

# Minimum Radius of Curvature

**API: 30-015-53279**      **Well: Vanadium 32 State 176H**      **Wellhead Location N+/S- : 32.269353**  
**Operator: Occidental**      **Area: New Mexico**      **E+/W- : -103.795350**  
**Rig:**      **Type: U-Lateral**      **Magnetic Declination: 6.55**  
**TD: 21,900'**      **Plane of Proposal: 179.68**

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			
25	0.00	0.00	25	25.0	32.85	0.00	0.00	0.00	#DIV/0!	0.00		
34	0.14	188.55	9	34.2	32.86	-0.01	0.00	0.01	188.55	1.53	1.53	2053.92
96	0.32	188.43	62	95.7	33.10	-0.26	-0.04	0.26	188.47	0.29	0.29	-0.19
121	0.38	183.75	25	120.6	33.25	-0.41	-0.05	0.41	187.51	0.27	0.24	-18.80
150	0.34	168.28	29	149.9	33.44	-0.59	-0.04	0.59	184.12	0.36	-0.14	-52.89
178	0.19	166.40	28	178.4	33.57	-0.72	-0.01	0.72	181.13	0.53	-0.53	-6.60
208	0.13	169.23	30	208.1	33.65	-0.80	0.00	0.80	179.73	0.20	-0.20	9.51
237	0.11	162.75	29	236.6	33.70	-0.86	0.02	0.86	178.80	0.08	-0.07	-22.74
268	0.14	130.75	31	268.1	33.76	-0.91	0.06	0.91	176.47	0.24	0.10	-101.62
300	0.11	106.55	31	299.5	33.79	-0.94	0.11	0.95	173.11	0.19	-0.10	-77.12
362	0.10	182.82	63	362.5	33.87	-1.02	0.17	1.03	170.54	0.21	-0.02	121.14
394	0.10	144.99	31	393.9	33.92	-1.07	0.18	1.08	170.22	0.21	0.00	-120.40
414	0.19	161.52	21	414.4	33.96	-1.11	0.20	1.13	169.58	0.48	0.44	80.52
524	0.48	179.25	110	524.0	34.59	-1.74	0.27	1.76	171.25	0.28	0.26	16.18
614	0.53	168.85	90	614.0	35.38	-2.53	0.35	2.55	172.04	0.12	0.06	-11.56
705	0.62	170.11	91	705.0	36.28	-3.43	0.52	3.47	171.38	0.10	0.10	1.38
796	1.03	129.38	91	796.0	37.29	-4.43	1.24	4.60	164.41	0.76	0.45	-44.76
887	2.20	111.52	91	886.9	38.46	-5.59	3.49	6.59	148.00	1.38	1.29	-19.63
977	3.48	105.74	90	976.8	39.86	-6.97	7.73	10.41	132.02	1.46	1.42	-6.42
1068	3.03	94.12	91	1067.7	40.81	-7.89	12.79	15.02	121.67	0.88	-0.49	-12.77
1159	1.16	90.20	91	1158.6	41.00	-8.06	16.11	18.01	116.59	2.06	-2.05	-4.31
1250	0.39	90.54	91	1249.6	41.02	-8.07	17.34	19.12	114.96	0.85	-0.85	0.37
1341	0.38	92.39	91	1340.6	41.03	-8.09	17.95	19.69	114.25	0.02	-0.01	2.03
1431	0.51	96.31	90	1430.6	41.09	-8.14	18.65	20.35	113.59	0.15	0.14	4.36
1526	0.38	88.86	95	1525.6	41.14	-8.18	19.38	21.04	112.89	0.15	-0.14	-7.84
1621	0.38	88.31	95	1620.6	41.13	-8.17	20.01	21.61	112.20	0.00	0.00	-0.58
1715	0.21	72.06	94	1714.6	41.07	-8.10	20.49	22.03	111.58	0.20	-0.18	-17.29
1810	0.18	71.95	95	1809.6	40.97	-8.00	20.79	22.28	111.05	0.03	-0.03	-0.12
1905	0.12	51.81	95	1904.6	40.86	-7.90	21.01	22.45	110.60	0.08	-0.06	-21.20
1999	0.15	41.09	94	1998.6	40.71	-7.74	21.17	22.54	110.09	0.04	0.03	-11.40
