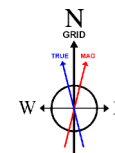


# NOBLE ENERGY, INC

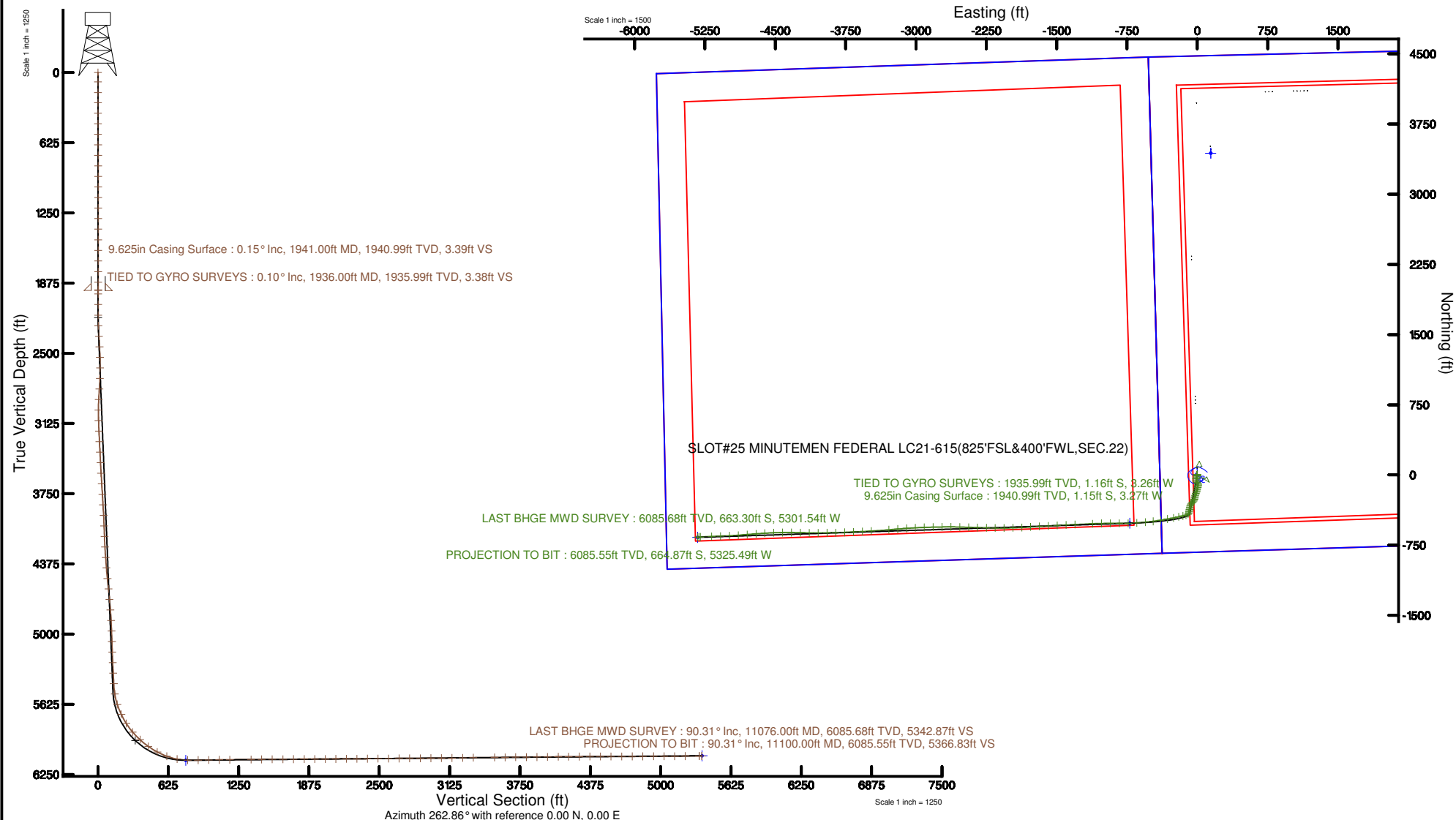
Location: COLORADO Slot: SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)  
 Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: MINUTEMEN FEDERAL LC21-615  
 Facility: SEC.22-T09N-R59W Wellbore: MINUTEMEN FEDERAL LC21-615 PWB



