

# Minimum Radius of Curvature

**API:** 17-031-27359      **Well:** HA RA Sum; S Man 7-12HC 001-ALT      **WH Lat:** 31.958538  
**Operator:** GEP Haynesville      **Area:** Haynesville      **Long:** -93.642732  
**Rig:** H&P 444      **Type:** U Lateral      **Magnetic Declination:** 1.10  
**TD:** 22,317'      **Plane of Proposal:** 180.59

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			
18	0.00	360.00	18	18.0	0.00	0.00	0.00	0.00	#DIV/0!	0.00		
175	0.75	317.86	157	175.0	-0.75	0.76	-0.69	1.03	317.86	0.48	0.48	-26.84
292	0.97	317.77	117	292.0	-2.04	2.06	-1.87	2.78	317.83	0.19	0.19	-0.08
387	1.01	329.20	95	387.0	-3.35	3.38	-2.84	4.41	319.96	0.21	0.04	12.03
482	0.79	236.03	95	482.0	-3.69	3.73	-3.81	5.33	314.40	1.39	-0.23	-98.07
577	0.48	326.91	95	577.0	-3.65	3.70	-4.57	5.88	308.98	0.98	-0.33	95.66
671	0.18	311.09	94	671.0	-4.07	4.13	-4.90	6.40	310.11	0.33	-0.32	-16.83
766	0.22	203.69	95	766.0	-4.00	4.06	-5.08	6.50	308.59	0.34	0.04	-113.05
861	0.26	200.61	95	861.0	-3.63	3.69	-5.23	6.40	305.18	0.04	0.04	-3.24
956	0.35	183.82	95	956.0	-3.14	3.20	-5.33	6.21	300.97	0.13	0.09	-17.67
1050	0.44	190.06	94	1049.9	-2.50	2.55	-5.41	5.98	295.28	0.11	0.10	6.64
1144	0.48	191.65	94	1143.9	-1.76	1.81	-5.55	5.84	288.09	0.04	0.04	1.69
1239	0.48	201.23	95	1238.9	-0.99	1.05	-5.78	5.87	280.33	0.08	0.00	10.08
1334	0.53	205.80	95	1333.9	-0.22	0.29	-6.11	6.12	272.68	0.07	0.05	4.81
1428	0.57	216.52	94	1427.9	0.55	-0.48	-6.58	6.60	265.82	0.12	0.04	11.40
1522	0.66	239.20	94	1521.9	1.21	-1.13	-7.32	7.41	261.20	0.27	0.10	24.13
1616	0.84	249.04	94	1615.9	1.74	-1.66	-8.43	8.59	258.88	0.23	0.19	10.47
1710	0.84	256.51	94	1709.9	2.16	-2.06	-9.74	9.96	258.04	0.12	0.00	7.95
1806	0.92	288.24	96	1805.9	2.10	-1.99	-11.16	11.34	259.90	0.51	0.08	33.05
1901	1.05	289.21	95	1900.9	1.59	-1.46	-12.71	12.79	263.43	0.14	0.14	1.02
1996	1.19	301.60	95	1995.9	0.81	-0.66	-14.37	14.38	267.37	0.29	0.15	13.04
2090	1.19	313.20	94	2089.8	-0.36	0.52	-15.91	15.92	271.87	0.26	0.00	12.34
2151	1.19	313.55	61	2150.8	-1.22	1.39	-16.83	16.89	274.72	0.01	0.00	0.57
2237	1.19	302.34	86	2236.8	-2.30	2.48	-18.23	18.40	277.76	0.27	0.00	-13.03
2331	1.49	347.70	94	2330.8	-4.00	4.20	-19.32	19.77	282.26	1.14	0.32	48.26
2424	2.81	11.59	93	2423.7	-7.42	7.61	-19.12	20.58	291.72	1.69	1.42	-361.41
2518	3.83	7.68	94	2517.6	-12.79	12.98	-18.24	22.39	305.45	1.11	1.09	-4.16
2611	4.95	3.18	93	2610.3	-19.89	20.07	-17.60	26.69	318.75	1.26	1.20	-4.84
