

30-025-44352

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EOG Resources - Midland

Lea County, NM (NAD 83 NME)

Antietam 9 Fed Com

#709H

OH

Survey: Dril Tech MWD

Midland PVA

27 April, 2018





Midland PVA



Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (H&P 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (H&P 653)
Well:	#709H	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	Antietam 9 Fed Com		
Site Position:		Northing:	419,815.00 usft
From:	Map	Easting:	774,698.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 9' 6.852 N
		Longitude:	103° 34' 45.452 W
		Grid Convergence:	0.40 °

Well	#709H		
Well Position	+N-S 0.0 usft	Northing:	419,767.00 usft
	+E-W 0.0 usft	Easting:	776,028.00 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 9' 6.285 N
		Longitude:	103° 34' 29.986 W
		Ground Level:	3,427.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	4/18/2018	6.93
			Dip Angle (°)
			59.99
			Field Strength (mT)
			47,877.90727818

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)
	0.0	0.0	0.0
			Direction (°)
			182.23

Survey Program	Date 4/27/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
194.0	19,810.0	Drill Tech MWD (OH)	MWD
			Description
			OWSG MWD - Standard



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Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	EW (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
194.0	0.88	205.51	194.0	-1.3	-0.6	0.45	0.45	0.00	0.0	0.0
314.0	1.23	207.80	314.0	-3.3	-1.6	0.29	0.29	1.91	0.0	0.0
492.0	0.26	345.52	492.0	-4.6	-2.6	0.81	-0.54	77.37	0.0	0.0
671.0	0.35	275.48	671.0	-4.2	-3.3	0.20	0.05	-39.13	0.0	0.0
861.0	1.06	254.47	860.9	-4.6	-5.5	0.39	0.37	-11.06	0.0	0.0
1,047.0	0.18	354.31	1,046.9	-4.8	-7.2	0.59	-0.47	53.68	0.0	0.0
1,186.0	0.35	340.07	1,185.9	-4.1	-7.4	0.13	0.12	-10.24	0.0	0.0
1,351.0	1.14	298.79	1,350.9	-2.9	-9.0	0.55	0.48	-25.02	3.3	0.6
1,538.0	2.37	291.32	1,537.8	-0.6	-14.2	0.67	0.66	-3.99	7.0	3.2
1,728.0	3.69	291.41	1,727.6	3.1	-23.6	0.69	0.69	0.05	6.6	5.7
1,918.0	3.78	295.63	1,917.1	8.0	-34.9	0.15	0.05	2.22	4.4	7.5
2,108.0	4.04	300.90	2,106.7	14.2	-46.3	0.23	0.14	2.77	2.0	8.5
2,298.0	5.01	305.47	2,296.1	22.4	-58.8	0.54	0.51	2.41	-2.3	8.9
2,488.0	5.54	308.81	2,485.3	33.0	-72.7	0.32	0.28	1.76	-7.4	7.2
2,678.0	5.36	312.33	2,674.4	44.7	-86.4	0.20	-0.09	1.85	-12.5	4.5
2,867.0	5.28	299.23	2,862.6	54.9	-100.6	0.64	-0.04	-6.93	-17.7	-1.3
3,057.0	5.10	296.86	3,051.9	63.0	-115.7	0.15	-0.09	-1.25	-21.8	-2.7
3,247.0	4.92	300.99	3,241.1	71.0	-130.2	0.21	-0.09	2.17	-25.6	-1.7
3,437.0	4.57	303.80	3,430.5	79.4	-143.5	0.22	-0.18	1.48	-28.5	-1.9
3,627.0	5.36	293.70	3,619.8	87.2	-157.9	0.62	0.42	-5.32	-31.1	-7.8
3,816.0	4.66	295.37	3,808.0	94.0	-172.9	0.38	-0.37	0.88	-34.9	-6.6
4,006.0	5.36	294.66	3,997.3	101.0	-188.0	0.37	0.37	-0.37	-38.5	-6.9
4,196.0	4.84	292.03	4,186.6	107.7	-203.5	0.30	-0.27	-1.38	-42.1	-8.3
4,385.0	2.64	292.73	4,375.2	112.4	-214.9	1.16	-1.16	0.37	-41.6	-7.1
4,572.0	2.64	296.33	4,562.0	116.0	-222.7	0.09	0.00	1.93	-37.8	-4.4
4,670.0	3.25	302.05	4,659.8	118.5	-227.1	0.69	0.62	5.84	-36.4	-1.1



