.06	-19.9	-6.3		
3,206.0	1.58	349.03	3,205.6	23.6	-26.3	1.03	0.10	38.85	-21.7	7.0		
3,300.0	2.02	9.95	3,299.6	26.5	-26.2	0.83	0.47	22.26	-20.4	14.4		
3,393.0	2.20	21.02	3,392.5	29.7	-25.3	0.48	0.19	11.90	-20.5	17.9		
3,487.0	2.64	19.17	3,486.4	33.5	-24.0	0.48	0.47	-1.97	-24.9	16.7		
3,580.0	2.29	7.66	3,579.4	37.3	-23.0	0.65	-0.38	-12.38	-31.5	10.5		
3,674.0	2.20	321.25	3,673.3	40.6	-23.9	1.88	-0.10	-49.37	-31.9	-17.0		
3,768.0	2.29	319.67	3,767.2	43.4	-26.2	0.12	0.10	-1.68	-34.6	-18.1		
3,861.0	2.46	317.74	3,860.1	46.3	-28.8	0.20	0.18	-2.08	-37.4	-19.4		
3,955.0	2.73	319.76	3,954.0	49.5	-31.6	0.30	0.29	2.15	-41.8	-18.1		
4,049.0	3.25	325.03	4,047.9	53.4	-34.6	0.63	0.55	5.61	-47.7	-14.1		
4,143.0	3.34	295.33	4,141.8	56.8	-38.6	1.80	0.10	-31.60	-39.0	-37.1		
4,236.0	4.04	297.44	4,234.6	59.5	-43.9	0.77	0.75	2.27	-45.9	-35.5		
4,329.0	4.75	300.16	4,327.3	62.9	-50.2	0.80	0.76	2.92	-54.1	-33.1		
4,422.0	5.10	296.21	4,420.0	66.7	-57.2	0.52	0.38	-4.25	-59.2	-36.9		
4,516.0	3.34	266.85	4,513.7	68.4	-63.7	2.91	-1.87	-31.23	-39.6	-62.9		
4,610.0	2.81	275.64	4,607.6	68.4	-68.7	0.75	-0.56	9.35	-53.3	-55.5		

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<b>Site:</b>	Nautilus 16 State Com	<b>MD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
4,705.0	1.85	280.03	4,702.5	68.9	-72.5	1.03	-1.01	4.62	-60.8	-50.8
4,798.0	1.93	291.72	4,795.4	69.8	-75.5	0.42	0.09	12.57	-72.4	-37.0
4,892.0	1.23	295.50	4,889.4	70.8	-77.8	0.75	-0.74	4.02	-76.8	-31.9
5,079.0	0.53	121.39	5,076.4	71.2	-78.9	0.94	-0.37	-93.11	79.8	23.6
5,173.0	0.70	121.83	5,170.4	70.7	-78.1	0.18	0.18	0.47	77.9	22.9
5,334.0	0.97	105.22	5,331.4	69.8	-75.9	0.22	0.17	-10.32	57.3	41.6
5,428.0	0.79	14.08	5,425.4	70.2	-75.0	1.34	-0.19	-96.96	-41.3	49.0
5,521.0	1.32	336.11	5,518.3	71.8	-75.3	0.91	0.57	-40.83	-58.6	8.9
5,614.0	1.76	316.95	5,611.3	73.8	-76.7	0.72	0.47	-20.60	-54.0	-13.0
5,708.0	2.02	304.82	5,705.3	75.8	-79.0	0.51	0.28	-12.90	-46.2	-24.8
5,802.0	2.55	304.12	5,799.2	78.0	-82.1	0.56	0.56	-0.74	-42.6	-25.7
5,896.0	4.40	288.38	5,893.0	80.3	-87.3	2.20	1.97	-16.74	-32.9	-35.3
5,989.0	4.48	293.39	5,985.7	82.8	-94.0	0.43	0.09	5.39	-36.1	-31.0
6,082.0	4.48	293.13	6,078.5	85.7	-100.7	0.02	0.00	-0.28	-36.4	-30.2
6,176.0	4.48	291.37	6,172.2	88.5	-107.4	0.15	0.00	-1.87	-35.9	-30.3
6,269.0	4.48	290.67	6,264.9	91.1	-114.2	0.06	0.00	-0.75	-36.0	-29.5
6,362.0	4.13	290.23	6,357.6	93.5	-120.8	0.38	-0.38	-0.47	-35.9	-28.4
6,456.0	4.22	287.59	6,451.4	95.7	-127.2	0.23	0.10	-2.81	-34.6	-28.6
6,549.0	4.04	286.54	6,544.1	97.7	-133.6	0.21	-0.19	-1.13	-34.1	-27.5
6,642.0	4.04	288.38	6,636.9	99.7	-139.9	0.14	0.00	1.98	-34.8	-24.8
6,735.0	4.04	290.84	6,729.7	101.9	-146.1	0.19	0.00	2.65	-35.5	-21.9
6,829.0	4.04	291.28	6,823.4	104.3	-152.2	0.03	0.00	0.47	-35.4	-20.3
6,922.0	3.87	292.95	6,916.2	106.7	-158.2	0.22	-0.18	1.80	-35.5	-18.2
7,016.0	3.87	289.44	7,010.0	109.0	-164.1	0.25	0.00	-3.73	-33.9	-19.1
7,109.0	3.69	291.37	7,102.8	111.1	-169.8	0.24	-0.19	2.08	-33.8	-16.7
7,202.0	3.69	293.74	7,195.6	113.4	-175.4	0.16	0.00	2.55	-33.5	-14.2
7,296.0	3.78	289.88	7,289.4	115.7	-181.1	0.28	0.10	-4.11	-31.8	-15.3

