

Noble Energy

CO, Weld County (NAD 83 NZ)
Sec 10 Twn 02 N Rng 64 W
Oscar Y11-79HN Original Hole
05-123-37943
H&P 277



A Schlumberger Company

Final Survey Report

7-Jan-2015

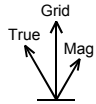
Well Coordinates:	NAD83 Colorado State Plane, NZ, US Feet
	N 40° 9' 7.99200" W 104° 31' 51.27600"
	1299777.27 usFt 3270882.66 usFt
Ground Level:	4929.00 ft MSL
TVD Reference:	KB 24ft @ 4953.00 ft MSL
Local Coordinate Origin:	Oscar Y11-79HN well head
Vertical Section Azimuth:	3.682 ° (Grid North)
North Reference:	Grid North

DOX Version: 2.8

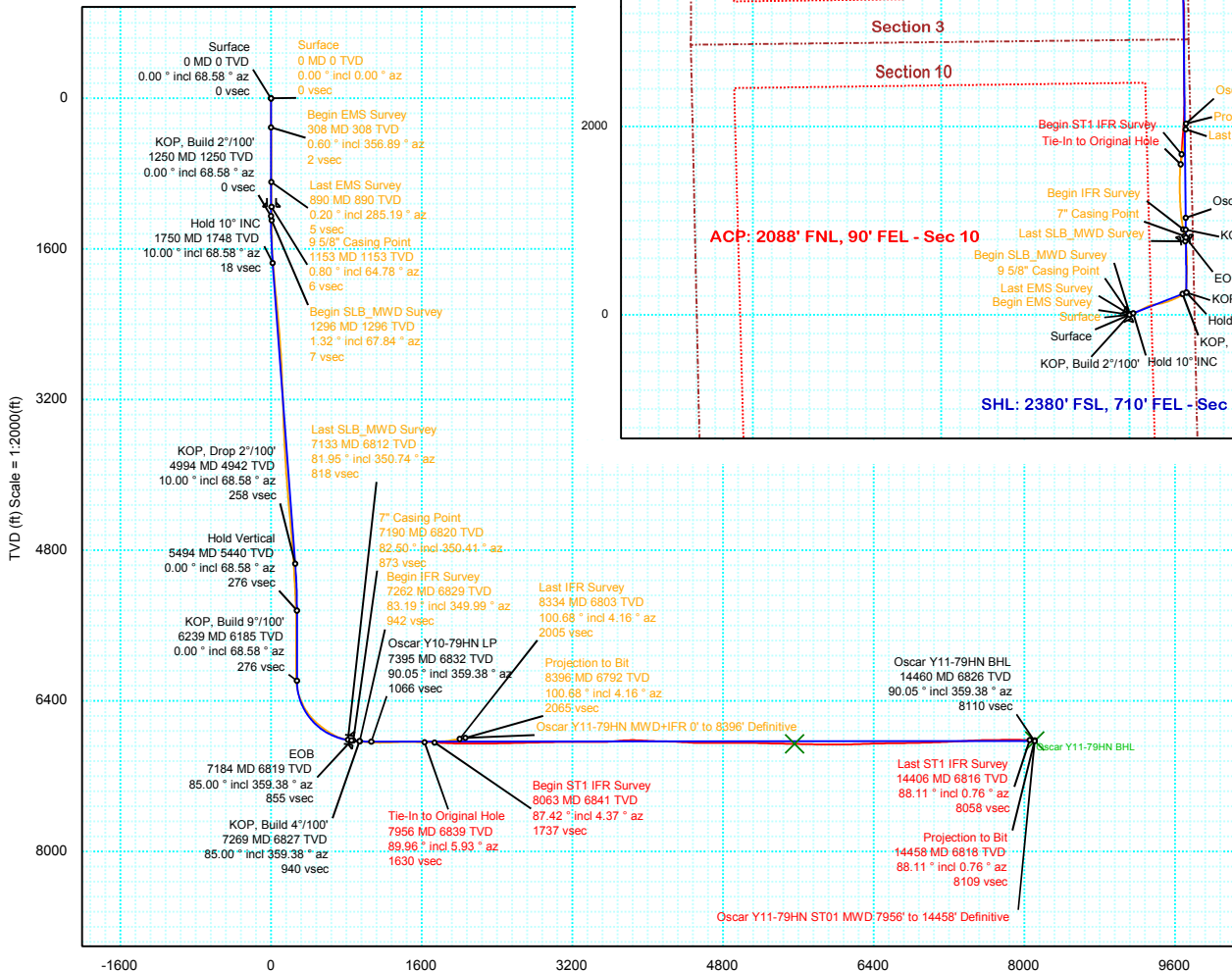