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Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

MD (usft)	Inc (°)	Azi (azimuth) (°)	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	1.85	305.74	4,849.6	123.1	-234.1	0.74	-0.74	1.94	-32.0	-0.7
4,886.0	1.67	302.13	4,875.6	123.6	-234.8	0.81	-0.69	-13.88	-31.0	-3.0
5,028.0	1.49	307.58	5,017.6	125.8	-238.0	0.16	-0.13	3.84	-25.5	-1.8
5,218.0	3.69	297.83	5,207.4	130.1	-245.4	1.18	1.16	-5.13	-20.4	-7.1
5,408.0	3.34	307.14	5,397.0	136.3	-255.2	0.35	-0.18	4.90	-20.1	-5.3
5,598.0	4.92	304.77	5,586.5	144.3	-266.3	0.84	0.83	-1.25	-20.8	-8.4
5,788.0	5.72	293.96	5,775.7	152.8	-281.7	0.67	0.42	-5.69	-23.3	-13.4
5,978.0	6.16	292.11	5,964.7	160.5	-299.8	0.25	0.23	-0.97	-29.6	-13.6
6,168.0	4.48	282.71	6,153.8	166.0	-316.4	0.99	-0.88	-4.95	-31.9	-17.1
6,358.0	3.08	274.89	6,343.4	168.0	-328.8	0.78	-0.74	-4.12	-29.5	-17.7
6,548.0	1.41	278.32	6,533.3	168.8	-336.2	0.88	-0.88	1.81	-25.6	-11.7
6,738.0	1.32	273.57	6,723.2	169.3	-340.7	0.08	-0.05	-2.50	-17.0	-9.1
6,928.0	1.32	272.51	6,913.2	169.5	-345.0	0.01	0.00	-0.56	-9.2	-4.4
7,118.0	1.41	270.41	7,103.1	169.6	-349.6	0.05	0.05	-1.11	-6.7	-1.6
7,308.0	1.41	261.88	7,293.1	169.3	-354.2	0.11	0.00	-4.49	-11.0	-2.9
7,498.0	1.41	273.39	7,483.0	169.1	-358.9	0.15	0.00	6.06	-16.0	-0.2
7,688.0	1.23	161.25	7,673.0	167.3	-360.5	1.15	-0.09	-59.02	5.0	-16.9
7,878.0	1.14	157.64	7,862.9	163.7	-359.2	0.06	-0.05	-1.90	2.2	-16.7
8,068.0	1.23	157.03	8,052.9	160.0	-357.6	0.05	0.05	-0.32	-1.6	-16.7
8,258.0	1.23	168.54	8,242.8	156.2	-356.4	0.13	0.00	6.06	-8.9	-15.6
8,448.0	0.79	109.30	8,432.8	153.7	-354.8	0.56	-0.23	-31.18	6.5	-17.4
8,638.0	0.79	127.76	8,622.8	152.5	-352.5	0.13	0.00	9.72	-1.9	-18.2
8,827.0	1.14	50.24	8,811.8	152.9	-350.1	0.66	0.19	-41.02	15.2	-7.0
9,017.0	0.70	78.80	9,001.8	154.3	-347.5	0.33	-0.23	15.03	7.1	-12.5
9,207.0	0.44	318.48	9,191.8	155.1	-346.8	0.52	-0.14	-63.33	7.1	11.5
9,397.0	1.41	279.55	9,381.7	156.0	-349.6	0.58	0.51	-20.49	-4.6	12.9
9,587.0	2.90	259.60	9,571.6	155.6	-356.6	0.87	0.78	-10.50	-15.7	9.8