Final PVA Report

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<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>TVD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
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<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

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)
7,390.0	3.43	285.92	7,383.2	117.5	-186.7	0.46	-0.37	-4.21	-29.8	-15.8
7,483.0	2.46	272.12	7,476.1	118.3	-191.3	1.28	-1.04	-14.84	-23.8	-19.7
7,576.0	1.23	247.51	7,569.0	118.0	-194.3	1.54	-1.32	-26.46	-12.1	-23.1
7,669.0	1.06	223.96	7,662.0	117.0	-195.8	0.53	-0.18	-25.32	-2.1	-19.7
7,763.0	1.41	211.30	7,756.0	115.4	-197.0	0.47	0.37	-13.47	0.2	-12.8
7,857.0	1.23	194.78	7,850.0	113.4	-197.8	0.45	-0.19	-17.57	-0.2	-5.9
7,949.0	1.49	199.70	7,942.0	111.4	-198.5	0.31	0.28	5.35	-4.2	0.9
8,041.0	1.49	209.72	8,033.9	109.2	-199.5	0.28	0.00	10.89	-6.5	6.5
8,135.0	1.41	202.16	8,127.9	107.1	-200.5	0.22	-0.09	-8.04	-10.0	7.2
8,140.9	1.41	203.05	8,133.8	106.9	-200.6	0.37	-0.04	15.09	-10.0	7.3
<b>KOP (Naut 16 SC #602H)</b>										
8,228.0	1.41	216.31	8,220.9	105.1	-201.6	0.37	0.00	15.22	-10.1	9.7
8,322.0	1.49	206.47	8,314.8	103.1	-202.9	0.28	0.09	-10.47	-14.0	7.6
8,415.0	1.58	207.79	8,407.8	100.8	-204.0	0.10	0.10	1.42	-16.3	8.0
8,509.0	0.97	195.92	8,501.8	98.9	-204.8	0.70	-0.65	-12.63	-19.7	4.2
8,602.0	1.06	157.69	8,594.8	97.4	-204.7	0.72	0.10	-41.11	-19.5	-9.4
8,696.0	0.97	166.57	8,688.7	95.8	-204.2	0.19	-0.10	9.45	-22.4	-6.1
8,790.0	1.23	163.31	8,782.7	94.1	-203.7	0.28	0.28	-3.47	-23.8	-7.4
8,882.0	1.23	162.70	8,874.7	92.2	-203.2	0.01	0.00	-0.66	-25.7	-7.7
8,981.0	1.14	147.93	8,973.7	90.3	-202.3	0.32	-0.09	-14.82	-24.9	-14.3
9,075.0	0.79	159.10	9,067.7	88.9	-201.6	0.42	-0.37	11.88	-28.8	-9.0
9,168.0	1.06	170.52	9,160.7	87.5	-201.2	0.35	0.29	12.28	-31.5	-3.0
9,261.0	0.97	174.92	9,253.6	85.8	-201.0	0.13	-0.10	4.73	-33.2	-0.5
9,355.0	0.97	197.15	9,347.6	84.3	-201.2	0.40	0.00	23.65	-32.5	12.4
9,448.0	0.79	206.73	9,440.6	83.0	-201.7	0.25	-0.19	10.30	-31.4	17.8
9,542.0	0.44	206.73	9,534.6	82.1	-202.1	0.37	-0.37	0.00	-32.4	17.8
9,635.0	0.44	207.00	9,627.6	81.4	-202.5	0.00	0.00	0.29	-33.0	17.9

