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HOBBS OCD

JUL 18 2018

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EOG Resources - Midland

Lea County, NM (NAD 83 NME)

Antietam 9 Fed Com

#710H

OH

Design: OH

PVA Report

26 March, 2018



PVA Report

Company: EOG Resources - Midland Project: Lea County, NM (NAD 83 NME) Site: Antietam 9 Fed Com Well: #710H Wellbore: OH Design: OH	Local Co-ordinate Reference: Well #710H TVD Reference: KB = 25' @ 3452.0usft (HP 653) MD Reference: KB = 25' @ 3452.0usft (HP 653) North Reference: Grid Survey Calculation Method: Minimum Curvature Database: EDM 5000.14
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Project Lea County, NM (NAD 83 NME)	
Map System: US State Plane 1983 Geo Datum: North American Datum 1983 Map Zone: New Mexico Eastern Zone	System Datum: Mean Sea Level

Site Antietam 9 Fed Com
Site Position: Northing: 419,815.00 usft Latitude: 32° 9' 6.852 N From: Map Easting: 774,698.00 usft Longitude: 103° 34' 45.452 W Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.40 °

Well #710H
Well Position +N/-S 0.0 usft Northing: 419,768.00 usft Latitude: 32° 9' 6.292 N +E/-W 0.0 usft Easting: 776,063.00 usft Longitude: 103° 34' 29.579 W Position Uncertainty 0.0 usft Wellhead Elevation: usft Ground Level: 3,427.0 usft

Wellbore OH												
<table border="1"> <tr> <th>Magnetics</th> <th>Model Name</th> <th>Sample Date</th> <th>Declination (°)</th> <th>Dip Angle (°)</th> <th>Field Strength (nT)</th> </tr> <tr> <td></td> <td>IGRF2015</td> <td>8/16/2017</td> <td>6.93</td> <td>59.99</td> <td>47,877.92044266</td> </tr> </table>	Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)		IGRF2015	8/16/2017	6.93	59.99	47,877.92044266
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)							
	IGRF2015	8/16/2017	6.93	59.99	47,877.92044266							

Design OH
Audit Notes: Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0
Vertical Section: Depth From (TVD) +N/-S +E/-W Direction (usft) (usft) (usft) (°) 0.0 0.0 0.0 180.22

Survey Program Date 3/26/2018										
<table border="1"> <tr> <th>From (usft)</th> <th>To (usft)</th> <th>Survey (Wellbore)</th> <th>Tool Name</th> <th>Description</th> </tr> <tr> <td>194.0</td> <td>19,670.0</td> <td>Drilltech MWD (OH)</td> <td>MWD</td> <td>OWSG MWD - Standard</td> </tr> </table>	From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	194.0	19,670.0	Drilltech MWD (OH)	MWD	OWSG MWD - Standard
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194.0	19,670.0	Drilltech MWD (OH)	MWD	OWSG MWD - Standard						



PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #710H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (HP 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 653)
Well:	#710H	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)	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	0.0
194.0	0.88	144.52	194.0	-1.2	0.9	0.45	0.45	0.00	-1.5	0.0	
314.0	1.14	145.75	314.0	-3.0	2.1	0.22	0.22	1.02	-3.6	0.1	
492.0	0.44	194.97	492.0	-5.1	2.9	0.51	-0.39	27.65	-4.2	4.1	
671.0	1.67	266.33	670.9	-5.9	0.1	0.89	0.69	39.87	-0.3	5.9	
861.0	1.23	252.10	860.9	-6.7	-4.6	0.30	-0.23	-7.49	-6.4	5.0	
1,047.0	1.41	290.42	1,046.8	-6.5	-8.6	0.47	0.10	20.60	-5.8	9.1	
1,197.0	2.37	272.22	1,196.7	-5.8	-13.5	0.75	0.64	-12.13	-13.2	6.3	
1,348.0	4.04	257.28	1,347.5	-6.8	-21.8	1.23	1.11	-9.89	-22.7	1.9	
1,535.0	3.25	282.42	1,534.1	-7.1	-33.4	0.94	-0.42	13.44	-31.1	14.2	
1,723.0	3.69	317.14	1,721.8	-1.5	-42.7	1.12	0.23	18.47	-27.9	32.4	
1,913.0	3.52	352.91	1,911.5	8.7	-47.6	1.17	-0.09	18.83	-14.5	46.1	
2,103.0	3.17	347.02	2,101.1	19.6	-49.5	0.26	-0.18	-3.10	-30.2	43.8	
2,292.0	2.20	27.89	2,289.9	27.9	-49.0	1.10	-0.51	21.62	-1.8	56.3	
2,482.0	2.29	20.42	2,479.8	34.7	-45.9	0.16	0.05	-3.93	-16.5	55.2	
2,672.0	2.37	24.81	2,669.6	41.8	-43.0	0.10	0.04	2.31	-19.9	56.6	
2,862.0	2.55	22.53	2,859.5	49.3	-39.7	0.11	0.09	-1.20	-30.3	55.6	
3,052.0	3.08	18.48	3,049.2	58.1	-36.4	0.30	0.28	-2.13	-43.5	53.0	
3,242.0	1.85	8.46	3,239.1	65.9	-34.4	0.68	-0.65	-5.27	-60.1	43.7	
3,432.0	0.97	301.75	3,429.0	69.8	-35.3	0.90	-0.46	-35.11	-66.7	-40.8	
3,621.0	1.14	307.29	3,618.0	71.8	-38.1	0.10	0.09	2.93	-73.8	-34.0	
3,811.0	1.06	344.91	3,807.9	74.6	-40.1	0.38	-0.04	19.80	-82.5	19.3	
4,001.0	1.23	6.88	3,997.9	78.4	-40.3	0.25	0.09	11.56	-73.0	49.4	
4,190.0	1.41	357.39	4,186.9	82.7	-40.2	0.15	0.10	-5.02	-84.4	36.4	
4,380.0	1.58	51.53	4,376.8	86.7	-38.2	0.72	0.09	28.49	-24.0	91.6	
4,570.0	1.49	71.48	4,566.7	89.1	-33.8	0.28	-0.05	10.50	3.8	95.2	
4,760.0	2.29	96.18	4,756.6	89.4	-27.7	0.59	0.42	13.00	37.2	86.0	



