

Report Date: March 30, 2006 Client: Noble Energy, Inc. Field: CO, Garfield County (NAD 27 CZ) Noble Energy 2005 Structure / Slot: Noble 01-8S-96W (Cass 1-52 Pad) Patterson 166 / CassDuncan 1-32A Well: CassDuncan 1-32A Borehole: Original Hole (No Plat) UWI/API#: Survey Name / Date: CassDuncan 1-32A Final Surveys / February 17, 2006 Tort / AHD / DDI / ERD ratio: 47.055° / 583.43 ft / 4.441 / 0.087 Grid Coordinate System: NAD27 Colorado State Planes, Central Zone, US Feet Location Lat/Long: N 39 23 1.656, W 108 3 20.952 Location Grid N/E Y/X: N 574827.300 US, E 1277673.200 ftUS Grid Convergence Angle: -1.61192897° Grid Scale Factor: 0.99994806	Survey / DLS Computation Method: Minimum Curvature / Lubinski Vertical Section Azimuth: 149.230° Vertical Section Origin: N 0.000 ft, E 0.000 ft TVD Reference Datum: RKB TVD Reference Elevation: 5974.8 ft relative to MSL Sea Bed / Ground Level Elevation: 5954.300 ft relative to MSL Magnetic Declination: 11.048° Total Field Strength: 52716.979 nT Magnetic Dip: 65.813° Declination Date: March 30, 2006 Magnetic Declination Model: BGM 2005 North Reference: Grid North Total Corr Mag North -> Grid North: +12.660° Local Coordinates Referenced To: Well Head
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Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	DLS (deg/100 ft)	Northing (ftUS)	Easting (ftUS)	Latitude	Longitude
Tie-In/Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	574827.30	1277673.20	N 39 23 1.656	W 108 3 20.952
Begin Gyro Surveys	20.00	0.25	236.61	20.00	0.00	-0.02	-0.04	1.25	574827.28	1277673.16	N 39 23 1.656	W 108 3 20.952
	50.00	0.25	197.61	50.00	0.05	-0.12	-0.11	0.56	574827.18	1277673.09	N 39 23 1.655	W 108 3 20.953
	79.00	1.00	187.61	79.00	0.29	-0.43	-0.16	2.60	574826.87	1277673.04	N 39 23 1.652	W 108 3 20.954
	110.00	2.50	160.61	109.98	1.16	-1.34	0.03	5.39	574825.96	1277673.23	N 39 23 1.643	W 108 3 20.951
	141.00	4.00	157.61	140.93	2.90	-2.98	0.66	4.87	574824.32	1277673.86	N 39 23 1.627	W 108 3 20.942
	172.00	4.75	136.61	171.84	5.22	-4.91	1.96	5.66	574822.39	1277675.16	N 39 23 1.608	W 108 3 20.925
	202.00	5.50	116.61	201.73	7.64	-6.46	4.09	6.42	574820.84	1277677.29	N 39 23 1.593	W 108 3 20.897
	233.00	6.00	112.61	232.57	10.19	-7.74	6.92	2.07	574819.56	1277680.12	N 39 23 1.582	W 108 3 20.861
	264.00	5.75	108.61	263.41	12.67	-8.86	9.89	1.55	574818.44	1277683.08	N 39 23 1.571	W 108 3 20.823
	295.00	6.00	113.61	294.24	15.17	-10.01	12.84	1.84	574817.29	1277686.04	N 39 23 1.561	W 108 3 20.785
	373.00	6.00	117.61	371.82	21.95	-13.53	20.19	0.54	574813.77	1277693.39	N 39 23 1.528	W 108 3 20.690
	443.00	6.15	115.28	441.42	28.18	-16.83	26.82	0.41	574810.47	1277700.02	N 39 23 1.497	W 108 3 20.604
Last Gyro	496.00	6.75	116.61	494.09	33.16	-19.43	32.17	1.17	574807.87	1277705.37	N 39 23 1.473	W 108 3 20.535
Begin SLB MWD	566.00	6.94	111.97	563.59	39.99	-22.86	39.77	0.84	574804.44	1277712.97	N 39 23 1.441	W 108 3 20.437
	659.00	7.21	112.05	655.88	49.11	-27.15	50.39	0.29	574800.15	1277723.59	N 39 23 1.402	W 108 3 20.301
	751.00	7.62	113.39	747.11	58.66	-31.74	61.34	0.48	574795.56	1277734.54	N 39 23 1.360	W 108 3 20.160
	843.00	8.04	114.59	838.25	68.89	-36.84	72.79	0.49	574790.46	1277745.99	N 39 23 1.312	W 108 3 20.012
	935.00	8.12	116.76	929.34	79.67	-42.44	84.44	0.34	574784.86	1277757.64	N 39 23 1.260	W 108 3 19.862
	1065.00	6.53	125.85	1058.28	94.20	-50.91	98.63	1.51	574776.40	1277771.83	N 39 23 1.181	W 108 3 19.678
	1219.00	6.91	136.05	1211.23	111.26	-62.70	112.16	0.81	574764.60	1277785.36	N 39 23 1.068	W 108 3 19.502