2704	5.96	4.31	93	2702.9	-28.71	28.89	-17.01	33.53	329.51	1.09	1.09	1.22
2798	7.35	4.66	94	2796.2	-39.58	39.75	-16.16	42.91	337.88	1.48	1.48	0.37
2891	8.20	4.74	93	2888.4	-52.13	52.29	-15.13	54.43	343.87	0.91	0.91	0.09
2985	8.11	5.13	94	2981.4	-65.42	65.57	-13.98	67.05	347.96	0.11	-0.10	0.41
3078	8.66	2.94	93	3073.4	-78.96	79.10	-13.03	80.16	350.64	0.68	0.59	-2.35
3172	10.33	3.05	94	3166.1	-94.45	94.58	-12.22	95.37	352.64	1.78	1.78	0.12
3265	11.29	1.66	93	3257.5	-111.88	112.01	-11.52	112.60	354.13	1.07	1.03	-1.49
3358	10.93	1.91	93	3348.8	-129.80	129.92	-10.96	130.38	355.18	0.39	-0.39	0.27
3452	10.50	0.87	94	3441.1	-147.28	147.39	-10.53	147.77	355.91	0.50	-0.46	-1.11
3545	11.21	1.46	93	3532.4	-164.79	164.90	-10.17	165.22	356.47	0.77	0.76	0.63
3638	11.11	1.44	93	3623.7	-182.79	182.90	-9.72	183.15	356.96	0.11	-0.11	-0.02
3732	10.36	0.12	94	3716.0	-200.29	200.40	-9.47	200.63	357.29	0.84	-0.80	-1.40
3825	11.09	3.21	93	3807.4	-217.59	217.70	-8.95	217.88	357.65	1.00	0.78	3.32
3919	12.15	5.18	94	3899.5	-236.48	236.57	-7.55	236.69	358.17	1.20	1.13	2.10
4012	12.43	5.17	93	3990.4	-256.22	256.29	-5.77	256.35	358.71	0.30	0.30	-0.01
4106	11.75	4.65	94	4082.3	-275.85	275.90	-4.08	275.93	359.15	0.73	-0.72	-0.55
4199	11.15	3.94	93	4173.4	-294.27	294.31	-2.69	294.33	359.48	0.66	-0.65	-0.76
4292	10.55	2.98	93	4264.8	-311.75	311.79	-1.63	311.79	359.70	0.67	-0.65	-1.03
4386	10.77	2.91	94	4357.1	-329.13	329.15	-0.74	329.15	359.87	0.23	0.23	-0.07
4479	12.46	6.26	93	4448.2	-347.79	347.80	0.79	347.81	0.13	1.96	1.82	3.60
4572	13.80	10.59	93	4538.8	-368.70	368.68	3.93	368.70	0.61	1.79	1.44	4.66
4666	13.17	10.18	94	4630.2	-390.30	390.24	7.88	390.32	1.16	0.68	-0.67	-0.44
4759	12.39	10.02	93	4720.9	-410.59	410.50	11.49	410.66	1.60	0.84	-0.84	-0.17
4853	11.64	9.86	94	4812.8	-429.90	429.77	14.87	430.03	1.98	0.80	-0.80	-0.17
4946	11.96	7.53	93	4903.9	-448.72	448.57	17.74	448.92	2.26	0.62	0.34	-2.51
5040	11.95	6.36	94	4995.8	-468.08	467.89	20.09	468.32	2.46	0.26	-0.01	-1.24
5133	11.30	5.92	93	5086.9	-486.73	486.53	22.10	487.03	2.60	0.71	-0.70	-0.47
5226	10.37	5.66	93	5178.3	-504.14	503.92	23.86	504.48	2.71	1.00	-1.00	-0.28
5320	10.54	3.80	94	5270.7	-521.15	520.92	25.27	521.53	2.78	0.40	0.18	-1.98

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5413	10.74	3.24	93	5362.1	-538.30	538.05	26.32	538.70	2.80	0.24	0.22	-0.60
5506	11.12	0.75	93	5453.4	-555.92	555.67	26.93	556.33	2.77	0.65	0.41	-2.68
