

Minimum Radius of Curvature

API: 30-015-53276 **Well: Vanadium 32 State 004H** **Wellhead Location N+/S- : 32.269759**
Operator: Occidental **Area: New Mexico** **E+/W- : -103.797400**
Rig: **Type: U-Lateral** **Magnetic Declination: 6.67**
TD: 22,185' **Plane of Proposal: 179.69**

Measured Depth Ft	Drift Angle Deg	Azimuth Direction Deg	Course Length Ft	TVD Ft	Vertical Section Ft	COORDINATES		CLOSURE		Dog Leg Severity Deg/100'	Build / Drop Deg/100'	Left / Right Deg/100'
						N-S Ft	E-W Ft	Distance FT	Direction Deg			
0.00	0.00	0.00		0.0	0.00	0.00	0.00	0.00	0.00			
24	0.00	0.00	24	24.0	32.83	0.00	0.00	0.00	#DIV/0!	0.00		
33	0.26	49.45	9	33.2	32.82	0.01	0.02	0.02	49.45	2.83	2.83	538.67
65	0.41	47.16	32	64.9	32.69	0.14	0.15	0.21	48.19	0.47	0.47	-7.22
120	0.45	50.15	55	119.6	32.42	0.41	0.46	0.62	48.55	0.08	0.07	5.46
149	0.50	54.17	29	148.9	32.28	0.56	0.65	0.86	49.59	0.21	0.17	13.74
177	0.49	61.27	28	177.4	32.15	0.69	0.86	1.10	51.39	0.22	-0.04	24.94
207	0.48	57.70	30	207.1	32.02	0.82	1.08	1.35	52.90	0.11	-0.03	-11.99
236	0.48	61.11	29	235.6	31.90	0.94	1.28	1.59	53.87	0.10	0.00	11.96
267	0.45	62.67	31	267.1	31.78	1.06	1.51	1.84	54.98	0.10	-0.10	4.95
330	0.42	74.86	63	330.0	31.61	1.23	1.95	2.31	57.74	0.15	-0.05	19.39
361	0.42	95.14	31	361.5	31.59	1.25	2.18	2.51	60.12	0.47	0.00	64.44
393	0.43	73.38	31	392.9	31.57	1.27	2.40	2.72	62.08	0.51	0.03	-69.26
418	0.51	79.86	26	418.4	31.52	1.32	2.61	2.92	63.13	0.38	0.31	25.38
535	0.53	67.64	117	535.0	31.23	1.62	3.62	3.96	65.90	0.10	0.02	-10.48
590	0.69	71.47	55	590.0	31.03	1.82	4.17	4.55	66.40	0.30	0.29	6.96
685	0.56	78.69	95	685.0	30.77	2.09	5.16	5.57	67.94	0.16	-0.14	7.60
762	0.68	77.59	77	762.0	30.60	2.27	5.98	6.39	69.25	0.16	0.16	-1.43
826	0.66	71.08	64	826.0	30.40	2.47	6.70	7.14	69.79	0.12	-0.03	-10.17
877	0.51	71.39	51	877.0	30.24	2.63	7.19	7.66	69.89	0.29	-0.29	0.61
942	0.33	75.59	65	942.0	30.10	2.77	7.65	8.14	70.07	0.28	-0.28	6.46
1000	0.34	294.35	58	1000.0	29.99	2.89	7.65	8.18	69.34	1.09	0.02	377.17
1062	0.40	298.49	62	1062.0	29.81	3.06	7.30	7.91	67.21	0.11	0.10	6.68
1160	0.41	301.33	98	1160.0	29.46	3.41	6.70	7.51	63.01	0.02	0.01	2.90
1255	0.56	312.06	95	1255.0	28.97	3.90	6.06	7.21	57.25	0.18	0.16	11.29
1343	0.55	311.93	88	1342.9	28.39	4.47	5.43	7.03	50.53	0.01	-0.01	-0.15
1443	0.60	310.81	100	1442.9	27.73	5.13	4.67	6.94	42.33	0.05	0.05	-1.12
1535	0.45	300.28	92	1534.9	27.22	5.63	4.00	6.90	35.38	0.19	-0.16	-11.45
1580	0.56	310.58	45	1579.9	26.99	5.86	3.68	6.92	32.11	0.32	0.24	22.89
1687	0.63	295.73	107	1686.9	26.39	6.46	2.75	7.02	23.07	0.16	0.07	-13.88
1781	0.44	288.35	94	1780.9	26.05	6.79	1.94	7.07	15.95	0.21	-0.20	-7.85
1875	0.39	310.33	94	1874.9	25.72	7.11	1.36	7.24	10.79	0.18	-0.05	23.38
