



HOBBS OCD

OCT 22 2018

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EOG Resources - Midland

Lea County, NM (NAD 83 NME)

Hearns 34 State Com

#709H

OH

Design: OH

Midland PVA

20 August, 2018





Midland PVA



Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3492.0usft
Site:	Hearns 34 State Com	MD Reference:	KB = 25' @ 3492.0usft
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	Hearns 34 State Com		
Site Position:		Northing:	425,568.00 usft
From:	Map	Easting:	780,745.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 3.355 N
		Longitude:	103° 33' 34.635 W
		Grid Convergence:	0.41 °

Well	#709H		
Well Position	+N-S	0.0 usft	Northing:
	+E-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			usft
			Latitude:
			Longitude:
			Ground Level:
			3,467.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	6/14/2017	6.94
			Dip Angle
			(°)
			60.01
			Field Strength
			(nT)
			47,906,43260827

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			359.68



Midland PVA



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Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3492.0usft
Site:	Hearns 34 Slate Corn	MD Reference:	KB = 25' @ 3492.0usft
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey Program	Date	8/20/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
187.0	5,041.0	Gordon MWD Cartel 18 22' KB + 3' (OH)	MWD	OWSG MWD - Standard	
5,095.0	22,607.0	Total Directional MWD (OH)	MWD	OWSG MWD - Standard	

Survey	MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (*/100usft)	Buidl (*/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
	187.0	0.71	109.31	187.0	-0.4	1.1	0.38	0.38	0.00	0.0	0.0
	338.0	0.88	98.79	338.0	-0.9	3.1	0.15	0.11	-6.97	0.0	0.0
	512.0	0.94	94.68	512.0	-1.2	5.9	0.05	0.03	-2.36	0.0	0.0
	687.0	1.12	80.71	686.9	-1.0	9.0	0.18	0.10	-7.98	0.0	0.0
	862.0	1.39	48.28	861.9	0.7	12.3	0.43	0.15	-18.53	0.0	0.0
	1,036.0	0.52	48.85	1,035.9	2.6	14.4	0.50	-0.50	0.33	0.0	0.0
	1,206.0	1.07	95.53	1,205.8	2.9	16.6	0.47	0.32	27.46	0.0	0.0
	1,297.0	1.36	113.47	1,296.8	2.4	18.4	0.52	0.32	19.71	0.0	0.0
	1,472.0	0.70	212.11	1,471.8	0.7	19.8	0.93	-0.38	56.37	0.0	0.0
	1,646.0	0.87	234.96	1,645.8	-1.0	18.1	0.20	0.10	13.13	0.0	0.0
	1,821.0	0.90	276.71	1,820.8	-1.6	15.7	0.36	0.02	23.86	0.0	0.0
	1,995.0	0.51	285.30	1,994.8	-1.2	13.6	0.23	-0.22	4.94	0.0	0.0
	2,170.0	0.68	264.70	2,169.7	-1.1	11.8	0.15	0.10	-11.77	0.0	0.0
	2,344.0	0.43	301.53	2,343.7	-0.8	10.2	0.24	-0.14	21.17	0.0	0.0
	2,519.0	0.35	163.25	2,518.7	-1.0	9.8	0.42	-0.05	-79.02	0.0	0.0
	2,693.0	3.26	182.47	2,692.6	-6.5	9.7	1.68	1.67	11.05	0.0	0.0
	2,868.0	3.73	184.25	2,867.3	-17.1	9.1	0.28	0.27	1.02	0.0	0.0
	3,042.0	2.95	174.90	3,041.0	-27.2	9.1	0.55	-0.45	-5.37	0.0	0.0
	3,216.0	2.48	171.54	3,214.8	-35.4	10.0	0.29	-0.27	-1.93	0.0	0.0
	3,391.0	1.66	162.56	3,389.7	-41.6	11.3	0.50	-0.47	-5.13	0.0	0.0