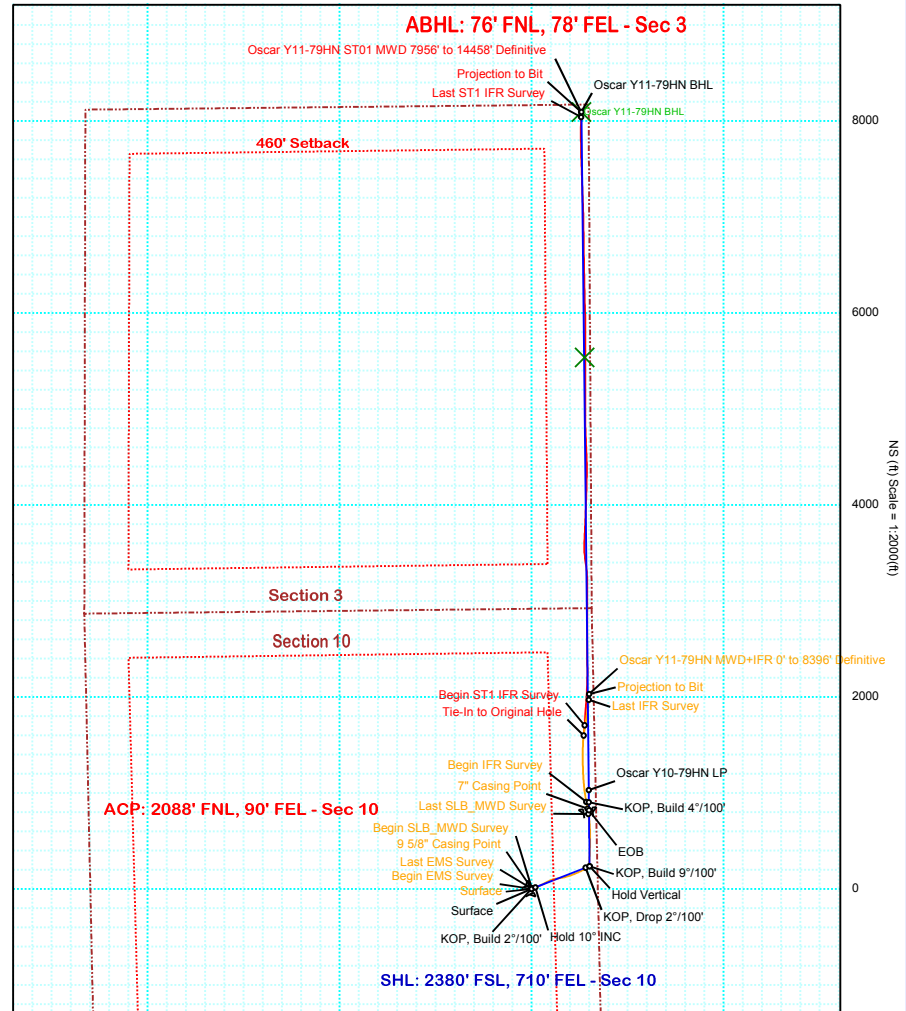
Borehole:	Well:	Field:	Structure:
ST01	Oscar Y11-79HN	CO, Weld County (NAD 83 NZ)	Noble 10-02N-64W (Oscar Y10-73HN Pad) - H&P 277
Gravity & Magnetic Parameters		Surface Location	Miscellaneous
Model: BGGM 2014 Dip: 66.759° Date: 25-Dec-2014		NAD83 Colorado State Plane, Northern Zone, US Feet	Slot: Oscar Y11-79HN TVD Ref: RKB(4953ft above MSL)
MagDec: 8.345° FS: 52538.057nT Gravity FS: 999.008mgn (9.80665 Based)		Lat: N 40 9 7.99 Northing: 1299778.09ftU Grid Conv: 0.6263°	Plan: Oscar Y11-79HN ST01 MWD 7956' to 14458' Definitive
		Lon: W 104 31 50.30 Easting: 3270958.13ftU Scale Fact: 0.99995832	

