

Phoenix Technology Services
Survey Report 30-Sep-2014 09:12:31

Chevron

Gramma Ridge 14-24-34 #1H
Lea County NM (NAD27 NME)
WB1/Job #1411672
Phoenix MWD Survey

Surface Loc.:

Northing: (Y) 446271.80

Easting: (X) 776517.00

KB Elev: 3516.50'

GL Elev: 3492.00'

Survey Type Information:

H 105.00 - 15663.00 PHEONIX MWD SURVEY : PHX+MWD+BGGM

MD	Incl.	Azim.	Sub- Sea Depth	Vertical Depth	Local	UTM		Vertical	Dogleg	Annotation
					Coordi ates	Coordi ates	Northings			
(ft)			(ft)	(ft)	(+N/-S) (ft)	(+E/-W) (ft)	(ft)	(ft)	(ft)	(°/100ft)
0	0	0	-3516.5	0	0	0	446271.8	776517	0	0
105	0.4	218.6	-3411.5	105	-0.29	-0.23	446271.51	776516.77	0.27	0.38 First Phoenix MWD Survey -
284	0.6	227.6	-3232.5	283.99	-1.41	-1.31	446270.39	776515.69	1.3	0.12
481	0.6	220.6	-3035.5	480.98	-2.89	-2.74	446268.91	776514.26	2.67	0.04
659	0.2	235.6	-2857.5	658.98	-3.77	-3.61	446268.03	776513.39	3.48	0.23
839	0.2	33.7	-2677.5	838.98	-3.68	-3.69	446268.12	776513.31	3.39	0.22
1003	0.4	31.6	-2513.5	1002.97	-2.96	-3.23	446268.84	776513.77	2.7	0.12
1183	0.7	357.6	-2333.5	1182.97	-1.33	-2.95	446270.47	776514.05	1.1	0.24
1220	0.9	327.6	-2296.5	1219.96	-0.85	-3.11	446270.95	776513.89	0.61	1.23
1377	1.11	324.82	-2139.6	1376.94	1.43	-4.65	446273.23	776512.35	-1.78	0.14
1556	1.13	330.59	-1960.6	1555.9	4.38	-6.52	446276.18	776510.48	-4.87	0.06
1735	1.1	327.62	-1781.6	1734.87	7.37	-8.3	446279.17	776508.7	-7.99	0.04
1914	1.01	334.61	-1602.7	1913.84	10.25	-9.9	446282.05	776507.1	-10.98	0.09
2093	1.25	336.41	-1423.7	2092.81	13.46	-11.36	446285.26	776505.64	-14.29	0.14
2272	1.48	328.94	-1244.8	2271.75	17.23	-13.33	446289.03	776503.67	-18.2	0.16
2452	1.03	358.49	-1064.8	2451.71	20.84	-14.57	446292.64	776502.43	-21.9	0.43
2631	1.26	347.09	-885.82	2630.68	24.37	-15.06	446296.17	776501.94	-25.45	0.18
2809	1.61	343.97	-707.88	2808.62	28.68	-16.18	446300.48	776500.82	-29.83	0.2
2988	1.16	31.19	-528.93	2987.57	32.65	-15.94	446304.45	776501.06	-33.77	0.66
3167	1.44	27.67	-349.97	3166.53	36.19	-13.96	446307.99	776503.04	-37.15	0.16
3347	1.86	23.82	-170.05	3346.45	40.86	-11.73	446312.66	776505.27	-41.64	0.24