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Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 653)
Well:	#710H	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)	Buld (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
4,919.0	1.93	47.84	4,915.5	90.9	-22.6	1.11	-0.23	-30.40	-44.3		82.6
5,031.0	2.02	45.38	5,027.5	93.6	-19.8	0.11	0.08	-2.20	-51.6		80.5
5,126.0	2.37	345.70	5,122.4	96.6	-19.1	2.32	0.37	-62.82	-98.4		-5.4
5,221.0	4.13	341.83	5,217.2	101.8	-20.6	1.87	1.85	-4.07	-103.1		-12.2
5,316.0	6.60	334.63	5,311.8	110.0	-24.0	2.69	2.60	-7.58	-109.6		-25.6
5,411.0	7.83	336.21	5,406.1	120.8	-29.0	1.31	1.29	1.66	-122.2		-22.4
5,506.0	6.60	324.78	5,500.3	131.2	-34.7	1.98	-1.29	-12.03	-127.1		-47.6
5,601.0	6.16	322.50	5,594.7	139.7	-41.0	0.53	-0.46	-2.40	-135.2		-52.6
5,696.0	6.07	321.35	5,689.2	147.7	-47.2	0.16	-0.09	-1.21	-141.0		-54.4
5,791.0	5.98	322.15	5,783.7	155.5	-53.4	0.13	-0.09	0.84	-145.1		-50.8
5,886.0	5.89	321.79	5,878.2	163.3	-59.5	0.10	-0.09	-0.38	-145.2		-49.5
5,981.0	4.48	298.41	5,972.8	168.8	-65.7	2.64	-1.48	-24.61	-114.0		-98.9
6,076.0	4.48	288.13	6,067.5	171.8	-72.5	0.84	0.00	-10.82	-95.2		-111.0
6,172.0	4.31	276.88	6,163.2	173.4	-79.7	0.91	-0.18	-11.72	-73.7		-119.6
6,267.0	2.90	259.39	6,258.0	173.4	-85.6	1.87	-1.48	-18.41	-37.5		-127.7
6,362.0	1.32	151.99	6,353.0	171.9	-87.4	3.71	-1.66	-113.05	122.8		0.3
6,457.0	1.85	124.13	6,447.9	170.1	-85.7	0.97	0.56	-29.33	97.3		52.3
6,551.0	0.18	15.23	6,541.9	169.4	-84.4	2.04	-1.78	-115.85	-73.0		67.4
6,646.0	0.88	314.15	6,636.9	170.1	-84.8	0.85	0.74	-64.29	-85.8		-27.9
6,741.0	1.14	336.82	6,731.9	171.4	-85.7	0.50	0.27	23.86	-81.7		7.2
6,836.0	0.97	312.39	6,826.9	172.8	-86.7	0.50	-0.18	-25.72	-69.8		-23.8
6,931.0	0.97	303.78	6,921.9	173.8	-88.0	0.15	0.00	-9.06	-58.5		-29.0
7,026.0	1.06	314.59	7,016.9	174.9	-89.3	0.22	0.09	11.38	-55.2		-14.0
7,121.0	0.70	160.16	7,111.9	175.0	-89.7	1.81	-0.38	-162.56	46.2		-10.7
7,216.0	1.76	155.15	7,206.8	173.1	-88.9	1.12	1.12	-5.27	35.0		-6.6
7,311.0	1.67	150.76	7,301.8	170.6	-87.6	0.17	-0.09	-4.62	22.6		-4.6
7,407.0	1.76	154.45	7,397.8	168.0	-86.3	0.15	0.09	3.84	10.8		-6.0



