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Schlumberger

Cimarex Grynberg 11 Fed 5H MWD Final Survey Geodetic Report



(Def Survey)

Report Date: November 28, 2016 - 09:54 AM
 Client: Cimarex
 Field: NMI Eddy County (NAD 83)
 Structure / Slot: Cimarex Grynberg 11 Fed 5H / Cimarex Grynberg 11 Fed 5H
 Well: Cimarex Grynberg 11 Fed 5H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Grynberg 11 Fed 5H MWD Final
 Survey Date: November 09, 2016
 Tort / AHD / DDI / ERD Ratio: 188.593° / 4891.272 ft / 6.175 / 0.677
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 8' 17.34579", W 104° 15' 22.03522"
 Location Grid N/E Y/X: N 414003.790 ftUS, E 565236.480 ftUS
 CRS Grid Convergence Angle: 0.0411°
 Grid Scale Factor: 0.999990975
 Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 355.050° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3310.700 ft above MSL
 Seabed / Ground Elevation: 3286.700 ft above MSL
 Magnetic Declination: 7.534°
 Total Gravity Field Strength: 998.4375mgn (9.80665 Based)
 Gravity Model: GARMI
 Total Magnetic Field Strength: 48079.819 nT
 Magnetic Dip Angle: 59.888°
 Declination Date: November 09, 2016
 Magnetic Declination Model: HDGM 2016
 North Reference: Grid North
 Grid Convergence Used: 0.0411°
 Total Corr Mag North->Grid North: 7.4925°
 Local Coord Referenced To: Structure Reference Point

NMI OIL CONSERVATION
 ARTESIA DISTRICT

FEB 17 2017

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Comments	MID (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ° °)	Longitude (E/W ° ° °)
Top In SHL [330' FSL, 331' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	414003.79	565236.48	N 32 8 17.35	W 104 15 22.04
	82.00	1.02	300.00	82.00	0.42	0.36	-0.63	1.24	414004.15	565235.85	N 32 8 17.35	W 104 15 22.04
	209.00	1.33	347.90	208.97	2.53	2.37	-1.92	0.78	414006.16	565234.56	N 32 8 17.37	W 104 15 22.06
	297.00	1.10	359.86	296.95	4.39	4.21	-2.18	0.34	414008.00	565234.30	N 32 8 17.39	W 104 15 22.06
	384.00	1.19	359.76	383.93	6.12	5.95	-2.23	0.12	414009.74	565234.25	N 32 8 17.40	W 104 15 22.06
	474.00	1.20	356.50	473.91	7.99	7.83	-2.29	0.08	414011.62	565234.19	N 32 8 17.42	W 104 15 22.06
	564.00	1.33	357.65	563.89	9.98	9.81	-2.39	0.15	414013.60	565234.09	N 32 8 17.44	W 104 15 22.06
	654.00	1.41	352.05	653.87	12.13	11.95	-2.59	0.17	414015.74	565233.89	N 32 8 17.46	W 104 15 22.07
	741.00	1.50	348.35	740.84	14.33	14.13	-2.97	0.15	414017.91	565233.51	N 32 8 17.49	W 104 15 22.07
	836.00	1.72	355.97	835.80	16.99	16.77	-3.32	0.32	414020.55	565233.16	N 32 8 17.51	W 104 15 22.07
	925.00	1.59	348.62	924.76	19.55	19.31	-3.65	0.28	414023.10	565232.83	N 32 8 17.54	W 104 15 22.08
	1019.00	1.81	356.15	1018.72	22.33	22.07	-4.01	0.33	414025.86	565232.47	N 32 8 17.56	W 104 15 22.08
	1113.00	2.03	348.75	1112.67	25.47	25.18	-4.44	0.35	414028.97	565232.04	N 32 8 17.60	W 104 15 22.09
	1210.00	0.31	14.41	1209.65	27.43	27.12	-4.71	1.81	414030.91	565231.77	N 32 8 17.61	W 104 15 22.09
	1303.00	0.62	74.78	1302.64	27.75	27.50	-4.16	0.58	414031.28	565232.32	N 32 8 17.62	W 104 15 22.08
	1397.00	0.80	89.10	1396.64	27.80	27.64	-3.01	0.27	414031.43	565233.47	N 32 8 17.62	W 104 15 22.07
	1489.00	1.50	76.98	1488.62	27.92	27.92	-1.20	0.80	414031.71	565235.28	N 32 8 17.62	W 104 15 22.05
	1583.00	0.80	135.07	1582.60	27.59	27.74	-4.16	1.35	414031.52	565236.95	N 32 8 17.62	W 104 15 22.03
	1676.00	1.33	141.06	1675.59	26.20	26.44	1.60	0.58	414030.22	565238.08	N 32 8 17.61	W 104 15 22.02
	1776.00	0.49	165.03	1775.57	24.82	24.82	3.06	0.90	414028.91	565238.92	N 32 8 17.59	W 104 15 22.01
	1833.00	1.50	132.42	1832.42	24.03	24.38	2.44	1.96	414028.17	565239.54	N 32 8 17.59	W 104 15 22.00
	1971.00	1.19	131.85	1970.52	21.65	22.21	5.46	0.22	414025.99	565241.94	N 32 8 17.57	W 104 15 21.97
	2066.00	1.19	133.13	2066.50	20.20	20.87	6.91	0.03	414024.66	565243.39	N 32 8 17.55	W 104 15 21.95
	2161.00	1.33	126.12	2160.48	18.74	19.55	8.52	0.22	414023.34	565245.00	N 32 8 17.54	W 104 15 21.94
	2254.00	1.33	129.34	2253.46	17.28	18.23	10.23	0.08	414022.02	565246.71	N 32 8 17.53	W 104 15 21.92
	2348.00	1.20	129.70	2347.43	15.83	16.91	11.83	0.14	414020.70	565248.31	N 32 8 17.51	W 104 15 21.90
	2441.00	1.19	139.56	2440.41	14.35	15.55	13.21	0.22	414019.34	565249.69	N 32 8 17.50	W 104 15 21.88