5599	10.98	359.94	93	5544.7	-573.75	573.50	27.04	574.13	2.70	0.22	-0.15	386.23
5693	10.49	359.89	94	5637.1	-591.25	591.01	27.01	591.62	2.62	0.52	-0.52	-0.05
5786	9.83	0.14	93	5728.6	-607.66	607.41	27.01	608.01	2.55	0.71	-0.71	-386.83
5879	9.00	359.86	93	5820.3	-622.87	622.62	27.01	623.21	2.48	0.89	-0.89	386.80
5973	8.36	0.77	94	5913.3	-637.06	636.81	27.09	637.39	2.44	0.70	-0.68	-382.01
6066	7.66	0.56	93	6005.4	-650.01	649.77	27.24	650.34	2.40	0.75	-0.75	-0.23
6160	6.88	0.90	94	6098.6	-661.91	661.66	27.39	662.23	2.37	0.83	-0.83	0.36
6253	6.15	1.09	93	6191.0	-672.46	672.21	27.57	672.78	2.35	0.79	-0.78	0.20
6347	5.56	359.92	94	6284.5	-682.05	681.80	27.66	682.36	2.32	0.64	-0.63	381.73
6440	5.14	359.80	93	6377.1	-690.72	690.47	27.64	691.02	2.29	0.45	-0.45	-0.13
6534	4.63	359.07	94	6470.8	-698.72	698.48	27.56	699.02	2.26	0.55	-0.54	-0.78
6627	4.22	358.59	93	6563.5	-705.89	705.65	27.42	706.18	2.23	0.44	-0.44	-0.52
6720	3.87	0.04	93	6656.3	-712.45	712.21	27.34	712.73	2.20	0.39	-0.38	-385.54
6813	3.57	0.10	93	6749.1	-718.49	718.24	27.34	718.76	2.18	0.32	-0.32	0.06
6906	3.47	359.14	93	6841.9	-724.20	723.95	27.31	724.47	2.16	0.12	-0.11	386.06
7000	3.33	0.42	94	6935.7	-729.77	729.53	27.28	730.04	2.14	0.17	-0.15	-381.62
7093	3.20	1.38	93	7028.6	-735.07	734.82	27.37	735.33	2.13	0.15	-0.14	1.03
7187	3.00	359.26	94	7122.4	-740.15	739.91	27.40	740.41	2.12	0.25	-0.21	380.72
7280	2.83	2.34	93	7215.3	-744.88	744.63	27.46	745.14	2.11	0.25	-0.18	-383.78
7373	2.72	2.17	93	7308.2	-749.38	749.13	27.64	749.64	2.11	0.12	-0.12	-0.18
7467	2.63	0.38	94	7402.1	-753.76	753.52	27.74	754.03	2.11	0.13	-0.10	-1.90
7560	2.65	2.10	93	7495.0	-758.05	757.80	27.83	758.31	2.10	0.09	0.02	1.85
7654	2.30	3.40	94	7588.9	-762.10	761.85	28.02	762.37	2.11	0.38	-0.37	1.38
7747	2.44	3.36	93	7681.8	-765.94	765.69	28.25	766.21	2.11	0.15	0.15	-0.04
7840	2.44	3.32	93	7774.7	-769.90	769.65	28.48	770.17	2.12	0.00	0.00	-0.04
7934	2.37	2.22	94	7868.7	-773.84	773.58	28.67	774.12	2.12	0.09	-0.07	-1.17
8027	2.41	1.92	93	7961.6	-777.72	777.46	28.81	777.99	2.12	0.05	0.04	-0.32
8120	2.29	358.02	93	8054.5	-781.53	781.27	28.81	781.80	2.11	0.21	-0.13	382.90
8214	2.34	2.62	94	8148.4	-785.32	785.07	28.83	785.59	2.10	0.20	0.05	-378.09
8307	2.34	359.94	93	8241.4	-789.12	788.86	28.92	789.39	2.10	0.12	0.00	384.22
8401	2.41	0.29	94	8335.3	-793.01	792.76	28.93	793.28	2.09	0.08	0.07	-382.61
8494	2.46	357.48	93	8428.2	-796.96	796.71	28.85	797.23	2.07	0.14	0.05	384.08