BGGM (1900.0 to 2019.0) Dip: 67.27° Field: 52714.9 nT  
 Magnetic North is 7.94 degrees East of True North (at 6/28/2017)  
 Grid North is 0.99 degrees East of True North  
 To correct azimuth from True to Grid subtract 0.99 degrees  
 To correct azimuth from Magnetic to Grid add 6.95 degrees

Plot reference wellbore is MINUTEMEN FEDERAL LC21-615 (REV 8.0 PWB)		Grid System: NAD83 (Lambert Colorado SP, Northern Zone (2011), US feet)	
True vertical depths are referenced to H&P RIG (2019) (RIG)		1 = Wellbore was transformed from a different geoidetic datum	
Measured depths are referenced to H&P RIG (2019) (RIG)		North Reference: Grid north	
H&P RIG (2019) (RIG) is Mean Sea Level: 4007 feet		Scale: True distance	
Mean Sea Level to Ground level (in feet) SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22) is feet		Depths are in feet	
Coordinates are in feet referenced to S&S		Created by: Lanteyan on 2017-09-20	
		Continued: Details	

Location Information					
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.22-T09N-R59W		500000.000	1500000.000	47°42'43.0237N	107°37'43.0207W
Date	Location (E)	Location (N)	Location (US ft)	Latitude	Longitude
SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)	4745.00	2750.00	345650.007	1500000.000	107°37'43.0207W
H&P RIG (2019) (RIG) is Ground level (in feet) SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)				4007	
Mean Sea Level to Ground level (in feet) SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)				0	
H&P RIG (2019) (RIG) is Mean Sea Level				4007	



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Cantryat
Scale	0.999992	Report Generated	9/20/2017 at 9:42:42 AM
Convergence at slot	0.99° East	Database/Source file	Denver/MINUTEMEN_FEDERAL_LC21-615_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-4142.54	-2708.40	3423453.07	1512843.42	40°43'52.068"N	103°58'19.344"W
Facility Reference Pt			3426161.44	1516985.93	40°44'32.532"N	103°57'43.236"W
Field Reference Pt			3000000.00	4454105.15	48°46'34.315"N	105°30'00.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	H&P RIG (30'KB) (RKB) to Facility Vertical Datum	4907.00ft
Horizontal Reference Pt	Slot	H&P RIG (30'KB) (RKB) to Mean Sea Level	4907.00ft
Vertical Reference Pt	H&P RIG (30'KB) (RKB)	H&P RIG (30'KB) (RKB) to Ground Level at Slot (SLOT#25 MINUTEMEN FEDERAL LC21-615 (825'FSL&400'FWL,SEC.22))	4907.00ft
MD Reference Pt	H&P RIG (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	262.86°

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

WELLPATH DATA (118 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00	0.000	285.150	0.00	0.00	0.00	0.00	0.00	
84.00	0.190	285.150	84.00	0.13	0.04	-0.13	0.23	
178.00	0.080	246.050	178.00	0.34	0.05	-0.34	0.15	
269.00	0.110	4.560	269.00	0.38	0.11	-0.40	0.18	
362.00	0.180	261.760	362.00	0.51	0.18	-0.53	0.25	
457.00	0.070	218.300	457.00	0.70	0.11	-0.72	0.15	
550.00	0.360	252.900	550.00	1.03	-0.02	-1.03	0.33	
643.00	0.580	224.600	643.00	1.68	-0.44	-1.64	0.34	
737.00	0.130	124.370	736.99	1.98	-0.84	-1.89	0.66	
831.00	0.380	274.900	830.99	2.20	-0.87	-2.11	0.53	
925.00	0.240	63.970	924.99	2.32	-0.76	-2.24	0.64	
1019.00	0.320	248.710	1018.99	2.39	-0.77	-2.31	0.60	
1112.00	0.110	80.740	1111.99	2.55	-0.85	-2.47	0.46	
1206.00	0.050	205.310	1205.99	2.48	-0.87	-2.39	0.15	
1300.00	0.080	264.420	1299.99	2.57	-0.91	-2.48	0.07	
1395.00	0.120	228.300	1394.99	2.72	-0.99	-2.62	0.08	
1489.00	0.080	161.760	1488.99	2.79	-1.11	-2.67	0.12	
1584.00	0.120	339.290	1583.99	2.80	-1.08	-2.68	0.21	
1678.00	0.120	300.130	1677.99	2.90	-0.94	-2.80	0.09	
1773.00	0.150	221.370	1772.99	3.07	-0.99	-2.97	0.18	
1868.00	0.140	233.880	1867.99	3.27	-1.15	-3.15	0.03	
1936.00	0.100	304.580	1935.99	3.38	-1.16	-3.26	0.21	TIED TO GYRO SURVEYS
1972.00	0.940	35.910	1971.99	3.21	-0.91	-3.12	2.63	
2066.00	1.270	158.730	2065.98	2.42	-1.25	-2.29	2.07	
2161.00	3.680	173.270	2160.89	2.19	-5.26	-1.55	2.60	
2255.00	5.130	196.380	2254.61	3.89	-12.29	-2.38	2.41	
2350.00	6.430	206.400	2349.13	8.52	-21.13	-5.94	1.73	
2444.00	7.050	201.930	2442.48	14.23	-31.20	-10.44	0.86	
2539.00	7.250	187.050	2536.75	18.53	-42.55	-13.35	1.96	
2633.00	7.960	172.080	2629.93	19.90	-54.89	-13.18	2.23	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