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Well:	#710H	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)	
7,501.0	1.49	146.28	7,491.7	165.7	-85.0	0.38	-0.29	-8.69	3.5	-5.4	
7,596.0	1.58	144.52	7,586.7	163.6	-83.5	0.11	0.09	-1.85	-1.2	-5.7	
7,691.0	1.76	139.86	7,681.6	161.4	-81.8	0.24	0.19	-4.91	-3.5	-5.9	
7,786.0	1.32	132.30	7,776.6	159.6	-80.1	0.51	-0.46	-7.96	-5.3	-6.5	
7,881.0	0.97	114.55	7,871.6	158.5	-78.5	0.52	-0.37	-18.68	-4.9	-8.2	
7,976.0	0.88	135.38	7,966.6	157.6	-77.3	0.36	-0.09	21.93	-8.9	-5.6	
8,071.0	1.32	152.34	8,061.6	156.2	-76.3	0.57	0.46	17.85	-12.0	-2.5	
8,166.0	1.67	149.97	8,156.5	154.0	-75.1	0.37	0.37	-2.49	-14.3	-3.1	
8,261.0	0.35	334.10	8,251.5	153.1	-74.5	2.13	-1.39	-185.13	15.6	1.9	
8,356.0	0.35	320.39	8,346.5	153.5	-74.8	0.09	0.00	-14.43	14.1	5.5	
8,451.0	0.53	301.14	8,441.5	154.0	-75.4	0.24	0.19	-20.26	10.8	9.8	
8,546.0	0.53	256.49	8,536.5	154.1	-76.2	0.42	0.00	-47.00	0.1	14.3	
8,641.0	0.44	200.42	8,631.5	153.7	-76.7	0.49	-0.09	-59.02	-12.4	7.7	
8,736.0	0.79	200.68	8,726.5	152.7	-77.1	0.37	0.37	0.27	-13.4	7.7	
8,831.0	0.88	201.82	8,821.5	151.4	-77.6	0.10	0.09	1.20	-14.6	8.0	
8,926.0	1.14	225.03	8,916.5	150.1	-78.5	0.50	0.27	24.43	-11.9	13.4	
9,021.0	0.97	15.76	9,011.5	150.2	-79.0	2.15	-0.18	158.66	16.9	-5.4	
9,116.0	0.88	19.36	9,106.5	151.6	-78.5	0.11	-0.09	3.79	15.0	-6.4	
9,211.0	1.06	2.40	9,201.4	153.2	-78.2	0.35	0.19	-17.85	14.7	-2.0	
9,306.0	0.53	292.44	9,296.4	154.3	-78.6	1.06	-0.56	-73.64	6.1	12.3	
9,401.0	0.70	320.30	9,391.4	154.9	-79.4	0.36	0.18	29.33	10.2	8.2	
9,495.0	1.49	333.22	9,485.4	156.4	-80.3	0.88	0.84	13.74	10.0	5.9	
9,590.0	1.67	320.21	9,580.4	158.6	-81.7	0.42	0.19	-13.69	5.8	7.7	
9,684.0	2.02	313.88	9,674.3	160.8	-83.8	0.43	0.37	-6.73	1.9	8.1	
9,780.0	2.02	286.20	9,770.3	162.4	-86.7	1.01	0.00	-28.83	-5.3	7.3	
9,875.0	1.58	290.15	9,865.2	163.3	-89.5	0.48	-0.46	4.16	-7.7	7.8	
9,970.0	1.23	292.53	9,960.2	164.2	-91.7	0.37	-0.37	2.51	-9.7	8.1	