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	2538.00	1.33	135.24	2537.39	12.67	13.99	14.65	0.17	414017.78	565251.13	N 32 8 17.47	W 104 15 21.86
	2631.00	1.41	140.04	2630.36	10.90	12.34	16.15	0.15	414016.13	565252.63	N 32 8 17.47	W 104 15 21.85
	2726.00	1.33	145.99	2725.34	8.98	10.53	17.51	0.17	414014.32	565253.99	N 32 8 17.45	W 104 15 21.83
	2820.00	1.41	142.56	2819.31	7.05	8.71	18.83	0.12	414012.50	565255.31	N 32 8 17.43	W 104 15 21.82
	2914.00	1.19	146.08	2913.29	5.22	6.98	20.08	0.25	414010.77	565256.55	N 32 8 17.41	W 104 15 21.80
	3008.00	1.72	237.61	3007.26	3.72	5.42	19.43	0.25	414009.21	565255.91	N 32 8 17.40	W 104 15 21.81
	3100.00	1.90	242.85	3099.22	2.51	3.98	16.91	0.27	414007.77	565253.38	N 32 8 17.39	W 104 15 21.84
	3195.00	1.80	246.40	3194.17	1.44	2.66	14.14	0.16	414006.45	565250.62	N 32 8 17.37	W 104 15 21.87
	3290.00	0.31	322.60	3289.15	1.17	2.27	12.61	1.84	414006.06	565248.09	N 32 8 17.37	W 104 15 21.89
	3386.00	0.40	331.50	3385.15	1.70	2.77	12.30	0.11	414006.56	565248.78	N 32 8 17.37	W 104 15 21.89
	3481.00	0.62	323.37	3478.15	2.46	3.49	11.86	0.24	414007.28	565246.33	N 32 8 17.38	W 104 15 21.90
	3576.00	0.49	323.37	3575.08	3.25	4.25	11.33	0.14	414008.04	565247.81	N 32 8 17.39	W 104 15 21.90
	3669.00	0.50	299.30	3668.14	3.82	4.77	10.74	0.22	414008.56	565247.22	N 32 8 17.39	W 104 15 21.91
	3762.00	0.62	310.23	3761.13	4.41	5.29	10.00	0.17	414009.08	565246.48	N 32 8 17.40	W 104 15 21.92
	3858.00	0.49	308.43	3857.13	5.06	5.88	9.28	0.14	414009.67	565245.76	N 32 8 17.40	W 104 15 21.93
	3952.00	0.49	332.80	3951.13	5.71	6.49	8.78	0.22	414010.28	565245.26	N 32 8 17.41	W 104 15 21.93
	4046.00	0.71	333.19	4045.12	6.62	7.36	8.34	0.23	414011.15	565244.82	N 32 8 17.42	W 104 15 21.94
	4142.00	0.80	342.53	4141.11	7.82	8.53	7.87	0.16	414012.32	565244.35	N 32 8 17.43	W 104 15 21.94
	4236.00	0.80	344.21	4235.10	9.11	9.79	7.49	0.16	414013.58	565243.97	N 32 8 17.44	W 104 15 21.95
	4330.00	0.80	337.82	4329.09	10.38	11.03	7.07	0.09	414014.82	565243.55	N 32 8 17.45	W 104 15 21.95
	4425.00	0.71	349.45	4424.09	11.60	12.22	6.71	0.19	414016.01	565243.19	N 32 8 17.47	W 104 15 21.96
	4520.00	0.88	324.38	4519.08	12.81	13.40	6.18	0.40	414017.18	565242.65	N 32 8 17.48	W 104 15 21.96
	4615.00	0.62	355.27	4614.07	13.95	14.50	5.71	0.50	414018.29	565242.19	N 32 8 17.48	W 104 15 21.97
	4708.00	0.60	5.80	4707.06	14.94	15.49	5.72	0.12	414019.28	565242.20	N 32 8 17.50	W 104 15 21.97
	4803.00	0.49	27.94	4802.06	15.77	16.34	5.66	0.25	414020.13	565242.44	N 32 8 17.51	W 104 15 21.97
	4897.00	0.49	34.37	4896.06	16.41	17.03	6.37	0.06	414020.82	565242.85	N 32 8 17.51	W 104 15 21.96
	4990.00	0.50	63.76	4989.05	16.87	17.82	6.96	0.27	414021.32	565243.44	N 32 8 17.52	W 104 15 21.95
	5180.00	0.62	79.58	5085.05	17.32	18.15	7.83	0.15	414021.67	565244.31	N 32 8 17.52	W 104 15 21.95
	5274.00	0.49	81.79	5273.04	17.40	18.32	8.95	0.24	414022.10	565246.33	N 32 8 17.53	W 104 15 21.92
