

# Noble Energy

CO, Weld County (NAD 83 NZ)  
Sec 05 Twn 09 N Rng 58 W  
Nugent LD06-665 Original Hole  
05-123-40808  
H&P 517



## Final Survey Report

4-Aug-2016

Well Coordinates:	NAD83 Colorado State Plane, NZ, US
	N 40° 46' 52.64400"    W 103° 52' 49.18800"
	1531526.3 usFt    3448533.44 usFt
Ground Level:	4761.00 ft MSL
TVD Reference:	KB 30ft @ 4791.00 ft MSL
Local Coordinate Origin:	Nugent LD06-665 well head
Vertical Section Azimuth:	272.566 ° (Grid North)
North Reference:	Grid North

DOX Version: 2.8

<b>Borehole:</b>	<b>Well:</b>	<b>Field:</b>	<b>Structure:</b>
Original Hole / PvA	Nugent LD06-665	CO, Weld County (NAD 83 NZ)	05-09N-58W (Nugent Pad) - H&P 517

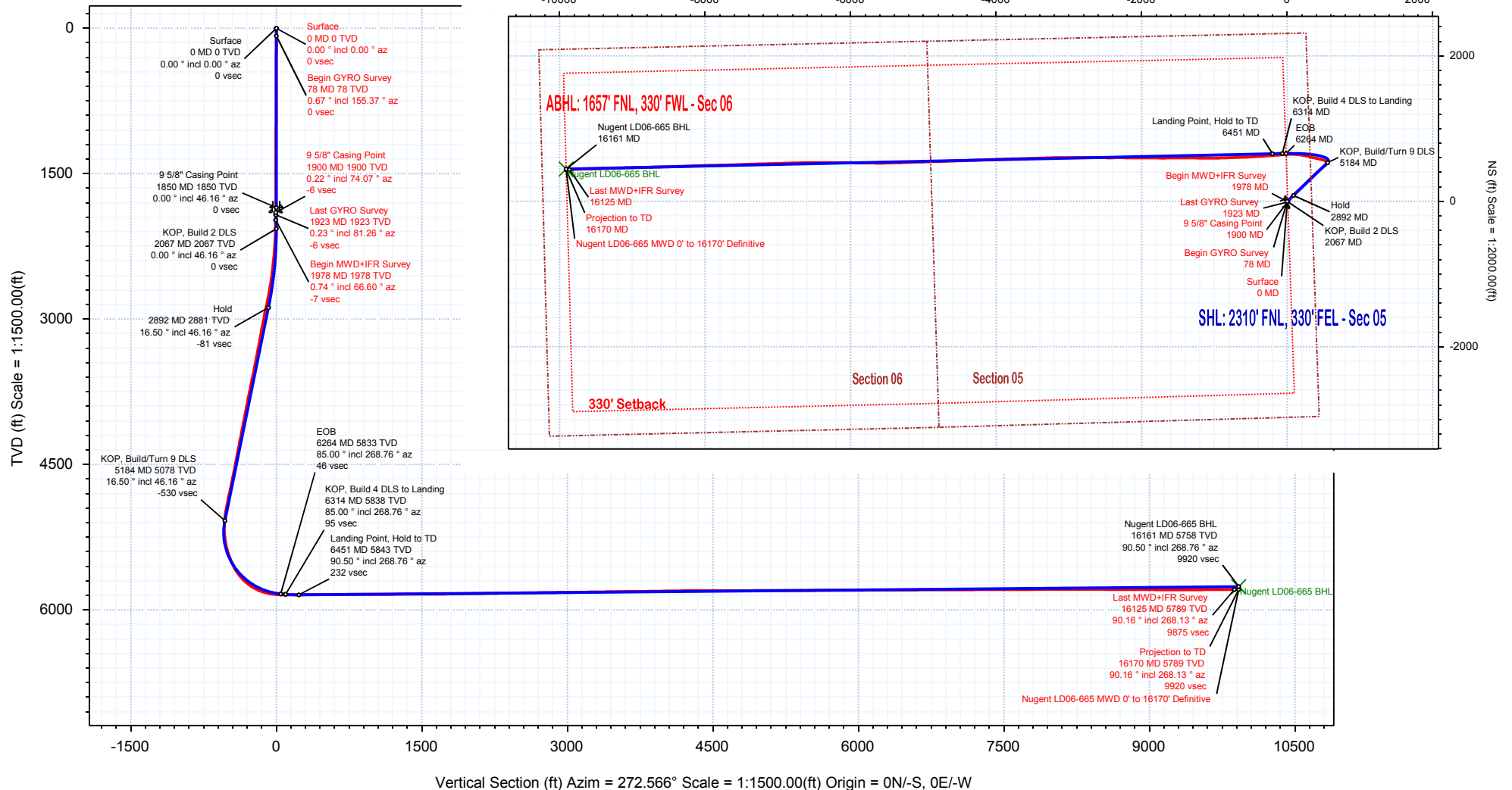
<b>Gravity &amp; Magnetic Parameters</b>	<b>Surface Location</b>	<b>NAD83 Colorado State Plane, Northern Zone, US Feet</b>	<b>Miscellaneous</b>
Model: HDGM 2016 Dip: 67.257° Date: 22-Jul-2016	Lat: N 40 46 52.64 Northing: 1531566.37ftUS Grid Conv: 1.0465°	Lon: W 103 52 49.19 Easting: 3448532.71ftUS Scale Fact: 0.99999967	Slot: Nugent LD06-665 TVD Ref: KB 30ft(4791ft above MSL)
MagDec: 7.719° FS: 52815.407nT Gravity FS: 999.096mgN (9.80665 Based)			Plan: Nugent LD06-665 MWD 0' to 16170' Definitive

