





## FRU 197-31C1 R1 Geodetic Proposal

Report Date: October 1, 2009	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: ExxonMobil	Vertical Section Azimuth: 18.430°
Field: CO, Rio Blanco County (NAD 27 NZ) ExxonMobil 2008	Vertical Section Origin: N 0.000 ft, E 0.000 ft
Structure / Slot: ExxonMobil 31-1S-97W (FRU 197-31C Pad) / FRU 197-31C01	TVD Reference Datum:
Well: FRU 197-31C01	TVD Reference Elevation: 6562.0 ft relative to MSL
Borehole: Original Hole (Est RKB)	Sea Bed / Ground Level Elevation: 6562.000 ft relative to MSL
UW/API#:	Magnetic Declination: 10.774°
Survey Name / Date: FRU 197-31C1 R1 Ivs 1-Oct-09 / October 1, 2009	Total Field Strength: 52624.034 nT
Tort / AHD / DDI / ERD ratio: 27.996° / 196.07 ft / 3.740 / 0.016	Magnetic Dip: 66.109°
Grid Coordinate System: NAD27 Colorado State Planes, Northern Zone, US Feet	Declination Date: October 01, 2009
Location Lat/Long: N 39 55 33.801, W 108 19 31.326	Magnetic Declination Model: BGGM 2008
Location Grid N/E Y/X: N 228530.000 ftUS, E 1207718.000 ftUS	North Reference: Grid North
Grid Convergence Angle: -1.82556496°	Total Corr Mag North -> Grid North: +12.600°
Grid Scale Factor: 0.99997281	Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Sub-Sea TVD (ft)	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	18.43	-6562.00	0.00	0.00	0.00	0.00	0.00	228530.00	1207718.00	N 39 55 33.801	W 108 19 31.326
	100.00	0.00	18.43	-6462.00	100.00	0.00	0.00	0.00	0.00	228530.00	1207718.00	N 39 55 33.801	W 108 19 31.326
	200.00	0.00	18.43	-6362.00	200.00	0.00	0.00	0.00	0.00	228530.00	1207718.00	N 39 55 33.801	W 108 19 31.326
	300.00	0.00	18.43	-6262.00	300.00	0.00	0.00	0.00	0.00	228530.00	1207718.00	N 39 55 33.801	W 108 19 31.326
	400.00	0.00	18.43	-6162.00	400.00	0.00	0.00	0.00	0.00	228530.00	1207718.00	N 39 55 33.801	W 108 19 31.326
KOP Build 2° DLS	500.00	0.00	18.43	-6062.00	500.00	0.00	0.00	0.00	0.00	228530.00	1207718.00	N 39 55 33.801	W 108 19 31.326
	600.00	2.00	18.43	-5962.02	599.98	1.75	1.66	0.55	2.00	228531.66	1207718.55	N 39 55 33.818	W 108 19 31.319
	700.00	4.00	18.43	-5862.16	699.84	6.98	6.62	2.21	2.00	228536.62	1207720.21	N 39 55 33.867	W 108 19 31.300
	800.00	6.00	18.43	-5762.55	799.45	15.69	14.89	4.96	2.00	228544.89	1207722.96	N 39 55 33.950	W 108 19 31.268
	900.00	8.00	18.43	-5663.30	898.70	27.88	26.45	8.82	2.00	228556.45	1207726.82	N 39 55 34.065	W 108 19 31.223
	1000.00	10.00	18.43	-5564.53	997.47	43.52	41.29	13.76	2.00	228571.29	1207731.76	N 39 55 34.213	W 108 19 31.166
	1100.00	12.00	18.43	-5466.38	1095.62	62.60	59.39	19.80	2.00	228589.39	1207737.80	N 39 55 34.394	W 108 19 31.096
Begin Tangent 14°	1199.90	14.00	18.43	-5369.04	1192.96	85.07	80.71	26.90	2.00	228610.71	1207744.90	N 39 55 34.607	W 108 19 31.014
	1200.00	14.00	18.43	-5368.94	1193.06	85.10	80.73	26.91	0.00	228610.73	1207744.91	N 39 55 34.607	W 108 19 31.013
A-Groove	1250.44	14.00	18.43	-5320.00	1242.00	97.30	92.31	30.77	0.00	228622.30	1207748.77	N 39 55 34.723	W 108 19 30.969
	1300.00	14.00	18.43	-5271.91	1290.09	109.29	103.68	34.56	0.00	228633.67	1207752.56	N 39 55 34.836	W 108 19 30.925
KOP Drop 2° DLS	1307.06	14.00	18.43	-5265.06	1296.94	110.99	105.30	35.10	0.00	228635.29	1207753.10	N 39 55 34.852	W 108 19 30.918
	1400.00	12.14	18.43	-5174.54	1387.46	132.01	125.23	41.74	2.00	228655.23	1207759.74	N 39 55 35.051	W 108 19 30.841
B-Groove	1435.28	11.43	18.43	-5140.00	1422.00	139.21	132.07	44.02	2.00	228662.07	1207762.02	N 39 55 35.120	W 108 19 30.815
	1500.00	10.14	18.43	-5076.42	1485.58	151.33	143.56	47.85	2.00	228673.56	1207765.85	N 39 55 35.234	W 108 19 30.770
	1600.00	8.14	18.43	-4977.70	1584.30	167.21	158.63	52.88	2.00	228688.62	1207770.87	N 39 55 35.385	W 108 19 30.712
	1700.00	6.14	18.43	-4878.48	1683.52	179.64	170.42	56.81	2.00	228700.41	1207774.80	N 39 55 35.503	W 108 19 30.667
	1800.00	4.14	18.43	-4778.89	1783.11	188.59	178.92	59.64	2.00	228708.91	1207777.64	N 39 55 35.587	W 108 19 30.634
	1900.00	2.14	18.43	-4679.04	1882.96	194.07	184.11	61.37	2.00	228714.11	1207779.37	N 39 55 35.639	W 108 19 30.614
	2000.00	0.14	18.43	-4579.07	1982.93	196.06	186.00	62.00	2.00	228715.99	1207780.00	N 39 55 35.658	W 108 19 30.606
Vertical Point	2006.97	0.00	18.43	-4572.10	1989.90	196.07	186.01	62.00	2.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2100.00	0.00	18.43	-4479.07	2082.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2200.00	0.00	18.43	-4379.07	2182.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2300.00	0.00	18.43	-4279.07	2282.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2400.00	0.00	18.43	-4179.07	2382.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2500.00	0.00	18.43	-4079.07	2482.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2600.00	0.00	18.43	-3979.07	2582.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2700.00	0.00	18.43	-3879.07	2682.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2800.00	0.00	18.43	-3779.07	2782.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	2900.00	0.00	18.43	-3679.07	2882.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Wasatch A	2929.07	0.00	18.43	-3650.00	2912.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3000.00	0.00	18.43	-3579.07	2982.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3100.00	0.00	18.43	-3479.07	3082.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3200.00	0.00	18.43	-3379.07	3182.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3300.00	0.00	18.43	-3279.07	3282.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3400.00	0.00	18.43	-3179.07	3382.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3500.00	0.00	18.43	-3079.07	3482.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3600.00	0.00	18.43	-2979.07	3582.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3700.00	0.00	18.43	-2879.07	3682.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3800.00	0.00	18.43	-2779.07	3782.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	3900.00	0.00	18.43	-2679.07	3882.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Wasatch C	3929.07	0.00	18.43	-2650.00	3912.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606

