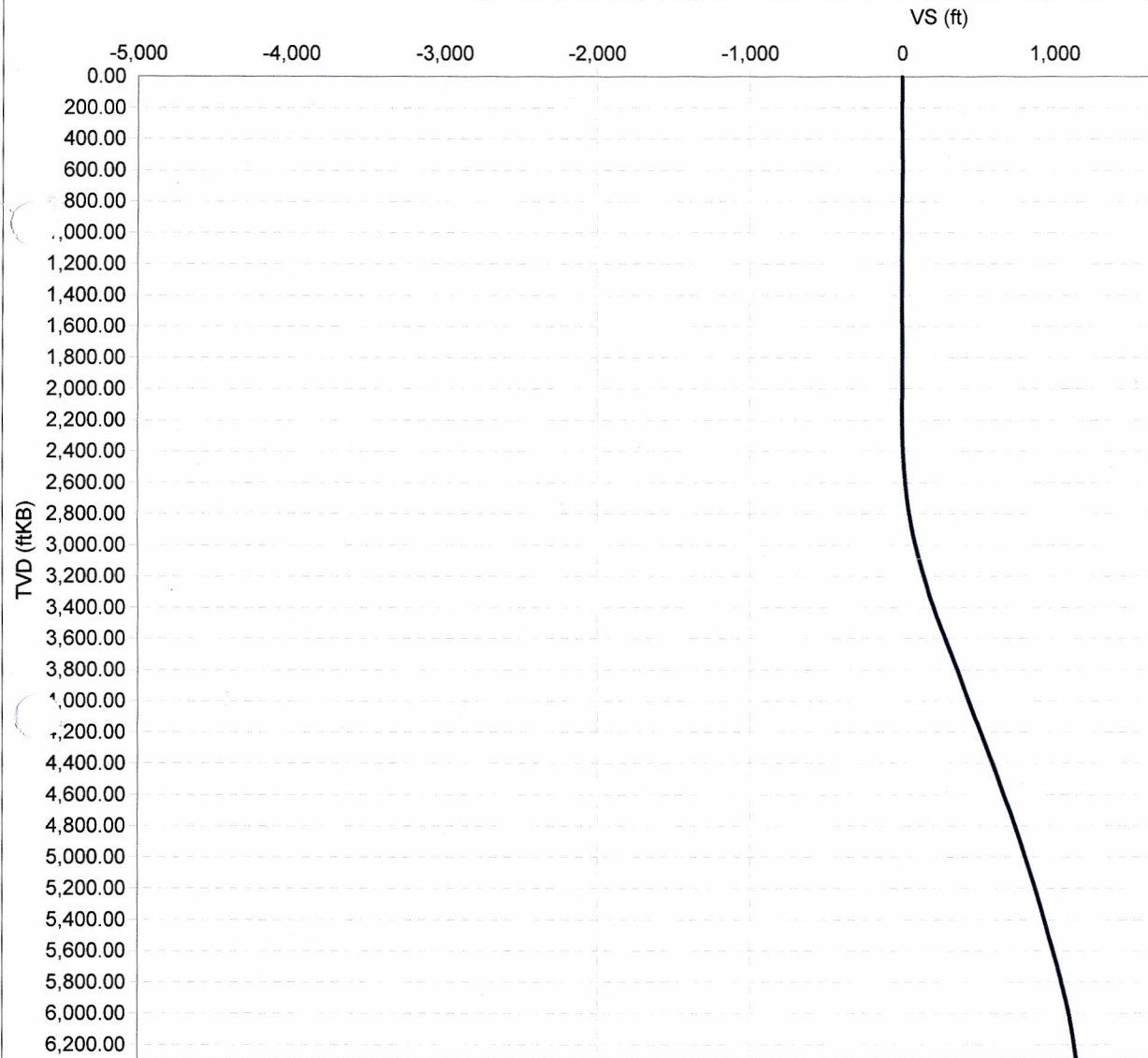




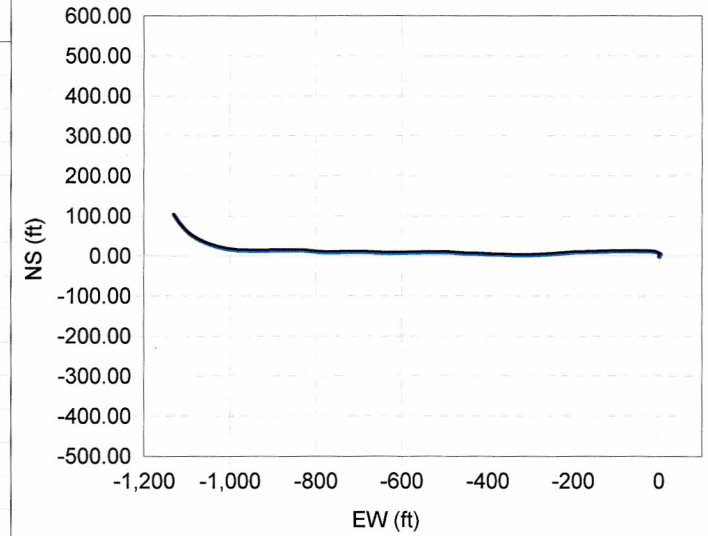
Directional Plot

Well Name Emerald 93X	Lease Emerald	Field Name Rangely	Business Unit Mid-Continent/Alaska	Surface UWI 0510311858	Surface ChevNo MZ1575
Wellbore Name Original Hole	Directional Type Shallow Kick Off 'S'	Kick Off Depth (ftKB)	Total Depth of Wellbore (ftKB) 6,866.00	Wellbore UWI 051031185800	Wellbore ChevNo MZ1575-00

Vertical Section



Plan



— VS vs TVD

— VS vs TVD



Directional Survey Data

Well Name Emerald 93X	Lease Emerald	Field Name Rangely	Business Unit Mid-Continent/Alaska	Surface U/WI 0510311858	Surface ChevNo MZ1575
Wellbore Name Original Hole	Directional Type Shallow Kick Off 'S'	Wellbore UWI 051031185800	Wellbore ChevNo MZ1575-00	Kick Off Depth (ftKB) 6,470.00	Date TD Reached (wellbore) 275.27
UTM Northing (Y) (ft)	UTM Easting (X) (ft)	UTM Grid Zone	Latitude (DMS)	Longitude (DMS)	Closure Direction (°)

Directional Surveys					
Description	Planned?	Definitive?		Note Correction	
Surveys	No	Yes			