	1410.00	7.57	141.70	1400.71	134.92	-80.85	127.93	0.51	574746.45	1277801.13	N 39 23 0.893	W 108 3 19.294
	1473.00	7.95	139.85	1463.13	143.33	-87.44	133.32	0.72	574739.87	1277806.51	N 39 23 0.829	W 108 3 19.223
8 5/8" Casing Point	1533.00	8.81	139.74	1522.49	151.96	-94.12	138.96	1.44	574733.19	1277812.15	N 39 23 0.765	W 108 3 19.149
	1574.00	9.40	139.68	1562.97	158.36	-99.06	143.16	1.44	574728.24	1277816.35	N 39 23 0.717	W 108 3 19.094
	1678.00	6.96	139.88	1665.91	172.95	-110.36	152.71	2.35	574716.95	1277825.91	N 39 23 0.608	W 108 3 18.968
	1763.00	6.71	140.93	1750.30	182.95	-118.15	159.16	0.33	574709.15	1277832.35	N 39 23 0.533	W 108 3 18.883
	1962.00	6.70	143.07	1947.94	205.99	-136.46	173.46	0.13	574690.85	1277846.66	N 39 23 0.356	W 108 3 18.695
	2124.00	5.76	147.95	2108.98	223.52	-150.90	183.46	0.67	574676.40	1277856.65	N 39 23 0.216	W 108 3 18.562
	2302.00	5.21	145.93	2286.17	240.52	-165.17	192.72	0.33	574662.14	1277865.91	N 39 23 0.078	W 108 3 18.439
	2504.00	6.78	145.74	2487.06	261.57	-182.62	204.58	0.78	574644.69	1277877.76	N 39 22 59.909	W 108 3 18.282
	2727.00	6.17	147.58	2708.63	286.69	-203.62	218.41	0.29	574623.69	1277891.60	N 39 22 59.705	W 108 3 18.099
	2917.00	5.26	149.61	2897.69	305.61	-219.75	228.29	0.49	574607.56	1277901.48	N 39 22 59.549	W 108 3 17.967
	3108.00	6.43	166.46	3087.71	324.58	-237.70	235.22	1.08	574589.61	1277908.41	N 39 22 59.373	W 108 3 17.872
	3266.00	7.87	168.85	3244.47	343.22	-256.92	239.39	0.93	574570.40	1277912.58	N 39 22 59.184	W 108 3 17.812
	3402.00	7.84	167.72	3379.20	360.79	-275.12	243.16	0.12	574552.20	1277916.35	N 39 22 59.006	W 108 3 17.758
	3583.00	7.89	168.96	3558.49	384.19	-299.37	248.17	0.10	574527.94	1277921.35	N 39 22 58.767	W 108 3 17.685
	3775.00	6.75	171.11	3748.93	407.07	-323.46	252.43	0.61	574503.86	1277925.62	N 39 22 58.531	W 108 3 17.622
	3870.00	5.54	180.85	3843.38	416.15	-333.56	253.23	1.68	574493.76	1277926.41	N 39 22 58.431	W 108 3 17.609
	3965.00	4.91	168.26	3937.99	423.90	-342.12	253.99	1.37	574485.19	1277927.17	N 39 22 58.347	W 108 3 17.596
	4060.00	3.54	164.21	4032.73	430.58	-348.93	255.61	1.48	574478.39	1277928.80	N 39 22 58.280	W 108 3 17.573
	4156.00	2.32	169.04	4128.60	435.27	-353.69	256.79	1.30	574473.63	1277929.97	N 39 22 58.233	W 108 3 17.556
	4251.00	0.79	195.99	4223.57	437.53	-356.20	256.97	1.74	574471.12	1277930.16	N 39 22 58.208	W 108 3 17.553
	4346.00	0.67	225.44	4318.56	438.11	-357.22	256.40	0.41	574470.10	1277929.58	N 39 22 58.198	W 108 3 17.560
	4568.00	1.35	255.90	4540.52	437.67	-358.77	252.94	0.38	574468.55	1277926.12	N 39 22 58.182	W 108 3 17.603
	4727.00	1.34	281.20	4699.48	435.89	-358.87	249.30	0.37	574468.45	1277922.48	N 39 22 58.180	W 108 3 17.650
	4917.00	1.61	263.50	4889.42	433.30	-358.74	244.46	0.28	574468.58	1277917.65	N 39 22 58.180	W 108 3 17.711
	5108.00	2.08	251.36	5080.32	431.47	-360.15	238.51	0.32	574467.17	1277911.70	N 39 22 58.164	W 108 3 17.787
	5298.00	1.85	226.83	5270.21	431.41	-363.35	233.01	0.45	574463.97	1277906.20	N 39 22 58.131	W 108 3 17.855
	5489.00	2.55	210.91	5461.07	434.08	-369.10	228.58	0.48	574458.22	1277901.77	N 39 22 58.073	W 108 3 17.910
	5679.00	3.72	214.27	5650.78	438.69	-377.82	222.94	0.62	574449.50	1277896.13	N 39 22 57.985	W 108 3 17.978
	5870.00	3.50	213.10	5841.40	443.87	-387.83	216.26	0.12	574439.49	1277889.45	N 39 22 57.885	W 108 3 18.060
	6061.00	3.70	220.76	6032.03	448.39	-397.38	209.06	0.27	574429.94	1277882.25	N 39 22 57.788	W 108 3 18.148
	6251.00	4.06	228.68	6221.59	451.57	-406.47	200.00	0.34	574420.86	1277873.19	N 39 22 57.696	W 108 3 18.260