1970	0.35	296.91	95	1969.9	25.38	7.45	0.85	7.50	6.51	0.10	-0.04	-14.13
2065	0.47	288.80	95	2064.9	25.12	7.71	0.22	7.72	1.65	0.14	0.13	-8.54
2159	0.56	313.42	94	2158.9	24.68	8.15	-0.48	8.17	356.66	0.25	0.10	26.19
2253	0.68	301.97	94	2252.9	24.06	8.76	-1.28	8.86	351.67	0.18	0.13	-12.18
2347	0.66	305.25	94	2346.9	23.45	9.37	-2.20	9.63	346.80	0.05	-0.02	3.49
2442	0.48	309.44	95	2441.9	22.88	9.94	-2.95	10.37	343.46	0.19	-0.19	4.41
2536	0.39	300.02	94	2535.9	22.46	10.35	-3.53	10.94	341.15	0.12	-0.10	-10.02
2631	0.48	282.45	95	2630.9	22.21	10.60	-4.20	11.40	338.37	0.17	0.09	-18.49
2725	0.48	299.98	94	2724.9	21.93	10.88	-4.93	11.94	335.63	0.16	0.00	18.65
2820	0.29	320.92	95	2819.9	21.54	11.26	-5.42	12.50	334.29	0.25	-0.20	22.04
2914	0.38	279.24	94	2913.9	21.30	11.50	-5.88	12.92	332.91	0.27	0.10	-44.34
3009	0.46	294.68	95	3008.9	21.09	11.71	-6.54	13.41	330.82	0.15	0.08	16.25
3104	0.39	312.79	95	3103.9	20.71	12.09	-7.12	14.03	329.49	0.16	-0.07	19.06
3198	0.41	279.65	94	3197.9	20.43	12.36	-7.69	14.56	328.12	0.24	0.02	-35.26
3293	0.27	331.87	95	3292.9	20.17	12.62	-8.13	15.01	327.20	0.34	-0.15	54.97
3387	0.28	87.80	94	3386.9	19.97	12.82	-8.00	15.11	328.02	0.50	0.01	-259.65
3482	1.02	120.63	95	3481.9	20.40	12.40	-7.04	14.26	330.39	0.84	0.78	34.56
3576	1.10	129.12	94	3575.9	21.40	11.40	-5.62	12.71	333.74	0.19	0.09	9.03
3671	1.46	125.82	95	3670.8	22.69	10.12	-3.94	10.86	338.74	0.39	0.38	-3.47
3765	2.01	135.67	94	3764.8	24.58	8.24	-1.81	8.44	347.59	0.66	0.59	10.48
3860	2.00	143.73	95	3859.7	27.12	5.71	0.33	5.72	3.33	0.30	-0.01	8.48
3954	1.00	175.74	94	3953.7	29.27	3.57	1.36	3.82	20.90	1.35	-1.06	34.05
4049	0.88	184.25	95	4048.7	30.82	2.02	1.37	2.44	34.22	0.19	-0.13	8.96
4146	1.00	189.89	97	4145.7	32.40	0.44	1.17	1.25	69.44	0.16	0.12	5.81
4289	0.59	178.62	143	4288.7	34.36	-1.53	0.97	1.81	147.47	0.31	-0.29	-7.88
4478	1.06	200.20	189	4477.6	36.97	-4.14	0.39	4.16	174.57	0.29	0.25	11.42

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						N-S Ft	E-W Ft	Distance FT	Direction Deg			
4573	0.38	110.96	95	4572.6	37.91	-5.08	0.38	5.09	175.68	1.18	-0.72	-93.94
4667	0.69	54.44	94	4666.6	37.70	-4.86	1.14	4.99	166.85	0.61	0.33	-60.13
4856	0.72	0.42	189	4855.6	35.85	-3.01	2.07	3.65	145.49	0.34	0.02	-28.58
4951	0.88	7.48	95	4950.6	34.53	-1.69	2.17	2.75	127.92	0.20	0.17	7.43
5046	1.03	44.54	95	5045.6	33.20	-0.36	2.86	2.89	97.13	0.66	0.16	39.01
5140	0.50	41.13	94	5139.6	32.30	0.55	3.73	3.77	81.56	0.57	-0.56	-3.63
5235	0.53	12.17	95	5234.6	31.56	1.29	4.09	4.29	72.44	0.27	0.03	-30.48
5424	1.21	6.09	189	5423.6	28.72	4.13	4.49	6.10	47.35	0.36	0.36	-3.22
5519	0.71	7.35	95	5518.5	27.14	5.71	4.67	7.38	39.25	0.53	-0.53	1.33