Survey Data											
Survey Company	Date	MD (ftKB)	TVD (ftKB)	Incl (°)	Azm (°)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)
Scientific Drilling	5/9/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scientific Drilling	5/10/2011	122.00	122.00	0.79	57.62	-0.67	0.45	0.71	0.65	0.65	47.23
Scientific Drilling	5/9/2011	156.00	155.99	0.70	136.54	-1.01	0.43	1.05	2.79	-0.26	232.12
Scientific Drilling	5/9/2011	248.00	247.99	0.48	26.42	-1.57	0.36	1.61	1.06	-0.24	-119.70
Scientific Drilling	5/9/2011	341.00	340.97	1.67	333.07	-0.99	1.92	1.17	1.54	1.28	329.73
Scientific Drilling	5/9/2011	433.00	432.94	1.41	336.58	0.27	4.15	0.11	0.30	-0.28	3.82
Scientific Drilling	5/9/2011	525.00	524.93	0.44	11.56	0.78	5.54	-0.27	1.17	-1.05	-353.28
Scientific Drilling	5/9/2011	617.00	616.93	0.35	44.79	0.56	6.08	0.00	0.26	-0.10	36.12
Scientific Drilling	5/9/2011	710.00	709.92	0.97	64.74	-0.30	6.62	0.91	0.70	0.67	21.45
Scientific Drilling	5/9/2011	771.00	770.91	0.97	80.12	-1.24	6.93	1.89	0.43	0.00	25.21
Scientific Drilling	5/9/2011	861.00	860.91	0.44	202.90	-1.88	6.74	2.51	1.40	-0.59	136.42
Scientific Drilling	5/9/2011	951.00	950.91	0.35	200.53	-1.70	6.17	2.27	0.10	-0.10	-2.63
Scientific Drilling	5/10/2011	1,041.00	1,040.90	0.35	171.38	-1.69	5.64	2.22	0.20	0.00	-32.39
Scientific Drilling	5/10/2011	1,041.00	1,040.90	0.35	171.38	-1.69	5.64	2.22	0.20	0.00	0.00
Scientific Drilling	5/10/2011	1,132.00	1,131.90	0.08	189.94	-1.75	5.30	2.25	0.30	-0.30	20.40
Scientific Drilling	5/10/2011	1,132.00	1,131.90	0.08	189.94	-1.75	5.30	2.25	0.30	0.00	0.00
Scientific Drilling	5/10/2011	1,222.00	1,221.90	0.79	57.62	-2.24	5.57	2.76	0.94	0.79	-147.02
Scientific Drilling	5/10/2011	1,312.00	1,311.90	0.38	52.36	-2.95	6.09	3.52	0.46	-0.46	-5.84
Scientific Drilling	5/10/2011	1,312.00	1,311.90	0.38	52.36	-2.95	6.09	3.52	0.46	0.00	0.00
Scientific Drilling	5/10/2011	1,402.00	1,401.89	0.70	247.37	-2.68	6.06	3.25	1.19	0.36	216.68
Scientific Drilling	5/10/2011	1,402.00	1,401.89	0.70	247.37	-2.68	6.06	3.25	1.19	0.00	0.00
Scientific Drilling	5/10/2011	1,492.00	1,491.89	0.44	253.37	-1.88	5.75	2.41	0.30	-0.29	6.67
Scientific Drilling	5/10/2011	1,492.00	1,491.89	0.44	253.61	-1.88	5.75	2.41	0.30	0.00	0.00
Scientific Drilling	5/10/2011	1,581.00	1,580.89	0.62	225.40	-1.25	5.31	1.74	0.35	0.20	-31.70
Scientific Drilling	5/11/2011	1,671.00	1,670.88	0.70	177.15	-1.01	4.42	1.42	0.60	0.09	-53.61
Scientific Drilling	5/11/2011	1,761.00	1,760.87	0.77	159.00	-1.36	3.31	1.67	0.27	0.08	-20.17
Scientific Drilling	5/11/2011	1,850.00	1,849.87	0.43	274.27	-1.29	2.77	1.55	1.16	-0.38	129.52
Scientific Drilling	5/11/2011	1,940.00	1,939.87	0.35	321.11	-0.76	3.01	1.04	0.35	-0.09	52.04
Scientific Drilling	5/11/2011	2,059.00	2,058.85	1.49	42.15	-1.43	4.44	1.85	1.24	0.96	-234.42
Scientific Drilling	5/11/2011	2,149.00	2,148.84	0.97	340.54	-1.82	6.03	2.38	1.49	-0.58	331.54
Scientific Drilling	5/11/2011	2,238.00	2,237.82	1.33	294.02	-0.52	7.16	1.19	1.09	0.40	-52.27
Scientific Drilling	5/11/2011	2,323.00	2,322.79	1.76	307.05	1.52	8.35	-0.76	0.65	0.51	15.33
Scientific Drilling	5/11/2011	2,413.00	2,412.70	3.25	296.94	5.07	10.34	-4.13	1.72	1.66	-11.23
Scientific Drilling	5/11/2011	2,503.00	2,502.50	4.40	277.17	10.89	11.92	-9.83	1.93	1.28	-21.97
Scientific Drilling	5/11/2011	2,593.00	2,592.17	5.45	274.71	18.61	12.70	-17.52	1.19	1.17	-2.73
Scientific Drilling	5/11/2011	2,683.00	2,681.63	7.05	273.65	28.41	13.41	-27.29	1.78	1.78	-1.18
Scientific Drilling	5/11/2011	2,772.00	2,769.80	8.62	271.02	40.52	13.87	-39.41	1.81	1.76	-2.96
Scientific Drilling	5/17/2011	2,862.00	2,858.53	10.64	269.87	55.52	13.97	-54.47	2.25	2.24	-1.28
Scientific Drilling	5/17/2011	2,952.00	2,946.59	13.10	270.31	73.95	14.01	-72.98	2.74	2.73	0.49