2094	0.09	345.63	95	2093.6	40.54	-7.58	21.24	22.55	109.64	0.13	-0.06	320.57
2188	0.11	345.30	94	2187.6	40.38	-7.42	21.19	22.45	109.29	0.02	0.02	-0.35
2283	0.15	310.28	95	2282.6	40.22	-7.25	21.08	22.29	108.98	0.09	0.04	-36.86
2378	0.22	268.60	95	2377.6	40.14	-7.17	20.80	22.00	109.03	0.15	0.07	-43.87
2472	0.17	268.01	94	2471.6	40.15	-7.18	20.48	21.70	109.33	0.05	-0.05	-0.63
2567	0.17	304.43	95	2566.6	40.07	-7.11	20.22	21.43	109.37	0.11	0.00	38.34
2662	0.22	289.36	95	2661.6	39.93	-6.97	19.93	21.12	109.27	0.07	0.05	-15.86
2756	0.37	291.15	94	2755.6	39.76	-6.80	19.48	20.63	109.24	0.16	0.16	1.90
2851	0.32	284.71	95	2850.6	39.57	-6.62	18.94	20.06	109.27	0.07	-0.05	-6.78
3040	0.36	288.85	189	3039.6	39.24	-6.29	17.87	18.94	109.41	0.02	0.02	2.19
3135	0.46	286.05	95	3134.6	39.04	-6.09	17.22	18.26	109.49	0.11	0.11	-2.95
3229	0.68	286.69	94	3228.6	38.77	-5.83	16.32	17.33	109.65	0.23	0.23	0.68
3324	0.38	319.67	95	3323.6	38.36	-5.43	15.58	16.49	109.21	0.44	-0.32	34.72
3419	0.92	105.80	95	3418.6	38.33	-5.39	16.11	16.98	108.52	1.32	0.57	-225.13
3514	1.42	119.36	95	3513.6	39.13	-6.18	17.87	18.90	109.08	0.60	0.53	14.27
3608	1.50	126.50	94	3607.5	40.44	-7.48	19.87	21.23	110.63	0.21	0.09	7.60
3703	2.01	133.65	95	3702.5	42.34	-9.37	22.07	23.98	113.00	0.58	0.54	7.53
3797	2.18	139.33	94	3796.4	44.85	-11.86	24.43	27.16	115.90	0.29	0.18	6.04
3892	1.94	152.00	95	3891.4	47.65	-14.66	26.36	30.16	119.07	0.54	-0.25	13.34
3986	2.03	149.53	94	3985.3	50.50	-17.49	27.96	32.98	122.04	0.13	0.10	-2.63
4081	2.12	148.20	95	4080.2	53.45	-20.44	29.74	36.08	124.50	0.11	0.09	-1.40
4176	1.90	151.79	95	4175.2	56.34	-23.32	31.41	39.12	126.60	0.27	-0.23	3.78
4201	2.04	151.63	25	4200.2	57.10	-24.08	31.81	39.90	127.12	0.56	0.56	-0.64
4351	1.48	155.98	150	4350.1	61.23	-28.20	33.87	44.07	129.78	0.38	-0.37	2.90
4446	0.05	2.66	95	4445.1	62.31	-29.27	34.37	45.15	130.42	1.61	-1.51	-161.39
4541	0.03	350.94	95	4540.1	62.25	-29.21	34.37	45.10	130.36	0.02	-0.02	366.61
4636	0.06	300.62	95	4635.1	62.20	-29.16	34.32	45.04	130.35	0.05	0.03	-52.97

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						N-S Ft	E-W Ft	Distance FT	Direction Deg			
4730	0.05	106.97	94	4729.1	62.19	-29.15	34.32	45.03	130.34	0.12	-0.01	-206.01
4825	0.04	348.56	95	4824.1	62.16	-29.12	34.35	45.04	130.29	0.08	-0.01	254.31
4920	0.19	85.57	95	4919.1	62.12	-29.08	34.50	45.12	130.13	0.21	0.16	-276.83
5015	1.54	106.94	95	5014.1	62.49	-29.44	35.88	46.41	129.37	1.44	1.42	22.49
5110	2.74	101.71	95	5109.0	63.34	-30.27	39.33	49.63	127.59	1.28	1.26	-5.51
5204	3.85	98.44	94	5202.8	64.29	-31.19	44.65	54.46	124.94	1.20	1.18	-3.48