5708	1.05	34.73	189	5707.5	24.56	8.30	5.81	10.13	34.97	0.28	0.18	14.49
5803	1.21	29.99	95	5802.5	22.98	9.88	6.80	12.00	34.54	0.19	0.17	-4.99
5897	0.97	10.16	94	5896.5	21.35	11.53	7.44	13.72	32.84	0.47	-0.26	-21.10
5992	3.98	331.55	95	5991.4	17.65	15.22	6.01	16.36	21.55	3.45	3.17	338.31
6087	4.03	330.94	95	6086.2	11.81	21.03	2.82	21.22	7.63	0.07	0.05	-0.64
6181	4.17	331.95	94	6179.9	5.89	26.94	-0.39	26.94	359.16	0.17	0.15	1.07
6276	4.23	324.18	95	6274.7	-0.02	32.83	-4.07	33.08	352.93	0.60	0.06	-8.18
6371	4.37	320.72	95	6369.4	-5.68	38.47	-8.41	39.38	347.67	0.31	0.15	-3.64
6466	4.17	324.38	95	6464.1	-11.32	44.08	-12.71	45.88	343.91	0.36	-0.21	3.85
6561	3.88	313.55	95	6558.9	-16.36	49.10	-17.06	51.98	340.85	0.85	-0.31	-11.40
6655	4.00	316.64	94	6652.7	-20.96	53.68	-21.61	57.86	338.07	0.26	0.13	3.29
6750	3.39	313.85	95	6747.5	-25.34	58.03	-25.91	63.55	335.94	0.67	-0.64	-2.94
6845	3.54	308.88	95	6842.3	-29.15	61.82	-30.22	68.81	333.95	0.35	0.16	-5.23
6940	3.34	319.00	95	6937.1	-33.10	65.75	-34.32	74.17	332.44	0.67	-0.21	10.65
7035	3.68	310.97	95	7032.0	-37.21	69.83	-38.44	79.71	331.17	0.63	0.36	-8.45
7129	3.75	316.47	94	7125.8	-41.44	74.04	-42.83	85.54	329.95	0.39	0.07	5.85
7224	3.30	315.60	95	7220.6	-45.67	78.25	-46.88	91.22	329.07	0.48	-0.47	-0.92
7319	3.32	316.26	95	7315.4	-49.63	82.19	-50.70	96.57	328.33	0.05	0.02	0.69
7414	2.81	317.91	95	7410.3	-53.36	85.90	-54.16	101.55	327.77	0.54	-0.54	1.74
7509	4.28	340.53	95	7505.1	-58.45	90.97	-56.90	107.31	327.97	2.11	1.55	23.81
7603	6.08	0.84	94	7598.7	-66.74	99.26	-58.00	114.96	329.70	2.71	1.91	-361.37
7698	6.46	10.94	95	7693.2	-77.01	109.54	-56.91	123.44	332.54	1.23	0.40	10.63
7793	6.00	9.65	95	7787.6	-87.15	119.68	-55.07	131.74	335.29	0.51	-0.48	-1.36
7888	5.81	11.74	95	7882.1	-96.74	129.28	-53.26	139.82	337.61	0.30	-0.20	2.20
7983	5.24	9.97	95	7976.7	-105.71	138.26	-51.53	147.55	339.56	0.63	-0.60	-1.86
8078	3.97	7.18	95	8071.4	-113.24	145.80	-50.36	154.25	340.94	1.36	-1.34	-2.94
8173	3.30	358.83	95	8166.2	-119.23	151.80	-50.01	159.82	341.77	0.90	-0.71	370.16
8268	3.00	11.29	95	8261.0	-124.40	156.97	-49.58	164.61	342.47	0.78	-0.32	-365.83
8362	4.03	12.11	94	8354.8	-130.04	162.61	-48.40	169.66	343.42	1.10	1.10	0.87
8457	3.70	12.00	95	8449.6	-136.29	168.87	-47.07	175.31	344.43	0.35	-0.35	-0.12
8552	3.88	347.82	95	8544.4	-142.43	175.01	-47.11	181.24	344.94	1.68	0.19	353.49
8646	3.58	335.64	94	8638.2	-148.23	180.79	-48.99	187.31	344.84	0.90	-0.32	-12.96
8741	3.65	333.53	95	8733.0	-153.65	186.20	-51.56	193.21	344.52	0.16	0.07	-2.22
8836	3.94	355.36	95	8827.8	-159.62	192.16	-53.17	199.38	344.53	1.54	0.31	22.98
8931	4.12	350.06	95	8922.6	-166.24	198.78	-54.02	205.99	344.80	0.44	0.19	-5.58