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<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

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)
9,728.0	0.26	251.29	9,720.6	81.0	-202.8	0.34	-0.19	47.62	-11.6	36.1
9,822.0	0.35	81.58	9,814.6	81.0	-202.7	0.65	0.10	-180.54	4.9	-37.7
9,916.0	0.44	83.95	9,908.6	81.1	-202.1	0.10	0.10	2.52	2.7	-37.8
10,009.0	0.26	92.65	10,001.6	81.1	-201.5	0.20	-0.19	9.35	-3.6	-37.7
10,102.0	0.26	30.51	10,094.6	81.3	-201.2	0.29	0.00	-66.82	31.4	-21.0
10,194.0	1.06	92.74	10,186.6	81.4	-200.3	1.05	0.87	67.64	-5.0	-37.4
10,288.0	1.23	86.50	10,280.6	81.4	-198.4	0.22	0.18	-6.64	-2.7	-37.8
10,382.0	1.67	91.24	10,374.6	81.5	-196.0	0.48	0.47	5.04	-8.2	-37.3
10,474.0	2.11	106.80	10,466.5	81.0	-193.1	0.73	0.48	16.91	-20.9	-33.4
10,567.0	1.85	109.88	10,559.4	80.0	-190.0	0.30	-0.28	3.31	-25.9	-32.1
10,660.0	0.44	86.32	10,652.4	79.5	-188.2	1.57	-1.52	-25.33	-12.6	-40.4
10,753.0	0.70	308.14	10,745.4	79.8	-188.3	1.16	0.28	-150.73	35.3	22.7
10,940.0	0.97	253.84	10,932.4	80.1	-190.8	0.41	0.14	-27.97	1.3	40.9
11,034.0	1.23	263.95	11,026.4	79.7	-192.5	0.34	0.28	10.76	6.7	40.2
11,128.0	1.76	261.93	11,120.4	79.4	-195.0	0.57	0.56	-2.15	2.8	40.4
11,222.0	1.85	285.66	11,214.3	79.6	-197.9	0.80	0.10	25.24	16.0	36.4
11,315.0	1.32	308.33	11,307.3	80.7	-200.2	0.87	-0.57	24.38	26.3	28.0
11,408.0	1.32	330.66	11,400.3	82.3	-201.5	0.55	0.00	24.01	32.9	16.3
11,501.0	2.64	1.86	11,493.2	85.4	-202.0	1.78	1.42	33.55	33.6	-2.6
11,594.0	3.69	17.33	11,586.1	90.4	-201.0	1.45	1.13	16.63	26.6	-10.9
11,688.0	3.78	17.86	11,679.9	96.2	-199.2	0.10	0.10	0.56	20.4	-11.1
11,782.0	3.78	22.69	11,773.7	102.0	-197.0	0.34	0.00	5.14	13.2	-12.5
11,875.0	2.81	26.47	11,866.5	108.9	-194.8	1.07	-1.04	4.08	7.0	-13.1
11,958.0	2.37	17.77	11,949.4	110.3	-193.4	0.71	-0.53	-10.48	5.2	-12.2
12,069.0	2.02	24.36	12,060.3	114.3	-191.9	0.39	-0.32	5.94	-0.5	-12.5
12,097.0	1.93	22.87	12,088.3	115.2	-191.5	0.37	-0.32	-5.32	-1.1	-12.5
12,190.0	7.03	181.16	12,181.1	110.9	-191.0	9.52	5.48	170.20	-3.7	12.5