WELLPATH DATA (118 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
2728.00	8.360	157.840	2723.98	18.02	-67.80	-9.67	2.16	
2822.00	6.990	135.970	2817.15	12.81	-78.24	-3.12	3.40	
2917.00	6.750	149.980	2911.48	7.17	-87.24	3.70	1.78	
3011.00	7.260	171.610	3004.79	4.89	-97.90	7.33	2.84	
3106.00	7.320	184.160	3099.03	5.94	-109.87	7.76	1.67	
3200.00	7.880	193.300	3192.21	9.37	-122.12	5.85	1.42	
3295.00	7.860	193.890	3286.31	13.97	-134.76	2.79	0.09	
3390.00	7.670	194.410	3380.44	18.63	-147.21	-0.35	0.21	
3484.00	7.720	196.260	3473.60	23.44	-159.34	-3.68	0.27	
3579.00	7.860	198.190	3567.72	28.75	-171.64	-7.49	0.31	
3673.00	7.870	198.450	3660.84	34.28	-183.85	-11.53	0.04	
3768.00	7.870	197.400	3754.94	39.79	-196.23	-15.54	0.15	
3863.00	7.610	199.010	3849.08	45.27	-208.38	-19.53	0.36	
3957.00	7.810	196.970	3942.23	50.62	-220.37	-23.42	0.36	
4052.00	7.840	187.420	4036.35	54.88	-232.97	-26.14	1.37	
4147.00	7.600	188.560	4130.48	58.21	-245.61	-27.92	0.30	
4241.00	7.830	196.730	4223.64	62.48	-257.89	-30.68	1.19	
4336.00	7.760	205.800	4317.76	68.59	-269.86	-35.34	1.30	
4430.00	7.100	214.160	4410.97	75.87	-280.38	-41.36	1.35	
4525.00	8.000	226.750	4505.16	85.09	-289.77	-49.47	1.98	
4619.00	7.370	222.830	4598.31	94.99	-298.67	-58.34	0.87	
4713.00	7.200	211.850	4691.56	103.31	-308.10	-65.55	1.49	
4808.00	7.830	206.650	4785.74	110.66	-318.94	-71.59	0.98	
4903.00	7.830	196.470	4879.86	116.85	-330.93	-76.33	1.46	
4997.00	7.920	190.380	4972.98	121.36	-343.44	-79.31	0.89	
5092.00	8.020	184.390	5067.06	124.65	-356.49	-81.00	0.88	
5186.00	7.860	188.140	5160.16	127.66	-369.39	-82.41	0.58	
5281.00	7.880	194.270	5254.27	131.74	-382.13	-84.93	0.88	
5375.00	7.780	194.520	5347.39	136.44	-394.53	-88.12	0.11	
5470.00	7.840	192.320	5441.51	140.98	-407.09	-91.11	0.32	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