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

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
9,777.0	2.64	254.50	9,761.4	153.5	-365.6	0.19	-0.14	-2.68	-25.7	7.9	
9,967.0	2.46	241.49	9,951.2	150.4	-373.4	0.32	-0.09	-6.85	-35.2	0.9	
10,157.0	2.29	226.46	10,141.0	145.8	-379.7	0.34	-0.09	-7.91	-41.9	-9.3	
10,345.0	1.06	105.87	10,329.0	142.8	-380.8	1.58	-0.65	-64.14	29.5	-34.6	
10,535.0	1.06	146.04	10,518.9	140.8	-378.1	0.38	0.00	21.14	-2.9	-44.4	
10,724.0	0.18	100.51	10,707.9	139.3	-376.8	0.50	-0.47	-24.09	28.1	-34.4	
10,914.0	1.06	357.77	10,897.9	141.0	-376.6	0.59	0.46	-54.07	25.6	34.7	
11,104.0	0.26	280.60	11,087.9	142.9	-377.1	0.54	-0.42	-40.62	-29.0	31.0	
11,294.0	1.41	310.48	11,277.9	144.5	-379.3	0.63	0.61	15.73	-12.4	41.5	
11,484.0	1.58	24.40	11,467.8	148.4	-380.0	0.95	0.09	38.91	33.2	25.7	
11,577.0	1.49	23.61	11,560.8	150.6	-379.0	0.10	-0.10	-0.85	30.3	26.1	
11,706.0	0.79	5.59	11,689.8	153.1	-378.2	0.60	-0.54	-13.97	18.3	33.7	
11,801.0	1.41	352.58	11,784.8	154.9	-378.3	0.70	0.65	-13.69	8.4	36.8	
11,896.0	1.23	15.43	11,879.7	157.0	-378.2	0.58	-0.19	24.05	20.0	31.1	
11,943.0	6.86	159.14	11,926.7	154.9	-377.0	16.78	11.98	305.77	-0.1	-36.6	
11,991.0	14.33	172.23	11,973.8	146.3	-375.2	16.25	15.56	27.27	-15.3	-34.8	
12,038.0	19.26	175.92	12,018.8	132.8	-373.9	10.73	10.49	7.85	-24.8	-33.0	
12,085.0	23.92	174.34	12,062.5	115.6	-372.4	9.99	9.91	-3.36	-30.4	-32.7	
12,133.0	29.48	173.37	12,105.3	94.2	-370.1	11.58	11.54	-2.02	-35.8	-31.4	
12,181.0	34.65	175.22	12,146.0	68.8	-367.6	11.00	10.81	3.85	-41.9	-28.2	
12,228.0	40.01	176.10	12,183.4	40.4	-365.4	11.46	11.40	1.87	-46.5	-25.8	
12,275.0	44.76	175.40	12,218.1	8.8	-363.1	10.16	10.11	-1.49	-49.5	-24.0	
12,322.0	48.72	172.06	12,250.3	-25.2	-359.3	9.89	8.43	-7.11	-50.4	-22.1	
12,370.0	51.09	173.55	12,281.2	-61.6	-354.7	5.48	4.94	3.10	-49.9	-16.5	
12,417.0	55.49	175.75	12,309.3	-99.1	-351.2	10.08	9.36	4.68	-46.8	-11.7	
12,432.0	57.55	176.38	12,317.6	-111.6	-350.4	14.15	13.71	4.22	-45.6	-10.6	
HL Crossing 12432.0' MD; 12317.6' TVD; -111.6°; -350.4°; 67.55											