Midland PVA



Company: EOG Resources - Midland
Project: Lea County, NM (NAD 83 NME)
Site: Hears 34 State Com
Well: #709H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference: KB = 25' @ 3492.0usft
MD Reference: KB = 25' @ 3492.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)	
3,564.0	2.13	162.66	3,562.6	-47.0	13.0	0.27	0.27	0.06	0.0	0.0	
3,739.0	1.57	165.46	3,737.5	-52.5	14.6	0.32	-0.32	1.60	0.0	0.0	
3,913.0	1.85	149.06	3,911.4	-57.2	16.7	0.32	0.16	-9.43	0.0	0.0	
4,088.0	1.31	154.89	4,086.4	-61.4	19.0	0.32	-0.31	3.33	0.0	0.0	
4,262.0	2.70	178.88	4,260.3	-67.3	19.9	0.92	0.80	13.79	0.0	0.0	
4,437.0	3.45	173.60	4,435.0	-76.7	20.5	0.46	0.43	-3.02	0.0	0.0	
4,611.0	3.01	162.20	4,608.7	-86.2	22.5	0.45	-0.25	-6.55	0.0	0.0	
4,785.0	2.95	152.00	4,782.5	-94.5	26.0	0.31	-0.03	-5.86	0.0	0.0	
4,960.0	2.79	163.06	4,957.3	-102.6	29.4	0.33	-0.09	6.32	0.0	0.0	
5,041.0	2.64	177.47	5,038.2	-106.3	30.0	0.86	-0.19	17.79	0.0	0.0	
5,095.0	2.00	189.30	5,092.1	-108.5	29.9	1.47	-1.19	21.91	0.3	0.1	
5,188.0	1.90	206.40	5,185.1	-111.5	29.0	0.63	-0.11	18.39	1.4	-1.0	
5,283.0	3.00	189.20	5,280.0	-115.3	27.9	1.38	1.16	-18.11	2.0	-1.2	
5,377.0	3.50	189.00	5,373.8	-120.6	27.1	0.53	0.53	-0.21	1.1	-1.4	
5,471.0	3.80	187.80	5,467.7	-126.5	26.2	0.33	0.32	-1.28	-0.4	-1.5	
5,565.0	3.70	188.30	5,561.5	-132.6	25.3	0.11	-0.11	0.53	-2.2	-1.6	
5,659.0	3.60	188.90	5,655.3	-138.5	24.4	0.11	-0.11	0.64	-3.8	-1.7	
5,753.0	3.30	185.10	5,749.1	-144.1	23.7	0.40	-0.32	-4.04	-5.0	-2.0	
5,848.0	3.50	188.40	5,843.9	-149.7	23.1	0.29	0.21	3.47	-6.3	-1.7	
5,942.0	3.40	186.10	5,937.8	-155.3	22.3	0.18	-0.11	-2.45	-7.4	-2.0	
6,036.0	3.70	184.60	6,031.6	-161.1	21.8	0.33	0.32	-1.60	-8.8	-2.1	
6,130.0	3.50	185.60	6,125.4	-167.0	21.3	0.22	-0.21	1.06	-10.4	-1.8	
6,224.0	3.20	184.30	6,219.2	-172.5	20.8	0.33	-0.32	-1.38	-11.4	-1.9	
6,318.0	3.40	186.70	6,313.1	-177.9	20.3	0.26	0.21	2.55	-12.5	-1.3	
6,412.0	3.00	185.80	6,406.9	-183.1	19.7	0.43	-0.43	-0.96	-13.3	-1.5	
6,506.0	3.10	185.30	6,500.8	-188.1	19.2	0.11	0.11	-0.53	-13.9	-1.5	
6,600.0	3.20	190.10	6,594.7	-193.2	18.5	0.30	0.11	5.11	-14.8	-0.4	



Midland PVA



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Well:	#709H	North Reference:	Grid
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)	DI Leg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
6,695.0	3.20	185.70	6,689.5	-198.4	17.8	0.26	0.00	-4.63	-15.6	-15.6	-1.6
6,789.0	3.10	187.90	6,783.4	-203.5	17.2	0.17	-0.11	2.34	-16.4	-16.4	-1.0
6,884.0	1.30	170.90	6,878.3	-207.2	17.0	2.00	-1.89	-17.89	-14.6	-14.6	-5.3
6,978.0	0.70	135.60	6,972.3	-208.6	17.6	0.89	-0.64	-37.55	-7.6	-7.6	-10.0
7,072.0	0.90	161.10	7,066.3	-209.7	18.2	0.43	0.21	27.13	-8.4	-8.4	-3.6
7,167.0	1.20	160.10	7,161.2	-211.4	18.8	0.32	0.32	-1.05	-6.1	-6.1	-1.8
7,261.0	1.10	159.90	7,255.2	-213.1	19.4	0.11	-0.11	-0.21	-4.1	-4.1	0.2
7,356.0	1.30	165.50	7,350.2	-215.0	20.0	0.24	0.21	5.89	-1.9	-1.9	2.3
7,451.0	1.30	159.80	7,445.2	-217.1	20.7	0.14	0.00	-8.00	-0.3	-0.3	4.0
7,545.0	1.20	163.00	7,539.2	-219.0	21.3	0.13	-0.11	3.40	1.9	1.9	5.8
7,639.0	1.30	162.50	7,633.1	-221.0	21.9	0.11	0.11	-0.53	1.9	1.9	6.8
7,733.0	1.50	148.20	7,727.1	-223.1	22.9	0.43	0.21	-15.21	-2.0	-2.0	6.9
7,827.0	0.80	239.60	7,821.1	-224.4	23.0	1.83	-0.74	97.23	6.3	6.3	3.1
7,921.0	1.20	261.40	7,915.1	-224.9	21.5	0.58	0.43	23.19	5.4	5.4	0.7
8,016.0	1.30	265.60	8,010.1	-225.1	19.4	0.14	0.11	4.42	3.4	3.4	0.4
8,110.0	1.50	270.70	8,104.0	-225.2	17.1	0.25	0.21	5.43	1.1	1.1	0.2
8,203.0	1.30	277.30	8,197.0	-225.1	14.8	0.28	-0.22	7.10	-1.1	-1.1	0.2
8,298.0	1.40	278.30	8,292.0	-224.8	12.6	0.11	0.11	1.05	-3.4	-3.4	0.3
8,392.0	1.30	273.90	8,386.0	-224.5	10.4	0.15	-0.11	-4.68	-5.6	-5.6	-0.1
8,487.0	0.80	134.00	8,480.9	-224.9	9.8	2.08	-0.53	-147.26	4.5	4.5	-4.2
8,581.0	1.00	128.40	8,574.9	-225.9	10.9	0.23	0.21	-5.96	3.4	3.4	-3.8
8,676.0	1.10	129.30	8,669.9	-227.0	12.3	0.11	0.11	0.95	1.6	1.6	-3.9
8,770.0	1.10	144.00	8,763.9	-228.3	13.5	0.30	0.00	15.64	-1.2	-1.2	-3.9
8,865.0	1.30	155.40	8,858.9	-230.0	14.5	0.33	0.21	12.00	-3.9	-3.9	-3.4
8,959.0	1.10	167.60	8,952.9	-231.8	15.1	0.34	-0.21	12.98	-6.5	-6.5	-2.3
9,053.0	1.20	173.40	9,046.8	-233.7	15.4	0.16	0.11	6.17	-8.6	-8.6	-1.5
9,241.0	0.70	190.10	9,234.8	-236.8	15.5	0.30	-0.27	8.88	-11.7	-11.7	1.5