WELLPATH DATA (118 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
5564.00	10.380	230.620	5534.40	150.28	-418.74	-99.03	6.83	
5659.00	18.260	253.170	5626.44	172.24	-428.50	-119.94	10.02	
5754.00	25.690	256.210	5714.48	207.42	-437.73	-154.23	7.91	
5848.00	32.670	258.650	5796.50	253.01	-447.59	-198.95	7.53	
5943.00	39.990	259.130	5872.98	309.12	-458.41	-254.15	7.71	
6037.00	47.800	259.810	5940.67	374.13	-470.28	-318.18	8.32	
6132.00	54.850	259.850	6000.00	448.15	-483.37	-391.13	7.42	
6226.00	61.130	262.830	6049.81	527.78	-495.29	-469.89	7.20	
6319.00	69.990	264.270	6088.25	612.35	-504.76	-553.94	9.63	
6414.00	79.510	266.020	6113.21	703.82	-512.47	-645.16	10.18	
6508.00	89.200	269.460	6122.45	796.90	-516.13	-738.50	10.93	
6602.00	90.830	270.280	6122.42	890.19	-516.35	-832.50	1.94	
6697.00	90.620	269.200	6121.22	984.50	-516.78	-927.49	1.16	
6791.00	90.770	268.930	6120.08	1077.94	-518.31	-1021.47	0.33	
6886.00	90.830	267.380	6118.75	1172.53	-521.37	-1116.41	1.63	
7075.00	90.370	267.420	6116.78	1360.92	-529.94	-1305.20	0.24	
7169.00	90.430	266.610	6116.12	1454.67	-534.84	-1399.07	0.86	
7264.00	90.460	266.990	6115.38	1549.45	-540.14	-1493.92	0.40	
7359.00	90.370	267.000	6114.69	1644.20	-545.12	-1588.79	0.10	
7453.00	90.280	267.360	6114.16	1737.93	-549.74	-1682.67	0.39	
7548.00	90.400	266.190	6113.60	1832.71	-555.09	-1777.52	1.24	
7642.00	90.280	266.660	6113.04	1926.52	-560.95	-1871.33	0.52	
7737.00	90.400	268.610	6112.48	2021.19	-564.87	-1966.25	2.06	
7831.00	90.370	269.210	6111.84	2114.66	-566.66	-2060.23	0.64	
7926.00	90.430	270.710	6111.18	2208.93	-566.72	-2155.22	1.58	
8020.00	90.400	271.350	6110.50	2301.97	-565.03	-2249.20	0.68	
8115.00	90.490	272.050	6109.76	2395.84	-562.22	-2344.16	0.74	
8209.00	90.460	271.510	6108.98	2488.70	-559.30	-2438.11	0.58	
8304.00	90.460	271.740	6108.22	2582.59	-556.60	-2533.07	0.24	
8399.00	90.430	270.230	6107.48	2676.63	-554.97	-2628.05	1.59	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

WELLPATH DATA (118 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
8493.00	90.340	268.970	6106.85	2769.98	-555.63	-2722.04	1.34	
8588.00	90.490	268.700	6106.16	2864.46	-557.56	-2817.02	0.33	
8682.00	90.430	267.990	6105.41	2958.03	-560.27	-2910.98	0.76	
8777.00	90.490	266.850	6104.64	3052.72	-564.55	-3005.88	1.20	
8871.00	90.800	266.000	6103.59	3146.54	-570.41	-3099.69	0.96	
8966.00	90.890	265.000	6102.19	3241.42	-577.86	-3194.38	1.06	
9060.00	90.550	265.250	6101.00	3335.34	-585.85	-3288.03	0.45	
9249.00	90.710	266.540	6098.93	3524.06	-599.38	-3476.53	0.69	
9344.00	90.710	267.580	6097.75	3618.80	-604.25	-3571.40	1.09	
9438.00	90.520	267.140	6096.74	3712.50	-608.58	-3665.29	0.51	
9533.00	90.550	267.140	6095.85	3807.24	-613.32	-3760.17	0.03	
9628.00	90.520	268.990	6094.97	3901.84	-616.53	-3855.11	1.95	
9722.00	90.620	269.120	6094.03	3995.28	-618.08	-3949.09	0.17	
9817.00	90.830	269.640	6092.83	4089.66	-619.11	-4044.08	0.59	
9911.00	90.400	270.850	6091.82	4182.88	-618.70	-4138.07	1.37	
10006.00	90.340	271.420	6091.21	4276.89	-616.82	-4233.05	0.60	
10101.00	90.280	270.330	6090.69	4370.96	-615.37	-4328.04	1.15	
10195.00	90.120	269.650	6090.36	4464.23	-615.39	-4422.03	0.74	
10290.00	90.180	267.630	6090.11	4558.74	-617.64	-4517.00	2.13	
10385.00	90.400	266.470	6089.63	4653.48	-622.53	-4611.87	1.24	
10479.00	90.090	265.800	6089.23	4747.33	-628.87	-4705.66	0.79	
10574.00	90.180	265.130	6089.01	4842.23	-636.38	-4800.36	0.71	
10669.00	90.430	265.260	6088.50	4937.15	-644.34	-4895.03	0.30	
10763.00	90.180	267.740	6088.00	5030.95	-650.07	-4988.84	2.65	
10858.00	90.400	268.010	6087.52	5125.59	-653.60	-5083.77	0.37	
10952.00	90.620	267.880	6086.68	5219.22	-656.97	-5177.71	0.27	
11076.00	90.310	266.260	6085.68	5342.87	-663.30	-5301.54	1.33	LAST BHGE MWD SURVEY
11100.00	90.310	266.260	6085.55	5366.83	-664.87	-5325.49	0.00	PROJECTION TO BIT