8587	2.38	355.53	93	8521.1	-800.88	800.62	28.61	801.14	2.05	0.12	-0.09	-2.10
8681	2.44	358.89	94	8615.0	-804.82	804.57	28.42	805.07	2.02	0.16	0.06	3.57
8774	2.23	356.53	93	8707.9	-808.60	808.36	28.27	808.85	2.00	0.25	-0.23	-2.54
8868	2.21	355.05	94	8801.9	-812.23	811.99	28.00	812.47	1.98	0.06	-0.02	-1.57
8961	2.21	354.44	93	8894.8	-815.80	815.56	27.68	816.03	1.94	0.03	0.00	-0.66
9055	2.12	352.14	94	8988.7	-819.32	819.08	27.26	819.54	1.91	0.13	-0.10	-2.45
9148	2.12	352.34	93	9081.7	-822.73	822.49	26.80	822.93	1.87	0.01	0.00	0.22
9242	2.07	350.11	94	9175.6	-826.12	825.89	26.27	826.31	1.82	0.10	-0.05	-2.37
9335	2.05	351.03	93	9268.6	-829.41	829.19	25.73	829.59	1.78	0.04	-0.02	0.99
9428	1.99	348.24	93	9361.5	-832.63	832.41	25.14	832.79	1.73	0.12	-0.06	-3.00
9522	1.90	348.66	94	9455.4	-835.74	835.54	24.50	835.90	1.68	0.10	-0.10	0.45
9615	1.81	351.06	93	9548.4	-838.70	838.50	23.97	838.84	1.64	0.13	-0.10	2.58
9708	1.77	350.38	93	9641.3	-841.56	841.37	23.50	841.69	1.60	0.05	-0.04	-0.73
9802	1.81	352.11	94	9735.3	-844.46	844.27	23.05	844.58	1.56	0.07	0.04	1.84
9895	1.79	353.21	93	9828.3	-847.35	847.16	22.68	847.47	1.53	0.04	-0.02	1.18
9989	1.71	356.57	94	9922.2	-850.21	850.02	22.42	850.32	1.51	0.14	-0.09	3.57
10082	1.59	353.85	93	10015.2	-852.87	852.69	22.20	852.98	1.49	0.15	-0.13	-2.92
10175	1.56	352.95	93	10108.1	-855.41	855.23	21.91	855.51	1.47	0.04	-0.03	-0.97
10269	1.46	355.67	94	10202.1	-857.87	857.69	21.66	857.97	1.45	0.13	-0.11	2.89
10362	1.38	358.47	93	10295.1	-860.17	859.99	21.54	860.26	1.43	0.11	-0.09	3.01
10462	1.45	0.56	100	10395.0	-862.64	862.46	21.52	862.73	1.43	0.09	0.07	-357.91
10548	1.35	12.18	86	10481.0	-864.72	864.54	21.75	864.81	1.44	0.35	-0.12	13.51
10642	1.49	16.61	94	10575.0	-866.98	866.79	22.33	867.08	1.48	0.19	0.15	4.71
10735	1.38	20.35	93	10668.0	-869.19	869.00	23.06	869.31	1.52	0.16	-0.12	4.02

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10829	1.11	14.65	94	10761.9	-871.14	870.95	23.69	871.27	1.56	0.32	-0.29	-6.06
10922	1.42	23.52	93	10854.9	-873.08	872.87	24.38	873.21	1.60	0.39	0.33	9.54
11016	1.39	22.62	94	10948.9	-875.21	874.99	25.28	875.36	1.65	0.04	-0.03	-0.96
11109	1.46	15.30	93	11041.9	-877.40	877.18	26.03	877.56	1.70	0.21	0.08	-7.87
11202	1.48	17.27	93	11134.8	-879.70	879.47	26.69	879.87	1.74	0.06	0.02	2.12
11295	1.37	17.47	93	11227.8	-881.91	881.68	27.38	882.10	1.78	0.12	-0.12	0.22