Midland PVA



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Well:	#709H	North Reference:	Grid
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)	Bulld (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)
9,335.0	0.40	209.30	9,328.8	-237.6	15.2	0.37	-0.32	20.43	-11.4	5.5
9,429.0	0.30	220.30	9,422.8	-238.1	14.9	0.13	-0.11	11.70	-10.7	7.6
9,523.0	0.70	191.50	9,516.8	-238.9	14.6	0.49	0.43	-30.64	-13.9	1.4
9,617.0	0.70	211.40	9,610.8	-239.9	14.2	0.28	0.00	21.17	-13.7	6.2
9,712.0	1.00	226.60	9,705.8	-241.0	13.3	0.39	0.32	16.00	-12.9	9.8
9,807.0	0.80	228.20	9,800.8	-242.0	12.2	0.21	-0.21	1.68	-14.2	10.1
9,901.0	0.60	255.80	9,894.8	-242.5	11.2	0.41	-0.21	29.36	-8.9	15.8
9,996.0	1.20	242.50	9,989.8	-243.1	9.9	0.66	0.63	-14.00	-13.8	13.3
10,091.0	1.00	305.20	10,084.7	-243.1	8.3	1.22	-0.21	66.00	4.2	19.2
10,185.0	1.20	309.20	10,178.7	-242.0	6.9	0.23	0.21	4.26	3.7	18.9
10,280.0	1.20	291.20	10,273.7	-241.0	5.2	0.40	0.00	-18.95	-4.3	18.9
10,374.0	0.50	224.50	10,367.7	-241.0	4.0	1.17	-0.74	-70.96	-19.8	2.6
10,468.0	0.60	214.30	10,461.7	-241.7	3.4	0.15	0.11	-10.85	-20.9	-1.0
10,563.0	1.10	9.30	10,556.7	-241.2	3.3	1.75	0.53	163.16	18.0	9.9
10,657.0	1.30	358.40	10,650.7	-239.2	3.4	0.32	0.21	-11.60	13.9	13.0
10,751.0	1.40	347.80	10,744.6	-237.0	3.1	0.29	0.11	-11.28	9.0	15.1
10,845.0	2.50	19.20	10,838.6	-234.0	3.6	1.59	1.17	33.40	12.6	8.8
10,939.0	2.50	22.90	10,932.5	-230.1	5.0	0.17	0.00	3.94	9.0	8.1
11,033.0	2.60	22.80	11,026.4	-226.3	6.6	0.11	0.11	-0.11	4.8	8.1
11,128.0	2.90	10.90	11,121.3	-221.9	7.9	0.68	0.32	-12.53	-1.5	8.5
11,222.0	2.60	2.10	11,215.2	-217.5	8.5	0.55	-0.32	-9.36	-7.2	7.8
11,316.0	2.10	3.10	11,309.1	-213.6	8.6	0.53	-0.53	1.06	-11.0	8.0
11,411.0	2.20	356.80	11,404.0	-210.1	8.6	0.27	0.11	-6.63	-15.3	6.5
11,505.0	1.80	344.20	11,498.0	-206.8	8.1	0.63	-0.43	-13.40	-19.6	2.6
11,599.0	1.50	332.40	11,591.9	-204.3	7.2	0.48	-0.32	-12.55	-22.4	-1.7
11,694.0	1.10	327.00	11,686.9	-202.5	6.1	0.44	-0.42	-5.68	-24.3	-4.0
11,775.0	1.00	316.50	11,767.9	-201.3	5.2	0.27	-0.12	-12.96	-24.6	-8.5