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Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 653)
Well:	#710H	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)	
10,065.0	1.23	232.94	10,055.2	164.0	-93.4	1.29	0.00	-62.73	-13.5	-5.2	
10,160.0	1.58	212.63	10,150.1	162.2	-94.9	0.64	0.37	-21.38	-13.1	-9.9	
10,254.0	1.32	325.84	10,244.1	162.0	-96.3	2.58	-0.28	120.44	-4.5	17.1	
10,348.0	1.67	334.19	10,338.1	164.2	-97.5	0.44	0.37	8.88	-4.4	17.7	
10,443.0	1.58	329.62	10,433.1	166.5	-98.7	0.17	-0.09	-4.81	-8.5	17.2	
10,538.0	1.58	331.73	10,528.0	168.8	-100.0	0.06	0.00	2.22	-10.4	17.6	
10,633.0	1.67	324.17	10,623.0	171.1	-101.4	0.24	0.09	-7.96	-15.3	15.9	
10,727.0	1.67	303.16	10,716.9	173.0	-103.4	0.65	0.00	-22.35	-22.7	8.8	
10,822.0	1.67	242.25	10,811.9	173.1	-105.8	1.78	0.00	-64.12	-20.8	-16.7	
10,917.0	2.64	257.46	10,906.8	172.0	-109.1	1.18	1.02	16.01	-28.0	-10.3	
11,012.0	3.43	260.89	11,001.7	171.0	-114.1	0.85	0.83	3.61	-33.6	-8.5	
11,107.0	2.02	228.81	11,096.6	169.5	-118.1	2.13	-1.48	-33.77	-28.0	-26.6	
11,202.0	0.97	209.47	11,191.6	167.7	-119.8	1.21	-1.11	-20.36	-20.0	-34.9	
11,297.0	1.32	9.17	11,286.6	168.1	-120.0	2.37	0.37	168.11	6.3	39.9	
11,391.0	0.97	325.66	11,380.5	169.8	-120.3	0.97	-0.37	-46.29	-24.5	32.6	
11,487.0	1.67	301.67	11,478.5	171.2	-121.9	0.91	0.73	-24.99	-37.7	19.5	
11,582.0	2.29	290.77	11,571.5	172.6	-124.9	0.76	0.65	-11.47	-44.0	11.7	
11,626.0	2.64	288.83	11,615.4	173.2	-126.7	0.82	0.80	-4.41	-46.3	10.2	
11,721.0	2.37	292.79	11,710.3	174.7	-130.6	0.34	-0.28	4.17	-49.6	13.5	
11,769.0	5.10	181.70	11,758.3	172.9	-131.5	13.23	5.69	-231.44	3.4	-52.1	
11,774.1	5.55	179.57	11,763.3	172.5	-131.5	9.65	8.83	-41.81	4.9	-51.9	
KOP (Antietam 9 Fed Com #710H)											
11,816.0	9.41	170.01	11,804.9	167.1	-130.9	9.65	9.21	-22.81	9.0	-50.6	
11,864.0	14.33	158.84	11,851.8	157.7	-128.1	11.27	10.25	-23.27	13.7	-46.7	
11,911.0	20.05	153.13	11,898.7	145.0	-122.4	12.67	12.17	-12.15	12.7	-41.4	
11,960.0	28.40	153.04	11,941.4	127.1	-113.3	17.04	17.04	-0.18	5.2	-34.8	
11,999.0	33.85	155.50	11,974.8	109.0	-104.5	14.35	13.97	6.31	-3.0	-28.1	



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12,047.0	40.63	162.10	12,013.0	81.9	-94.2	16.38	14.12	13.75	-13.8	-19.1	
12,094.0	49.42	170.89	12,046.2	49.6	-86.6	22.87	18.70	18.70	-24.7	-11.0	
12,142.0	54.96	178.97	12,075.6	11.9	-83.4	17.59	11.54	16.83	-35.6	-5.2	
12,189.0	56.37	179.15	12,102.1	-26.9	-82.7	3.02	3.00	0.38	-43.2	-4.7	
12,237.0	57.60	179.06	12,128.3	-67.2	-82.1	2.57	2.56	-0.19	-46.9	-4.3	
12,283.0	62.87	178.27	12,151.1	-107.1	-81.2	11.55	11.46	-1.72	-48.1	-3.9	
12,287.7	63.45	178.31	12,153.2	-111.3	-81.1	12.30	12.27	0.96	-48.2	-3.8	
HL Crossing, MD:12287.7, TVD:12153.2, N/S:-111.3, E/W:-81.1, INC:63.45											
12,326.8	68.24	178.67	12,169.2	-146.9	-80.1	12.30	12.27	0.92	-48.7	-2.9	
FTP (Antietam 9 Fed Com #710H)											
12,331.0	68.76	178.71	12,170.8	-150.8	-80.0	12.30	12.27	0.88	-48.7	-2.8	
12,378.0	71.31	178.62	12,186.8	-195.0	-79.0	5.43	5.43	-0.19	-47.6	-2.0	
12,426.0	73.78	178.88	12,201.2	-240.8	-78.0	5.17	5.15	0.54	-43.3	-1.2	
12,473.0	74.66	179.76	12,214.0	-286.0	-77.5	2.60	1.87	1.87	-35.3	-0.9	
12,521.0	77.56	179.76	12,225.5	-332.6	-77.3	6.04	6.04	0.00	-24.5	-1.0	
12,568.0	80.72	181.26	12,234.4	-378.7	-77.7	7.42	6.72	3.19	-15.8	-1.7	
12,616.0	83.54	181.52	12,240.9	-426.2	-78.8	5.90	5.87	0.54	-9.4	-3.2	
12,663.0	84.94	179.67	12,245.7	-473.0	-79.3	4.92	2.98	-3.94	-4.8	-4.0	
12,711.0	86.61	179.41	12,249.2	-520.9	-78.9	3.52	3.48	-0.54	-1.4	-3.9	
12,758.0	83.45	178.71	12,253.3	-567.7	-78.2	6.89	-6.72	-1.49	2.5	-3.4	
12,806.0	83.10	178.62	12,258.9	-615.3	-77.1	0.75	-0.73	-0.19	8.0	-2.6	
12,853.0	80.46	178.09	12,265.6	-661.8	-75.7	5.73	-5.62	-1.13	14.6	-1.6	
12,900.0	80.72	178.09	12,273.3	-708.2	-74.2	0.55	0.55	0.00	22.2	-0.3	
12,947.0	82.98	178.88	12,280.0	-754.7	-73.0	5.09	4.81	1.68	28.7	0.6	
12,995.0	78.61	181.34	12,287.6	-802.0	-73.0	10.41	-9.10	5.12	36.2	0.2	
13,042.0	77.38	181.87	12,297.4	-848.0	-74.3	2.84	-2.62	1.13	45.9	-1.4	
13,074.0	79.76	181.61	12,303.8	-879.3	-75.3	7.48	7.44	-0.81	52.1	-2.6	



PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #710H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (HP 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 653)
Well:	#710H	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)	
13,138.0	89.87	181.96	12,309.5	-943.0	-77.3	15.81	15.80	0.55	57.7	-5.0	
13,162.0	89.60	180.20	12,309.6	-967.0	-77.7	7.42	-1.12	-7.33	57.7	-5.6	
13,194.6	89.51	179.60	12,309.9	-999.5	-77.7	1.87	-0.27	-1.85	57.9	-5.7	
TGT 1 (Antietam 9 Fed Com #710H)											
13,257.0	89.34	178.44	12,310.5	-1,061.9	-76.6	1.87	-0.27	-1.85	58.4	-5.1	
13,352.0	88.37	179.32	12,312.4	-1,156.9	-74.7	1.38	-1.02	0.93	60.1	-3.8	
13,447.0	88.72	178.18	12,314.8	-1,251.9	-72.7	1.25	0.37	-1.20	62.3	-2.4	
13,542.0	86.61	168.69	12,318.7	-1,346.0	-61.8	10.22	-2.22	-9.99	66.0	7.7	
13,637.0	89.52	174.23	12,321.9	-1,439.9	-47.7	6.58	3.06	5.83	69.1	21.2	
13,732.0	86.97	176.16	12,324.8	-1,534.5	-39.8	3.37	-2.68	2.03	71.7	28.6	
13,827.0	91.63	183.28	12,326.0	-1,629.4	-39.3	8.96	4.91	7.49	72.7	28.4	
13,922.0	94.62	184.86	12,320.8	-1,724.0	-46.1	3.56	3.15	1.66	67.4	21.1	
14,017.0	92.95	181.78	12,314.5	-1,818.6	-51.5	3.68	-1.76	-3.24	60.9	15.0	
14,112.0	90.75	182.40	12,311.5	-1,913.5	-55.0	2.41	-2.32	0.65	57.6	10.9	
14,198.3	89.15	176.57	12,311.5	-1,999.7	-54.2	7.01	-1.85	-6.76	57.5	11.1	
TGT 2 (Antietam 9 Fed Com #710H)											
14,207.0	88.99	175.98	12,311.7	-2,008.4	-53.7	7.01	-1.85	-6.76	57.7	11.6	
14,302.0	87.41	184.16	12,314.7	-2,103.3	-53.8	8.77	-1.66	8.61	60.5	10.8	
14,397.0	88.37	184.77	12,318.2	-2,198.0	-61.2	1.20	1.01	0.64	63.8	2.8	
14,492.0	89.25	186.27	12,320.1	-2,292.5	-70.3	1.83	0.93	1.58	65.6	-6.9	
14,587.0	87.93	184.24	12,322.5	-2,387.1	-79.0	2.55	-1.39	-2.14	67.7	-16.2	
14,682.0	87.58	182.22	12,326.2	-2,481.8	-84.3	2.16	-0.37	-2.13	71.2	-22.3	
14,777.0	86.97	181.87	12,330.7	-2,576.7	-87.7	0.74	-0.64	-0.37	75.6	-26.3	
14,873.0	87.76	179.59	12,335.1	-2,672.5	-89.0	2.51	0.82	-2.37	79.8	-28.1	
14,968.0	90.66	178.62	12,336.4	-2,767.5	-87.5	3.22	3.05	-1.02	80.9	-27.3	
15,063.0	92.77	180.99	12,333.6	-2,862.5	-87.1	3.34	2.22	2.49	77.9	-27.6	
15,158.0	87.41	178.62	12,333.5	-2,957.4	-86.8	6.17	-5.64	-2.49	77.5	-27.9	



PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #710H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (HP 853)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 853)
Well:	#710H	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)	
15,198.5	87.63	177.82	12,335.2	-2,997.9	-85.6	2.04	0.55	-1.97	79.2	-26.9	
TGT 3 (Antietam 9 Fed Com #710H)											
15,252.0	87.93	176.77	12,337.3	-3,051.3	-83.0	2.04	0.55	-1.97	81.2	-24.7	
15,348.0	89.60	176.95	12,339.3	-3,147.1	-77.8	1.75	1.74	0.19	83.1	-20.1	
15,443.0	89.34	177.85	12,340.2	-3,242.0	-73.3	0.79	-0.27	0.74	83.7	-16.2	
15,537.0	91.63	178.09	12,339.4	-3,335.9	-69.8	2.48	2.44	0.47	82.8	-13.4	
15,632.0	92.24	177.30	12,336.2	-3,430.8	-66.0	1.05	0.64	-0.83	79.4	-10.2	
15,727.0	90.40	177.57	12,334.0	-3,525.6	-61.8	1.96	-1.94	0.28	77.0	-6.6	
15,822.0	90.31	177.04	12,333.4	-3,620.5	-57.3	0.57	-0.09	-0.56	76.2	-2.7	
15,917.0	91.36	178.80	12,332.1	-3,715.5	-53.8	2.16	1.11	1.85	74.6	0.1	
16,012.0	93.12	183.19	12,328.3	-3,810.3	-55.5	4.98	1.85	4.62	70.7	-2.2	
16,044.0	93.47	183.98	12,326.5	-3,842.2	-57.5	2.70	1.09	2.47	68.8	-4.4	
16,075.0	90.66	183.01	12,325.4	-3,873.2	-59.4	9.59	-9.06	-3.13	67.6	-6.5	
16,107.0	88.55	183.54	12,325.6	-3,905.1	-61.2	6.80	-6.59	1.66	67.8	-8.5	
16,139.0	86.53	183.72	12,327.0	-3,937.0	-63.2	6.34	-6.31	0.56	69.1	-10.8	
16,197.3	87.26	184.13	12,330.1	-3,995.1	-67.2	1.43	1.25	0.70	72.1	-15.1	
TGT 4 (Antietam 9 Fed Com #710H)											
16,202.0	87.32	184.16	12,330.4	-3,999.8	-67.5	1.43	1.25	0.70	72.4	-15.5	
16,233.0	85.65	182.84	12,332.3	-4,030.6	-69.4	6.86	-5.39	-4.28	74.2	-17.6	
16,265.0	85.91	183.45	12,334.6	-4,062.5	-71.2	2.07	0.81	1.91	76.5	-19.6	
16,297.0	84.77	181.70	12,337.2	-4,094.4	-72.6	6.51	-3.56	-5.47	79.0	-21.3	
16,360.0	88.55	179.41	12,340.9	-4,157.2	-73.2	7.01	6.00	-3.63	82.6	-22.2	
16,391.0	88.64	180.29	12,341.6	-4,188.2	-73.1	2.85	0.29	2.84	83.3	-22.4	
16,486.0	87.58	177.39	12,344.8	-4,283.2	-71.2	3.25	-1.12	-3.05	86.2	-21.1	
16,581.0	86.79	178.62	12,349.4	-4,378.0	-67.9	1.54	-0.83	1.29	90.7	-18.4	
16,676.0	82.92	175.98	12,358.0	-4,472.5	-63.5	4.92	-4.07	-2.78	99.0	-14.6	
16,708.0	83.01	176.25	12,361.9	-4,504.1	-61.3	0.88	0.28	0.84	102.9	-12.7	



PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #710H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (HP 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 653)
Well:	#710H	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)	
16,740.0	82.83	175.72	12,365.8	-4,535.8	-59.1	1.74	-0.56	-1.66	106.8	-10.6	
16,771.0	86.35	177.57	12,368.7	-4,566.6	-57.3	12.81	11.35	5.97	109.6	-9.0	
16,803.0	90.92	178.18	12,369.5	-4,598.6	-56.1	14.41	14.28	1.91	110.3	-8.0	
16,866.0	91.80	178.18	12,368.0	-4,661.5	-54.1	1.40	1.40	0.00	108.7	-6.5	
16,917.0	94.35	180.38	12,365.3	-4,712.5	-53.5	6.60	5.00	4.31	105.9	-6.2	
16,961.0	93.74	178.62	12,362.2	-4,756.3	-53.1	4.22	-1.39	-4.00	102.7	-6.1	
17,056.0	91.36	178.18	12,358.0	-4,851.2	-50.4	2.55	-2.51	-0.46	98.2	-4.0	
17,151.0	92.68	178.62	12,354.6	-4,946.1	-47.8	1.46	1.39	0.46	94.7	-2.0	
17,207.7	91.47	177.99	12,352.5	-5,002.7	-46.1	2.40	-2.13	-1.11	92.5	-0.7	
TGT 5 (Antietam 9 Fed Com #710H)											
17,246.0	90.66	177.57	12,351.8	-5,041.0	-44.6	2.40	-2.13	-1.10	91.6	0.5	
17,341.0	88.64	179.59	12,352.4	-5,136.0	-42.3	3.01	-2.13	2.13	91.7	2.2	
17,436.0	90.31	180.38	12,353.3	-5,231.0	-42.2	1.94	1.76	0.83	92.1	1.6	
17,531.0	90.48	180.64	12,352.6	-5,326.0	-43.1	0.33	0.18	0.27	91.0	0.1	
17,626.0	88.99	181.26	12,353.1	-5,420.9	-44.7	1.70	-1.57	0.65	91.0	-2.1	
17,721.0	88.20	180.82	12,355.4	-5,515.9	-46.4	0.95	-0.83	-0.46	92.8	-4.4	
17,816.0	87.05	180.47	12,359.3	-5,610.8	-47.5	1.27	-1.21	-0.37	96.3	-6.1	
17,911.0	88.55	184.16	12,363.0	-5,705.6	-51.3	4.19	1.58	3.88	99.5	-10.6	
18,006.0	90.40	183.19	12,363.9	-5,800.4	-57.4	2.20	1.95	-1.02	99.9	-17.3	
18,101.0	90.84	178.09	12,362.8	-5,895.4	-58.4	5.39	0.46	-5.37	98.4	-19.0	
18,196.0	89.08	175.54	12,362.9	-5,990.2	-53.2	3.26	-1.85	-2.68	97.9	-14.3	
18,207.1	89.32	175.43	12,363.0	-6,001.3	-52.3	2.35	2.13	-1.01	98.0	-13.5	
TGT 6 (Antietam 9 Fed Com #710H)											
18,291.0	91.10	174.58	12,362.7	-6,084.9	-45.0	2.35	2.13	-1.01	97.5	-6.7	
18,386.0	89.43	175.81	12,362.3	-6,179.5	-37.0	2.18	-1.76	1.29	96.7	0.6	
18,481.0	89.08	178.88	12,363.5	-6,274.4	-32.6	3.25	-0.37	3.23	97.6	4.3	
18,576.0	91.54	181.08	12,363.0	-6,369.4	-32.6	3.47	2.59	2.32	96.8	3.7	



PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #710H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (HP 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (HP 653)
Well:	#710H	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)	BuId (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
18,871.0	90.75	180.64	12,361.1	-8,464.4	-34.0	0.95	-0.83	-0.46	94.5	1.7	
18,766.0	88.72	180.99	12,361.6	-6,559.3	-35.4	2.17	-2.14	0.37	94.7	-0.3	
18,881.0	88.11	180.29	12,364.2	-6,654.3	-36.4	0.98	-0.64	-0.74	97.0	-2.0	
18,956.0	90.48	181.52	12,365.4	-6,749.3	-37.9	2.81	2.49	1.29	97.8	-4.1	
19,051.0	93.21	182.40	12,362.3	-6,844.2	-41.2	3.02	2.87	0.93	94.4	-8.0	
19,146.0	89.78	181.87	12,359.8	-6,939.0	-44.7	3.65	-3.61	-0.56	91.6	-12.2	
19,241.0	89.87	179.24	12,360.1	-7,034.0	-45.6	2.77	0.09	-2.77	91.6	-13.7	
19,336.0	88.90	174.93	12,361.1	-7,128.9	-40.8	4.65	-1.02	-4.54	92.3	-9.5	
19,431.0	91.28	172.64	12,361.0	-7,223.3	-30.5	3.48	2.51	-2.41	91.8	0.2	
19,525.0	86.00	171.41	12,363.2	-7,316.3	-17.5	5.77	-5.62	-1.31	93.8	12.5	
19,582.8	86.52	173.69	12,367.0	-7,373.5	-10.0	4.04	0.90	3.95	97.3	19.6	
HL Crossing, MD:19582.8, TVD:12367.0, N/S:-7373.5, E/W:-10.0, INC:86.52											
19,603.0	86.70	174.49	12,368.2	-7,393.6	-7.9	4.04	0.90	3.95	98.5	21.6	
Final MWD Survey (MD= 19603.0)											
19,670.0	86.70	174.49	12,372.0	-7,460.2	-1.5	0.00	0.00	0.00	102.1	27.6	
Final Bit Projection (MD= 19670.0) - PBHL (Antietam 9 Fed Com #710H)											