Critical Points							
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)S(-)	E(+)W(-)
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin GYRO Survey	78.00	0.67	155.37	78.00	-0.21	-0.41	0.19
9 5/8" Casing Point	1900.00	0.22	74.07	1899.96	-6.16	-8.75	5.77
Last GYRO Survey	1923.00	0.23	81.26	1922.96	-6.24	-8.73	5.86
Begin MWD+IFR Survey	1978.00	0.74	66.60	1977.95	-6.67	-8.57	6.29
Last MWD+IFR Survey	16125.00	90.16	268.13	5788.96	9875.26	438.01	-9865.54
Projection to TD	16170.00	90.16	268.13	5788.83	9920.13	436.55	-9910.52



Grid North  
Tot Corr (M->G 6.672°)  
Mag Dec (7.719°)  
Grid Conv (1.047°)

EW (ft) Scale = 1:2000.00(ft)





## Nugent LD06-665 MWD 0' to 16170' Definitive Survey Geodetic Report

(Def Survey)

**Report Date:** August 04, 2016 - 09:39 AM  
**Client:** Noble Energy  
**Field:** CO, Weld County (NAD 83 NZ)  
**Structure / Slot:** Noble 05-09N-58W (Nugent Pad) - H&P 517 / Nugent LD06-665  
**Well:** Nugent LD06-665  
**Borehole:** Original Hole  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Nugent LD06-665 MWD 0' to 16170' Definitive  
**Survey Date:** July 22, 2016  
**Tort / AHD / DDI / ERD Ratio:** 194.294 ° / 11289.260 ft / 6.783 / 1.932  
**Coordinate Reference System:** NAD83 Colorado State Plane, Northern Zone, US Feet  
**Location Lat / Long:** N 40° 46' 52.64400", W 103° 52' 49.18800"  
**Location Grid N/E Y/X:** N 1531566.373 ftUS, E 3448532.706 ftUS  
**CRS Grid Convergence Angle:** 1.0465 °  
**Grid Scale Factor:** 0.99999967  
**Version / Patch:** 2.9.370.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 272.566 ° (Grid North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** KB 30ft  
**TVD Reference Elevation:** 4791.000 ft above MSL  
**Seabed / Ground Elevation:** 4761.000 ft above MSL  
**Magnetic Declination:** 7.719 °  
**Total Gravity Field Strength:** 999.0962mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 52815.407 nT  
**Magnetic Dip Angle:** 67.257 °  
**Declination Date:** July 22, 2016  
**Magnetic Declination Model:** HDGM 2016  
**North Reference:** Grid North  
**Grid Convergence Used:** 1.0465 °  
**Total Corr Mag North→Grid North:** 6.6724 °  
**Local Coord Referenced To:** Well Head