Midland PVA



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11,823.0	1.00	305.80	11,815.9	-200.8	4.5	0.39	0.00	-22.29	-23.5	-13.0	
11,918.0	0.80	287.90	11,910.9	-200.1	3.2	0.36	-0.21	-18.84	-19.8	-19.8	
11,965.0	0.80	319.10	11,957.9	-199.7	2.7	0.92	0.00	66.38	-27.8	-6.5	
11,970.0	1.29	340.54	11,962.9	-199.6	2.7	12.40	9.85	426.85	-28.4	4.1	
KOP 11970.0' MD; 11962.9' TVD; -199.6'; 2.7'; 1.29'											
12,013.0	6.50	3.20	12,005.8	-196.7	2.6	12.40	12.11	52.72	-27.4	15.0	
12,060.0	14.40	16.90	12,052.0	-188.5	4.5	17.50	16.81	29.15	-30.8	21.7	
12,103.7	22.96	19.00	12,093.3	-175.2	8.9	19.63	19.57	4.81	-40.1	21.7	
FTP Crossing 12103.7' MD; 12093.3' TVD; -175.2'; 8.9'; 22.96'											
12,107.0	23.60	19.10	12,096.3	-174.0	9.3	19.63	19.59	3.00	-40.9	21.6	
12,154.0	27.30	15.90	12,138.8	-154.7	15.3	8.40	7.87	-6.81	-53.5	15.6	
12,201.0	28.50	13.80	12,180.3	-133.5	20.9	3.30	2.55	-4.47	-62.5	9.0	
12,248.0	29.30	9.00	12,221.5	-111.2	25.4	5.22	1.70	-10.21	-66.7	-0.6	
12,295.0	34.70	358.40	12,261.3	-86.4	26.8	16.54	11.49	-22.55	-66.3	-13.0	
12,342.0	41.90	351.40	12,298.2	-57.5	24.1	17.87	15.32	-14.89	-65.5	-16.4	
12,390.0	44.20	350.90	12,333.3	-25.1	19.1	4.84	4.79	-1.04	-64.8	-11.1	
12,437.0	48.50	353.10	12,365.7	8.6	14.4	9.75	9.15	4.68	-61.5	-4.1	
12,485.0	52.80	356.30	12,396.2	45.5	11.0	10.33	8.96	6.67	-56.1	1.6	
12,532.0	56.80	357.30	12,423.2	83.8	8.8	8.69	8.51	2.13	-48.8	4.3	
12,579.0	64.20	359.70	12,446.4	124.7	7.8	16.36	15.74	5.11	-41.0	5.8	
12,626.0	66.60	359.40	12,465.9	167.4	7.5	5.14	5.11	-0.64	-32.3	5.9	
12,674.0	72.60	359.50	12,482.7	212.4	7.0	12.50	12.50	0.21	-22.0	6.0	
12,721.0	76.20	0.90	12,495.3	257.7	7.2	8.18	7.66	2.98	-11.1	5.6	
12,769.0	80.60	2.00	12,505.0	304.6	8.4	9.44	9.17	2.29	-0.7	3.9	
12,816.0	86.80	2.10	12,510.1	351.3	10.1	13.19	13.19	0.21	5.1	1.9	
12,863.0	92.30	0.00	12,510.5	398.3	10.9	12.53	11.70	-4.47	6.2	0.7	
12,958.0	92.50	358.60	12,506.5	493.2	9.8	1.49	0.21	-1.47	3.7	1.2	



Midland PVA



Company: EOG Resources - Midland
Project: Lea County, NM (NAD 83 NME)
Site: Hearns 34 State Com
Well: #709H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #709H
TVD Reference: KB = 25' @ 3492.0usft
MD Reference: KB = 25' @ 3492.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	ENW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
13,053.0	89.70	356.80	12,504.7	588.1	6.0	3.50	-2.95	-1.89	3.3	4.3	
13,148.0	88.60	356.30	12,506.1	682.9	0.2	1.27	-1.16	-0.53	6.2	9.4	
13,242.0	90.40	357.90	12,506.9	776.8	-4.5	2.56	1.91	1.70	8.4	13.5	
13,337.0	90.20	359.30	12,506.4	871.7	-6.8	1.49	-0.21	1.47	9.4	15.1	
13,431.0	91.70	359.30	12,504.8	965.7	-8.0	1.60	1.60	0.00	9.3	15.8	
13,526.0	91.00	358.90	12,502.6	1,060.7	-9.5	0.85	-0.74	-0.42	8.5	16.5	
13,620.0	90.60	358.50	12,501.3	1,154.6	-11.6	0.60	-0.43	-0.43	8.6	17.9	
13,714.0	90.70	0.30	12,500.2	1,248.6	-12.6	1.92	0.11	1.91	9.0	18.3	
13,808.0	91.50	0.50	12,498.4	1,342.6	-11.9	0.88	0.85	0.21	8.6	16.9	
13,902.0	90.60	0.80	12,496.7	1,436.6	-10.9	1.01	-0.96	0.32	8.4	15.2	
13,997.0	92.30	1.00	12,494.3	1,531.5	-9.4	1.80	1.79	0.21	7.4	13.1	
14,091.0	93.50	1.70	12,489.5	1,625.4	-7.2	1.48	1.28	0.74	4.1	10.2	
14,186.0	86.40	358.70	12,489.6	1,720.3	-6.8	8.11	-7.47	-3.16	5.6	9.2	
14,280.0	91.70	0.70	12,491.2	1,814.3	-7.3	6.03	5.64	2.13	8.7	9.0	
14,374.0	93.80	0.30	12,486.7	1,908.1	-6.5	2.27	2.23	-0.43	5.6	7.6	
14,469.0	89.10	0.10	12,484.3	2,003.1	-6.2	4.95	-4.95	-0.21	4.6	6.5	
14,563.0	90.90	359.30	12,484.3	2,097.1	-6.7	2.10	1.91	-0.85	6.1	6.4	
14,657.0	93.90	358.80	12,480.3	2,191.0	-8.2	3.24	3.19	-0.53	3.6	7.3	
14,796.0	93.00	357.90	12,472.0	2,329.7	-12.2	0.91	-0.65	-0.65	-2.6	10.3	
14,891.0	93.00	359.10	12,467.0	2,424.5	-14.7	1.26	0.00	1.26	-6.1	12.1	
14,985.0	91.40	0.20	12,463.4	2,518.4	-15.3	2.07	-1.70	1.17	-8.4	12.0	
15,079.0	90.60	0.40	12,461.8	2,612.4	-14.8	0.88	-0.85	0.21	-8.7	10.9	
15,173.0	90.60	1.20	12,460.8	2,706.4	-13.5	0.85	0.00	0.85	-8.4	8.9	
15,267.0	90.20	1.00	12,460.1	2,800.4	-11.7	0.48	-0.43	-0.21	-7.8	6.4	
15,361.0	90.30	1.80	12,459.7	2,894.3	-9.4	0.86	0.11	0.85	-7.0	3.5	
15,456.0	91.00	1.30	12,458.6	2,989.3	-6.8	0.91	0.74	-0.53	-6.8	0.3	
15,551.0	90.30	0.70	12,457.5	3,084.3	-5.1	0.97	-0.74	-0.63	-6.6	-2.1	