	5368.00	0.49	116.78	5367.03	17.21	18.19	10.61	0.31	414021.98	565247.09	N 32 8 17.53	W 104 15 21.91
	5464.00	0.31	153.31	5463.03	16.75	17.78	11.09	0.32	414021.56	565247.57	N 32 8 17.52	W 104 15 21.91
	5559.00	0.40	137.25	5558.03	16.25	17.30	11.43	0.14	414021.09	565247.91	N 32 8 17.52	W 104 15 21.90
	5653.00	0.49	96.02	5652.03	15.91	17.02	12.05	0.35	414020.81	565248.53	N 32 8 17.51	W 104 15 21.89
	5747.00	0.31	34.15	5746.03	16.03	17.19	12.60	0.47	414020.97	565249.08	N 32 8 17.52	W 104 15 21.89
	5893.00	1.02	114.79	5892.02	15.70	16.97	14.00	0.70	414020.76	565250.48	N 32 8 17.51	W 104 15 21.87
	5938.00	1.50	110.17	5937.01	15.25	16.60	14.91	1.09	414020.39	565251.39	N 32 8 17.51	W 104 15 21.86
	6032.00	1.41	178.65	6030.98	13.57	15.02	16.10	1.74	414018.80	565252.58	N 32 8 17.49	W 104 15 21.85
	6126.00	1.72	193.81	6124.95	11.08	12.49	15.79	0.55	414016.28	565252.27	N 32 8 17.47	W 104 15 21.85
	6219.00	2.03	195.79	6217.90	8.22	9.55	15.01	0.34	414013.34	565251.48	N 32 8 17.44	W 104 15 21.86
	6314.00	0.62	264.89	6312.87	6.64	7.88	14.04	2.00	414011.67	565250.51	N 32 8 17.42	W 104 15 21.87
	6409.00	0.62	266.12	6407.87	6.65	7.80	13.01	0.01	414011.59	565249.49	N 32 8 17.42	W 104 15 21.88
	6503.00	0.60	258.30	6501.86	6.60	7.67	12.02	0.09	414011.46	565248.50	N 32 8 17.42	W 104 15 21.90
	6586.00	0.31	255.28	6584.86	6.51	7.52	11.38	0.35	414011.31	565247.86	N 32 8 17.42	W 104 15 21.90
	6614.00	0.18	202.10	6612.86	6.46	7.46	11.29	0.89	414011.25	565247.77	N 32 8 17.42	W 104 15 21.90
	6646.00	1.67	275.16	6644.85	6.50	7.46	10.81	5.08	414011.25	565247.29	N 32 8 17.42	W 104 15 21.91
	6677.00	5.51	281.06	6675.79	6.99	7.79	8.89	12.43	414011.58	565245.37	N 32 8 17.42	W 104 15 21.93
	6709.00	9.51	281.84	6707.51	8.18	8.62	4.80	12.50	414012.41	565241.28	N 32 8 17.43	W 104 15 21.98
	6756.00	16.34	284.40	6753.29	11.49	11.07	-5.42	14.58	414014.86	565231.06	N 32 8 17.46	W 104 15 22.10
	6803.00	22.32	287.35	6797.62	17.08	15.38	-20.35	12.89	414019.17	565216.13	N 32 8 17.50	W 104 15 22.27
	6850.00	27.44	288.75	6840.25	24.82	21.52	-39.14	10.96	414025.31	565197.34	N 32 8 17.50	W 104 15 22.49
	6897.00	33.52	289.18	6880.73	34.49	29.28	-61.67	12.94	414033.06	565174.81	N 32 8 17.64	W 104 15 22.75
	6945.00	39.77	291.28	6919.23	46.70	39.21	-88.52	13.28	414043.00	565147.98	N 32 8 17.73	W 104 15 23.06
	6992.00	42.12	297.65	6954.74	61.85	51.99	-116.51	10.19	414055.77	565119.98	N 32 8 17.86	W 104 15 23.39
	7039.00	44.26	303.66	6989.02	80.58	68.40	-144.14	9.86	414072.19	565092.36	N 32 8 18.02	W 104 15 23.71
	7086.00	46.46	310.31	7022.06	102.93	88.53	-170.80	11.10	414092.31	565065.70	N 32 8 18.22	W 104 15 24.02
	7133.00	49.67	316.83	7053.49	129.13	112.63	-196.07	12.37	414116.41	565040.43	N 32 8 18.46	W 104 15 24.31
	7180.00	51.99	322.85	7083.19	158.89	140.48	-219.52	11.09	414144.25	565016.98	N 32 8 18.74	W 104 15 24.59