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 ° ' ")
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	1531566.37	3448532.71	N 40 46 52.64	W 103 52 49.19
Begin GYRO	78.00	0.67	155.37	78.00	-0.21	-0.41	0.19	0.86	1531565.96	3448532.90	N 40 46 52.64	W 103 52 49.19
Survey	177.00	0.76	151.91	176.99	-0.81	-1.52	0.74	0.10	1531564.85	3448533.45	N 40 46 52.63	W 103 52 49.18
	271.00	0.71	155.37	270.98	-1.39	-2.60	1.28	0.07	1531563.77	3448533.98	N 40 46 52.62	W 103 52 49.17
	366.00	0.50	165.71	365.98	-1.78	-3.54	1.62	0.25	1531562.84	3448534.33	N 40 46 52.61	W 103 52 49.17
	460.00	0.49	155.78	459.97	-2.08	-4.30	1.89	0.09	1531562.07	3448534.60	N 40 46 52.60	W 103 52 49.16
	555.00	0.42	154.49	554.97	-2.43	-4.98	2.21	0.07	1531561.39	3448534.91	N 40 46 52.59	W 103 52 49.16
	650.00	0.36	160.98	649.97	-2.70	-5.58	2.45	0.08	1531560.79	3448535.16	N 40 46 52.59	W 103 52 49.16
	744.00	0.30	163.15	743.97	-2.89	-6.10	2.62	0.07	1531560.28	3448535.33	N 40 46 52.58	W 103 52 49.16
	839.00	0.28	124.41	838.97	-3.17	-6.47	2.89	0.20	1531559.91	3448535.59	N 40 46 52.58	W 103 52 49.15
	933.00	0.27	127.55	932.96	-3.55	-6.73	3.25	0.02	1531559.64	3448535.96	N 40 46 52.58	W 103 52 49.15
	1028.00	0.21	141.31	1027.96	-3.85	-7.00	3.54	0.09	1531559.37	3448536.24	N 40 46 52.57	W 103 52 49.14
	1123.00	0.16	183.95	1122.96	-3.96	-7.27	3.64	0.15	1531559.10	3448536.34	N 40 46 52.57	W 103 52 49.14
	1217.00	0.37	132.23	1216.96	-4.19	-7.61	3.85	0.32	1531558.77	3448536.56	N 40 46 52.57	W 103 52 49.14
	1311.00	0.15	122.61	1310.96	-4.53	-7.88	4.18	0.24	1531558.50	3448536.89	N 40 46 52.57	W 103 52 49.14
	1406.00	0.45	129.57	1405.96	-4.93	-8.18	4.57	0.32	1531558.19	3448537.28	N 40 46 52.56	W 103 52 49.13
	1501.00	0.10	42.01	1500.96	-5.29	-8.36	4.92	0.48	1531558.02	3448537.62	N 40 46 52.56	W 103 52 49.13
	1563.00	0.33	156.86	1562.96	-5.40	-8.48	5.02	0.62	1531557.89	3448537.73	N 40 46 52.56	W 103 52 49.12
	1658.00	0.17	115.29	1657.96	-5.65	-8.79	5.26	0.24	1531557.58	3448537.96	N 40 46 52.56	W 103 52 49.12
	1753.00	0.06	138.85	1752.96	-5.81	-8.89	5.42	0.12	1531557.48	3448538.12	N 40 46 52.56	W 103 52 49.12
	1847.00	0.21	55.66	1846.96	-5.98	-8.83	5.59	0.22	1531557.54	3448538.30	N 40 46 52.56	W 103 52 49.12
9 5/8" Casing	1900.00	0.22	74.07	1899.96	-6.16	-8.75	5.77	0.13	1531557.63	3448538.48	N 40 46 52.56	W 103 52 49.12
Point												
Last GYRO	1923.00	0.23	81.26	1922.96	-6.24	-8.73	5.86	0.13	1531557.65	3448538.56	N 40 46 52.56	W 103 52 49.11
Survey												
Begin												
MWD+IFR	1978.00	0.74	66.60	1977.95	-6.67	-8.57	6.29	0.95	1531557.80	3448539.00	N 40 46 52.56	W 103 52 49.11
Survey												
	2073.00	2.57	45.80	2072.91	-8.68	-6.84	8.38	2.00	1531559.53	3448541.09	N 40 46 52.57	W 103 52 49.08
	2167.00	5.01	33.88	2166.70	-12.26	-1.96	12.18	2.71	1531564.41	3448544.89	N 40 46 52.62	W 103 52 49.03
	2262.00	6.96	38.56	2261.18	-17.80	5.98	18.08	2.11	1531572.36	3448550.79	N 40 46 52.70	W 103 52 48.95
	2356.00	9.12	39.00	2354.25	-25.57	16.23	26.32	2.30	1531582.60	3448559.03	N 40 46 52.80	W 103 52 48.84
	2451.00	10.53	38.40	2447.85	-35.12	28.88	36.45	1.49	1531595.25	3448569.16	N 40 46 52.92	W 103 52 48.71
	2544.00	11.79	39.43	2539.09	-45.80	42.88	47.77	1.37	1531609.25	3448580.47	N 40 46 53.06	W 103 52 48.56
	2639.00	13.93	42.51	2631.71	-58.96	58.81	61.66	2.36	1531625.18	3448594.37	N 40 46 53.21	W 103 52 48.37
	2734.00	15.34	43.36	2723.62	-74.52	76.37	78.01	1.50	1531642.75	3448610.72	N 40 46 53.38	W 103 52 48.16
	2828.00	16.71	46.59	2813.97	-92.03	94.70	96.37	1.74	1531661.08	3448629.08	N 40 46 53.56	W 103 52 47.91
	2923.00	16.35	46.72	2905.04	-110.84	113.25	116.03	0.38	1531679.63	3448648.73	N 40 46 53.74	W 103 52 47.65
	3017.00	15.86	46.84	2995.35	-129.02	131.11	135.03	0.52	1531697.48	3448667.73	N 40 46 53.91	W 103 52 47.40