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3526	1.15	64.39	8.89	3525.39	44.3	-8.93	446316.1	776508.07	-44.85	0.69
3705	1.52	39.68	187.85	3704.35	46.9	-5.8	446318.7	776511.2	-47.21	0.38
3884	1.31	46.92	366.79	3883.29	50.13	-2.79	446321.93	776514.21	-50.19	0.15
4063	1.35	41.19	545.74	4062.24	53.11	0.1	446324.91	776517.1	-52.95	0.08
4242	1.12	41.59	724.7	4241.2	56.01	2.64	446327.81	776519.64	-55.64	0.13
4421	1.42	39.47	903.66	4420.16	59.03	5.22	446330.83	776522.22	-58.45	0.17
4600	2.81	86.91	1082.54	4599.04	60.98	11.01	446332.78	776528.01	-59.95	1.19
4779	0.96	21.32	1261.45	4777.95	62.61	15.94	446334.41	776532.94	-61.21	1.43
4958	1.55	86.52	1440.42	4956.92	64.15	18.9	446335.95	776535.9	-62.52	0.8
5136	1.89	103.8	1618.34	5134.84	63.6	24.15	446335.4	776541.15	-61.56	0.35
5274	1.03	4.45	1756.31	5272.81	64.29	26.46	446336.09	776543.46	-62.08	1.66
5420	1.29	356.12	1902.28	5418.78	67.24	26.45	446339.04	776543.45	-65.02	0.21
5599	0.54	68.11	2081.26	5597.76	69.57	27.09	446341.37	776544.09	-67.29	0.69
5778	1.32	158.51	2260.24	5776.74	67.96	28.63	446339.76	776545.63	-65.57	0.8
5958	0.81	136.92	2440.21	5956.71	65.1	30.26	446336.9	776547.26	-62.6	0.36
6136	2.36	164.16	2618.14	6134.64	60.66	32.12	446332.46	776549.12	-58.02	0.94
6316	1.95	167.39	2798.01	6314.51	54.1	33.8	446325.9	776550.8	-51.36	0.24
6494	1.65	161.28	2975.92	6492.42	48.72	35.28	446320.52	776552.28	-45.88	0.2
6673	1.21	166.34	3154.87	6671.37	44.44	36.56	446316.24	776553.56	-41.52	0.26
6852	1.39	167.65	3333.82	6850.32	40.49	37.47	446312.29	776554.47	-37.5	0.1
7031	1.18	159.14	3512.77	7029.27	36.64	38.59	446308.44	776555.59	-33.58	0.16
7210	1.33	164.07	3691.73	7208.23	32.92	39.82	446304.72	776556.82	-29.78	0.1
7389	0.81	170.16	3870.7	7387.2	29.68	40.6	446301.48	776557.6	-26.48	0.3
7568	0.7	157.79	4049.68	7566.18	27.42	41.23	446299.22	776558.23	-24.18	0.11
7747	0.34	146.1	4228.68	7745.18	25.97	41.94	446297.77	776558.94	-22.68	0.21
7926	0.11	331.15	4407.68	7924.18	25.68	42.15	446297.48	776559.15	-22.38	0.25
8105	0.64	6.64	4586.67	8103.17	26.82	42.19	446298.62	776559.19	-23.51	0.31
8284	0.95	26.95	4765.65	8282.15	29.14	42.98	446300.94	776559.98	-25.76	0.23
8462	1.32	24.86	4943.62	8460.12	32.31	44.51	446304.11	776561.51	-28.81	0.21
8642	1.35	313.01	5123.58	8640.08	35.64	43.83	446307.44	776560.83	-32.18	0.87
8821	1.61	342.02	5302.52	8819.02	39.47	41.51	446311.27	776558.51	-36.18	0.44
9000	1.3	3.45	5481.47	8997.97	43.89	40.85	446315.69	776557.85	-40.63	0.35
9179	1.73	27.82	5660.41	9176.91	48.31	42.24	446320.11	776559.24	-44.93	0.43
9358	1.55	148.43	5839.37	9355.87	48.63	44.77	446320.43	776561.77	-45.06	1.59
9537	1.9	117.29	6018.29	9534.79	45.21	48.67	446317.01	776565.67	-41.35	0.55
9718	0.8	200.13	6199.25	9715.75	42.65	50.9	446314.45	776567.9	-38.63	1.09
9897	0.52	192.87	6378.24	9894.74	40.68	50.29	446312.48	776567.29	-36.71	0.16
10076	0.56	68.45	6557.24	10073.74	40.21	50.93	446312.01	776567.93	-36.2	0.53
10255	0.74	32.74	6736.22	10252.72	41.5	52.36	446313.3	776569.36	-37.37	0.24
10429	1.06	43.04	6910.2	10426.7	43.63	54.07	446315.43	776571.07	-39.36	0.21
10518	1.35	22.53	6999.18	10515.68	45.2	55.03	446317	776572.03	-40.85	0.58
10607	1.5	14.61	7088.16	10604.66	47.29	55.73	446319.09	776572.73	-42.89	0.28
10652	0.86	73.86	7133.15	10649.65	47.96	56.2	446319.76	776573.2	-43.51	2.87
10697	5.88	168.23	7178.07	10694.57	45.79	57	446317.59	776574	-41.29	13.35
10742	12.48	173.47	7222.47	10738.97	38.7	58.02	446310.5	776575.02	-34.14	14.77
10786	18.27	171.85	7264.88	10781.38	27.14	59.54	446298.94	776576.54	-22.5	13.19
10831	25.06	172.52	7306.67	10823.17	10.68	61.78	446282.48	776578.78	-5.92	15.1