5394	6.19	94.69	190	5392.1	66.16	-32.97	61.17	69.49	118.32	1.24	1.23	-1.97
5489	7.47	93.30	95	5486.4	66.99	-33.74	72.44	79.91	114.97	1.36	1.35	-1.46
5583	7.59	93.43	94	5579.6	67.78	-34.46	84.74	91.48	112.13	0.13	0.13	0.14
5678	7.55	91.70	95	5673.8	68.42	-35.02	97.24	103.35	109.81	0.24	-0.04	-1.82
5773	7.50	90.54	95	5768.0	68.73	-35.27	109.68	115.21	107.83	0.17	-0.05	-1.22
5867	7.91	91.03	94	5861.1	68.97	-35.44	122.28	127.31	106.16	0.44	0.44	0.52
5962	7.64	92.08	95	5955.2	69.39	-35.79	135.12	139.78	104.83	0.32	-0.28	1.11
6057	7.39	90.55	95	6049.4	69.75	-36.08	147.54	151.89	103.74	0.34	-0.26	-1.61
6151	7.56	88.94	94	6142.6	69.76	-36.02	159.77	163.78	102.70	0.29	0.18	-1.71
6246	7.54	87.37	95	6236.8	69.43	-35.62	172.25	175.89	101.68	0.22	-0.02	-1.65
6341	7.41	85.78	95	6331.0	68.76	-34.88	184.58	187.85	100.70	0.26	-0.14	-1.67
6436	7.47	85.02	95	6425.2	67.84	-33.89	196.84	199.74	99.77	0.12	0.06	-0.80
6625	7.52	100.70	189	6612.6	69.21	-35.12	221.24	224.01	99.02	1.08	0.03	8.30
6720	7.47	100.21	95	6706.8	71.52	-37.37	233.42	236.40	99.10	0.09	-0.05	-0.52
6815	7.41	100.17	95	6801.0	73.77	-39.55	245.53	248.70	99.15	0.06	-0.06	-0.04
6910	7.45	99.61	95	6895.2	75.95	-41.66	257.63	260.98	99.19	0.09	0.04	-0.59
7005	7.39	95.00	95	6989.4	77.57	-43.22	269.79	273.23	99.10	0.63	-0.06	-4.85
7099	7.50	88.97	94	7082.6	78.06	-43.64	281.95	285.30	98.80	0.84	0.12	-6.41
7194	7.60	90.44	95	7176.8	78.07	-43.57	294.43	297.64	98.42	0.23	0.11	1.55
7289	7.47	89.26	95	7271.0	78.10	-43.54	306.89	309.96	98.08	0.21	-0.14	-1.24
7383	7.48	90.25	94	7364.2	78.12	-43.49	319.11	322.06	97.76	0.14	0.01	1.05
7478	7.44	91.39	95	7458.4	78.36	-43.67	331.45	334.31	97.51	0.16	-0.04	1.20
7572	7.50	90.71	94	7551.6	78.66	-43.89	343.66	346.46	97.28	0.11	0.06	-0.72
7667	7.52	91.22	95	7645.8	78.94	-44.10	356.08	358.80	97.06	0.07	0.02	0.54
7762	7.49	90.39	95	7739.9	79.18	-44.27	368.49	371.14	96.85	0.12	-0.03	-0.87
7951	7.29	92.12	189	7927.4	79.84	-44.80	392.79	395.33	96.51	0.16	-0.11	0.92
8046	7.19	92.70	95	8021.6	80.41	-45.30	404.75	407.28	96.39	0.13	-0.11	0.61
8140	7.13	91.49	94	8114.9	80.91	-45.73	416.46	418.96	96.27	0.17	-0.06	-1.29
8235	7.24	90.17	95	8209.1	81.14	-45.90	428.34	430.79	96.12	0.21	0.12	-1.39
8329	7.30	96.68	94	8302.4	81.92	-46.62	440.19	442.65	96.05	0.88	0.06	6.93
8424	7.02	101.28	95	8396.6	83.83	-48.45	451.88	454.47	96.12	0.67	-0.29	4.84
8519	7.34	105.15	95	8490.9	86.61	-51.18	463.43	466.25	96.30	0.61	0.34	4.07
8613	6.94	90.42	94	8584.2	88.29	-52.79	474.91	477.83	96.34	1.99	-0.43	-15.67
8802	7.10	78.32	189	8771.8	86.13	-50.51	497.76	500.32	95.79	0.79	0.08	-6.40
8897	7.37	80.23	95	8866.0	83.98	-48.28	509.52	511.80	95.41	0.38	0.28	2.01