WellDesign Ver SP 2.1 Bld( doc40x\_100 )FRU 197-31C01\FRU 197-31C01\Original Hole (Est RKB)\FRU 197-31C1 R1 ivs 1-Oct-09 Generated 11/20/2009 10:18 AM Page 2 of 3

	10100.00	0.00	18.43	3520.93	10082.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10200.00	0.00	18.43	3620.93	10182.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10300.00	0.00	18.43	3720.93	10282.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10400.00	0.00	18.43	3820.93	10382.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10500.00	0.00	18.43	3920.93	10482.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
WF 200	10600.00	0.00	18.43	4020.93	10582.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10700.00	0.00	18.43	4120.93	10682.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10800.00	0.00	18.43	4220.93	10782.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10879.07	0.00	18.43	4300.00	10862.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	10900.00	0.00	18.43	4320.93	10882.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Cameo	11000.00	0.00	18.43	4420.93	10982.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11100.00	0.00	18.43	4520.93	11082.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11169.07	0.00	18.43	4590.00	11152.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11200.00	0.00	18.43	4620.93	11182.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Rollins	11300.00	0.00	18.43	4720.93	11282.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11400.00	0.00	18.43	4820.93	11382.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Cozzette Coastal	11419.07	0.00	18.43	4840.00	11402.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11500.00	0.00	18.43	4920.93	11482.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11599.07	0.00	18.43	5020.00	11582.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Corcorran Coastal	11600.00	0.00	18.43	5020.93	11582.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11700.00	0.00	18.43	5120.93	11682.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11800.00	0.00	18.43	5220.93	11782.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11899.07	0.00	18.43	5320.00	11882.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	11900.00	0.00	18.43	5320.93	11882.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
Corcorran Marine	12000.00	0.00	18.43	5420.93	11982.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12100.00	0.00	18.43	5520.93	12082.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12200.00	0.00	18.43	5620.93	12182.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12300.00	0.00	18.43	5720.93	12282.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12400.00	0.00	18.43	5820.93	12382.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
PBHL / TD	12449.07	0.00	18.43	5870.00	12432.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12500.00	0.00	18.43	5920.93	12482.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12600.00	0.00	18.43	6020.93	12582.93	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606
	12649.07	0.00	18.43	6070.00	12632.00	196.07	186.01	62.00	0.00	228716.00	1207780.00	N 39 55 35.658	W 108 19 30.606

**Survey Type:** Non-Def Proposal

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

**Surveying Prog:**

MD From ( ft )	MD To ( ft )	EOU Freq	Survey Tool Type
0.00	500.00	1/100.00	SLB_NSG+SSHOT
500.00	2006.97	1/100.00	SLB_MWD-STD
2006.97	12649.07	1/100.00	SLB_INC-ONLY

**Borehole -> Survey**

Original Hole (Est RKB) -> FRU 197-31C1 R1 ivs 1-Oct-09  
Original Hole (Est RKB) -> FRU 197-31C1 R1 ivs 1-Oct-09  
Original Hole (Est RKB) -> FRU 197-31C1 R1 ivs 1-Oct-09