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12,465.0	62.08	177.68	12,334.2	-140.1	-348.9	14.15	13.74	3.93	-42.8	-8.7
12,512.0	67.45	179.79	12,354.2	-182.6	-348.0	12.12	11.43	4.49	-38.5	-7.4
12,560.0	74.04	182.69	12,370.0	-227.8	-349.0	14.87	13.73	6.04	-33.9	-8.4
12,607.0	81.25	181.81	12,380.1	-273.7	-350.8	15.45	15.34	-1.87	-30.0	-10.8
12,655.0	91.63	182.51	12,383.0	-321.5	-352.6	21.67	21.62	1.46	-28.6	-13.0
12,750.0	90.40	178.80	12,381.4	-416.4	-352.0	6.15	-1.29	-6.01	-31.2	-13.1
12,845.0	83.98	173.99	12,386.0	-510.9	-344.4	7.37	-6.76	-2.96	-27.4	-6.1
12,939.0	86.97	180.76	12,393.4	-604.5	-340.1	7.85	3.18	7.20	-20.9	-2.5
13,062.0	89.16	178.65	12,397.6	-727.4	-339.5	2.47	1.78	-1.72	-17.9	-2.7
13,157.0	92.15	178.47	12,396.5	-822.4	-337.1	3.15	3.15	-0.19	-19.9	-0.9
13,252.0	94.62	177.94	12,390.9	-917.1	-334.1	2.66	2.60	-0.56	-26.4	1.4
13,347.0	93.39	177.33	12,384.3	-1,011.8	-330.2	1.44	-1.29	-0.64	-34.0	4.7
13,379.0	93.47	177.59	12,382.3	-1,043.7	-328.8	0.85	0.25	0.81	-36.3	5.9
13,410.0	93.39	177.68	12,380.5	-1,074.7	-327.5	0.39	-0.26	0.29	-38.5	6.9
13,442.0	88.20	176.45	12,380.0	-1,106.6	-325.9	16.67	-16.22	-3.84	-39.3	8.3
13,505.0	89.16	177.94	12,381.5	-1,169.5	-322.8	2.81	1.52	2.37	-38.5	11.0
13,537.0	88.99	179.00	12,382.0	-1,201.5	-321.9	3.35	-0.53	3.31	-38.3	11.6
13,568.0	91.54	179.97	12,381.9	-1,232.5	-321.7	8.80	8.23	3.13	-38.8	11.7
13,600.0	89.34	180.05	12,381.6	-1,264.5	-321.7	6.88	-6.87	0.25	-39.4	11.5
13,632.0	91.10	181.28	12,381.5	-1,296.5	-322.0	6.71	5.50	3.84	-39.9	10.9
13,663.0	89.69	181.72	12,381.3	-1,327.5	-322.9	4.76	-4.55	1.42	-40.4	9.9
13,695.0	91.10	183.66	12,381.1	-1,359.4	-324.4	7.49	4.41	6.06	-41.0	8.2
13,727.0	90.31	184.27	12,380.7	-1,391.3	-326.6	3.12	-2.47	1.91	-41.8	5.8
13,759.0	89.25	183.83	12,380.8	-1,423.3	-328.8	3.59	-3.31	-1.37	-42.0	3.3
13,791.0	85.21	182.78	12,382.3	-1,455.2	-330.7	13.04	-12.62	-3.28	-40.8	1.2
13,822.0	81.51	180.41	12,385.9	-1,485.9	-331.5	14.15	-11.94	-7.65	-37.5	0.1
13,854.0	80.64	179.53	12,390.9	-1,517.6	-331.5	3.84	-2.72	-2.75	-32.9	-0.1