Midland PVA



Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3492.0usft
Site:	Hearns 34 State Com	MD Reference:	KB = 25' @ 3492.0usft
Well:	#709H	North Reference:	Grid
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)	Buikd (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
15,646.0	91.20	1.20	12,456.3	3,179.2	-3.6	1.08	0.95	0.53	-6.5	-4.3	
15,742.0	90.90	0.20	12,454.5	3,275.2	-2.4	1.09	-0.31	-1.04	-7.0	-6.2	
15,836.0	92.10	1.40	12,452.1	3,369.2	-1.1	1.81	1.28	1.28	-8.2	-8.1	
15,932.0	91.90	0.00	12,448.7	3,465.1	0.1	1.47	-0.21	-1.46	-10.2	-10.0	
16,027.0	90.40	0.30	12,446.8	3,560.1	0.3	1.61	-1.58	0.32	-10.9	-10.9	
16,122.0	90.10	2.10	12,446.4	3,655.1	2.3	1.92	-0.32	1.89	-10.0	-13.5	
16,217.0	89.60	1.70	12,446.7	3,750.0	5.5	0.67	-0.53	-0.42	-8.5	-17.4	
16,312.0	90.10	0.30	12,446.9	3,845.0	7.1	1.56	0.53	-1.47	-6.9	-19.7	
16,407.0	89.40	359.70	12,447.3	3,940.0	7.1	0.97	-0.74	-0.63	-5.2	-20.3	
16,502.0	90.30	359.50	12,447.6	4,035.0	6.5	0.97	0.95	-0.21	-3.7	-20.4	
16,597.0	91.30	359.70	12,446.2	4,130.0	5.8	1.07	1.05	0.21	-3.7	-20.4	
16,692.0	91.90	0.00	12,443.6	4,224.9	5.6	0.71	0.63	0.32	-5.1	-20.8	
16,787.0	90.90	359.10	12,441.3	4,319.9	4.8	1.42	-1.05	-0.95	-6.2	-20.7	
16,882.0	90.90	359.20	12,439.8	4,414.9	3.4	0.11	0.00	0.11	-6.4	-19.9	
16,977.0	92.10	359.10	12,437.3	4,509.8	2.0	1.27	1.26	-0.11	-7.6	-19.2	
17,072.0	92.60	0.00	12,433.4	4,604.7	1.2	1.08	0.53	0.95	-9.9	-19.1	
17,167.0	92.50	359.80	12,429.2	4,699.6	1.1	0.24	-0.11	-0.21	-12.6	-19.8	
17,262.0	91.30	359.40	12,426.0	4,794.6	0.4	1.33	-1.26	-0.42	-14.3	-19.6	
17,357.0	90.80	359.00	12,424.3	4,889.6	-0.9	0.67	-0.53	-0.42	-14.5	-19.0	
17,452.0	91.90	358.40	12,422.0	4,984.5	-3.1	1.32	1.16	-0.63	-15.2	-17.5	
17,547.0	90.70	359.50	12,419.9	5,079.5	-4.8	1.71	-1.26	1.16	-15.8	-16.4	
17,642.0	89.10	358.90	12,420.1	5,174.5	-6.1	1.80	-1.68	-0.63	-14.2	-15.8	
17,737.0	89.50	358.70	12,421.2	5,269.4	-8.1	0.47	0.42	-0.21	-11.5	-14.4	
17,832.0	90.40	358.10	12,421.3	5,364.4	-10.8	1.14	0.95	-0.63	-9.9	-12.4	
17,926.0	88.40	359.00	12,422.3	5,458.3	-13.2	2.33	-2.13	0.96	-7.4	-10.7	
18,020.0	89.40	359.50	12,424.1	5,552.3	-14.4	1.19	1.06	0.53	-4.1	-10.2	
18,115.0	90.70	359.70	12,424.0	5,647.3	-15.0	1.38	1.37	0.21	-2.6	-10.2	



