



Noble Energy, Inc

Weld County, CO (NAD 83)

Sec 14, T06N-R65W (Eagle E14 Pad)

Eagle E14-67-1HNA

Wellbore #1

Design: OH

Standard Survey Report

07 July, 2014





IDS Survey Report



Company:	Noble Energy, Inc	Local Co-ordinate Reference:	Well Eagle E14-67-1HNA
Project:	Weld County, CO (NAD 83)	TVD Reference:	Well @ 4748.0usft (H&P 330)
Site:	Sec 14, T06N-R65W (Eagle E14 Pad)	MD Reference:	Well @ 4748.0usft (H&P 330)
Well:	Eagle E14-67-1HNA	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Weld County, CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 14, T06N-R65W (Eagle E14 Pad)			
Site Position:		Northing:	1,420,783.97 usft	Latitude:	40° 29' 6.936 N
From:	Lat/Long	Easting:	3,239,556.05 usft	Longitude:	104° 38' 19.572 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.56 °

Well	Eagle E14-67-1HNA					
Well Position	+N-S	0.0 usft	Northing:	1,420,783.74 usft	Latitude:	40° 29' 6.936 N
	+E-W	0.0 usft	Easting:	3,239,533.79 usft	Longitude:	104° 38' 19.860 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,718.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	5/20/2014	8.36	67.05	52,909

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.0	0.0	0.0	74.77	

Survey Program	Date 7/7/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
357.0	681.0	Survey #1 (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool
724.0	7,402.0	Survey #2 (Wellbore #1)	MWD	MWD - Standard
7,431.0	11,483.0	Survey #3 (Wellbore #1)	MWD	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
357.0	0.50	352.50	357.0	1.5	-0.2	0.2	0.14	0.14	0.00
681.0	0.50	225.40	681.0	2.0	-1.4	-0.8	0.28	0.00	-39.23
724.0	0.62	230.34	724.0	1.7	-1.7	-1.2	0.30	0.28	11.49
First MWD									
816.0	0.53	239.66	816.0	1.1	-2.5	-2.1	0.14	-0.10	10.13
910.0	0.97	261.98	910.0	0.8	-3.6	-3.3	0.55	0.47	23.74
1,004.0	1.67	0.68	1,004.0	2.1	-4.4	-3.7	2.19	0.74	105.00
1,096.0	3.25	10.61	1,095.9	6.0	-3.9	-2.2	1.77	1.72	10.79