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13,886.0	82.66	179.44	12,395.5	-1,549.2	-331.2	6.32	6.31	-0.28	-28.6	0.0	
13,917.0	85.38	177.86	12,398.8	-1,580.0	-330.5	10.13	8.77	-5.10	-25.7	0.5	
14,012.0	89.25	179.35	12,403.2	-1,674.9	-328.2	4.36	4.07	1.57	-22.3	2.2	
14,107.0	89.25	180.76	12,404.5	-1,769.9	-328.3	1.48	0.00	1.48	-22.1	1.5	
14,202.0	88.90	183.04	12,406.0	-1,864.8	-331.4	2.43	-0.37	2.40	-21.6	-2.3	
14,298.0	87.58	182.08	12,408.9	-1,960.6	-335.7	1.70	-1.37	-1.00	-19.8	-7.3	
14,393.0	87.93	180.32	12,412.7	-2,055.6	-337.7	1.89	0.37	-1.85	-17.0	-9.9	
14,488.0	89.34	180.49	12,414.9	-2,150.5	-338.4	1.49	1.48	0.18	-15.8	-11.2	
14,583.0	87.67	178.91	12,417.4	-2,245.5	-337.9	2.42	-1.76	-1.66	-14.3	-11.4	
14,678.0	89.16	178.38	12,420.0	-2,340.4	-335.6	1.66	1.57	-0.56	-12.7	-9.8	
14,773.0	90.13	178.03	12,420.6	-2,435.4	-332.7	1.09	1.02	-0.37	-13.1	-7.4	
14,868.0	90.75	176.36	12,419.9	-2,530.2	-328.0	1.88	0.65	-1.76	-14.8	-3.4	
14,963.0	89.78	177.59	12,419.5	-2,625.1	-323.0	1.65	-1.02	1.29	-16.2	0.9	
15,058.0	89.87	179.44	12,419.7	-2,720.1	-320.5	1.95	0.09	1.95	-16.9	2.7	
15,152.0	91.80	179.44	12,418.4	-2,814.1	-319.6	2.05	2.05	0.00	-19.3	3.0	
15,247.0	89.96	180.93	12,416.9	-2,909.0	-319.9	2.49	-1.94	1.57	-21.7	2.1	
15,342.0	87.76	181.55	12,418.8	-3,004.0	-322.0	2.41	-2.32	0.65	-20.8	-0.6	
15,437.0	89.34	180.49	12,421.2	-3,098.9	-323.7	2.00	1.66	-1.12	-19.4	-3.0	
15,532.0	89.60	180.85	12,422.1	-3,193.9	-324.8	0.47	0.27	0.38	-19.6	-4.7	
15,627.0	86.61	181.11	12,425.2	-3,288.8	-326.4	3.16	-3.15	0.27	-17.4	-7.0	
15,722.0	85.12	182.16	12,432.1	-3,383.6	-329.1	1.92	-1.57	1.11	-11.6	-10.3	
15,817.0	87.85	179.88	12,437.9	-3,478.3	-330.8	3.74	2.87	-2.40	-6.7	-12.7	
15,912.0	89.78	179.61	12,439.9	-3,573.3	-330.4	2.05	2.03	-0.28	-5.8	-12.9	
16,007.0	91.10	179.44	12,439.1	-3,668.3	-329.6	1.40	1.39	-0.18	-7.5	-12.7	
16,102.0	91.19	177.42	12,437.2	-3,763.2	-327.0	2.13	0.09	-2.13	-10.4	-10.8	
16,197.0	89.16	175.92	12,436.9	-3,858.1	-321.5	2.66	-2.14	-1.58	-11.7	-5.9	
16,291.0	94.62	177.77	12,433.9	-3,951.8	-316.3	6.13	5.81	1.97	-15.7	-1.4	