9026	4.03	2.00	95	9017.4	-172.94	205.48	-54.50	212.58	345.15	0.90	-0.09	-366.38
9121	3.80	16.67	95	9112.1	-179.28	211.83	-53.48	218.47	345.83	1.08	-0.24	15.44
9302	2.62	356.91	181	9292.9	-189.15	221.71	-51.98	227.72	346.81	0.88	-0.65	187.98
9388	2.56	354.79	86	9378.8	-193.03	225.58	-52.26	231.56	346.96	0.13	-0.07	-2.47
9425	0.63	87.05	37	9415.8	-193.86	226.41	-52.13	232.34	347.03	7.19	-5.22	-723.62
9482	4.31	153.17	57	9472.7	-191.96	224.52	-50.85	230.21	347.24	7.19	6.46	116.00
9577	11.89	173.86	95	9566.7	-179.01	211.58	-48.19	217.00	347.17	8.42	7.98	21.78
9647	19.75	177.42	70	9634.0	-159.99	192.57	-46.88	198.19	346.32	11.31	11.23	5.09
9672	22.56	178.11	25	9657.3	-150.97	183.55	-46.54	189.36	345.77	11.28	11.24	2.76
9766	30.58	174.57	94	9741.3	-109.06	141.66	-43.67	148.24	342.87	8.69	8.53	-3.77
9861	40.07	172.40	95	9818.7	-54.53	87.16	-37.33	94.82	336.82	10.08	9.99	-2.28
9955	49.89	169.87	94	9885.2	11.06	21.62	-26.98	34.57	308.71	10.62	10.45	-2.69
10050	56.72	171.60	95	9941.9	86.27	-53.52	-14.77	55.52	195.43	7.34	7.19	1.82
10145	59.50	182.16	95	9992.2	166.65	-133.88	-10.50	134.29	184.49	9.88	2.93	11.12

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10239	70.93	185.76	94	10031.5	251.58	-218.85	-16.51	219.47	184.31	12.64	12.16	3.83
10334	82.81	181.60	95	10053.1	343.69	-310.99	-22.36	311.79	184.11	13.21	12.51	-4.38
10429	86.77	180.24	95	10061.7	438.26	-405.56	-23.87	406.27	183.37	4.41	4.17	-1.43
10524	87.27	186.40	95	10066.6	532.89	-500.23	-29.36	501.09	183.36	6.50	0.53	6.48
10618	89.48	190.00	94	10069.3	625.80	-593.21	-42.76	594.75	184.12	4.49	2.35	3.83
10713	89.48	189.40	95	10070.2	719.35	-686.85	-58.77	689.36	184.89	0.63	0.00	-0.63
10747	89.45	189.29	34	10070.5	752.87	-720.40	-64.29	723.26	185.10	0.34	-0.09	-0.32
10768	89.43	189.23	21	10070.7	773.57	-741.12	-67.67	744.20	185.22	0.30	-0.10	-0.29
10808	89.40	189.10	40	10071.1	813.03	-780.61	-74.04	784.11	185.42	0.33	-0.08	-0.32
10902	89.57	188.50	94	10072.0	905.84	-873.50	-88.42	877.96	185.78	0.66	0.18	-0.64
10997	89.53	188.78	95	10072.7	999.68	-967.42	-102.69	972.85	186.06	0.30	-0.04	0.29
11092	89.61	186.58	95	10073.4	1093.75	-1061.56	-115.39	1067.81	186.20	2.32	0.08	-2.32
11185	89.46	184.59	93	10074.2	1186.25	-1154.11	-124.44	1160.79	186.15	2.15	-0.16	-2.14
11280	89.66	183.43	95	10074.9	1280.97	-1248.87	-131.08	1255.73	185.99	1.24	0.21	-1.22
11375	89.54	182.53	95	10075.6	1375.81	-1343.74	-136.02	1350.60	185.78	0.96	-0.13	-0.95
11469	89.55	182.11	94	10076.3	1469.71	-1437.66	-139.82	1444.44	185.55	0.45	0.01	-0.45
11564	89.59	180.78	95	10077.0	1564.66	-1532.62	-142.22	1539.21	185.30	1.40	0.04	-1.40
11658	89.37	179.80	94	10077.9	1658.65	-1626.62	-142.69	1632.86	185.01	1.07	-0.23	-1.04