11389	5.36	170.09	94	11321.7	-878.67	878.42	28.48	878.88	1.86	7.03	4.24	162.36
11482	16.23	178.91	93	11412.9	-861.35	861.09	29.48	861.60	1.96	11.79	11.69	9.48
11576	23.66	176.32	94	11501.2	-829.37	829.09	30.94	829.67	2.14	7.96	7.90	-2.76
11669	28.96	180.98	93	11584.6	-788.21	787.92	31.75	788.56	2.31	6.11	5.70	5.01
11763	38.27	182.90	94	11662.8	-736.25	735.98	29.89	736.59	2.33	9.97	9.90	2.04
11856	48.19	183.12	93	11730.4	-672.69	672.45	26.53	672.97	2.26	10.67	10.67	0.24
11949	56.91	184.40	93	11786.9	-599.05	598.85	21.65	599.25	2.07	9.44	9.38	1.38
12043	63.74	184.80	94	11833.4	-517.62	517.49	15.09	517.71	1.67	7.28	7.27	0.43
12136	73.49	183.14	93	11867.3	-431.28	431.21	9.15	431.31	1.22	10.61	10.48	-1.78
12229	77.77	182.68	93	11890.4	-341.29	341.26	4.58	341.29	0.77	4.63	4.60	-0.49
12323	81.15	182.47	94	11907.6	-248.94	248.95	0.43	248.95	0.10	3.60	3.60	-0.22
12416	83.46	182.11	93	11920.0	-156.83	156.87	-3.25	156.90	358.81	2.51	2.48	-0.39
12510	87.79	180.88	94	11927.2	-63.14	63.20	-5.70	63.45	354.85	4.79	4.61	-1.31
12603	88.57	181.23	93	11930.1	29.81	-29.74	-7.41	30.65	193.99	0.92	0.84	0.38
12696	88.94	181.87	93	11932.2	122.78	-122.68	-9.92	123.08	184.62	0.79	0.40	0.69
12790	89.38	180.80	94	11933.5	216.76	-216.65	-12.11	216.98	183.20	1.23	0.47	-1.14
12883	89.44	183.73	93	11934.5	309.70	-309.56	-15.79	309.96	182.92	3.15	0.06	3.15
12977	88.82	181.92	94	11935.9	403.62	-403.43	-20.42	403.94	182.90	2.04	-0.66	-1.93
13070	88.99	180.97	93	11937.7	496.59	-496.38	-22.76	496.90	182.63	1.04	0.18	-1.02
13163	89.30	180.93	93	11939.1	589.58	-589.36	-24.31	589.86	182.36	0.34	0.33	-0.04
13257	89.05	180.80	94	11940.5	683.57	-683.34	-25.72	683.82	182.16	0.30	-0.27	-0.14
13350	88.99	180.11	93	11942.0	776.55	-776.32	-26.46	776.77	181.95	0.74	-0.06	-0.74
13444	88.46	179.24	94	11944.1	870.51	-870.29	-25.93	870.68	181.71	1.08	-0.56	-0.93
13537	88.54	181.46	93	11946.6	963.48	-963.25	-26.50	963.62	181.58	2.39	0.09	2.39
13630	88.99	181.99	93	11948.6	1056.44	-1056.19	-29.30	1056.60	181.59	0.75	0.48	0.57
13723	88.96	184.37	93	11950.2	1149.32	-1149.03	-34.45	1149.54	181.72	2.56	-0.03	2.56
13817	89.13	185.45	94	11951.8	1243.04	-1242.67	-42.50	1243.39	181.96	1.16	0.18	1.15
13910	89.02	185.63	93	11953.3	1335.68	-1335.22	-51.48	1336.21	182.21	0.23	-0.12	0.19
14004	88.80	185.31	94	11955.1	1429.32	-1428.77	-60.43	1430.05	182.42	0.41	-0.23	-0.34
14097	88.46	180.17	93	11957.3	1522.20	-1521.61	-64.88	1522.99	182.44	5.54	-0.37	-5.53