10876	31.24	175.99	7346.33	10862.83	-10.43	63.84	446261.37	776580.84	15.28	14.2
10920	35.98	180.52	7382.97	10899.47	-34.75	64.52	446237.05	776581.52	39.59	12.18
10965	40.14	180.53	7418.4	10934.9	-62.49	64.27	446209.31	776581.27	67.22	9.24
11010	43.5	179.97	7451.93	10968.43	-92.49	64.14	446179.31	776581.14	97.13	7.51
11055	46.81	180.3	7483.66	11000.16	-124.39	64.07	446147.41	776581.07	128.93	7.37
11100	50.31	182.54	7513.44	11029.94	-158.1	63.21	446113.7	776580.21	162.48	8.63
11144	53.45	183.35	7540.6	11057.1	-192.67	61.43	446079.13	776578.43	196.8	7.28
11189	55.12	180.4	7566.87	11083.37	-229.18	60.24	446042.62	776577.24	233.12	6.49
11234	58.55	176.98	7591.49	11107.99	-266.82	61.13	446004.98	776578.13	270.72	9.93
11278	64.39	173.69	7612.5	11129	-305.32	64.3	445966.48	776581.3	309.35	14.81
11323	69.92	174.18	7629.96	11146.46	-346.55	68.68	445925.25	776585.68	350.79	12.33
11368	72.83	173.19	7644.33	11160.83	-388.92	73.37	445882.88	776590.37	393.4	6.79
11413	75.11	175.01	7656.76	11173.26	-431.94	77.81	445839.86	776594.81	436.63	6.39
11457	78.35	175.2	7666.86	11183.36	-474.6	81.46	445797.2	776598.46	479.45	7.38
11502	81.28	175.98	7674.81	11191.31	-518.76	84.87	445753.04	776601.87	523.73	6.73
11547	84.59	176.6	7680.35	11196.85	-563.32	87.76	445708.48	776604.76	568.38	7.48
11592	87.57	176.15	7683.42	11199.92	-608.12	90.59	445663.68	776607.59	613.27	6.7
11681	90.98	177.68	7684.55	11201.05	-696.97	95.38	445574.83	776612.38	702.22	4.2
11770	92.91	178.32	7681.53	11198.03	-785.85	98.49	445485.95	776615.49	791.09	2.28
11860	92.99	178.02	7676.9	11193.4	-875.69	101.36	445396.11	776618.36	880.88	0.34
11949	93.08	177.39	7672.18	11188.68	-964.49	104.92	445307.31	776621.92	969.69	0.71
12039	92.88	178.13	7667.5	11184	-1054.3	108.43	445217.5	776625.43	1059.51	0.85
12128	90.11	178.03	7665.18	11181.68	-1143.21	111.41	445128.59	776628.41	1148.39	3.11
12217	88.71	177.97	7666.1	11182.6	-1232.15	114.52	445039.65	776631.52	1237.3	1.57
12307	88.04	178.17	7668.65	11185.15	-1322.06	117.55	444949.74	776634.55	1327.18	0.78
12397	86.5	177.97	7672.94	11189.44	-1411.91	120.57	444859.89	776637.57	1417	1.73
12486	88.55	178.36	7676.78	11193.28	-1500.77	123.42	444771.03	776640.42	1505.82	2.34
12576	87.74	178.65	7679.69	11196.19	-1590.7	125.77	444681.1	776642.77	1595.66	0.96
12665	88.21	178.1	7682.84	11199.34	-1679.6	128.29	444592.2	776645.29	1684.5	0.81
12755	88.24	176.6	7685.63	11202.13	-1769.46	132.45	444502.34	776649.45	1774.41	1.67
12844	87.01	176.89	7689.32	11205.82	-1858.24	137.5	444413.56	776654.5	1863.31	1.42
12934	87.23	176.23	7693.84	11210.34	-1947.96	142.89	444323.84	776659.89	1953.19	0.77
13023	89.08	176.28	7696.7	11213.2	-2036.72	148.7	444235.08	776665.7	2042.13	2.08
13113	89.52	174.93	7697.8	11214.3	-2126.45	155.6	444145.35	776672.6	2132.12	1.58
13202	88.6	174.71	7699.26	11215.76	-2215.07	163.63	444056.73	776680.63	2221.1	1.06
13292	89.69	173.22	7700.61	11217.11	-2304.56	173.09	443967.24	776690.09	2311.05	2.05
13381	88.74	176.25	7701.83	11218.33	-2393.17	181.26	443878.63	776698.26	2400.02	3.57
13471	87.93	176.3	7704.44	11220.94	-2482.94	187.1	443788.86	776704.1	2489.97	0.9
13560	90.2	175.22	7705.89	11222.39	-2571.68	193.68	443700.12	776710.68	2578.96	2.82
13649	89.47	174.99	7706.15	11222.65	-2660.35	201.27	443611.45	776718.27	2667.95	0.86
13739	87.96	175.71	7708.17	11224.67	-2750.03	208.57	443521.77	776725.57	2757.92	1.86
13828	89.38	174.39	7710.23	11226.73	-2838.67	216.25	443433.13	776733.25	2846.89	2.18
13918	88.97	175.7	7711.53	11228.03	-2928.32	224.02	443343.48	776741.02	2936.88	1.53
14007	87.71	175.44	7714.11	11230.61	-3017.01	230.89	443254.79	776747.89	3025.84	1.45
14097	88.63	175.44	7716.98	11233.48	-3106.68	238.04	443165.12	776755.04	3115.79	1.02
14186	90.14	174.45	7717.94	11234.44	-3195.33	245.88	443076.47	776762.88	3204.77	2.03
14276	88.74	175.03	7718.82	11235.32	-3284.94	254.13	442986.86	776771.13	3294.76	1.68

