



Scientific Drilling FINAL REPORT



Company: NORTHWEST Nat. Gas	Date: 3/14/2007	Time: 11:54:32	Page: 1
Field: MIST	Co-ordinate(NE) Reference: Well: NWN 44-3-65, Grid North		
Site: REICHOLD	Vertical (TVD) Reference: NWN 44-3-65 1190.0		
Well: NWN 44-3-65	Section (VS) Reference: Well (0.00N,0.00E,221.00Azi)		
Wellpath: NWN 44-3-65 SUR	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey: NWN 44-3-65 E-FIELD TOOL	Start Date: 3/14/2007
Company: Scientific Drilling	Engineer: B. SHEWCHUCK, J. SHEWCHUCK
Tool: EM-MWD;E-FIELD	Tied-to: From Surface

Field: MIST OREGON U.S.A.	Map Zone: Oregon, Northern Zone
Map System: US State Plane Coordinate System 1927	Coordinate System: Well Centre
Geo Datum: NAD27 (Clarke 1866)	Geomagnetic Model: igrf2005
Sys Datum: Mean Sea Level	

Site: REICHOLD SEC. 23, T6N, R5W COLUMBIA CTY. OREGON, U.S.A.			
Site Position:	Northing: 857000.00 ft	Latitude: 45 59 2.754 N	
From: Map	Easting: 1295000.00 ft	Longitude: 123 16 25.298 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 0.00 ft		Grid Convergence: -1.97 deg	

Well: NWN 44-3-65 SUR. N 873653.70, E 1294445.40	Slot Name:
Well Position: +N/-S 16653.70 ft	Latitude: 46 1 46.874 N
+E/-W -554.60 ft	Longitude: 123 16 41.255 W
Position Uncertainty: 0.00 ft	

Wellpath: NWN 44-3-65 SUR	Drilled From: Surface
Current Datum: NWN 44-3-65	Tie-on Depth: 0.00 ft
Magnetic Data: 2/19/2007	Above System Datum: Mean Sea Level
Field Strength: 53694 nT	Declination: 17.13 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 67.86 deg
ft	+N/-S
ft	+E/-W
ft	Direction
ft	deg
0.00	0.00
0.00	0.00
0.00	221.00

Survey

Stn	CLen ft	MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	ClsD ft	ClsA deg
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	790.00	790.00	0.00	0.00	790.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	13.00	803.00	1.63	72.91	803.00	-0.16	0.05	0.18	12.54	12.54	0.00	0.18	72.91
4	15.00	818.00	1.64	78.80	817.99	-0.51	0.16	0.59	1.12	0.07	39.27	0.61	74.97
5	32.00	850.00	0.76	90.00	849.98	-1.01	0.25	1.25	2.83	-2.75	35.00	1.28	78.82
6	30.00	880.00	0.30	185.40	879.98	-1.08	0.17	1.44	2.81	-1.53	318.00	1.45	83.31
7	25.00	905.00	1.64	237.60	904.98	-0.68	-0.09	1.14	5.90	5.36	208.80	1.14	94.40
8	35.00	940.00	3.55	247.20	939.94	0.77	-0.78	-0.29	5.58	5.46	27.43	0.83	200.23
9	31.00	971.00	5.37	248.60	970.85	2.92	-1.68	-2.52	5.88	5.87	4.52	3.03	236.37
10	31.00	1002.00	6.53	244.90	1001.68	5.82	-2.95	-5.47	3.94	3.74	-11.94	6.22	241.62
11	31.00	1033.00	7.35	242.50	1032.45	9.27	-4.62	-8.82	2.81	2.65	-7.74	9.96	242.38
12	30.00	1063.00	8.81	239.30	1062.15	13.24	-6.68	-12.50	5.09	4.87	-10.67	14.17	241.89
13	29.00	1092.00	10.53	238.46	1090.74	17.88	-9.20	-16.67	5.95	5.93	-2.90	19.04	241.11
14	31.00	1123.00	12.50	237.60	1121.12	23.80	-12.48	-21.92	6.38	6.35	-2.77	25.22	240.35
15	32.00	1155.00	13.31	229.00	1152.31	30.76	-16.75	-27.62	6.51	2.53	-26.87	32.30	238.77
16	32.00	1187.00	14.40	223.30	1183.38	38.39	-22.06	-33.13	5.45	3.41	-17.81	39.80	236.34
17	31.00	1218.00	15.90	217.90	1213.30	46.48	-28.22	-38.38	6.64	4.84	-17.42	47.64	233.68
18	32.00	1250.00	17.32	212.80	1243.97	55.57	-35.68	-43.66	6.36	4.44	-15.94	56.38	230.74
19	32.00	1282.00	17.60	211.50	1274.49	65.06	-43.81	-48.77	1.50	0.87	-4.06	65.55	228.06
20	31.00	1313.00	17.90	210.50	1304.02	74.36	-51.91	-53.63	1.38	0.97	-3.23	74.64	225.93
21	31.00	1344.00	18.30	214.40	1333.49	83.88	-60.03	-58.80	4.12	1.29	12.58	84.03	224.41
22	30.00	1374.00	18.79	217.20	1361.93	93.38	-67.77	-64.38	3.39	1.63	9.33	93.47	223.53
23	32.00	1406.00	18.77	218.40	1392.23	103.67	-75.91	-70.70	1.21	-0.06	3.75	103.73	222.96
24	32.00	1438.00	18.97	221.38	1422.51	114.01	-83.85	-77.33	3.08	0.62	9.31	114.06	222.69