8992	7.26	81.70	95	8960.2	82.14	-46.38	521.46	523.52	95.08	0.23	-0.12	1.55
9087	7.45	89.27	95	9054.5	81.26	-45.44	533.56	535.49	94.87	1.04	0.20	7.97
9181	7.27	93.38	94	9147.7	81.61	-45.71	545.59	547.50	94.79	0.59	-0.19	4.37
9276	7.41	94.21	95	9241.9	82.48	-46.51	557.70	559.64	94.77	0.18	0.15	0.87
9301	7.38	93.06	25	9267.0	82.70	-46.72	560.95	562.89	94.76	0.60	-0.12	-4.54
9371	7.32	89.85	70	9336.1	82.98	-46.95	569.86	571.79	94.71	0.60	-0.09	-4.61
9434	6.77	85.05	63	9398.6	82.69	-46.62	577.57	579.45	94.61	1.28	-0.87	-7.62
9482	5.66	85.60	48	9446.4	82.29	-46.19	582.75	584.58	94.53	2.32	-2.31	1.15
9485	5.64	88.33	3	9449.3	82.28	-46.18	583.05	584.87	94.53	8.98	-0.67	91.00
9576	9.68	146.10	91	9539.6	88.56	-52.41	591.80	594.12	95.06	9.00	4.44	63.48
9671	15.39	165.04	95	9632.4	107.43	-71.24	599.52	603.74	96.78	7.33	6.01	19.94
9765	26.78	173.41	94	9720.0	140.67	-104.44	605.19	614.13	99.79	12.50	12.12	8.90
9860	35.73	173.50	95	9801.1	189.62	-153.36	610.80	629.76	104.09	9.42	9.42	0.09
9954	47.11	170.90	94	9871.5	251.14	-214.84	619.38	655.58	109.13	12.24	12.11	-2.77
10049	57.57	169.92	95	9929.4	325.26	-288.88	631.93	694.83	114.57	11.04	11.01	-1.03
10143	61.99	172.62	94	9976.7	405.58	-369.14	644.22	742.48	119.81	5.32	4.70	2.87
10238	64.96	173.52	95	10019.2	490.01	-453.51	654.46	796.24	124.72	3.24	3.13	0.95

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10333	73.65	174.46	95	10052.7	578.36	-541.81	663.74	856.80	129.22	9.19	9.15	0.99
10361	76.88	174.61	28	10059.8	605.32	-568.76	666.31	876.05	130.48	11.55	11.54	0.54
10428	84.60	174.94	67	10070.6	671.16	-634.57	672.33	924.50	133.34	11.53	11.52	0.49
10523	87.59	177.15	95	10077.1	765.73	-729.10	678.86	996.22	137.04	3.91	3.15	2.33
10617	87.25	180.32	94	10081.3	859.61	-822.97	680.94	1068.16	140.40	3.39	-0.36	3.37
10712	88.85	182.31	95	10084.5	954.51	-917.88	678.76	1141.59	143.52	2.69	1.68	2.09
10901	89.71	182.00	189	10086.9	1143.32	-1106.73	671.65	1294.59	148.75	0.48	0.46	-0.16
10996	89.80	181.41	95	10087.3	1238.26	-1201.69	668.82	1375.28	150.90	0.63	0.09	-0.62
11091	89.53	180.45	95	10087.9	1333.23	-1296.68	667.28	1458.30	152.77	1.05	-0.28	-1.01
11185	89.64	180.26	94	10088.5	1427.22	-1390.67	666.70	1542.22	154.39	0.23	0.12	-0.20
11280	88.89	180.73	95	10089.8	1522.20	-1485.66	665.88	1628.06	155.86	0.93	-0.79	0.49
11374	89.58	181.13	94	10091.0	1616.17	-1579.64	664.35	1713.66	157.19	0.85	0.73	0.43
11469	89.69	180.92	95	10091.6	1711.14	-1674.62	662.65	1800.96	158.41	0.25	0.12	-0.22
11564	89.83	180.45	95	10092.0	1806.13	-1769.61	661.52	1889.21	159.50	0.52	0.15	-0.49