Directional Survey Data

Well Name Emerald 93X		Lease Emerald		Field Name Rangely		Business Unit Mid-Continent/Alaska		Surface UWI 0510311858		Surface ChevNo MZ1575	
Survey Data											
Survey Company	Date	MD (ftKB)	TVD (ftKB)	Incl (°)	Azm (°)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Build (°/100ft)	Turn (°/100ft)
Scientific Drilling	5/17/2011	3,042.00	3,034.03	14.33	267.96	95.16	13.67	-94.31	1.50	1.37	-2.61
Scientific Drilling	5/17/2011	3,132.00	3,120.93	15.83	268.03	118.39	12.85	-117.71	1.67	1.67	0.08
Scientific Drilling	5/17/2011	3,221.00	3,206.32	16.88	268.91	143.27	12.19	-142.76	1.21	1.18	0.99
Scientific Drilling	5/17/2011	3,311.00	3,292.18	18.03	267.94	170.08	11.44	-169.74	1.32	1.28	-1.08
Scientific Drilling	5/17/2011	3,356.00	3,334.90	18.55	268.64	184.09	11.02	-183.86	1.25	1.16	1.56
Scientific Drilling	5/17/2011	3,401.00	3,377.49	19.17	267.32	198.52	10.50	-198.39	1.67	1.38	-2.93
Scientific Drilling	5/17/2011	3,490.00	3,461.09	20.93	265.30	228.65	8.52	-228.84	2.12	1.98	-2.27
Scientific Drilling	5/17/2011	3,580.00	3,544.90	21.81	265.48	260.96	5.88	-261.53	0.98	0.98	0.20
Scientific Drilling	5/17/2011	3,670.00	3,628.39	22.07	267.94	294.21	3.96	-295.09	1.06	0.29	2.73
Scientific Drilling	5/17/2011	3,760.00	3,711.84	21.90	270.93	327.71	3.62	-328.77	1.26	-0.19	3.32
Scientific Drilling	5/17/2011	3,850.00	3,795.53	21.28	272.60	360.77	4.63	-361.87	0.97	-0.69	1.86
Scientific Drilling	5/17/2011	3,939.00	3,878.61	20.75	272.75	392.65	6.12	-393.75	0.60	-0.60	0.17
Scientific Drilling	5/17/2011	4,029.00	3,962.94	20.14	270.31	424.01	6.97	-425.17	1.16	-0.68	-2.71
Scientific Drilling	5/18/2011	4,119.00	4,047.20	21.02	273.92	455.59	8.16	-456.77	1.72	0.98	4.01
Scientific Drilling	5/18/2011	4,209.00	4,131.09	21.46	273.48	488.18	10.26	-489.31	0.52	0.49	-0.49
Scientific Drilling	5/18/2011	4,299.00	4,214.98	21.02	270.40	520.72	11.37	-521.88	1.33	-0.49	-3.42
Scientific Drilling	5/18/2011	4,389.00	4,298.92	21.28	267.59	552.99	10.80	-554.34	1.16	0.29	-3.12
Scientific Drilling	5/18/2011	4,479.00	4,382.81	21.19	268.38	585.32	9.65	-586.92	0.33	-0.10	0.88
Scientific Drilling	5/18/2011	4,569.00	4,467.02	20.11	270.15	616.88	9.23	-618.65	1.39	-1.20	1.97