	3112.00	14.98	46.46	3086.93	-146.60	148.45	153.40	0.93	1531714.82	3448686.10	N 40 46 54.08	W 103 52 47.16
	3206.00	14.79	46.59	3177.78	-163.36	165.06	170.92	0.21	1531731.44	3448703.63	N 40 46 54.24	W 103 52 46.93
	3301.00	16.10	46.07	3269.35	-180.85	182.54	189.22	1.39	1531748.91	3448721.92	N 40 46 54.41	W 103 52 46.69
	3395.00	16.01	45.89	3359.68	-198.72	200.60	207.91	0.11	1531766.97	3448740.62	N 40 46 54.59	W 103 52 46.44
	3490.00	15.79	45.47	3451.04	-216.51	218.78	226.53	0.26	1531785.16	3448759.24	N 40 46 54.76	W 103 52 46.19
	3584.00	15.52	44.89	3541.56	-233.68	236.66	244.52	0.33	1531803.04	3448777.23	N 40 46 54.94	W 103 52 45.95
	3679.00	17.23	46.67	3632.70	-252.03	255.32	263.73	1.88	1531821.70	3448796.44	N 40 46 55.12	W 103 52 45.70
	3774.00	16.73	45.95	3723.56	-271.22	274.48	283.79	0.57	1531840.86	3448816.50	N 40 46 55.30	W 103 52 45.43
	3868.00	15.67	46.34	3813.83	-289.29	292.66	302.70	1.13	1531859.03	3448835.41	N 40 46 55.48	W 103 52 45.18
	3963.00	16.33	45.53	3905.15	-307.27	310.87	321.51	0.73	1531877.24	3448854.22	N 40 46 55.66	W 103 52 44.94
	4058.00	16.06	45.11	3996.38	-325.26	329.50	340.35	0.31	1531895.87	3448873.06	N 40 46 55.84	W 103 52 44.69
	4152.00	15.51	44.96	4086.83	-342.53	347.57	358.45	0.59	1531913.94	3448891.15	N 40 46 56.01	W 103 52 44.45
	4247.00	15.86	46.93	4178.29	-360.17	365.42	376.90	0.67	1531931.79	3448909.61	N 40 46 56.19	W 103 52 44.20
	4342.00	15.20	46.51	4269.82	-377.89	382.86	395.42	0.70	1531949.23	3448928.13	N 40 46 56.35	W 103 52 43.96
	4436.00	15.94	47.36	4360.37	-395.53	400.08	413.86	0.82	1531966.46	3448946.56	N 40 46 56.52	W 103 52 43.71
	4531.00	15.16	47.13	4451.90	-413.44	417.37	432.56	0.82	1531983.74	3448965.26	N 40 46 56.69	W 103 52 43.47
	4626.00	15.63	48.09	4543.49	-431.29	434.37	451.19	0.56	1532000.74	3448983.89	N 40 46 56.85	W 103 52 43.22
	4720.00	16.45	48.89	4633.83	-449.95	451.58	470.64	0.90	1532017.95	3449003.34	N 40 46 57.02	W 103 52 42.96
	4815.00	15.40	49.57	4725.18	-468.91	468.61	490.38	1.12	1532034.98	3449023.08	N 40 46 57.18	W 103 52 42.70
	4910.00	16.26	49.61	4816.58	-487.87	485.40	510.11	0.91	1532051.78	3449042.81	N 40 46 57.35	W 103 52 42.44
	5004.00	15.94	46.99	4906.89	-506.53	502.74	529.57	0.84	1532069.11	3449062.27	N 40 46 57.52	W 103 52 42.19
	5052.00	15.32	46.56	4953.12	-515.55	511.59	538.99	1.31	1532077.96	3449071.70	N 40 46 57.60	W 103 52 42.06
	5116.00	13.61	46.37	5015.08	-526.64	522.60	550.58	2.67	1532088.97	3449083.29	N 40 46 57.71	W 103 52 41.91
	5160.00	9.97	43.68	5058.15	-532.73	528.93	556.96	8.36	1532095.30	3449089.67	N 40 46 57.77	W 103 52 41.82
	5192.00	7.90	35.33	5089.76	-535.74	532.73	560.15	7.62	1532099.10	3449092.85	N 40 46 57.81	W 103 52 41.78
	5255.00	6.71	0.33	5152.28	-537.94	539.95	562.68	7.19	1532106.32	3449095.38	N 40 46 57.88	W 103 52 41.75
	5318.00	6.57	317.13	5214.89	-535.22	546.27	560.24	7.75	1532112.64	3449092.95	N 40 46 57.94	W 103 52 41.78
	5349.00	7.51	300.83	5245.66	-532.18	548.61	557.30	7.09	1532114.98	3449090.00	N 40 46 57.96	W 103 52 41.81
	5381.00	8.81	286.17	5277.34	-527.95	550.36	553.15	7.64	1532116.74	3449085.85	N 40 46 57.98	W 103 52 41.87
	5412.00	10.72	283.05	5307.89	-522.81	551.68	548.06	6.39	1532118.05	3449080.76	N 40 46 58.00	W 103 52 41.93
	5444.00	13.10	285.96	5339.20	-516.35	553.35	541.67	7.67	1532119.72	3449074.38	N 40 46 58.01	W 103 52 42.02
	5507.00	17.71	289.35	5399.92	-500.23	558.49	525.76	7.45	1532124.86	3449058.46	N 40 46 58.07	W 103 52 42.22
	5538.00	19.41	288.63	5429.31	-490.76	561.69	516.43	5.53	1532128.07	3449049.13	N 40 46 58.10	W 103 52 42.34
	5570.00	21.49	287.90	5459.29	-480.00	565.20	505.81	6.55	1532131.57	3449038.51	N 40 46 58.14	W 103 52 42.48
	5601.00	23.21	285.93	5487.96	-468.58	568.62	494.53	6.05				