11658	90.11	180.24	94	10092.1	1900.12	-1863.61	660.95	1977.35	160.47	0.37	0.30	-0.22
11753	89.75	179.67	95	10092.2	1995.12	-1958.61	661.03	2067.15	161.35	0.71	-0.38	-0.60
11847	89.46	179.02	94	10092.8	2089.11	-2052.60	662.10	2156.74	162.12	0.76	-0.31	-0.69
11942	89.44	179.61	95	10093.7	2184.11	-2147.59	663.24	2247.67	162.84	0.62	-0.02	0.62
12037	89.58	179.39	95	10094.6	2279.10	-2242.58	664.07	2338.84	163.51	0.27	0.15	-0.23
12132	89.14	179.97	95	10095.6	2374.10	-2337.57	664.60	2430.21	164.13	0.77	-0.46	0.61
12226	89.46	179.54	94	10096.8	2468.09	-2431.57	665.00	2520.86	164.70	0.57	0.34	-0.46
12321	89.64	179.60	95	10097.5	2563.09	-2526.56	665.71	2612.79	165.24	0.20	0.19	0.06
12415	89.62	179.02	94	10098.1	2657.08	-2620.55	666.84	2704.06	165.72	0.62	-0.02	-0.62
12510	89.70	179.38	95	10098.7	2752.08	-2715.54	668.17	2796.53	166.18	0.39	0.08	0.38
12605	89.97	179.72	95	10099.0	2847.08	-2810.54	668.92	2889.04	166.61	0.46	0.28	0.36
12699	89.20	179.08	94	10099.6	2941.07	-2904.53	669.90	2980.78	167.01	1.07	-0.82	-0.68
12794	89.75	179.46	95	10100.5	3036.06	-2999.51	671.11	3073.68	167.39	0.70	0.58	0.40
12888	89.55	179.97	94	10101.1	3130.06	-3093.51	671.58	3165.57	167.75	0.58	-0.21	0.54
12983	89.77	179.71	95	10101.6	3225.06	-3188.51	671.84	3258.52	168.10	0.36	0.23	-0.27
13078	89.54	179.75	95	10102.2	3320.06	-3283.51	672.29	3351.63	168.43	0.25	-0.24	0.04
13173	89.72	179.25	95	10102.8	3415.06	-3378.50	673.12	3444.90	168.73	0.56	0.19	-0.53
13267	89.78	180.24	94	10103.2	3509.05	-3472.50	673.54	3537.22	169.02	1.06	0.06	1.05
13362	89.67	181.41	95	10103.7	3604.03	-3567.48	672.17	3630.26	169.33	1.24	-0.12	1.23
13457	89.16	180.71	95	10104.7	3699.00	-3662.46	670.41	3723.32	169.63	0.91	-0.54	-0.74
13551	89.70	180.63	94	10105.6	3792.98	-3756.45	669.31	3815.61	169.90	0.58	0.57	-0.09
13646	89.44	180.91	95	10106.3	3887.96	-3851.44	668.04	3908.95	170.16	0.40	-0.27	0.29
13741	89.71	180.96	95	10107.0	3982.93	-3946.42	666.49	4002.31	170.41	0.29	0.28	0.05
13836	90.39	181.34	95	10106.9	4077.90	-4041.40	664.58	4095.68	170.66	0.82	0.72	0.40
13930	91.67	182.22	94	10105.2	4171.82	-4135.34	661.66	4187.94	170.91	1.65	1.36	0.94
14025	93.67	182.43	95	10100.8	4266.61	-4230.16	657.81	4281.00	171.16	2.12	2.11	0.22
14119	93.73	182.20	94	10094.8	4360.32	-4323.88	654.02	4373.07	171.40	0.25	0.06	-0.24
14214	93.60	182.40	95	10088.7	4455.02	-4418.61	650.22	4466.20	171.63	0.25	-0.14	0.21
14308	93.41	188.68	94	10082.9	4548.31	-4511.95	641.16	4557.28	171.91	6.67	-0.20	6.68
14367	93.34	192.65	59	10079.5	4606.12	-4569.82	630.27	4613.08	172.15	6.72	-0.12	6.73
14403	93.29	195.07	36	10077.4	4640.96	-4604.71	621.66	4646.48	172.31	6.71	-0.14	6.72