Comments	MD (ft)	Incl (°)	Azirn Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S...)	Longitude (E/W...)
	7228.00	55.54	328.28	7111.57	192.59	172.41	-241.36	11.74	414176.18	564955.14	N 32 8 19.05	W 104 15 25.84
	7225.00	61.43	328.55	7136.13	229.00	207.25	-261.09	14.73	414211.02	564975.42	N 32 8 19.40	W 104 15 25.07
	7323.00	67.31	335.75	7156.90	269.55	246.34	-279.57	14.57	414250.11	564956.94	N 32 8 19.79	W 104 15 25.28
	7370.00	72.18	338.72	7173.16	311.63	287.14	-296.26	11.08	414290.90	564940.25	N 32 8 20.19	W 104 15 25.48
	7417.00	76.43	341.49	7185.88	355.34	329.68	-311.64	10.67	414333.44	564924.87	N 32 8 20.61	W 104 15 25.66
	7464.00	77.85	345.48	7196.34	400.22	373.60	-324.66	8.81	414377.35	564911.85	N 32 8 21.04	W 104 15 25.81
	7512.00	78.90	351.76	7206.02	446.91	419.66	-333.92	13.00	414423.42	564902.59	N 32 8 21.50	W 104 15 25.92
	7558.00	80.61	357.02	7214.39	493.14	465.68	-339.68	11.60	414469.42	564898.07	N 32 8 21.96	W 104 15 25.97
	7605.00	85.57	359.85	7219.92	538.71	511.31	-339.68	12.39	414515.05	564895.48	N 32 8 22.41	W 104 15 25.98
	7652.00	91.63	0.57	7221.07	585.48	558.27	-339.50	12.98	414562.01	564897.01	N 32 8 22.87	W 104 15 25.98
	7683.00	93.28	0.90	7219.74	616.30	589.24	-339.11	5.43	414592.97	564897.40	N 32 8 23.18	W 104 15 25.97
	7714.00	93.94	1.49	7217.79	647.06	620.17	-338.46	2.85	414623.90	564898.05	N 32 8 23.48	W 104 15 25.97
	7787.00	94.51	1.09	7212.41	719.43	692.95	-338.82	0.95	414696.68	564899.69	N 32 8 24.21	W 104 15 25.95
	7882.00	94.06	359.60	7205.31	813.76	787.68	-336.25	1.63	414791.40	564900.26	N 32 8 25.14	W 104 15 25.94
	7977.00	92.86	359.18	7199.58	908.31	882.50	-337.26	1.34	414886.21	564899.25	N 32 8 26.08	W 104 15 25.95
	8070.00	91.93	358.90	7195.69	1001.00	975.40	-338.82	1.04	414979.10	564897.69	N 32 8 27.00	W 104 15 25.97
	8166.00	91.38	358.43	7192.95	1095.77	1070.34	-341.03	0.76	415074.03	564895.48	N 32 8 27.94	W 104 15 25.99
	8259.00	91.31	357.70	7190.74	1189.62	1164.26	-344.21	0.78	415167.94	564892.31	N 32 8 28.87	W 104 15 26.03
	8353.00	91.14	357.54	7188.73	1283.50	1258.16	-348.11	0.25	415261.83	564888.40	N 32 8 29.80	W 104 15 26.07
	8447.00	91.10	357.31	7186.90	1377.41	1352.03	-352.67	0.69	415355.69	564883.84	N 32 8 30.73	W 104 15 26.13
	8540.00	91.27	357.89	7184.97	1470.33	1444.89	-357.38	0.49	415448.54	564879.13	N 32 8 31.65	W 104 15 26.18
	8635.00	91.55	358.86	7182.63	1565.17	1539.80	-360.55	1.66	415543.45	564875.96	N 32 8 32.59	W 104 15 26.22
	8728.00	92.03	359.05	7179.73	1657.91	1632.74	-362.25	0.56	415638.38	564874.27	N 32 8 33.50	W 104 15 26.23
	8823.00	91.89	358.37	7176.48	1752.66	1727.66	-364.39	0.73	415731.29	564872.13	N 32 8 34.44	W 104 15 26.26
	8917.00	91.79	0.06	7173.46	1846.36	1821.60	-366.67	1.80	415825.22	564870.84	N 32 8 35.37	W 104 15 26.27
	9012.00	91.82	1.17	7170.47	1940.86	1916.55	-364.65	1.17	415920.16	564871.86	N 32 8 36.31	W 104 15 26.26
	9107.00	92.37	0.94	7167.00	2035.28	2011.47	-362.90	0.63	416015.07	564873.61	N 32 8 37.25	W 104 15 26.24