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/S (usft)	+E/W (usft)	Comment	
12,287.7	12,153.2	-111.3	-81.1	HL Crossing, MD:12287.7, TVD:12153.2, N/S:-111.3, E/W:-81.1, INC:63.45	
19,582.8	12,367.0	-7,373.5	-10.0	HL Crossing, MD:19582.8, TVD:12367.0, N/S:-7373.5, E/W:-10.0, INC:86.52	
19,603.0	12,368.2	-7,393.6	-7.9	Final MWD Survey (MD= 19603.0)	
19,670.0	12,372.0	-7,460.2	-1.5	Final Bit Projection (MD= 19670.0)	

Checked By: _____	Approved By: _____	Date: _____
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Lea County, NM (NAD 83 NME)

Antietam 9 Fed Com #710H

HP 653

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

WELL DETAILS: #710H

KB = 28' @ 3452.0usft (HP 653) 3427.0
Northing 419768.00 Easting 776063.00 Latitude 32° 9' 6.292 N Longitude 103° 34' 29.575 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	5542.0	0.00	0.00	5542.0	0.0	0.0	0.00	0.00	0.0	
3	5842.1	6.00	334.65	5841.6	14.2	-6.7	2.00	334.65	-14.2	
4	7319.1	6.00	334.65	7310.4	153.8	-72.9	0.00	0.00	-153.5	
5	7619.2	0.00	0.00	7610.0	168.0	-79.6	2.00	180.00	-167.6	
6	11781.7	0.00	0.00	11772.5	168.0	-79.6	0.00	0.00	-167.6	
7	12530.3	89.83	179.62	12250.0	-308.1	-76.5	12.00	179.62	308.4	
8	13222.2	89.83	179.62	12252.0	-1000.0	-71.9	0.00	0.00	1000.3	TGT 1 (Antietam 9 Fed Com #710H)
9	13224.9	89.89	179.62	12252.0	-1002.7	-71.9	2.00	-5.05	1003.0	
10	14222.2	89.89	179.62	12254.0	-2000.0	-65.3	0.00	0.00	2000.2	TGT 2 (Antietam 9 Fed Com #710H)
11	15222.3	89.89	179.62	12256.0	-3000.0	-58.7	0.00	0.00	3000.2	TGT 3 (Antietam 9 Fed Com #710H)
12	16222.3	89.89	179.62	12258.0	-4000.0	-52.0	0.00	0.00	4000.2	TGT 4 (Antietam 9 Fed Com #710H)
13	17222.3	89.89	179.62	12260.0	-5000.0	-45.4	0.00	0.00	5000.1	TGT 5 (Antietam 9 Fed Com #710H)
14	17230.9	89.71	179.62	12260.0	-5008.6	-45.3	2.00	180.00	5008.8	
15	18222.3	89.71	179.62	12265.0	-6000.0	-38.8	0.00	0.00	6000.1	TGT 6 (Antietam 9 Fed Com #710H)
16	18227.0	89.81	179.62	12265.0	-6004.6	-38.7	2.00	0.00	6004.7	
17	19695.4	89.81	179.62	12270.0	-7473.0	-29.0	0.00	0.00	7473.1	PBHL (Antietam 9 Fed Com #710H)

CASINGS DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
TGT 1 (Antietam 9 Fed Com #710H)	12252.0	-1000.0	-71.9	419768.00	775991.07
TGT 2 (Antietam 9 Fed Com #710H)	12254.0	-2000.0	-65.3	417768.00	775997.70
TGT 3 (Antietam 9 Fed Com #710H)	12256.0	-3000.0	-58.7	416768.00	776004.33
TGT 4 (Antietam 9 Fed Com #710H)	12258.0	-4000.0	-52.0	415768.00	776010.97
TGT 5 (Antietam 9 Fed Com #710H)	12260.0	-5000.0	-45.4	414768.00	776017.60
TGT 6 (Antietam 9 Fed Com #710H)	12265.0	-6000.0	-38.8	413768.00	776024.23
PBHL (Antietam 9 Fed Com #710H)	12270.0	-7473.0	-29.0	412295.00	776034.00
FTP (Antietam 9 Fed Com #710H)	12280.0	-111.0	-78.0	419867.00	775986.00
KOP (Antietam 9 Fed Com #710H)	11762.1	198.0	-78.4	419535.55	775963.40