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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,190.0	4.75	4.11	1,189.6	12.5	-3.1	0.3	1.66	1.60	-6.91
1,284.0	6.07	4.55	1,283.2	21.3	-2.5	3.2	1.40	1.40	0.47
1,378.0	7.65	6.83	1,376.5	32.5	-1.3	7.3	1.71	1.68	2.43
1,472.0	9.06	359.89	1,469.5	46.1	-0.6	11.5	1.84	1.50	-7.38
1,567.0	9.67	0.94	1,563.3	61.5	-0.5	15.7	0.67	0.64	1.11
1,662.0	9.85	1.91	1,656.9	77.6	-0.1	20.3	0.26	0.19	1.02
1,757.0	9.32	5.08	1,750.6	93.4	0.9	25.4	0.79	-0.56	3.34
1,852.0	10.38	4.90	1,844.2	109.6	2.3	31.0	1.12	1.12	-0.19
1,947.0	11.17	358.75	1,937.5	127.4	2.8	36.2	1.47	0.83	-6.47
2,042.0	8.97	354.44	2,031.0	143.9	1.9	39.6	2.45	-2.32	-4.54
2,137.0	8.09	6.04	2,125.0	157.9	1.9	43.3	2.03	-0.93	12.21
2,232.0	9.50	4.90	2,218.9	172.4	3.3	48.4	1.50	1.48	-1.20
2,327.0	10.29	359.27	2,312.5	188.7	3.8	53.3	1.31	0.83	-5.93
2,422.0	10.55	359.27	2,405.9	205.9	3.6	57.6	0.27	0.27	0.00
2,517.0	9.67	8.50	2,499.4	222.5	4.7	62.9	1.94	-0.93	9.72
2,612.0	10.29	6.75	2,593.0	238.8	6.9	69.3	0.73	0.65	-1.84
2,707.0	9.85	4.55	2,686.5	255.3	8.5	75.3	0.62	-0.46	-2.32
2,802.0	10.73	358.84	2,780.0	272.3	9.0	80.2	1.42	0.93	-6.01
2,897.0	10.64	358.40	2,873.3	289.9	8.5	84.4	0.13	-0.09	-0.46
2,992.0	8.88	357.96	2,967.0	306.0	8.0	88.1	1.85	-1.85	-0.46
3,087.0	9.58	5.95	3,060.7	321.2	8.6	92.6	1.54	0.74	8.41
3,182.0	9.41	0.77	3,154.4	336.8	9.5	97.6	0.92	-0.18	-5.45
3,277.0	9.15	5.60	3,248.2	352.1	10.4	102.5	0.86	-0.27	5.08
3,372.0	9.67	7.71	3,341.9	367.5	12.2	108.3	0.66	0.55	2.22
3,467.0	10.82	8.06	3,435.4	384.2	14.5	114.9	1.21	1.21	0.37
3,563.0	8.00	3.32	3,530.1	399.8	16.1	120.6	3.04	-2.94	-4.94
3,658.0	8.44	11.84	3,624.1	413.2	17.9	125.9	1.36	0.46	8.97
3,753.0	11.08	14.39	3,717.8	428.9	21.6	133.5	2.82	2.78	2.68
3,848.0	13.01	7.54	3,810.7	448.4	25.3	142.2	2.52	2.03	-7.21
3,943.0	14.25	7.98	3,903.0	470.5	28.3	150.9	1.31	1.31	0.46
4,039.0	13.45	4.90	3,996.2	493.4	30.9	159.4	1.13	-0.83	-3.21
4,134.0	11.52	354.53	4,089.0	513.8	31.0	164.9	3.11	-2.03	-10.92
4,229.0	7.12	343.98	4,182.7	528.9	28.5	166.4	4.95	-4.63	-11.11
4,324.0	4.48	338.97	4,277.2	538.0	25.5	165.9	2.83	-2.78	-5.27
4,419.0	6.16	3.93	4,371.8	546.6	24.5	167.2	2.97	1.77	26.27
4,514.0	8.18	12.90	4,466.0	558.3	26.4	172.1	2.42	2.13	9.44
4,609.0	9.85	15.53	4,559.9	572.7	30.1	179.4	1.81	1.76	2.77
4,704.0	7.91	9.82	4,653.7	587.0	33.3	186.3	2.24	-2.04	-6.01
4,799.0	8.88	4.64	4,747.7	600.7	35.1	191.6	1.29	1.02	-5.45
4,894.0	9.15	5.69	4,841.5	615.5	36.4	196.8	0.33	0.28	1.11
4,989.0	8.53	4.55	4,935.4	630.1	37.7	201.9	0.68	-0.65	-1.20
5,085.0	9.41	2.61	5,030.2	645.0	38.6	206.7	0.97	0.92	-2.02
5,180.0	10.11	4.02	5,123.9	661.1	39.6	211.8	0.78	0.74	1.48