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

HOLE & CASING SECTIONS - Ref Wellbore: MINUTEMEN FEDERAL LC21-615 AWB Ref Wellpath: MINUTEMEN FEDERAL LC21-615 AWP									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
13.5in Open Hole	30.00	1941.00	1911.00	30.00	1940.99	0.00	-0.02	-1.15	-3.27
9.625in Casing Surface	30.00	1941.00	1911.00	30.00	1940.99	0.00	-0.02	-1.15	-3.27
8.5in Open Hole	1941.00	11100.00	9159.00	1940.99	6085.55	-1.15	-3.27	-664.87	-5325.49

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
MAGPUL FEDERAL LC21-670 SECTION 21	-31.00	3438.64	143.07	3423596.13	1516282.03	40°44'26.016"N	103°58'16.716"W	polygon
DUKES FEDERAL LC10-745 SECTION 22	-17.00	4142.55	2708.40	3426161.44	1516985.93	40°44'32.532"N	103°57'43.236"W	polygon
MINUTEMEN FEDERAL LC21-615 REV-2 BHL (330'FSL&330'FWL,SEC.21)	6083.78	-666.96	-5327.39	3418125.73	1512176.47	40°43'46.380"N	103°59'28.680"W	point
MINUTEMEN FEDERAL LC21-615 Landing Point (330'FSL&330'FEL,SEC.21)	6124.00	-515.90	-721.30	3422731.77	1512327.53	40°43'47.094"N	103°58'28.827"W	point
MAGPUL FEDERAL LC21-670 SECTION 21 HARDLINE (300'SETBACK)	6369.00	3438.64	143.07	3423596.13	1516282.03	40°44'26.016"N	103°58'16.716"W	polygon
DUKES FEDERAL LC10-745 SECTION 22 300' SETBACK	6483.00	4142.55	2708.40	3426161.44	1516985.93	40°44'32.532"N	103°57'43.236"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: MINUTEMEN FEDERAL LC21-615 AWB Ref Wellpath: MINUTEMEN FEDERAL LC21-615 AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1936.00	Gyrodata standard - Drop gyro or Multi-shot	3rd Party Surface Surveys <84'-1936'>	MINUTEMEN FEDERAL LC21-615 AWB
1936.00	11076.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BHI/ATC OWSG MWD rev2+IFR+MSA 8.5" Hole <1972'-11076'>	MINUTEMEN FEDERAL LC21-615 AWB
11076.00	11100.00	Blind Drilling (std)	Projection to bit	MINUTEMEN FEDERAL LC21-615 AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#25 MINUTEMEN FEDERAL LC21-615(825'FSL&400'FWL,SEC.22)
Area	COLORADO	Well	MINUTEMEN FEDERAL LC21-615
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	MINUTEMEN FEDERAL LC21-615 AWB
Facility	SEC.22-T09N-R59W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1936.00	0.100	304.580	1935.99	TIED TO GYRO SURVEYS
11076.00	90.310	266.260	6085.68	LAST BHGE MWD SURVEY
11100.00	90.310	266.260	6085.55	PROJECTION TO BIT

COMMENTS	
<b>Wellpath general comments</b> SURFACE LOCATION: SWSW 40.73113N 103.97204W API #: 05-123-42787	