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 ° ' ")
	5814.00	43.21	284.66	5668.30	-359.70	595.21	386.73	11.70	1532161.58	3448919.44	N 40 46 58.45	W 103 52 44.02
	5909.00	52.25	284.37	5732.13	-290.99	612.80	318.75	9.52	1532179.17	3448851.45	N 40 46 58.64	W 103 52 44.90
	6004.00	62.85	280.59	5783.05	-212.13	629.94	240.58	11.65	1532196.31	3448773.28	N 40 46 58.82	W 103 52 45.91
	6098.00	73.54	276.60	5817.93	-125.48	642.85	154.41	12.03	1532209.22	3448687.12	N 40 46 58.97	W 103 52 47.03
	6193.00	82.58	269.87	5837.58	-32.69	647.99	61.76	11.77	1532214.36	3448594.47	N 40 46 59.03	W 103 52 48.23
	6224.00	85.70	268.07	5840.75	-1.92	647.44	30.94	11.60	1532213.81	3448563.64	N 40 46 59.03	W 103 52 48.63
	6298.00	90.16	265.42	5843.42	71.63	643.24	-42.87	7.01	1532209.61	3448489.83	N 40 46 59.01	W 103 52 49.59
	6393.00	90.30	266.16	5843.04	165.96	636.26	-137.61	0.79	1532202.63	3448395.09	N 40 46 58.95	W 103 52 50.83
	6487.00	90.12	265.60	5842.69	259.32	629.51	-231.37	0.63	1532195.88	3448301.34	N 40 46 58.90	W 103 52 52.05
	6582.00	90.33	266.23	5842.32	353.68	622.74	-326.13	0.70	1532189.11	3448206.58	N 40 46 58.86	W 103 52 53.28
	6676.00	90.36	266.32	5841.75	447.11	616.63	-419.93	0.10	1532183.01	3448112.78	N 40 46 58.81	W 103 52 54.50
	6771.00	90.43	266.72	5841.10	541.58	610.87	-514.75	0.43	1532177.24	3448017.96	N 40 46 58.77	W 103 52 55.73
	6866.00	90.36	268.16	5840.44	636.20	606.62	-609.65	1.52	1532173.00	3447923.06	N 40 46 58.75	W 103 52 56.97
	6960.00	90.26	267.88	5839.94	729.90	603.38	-703.59	0.32	1532169.75	3447829.12	N 40 46 58.73	W 103 52 58.19
	7055.00	90.33	268.17	5839.45	824.60	600.10	-798.53	0.31	1532166.47	3447734.17	N 40 46 58.72	W 103 52 59.42
	7150.00	90.26	268.39	5838.96	919.33	597.25	-893.49	0.24	1532163.62	3447639.22	N 40 46 58.71	W 103 53 0.66
	7244.00	90.33	270.06	5838.47	1013.17	595.98	-987.48	1.78	1532162.35	3447545.23	N 40 46 58.71	W 103 53 1.88
	7339.00	90.16	269.79	5838.07	1108.07	595.86	-1082.48	0.34	1532162.23	3447450.23	N 40 46 58.73	W 103 53 3.12
	7434.00	90.30	270.35	5837.69	1202.98	595.97	-1177.47	0.61	1532162.34	3447355.23	N 40 46 58.74	W 103 53 4.35
	7528.00	90.26	270.30	5837.23	1296.90	596.51	-1271.47	0.07	1532162.88	3447261.24	N 40 46 58.77	W 103 53 5.57
	7623.00	90.23	269.92	5836.82	1391.81	596.69	-1366.47	0.40	1532163.06	3447166.24	N 40 46 58.79	W 103 53 6.81
	7717.00	90.26	270.13	5836.42	1485.72	596.73	-1460.47	0.23	1532163.10	3447072.24	N 40 46 58.80	W 103 53 8.03
	7812.00	90.19	270.09	5836.05	1580.63	596.91	-1555.47	0.08	1532163.28	3446987.24	N 40 46 58.82	W 103 53 9.26
	7907.00	90.23	269.48	5835.70	1675.52	596.55	-1650.47	0.64	1532162.93	3446892.24	N 40 46 58.83	W 103 53 10.50
	8001.00	90.71	270.35	5834.93	1769.42	596.41	-1744.46	1.06	1532162.79	3446788.25	N 40 46 58.85	W 103 53 11.72