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,275.0	10.20	1.91	5,217.4	677.8	40.4	217.0	0.40	0.09	-2.22
5,370.0	10.99	358.84	5,310.7	695.3	40.5	221.7	1.02	0.83	-3.23
5,465.0	10.73	0.94	5,404.0	713.2	40.5	226.4	0.50	-0.27	2.21
5,560.0	10.38	2.44	5,497.4	730.6	41.0	231.4	0.47	-0.37	1.58
5,656.0	10.73	3.05	5,591.8	748.1	41.8	236.9	0.38	0.36	0.64
5,751.0	10.55	4.11	5,685.2	765.6	42.9	242.5	0.28	-0.19	1.12
5,846.0	10.11	358.84	5,778.6	782.6	43.4	247.4	1.10	-0.46	-5.55
5,941.0	9.58	357.78	5,872.2	798.9	42.9	251.2	0.59	-0.56	-1.12
6,036.0	8.09	358.48	5,966.1	813.5	42.4	254.6	1.57	-1.57	0.74
6,077.0	6.95	359.45	6,006.8	818.8	42.3	255.9	2.80	-2.78	2.37
6,125.0	9.50	11.58	6,054.3	825.6	43.1	258.4	6.40	5.31	25.27
6,172.0	12.75	21.51	6,100.4	834.2	45.8	263.3	8.00	6.91	21.13
6,220.0	16.97	25.91	6,146.8	845.5	50.8	271.1	9.09	8.79	9.17
6,267.0	19.70	31.97	6,191.4	858.4	58.0	281.4	7.08	5.81	12.89
6,315.0	23.48	35.49	6,236.0	873.0	67.8	294.7	8.32	7.88	7.33
6,362.0	26.12	40.14	6,278.7	888.6	79.9	310.5	6.98	5.62	9.89
6,410.0	30.43	39.97	6,320.9	906.0	94.6	329.2	8.98	8.98	-0.35
6,457.0	33.24	40.23	6,360.9	924.9	110.5	349.6	5.99	5.98	0.55
6,505.0	37.02	41.73	6,400.1	945.8	128.6	372.5	8.08	7.88	3.13
6,553.0	40.45	41.29	6,437.5	968.3	148.5	397.6	7.17	7.15	-0.92
6,601.0	45.20	41.37	6,472.7	992.7	170.1	424.9	9.90	9.90	0.17
6,648.0	50.47	43.92	6,504.3	1,018.3	193.7	454.4	11.91	11.21	5.43
6,696.0	55.31	45.95	6,533.2	1,045.4	220.7	487.6	10.63	10.08	4.23
6,743.0	58.12	49.02	6,559.0	1,071.9	249.7	522.5	8.10	5.98	6.53
6,791.0	59.97	53.42	6,583.7	1,097.7	281.8	560.2	8.75	3.85	9.17
6,839.0	60.94	59.66	6,607.4	1,120.7	316.6	599.9	11.49	2.02	13.00
6,887.0	61.47	65.10	6,630.6	1,140.2	353.9	640.9	9.99	1.10	11.33
6,934.0	61.73	66.42	6,652.9	1,157.2	391.6	681.7	2.53	0.55	2.81
6,982.0	60.94	70.99	6,675.9	1,172.4	430.8	723.6	8.51	-1.65	9.52
7,029.0	61.29	75.39	6,698.7	1,184.3	470.2	764.7	8.23	0.74	9.36
7,077.0	63.05	78.38	6,721.1	1,194.0	511.5	807.1	6.62	3.67	6.23
7,124.0	66.48	80.40	6,741.1	1,201.8	553.3	849.5	8.27	7.30	4.30
7,172.0	70.26	82.68	6,758.8	1,208.3	597.4	893.8	9.03	7.88	4.75
7,219.0	75.27	84.35	6,772.7	1,213.4	642.0	938.2	11.19	10.66	3.55
7,267.0	79.05	86.55	6,783.4	1,217.1	688.6	984.1	9.05	7.88	4.58
7,318.0	82.83	88.13	6,791.4	1,219.4	738.9	1,033.3	8.02	7.41	3.10
7,360.0	84.59	88.66	6,796.0	1,220.6	780.7	1,073.8	4.37	4.19	1.26
7,402.0	85.30	88.66	6,799.7	1,221.6	822.5	1,114.5	1.69	1.69	0.00
7,404.0	85.22	88.64	6,799.9	1,221.6	824.5	1,116.4	4.06	-3.97	-0.90
Actual 7" Csg @ 7404' MD / 6800' TVD / 1829' FNL & 1176' FWL - Actual 7" Csg									
7,431.0	84.15	88.40	6,802.4	1,222.3	851.3	1,142.5	4.06	-3.97	-0.90
7,526.0	88.81	89.01	6,808.2	1,224.5	946.1	1,234.5	4.95	4.91	0.64
7,621.0	88.37	88.66	6,810.6	1,226.4	1,041.1	1,326.6	0.59	-0.46	-0.37
7,717.0	87.76	88.75	6,813.8	1,228.6	1,137.0	1,419.8	0.64	-0.64	0.09