Midland PVA



Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3492.0usft
Site:	Hearns 34 State Com	MD Reference:	KB = 25' @ 3492.0usft
Well:	#709H	North Reference:	Grid
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)
18,210.0	90.20	359.70	12,423.3	5,742.3	-15.5	0.53	-0.53	0.00	-1.9	-10.3
18,304.0	87.70	359.80	12,425.0	5,836.3	-16.0	2.66	-2.66	0.11	1.4	-10.6
18,398.0	86.60	359.50	12,429.7	5,930.2	-16.5	1.21	-1.17	-0.32	7.5	-10.7
18,492.0	89.90	358.50	12,432.5	6,024.1	-18.2	3.67	3.51	-1.06	11.9	-9.7
18,586.0	90.60	357.10	12,432.1	6,118.0	-21.8	1.67	0.74	-1.49	13.0	-6.7
18,680.0	90.90	356.30	12,430.9	6,211.9	-27.2	0.91	0.32	-0.85	13.3	-2.0
18,775.0	91.30	355.50	12,429.1	6,306.6	-34.0	0.94	0.42	-0.84	13.0	4.1
18,869.0	90.60	356.50	12,427.5	6,400.4	-40.5	1.30	-0.74	1.06	12.9	10.0
18,963.0	90.40	358.20	12,426.7	6,494.2	-44.9	1.82	-0.21	1.81	13.6	13.7
19,057.0	90.10	1.30	12,426.3	6,588.2	-45.3	3.31	-0.32	3.30	13.6	13.5
19,151.0	92.00	1.50	12,424.5	6,682.2	-43.0	2.03	2.02	0.21	11.9	10.5
19,245.0	91.10	1.40	12,422.0	6,776.1	-40.6	0.96	-0.96	-0.11	9.3	7.5
19,340.0	90.30	2.50	12,420.8	6,871.1	-37.4	1.43	-0.84	1.16	8.1	3.6
19,434.0	88.10	358.00	12,422.2	6,965.1	-37.0	5.33	-2.34	-4.79	9.4	2.5
19,528.0	87.90	357.00	12,425.4	7,058.9	-41.1	1.08	-0.21	-1.06	12.6	6.0
19,623.0	88.70	355.30	12,428.3	7,153.6	-47.4	1.98	0.84	-1.79	15.4	11.7
19,717.0	89.30	355.30	12,429.9	7,247.3	-55.1	0.64	0.64	0.00	17.0	18.7
19,812.0	90.60	1.60	12,430.0	7,342.2	-57.7	6.77	1.37	6.63	17.0	20.6
19,905.0	90.10	1.70	12,429.4	7,435.2	-55.0	0.55	-0.54	0.11	16.4	17.3
20,000.0	90.20	1.60	12,429.2	7,530.1	-52.3	0.15	0.11	-0.11	16.0	13.9
20,094.0	90.40	0.50	12,428.7	7,624.1	-50.6	1.19	0.21	-1.17	14.5	11.5
20,188.0	90.60	359.90	12,427.8	7,718.1	-50.2	0.67	0.21	-0.64	12.6	10.5
20,282.0	91.20	359.40	12,426.4	7,812.1	-50.8	0.83	0.64	-0.53	10.1	10.4
20,376.0	91.10	359.50	12,424.5	7,906.1	-51.7	0.15	-0.11	0.11	7.2	10.7
20,470.0	90.90	0.30	12,422.8	8,000.1	-51.9	0.88	-0.21	0.85	4.6	10.2
20,564.0	91.50	1.00	12,420.9	8,094.0	-50.8	0.98	0.64	0.74	1.6	8.5
20,658.0	91.30	2.80	12,418.6	8,188.0	-47.7	1.93	-0.21	1.91	-1.8	4.7