	8095.00	90.81	270.32	5833.68	1863.34	596.96	-1838.45	1.11	1532163.34	3446694.26	N 40 46 58.87	W 103 53 12.94
	8190.00	90.74	270.69	5832.39	1958.27	597.80	-1933.44	0.40	1532164.17	3446599.27	N 40 46 58.90	W 103 53 14.18
	8285.00	90.74	270.02	5831.17	2053.19	598.39	-2028.43	0.71	1532164.76	3446504.28	N 40 46 58.92	W 103 53 15.41
	8379.00	90.88	270.49	5829.84	2147.10	598.81	-2122.42	0.52	1532165.18	3446410.29	N 40 46 58.94	W 103 53 16.63
	8474.00	90.88	270.61	5828.38	2242.03	599.72	-2217.40	0.13	1532166.09	3446315.31	N 40 46 58.97	W 103 53 17.87
	8568.00	90.67	269.71	5827.11	2335.94	599.98	-2311.39	0.98	1532166.35	3446221.32	N 40 46 58.99	W 103 53 19.09
	8663.00	90.64	269.78	5826.02	2430.82	599.56	-2406.39	0.08	1532165.93	3446126.32	N 40 46 59.00	W 103 53 20.32
	8757.00	90.88	270.48	5824.78	2524.72	599.77	-2500.38	0.79	1532166.15	3446032.33	N 40 46 59.02	W 103 53 21.54
	8852.00	90.47	270.05	5823.66	2619.64	600.21	-2595.37	0.63	1532166.58	3445937.34	N 40 46 59.04	W 103 53 22.78
	8947.00	90.85	270.40	5822.56	2714.55	600.59	-2690.36	0.54	1532166.96	3445842.35	N 40 46 59.06	W 103 53 24.01
	9041.00	90.78	269.82	5821.22	2808.46	600.77	-2784.35	0.62	1532167.14	3445748.36	N 40 46 59.08	W 103 53 25.23
	9136.00	90.78	270.23	5819.93	2903.35	600.81	-2879.34	0.43	1532167.18	3445653.37	N 40 46 59.10	W 103 53 26.47
	9230.00	90.81	270.33	5818.63	2997.27	601.27	-2973.33	0.11	1532167.64	3445559.38	N 40 46 59.12	W 103 53 27.69
	9325.00	90.85	270.55	5817.25	3092.19	602.00	-3068.32	0.24	1532168.37	3445464.39	N 40 46 59.14	W 103 53 28.92
	9419.00	90.85	268.52	5815.86	3186.05	601.23	-3162.30	2.16	1532167.61	3445370.41	N 40 46 59.15	W 103 53 30.15
	9514.00	90.88	268.46	5814.42	3280.80	598.73	-3257.26	0.07	1532165.10	3445275.46	N 40 46 59.14	W 103 53 31.38
	9608.00	90.78	268.33	5813.06	3374.54	596.10	-3351.21	0.17	1532162.47	3445181.50	N 40 46 59.14	W 103 53 32.60
	9703.00	90.64	268.02	5811.88	3469.25	593.07	-3446.16	0.36	1532159.44	3445086.56	N 40 46 59.12	W 103 53 33.84
	9798.00	90.74	268.42	5810.74	3563.97	590.12	-3541.10	0.43	1532156.49	3444991.61	N 40 46 59.11	W 103 53 35.07
	9892.00	90.78	268.35	5809.49	3657.71	587.47	-3635.06	0.09	1532153.84	3444897.66	N 40 46 59.10	W 103 53 36.29
	9987.00	90.64	268.18	5808.32	3752.44	584.60	-3730.01	0.23	1532150.97	3444802.71	N 40 46 59.09	W 103 53 37.53
	10082.00	90.81	268.33	5807.11	3847.16	581.70	-3824.95	0.24	1532148.08	3444707.76	N 40 46 59.08	W 103 53 38.76
	10176.00	90.88	268.60	5805.73	3940.91	579.19	-3918.91	0.30	1532145.56	3444613.80	N 40 46 59.07	W 103 53 39.99
	10270.00	90.71	267.68	5804.42	4034.62	576.14	-4012.85	1.00	1532142.51	3444519.86	N 40 46 59.06	W 103 53 41.21
	10365.00	90.75	268.33	5803.21	4129.31	572.83	-4107.78	0.69	1532139.20	3444424.93	N 40 46 59.04	W 103 53 42.44