Final PVA Report

<b>Company:</b>	EOG Resources - Midland	<b>Local Co-ordinate Reference:</b>	Well #602H
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>TVD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Site:</b>	Nautilus 16 State Com	<b>MD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
12,283.0	15.39	181.42	12,272.3	92.9	-191.4	8.99	8.99	0.28	-0.5	11.8
12,314.0	19.08	183.09	12,301.9	83.7	-191.8	12.01	11.90	5.39	1.6	11.3
12,345.0	23.92	183.27	12,330.7	72.4	-192.4	15.61	15.61	0.58	3.1	10.4
12,377.0	29.28	184.85	12,359.3	58.1	-193.5	16.89	16.75	4.94	4.1	9.1
12,422.0	34.91	185.29	12,397.4	34.3	-195.6	12.52	12.51	0.98	4.5	6.8
12,471.0	40.36	185.55	12,436.2	4.5	-198.4	11.13	11.12	0.53	4.9	3.6
12,518.0	47.13	183.88	12,470.1	-27.9	-201.0	14.61	14.40	-3.55	4.9	0.9
12,565.0	51.00	182.83	12,500.9	-63.3	-203.1	8.41	8.23	-2.23	5.2	-1.5
12,595.0	56.63	181.42	12,518.6	-87.5	-204.0	19.15	18.77	-4.70	5.3	-2.5
12,627.0	62.08	180.45	12,534.9	-115.0	-204.4	17.23	17.03	-3.03	4.5	-3.1
12,658.0	65.69	179.75	12,548.6	-142.8	-204.5	11.82	11.65	-2.26	3.2	-3.3
12,678.0	68.42	179.79	12,556.4	-161.3	-204.4	13.66	13.66	0.20	2.3	-3.4
<b>HL Crossing, MD:12678.0', TVD:12556.4', N/S:-161.3', EW:-204.4', INC:68.42</b>										
12,691.5	70.26	179.81	12,561.1	-173.9	-204.4	13.66	13.66	0.19	1.7	-3.5
<b>FTP(Naut 16 SC #602H)</b>										
12,705.0	72.11	179.84	12,565.5	-186.7	-204.3	13.66	13.66	0.19	0.9	-3.6
12,751.0	74.30	180.19	12,578.8	-230.7	-204.3	4.82	4.76	0.76	-0.3	-4.0
12,797.0	77.73	180.10	12,589.9	-275.3	-204.5	7.46	7.46	-0.20	0.7	-4.5
12,844.0	82.66	179.22	12,597.9	-321.6	-204.2	10.65	10.49	-1.87	2.9	-4.6
12,891.0	89.08	177.11	12,601.3	-368.5	-202.7	14.37	13.66	-4.49	4.8	-3.5
12,938.0	90.31	176.85	12,601.5	-415.4	-200.2	2.67	2.62	-0.55	5.1	-1.4
13,032.0	91.63	180.45	12,599.9	-509.3	-198.0	4.08	1.40	3.83	3.7	0.0
13,124.0	92.77	180.37	12,596.4	-601.3	-198.6	1.24	1.24	-0.09	0.2	-1.5
13,218.0	93.12	182.12	12,591.6	-695.1	-200.7	1.90	0.37	1.86	-4.5	-4.3
13,311.0	90.13	180.10	12,588.9	-788.0	-202.5	3.88	-3.22	-2.17	-7.0	-6.9
13,405.0	89.87	178.87	12,588.9	-882.0	-201.6	1.34	-0.28	-1.31	-6.9	-6.9
13,498.0	90.57	179.49	12,588.6	-975.0	-200.3	1.01	0.75	0.67	-7.1	-6.4