11753	89.48	179.82	95	10078.8	1753.65	-1721.61	-142.38	1727.49	184.73	0.12	0.12	0.02
11848	89.44	180.35	95	10079.7	1848.64	-1816.61	-142.52	1822.19	184.49	0.56	-0.04	0.56
11943	89.60	179.56	95	10080.5	1943.63	-1911.60	-142.45	1916.90	184.26	0.85	0.17	-0.83
12037	89.41	179.35	94	10081.3	2037.63	-2005.59	-141.55	2010.58	184.04	0.30	-0.20	-0.22
12132	89.34	179.38	95	10082.4	2132.62	-2100.58	-140.50	2105.28	183.83	0.08	-0.07	0.03
12226	89.57	178.91	94	10083.3	2226.61	-2194.57	-139.10	2198.97	183.63	0.56	0.24	-0.50
12321	89.58	179.28	95	10084.0	2321.61	-2289.55	-137.60	2293.68	183.44	0.39	0.01	0.39
12416	89.55	178.79	95	10084.7	2416.60	-2384.54	-136.00	2388.41	183.26	0.52	-0.03	-0.52
12605	89.59	176.98	189	10086.1	2605.49	-2573.39	-129.02	2576.63	182.87	0.96	0.02	-0.96
12699	89.58	177.18	94	10086.8	2699.39	-2667.27	-124.23	2670.16	182.67	0.21	-0.01	0.21
12793	89.45	177.48	94	10087.6	2793.31	-2761.16	-119.85	2763.76	182.49	0.35	-0.14	0.32
12887	89.54	176.44	94	10088.4	2887.19	-2855.03	-114.87	2857.34	182.30	1.11	0.10	-1.11
12972	89.65	176.87	85	10089.0	2972.07	-2939.88	-109.91	2941.93	182.14	0.52	0.13	0.51
12979	89.66	176.90	7	10089.1	2979.06	-2946.87	-109.53	2948.90	182.13	0.45	0.14	0.43
13073	90.04	179.16	94	10089.3	3073.02	-3040.81	-106.30	3042.66	182.00	2.44	0.40	2.40
13167	89.44	179.60	94	10089.7	3167.02	-3134.80	-105.28	3136.57	181.92	0.79	-0.64	0.47
13260	89.53	178.77	93	10090.6	3260.01	-3227.79	-103.96	3229.46	181.84	0.90	0.10	-0.89
13354	89.64	179.18	94	10091.2	3354.00	-3321.77	-102.28	3323.34	181.76	0.45	0.12	0.44
13448	89.59	179.36	94	10091.9	3447.99	-3415.76	-101.08	3417.25	181.69	0.20	-0.05	0.19
13543	89.57	179.20	95	10092.6	3542.99	-3510.75	-99.89	3512.17	181.63	0.17	-0.02	-0.17
13637	89.41	179.02	94	10093.4	3636.98	-3604.73	-98.43	3606.08	181.56	0.26	-0.17	-0.19
13732	89.49	179.51	95	10094.3	3731.97	-3699.72	-97.21	3701.00	181.51	0.52	0.08	0.52
13827	89.48	179.69	95	10095.2	3826.97	-3794.71	-96.54	3795.94	181.46	0.19	-0.01	0.19
13921	89.60	181.04	94	10095.9	3920.96	-3888.71	-97.14	3889.92	181.43	1.44	0.13	1.44
14015	89.44	182.48	94	10096.7	4014.89	-3982.66	-100.03	3983.91	181.44	1.54	-0.17	1.53
14110	89.48	182.10	95	10097.6	4109.79	-4077.58	-103.82	4078.90	181.46	0.40	0.04	-0.40
14204	89.48	182.29	94	10098.5	4203.69	-4171.50	-107.42	4172.89	181.48	0.20	0.00	0.20
14299	89.42	181.24	95	10099.4	4298.62	-4266.45	-110.35	4267.88	181.48	1.11	-0.06	-1.11
14394	89.47	181.65	95	10100.3	4393.58	-4361.42	-112.75	4362.88	181.48	0.43	0.05	0.43
14488	91.67	181.73	94	10099.4	4487.51	-4455.37	-115.52	4456.86	181.49	2.34	2.34	0.09
14583	93.07	180.36	95	10095.4	4582.40	-4550.27	-117.25	4551.78	181.48	2.06	1.47	-1.44