	10460.00	90.23	267.75	5802.40	4224.01	569.58	-4202.72	0.82	1532135.95	3444329.99	N 40 46 59.03	W 103 53 43.68
	10554.00	90.13	267.66	5802.10	4317.67	565.82	-4296.65	0.14	1532132.19	3444236.07	N 40 46 59.01	W 103 53 44.90
	10649.00	90.33	268.44	5801.72	4412.38	562.58	-4391.59	0.85	1532128.96	3444141.12	N 40 46 58.99	W 103 53 46.13
	10743.00	90.13	267.67	5801.35	4506.08	559.39	-4485.54	0.85	1532125.76	3444047.18	N 40 46 58.98	W 103 53 47.35
	10838.00	90.13	267.82	5801.13	4600.75	555.65	-4580.46	0.16	1532122.03	3443952.25	N 40 46 58.96	W 103 53 48.59
	10933.00	90.13	268.38	5800.91	4695.46	552.51	-4675.41	0.59	1532118.88	3443857.31	N 40 46 58.94	W 103 53 49.82
	11027.00	90.16	268.06	5800.68	4789.19	549.59	-4769.36	0.34	1532115.96	3443763.35	N 40 46 58.93	W 103 53 51.05
	11122.00	90.26	268.41	5800.33	4883.92	546.66	-4864.32	0.38	1532113.03	3443668.40	N 40 46 58.92	W 103 53 52.28
	11217.00	90.16	268.32	5799.98	4978.66	543.95	-4959.28	0.14	1532110.32	3443573.44	N 40 46 58.91	W 103 53 53.52
	11311.00	90.23	268.34	5799.66	5072.40	541.21	-5053.24	0.08	1532107.58	3443479.48	N 40 46 58.90	W 103 53 54.74
	11406.00	90.26	268.15	5799.25	5167.13	538.30	-5148.19	0.20	1532104.67	3443384.52	N 40 46 58.89	W 103 53 55.97
	11500.00	90.16	267.92	5798.91	5260.84	535.08	-5242.14	0.27	1532101.45	3443290.58	N 40 46 58.87	W 103 53 57.19
	11595.00	90.30	268.24	5798.53	5355.54	531.89	-5337.08	0.37	1532098.27	3443195.64	N 40 46 58.86	W 103 53 58.43
	11689.00	90.26	268.57	5798.07	5449.30	529.28	-5431.05	0.35	1532095.65	3443101.67	N 40 46 58.85	W 103 53 59.65
	11784.00	90.16	268.47	5797.72	5544.06	526.82	-5526.01	0.15	1532093.20	3443006.71	N 40 46 58.84	W 103 54 0.89
	11879.00	90.37	270.46	5797.28	5638.91	525.94	-5621.00	2.11	1532092.31	3442911.72	N 40 46 58.85	W 103 54 2.12
	11973.00	90.20	270.75	5796.81	5732.86	526.93	-5715.00	0.36	1532093.30	3442817.72	N 40 46 58.87	W 103 54 3.34
	12068.00	90.33	270.62	5796.37	5827.80	528.07	-5809.99	0.19	1532094.44	3442722.73	N 40 46 58.90	W 103 54 4.58
	12163.00	90.37	270.70	5795.79	5922.75	529.16	-5904.98	0.09	1532095.53	3442627.74	N 40 46 58.93	W 103 54 5.81
	12257.00	90.23	270.24	5795.30	6016.69	529.93	-5998.98	0.51	1532096.30	3442533.74	N 40 46 58.95	W 103 54 7.03
	12352.00	90.33	270.61	5794.84	6111.62	530.64	-6093.97	0.40	1532097.01	3442438.75	N 40 46 58.98	W 103 54 8.27
	12446.00	90.13	270.14	5794.46	6205.55	531.25	-6187.97	0.54	1532097.62	3442344.75	N 40 46 59.00	W 103 54 9.49
	12541.00	90.16	269.86	5794.22	6300.45	531.25	-6282.97	0.30	1532097.62	3442249.75	N 40 46 59.02	W 103 54 10.72
	12635.00	90.33	270.50	5793.82	6394.37	531.55	-6376.97	0.70	1532097.92	3442155.75	N 40 46 59.04	W 103 54 11.94
	12730.00	90.23	270.37	5793.35	6489.30	532.27	-6471.96	0.17</				