Final PVA Report

<b>Company:</b>	EOG Resources - Midland	<b>Local Co-ordinate Reference:</b>	Well #602H
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>TVD Reference:</b>	.kB = 25 @ 3347.0usft (H&P 610)
<b>Site:</b>	Nautilus 16 Slate Corn	<b>MD Reference:</b>	.kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
13,592.0	88.29	177.11	12,589.5	-1,069.0	-197.5	3.51	-2.43	-2.53	-6.1	-4.4	
13,685.0	89.69	177.64	12,591.2	-1,161.9	-193.3	1.61	1.51	0.57	-4.4	-1.0	
13,779.0	91.71	181.07	12,590.0	-1,255.8	-192.2	4.23	2.15	3.65	-5.4	-0.7	
13,872.0	89.96	181.24	12,588.7	-1,348.8	-194.1	1.89	-1.88	0.18	-6.6	-3.4	
13,966.0	88.37	179.40	12,590.0	-1,442.8	-194.6	2.59	-1.69	-1.96	-5.2	-4.7	
14,060.0	89.52	180.63	12,591.8	-1,536.8	-194.6	1.79	1.22	1.31	-3.3	-5.6	
14,153.0	89.52	181.86	12,592.5	-1,629.7	-196.6	1.32	0.00	1.32	-2.4	-8.4	
14,167.8	89.34	181.81	12,592.7	-1,644.5	-197.1	1.28	-1.22	-0.37	-2.3	-9.0	
<b>TGT #1(Naut 16 SC #602H)</b>											
14,247.0	88.37	181.51	12,594.3	-1,723.7	-199.4	1.28	-1.22	-0.37	-0.6	-12.0	
14,341.0	89.34	178.96	12,596.1	-1,817.6	-199.8	2.90	1.03	-2.71	1.4	-13.2	
14,434.0	90.40	180.63	12,596.4	-1,910.6	-199.5	2.13	1.14	1.80	1.7	-13.7	
14,527.0	87.85	177.20	12,597.8	-2,003.6	-197.7	4.60	-2.74	-3.69	3.3	-12.7	
14,621.0	87.67	178.26	12,601.5	-2,097.4	-194.0	1.14	-0.19	1.13	7.0	-9.8	
14,713.0	87.32	178.17	12,605.5	-2,189.3	-191.1	0.39	-0.38	-0.10	11.2	-7.7	
14,770.0	88.46	176.59	12,607.6	-2,246.2	-188.5	3.42	2.00	-2.77	13.3	-5.6	
14,806.0	89.87	177.03	12,608.1	-2,282.1	-186.5	4.10	3.92	1.22	13.9	-3.9	
14,853.0	90.31	177.20	12,608.0	-2,329.1	-184.2	1.00	0.94	0.36	13.9	-2.0	
14,899.0	90.57	177.47	12,607.7	-2,375.0	-182.0	0.81	0.57	0.59	13.6	-0.2	
14,993.0	89.69	178.52	12,607.5	-2,469.0	-178.7	1.46	-0.94	1.12	13.5	2.2	
15,086.0	91.80	179.84	12,606.3	-2,561.9	-177.4	2.68	2.27	1.42	12.4	2.8	
15,180.0	92.07	180.37	12,603.1	-2,655.9	-177.6	0.63	0.29	0.56	9.3	1.8	
15,273.0	92.07	180.98	12,599.7	-2,748.8	-178.7	0.68	0.00	0.66	6.1	-0.1	
15,366.0	92.33	180.28	12,596.1	-2,841.7	-179.7	0.80	0.28	-0.75	2.6	-2.0	
15,460.0	92.42	180.54	12,592.3	-2,935.7	-180.4	0.29	0.10	0.28	-1.2	-3.5	
15,554.0	90.40	179.84	12,589.9	-3,029.6	-180.7	2.27	-2.15	-0.74	-3.4	-4.6	
15,647.0	88.90	179.14	12,590.5	-3,122.6	-179.8	1.78	-1.61	-0.75	-2.7	-4.6	