	9202.00	92.55	0.61	7162.92	2129.72	2106.37	-361.62	0.40	416109.97	564874.89	N 32 8 38.19	W 104 15 26.21
	9296.00	92.72	0.23	7158.60	2223.20	2200.27	-360.93	0.44	416203.85	564875.58	N 32 8 39.12	W 104 15 26.21
	9390.00	92.55	359.86	7154.28	2316.75	2294.17	-360.86	0.43	416297.75	564875.65	N 32 8 40.05	W 104 15 26.21
	9483.00	92.58	359.53	7150.11	2409.35	2387.07	-361.35	0.36	416390.64	564875.16	N 32 8 40.97	W 104 15 26.22
	9577.00	92.51	358.80	7145.94	2503.01	2480.97	-362.72	0.78	416484.53	564873.79	N 32 8 41.90	W 104 15 26.23
	9671.00	92.58	358.76	7141.77	2596.72	2574.86	-364.72	0.09	416578.41	564871.79	N 32 8 42.83	W 104 15 26.26
	9766.00	92.55	358.75	7137.51	2691.43	2669.74	-366.78	0.03	416673.28	564869.73	N 32 8 43.77	W 104 15 26.28
	9859.00	92.24	358.65	7133.63	2784.16	2762.63	-368.89	0.35	416768.17	564867.62	N 32 8 44.69	W 104 15 26.30
	9953.00	91.34	359.63	7130.69	2877.87	2856.57	-370.30	1.42	416860.10	564866.21	N 32 8 45.61	W 104 15 26.32
	10048.00	90.83	359.31	7128.89	2972.57	2951.55	-371.18	0.63	416955.07	564865.33	N 32 8 46.55	W 104 15 26.33
	10142.00	90.62	358.96	7127.70	3066.33	3045.53	-372.60	0.43	417049.04	564863.92	N 32 8 47.48	W 104 15 26.34
	10236.00	90.14	358.87	7127.08	3160.11	3139.52	-374.38	0.52	417143.02	564862.14	N 32 8 48.41	W 104 15 26.36
	10330.00	90.21	359.44	7126.79	3253.87	3233.50	-375.77	0.61	417237.00	564860.75	N 32 8 49.34	W 104 15 26.38
	10424.00	90.83	0.31	7125.94	3347.53	3327.50	-375.97	1.14	417330.98	564860.54	N 32 8 50.27	W 104 15 26.38
	10519.00	91.20	359.41	7124.26	3442.18	3422.46	-376.20	1.02	417425.96	564860.31	N 32 8 51.21	W 104 15 26.38
	10613.00	91.41	358.49	7122.12	3535.94	3516.44	-377.92	1.00	417519.91	564858.59	N 32 8 52.14	W 104 15 26.40
	10706.00	91.58	358.89	7119.69	3628.72	3609.39	-380.05	0.47	417612.84	564856.47	N 32 8 53.06	W 104 15 26.43
	10799.00	91.82	0.05	7116.93	3721.40	3702.34	-380.91	1.27	417705.79	564855.61	N 32 8 53.98	W 104 15 26.43
	10894.00	91.64	0.22	7114.08	3815.98	3797.30	-380.69	0.28	417800.74	564855.83	N 32 8 54.92	W 104 15 26.43
	10988.00	91.44	0.80	7111.57	3909.55	3891.26	-380.18	0.27	417894.69	564856.34	N 32 8 55.85	W 104 15 26.42
	11083.00	91.17	359.88	7109.41	4004.15	3986.24	-379.95	0.62	417989.66	564856.57	N 32 8 56.79	W 104 15 26.42
	11177.00	91.20	359.87	7107.46	4097.80	4080.22	-380.15	0.03	418083.63	564856.36	N 32 8 57.72	W 104 15 26.42
	11273.00	91.17	357.61	7105.48	4193.57	4176.17	-382.26	2.35	418179.57	564854.25	N 32 8 58.67	W 104 15 26.45
	11367.00	91.07	355.62	7103.64	4287.52	4269.98	-387.81	2.12	418273.37	564848.71	N 32 8 59.60	W 104 15 26.45
	11462.00	91.03	355.09	7101.90	4382.50	4364.65	-395.50	0.56	418368.04	564841.01	N 32 9 0.54	W 104 15 26.60
	11555.00	90.76	356.86	7100.45	4475.47	4457.41	-402.63	1.93	418460.78	564834.49	N 32 9 1.46	W 104 15 26.67
	11650.00	91.03	358.80	7098.96	4552.32	4552.32	-405.03	2.06	418555.69	564830.89	N 32 9 2.40	W 104 15 26.72
	11719.00	91.03	358.80	7097.72	4639.18	4621.30	-407.07	0.00	418624.66	564829.45	N 32 9 3.08	W 104 15 26.73