Midland PVA



Company: EOG Resources - Midland
Project: Lea County, NM (NAD 83 NME)
Site: Hearn 34 State Com
Well: #709H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #709H
TVD Reference: KB = 25' @ 3492.0usft
MD Reference: KB = 25' @ 3492.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)	
20,718.0	91.30	2.80	12,417.2	8,247.9	-44.8	0.00	0.00	0.00	-3.8	1.3	
20,752.0	88.80	2.70	12,417.2	8,281.8	-43.1	7.36	-7.35	-0.29	-4.2	-0.5	
20,847.0	88.40	3.40	12,419.5	8,376.7	-38.1	0.85	-0.42	0.74	-2.9	-6.2	
20,941.0	89.50	1.80	12,421.2	8,470.6	-33.8	2.07	1.17	-1.70	-2.2	-11.2	
21,035.0	88.70	359.60	12,422.7	8,564.5	-32.7	2.49	-0.85	-2.34	-1.7	-13.0	
21,129.0	88.80	358.90	12,424.8	8,658.5	-33.9	0.75	0.11	-0.74	-0.7	-12.4	
21,223.0	88.70	358.40	12,426.8	8,752.4	-36.1	0.54	-0.11	-0.53	0.3	-10.9	
21,318.0	89.80	357.90	12,428.1	8,847.4	-39.2	1.27	1.16	-0.53	0.6	-8.5	
21,412.0	91.10	357.00	12,427.3	8,941.3	-43.4	1.68	1.38	-0.96	-1.2	-4.9	
21,506.0	91.70	358.10	12,425.0	9,035.2	-47.4	1.33	0.64	1.17	-4.5	-1.6	
21,600.0	89.00	359.50	12,424.4	9,129.1	-49.4	3.24	-2.87	1.49	-6.1	-0.3	
21,694.0	88.80	358.10	12,426.2	9,223.1	-51.3	1.50	-0.21	-1.49	-5.3	1.0	
21,788.0	88.60	357.40	12,428.4	9,317.0	-55.0	0.77	-0.21	-0.74	-4.2	4.1	
21,882.0	89.80	357.50	12,429.7	9,410.9	-59.2	1.28	1.28	0.11	-3.9	7.6	
21,976.0	91.20	358.10	12,428.9	9,504.8	-62.8	1.62	1.49	0.64	-5.8	10.5	
22,071.0	91.00	357.80	12,427.1	9,599.7	-66.2	0.38	-0.21	-0.32	-8.6	13.3	
22,165.0	91.70	357.50	12,424.8	9,693.6	-70.1	0.81	0.74	-0.32	-11.9	16.5	
22,260.0	91.10	0.00	12,422.5	9,788.6	-72.1	2.71	-0.63	2.63	-15.2	17.9	
22,353.0	88.40	0.80	12,422.9	9,881.6	-71.5	3.03	-2.90	0.86	-15.8	16.6	
22,447.0	89.70	0.80	12,424.5	9,975.5	-70.2	1.38	1.38	0.00	-15.3	14.6	
22,547.0	90.60	0.30	12,424.2	10,075.5	-69.2	1.03	0.90	-0.50	-16.6	12.9	
Projection to Bit (MD = 22547.0)											
22,607.0	90.60	0.30	12,423.6	10,135.5	-68.9	0.00	0.00	0.00	-17.9	12.2	
Last MWD Survey (MD = 22607.0)											



