

Scientific Drilling

SDI Survey Report

Company: Hearby Production Company	Date: 4/24/99	Page: 1
Field: Buffalo Plain, San Juan	Coordinate (VD) Reference: Site Line County, New Mexico, True North	
Site: Las County, New Mexico	Vertical (TV) Reference: Site E.O. 0.000 Mean Sea Level	
Well: Well - F. F. F. F. F.	Survey (VS) Reference: Site (0.000 0.000 0.000)	
Wellpath: On Original Log	Survey Calculation Method: Minimum Curvature	

Survey: Survey #1

SUR U+J. 3-20-33 2200/5 4 1600/E
 BHL UAG. 3-20-33 3067/5 4 2012/E

Start Date: 1/26/1999

Company:

Tool: Single Shot

Engineer:

30-025-34543

Survey

MD	Incl	True	TV	NS	EW	DL	VS	Ch	CT
ft	deg	deg	ft	ft	ft	ft	ft	ft	ft
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0	0.00	0.0
100.0	0.31	99.00	100.0	0.0	0.3	0.31	-0.1	99.00	0.3
200.0	0.61	99.00	200.0	-0.2	1.1	0.31	-0.2	98.00	1.1
300.0	0.74	103.35	300.0	-0.4	2.3	0.14	-0.5	99.67	2.3
400.0	0.74	111.42	400.0	-0.8	3.5	0.10	-0.9	102.42	3.6
500.0	0.75	119.00	500.0	-1.3	4.7	0.10	-1.5	105.86	4.9
600.0	0.84	108.00	600.0	-1.9	6.0	0.18	-2.1	107.42	6.3
700.0	0.95	99.78	699.9	-2.2	7.5	0.17	-2.5	106.66	7.6
800.0	1.24	102.60	799.9	-2.5	9.3	0.30	-2.9	105.28	9.7
900.0	1.66	108.20	899.9	-3.2	11.7	0.44	-3.6	105.39	12.2
1000.0	2.15	117.38	999.8	-4.5	14.8	0.57	-5.0	105.95	15.5
1100.0	2.31	113.82	1099.8	-6.3	18.3	0.22	-6.9	103.94	19.4
1200.0	2.42	107.79	1199.7	-7.7	22.2	0.27	-8.5	103.25	23.5
1300.0	2.59	105.95	1299.6	-8.9	26.4	0.19	-9.8	101.68	27.8
1400.0	2.74	106.68	1399.5	-10.3	30.8	0.15	-11.4	101.53	32.5
1500.0	2.73	101.47	1499.4	-11.5	35.5	0.25	-12.7	107.97	37.3
1600.0	2.74	96.27	1599.2	-12.2	40.2	0.25	-13.6	106.94	42.0
1700.0	2.47	96.89	1699.1	-12.7	44.8	0.27	-14.2	105.78	46.6
1800.0	2.00	104.00	1799.1	-13.3	48.6	0.55	-15.0	105.34	50.4
1900.0	1.68	104.00	1899.0	-14.1	51.8	0.32	-15.9	105.26	53.6
2000.0	1.31	106.56	1999.0	-14.8	54.3	0.37	-16.7	105.22	56.3
2100.0	1.00	111.52	2099.0	-15.4	56.1	0.33	-17.4	105.38	58.2
2200.0	0.99	105.00	2198.9	-16.0	57.8	0.11	-18.0	105.46	59.9
2300.0	1.00	98.46	2298.9	-16.3	59.5	0.11	-18.4	105.36	61.7
2400.0	1.33	102.86	2398.9	-16.7	61.4	0.34	-18.8	105.19	63.6
2500.0	1.76	107.18	2498.9	-17.4	64.0	0.45	-19.6	105.19	66.3
2600.0	2.20	109.77	2598.8	-18.5	67.3	0.45	-20.6	105.35	69.8
2700.0	2.41	102.06	2698.7	-19.8	71.2	0.38	-22.3	105.58	73.9
2800.0	2.50	77.00	2798.6	-19.7	75.4	1.07	-22.3	104.65	77.9
2900.0	2.50	73.17	2898.5	-18.6	79.6	0.17	-21.3	103.13	81.7
3000.0	2.48	68.53	2998.4	-17.2	83.7	0.20	-20.1	101.58	85.4
3100.0	2.49	63.87	3098.4	-15.4	87.7	0.20	-18.5	99.96	89.0
3200.0	2.56	61.00	3198.3	-13.3	91.5	0.15	-16.5	98.29	92.5
3300.0	2.72	61.00	3298.2	-11.1	95.6	0.16	-14.4	96.53	96.2
3400.0	2.64	64.24	3398.0	-8.9	99.7	0.17	-12.4	95.11	100.1
3500.0	2.51	68.63	3497.9	-7.1	103.8	0.23	-10.7	93.92	104.1
3600.0	2.49	81.34	3597.8	-6.0	108.0	0.55	-9.7	93.16	108.2
3700.0	2.34	82.63	3697.8	-5.5	112.2	0.16	-9.4	92.79	112.4
3800.0	2.14	80.62	3797.7	-4.9	116.1	0.22	-9.0	92.42	116.2
3900.0	2.04	75.90	3897.6	-4.2	119.6	0.20	-8.4	92.02	119.7
4000.0	2.21	68.81	3997.5	-3.0	123.1	0.38	-7.3	91.41	123.1
4100.0	2.00	65.00	4097.5	-1.5	126.5	0.22	-5.9	90.67	126.5
4200.0	2.00	65.00	4197.4	0.0	129.6	0.00	-4.5	90.00	129.6
4300.0	2.00	65.00	4297.4	1.5	132.8	0.00	-3.2	89.36	132.8
4400.0	2.00	65.00	4397.3	3.0	136.0	0.00	-1.8	88.75	136.0
4500.0	2.00	65.00	4497.2	4.4	139.1	0.00	-0.4	88.18	139.2
4600.0	2.00	65.00	4597.2	5.9	142.3	0.00	0.9	87.63	142.4
4700.0	1.94	62.59	4697.1	7.4	145.4	0.10	2.3	87.09	145.6