14497	93.56	196.24	94	10071.8	4731.17	-4695.06	596.34	4732.78	172.76	1.28	0.29	1.24
14592	94.59	196.13	95	10065.0	4822.02	-4786.06	569.93	4819.88	173.21	1.09	1.08	-0.12
14687	94.59	200.21	95	10057.4	4911.81	-4876.02	540.40	4905.87	173.68	4.28	0.00	4.29
14781	94.98	205.14	94	10049.6	4998.01	-4962.42	504.30	4987.98	174.20	5.24	0.41	5.24
14876	95.04	214.53	95	10041.2	5079.75	-5044.42	457.28	5065.11	174.82	9.85	0.06	9.88
14955	95.42	215.28	79	10034.0	5144.01	-5108.94	412.26	5125.55	175.39	1.06	0.48	0.95
14971	95.50	215.43	16	10032.5	5156.95	-5121.93	403.04	5137.76	175.50	1.06	0.50	0.94
15051	95.69	224.43	80	10024.7	5217.66	-5182.92	351.99	5194.86	176.11	11.20	0.24	11.25
15146	95.27	232.98	95	10015.6	5279.60	-5245.27	281.01	5252.79	176.93	8.97	-0.44	9.00
15240	95.07	239.21	94	10007.1	5331.36	-5297.46	203.35	5301.36	177.80	6.60	-0.21	6.63
15335	95.20	246.97	95	9998.6	5373.68	-5340.25	119.04	5341.58	178.72	8.14	0.14	8.17
15429	95.60	251.60	94	9989.8	5406.29	-5373.35	31.53	5373.44	179.66	4.92	0.43	4.93
15524	94.69	260.21	95	9981.2	5428.79	-5396.36	-60.15	5396.70	180.64	9.08	-0.96	9.06

# Minimum Radius of Curvature

**API: 30-015-53279**      **Well: Vanadium 32 State 176H**      **Wellhead Location N+/S- : 32.269353**  
**Operator: Occidental**      **Area: New Mexico**      **E+/W- : -103.795350**  
**Rig:**      **Type: U-Lateral**      **Magnetic Declination: 6.55**  
**TD: 21,900'**      **Plane of Proposal: 179.68**

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			
15618	93.92	267.70	94	9974.2	5438.13	-5406.22	-153.29	5408.40	181.62	7.99	-0.82	7.97
15713	94.19	270.02	95	9967.4	5439.49	-5408.11	-248.03	5413.79	182.63	2.45	0.28	2.44
15808	94.36	270.23	95	9960.4	5438.75	-5407.90	-342.77	5418.75	183.63	0.28	0.18	0.22
15902	94.25	270.04	94	9953.3	5438.01	-5407.68	-436.50	5425.27	184.61	0.23	-0.12	-0.20
15996	94.24	270.17	94	9946.3	5437.31	-5407.51	-530.24	5433.44	185.60	0.14	-0.01	0.14
16091	94.61	271.97	95	9939.0	5435.02	-5405.74	-624.94	5441.75	186.59	1.93	0.39	1.89
16186	94.45	272.26	95	9931.5	5430.99	-5402.25	-719.58	5449.96	187.59	0.35	-0.17	0.31
16280	92.96	272.16	94	9925.4	5426.85	-5398.63	-813.31	5459.55	188.57	1.59	-1.59	-0.11
16375	92.42	271.98	95	9921.0	5422.89	-5395.20	-908.14	5471.10	189.55	0.60	-0.57	-0.19
16469	94.08	271.79	94	9915.7	5419.28	-5392.11	-1001.94	5484.41	190.53	1.78	1.77	-0.20
16564	95.95	271.48	95	9907.3	5416.05	-5389.41	-1096.53	5499.83	191.50	2.00	1.97	-0.33
16658	91.79	278.29	94	9901.0	5407.54	-5381.42	-1189.90	5511.40	192.47	8.47	-4.43	7.24