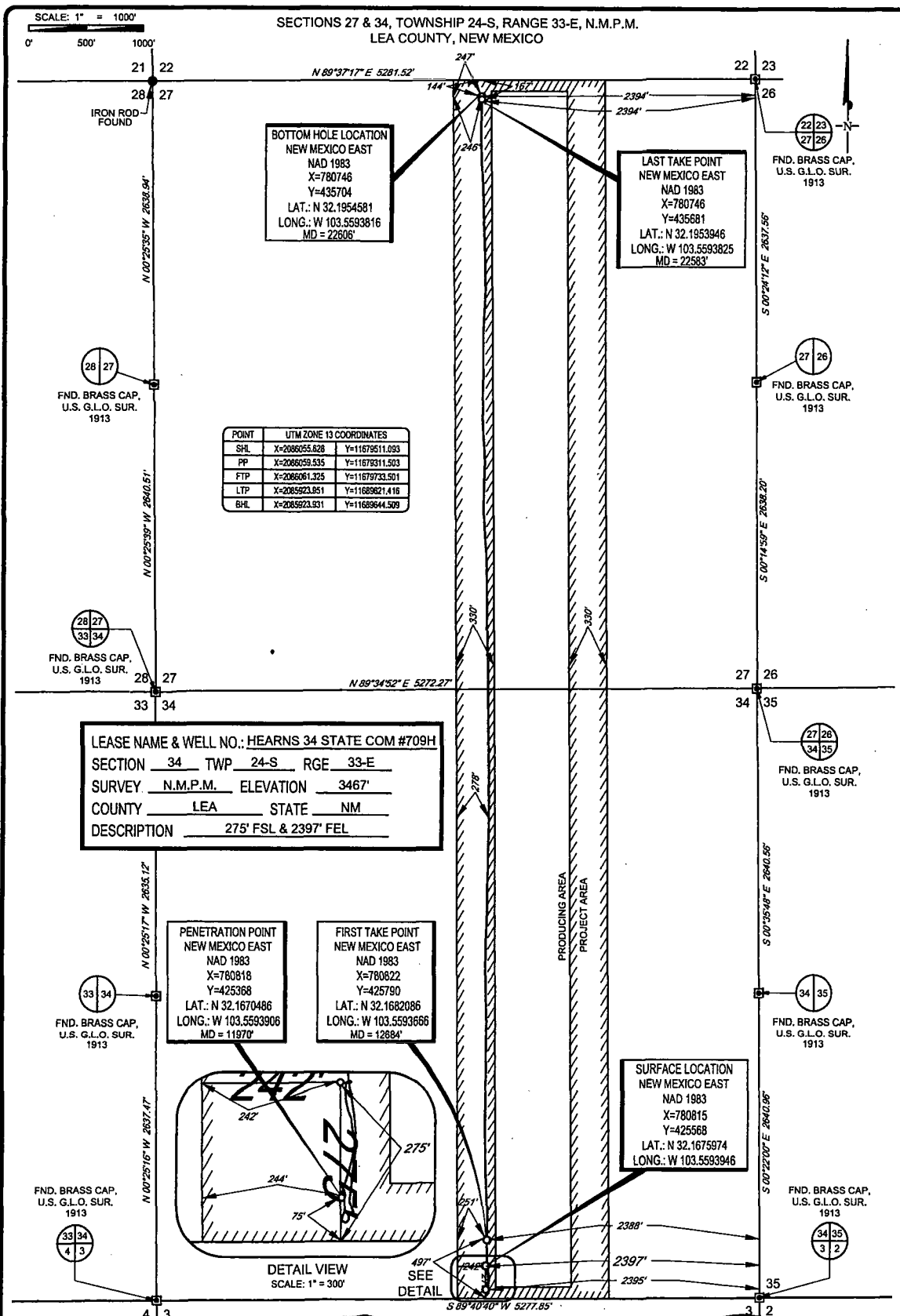
Midland PVA



Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 25' @ 3492.0usft
Site:	Hearns 34 State Com	MD Reference:	KB = 25' @ 3492.0usft
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
11,970.0	11,962.9	-199.6	2.7	KOP 11970.0' MD; 11962.9' TVD; -199.6'; 2.7'; 1.29
12,103.7	12,093.3	-175.2	8.9	FTP Crossing 12103.7' MD; 12093.3' TVD; -175.2'; 8.9'; 22.96
22,547.0	12,424.2	10,075.5	-69.2	Projection to Bit (MD = 22547.0)
22,607.0	12,423.6	10,135.5	-68.9	Last MWD Survey (MD = 22607.0)

Checked By: _____ Approved By: _____ Date: _____



eg resources, Inc.

HEARNS 34 STATE COM
#709H
AS-COMPLETED

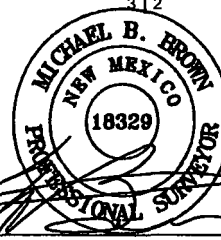
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REVISION:

TOPOGRAPHIC
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2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
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WWW.TOPOGRAPHIC.COM

NOTES:

1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
3. THIS WELL LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.



Michael Blake Brown, P.S. No. 18329
OCTOBER 4, 2018



Lea County, NM (NAD 83 NME)

Hearns 34 State Com #709H

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' @ 3492.0usft
Northing 425568.00 Easting 780815.00 Latitude 32°10' 33.821 N Longitude 103°33' 33.821 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
5041.0	2.64	177.47	5038.2	-106.3	30.0	0.00	0.00	-106.5	
5062.7	2.68	186.78	5059.9	-107.3	30.0	2.00	89.27	-107.5	
7529.5	2.68	186.78	7524.0	-221.9	16.4	0.00	0.00	-222.0	
7663.6	0.00	0.00	7658.0	-225.0	16.0	2.00	180.00	-225.1	
12034.6	0.00	0.00	12029.0	-225.0	16.0	0.00	0.00	-225.1	
12791.9	90.88	359.60	12506.4	259.8	12.6	12.00	359.60	259.7	Brushy Top(Hearns 34 State Com #709H)
15032.4	90.88	359.60	12472.0	2500.0	-3.1	0.00	0.00	2500.0	TGT #1(Hearns 34 State Com #709H)
15037.8	90.77	359.60	12471.9	2505.3	-3.2	2.00	180.00	2505.3	TGT #2(Hearns 34 State Com #709H)
17032.7	90.77	359.60	12445.0	4500.0	-17.1	0.00	0.00	4500.0	TGT #3(Hearns 34 State Com #709H)
17039.9	90.92	359.60	12444.9	4507.2	-17.2	2.00	0.00	4507.2	TGT #4(Hearns 34 State Com #709H)
19032.9	90.92	359.60	12413.0	6499.9	-31.2	0.00	0.00	6500.0	
19079.8	89.98	359.60	12412.6	6546.8	-31.5	2.00	-180.00	6546.9	
20032.9	89.98	359.60	12413.0	7499.9	-38.2	0.00	0.00	7500.0	
20063.0	89.38	359.60	12413.2	7530.0	-38.4	2.00	180.00	7530.1	
22713.2	89.38	359.60	12442.0	10180.0	-57.0	0.00	0.00	10180.2	PBHL (Hearns 34 State Com #709H)

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP COORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
Brushy Top(Hearns 34 State Com #709H)	7658.0	-225.0	16.0	425343.00	780831.00
TGT #1(Hearns 34 State Com #709H)	12413.0	6499.9	-31.2	430067.90	780763.82
TGT #2(Hearns 34 State Com #709H)	12413.0	7499.9	-38.2	430067.90	780776.30
PBHL (Hearns 34 State Com #709H)	12442.0	10180.0	-57.0	435748.00	780765.00
TGT #3(Hearns 34 State Com #709H)	12445.0	4500.0	-17.1	430068.00	780777.85
TGT #4(Hearns 34 State Com #709H)	12472.0	2500.0	-3.1	430068.00	780811.80
FTP (Hearns 34 State Com #709H)	12508.0	-175.0	16.0	425393.00	780831.00