Scientific Drilling

SDI Survey Report

Company: Nearburg Producing Company
 Field: Buffalo Park Gas Field
 Site: Lea County, New Mexico
 Well: Vow 2- Federal #1
 Wellbore: CH Original hole

Date: 4/9/99
 Co-ordinator: NE Regulator
 Vertical (FV) Reference: Site Lea County, New Mexico, True North
 Surface (FS) Reference: 505.00 above Mean Sea Level
 Survey Control Point: Site (DUE-GIN-358.00)
 Minimum Curvature

Sheet: 1028.07
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Survey

MD R	Lat deg	Long deg	FV ft	NS ft	EW ft	D/A ft/1000	YS ft	CL ft	CLD ft
4800.0	1.71	49.69	4797.1	9.1	148.1	0.47	4.0	86.47	148.4
4900.0	1.59	33.87	4897.0	11.2	150.0	0.47	6.0	85.71	150.4
5000.0	1.60	16.96	4997.0	13.7	151.2	0.47	8.4	84.81	151.8
5100.0	1.74	1.61	5096.9	16.6	151.6	0.47	11.3	83.76	152.5
5200.0	1.99	349.32	5196.9	19.8	151.3	0.47	14.5	82.54	152.6
5300.0	2.00	349.00	5296.8	23.2	150.7	0.01	18.0	81.23	152.4
5400.0	2.00	349.00	5396.8	26.7	150.0	0.00	21.4	79.92	152.4
5500.0	1.92	2.96	5496.7	30.1	149.7	0.48	24.8	78.65	152.7
5600.0	1.86	12.97	5596.7	33.4	150.3	0.34	28.1	77.46	154.0
5700.0	1.90	313.85	5696.6	36.0	149.4	1.85	30.7	76.46	153.7
5800.0	3.71	339.31	5796.5	40.0	147.2	2.16	34.8	74.81	152.5
5900.0	5.65	335.33	5896.2	47.6	144.0	1.96	42.5	71.72	151.7
6000.0	7.65	336.72	5995.5	58.2	139.5	2.04	53.3	67.36	151.1
6100.0	9.98	338.49	6094.3	72.6	133.9	2.33	67.8	61.55	152.3
6200.0	12.08	338.77	6192.4	90.3	128.9	2.10	85.8	54.56	155.8
6300.0	13.24	339.00	6290.0	110.9	119.0	1.16	106.6	47.03	162.6
6400.0	14.99	339.51	6386.9	133.8	110.2	1.76	129.8	39.49	173.3
6500.0	15.40	339.86	6483.3	158.8	101.3	0.41	155.2	32.52	188.3
6600.0	15.18	338.00	6579.8	183.1	91.6	0.49	179.7	26.59	204.7
6700.0	16.84	338.81	6676.1	208.4	81.5	1.68	205.4	21.37	223.8
6800.0	16.57	339.00	6771.7	235.6	71.1	0.27	233.0	16.79	246.1
6900.0	16.31	338.26	6867.6	261.9	60.8	0.34	259.6	13.07	268.9
7000.0	15.69	336.92	6963.7	287.5	50.3	0.72	285.6	9.92	291.9
7100.0	15.25	337.11	7060.2	311.8	39.7	0.45	310.3	7.26	314.3
7200.0	15.10	336.45	7156.6	336.2	30.0	0.38	335.0	5.09	337.6
7300.0	14.46	335.91	7253.3	359.7	20.1	0.91	359.8	3.20	360.3