16753	89.82	283.49	95	9899.7	5389.08	-5363.48	-1283.14	5514.83	193.45	5.85	-2.07	5.47
16847	89.90	290.04	94	9899.9	5361.48	-5336.38	-1373.10	5510.21	194.43	6.97	0.09	6.97
16942	89.88	296.51	95	9900.1	5323.47	-5298.86	-1460.32	5496.41	195.41	6.81	-0.02	6.81
17037	90.48	304.12	95	9899.8	5275.10	-5250.95	-1542.27	5472.75	196.37	8.04	0.63	8.01
17131	90.41	308.66	94	9899.0	5218.93	-5195.20	-1617.91	5441.30	197.30	4.83	-0.07	4.83
17226	90.16	315.43	95	9898.6	5154.95	-5131.61	-1688.42	5402.24	198.21	7.13	-0.26	7.13
17320	91.43	320.82	94	9897.3	5084.64	-5061.65	-1751.14	5356.01	199.08	5.89	1.35	5.73
17415	91.99	327.77	95	9894.4	5007.27	-4984.59	-1806.52	5301.86	199.92	7.34	0.59	7.32
17509	91.81	334.64	94	9891.3	4924.74	-4902.31	-1851.75	5240.38	200.69	7.31	-0.19	7.31
17604	92.37	341.17	95	9887.8	4836.62	-4814.39	-1887.44	5171.15	201.41	6.89	0.59	6.87
17699	92.53	345.54	95	9883.8	4745.56	-4723.48	-1914.62	5096.77	202.06	4.60	0.17	4.60
17793	91.95	352.72	94	9880.1	4653.28	-4631.30	-1932.32	5018.24	202.65	7.66	-0.62	7.64
17888	91.93	5.38	95	9876.9	4558.53	-4536.56	-1933.89	4931.56	203.09	13.32	-0.02	-365.62
17983	91.89	3.35	95	9873.7	4463.91	-4441.89	-1926.66	4841.74	203.45	2.14	-0.04	-2.14
18078	91.74	356.04	95	9870.7	4369.02	-4347.00	-1927.17	4755.04	203.91	7.69	-0.16	371.25
18172	91.77	355.63	94	9867.8	4275.28	-4253.30	-1933.99	4672.35	204.45	0.44	0.03	-0.44
18267	91.10	358.12	95	9865.4	4180.43	-4158.48	-1939.17	4588.39	205.00	2.71	-0.71	2.62
18362	90.84	358.23	95	9863.8	4085.48	-4063.54	-1942.20	4503.83	205.55	0.30	-0.27	0.12
18456	90.99	359.38	94	9862.3	3991.50	-3969.57	-1944.16	4420.09	206.09	1.23	0.16	1.22
18551	91.07	359.60	95	9860.6	3896.52	-3874.59	-1945.00	4335.38	206.66	0.25	0.08	0.23
18645	91.12	359.64	94	9858.8	3802.53	-3780.61	-1945.62	4251.88	207.23	0.07	0.05	0.04
18740	91.07	359.79	95	9857.0	3707.55	-3685.63	-1946.10	4167.87	207.84	0.17	-0.05	0.16
18835	90.88	359.59	95	9855.4	3612.56	-3590.64	-1946.61	4084.36	208.46	0.29	-0.20	-0.21
18929	90.58	1.28	94	9854.2	3518.58	-3496.66	-1945.90	4001.64	209.10	1.83	-0.32	-381.18
19024	90.50	0.12	95	9853.3	3423.60	-3401.67	-1944.74	3918.34	209.76	1.22	-0.08	-1.22
19118	90.64	359.71	94	9852.4	3329.61	-3307.68	-1944.88	3837.09	210.46	0.46	0.15	382.54
19213	90.52	359.35	95	9851.4	3234.62	-3212.68	-1945.66	3755.92	211.20	0.40	-0.13	-0.38
19308	90.50	358.49	95	9850.6	3139.63	-3117.71	-1947.45	3675.95	211.99	0.91	-0.02	-0.91
19402	90.64	359.39	94	9849.6	3045.64	-3023.73	-1949.18	3597.53	212.81	0.97	0.15	0.96
19497	90.44	359.72	95	9848.7	2950.65	-2928.73	-1949.92	3518.48	213.66	0.41	-0.21	0.35