TD project to bit

Comments MD (ft) Incl (°) Azim Grid (°) TVD (ft) VSEC (ft) NS (ft) EW (ft) DLS (ft/100ft) Northing (ftUS) Easting (ftUS) Latitude (N/S ° ° °) Longitude (E/W ° ° °)

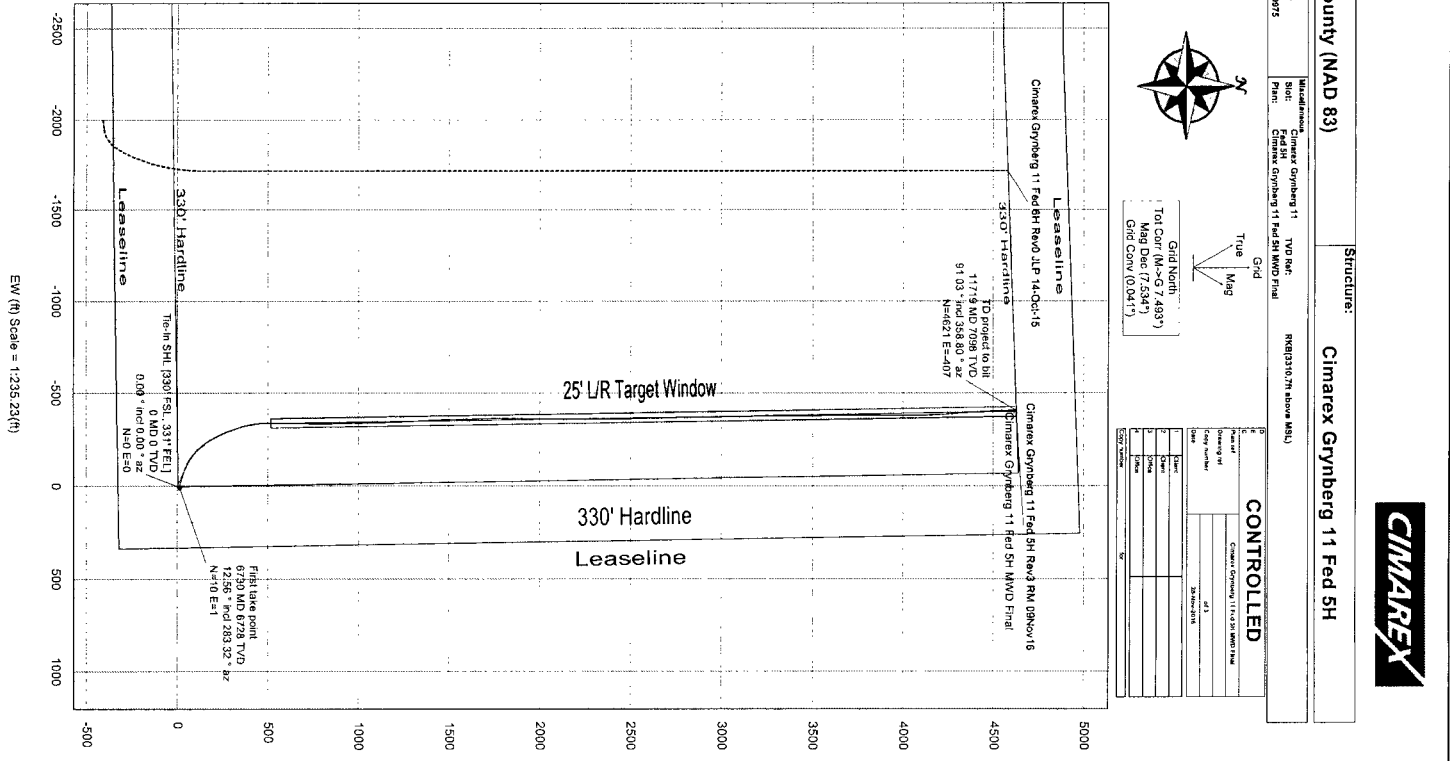
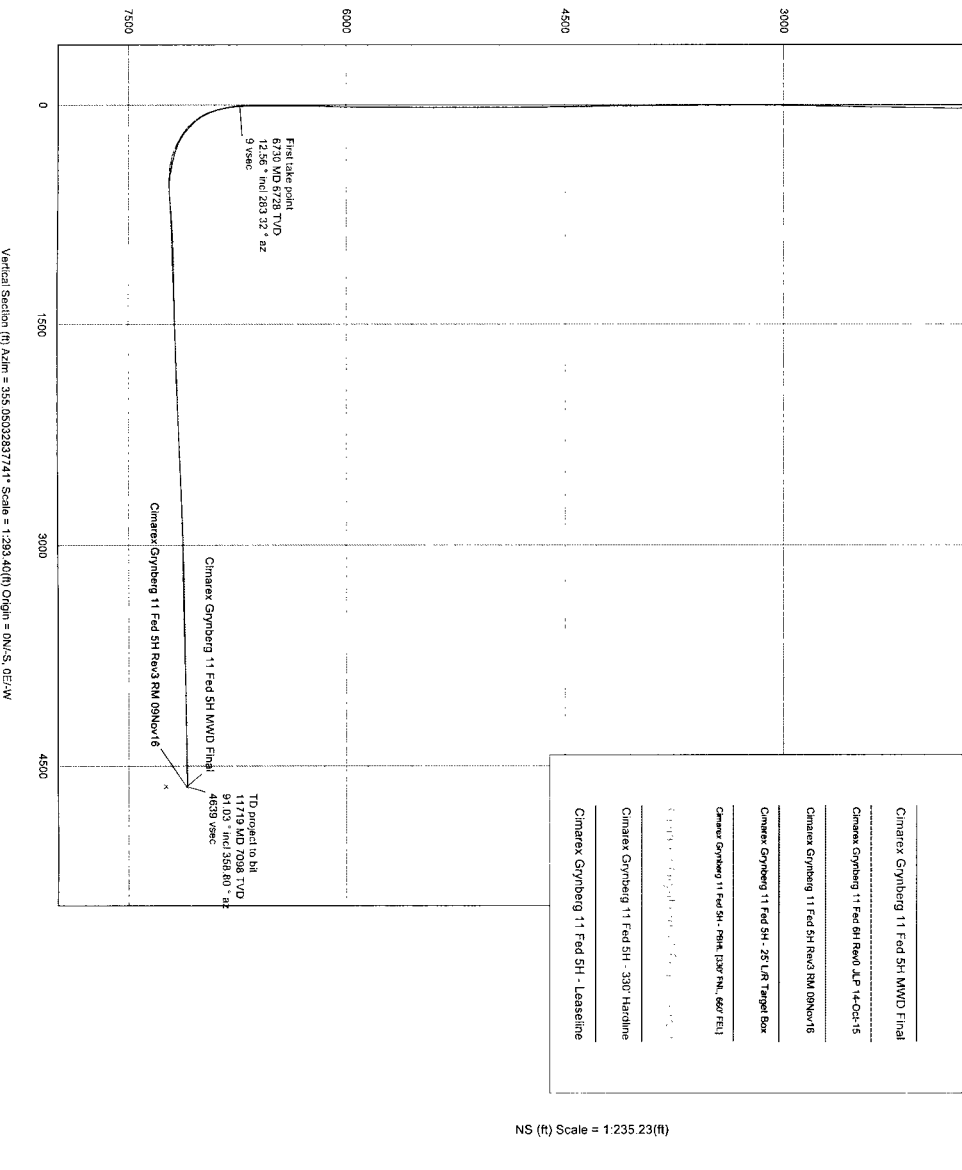
Survey Error Model: ISCWSA Rev 0 *** 3-D 95.0000% Confidence 2.7955 sigma
 Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	24.000	1/98.425	30.000	30.000	NAL_MWWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Cimarex Gynberg 11 Fed 5H MWWD Final
	1	24.000	24.000	Act Stns	30.000	30.000	NAL_MWWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Cimarex Gynberg 11 Fed 5H MWWD Final
	1	24.000	11719.000	Act Stns	30.000	30.000	NAL_MWWD_PLUS_0.5_DEG	Original Borehole / Cimarex Gynberg 11 Fed 5H MWWD Final