14365	87.31	176.83	7721.88	11238.38	-3373.66	260.45	442898.14	776777.45	3383.7	2.58
14455	88.46	176.31	7725.2	11241.7	-3463.43	265.83	442808.37	776782.83	3473.62	1.4
14544	89.13	175.34	7727.08	11243.58	-3552.18	272.31	442719.62	776789.31	3562.6	1.32
14633	90.59	173.85	7727.29	11243.79	-3640.78	280.69	442631.02	776797.69	3651.58	2.34
14723	91.23	172.92	7725.86	11242.36	-3730.16	291.05	442541.64	776808.05	3741.5	1.25
14813	89.75	174.79	7725.09	11241.59	-3819.64	300.69	442452.16	776817.69	3831.45	2.65
14902	88.99	176.45	7726.07	11242.57	-3908.37	307.48	442363.43	776824.48	3920.44	2.05
14992	88.04	176.64	7728.41	11244.91	-3998.17	312.91	442273.63	776829.91	4010.4	1.08
15081	88.97	175.66	7730.73	11247.23	-4086.94	318.88	442184.86	776835.88	4099.36	1.52
15171	89.41	174.56	7732	11248.5	-4176.6	326.55	442095.2	776843.55	4189.34	1.32
15260	87.32	175.19	7734.54	11251.04	-4265.21	334.5	442006.59	776851.5	4278.3	2.45
15350	87.99	173.93	7738.22	11254.72	-4354.72	343.02	441917.08	776860.02	4368.2	1.58
15439	89.38	173.73	7740.26	11256.76	-4443.18	352.59	441828.62	776869.59	4457.13	1.58
15544	91.31	172.4	7739.63	11256.13	-4547.4	365.26	441724.4	776882.26	4562.02	2.23
15611	92.77	171.79	7737.25	11253.75	-4613.72	374.47	441658.08	776891.47	4628.85	2.36 Last Phoenix MWD Survey
15663	92.77	171.79	7734.73	11251.23	-4665.13	381.89	441606.67	776898.89	4680.68	0 Projection to TD

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
 Vertical depths are relative to KB. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.
 Vertical Section is from Slot and calculated along an Azimuth of 175.610° (Grid).

Coordinate System is NAD 1927 (NADCON CONUS) US State Plane 1927 (Exact solution), New Mexico East 3001.
 Grid Convergence at Surface is 0.477°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 15663.00ft.,
 the Bottom Hole Displacement is 4680.73ft., in the Direction of 175.610° (Grid).