19592	90.52	359.95	95	9847.9	2855.65	-2833.74	-1950.20	3439.96	214.54	0.26	0.08	0.24
19686	90.55	359.90	94	9847.0	2761.66	-2739.74	-1950.32	3363.02	215.45	0.06	0.03	-0.05
19781	90.68	0.40	95	9846.0	2666.66	-2644.75	-1950.07	3285.95	216.40	0.54	0.14	-378.42
19876	90.57	0.42	95	9845.0	2571.68	-2549.76	-1949.39	3209.58	217.40	0.12	-0.12	0.02
19970	90.59	0.02	94	9844.0	2477.69	-2455.76	-1949.03	3135.20	218.44	0.43	0.02	-0.43
20065	90.45	0.37	95	9843.2	2382.70	-2360.77	-1948.71	3061.16	219.54	0.40	-0.15	0.37
20159	90.63	1.22	94	9842.3	2288.72	-2266.78	-1947.40	2988.42	220.67	0.92	0.19	0.90
20254	89.82	0.74	95	9841.9	2193.74	-2171.80	-1945.78	2915.95	221.86	0.99	-0.85	-0.51
20349	89.62	358.78	95	9842.4	2098.75	-2076.80	-1946.18	2846.17	223.14	2.07	-0.21	376.88
20444	89.81	0.62	95	9842.9	2003.76	-1981.81	-1946.67	2777.97	224.49	1.95	0.20	-377.01
20538	90.71	359.73	94	9842.4	1909.76	-1887.81	-1946.39	2711.50	225.88	1.35	0.96	382.03
20633	90.45	359.57	95	9841.5	1814.77	-1792.82	-1946.97	2646.67	227.36	0.32	-0.27	-0.17
20728	90.69	359.93	95	9840.5	1719.77	-1697.83	-1947.38	2583.58	228.92	0.46	0.25	0.38
20822	90.45	359.16	94	9839.6	1625.78	-1603.83	-1948.13	2523.39	230.54	0.86	-0.26	-0.82
20917	90.29	359.90	95	9839.0	1530.78	-1508.84	-1948.91	2464.72	232.25	0.80	-0.17	0.78
21106	90.35	359.96	189	9837.9	1341.79	-1319.84	-1949.14	2353.96	235.90	0.04	0.03	0.03

## Minimum Radius of Curvature

**API: 30-015-53279**      **Well: Vanadium 32 State 176H**      **Wellhead Location N+/S- : 32.269353**  
**Operator: Occidental**      **Area: New Mexico**      **E+/W- : -103.795350**  
**Rig:**      **Type: U-Lateral**      **Magnetic Declination: 6.55**  
**TD: 21,900'**      **Plane of Proposal: 179.68**

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			
21201	90.56	0.38	95	9837.2	1246.79	-1224.85	-1948.85	2301.80	237.85	0.49	0.22	-378.51
21295	90.53	0.04	94	9836.3	1152.80	-1130.85	-1948.51	2252.89	239.87	0.36	-0.03	-0.36
21390	90.45	359.87	95	9835.5	1057.80	-1035.86	-1948.59	2206.80	242.01	0.20	-0.08	378.77
21485	90.77	0.75	95	9834.4	962.82	-940.86	-1948.07	2163.38	244.22	0.99	0.34	-378.02
21579	90.64	0.13	94	9833.3	868.83	-846.87	-1947.35	2123.53	246.50	0.67	-0.14	-0.66
21674	90.51	0.21	95	9832.3	773.84	-751.88	-1947.07	2087.20	248.89	0.16	-0.14	0.08
21768	91.00	0.79	94	9831.1	679.86	-657.89	-1946.25	2054.43	251.32	0.81	0.52	0.62
21843	90.64	0.53	75	9830.0	604.88	-582.90	-1945.38	2030.84	253.32	0.59	-0.48	-0.35
21865	90.54	0.46	22	9829.8	582.88	-560.91	-1945.19	2024.45	253.91	0.55	-0.45	-0.32
21900	90.54	0.46	35	9829.5	547.89	-525.91	-1944.91	2014.76	254.87	0.00	0.00	0.00