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Company: NORTHWEST Nat. Gas Field: MIST Site: REICHOLD Well: NWN 44-3-65 Wellpath: NWN 44-3-65 SUR	Date: 3/14/2007 Co-ordinate(NE) Reference: Well: NWN 44-3-65, Grid North Vertical (TVD) Reference: NWN 44-3-65 1190.0 Section (VS) Reference: Well (0.00N,0.00E,221.00Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
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Survey

Stn	CLen ft	MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	ClsD ft	ClsA deg
25	31.00	1469.00	19.55	224.07	1451.77	124.23	-91.35	-84.27	3.42	1.87	8.68	124.29	222.69
26	31.00	1500.00	20.39	225.14	1480.91	134.80	-98.89	-91.71	2.95	2.71	3.45	134.87	222.84
27	32.00	1532.00	21.20	224.22	1510.82	146.13	-106.97	-99.69	2.73	2.53	-2.87	146.22	222.98
28	31.00	1563.00	22.36	223.45	1539.61	157.62	-115.27	-107.66	3.85	3.74	-2.48	157.72	223.05
29	33.00	1596.00	23.28	223.84	1570.03	170.41	-124.53	-116.49	2.83	2.79	1.18	170.52	223.09
30	31.00	1627.00	24.47	222.17	1598.37	182.95	-133.70	-125.05	4.41	3.84	-5.39	183.07	223.08
31	33.00	1660.00	25.51	221.70	1628.28	196.88	-144.08	-134.36	3.21	3.15	-1.42	197.00	223.00
32	31.00	1691.00	26.23	220.73	1656.18	210.41	-154.25	-143.27	2.69	2.32	-3.13	210.52	222.89
33	32.00	1723.00	27.44	220.99	1684.73	224.86	-165.18	-152.72	3.80	3.78	0.81	224.96	222.76
34	32.00	1755.00	28.16	222.02	1713.04	239.78	-176.35	-162.61	2.70	2.25	3.22	239.88	222.68
35	32.00	1787.00	29.10	221.65	1741.12	255.11	-187.78	-172.84	2.99	2.94	-1.16	255.21	222.63
36	33.00	1820.00	30.12	221.01	1769.81	271.41	-200.02	-183.61	3.24	3.09	-1.94	271.51	222.55
37	31.00	1851.00	31.23	220.44	1796.48	287.23	-212.01	-193.92	3.70	3.58	-1.84	287.32	222.45
38	31.00	1882.00	32.27	219.88	1822.84	303.54	-224.47	-204.44	3.49	3.35	-1.81	303.62	222.33
39	32.00	1914.00	33.85	218.86	1849.66	320.99	-237.97	-215.51	5.23	4.94	-3.19	321.05	222.16
40	32.00	1946.00	35.65	219.97	1875.95	339.22	-252.06	-227.10	5.96	5.62	3.47	339.27	222.02
41	31.00	1977.00	37.36	220.80	1900.86	357.66	-266.10	-239.05	5.74	5.52	2.68	357.71	221.93
42	31.00	2008.00	38.60	220.70	1925.30	376.73	-280.55	-251.50	4.00	4.00	-0.32	376.78	221.87
43	32.00	2040.00	39.70	220.30	1950.11	396.94	-295.92	-264.62	3.53	3.44	-1.25	396.98	221.80
44	31.00	2071.00	40.70	220.10	1973.79	416.94	-311.20	-277.53	3.25	3.23	-0.65	416.98	221.73
45	32.00	2103.00	41.60	219.60	1997.89	438.00	-327.37	-291.02	2.99	2.81	-1.56	438.02	221.64
46	33.00	2136.00	43.00	219.90	2022.29	460.20	-344.44	-305.23	4.29	4.24	0.91	460.22	221.55
47	32.00	2168.00	44.26	219.90	2045.46	482.27	-361.38	-319.39	3.94	3.94	0.00	482.29	221.47