Final PVA Report

<b>Company:</b>	EOG Resources - Midland	<b>Local Co-ordinate Reference:</b>	Well #602H
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>TVD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Site:</b>	Nautilus 16 State Com	<b>MD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (°/100usft)	BuHd (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
15,740.0	91.28	179.05	12,590.4	-3,215.6	-178.4	2.56	2.56	-0.10	-2.7	-3.9
15,820.4	91.96	179.13	12,588.1	-3,296.0	-177.1	0.85	0.85	0.10	-4.9	-3.3
<b>TGT #2(Naut 16 SC #602H)</b>										
15,833.0	92.07	179.14	12,587.6	-3,308.6	-176.9	0.85	0.85	0.10	-5.3	-3.2
15,926.0	90.84	177.82	12,585.3	-3,401.5	-174.4	1.94	-1.32	-1.42	-7.1	-1.6
16,021.0	89.43	177.47	12,585.1	-3,496.4	-170.5	1.53	-1.48	-0.37	-6.7	1.5
16,114.0	87.85	178.43	12,587.3	-3,589.3	-167.2	1.99	-1.70	1.03	-3.9	4.0
16,207.0	89.16	180.01	12,589.7	-3,682.3	-165.9	2.21	1.41	1.70	-0.9	4.5
16,301.0	89.69	181.16	12,590.6	-3,776.3	-166.9	1.35	0.56	1.22	0.6	2.7
16,395.0	88.37	182.12	12,592.2	-3,870.2	-169.6	1.74	-1.40	1.02	2.8	-0.8
16,489.0	88.72	183.35	12,594.6	-3,964.1	-174.1	1.36	0.37	1.31	5.8	-6.1
16,582.0	92.95	181.68	12,593.3	-4,058.9	-178.2	4.89	4.55	-1.80	5.1	-11.0
16,675.0	93.56	181.51	12,588.0	-4,149.8	-180.7	0.68	0.66	-0.18	0.4	-14.4
16,767.0	92.68	177.82	12,583.0	-4,241.6	-180.2	4.12	-0.96	-4.01	-4.1	-14.6
16,860.0	91.80	174.13	12,579.3	-4,334.3	-173.7	4.08	-0.95	-3.97	-7.2	-8.9
16,953.0	87.05	173.33	12,580.3	-4,426.7	-163.5	5.18	-5.11	-0.86	-5.6	0.4
17,045.0	87.93	174.83	12,584.3	-4,518.1	-154.0	1.89	0.96	1.63	-1.0	9.1
17,138.0	89.25	173.95	12,586.6	-4,610.6	-145.0	1.71	1.42	-0.95	1.9	17.4
17,230.0	89.52	170.08	12,587.6	-4,701.7	-132.2	4.22	0.29	-4.21	3.4	29.4
17,311.0	87.75	165.72	12,589.5	-4,780.9	-115.2	5.81	-2.18	-5.39	5.6	45.7
<b>HL Crossing, MD:17311.0', TVD:12589.5', N/S:-4780.9', EW:-115.2', INC:87.75</b>										
17,323.0	87.49	165.07	12,590.0	-4,792.5	-112.2	5.81	-2.18	-5.39	6.1	48.6
<b>Final MWD Survey (MD=17323.0')</b>										
17,396.8	87.49	165.07	12,593.2	-4,863.7	-93.2	0.00	0.00	0.00	9.7	67.0
<b>PBHL(Naut 16 SC #602H)</b>										
17,397.0	87.49	165.07	12,593.2	-4,863.9	-93.1	0.00	0.00	0.00	9.7	67.1
<b>Final Projection to Bit (MD=17397.0')</b>										

Final PVA Report

<b>Company:</b>	EOG Resources - Midland	<b>Local Co-ordinate Reference:</b>	Well #602H
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>TVD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Site:</b>	Nautilus 16 State Com	<b>MD Reference:</b>	kB = 25 @ 3347.0usft (H&P 610)
<b>Well:</b>	#602H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.14