Midland PVA



Company:	EEO Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (H&P 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (H&P 653)
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
16,386.0	88.90	178.91	12,430.9	-4,046.7	-313.5	6.14	-6.02	1.20	-19.7	0.7
16,481.0	89.87	178.03	12,432.0	-4,141.7	-311.0	1.38	1.02	-0.93	-19.7	2.6
16,576.0	87.76	179.70	12,433.9	-4,236.6	-309.1	2.83	-2.22	1.76	-18.8	3.9
16,671.0	86.97	180.05	12,438.3	-4,331.5	-308.9	0.91	-0.83	0.37	-15.5	3.4
16,766.0	87.67	181.55	12,442.7	-4,426.4	-310.2	1.74	0.74	1.58	-12.1	1.5
16,861.0	87.93	182.25	12,446.4	-4,521.3	-313.4	0.79	0.27	0.74	-9.5	-2.3
16,956.0	88.99	179.97	12,448.9	-4,616.2	-315.2	2.65	1.12	-2.40	-7.9	-4.8
17,051.0	88.46	178.82	12,451.0	-4,711.2	-314.2	1.33	-0.56	-1.21	-6.9	-4.5
17,114.0	90.92	183.04	12,451.4	-4,774.1	-315.3	7.75	3.90	6.70	-7.2	-5.9
17,145.0	91.45	182.08	12,450.7	-4,805.1	-316.6	3.54	1.71	-3.10	-8.2	-7.5
17,241.0	92.68	182.43	12,447.3	-4,901.0	-320.4	1.33	1.28	0.36	-12.7	-11.9
17,335.0	90.40	179.18	12,444.8	-4,994.9	-321.7	4.22	-2.43	-3.46	-16.3	-13.9
17,430.0	90.84	180.76	12,443.7	-5,089.9	-321.7	1.73	0.46	1.66	-18.1	-14.5
17,525.0	92.59	180.23	12,440.9	-5,184.8	-322.5	1.92	1.84	-0.56	-21.8	-16.0
17,620.0	90.75	178.82	12,438.1	-5,279.8	-321.7	2.44	-1.94	-1.48	-25.4	-15.8
17,716.0	88.99	178.82	12,438.3	-5,375.8	-319.7	1.83	-1.83	0.00	-26.1	-14.5
17,811.0	89.52	178.91	12,439.6	-5,470.7	-317.9	0.57	0.56	0.09	-25.7	-13.2
17,905.0	89.16	179.18	12,440.7	-5,564.7	-316.3	0.48	-0.38	0.29	-25.4	-12.3
18,001.0	87.76	176.80	12,443.2	-5,660.6	-312.9	2.88	-1.46	-2.48	-23.7	-9.6
18,095.0	91.10	175.57	12,444.2	-5,754.4	-306.7	3.79	3.55	-1.31	-23.6	-4.0
18,159.0	91.10	175.92	12,442.9	-5,818.2	-301.9	0.55	0.00	0.55	-25.4	0.3
18,190.0	91.63	177.59	12,442.2	-5,849.1	-300.2	5.65	1.71	5.39	-26.4	1.9
18,286.0	89.08	177.86	12,441.6	-5,945.1	-296.4	2.67	-2.66	0.28	-27.8	5.0
18,381.0	86.88	177.86	12,445.0	-6,039.9	-292.8	2.32	-2.32	0.00	-25.3	7.9
18,475.0	91.01	178.03	12,446.7	-6,133.8	-289.4	4.40	4.39	0.18	-24.4	10.7
18,570.0	91.80	180.23	12,444.4	-6,228.8	-288.0	2.46	0.83	2.32	-27.6	11.5
18,666.0	90.66	180.05	12,442.3	-6,324.8	-286.2	1.20	-1.19	-0.19	-30.5	10.6



Midland PVA



Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3452.0usft (H&P 653)
Site:	Antietam 9 Fed Com	MD Reference:	KB = 25' @ 3452.0usft (H&P 653)
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Bulld (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
18,760.0	89.60	178.47	12,442.1	-6,418.7	-287.0	2.02	-1.13	-1.68	-31.6	11.1
18,855.0	90.48	181.11	12,442.0	-6,513.7	-286.7	2.93	0.93	2.78	-32.5	10.9
18,950.0	88.46	182.08	12,442.9	-6,608.7	-289.3	2.36	-2.13	1.02	-32.4	7.6
19,045.0	89.52	180.23	12,444.6	-6,703.7	-291.2	2.24	1.12	-1.95	-31.6	5.0
19,140.0	88.81	179.97	12,446.0	-6,798.6	-291.4	0.80	-0.75	-0.27	-31.1	4.2
19,235.0	87.49	179.61	12,449.0	-6,893.6	-291.0	1.44	-1.39	-0.38	-28.8	3.9
19,330.0	90.13	178.47	12,451.0	-6,988.5	-289.5	3.03	2.78	-1.20	-27.7	4.8
19,425.0	86.26	177.51	12,454.0	-7,083.4	-286.1	4.20	-4.07	-1.01	-25.6	7.5
19,520.0	91.28	180.67	12,456.0	-7,178.3	-284.6	6.24	5.28	3.33	-24.4	8.4
19,615.0	87.67	180.49	12,456.9	-7,273.3	-285.6	3.80	-3.80	-0.19	-24.3	6.8
19,710.0	88.02	180.32	12,460.5	-7,368.2	-286.3	0.41	0.37	-0.18	-21.6	5.5
19,716.3	88.21	180.41	12,460.7	-7,374.6	-286.3	3.31	3.00	1.40	-21.4	5.4
HL Crossing 19716.3' MD; 12460.7' TVD; -7374.6'; -286.3'; 88.21										
19,748.0	89.16	180.85	12,461.4	-7,406.3	-286.6	3.30	3.00	1.39	-21.0	4.8
Last MWD Survey (MD = 19748.0)										
19,810.0	89.16	180.85	12,462.3	-7,468.2	-287.6	0.00	0.00	0.00	-20.6	3.5
Projection to Bit (MD = 19810.0)										