7400.0	14.04	335.00	7350.3	382.0	9.8	0.48	381.4	1.47	382.1
7500.0	13.66	335.00	7447.4	403.7	-0.4	0.36	403.5	359.95	403.7
7600.0	13.03	335.00	7544.6	424.7	-10.1	0.65	424.8	358.63	424.8
7700.0	12.57	333.65	7642.2	444.6	-19.6	0.55	445.0	357.48	445.1
7800.0	12.27	331.18	7739.8	463.7	-29.5	0.61	464.4	356.35	464.6
7900.0	12.25	331.00	7837.6	482.3	-39.8	0.04	483.3	355.23	483.9
8000.0	12.25	330.86	7935.3	500.8	-50.1	0.03	502.3	354.23	503.3
8100.0	12.25	330.21	8033.0	519.3	-60.6	0.14	521.1	353.35	522.8
8200.0	12.14	330.00	8130.7	537.6	-71.1	0.12	539.8	352.46	542.3
8300.0	11.98	330.00	8228.5	555.7	-81.6	0.16	558.2	351.65	561.7
8400.0	11.82	330.00	8326.4	573.6	-91.9	0.16	576.4	350.90	580.9
8500.0	11.20	329.16	8424.3	590.9	-102.0	0.64	594.1	350.21	599.7
8600.0	10.25	327.50	8522.6	606.8	-111.8	0.89	610.3	349.56	617.0
8700.0	9.98	329.82	8621.1	621.6	-120.9	0.49	625.4	348.99	633.3
8800.0	9.79	328.30	8719.6	636.3	-129.7	0.32	640.5	348.48	649.4
8900.0	9.57	323.29	8818.2	650.1	-139.2	0.87	654.5	347.91	664.8
9000.0	9.88	320.62	8916.7	663.6	-149.3	0.54	668.4	347.32	680.2
9100.0	10.90	318.00	9015.1	677.0	-161.2	1.13	682.2	346.60	695.9
9200.0	11.49	317.95	9113.2	691.5	-174.3	0.58	697.2	345.85	713.1
9300.0	11.11	316.37	9211.2	706.0	-187.6	0.49	712.1	345.12	730.5
9400.0	10.32	312.00	9309.5	718.7	-200.9	1.14	725.3	344.38	746.2
9500.0	10.31	311.76	9407.9	730.8	-214.3	0.04	737.8	343.65	761.5
9600.0	9.75	310.55	9506.4	742.2	-227.4	0.60	749.7	342.97	776.3
9700.0	9.74	304.85	9604.9	752.6	-240.8	0.96	760.5	342.26	790.1
9800.0	9.07	305.79	9703.6	761.9	-254.3	0.69	770.4	341.55	803.3
9900.0	8.69	302.56	9802.4	770.7	-267.0	0.63	779.5	340.89	815.6

Scientific Drilling SDI Survey Report

Company: Alamogordo Drilling Company	Date: 4/9/1999	Draw: 10/28/07	Page: 3
Well: Buffalo Park Gas Field	Coordinate (N): Reference	Site: Las County New Mexico True North	
Loc: Las County New Mexico	Vertical (TVD) Reference:	SITE 001 above Mean Sea Level	
Depth: 2100.00	Section (T/S) Reference:	SITE 002 0.00N 353.04W	
Remarks: ON Original hole	Survey Calculation Method:	Minimum Curvature	