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E/W (usft)	
12,678.0	12,556.4	-161.3	-204.4	HL Crossing, MD:12678.0', TVD:12556.4', N/S:-161.3', E/W:-204.4', INC:68.42
17,311.0	12,589.5	-4,780.9	-115.2	HL Crossing, MD:17311.0', TVD:12589.5', N/S:-4780.9', E/W:-115.2', INC:87.75
17,323.0	12,590.0	-4,792.5	-112.2	Final MWD Survey (MD=17323.0')
17,397.0	12,593.2	-4,863.9	-93.1	Final Projection to Bit (MD=17397.0')

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



Lea County, NM (NAD 83 NME)  
 Nautilus 16 State Com #602H  
 H&P 610  
 Plan #1

**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



Magnetic Declination  
 Magnetic North  
 Magnetic South  
 Magnetic East  
 Magnetic West

To convert a Magnetic Direction to a Grid Direction, Add 6.35°  
 To convert a Magnetic Direction to a True Direction, Add 6.80° East  
 To convert a True Direction to a Grid Direction, Subtract 0.45°

**WELL DETAILS: #602H**

3322.0  
 KB = 25 @ 3347.0usft (H&P 610)  
 Northing 383080.00 Easting 808399.00 Latitude 32° 3' 0.850 N Longitude 103° 28' 16.880 W