14678	94.47	183.69	95	10089.2	4677.10	-4644.98	-120.60	4646.55	181.49	3.80	1.47	3.51
14772	94.01	189.10	94	10082.2	4770.16	-4738.11	-131.04	4739.92	181.58	5.76	-0.49	5.76
14831	94.17	193.26	59	10078.0	4827.82	-4795.83	-142.44	4797.94	181.70	7.04	0.27	7.05
14867	94.25	195.80	36	10075.4	4862.52	-4830.58	-151.45	4832.95	181.80	7.04	0.22	7.06
14962	94.17	201.85	95	10068.4	4951.99	-4920.21	-182.01	4923.58	182.12	6.35	-0.08	6.37
15057	93.98	205.62	95	10061.6	5038.51	-5006.94	-220.14	5011.78	182.52	3.96	-0.20	3.97
15151	94.24	213.49	94	10054.9	5119.75	-5088.44	-266.35	5095.40	183.00	8.36	0.28	8.37
15246	92.28	216.90	95	10049.5	5196.95	-5165.93	-321.01	5175.89	183.56	4.13	-2.06	3.59
15340	93.14	222.23	94	10045.0	5268.98	-5238.29	-380.79	5252.11	184.16	5.74	0.91	5.67

Minimum Radius of Curvature

API: 30-015-53276 **Well: Vanadium 32 State 004H** **Wellhead Location N+/S- : 32.269759**
Operator: Occidental **Area: New Mexico** **E+/W- : -103.797400**
Rig: **Type: U-Lateral** **Magnetic Declination: 6.67**
TD: 22,185' **Plane of Proposal: 179.69**

Measured Depth Ft	Drift Angle Deg	Azimuth Direction Deg	Course Length Ft	TVD Ft	Vertical Section Ft	COORDINATES		CLOSURE		Dog Leg Severity Deg/100'	Build / Drop Deg/100'	Left / Right Deg/100'
						N-S Ft	E-W Ft	Distance FT	Direction Deg			
15435	94.79	227.00	95	10038.5	5336.06	-5305.73	-447.33	5324.55	184.82	5.30	1.74	5.02
15530	94.96	231.21	95	10030.4	5397.63	-5367.69	-518.87	5392.71	185.52	4.42	0.18	4.43
15624	95.16	235.99	94	10022.1	5452.77	-5423.23	-594.21	5455.69	186.25	5.07	0.21	5.09
15719	96.46	240.16	95	10012.5	5502.31	-5473.20	-674.40	5514.60	187.02	4.58	1.37	4.39
15731	96.53	240.76	12	10011.1	5508.13	-5479.08	-684.78	5521.71	187.12	5.00	0.58	5.00
15813	97.02	244.87	82	10001.4	5544.93	-5516.28	-757.19	5568.00	187.82	5.01	0.60	5.01
15908	96.05	253.59	95	9990.6	5577.88	-5549.71	-845.35	5613.72	188.66	9.18	-1.02	9.18
16003	96.23	260.43	95	9980.4	5598.60	-5570.93	-937.34	5649.23	189.55	7.16	0.19	7.20
16098	96.03	269.07	95	9970.3	5606.73	-5579.56	-1031.31	5674.07	190.47	9.05	-0.21	9.09
16193	95.24	269.08	95	9960.9	5607.74	-5581.09	-1125.83	5693.51	191.40	0.83	-0.83	0.01
16287	94.80	271.06	94	9952.7	5607.12	-5580.97	-1219.47	5712.65	192.33	2.15	-0.47	2.11
16382	93.36	270.90	95	9946.0	5604.99	-5579.35	-1314.21	5732.04	193.25	1.53	-1.52	-0.17
16477	90.95	267.85	95	9942.4	5605.51	-5580.39	-1409.12	5755.55	194.17	4.09	-2.54	-3.21
16572	93.97	271.32	95	9938.3	5605.69	-5581.08	-1504.00	5780.18	195.08	4.84	3.18	3.65
16666	93.93	275.47	94	9931.8	5599.63	-5575.53	-1597.60	5799.90	195.99	4.40	-0.04	4.41
16761	94.40	275.67	95	9924.9	5589.92	-5566.33	-1691.90	5817.78	196.91	0.54	0.49	0.21
16856	94.34	278.47	95	9917.7	5577.76	-5554.67	-1785.89	5834.70	197.82	2.94	-0.06	2.95