Survey

MD ft	Incl deg	True deg	TVD ft	N/S ft	E/W ft	DLS ft/100ft	VS ft	QA ft	QSD ft
10000.0	8.02	298.44	9801.3	778.2	-279.6				
10100.0	7.00	298.00	10000.4	784.4	-280.9	0.81	787.5	340.24	826.9
10200.0	7.00	298.00	10099.7	790.1	-301.7	1.04	794.0	339.65	836.6
10300.0	6.80	300.36	10199.0	795.9	-312.2	0.00	800.1	339.10	845.7
10400.0	6.29	297.02	10298.3	801.6	-322.1	0.35	806.3	338.58	855.0
						0.64	812.3	338.11	863.9
10500.0	6.00	292.81	10397.8	806.0	-331.8				
10600.0	6.00	291.79	10497.2	809.8	-341.5	0.54	817.0	337.63	871.6
10700.0	6.00	295.00	10596.7	814.0	-351.1	0.11	821.3	337.14	878.9
10800.0	5.45	295.00	10696.2	818.2	-360.1	0.34	825.7	336.67	886.5
10900.0	4.88	295.49	10795.8	822.0	-368.3	0.55	830.3	336.25	893.9
						0.57	834.4	335.87	900.7
11000.0	4.21	298.92	10895.4	825.6	-375.3				
11100.0	3.61	304.11	10995.2	829.1	-381.1	0.73	838.2	335.55	906.9
11200.0	3.21	312.07	11095.0	832.8	-385.8	0.69	841.9	335.31	912.5
11300.0	2.79	319.32	11194.9	836.6	-389.4	0.62	845.7	335.14	917.8
11400.0	2.25	323.96	11294.8	840.0	-392.2	0.57	849.7	335.04	922.8
						0.58	853.2	334.97	927.1
11500.0	1.92	330.33	11394.7	843.0	-394.1				
11600.0	1.79	337.38	11494.7	845.9	-395.5	0.40	856.2	334.94	930.6
11700.0	1.56	328.31	11594.6	848.6	-396.8	0.26	859.2	334.94	933.8
11800.0	1.48	301.29	11694.6	850.4	-398.6	0.40	861.9	334.94	936.7
11900.0	1.28	301.34	11794.6	851.6	-400.8	0.66	863.8	334.88	939.2
						0.21	865.0	334.80	941.2
12000.0	1.02	309.02	11894.6	852.7	-402.4				
12100.0	0.99	302.28	11994.5	853.7	-403.8	0.30	866.2	334.74	942.9
12200.0	0.86	302.66	12094.5	854.6	-405.3	0.12	867.3	334.69	944.4
12300.0	0.61	318.07	12194.5	856.4	-406.3	0.13	868.2	334.63	945.8
12400.0	0.50	334.00	12294.5	856.2	-406.7	0.32	869.0	334.59	947.0
						0.19	869.8	334.59	947.9
12500.0	0.50	334.00	12394.5	857.0	-407.1				
12600.0	0.50	335.89	12494.5	857.8	-407.5	0.00	870.6	334.59	948.7
12700.0	0.50	336.82	12594.5	858.5	-407.8	0.02	871.4	334.59	949.6
12800.0	0.50	337.64	12694.5	859.4	-408.2	0.01	872.3	334.59	950.5
12900.0	0.50	338.00	12794.5	860.2	-408.5	0.01	873.1	334.59	951.4
						0.00	873.9	334.60	952.2
13000.0	0.50	335.05	12894.5	861.0	-408.9				
13100.0	0.50	333.17	12994.5	861.7	-409.2	0.03	874.7	334.60	953.1
13200.0	0.50	332.00	13094.5	862.5	-409.6	0.02	875.5	334.60	954.0
13300.0	0.50	332.00	13194.5	863.3	-410.0	0.01	876.3	334.60	954.8
13400.0	0.50	332.00	13294.5	864.1	-410.5	0.00	877.1	334.58	955.7
						0.00	877.9	334.58	956.6
13500.0	0.50	332.00	13394.5	864.8	-410.9				
13600.0	0.50	332.00	13494.5	865.6	-411.3	0.00	878.6	334.58	957.5
13700.0	0.50	332.00	13594.5	866.4	-411.7	0.00	879.4	334.58	958.3
13800.0	0.50	332.00	13694.5	867.1	-412.1	0.00	880.2	334.58	959.2
						0.00	881.0	334.58	960.1