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	DLS (deg/100 ft)	Northing (ftUS)	Easting (ftUS)	Latitude	Longitude
	6412.00	4.31	228.79	6382.17	453.71	-414.21	191.17	0.16	574413.11	1277864.36	N 39 22 57.617	W 108 3 18.370
Last SLB MWD	6670.00	4.54	227.16	6639.40	457.60	-427.54	176.39	0.10	574399.78	1277849.58	N 39 22 57.481	W 108 3 18.553
Projection to TD	6730.00	4.54	227.16	6699.21	458.59	-430.77	172.91	0.00	574396.55	1277846.10	N 39 22 57.448	W 108 3 18.596

Survey Type: Definitive Survey

Survey Error Model: SLB ISCWSA version 24 *** 3-D 95.00% Confidence 2.7955 sigma

Surveying Prog:

MD From (ft)

0.00

20.50

496.00

6670.00

MD To (ft)

20.50

496.00

6670.00

6730.00

EOU Freq Act-Stns SLB_PHOTO-GSS-Depth Only

Act-Stns SLB_PHOTO-GSS

Act-Stns SLB_MWD+DMAG

Act-Stns SLB_BLIND+TREND

Borehole -> Survey

Original Hole (No Plat) -> CassDuncan 1-32A Final Surveys

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**Italicized stations are NOT used in position calculations.*