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7,812.0	89.96	88.92	6,815.7	1,230.5	1,231.9	1,511.9	2.32	2.32	0.18
7,907.0	89.60	88.04	6,816.0	1,233.0	1,326.9	1,604.2	1.00	-0.38	-0.93
8,002.0	89.34	87.43	6,816.9	1,236.8	1,421.8	1,696.8	0.70	-0.27	-0.64
8,097.0	89.34	86.73	6,818.0	1,241.6	1,516.7	1,789.6	0.74	0.00	-0.74
8,192.0	89.34	88.84	6,819.1	1,245.3	1,611.6	1,882.1	2.22	0.00	2.22
8,287.0	90.48	91.03	6,819.3	1,245.4	1,706.6	1,973.8	2.60	1.20	2.31
8,382.0	91.10	91.30	6,818.0	1,243.4	1,801.6	2,064.9	0.71	0.65	0.28
8,477.0	90.48	91.21	6,816.6	1,241.4	1,896.5	2,156.0	0.66	-0.65	-0.09
8,572.0	91.54	91.65	6,815.0	1,239.0	1,991.5	2,247.0	1.21	1.12	0.46
8,668.0	90.66	89.01	6,813.1	1,238.4	2,087.5	2,339.5	2.90	-0.92	-2.75
8,762.0	88.72	87.17	6,813.6	1,241.6	2,181.4	2,430.9	2.84	-2.06	-1.96
8,858.0	88.20	86.90	6,816.2	1,246.5	2,277.2	2,524.7	0.61	-0.54	-0.28
8,953.0	87.49	85.67	6,819.8	1,252.7	2,372.0	2,617.7	1.49	-0.75	-1.29
9,048.0	89.16	88.04	6,822.6	1,257.9	2,466.8	2,710.6	3.05	1.76	2.49
9,143.0	89.52	88.31	6,823.7	1,260.9	2,561.7	2,803.0	0.47	0.38	0.28
9,238.0	89.43	88.40	6,824.5	1,263.7	2,656.7	2,895.3	0.13	-0.09	0.09
9,333.0	89.25	87.25	6,825.6	1,267.3	2,751.6	2,987.9	1.23	-0.19	-1.21
9,428.0	88.72	86.81	6,827.3	1,272.2	2,846.5	3,080.7	0.73	-0.56	-0.46
9,523.0	90.13	87.78	6,828.3	1,276.7	2,941.4	3,173.4	1.80	1.48	1.02
9,619.0	90.40	87.25	6,827.8	1,280.8	3,037.3	3,267.0	0.62	0.28	-0.55
9,713.0	90.13	86.11	6,827.4	1,286.3	3,131.1	3,359.0	1.25	-0.29	-1.21
9,808.0	90.31	86.81	6,827.0	1,292.1	3,225.9	3,452.0	0.76	0.19	0.74
9,903.0	91.19	89.54	6,825.8	1,295.2	3,320.9	3,544.4	3.02	0.93	2.87
9,999.0	91.45	89.89	6,823.6	1,295.6	3,416.8	3,637.2	0.45	0.27	0.36
10,094.0	90.04	89.10	6,822.3	1,296.5	3,511.8	3,729.0	1.70	-1.48	-0.83
10,189.0	89.34	89.45	6,822.8	1,297.7	3,606.8	3,821.0	0.82	-0.74	0.37
10,284.0	89.34	88.92	6,823.9	1,299.0	3,701.8	3,913.0	0.56	0.00	-0.56
10,379.0	89.52	88.48	6,824.9	1,301.2	3,796.8	4,005.2	0.50	0.19	-0.46
10,474.0	89.16	88.40	6,826.0	1,303.8	3,891.7	4,097.5	0.39	-0.38	-0.08
10,570.0	88.72	88.04	6,827.7	1,306.8	3,987.7	4,190.9	0.59	-0.46	-0.38
10,665.0	88.64	88.13	6,829.9	1,309.9	4,082.6	4,283.3	0.13	-0.08	0.09
10,760.0	87.67	86.90	6,833.0	1,314.0	4,177.4	4,375.9	1.65	-1.02	-1.29
10,855.0	88.72	89.19	6,836.0	1,317.3	4,272.3	4,468.3	2.65	1.11	2.41
10,950.0	91.01	89.36	6,836.2	1,318.5	4,367.3	4,560.3	2.42	2.41	0.18
11,046.0	91.01	89.01	6,834.5	1,319.8	4,463.3	4,653.2	0.36	0.00	-0.36
11,141.0	90.57	88.40	6,833.2	1,322.0	4,558.2	4,745.4	0.79	-0.46	-0.64
11,236.0	90.40	88.48	6,832.4	1,324.6	4,653.2	4,837.7	0.20	-0.18	0.08
11,331.0	90.57	87.69	6,831.6	1,327.8	4,748.2	4,930.2	0.85	0.18	-0.83
11,414.0	90.84	87.69	6,830.6	1,331.1	4,831.1	5,011.1	0.33	0.33	0.00
Last MWD @ 11414' MD									
11,483.0	90.84	87.69	6,829.6	1,333.9	4,900.0	5,078.3	0.00	0.00	0.00
PTD @ 11483' MD / 6830' TVD / 1728' FNL & 74' FEL									