PvA

EW (ft) Scale = 1:2000(ft)



Grid North
Tot Corr (M->G 7.719°)
Mag Dec (8.345°)
Grid Conv (0.626°)



Vertical Section (ft) Azim = 3.682° Scale = 1:2000(ft) Origin = 0N/-S, 0E/-W



Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive Survey Geodetic Report

(Def Survey)

Report Date: January 06, 2015 - 01:16 PM
Client: Noble Energy
Field: CO, Weld County (NAD 83 NZ)
Structure / Slot: Noble 10-02N-64W (Oscar Y10-73HN Pad) - H&P 277 / Oscar Y11-79HN
Well: Oscar Y11-79HN
Borehole: Original Hole
UWI / API#: Unknown / Unknown
Survey Name: Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive
Survey Date: December 23, 2014
Tort / AHD / DDI / ERD Ratio: 168.701 ° / 2467.212 ft / 5.708 / 0.361
Coordinate Reference System: NAD83 Colorado State Plane, Northern Zone, US Feet
Location Lat / Long: N 40° 9' 7.99200", W 104° 31' 50.30400"
Location Grid N/E Y/X: N 1299778.094 ftUS, E 3270958.127 ftUS
CRS Grid Convergence Angle: 0.6263 °
Grid Scale Factor: 0.99995832
Version / Patch: 2.8.572.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 3.682 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: KB 24ft
TVD Reference Elevation: 4953.000 ft above MSL
Seabed / Ground Elevation: 4929.000 ft above MSL
Magnetic Declination: 8.345 °
Total Gravity Field Strength: 999.0079mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 52538.796 nT
Magnetic Dip Angle: 66.759 °
Declination Date: December 23, 2014
Magnetic Declination Model: BGGM 2014
North Reference: Grid North
Grid Convergence Used: 0.6263 °
Total Corr Mag North->Grid North: 7.7189 °
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	1299778.09	3270958.13	N 40 9 7.99	W 104 31 50.30
Begin EMS	308.00	0.60	356.89	307.99	1.60	1.61	-0.09	0.19	1299779.70	3270958.04	N 40 9 8.01	W 104 31 50.30
Survey	604.00	0.40	30.79	603.98	4.06	4.05	0.36	0.12	1299782.14	3270958.48	N 40 9 8.03	W 104 31 50.30
Last EMS	890.00	0.20	285.19	889.98	5.05	5.03	0.39	0.17	1299783.13	3270958.51	N 40 9 8.04	W 104 31 50.30
Survey	1153.00	0.80	64.78	1152.97	6.03	5.94	1.61	0.37	1299784.03	3270959.73	N 40 9 8.05	W 104 31 50.28
9 5/8" Casing												
Point												
Begin												
SLB_MWD	1296.00	1.32	67.84	1295.95	7.23	6.98	4.03	0.37	1299785.08	3270962.16	N 40 9 8.06	W 104 31 50.25
Survey												
	1390.00	4.66	85.92	1389.81	8.22	7.66	8.85	3.65	1299785.76	3270966.97	N 40 9 8.07	W 104 31 50.19
	1483.00	6.51	85.62	1482.36	9.47	8.34	17.87	1.99	1299786.43	3270976.00	N 40 9 8.07	W 104 31 50.07
	1577.00	7.30	80.49	1575.68	11.58	9.73	29.08	1.07	1299787.82	3270987.20	N 40 9 8.08	W 104 31 49.93
	1670.00	7.91	68.16	1667.87	15.68	13.09	40.84	1.87	1299791.18	3270998.97	N 40 9 8.12	W 104 31 49.78
	1764.00	10.46	64.14	1760.66	22.68	19.22	54.53	2.80	1299797.31	3271012.65	N 40 9 8.18	W 104 31 49.60
	1859.00	10.73	65.53	1854.04	31.10	26.64	70.34	0.39	1299804.73	3271028.46	N 40 9 8.25	W 104 31 49.39
	2049.00	10.90	65.99	2040.66	47.79	41.28	102.85	0.10	1299819.37	3271060.97	N 40 9 8.39	W 104 31 48.97