16950	94.33	286.38	94	9910.6	5557.11	-5534.52	-1877.35	5844.26	198.74	8.39	-0.01	8.41
17045	93.98	288.96	95	9903.7	5527.87	-5505.76	-1967.62	5846.79	199.67	2.73	-0.37	2.72
17140	94.20	293.22	95	9896.9	5493.30	-5471.67	-2056.02	5845.20	200.59	4.48	0.23	4.48
17234	94.00	293.03	94	9890.2	5456.01	-5434.85	-2142.24	5841.81	201.51	0.29	-0.21	-0.20
17329	94.03	299.18	95	9883.5	5413.87	-5393.17	-2227.30	5834.99	202.44	6.46	0.03	6.47
17424	92.82	305.66	95	9877.9	5362.63	-5342.36	-2307.30	5819.31	203.36	6.93	-1.27	6.82
17519	93.00	315.85	95	9873.0	5300.38	-5280.50	-2379.08	5791.69	204.25	10.71	0.19	10.73
17614	93.17	319.54	95	9867.9	5229.89	-5210.36	-2442.92	5754.62	205.12	3.88	0.18	3.88
17708	93.02	322.90	94	9862.8	5156.41	-5137.19	-2501.70	5713.95	205.97	3.57	-0.16	3.57
17803	92.40	333.24	95	9858.3	5075.72	-5056.77	-2551.82	5664.16	206.78	10.89	-0.65	10.88
17898	92.62	344.60	95	9854.1	4987.12	-4968.36	-2585.90	5601.02	207.50	11.95	0.23	11.96
17992	90.49	354.60	94	9851.6	4894.73	-4876.06	-2602.83	5527.26	208.09	10.87	-2.27	10.64
18087	91.94	0.77	95	9849.6	4799.86	-4781.20	-2606.67	5445.61	208.60	6.67	1.53	-372.45
18182	90.23	359.94	95	9847.8	4704.89	-4686.23	-2606.08	5362.12	209.08	2.00	-1.80	378.07
18276	89.98	358.22	94	9847.6	4610.90	-4592.24	-2607.59	5280.93	209.59	1.85	-0.27	-1.83
18371	90.17	357.66	95	9847.5	4515.94	-4497.30	-2611.00	5200.30	210.14	0.62	0.20	-0.59
18466	90.14	357.65	95	9847.2	4421.00	-4402.38	-2614.89	5120.41	210.71	0.03	-0.03	-0.01
18562	90.61	357.09	96	9846.6	4325.08	-4306.49	-2619.30	5040.49	211.31	0.76	0.49	-0.58
18656	90.74	356.54	94	9845.5	4231.21	-4212.64	-2624.52	4963.31	211.92	0.60	0.14	-0.59
18751	90.44	358.31	95	9844.5	4136.29	-4117.75	-2628.79	4885.32	212.55	1.89	-0.32	1.86
18846	91.30	358.82	95	9843.1	4041.32	-4022.79	-2631.16	4806.85	213.19	1.05	0.91	0.54
18940	90.76	357.87	94	9841.4	3947.37	-3928.84	-2633.88	4730.02	213.84	1.16	-0.57	-1.01
19035	90.65	0.24	95	9840.2	3852.39	-3833.87	-2635.45	4652.33	214.51	2.50	-0.12	-376.45
19225	90.59	1.27	190	9838.1	3662.43	-3643.90	-2632.94	4495.60	215.85	0.54	-0.03	0.54
19319	90.44	1.17	94	9837.3	3568.47	-3549.93	-2630.94	4418.58	216.54	0.19	-0.16	-0.11
19509	90.41	1.11	190	9835.9	3378.54	-3359.97	-2627.16	4265.13	218.02	0.04	-0.02	-0.03
19604	90.70	0.61	95	9835.0	3283.56	-3264.98	-2625.73	4189.82	218.81	0.61	0.31	-0.53
19698	90.58	1.04	94	9833.9	3189.58	-3171.00	-2624.38	4116.14	219.61	0.47	-0.13	0.46
19793	89.48	0.21	95	9833.9	3094.60	-3076.01	-2623.35	4042.74	220.46	1.45	-1.16	-0.87
19887	90.62	0.36	94	9833.8	3000.61	-2982.01	-2622.88	3971.38	221.33	1.22	1.21	0.16
19982	90.66	359.76	95	9832.7	2905.61	-2887.02	-2622.78	3900.49	222.25	0.63	0.04	378.32