Borehole: **Original Borehole** Well: **Cimarex Grynberg 11 Fed 5H** Field: **NM Eddy County (NAD 83)** Structure: **Cimarex Grynberg 11 Fed 5H**

Company Magnetic Parameters	Dip:	89.888°	Date:	04-Nov-2016	Surface Location	NAD 83 State Plane, Elevation, US Feet	Grid Contour	0.0411'
Model:	NS	4679.51917'	Gravity FS:	979.52491 (9.80665 Standard)	Lat:	N 28 8 17.33	Northings:	41402.79105
Magnetics:	7.334				Lon:	W 104 15 23.14	Eastings:	36528.48105
							Scale Feet:	0.9999073
								Mag Dec:
								Grid Cont:
								Grid Cont:
								Grid Cont:

Critical Point	Critical Points							
	MD	INCL	AZIM	TVD	VSEC	N(Y)SI	E(Y)NI	DLS
Top-h SHL [330' FSU, 331' FEU]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First take point	6730.00	12.56	283.32	6728.12	9.39	9.51	0.88	14.58
TD projected to bit	11719.00	91.03	358.80	7097.72	4639.18	4621.30	-407.07	0.00



Grid North
 Top Corr (M-G 7.4837)
 Mag Dec (7.5347)
 Grid Cont (0.0411)

CONTROLLED	
Checked by:	30-Nov-2016
Drawn by:	
Scale:	
Sheet:	
Project:	
Client:	
Drawn:	
Checked:	
Scale:	
Sheet:	
Project:	
Client:	