	2143.00	10.20	63.73	2133.07	56.08	48.58	118.43	0.86	1299826.67	3271076.55	N 40 9 8.46	W 104 31 48.77
	2333.00	10.29	59.36	2320.05	74.05	64.67	148.11	0.41	1299842.76	3271106.23	N 40 9 8.62	W 104 31 48.39
	2523.00	8.62	66.62	2507.47	90.10	78.97	175.79	1.08	1299857.06	3271133.91	N 40 9 8.75	W 104 31 48.03
	2712.00	8.53	63.50	2694.35	103.59	90.85	201.33	0.25	1299868.94	3271159.45	N 40 9 8.87	W 104 31 47.70
	2901.00	8.18	78.57	2881.37	114.14	99.77	227.06	1.17	1299877.86	3271185.18	N 40 9 8.95	W 104 31 47.37
	3091.00	8.62	78.39	3069.33	121.42	105.31	254.26	0.23	1299883.40	3271212.37	N 40 9 9.01	W 104 31 47.01
	3280.00	8.09	80.25	3256.33	128.25	110.41	281.24	0.31	1299888.50	3271239.35	N 40 9 9.05	W 104 31 46.67
	3470.00	7.83	81.89	3444.50	134.00	114.50	307.23	0.18	1299892.59	3271265.34	N 40 9 9.09	W 104 31 46.33
	3565.00	9.50	78.61	3538.41	137.36	116.96	321.32	1.83	1299895.05	3271279.43	N 40 9 9.11	W 104 31 46.15
	3659.00	9.32	77.85	3631.14	141.45	120.10	336.36	0.23	1299898.19	3271294.48	N 40 9 9.14	W 104 31 45.96
	3754.00	10.02	73.11	3724.79	146.45	124.12	351.79	1.12	1299902.21	3271309.90	N 40 9 9.18	W 104 31 45.76
	3848.00	9.85	74.37	3817.39	151.99	128.66	367.36	0.29	1299906.75	3271325.47	N 40 9 9.22	W 104 31 45.56
	3943.00	10.82	72.96	3910.84	157.83	133.46	383.71	1.06	1299911.55	3271341.82	N 40 9 9.27	W 104 31 45.34
	4038.00	11.78	73.08	4004.00	164.40	138.90	401.52	1.01	1299916.99	3271359.62	N 40 9 9.32	W 104 31 45.11
	4132.00	11.08	68.36	4096.14	171.64	145.02	419.09	1.24	1299923.11	3271377.20	N 40 9 9.38	W 104 31 44.89
	4227.00	10.82	68.30	4189.41	179.36	151.69	435.86	0.27	1299929.77	3271393.97	N 40 9 9.44	W 104 31 44.67
	4321.00	11.26	67.17	4281.67	187.24	158.51	452.52	0.52	1299936.60	3271410.63	N 40 9 9.51	W 104 31 44.45
	4416.00	11.26	68.53	4374.84	195.32	165.50	469.70	0.28	1299943.59	3271427.80	N 40 9 9.58	W 104 31 44.23
	4511.00	10.46	64.62	4468.14	203.45	172.59	486.12	1.14	1299950.68	3271444.23	N 40 9 9.64	W 104 31 44.02
	4701.00	9.94	64.01	4655.14	219.95	187.17	516.44	0.28	1299965.26	3271474.55	N 40 9 9.79	W 104 31 43.63
	4795.00	9.41	62.98	4747.80	227.89	194.22	530.58	0.59	1299972.30	3271488.69	N 40 9 9.85	W 104 31 43.44
	4890.00	8.53	65.57	4841.64	235.18	200.66	543.92	1.02	1299978.75	3271502.02	N 40 9 9.92	W 104 31 43.27
	5079.00	7.03	69.75	5028.89	246.47	210.46	567.53	0.85	1299988.55	3271525.63	N 40 9 10.01	W 104 31 42.97
	5174.00	6.95	68.07	5123.19	251.32	214.62	578.32	0.23	1299992.70	3271536.42	N 40 9 10.05	W 104 31 42.83
	5269.00	5.72	65.94	5217.60	256.00	218.70	587.97	1.32	1299996.78	3271546.07	N 40 9 10.09	W 104 31 42.70
	5363.00	4.31	54.74	5311.24	260.40	222.65	595.13	1.82	1300000.73	3271553.23	N 40 9 10.13	W 104 31 42.61
	5458.00	2.90	41.51	5406.06	264.55	226.51	599.64	1.71	1300004.59	3271557.74	N 40 9 10.17	W 104 31 42.55
	5553.00	1.49	4.49	5500.99	267.68	229.54	601.33	2.03	1300007.62	3271559.43	N 40 9 10.20	W 104 31 42.53
	5648.00	0.79	261.02	5595.98	268.77	230.67	600.78	1.94	1300008.75	3271558.88	N 40 9 10.21	W 104 31 42.53