**SECTION DETAILS**

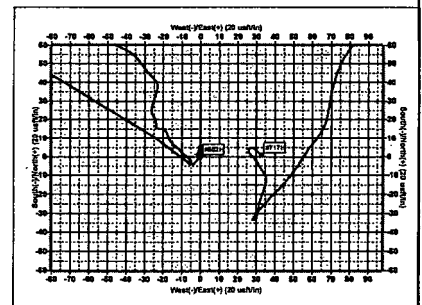
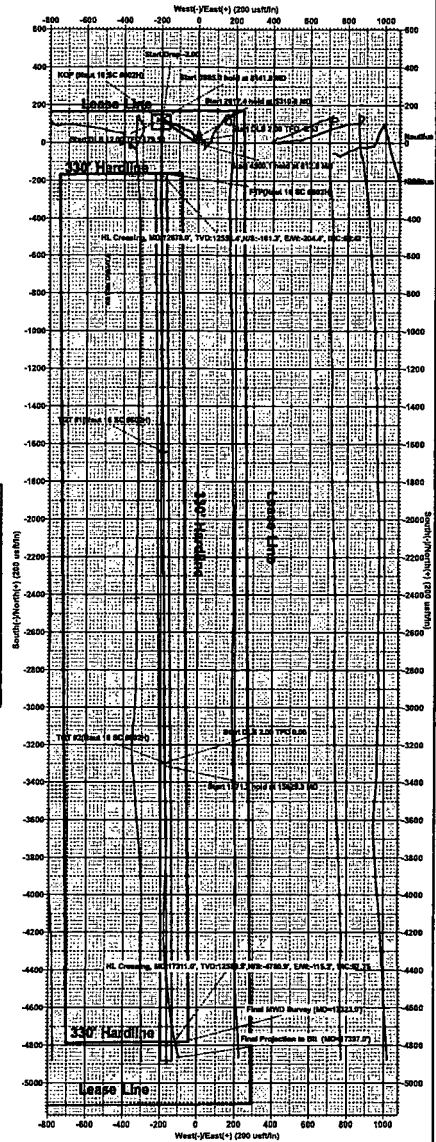
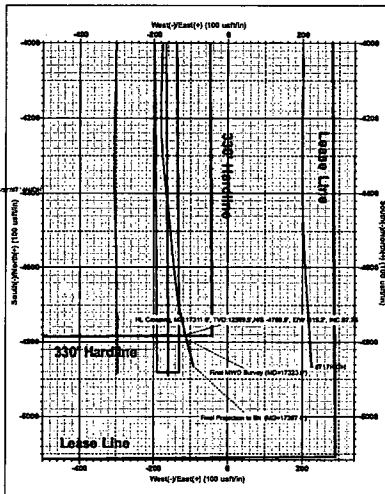
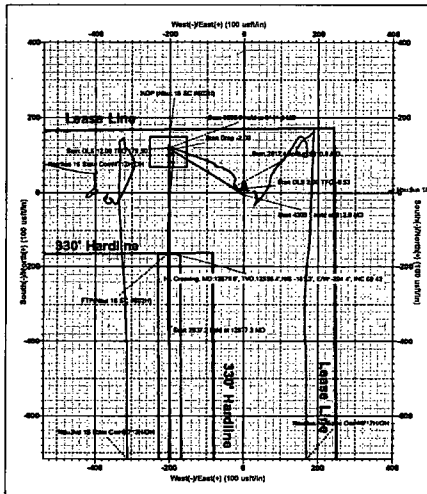
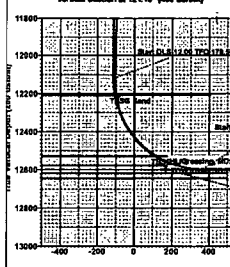
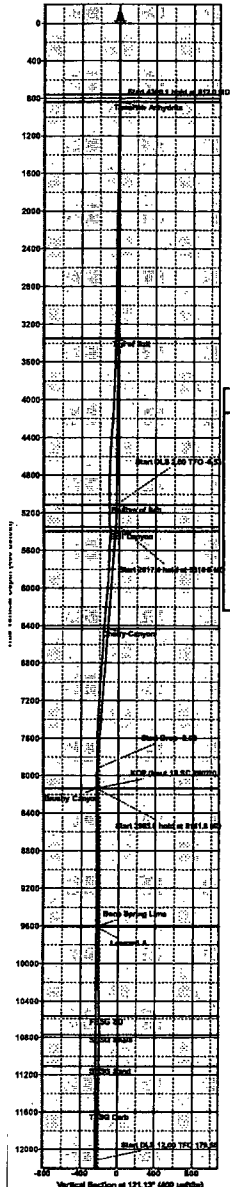
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
812.0	0.30	307.30	812.0	-4.0	-5.3	0.00	0.00	4.2
5112.1	0.30	307.30	5112.0	9.6	-23.2	0.00	0.00	-8.9
5310.8	4.27	301.23	5310.5	13.8	-29.9	2.00	-6.53	-12.6
7928.2	4.27	301.23	7920.6	114.9	-196.6	0.00	0.00	-108.4
8141.8	0.00	0.00	8134.0	119.0	-203.4	2.00	180.00	-112.3
12126.8	0.00	0.00	12119.0	119.0	-203.4	0.00	0.00	-112.3
12877.3	90.07	179.50	12596.5	-359.0	-199.3	12.00	179.50	365.4
15814.5	90.07	179.50	12593.0	-3296.1	-173.8	0.00	0.00	3300.0
15829.3	90.36	179.50	12592.9	-3310.9	-173.6	2.00	0.00	3314.8
17400.5	90.36	179.50	12583.0	-4882.0	-160.0	0.00	0.00	4884.6

**CASING DETAILS**

No casing data is available

**WELLBORE TARGET DETAILS (MAP CO-ORDINATES)**

Name	TVD	+N/-S	+E/-W	Northing	Easting
KOP (Nautilus 16 SC #602H)	8134.0	119.0	-203.4	383198.99	808195.57
PHD (Nautilus 16 SC #602H)	12393.0	-682.0	-160.0	378195.00	808225.00
TGT #1 (Nautilus 16 SC #602H)	12393.0	-3296.1	-173.8	378783.90	808225.23
TGT #2 (Nautilus 16 SC #602H)	12393.0	-1644.7	-188.1	381435.30	808210.89
FTP (Nautilus 16 SC #602H)	12393.0	-161.0	-391.8	382919.00	808198.00



Use Scale of 1" = 100' unless otherwise noted.  
 All dimensions are in feet unless otherwise noted.  
 All bearings are magnetic unless otherwise noted.  
 All depths are true vertical depth unless otherwise noted.