48	31.00	2199.00	45.50	221.90	2067.42	504.15	-377.91	-333.71	6.06	4.00	6.45	504.16	221.45
49	31.00	2230.00	46.30	223.80	2089.00	526.39	-394.23	-348.85	5.10	2.58	6.13	526.41	221.51
50	31.00	2261.00	47.60	223.20	2110.16	549.03	-410.66	-364.45	4.43	4.19	-1.94	549.05	221.59
51	31.00	2292.00	49.30	223.90	2130.72	572.20	-427.47	-380.43	5.74	5.48	2.26	572.24	221.67
52	31.00	2323.00	51.00	222.90	2150.58	595.98	-444.76	-396.78	6.02	5.48	-3.23	596.03	221.74
53	32.00	2355.00	52.70	221.90	2170.35	621.13	-463.35	-413.75	5.85	5.31	-3.12	621.19	221.76
54	32.00	2387.00	53.08	220.85	2189.66	646.65	-482.50	-430.61	2.87	1.19	-3.28	646.71	221.75
55	31.00	2418.00	52.88	219.99	2208.32	671.40	-501.34	-446.66	2.31	-0.65	-2.77	671.45	221.70
56	32.00	2450.00	52.83	218.79	2227.65	696.90	-521.05	-462.85	2.99	-0.16	-3.75	696.94	221.61
57	32.00	2482.00	52.89	218.46	2246.97	722.39	-540.98	-478.77	0.84	0.19	-1.03	722.41	221.51
58	63.00	2545.00	51.45	217.84	2285.60	772.08	-580.11	-509.51	2.41	-2.29	-0.98	772.09	221.29
59	63.00	2608.00	50.56	217.71	2325.25	820.97	-618.81	-539.50	1.42	-1.41	-0.21	820.97	221.08
60	32.00	2640.00	49.50	218.00	2345.80	845.45	-638.17	-554.55	3.38	-3.31	0.91	845.45	220.99
61	32.00	2672.00	48.91	218.57	2366.71	869.65	-657.19	-569.56	2.28	-1.84	1.78	869.65	220.91
62	65.00	2737.00	49.06	219.41	2409.37	918.67	-695.31	-600.42	1.00	0.23	1.29	918.67	220.81
63	30.00	2767.00	49.98	220.89	2428.84	941.48	-712.75	-615.13	4.85	3.07	4.93	941.49	220.80
64	32.00	2799.00	48.94	221.32	2449.64	965.80	-731.07	-631.12	3.41	-3.25	1.34	965.81	220.80
65	31.00	2830.00	48.73	221.78	2470.05	989.14	-748.54	-646.60	1.31	-0.68	1.48	989.14	220.82
66	63.00	2893.00	47.93	221.46	2511.93	1036.19	-783.72	-677.86	1.33	-1.27	-0.51	1036.20	220.86
67	32.00	2925.00	47.90	221.96	2533.38	1059.94	-801.45	-693.66	1.16	-0.09	1.56	1059.94	220.88
68	32.00	2957.00	48.35	220.81	2554.74	1083.77	-819.32	-709.41	3.02	1.41	-3.59	1083.77	220.89
69	64.00	3021.00	49.21	220.61	2596.91	1131.90	-855.82	-740.81	1.36	1.34	-0.31	1131.91	220.88
70	96.00	3117.00	50.10	219.50	2659.06	1205.06	-911.82	-787.89	1.28	0.93	-1.16	1205.06	220.83
71	27.00	3144.00	50.52	219.54	2676.31	1225.83	-927.85	-801.11	1.56	1.56	0.15	1225.84	220.81
72	4.00	3148.00	50.58	219.55	2678.85	1228.92	-930.23	-803.07	1.57	1.57	0.16	1228.92	220.80
73	33.00	3181.00	51.10	219.60	2699.69	1254.50	-949.95	-819.37	1.57	1.57	0.16	1254.51	220.78
74	65.00	3246.00	51.00	219.00	2740.55	1305.02	-989.07	-851.39	0.73	-0.15	-0.92	1305.04	220.72
75	63.00	3309.00	51.20	219.50	2780.11	1354.03	-1027.04	-882.41	0.69	0.32	0.79	1354.05	220.67
76	17.00	3326.00	51.23	219.36	2790.76	1367.28	-1037.27	-890.83	0.64	0.16	-0.79	1367.30	220.66