	5742.00	0.35	242.18	5689.97	268.48	230.43	599.89	0.50	1300008.52	3271557.99	N 40 9 10.20	W 104 31 42.55
	5837.00	0.35	210.03	5784.97	268.07	230.04	599.48	0.20	1300008.13	3271557.58	N 40 9 10.20	W 104 31 42.55
	5932.00	0.26	282.71	5879.97	267.84	229.84	599.13	0.39	1300007.93	3271557.23	N 40 9 10.20	W 104 31 42.56
	6026.00	0.44	316.04	5973.97	268.12	230.15	598.67	0.28	1300008.23	3271556.77	N 40 9 10.20	W 104 31 42.56
	6121.00	0.18	331.71	6068.96	268.49	230.54	598.35	0.29	1300008.63	3271556.45	N 40 9 10.21	W 104 31 42.57
	6216.00	0.26	29.58	6163.96	268.81	230.86	598.38	0.24	1300008.95	3271556.48	N 40 9 10.21	W 104 31 42.57
	6310.00	10.02	2.14	6257.47	277.20	239.24	598.79	10.41	1300017.32	3271556.89	N 40 9 10.29	W 104 31 42.56
	6405.00	18.73	5.23	6349.41	300.75	262.73	600.50	9.20	1300040.82	3271558.60	N 40 9 10.52	W 104 31 42.53
	6500.00	26.47	4.67	6437.05	337.22	299.08	603.62	8.15	1300077.16	3271561.72	N 40 9 10.88	W 104 31 42.49
	6595.00	34.38	2.57	6518.91	385.29	347.05	606.55	8.40	1300125.13	3271564.65	N 40 9 11.36	W 104 31 42.44
	6689.00	42.74	1.70	6592.35	443.81	405.55	608.69	8.91	1300183.63	3271566.79	N 40 9 11.93	W 104 31 42.41
	6784.00	50.91	1.80	6657.29	512.99	474.74	610.80	8.60	1300252.82	3271568.90	N 40 9 12.62	W 104 31 42.37
	6879.00	56.10	359.08	6713.78	589.20	551.07	611.33	5.93	1300329.15	3271569.43	N 40 9 13.37	W 104 31 42.35
	6973.00	61.38	357.99	6762.54	669.19	631.37	609.25	5.70	1300409.44	3271567.35	N 40 9 14.16	W 104 31 42.37
	7068.00	73.95	352.54	6798.60	755.88	718.71	601.83	14.25	1300496.77	3271559.93	N 40 9 15.03	W 104 31 42.45
Last SLB_MWD												
Survey	7133.00	81.95	350.74	6812.16	817.99	781.55	592.58	12.60	1300559.61	3271550.68	N 40 9 15.65	W 104 31 42.56
7" Casing Point												
Begin IFR	7190.00	82.50	350.41	6819.87	872.99	837.26	583.33	1.12	1300615.32	3271541.43	N 40 9 16.20	W 104 31 42.67
Survey	7262.00	83.19	349.99	6828.84	942.46	907.66	571.17	1.12	1300685.71	3271529.27	N 40 9 16.90	W 104 31 42.82
	7294.00	83.01	350.08	6832.68	973.33	938.94	565.67	0.63	1300717.00	3271523.78	N 40 9 17.21	W 104 31 42.89
	7388.00	86.79	353.45	6841.04	1064.91	1031.58	552.28	5.38	1300809.63	3271510.38	N 40 9 18.13	W 104 31 43.05
	7483.00	90.04	355.91	6843.67	1158.69	1126.11	543.47	4.29	1300904.16	3271501.58	N 40 9 19.06	W 104 31 43.15
	7578.00	92.68	357.67	6841.41	1252.96	1220.92	538.16	3.34	1300998.97	3271496.26	N 40 9 20.00	W 104 31 43.20
	7673.00	91.89	358.81	6837.62	1347.46	1315.80	535.24	1.46	1301093.84	3271493.34	N 40 9 20.94	W 104 31 43.23
	7767.00	91.10	0.48	6835.17	1441.19	1409.76	534.66	1.96	1301187.80	3271492.76	N 40 9 21.86	W 104 31 43.22
	7862.00	87.41	2.46	6836.41	1536.09	1504.70	537.10	4.41	1301282.73	3271495.20	N 40 9 22.80	W 104 31 43.18
	7956.00	89.96	5.93	6838.56	1630.04	1598.40	543.97	4.58	1301376.43	3271502.07	N 40 9 23.73	W 104 31 43.07
	8051.00	93.39	9.85	6835.79	1724.71	1692.43	557.00	5.48	1301470.45	3271515.10	N 40 9 24.66	W 104 31 42.89