14190	89.41	178.68	93	11959.0	1615.16	-1614.59	-63.94	1615.85	182.27	1.90	1.02	-1.60
14284	89.66	179.43	94	11959.8	1709.12	-1708.57	-62.39	1709.71	182.09	0.84	0.27	0.80
14377	88.29	177.43	93	11961.5	1802.03	-1801.51	-59.85	1802.51	181.90	2.61	-1.47	-2.15
14471	87.95	176.68	94	11964.6	1895.80	-1895.34	-55.02	1896.14	181.66	0.88	-0.36	-0.80
14564	88.40	177.20	93	11967.5	1988.57	-1988.16	-50.06	1988.79	181.44	0.74	0.48	0.56
14657	89.05	179.31	93	11969.6	2081.46	-2081.08	-47.23	2081.62	181.30	2.37	0.70	2.27
14751	89.44	180.11	94	11970.8	2175.44	-2175.07	-46.75	2175.58	181.23	0.95	0.41	0.85
14844	89.24	179.96	93	11971.9	2268.43	-2268.07	-46.81	2268.55	181.18	0.27	-0.22	-0.16
14938	88.68	177.68	94	11973.6	2362.36	-2362.03	-44.87	2362.45	181.09	2.50	-0.60	-2.43
15031	88.52	176.96	93	11975.9	2455.18	-2454.90	-40.53	2455.23	180.95	0.79	-0.17	-0.77
15125	88.07	178.40	94	11978.7	2549.02	-2548.77	-36.72	2549.04	180.83	1.60	-0.48	1.53
15218	88.82	181.36	93	11981.2	2641.97	-2641.73	-36.53	2641.98	180.79	3.28	0.81	3.18
15311	89.30	182.71	93	11982.7	2734.92	-2734.66	-39.83	2734.95	180.83	1.54	0.52	1.45
15405	89.08	181.33	94	11984.1	2828.88	-2828.59	-43.14	2828.91	180.87	1.49	-0.23	-1.47
15498	88.99	182.70	93	11985.6	2921.84	-2921.51	-46.41	2921.88	180.91	1.48	-0.10	1.47
15591	89.05	182.96	93	11987.2	3014.75	-3014.39	-51.00	3014.82	180.97	0.29	0.06	0.28
15685	89.30	183.01	94	11988.6	3108.66	-3108.25	-55.90	3108.75	181.03	0.27	0.27	0.05
15778	89.38	183.43	93	11989.6	3201.55	-3201.09	-61.12	3201.68	181.09	0.46	0.09	0.45
15872	89.38	185.40	94	11990.7	3295.33	-3294.81	-68.36	3295.51	181.19	2.10	0.00	2.10
15965	88.77	187.76	93	11992.2	3387.81	-3387.17	-79.01	3388.10	181.34	2.62	-0.66	2.54
16059	87.90	192.36	94	11994.9	3480.46	-3479.66	-95.42	3480.97	181.57	4.98	-0.93	4.89
16152	88.54	202.80	93	11997.8	3569.24	-3568.15	-123.46	3570.29	181.98	11.24	0.69	11.23

# Minimum Radius of Curvature

API: 17-031-27359      Well: HA RA Sum; S Man 7-12HC 001-ALT      WH Lat: 31.958538  
 Operator: GEP Haynesville      Area: Haynesville      Long: -93.642732  
 Rig: H&P 444      Type: U Lateral      Magnetic Declination: 1.10  
 TD: 22,317'      Plane of Proposal: 180.59

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			
16246	88.91	211.17	94	11999.9	3653.34	-3651.82	-166.06	3655.60	182.60	8.91	0.39	8.90
16339	89.72	218.86	93	12001.0	3729.99	-3727.93	-219.38	3734.38	183.37	8.31	0.87	8.27