Scientific Drilling FINAL REPORT



Company: NORTHWEST Nat. Gas
Field: MIST
Site: REICHHOLD
Well: NWN 44-3-65
Wellpath: NWN 44-3-65 SUR

Date: 3/14/2007 **Time:** 11:54:32 **Page:** 3
Co-ordinate(NE) Reference: Well: NWN 44-3-65, Grid North
Vertical (TVD) Reference: NWN 44-3-65 1190.0
Section (VS) Reference: Well (0.00N,0.00E,221.00Azi)
Survey Calculation Method: Minimum Curvature **Db:** Sybase

Survey

Stn	CLen ft	MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	ClsD ft	ClsA deg
77	42.00	3368.00	51.29	219.03	2817.04	1400.02	-1062.66	-911.53	0.64	0.16	-0.79	1400.05	220.62
78	4.00	3372.00	51.30	219.00	2819.54	1403.14	-1065.09	-913.50	0.64	0.16	-0.79	1403.17	220.62
79	28.00	3400.00	51.49	218.98	2837.01	1425.01	-1082.09	-927.27	0.69	0.69	-0.06	1425.04	220.59
80	36.00	3436.00	51.74	218.96	2859.37	1453.21	-1104.03	-945.01	0.69	0.69	-0.06	1453.25	220.56
81	63.00	3499.00	52.08	219.03	2898.23	1502.76	-1142.57	-976.22	0.55	0.54	0.11	1502.82	220.51
82	63.00	3562.00	52.63	218.93	2936.71	1552.61	-1181.35	-1007.59	0.88	0.87	-0.16	1552.68	220.46
83	63.00	3625.00	52.67	218.67	2974.93	1602.66	-1220.38	-1038.98	0.33	0.06	-0.41	1602.74	220.41
84	47.00	3672.00	52.39	218.88	3003.52	1639.93	-1249.46	-1062.34	0.69	-0.60	0.45	1640.03	220.37

Annotation

MD ft	TVD ft	
3148.00	2678.85	TOP TARGET
3326.00	2790.76	COMPLETED TD
3368.00	2817.04	
3400.00	2837.01	