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
12,432.0	12,317.6	-111.6	-350.4	HL Crossing 12432.0' MD; 12317.6' TVD; -111.6'; -350.4'; 57.55
19,716.3	12,460.7	-7,374.6	-286.3	HL Crossing 19716.3' MD; 12460.7' TVD; -7374.6'; -286.3'; 88.21
19,748.0	12,461.4	-7,406.3	-286.6	Last MWD Survey (MD = 19748.0)
19,810.0	12,462.3	-7,468.2	-287.6	Projection to Bit (MD = 19810.0)

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

Antietam 9 Fed Com #709H

H&P 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: #709H

KB = 25' @ 3452.0usft (H&P 653)
Northing 419767.00 Easting 776028.00 Latitude 32° 0' 6.285 N Longitude 103° 34' 29.985 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
1	1186.0	0.35	340.07	1185.9	-4.1	-7.4	0.00	0.00	4.4	
2	1321.9	3.00	306.00	1321.7	-1.7	-10.4	2.00	-38.20	2.1	
3	2321.9	3.00	306.00	2320.3	29.1	-52.8	0.00	0.00	-27.0	
4	2377.3	3.92	295.53	2375.7	30.8	-55.6	2.00	-39.85	-28.6	
5	6939.8	3.92	295.53	6927.5	165.1	-336.9	0.00	0.00	-151.9	
6	7135.6	0.00	0.00	7123.2	168.0	-342.9	2.00	180.00	-154.5	
7	11946.4	0.00	0.00	11934.0	168.0	-342.9	0.00	0.00	-154.5	
8	12691.8	89.45	179.61	12411.4	-304.9	-339.7	12.00	179.61	317.9	
9	13374.7	89.45	179.61	12418.0	-987.7	-335.1	0.00	0.00	1000.0	TGT #1 (Antietam 9 Fed Com #709H)
10	13378.7	89.37	179.61	12418.0	-991.7	-335.0	2.00	-180.00	1004.0	
11	14375.8	89.37	179.61	12429.0	-1988.7	-328.3	0.00	0.00	2000.0	TGT #2 (Antietam 9 Fed Com #709H)
12	14377.2	89.40	179.61	12429.0	-1990.1	-328.2	2.00	0.00	2001.4	
13	16378.1	89.40	179.61	12450.0	-3990.8	-314.7	0.00	0.00	4000.0	TGT #4 (Antietam 9 Fed Com #709H)
14	16379.5	89.37	179.61	12450.0	-3992.2	-314.6	2.00	180.00	4001.5	
15	17379.1	89.37	179.61	12461.0	-4991.8	-307.9	0.00	0.00	5000.0	TGT #5 (Antietam 9 Fed Com #709H)
16	17385.2	89.49	179.61	12461.1	-4997.9	-307.8	2.00	0.00	5006.1	
17	19861.5	89.49	179.61	12483.0	-7474.0	-291.0	0.00	0.00	7479.7	PBHL (Antietam 9 Fed Com #709H)

CASING DETAILS

No casing data is available

WELLS TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
TGT #1 (Antietam 9 Fed Com #709H)	12418.0	-987.7	-335.1	419778.30	776028.05
TGT #2 (Antietam 9 Fed Com #709H)	12429.0	-1988.7	-328.3	417778.30	775999.75
TGT #4 (Antietam 9 Fed Com #709H)	12450.0	-3990.8	-314.7	415778.20	775713.34
TGT #5 (Antietam 9 Fed Com #709H)	12461.0	-4991.8	-307.9	414778.20	775720.14
PBHL (Antietam 9 Fed Com #709H)	12483.0	-7474.0	-291.0	412533.00	775737.00
FTP (Antietam 9 Fed Com #709H)	12467.0	-112.0	-341.0	419655.00	775687.00
TGT #3 (Antietam 9 Fed Com #709H)	12440.0	-2985.8	-321.5	416777.20	775708.55
TGT #6 (Antietam 9 Fed Com #709H)	12472.0	-5992.8	-301.1	413774.20	775726.54