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 ° ' ")
Last MWD+IFR Survey	16041.00	90.09	268.10	5789.14	9791.51	440.78	-9781.59	0.58	1532007.15	3438751.14	N 40 46 58.74	W 103 54 56.22
Projection to TD	16125.00	90.16	268.13	5788.96	9875.26	438.01	-9865.54	0.09	1532004.39	3438667.19	N 40 46 58.73	W 103 54 57.31
	16170.00	90.16	268.13	5788.83	9920.13	436.55	-9910.52	0.00	1532002.92	3438622.21	N 40 46 58.73	W 103 54 57.89

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma  
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
Surface	1	0.000	30.000	1/98.425	13.375	9.625	NAL_NSG+MSHOT-Depth Only	Original Hole / Nugent LD06-665 MWD 0' to 16170' Definitive
Surface	1	30.000	1923.000	Act Stns	13.375	9.625	NAL_NSG+MSHOT	Original Hole / Nugent LD06-665 MWD 0' to 16170' Definitive
*Intermediate/Lateral	1	1923.000	16170.000	Act Stns	8.500	7.000	NAL_MWD_IFR1+MS * NAL_MWD_IFR+MS = MWD+IFR1+MS_WY	Original Hole / Nugent LD06-665 MWD 0' to 16170' Definitive