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 ° ' ")
	8240.00	98.84	7.71	6819.39	1911.97	1878.11	587.62	5.77	1301656.13	3271545.72	N 40 9 26.49	W 104 31 42.47
Last IFR Survey	8334.00	100.68	4.16	6803.45	2004.52	1970.24	597.21	4.21	1301748.24	3271555.31	N 40 9 27.40	W 104 31 42.34
Projection to Bit	8396.00	100.68	4.16	6791.96	2065.44	2031.00	601.63	0.00	1301809.01	3271559.73	N 40 9 28.00	W 104 31 42.27

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	24.000	Act Stns	13.750	9.625	SLB_EMS-STD-Depth Only	Original Hole / Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive
Surface	1	24.000	890.000	Act Stns	13.750	9.625	SLB_EMS-STD	Original Hole / Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive
Intermediate	1	890.000	7133.000	Act Stns	8.750	7.000	SLB_MWD-STD	Original Hole / Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive
* Lateral	1	7133.000	8334.000	Act Stns	6.125	4.500	SLB_MWD+IFR1+MS	Original Hole / Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive
Bit Projection	1	8334.000	8396.000	Act Stns	6.125	4.500	SLB_BLIND+TREND	Original Hole / Oscar Y11-79HN MWD+IFR 0' to 8396' Definitive

* SLB_MWD+IFR+MS =
MWD+IFR1+MS_WY