20076	89.47	1.44	94	9832.6	2811.63	-2793.03	-2621.79	3830.77	223.19	2.19	-1.27	-381.19
20171	89.56	1.10	95	9833.4	2716.67	-2698.05	-2619.69	3760.62	224.16	0.37	0.09	-0.36
20266	89.35	1.50	95	9834.3	2621.71	-2603.08	-2617.53	3691.55	225.16	0.48	-0.22	0.42
20360	89.41	1.37	94	9835.3	2527.76	-2509.12	-2615.18	3624.20	226.19	0.15	0.06	-0.14
20455	89.63	1.31	95	9836.1	2432.81	-2414.15	-2612.96	3557.48	227.26	0.24	0.23	-0.06
20549	89.66	0.13	94	9836.7	2338.82	-2320.16	-2611.78	3493.50	228.38	1.26	0.03	-1.26
20644	89.67	1.28	95	9837.3	2243.84	-2225.17	-2610.61	3430.25	229.56	1.21	0.01	1.21
20739	89.64	1.78	95	9837.9	2148.89	-2130.20	-2608.07	3367.46	230.76	0.53	-0.03	0.53
20833	89.85	1.69	94	9838.3	2054.95	-2036.25	-2605.23	3306.59	231.99	0.24	0.22	-0.10
20928	89.56	1.54	95	9838.8	1960.01	-1941.29	-2602.55	3246.82	233.28	0.34	-0.31	-0.16

Minimum Radius of Curvature

API: 30-015-53276 **Well: Vanadium 32 State 004H** **Wellhead Location N+/S- : 32.269759**
Operator: Occidental **Area: New Mexico** **E+/W- : -103.797400**
Rig: **Type: U-Lateral** **Magnetic Declination: 6.67**
TD: 22,185' **Plane of Proposal: 179.69**

Measured Depth Ft	Drift Angle Deg	Azimuth Direction Deg	Course Length Ft	TVD Ft	Vertical Section Ft	COORDINATES		CLOSURE		Dog Leg Severity Deg/100'	Build / Drop Deg/100'	Left / Right Deg/100'
						N-S Ft	E-W Ft	Distance FT	Direction Deg			
21023	89.40	1.25	95	9839.6	1865.05	-1846.32	-2600.24	3189.06	234.62	0.35	-0.17	-0.31
21118	90.86	359.26	95	9839.4	1770.07	-1751.33	-2599.81	3134.67	236.03	2.60	1.54	376.85
21212	90.23	359.41	94	9838.5	1676.07	-1657.34	-2600.90	3084.07	237.49	0.69	-0.67	0.16
21307	90.69	359.22	95	9837.8	1581.08	-1562.35	-2602.04	3035.05	239.02	0.52	0.48	-0.20
21402	90.21	358.49	95	9837.0	1486.09	-1467.37	-2603.94	2988.92	240.60	0.92	-0.51	-0.77
21496	90.34	359.14	94	9836.6	1392.11	-1373.39	-2605.88	2945.65	242.21	0.71	0.14	0.69
21591	90.70	359.45	95	9835.7	1297.11	-1278.41	-2607.05	2903.62	243.88	0.50	0.38	0.33
21686	90.76	359.39	95	9834.5	1202.12	-1183.42	-2608.01	2863.95	245.59	0.09	0.06	-0.06
21781	90.69	357.68	95	9833.3	1107.15	-1088.46	-2610.44	2828.28	247.37	1.80	-0.07	-1.80
21876	90.22	358.97	95	9832.5	1012.18	-993.51	-2613.22	2795.70	249.18	1.45	-0.49	1.36
21970	90.30	359.10	94	9832.1	918.19	-899.52	-2614.80	2765.20	251.02	0.16	0.09	0.14
22065	91.09	359.83	95	9830.9	823.20	-804.53	-2615.69	2736.62	252.90	1.13	0.83	0.77
22136	91.06	359.18	71	9829.6	752.21	-733.55	-2616.30	2717.19	254.34	0.92	-0.04	-0.92
22149	91.05	359.06	13	9829.4	739.22	-720.55	-2616.50	2713.90	254.60	0.93	-0.08	-0.92
22185	91.05	359.06	36	9828.7	703.22	-684.56	-2617.09	2705.14	255.34	0.00	0.00	0.00