Scientific Drilling	5/18/2011	4,659.00	4,551.65	19.70	273.13	647.45	10.10	-649.27	1.22	-0.46	3.31
Scientific Drilling	5/18/2011	4,749.00	4,636.00	21.10	272.07	678.79	11.52	-680.61	1.61	1.56	-1.18
Scientific Drilling	5/19/2011	4,839.00	4,720.09	20.66	270.23	710.78	12.17	-712.67	0.88	-0.49	-2.04
Scientific Drilling	5/19/2011	4,929.00	4,804.83	18.73	266.80	740.89	11.42	-742.98	2.50	-2.14	-3.81
Scientific Drilling	5/19/2011	5,019.00	4,890.26	17.94	270.58	769.00	10.76	-771.27	1.59	-0.88	4.20
Scientific Drilling	5/19/2011	5,108.00	4,974.96	17.85	275.41	796.30	12.18	-798.56	1.67	-0.10	5.43
Scientific Drilling	5/19/2011	5,198.00	5,060.26	19.35	275.50	825.01	14.91	-827.13	1.67	1.67	0.10
Scientific Drilling	5/19/2011	5,288.00	5,145.32	18.82	269.96	854.37	16.33	-856.49	2.10	-0.59	-6.16
Scientific Drilling	5/19/2011	5,378.00	5,231.10	16.36	268.38	881.42	15.96	-883.69	2.78	-2.73	-1.76
Scientific Drilling	5/19/2011	5,467.00	5,316.52	16.27	269.87	906.27	15.58	-908.68	0.48	-0.10	1.67
Scientific Drilling	5/20/2011	5,557.00	5,402.86	16.52	268.87	931.54	15.30	-934.08	0.42	0.28	-1.11
Scientific Drilling	5/20/2011	5,646.00	5,488.34	15.83	270.49	956.21	15.15	-958.87	0.93	-0.78	1.82
Scientific Drilling	5/20/2011	5,736.00	5,574.83	16.27	274.53	981.05	16.25	-983.72	1.33	0.49	4.49
Scientific Drilling	5/20/2011	5,826.00	5,661.29	16.00	280.33	1,006.01	19.47	-1,008.49	1.82	-0.30	6.44
Scientific Drilling	5/20/2011	5,916.00	5,748.10	14.60	287.10	1,029.48	25.03	-1,031.54	2.52	-1.56	7.52
Scientific Drilling	5/21/2011	6,005.00	5,834.35	13.97	290.77	1,050.81	32.14	-1,052.30	1.24	-0.71	4.12
Scientific Drilling	5/21/2011	6,095.00	5,921.41	15.48	299.23	1,072.26	41.86	-1,072.95	2.92	1.68	9.40
Scientific Drilling	5/21/2011	6,185.00	6,008.42	14.16	308.81	1,092.41	54.63	-1,092.01	3.09	-1.47	10.64
Scientific Drilling	5/21/2011	6,275.00	6,096.01	12.49	318.39	1,108.69	68.81	-1,107.05	3.07	-1.86	10.64
Scientific Drilling	5/21/2011	6,365.00	6,183.83	12.84	326.91	1,122.00	84.46	-1,118.98	2.11	0.39	9.47
Scientific Drilling	5/21/2011	6,381.00	6,199.42	13.08	327.22	1,124.22	87.47	-1,120.93	1.56	1.50	1.94
Scientific Drilling	5/21/2011	6,470.00	6,286.11	13.08	327.22	1,136.64	104.41	-1,131.83	0.00	0.00	0.00