IDS Survey Report



Company:	Noble Energy, Inc	Local Co-ordinate Reference:	Well Eagle E14-67-1HNA
Project:	Weld County, CO (NAD 83)	TVD Reference:	Well @ 4748.0usft (H&P 330)
Site:	Sec 14, T06N-R65W (Eagle E14 Pad)	MD Reference:	Well @ 4748.0usft (H&P 330)
Well:	Eagle E14-67-1HNA	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
7,404.0	6,799.9	Actual 7" Csg	7	8-3/4

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
724.0	724.0	1.7	-1.7	First MWD
7,404.0	6,799.9	1,221.6	824.5	Actual 7" Csg @ 7404' MD / 6800' TVD / 1829' FNL & 1176' FWL
11,414.0	6,830.6	1,331.1	4,831.1	Last MWD @ 11414' MD
11,483.0	6,829.6	1,333.9	4,900.0	PTD @ 11483' MD / 6830' TVD / 1728' FNL & 74' FEL

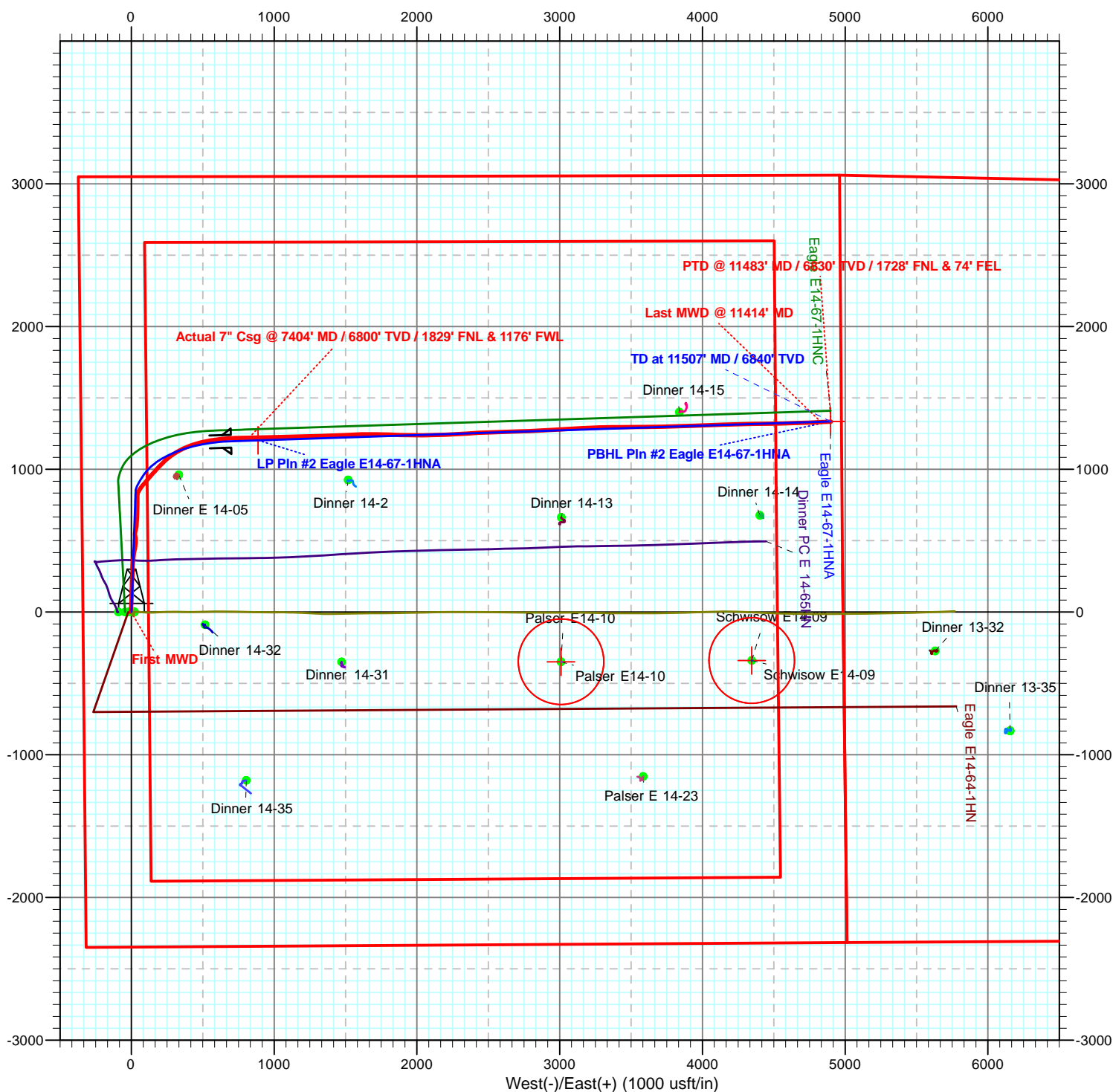
Checked By: _____ Approved By: _____ Date: _____



Weld County, CO (NAD 83)
Eagle E14-67-1HNA
H&P 330
Plan #2



SHL @ 2350' FSL & 341 FWL Sec 14
Actual 7" Csg 1829' FNL & 1176' FWL Sec 14
Actual PBHL @ 1728' FNL & 74' FWL Sec 13





Weld County, CO (NAD 83)
Eagle E14-67-1HNA
H&P 330
Plan #2



SHL @ 2350' FSL & 341 FWL Sec 14
Actual 7" Csg @ 1829 FNL & 1176' FWL Sec 14
Actual PBHL @ 1728' FNL & 74' FWL Sec 13



Azimuths to Grid North
Convergence: 0.56°
Total Correction: 7.80°

Magnetic Field
Strength: 52909.2snT
Dip Angle: 67.05°
Date: 5/20/2014
Model: IGRF200510