16433	87.59	226.24	94	12003.2	3799.82	-3797.11	-282.88	3807.63	184.26	8.17	-2.27	7.85
16526	85.85	233.16	93	12008.5	3860.56	-3857.13	-353.64	3873.30	185.24	7.66	-1.87	7.44
16619	86.75	239.78	93	12014.5	3912.59	-3908.36	-430.96	3932.05	186.29	7.17	0.97	7.12
16713	87.81	246.65	94	12019.0	3955.73	-3950.64	-514.73	3984.03	187.42	7.39	1.13	7.31
16806	90.45	253.21	93	12020.4	3988.52	-3982.53	-602.02	4027.78	188.60	7.60	2.84	7.05
16900	91.35	260.18	94	12018.9	4011.08	-4004.15	-693.43	4063.75	189.82	7.48	0.96	7.41
16993	92.75	270.72	93	12015.6	4019.39	-4011.51	-785.94	4087.78	191.09	11.43	1.51	11.33
17087	92.52	270.91	94	12011.3	4019.03	-4010.18	-879.83	4105.56	192.37	0.32	-0.24	0.20
17180	90.48	275.85	93	12008.8	4014.50	-4004.70	-972.61	4121.11	193.65	5.74	-2.19	5.31
17274	90.50	283.00	94	12008.0	4000.07	-3989.31	-1065.27	4129.10	194.95	7.61	0.02	7.61
17367	91.12	288.73	93	12006.7	3975.58	-3963.90	-1154.68	4128.66	196.24	6.20	0.67	6.16
17460	92.24	297.26	93	12004.0	3940.19	-3927.63	-1240.18	4118.77	197.52	9.25	1.20	9.17
17554	93.76	306.15	94	11999.1	3891.73	-3878.35	-1319.96	4096.81	198.80	9.58	1.62	9.46
17647	93.36	315.52	93	11993.3	3831.83	-3817.72	-1390.11	4062.93	200.01	10.06	-0.43	10.08
17740	91.74	322.56	93	11989.1	3762.35	-3747.60	-1450.97	4018.69	201.17	7.76	-1.74	7.57
17834	91.40	330.96	94	11986.6	3684.36	-3669.08	-1502.43	3964.78	202.27	8.94	-0.36	8.94
17927	91.46	339.55	93	11984.2	3600.41	-3584.73	-1541.31	3902.04	203.27	9.23	0.06	9.24
18021	90.78	346.58	94	11982.4	3510.85	-3494.88	-1568.67	3830.78	204.17	7.51	-0.72	7.48
18114	90.64	352.89	93	11981.2	3419.56	-3403.42	-1585.23	3754.49	204.97	6.79	-0.15	6.78
18208	90.11	357.00	94	11980.6	3326.04	-3309.81	-1593.51	3673.43	205.71	4.41	-0.56	4.37
18301	90.36	357.27	93	11980.2	3233.21	-3216.93	-1598.16	3592.04	206.42	0.40	0.27	0.29
18395	91.15	357.81	94	11979.0	3139.35	-3123.02	-1602.19	3510.03	207.16	1.02	0.84	0.57
18488	92.32	359.55	93	11976.2	3046.45	-3030.09	-1604.33	3428.61	207.90	2.25	1.26	1.87
18581	92.18	359.78	93	11972.5	2953.54	-2937.17	-1604.88	3347.03	208.65	0.29	-0.15	0.25
18675	91.09	359.11	94	11969.8	2859.60	-2843.21	-1605.79	3265.33	209.46	1.36	-1.16	-0.71
18768	91.29	359.22	93	11967.9	2766.65	-2750.24	-1607.14	3185.39	210.30	0.25	0.22	0.12
18862	90.98	359.58	94	11966.1	2672.68	-2656.27	-1608.13	3105.13	211.19	0.51	-0.33	0.38
18955	91.26	0.90	93	11964.2	2579.71	-2563.29	-1607.74	3025.77	212.10	1.45	0.30	-385.68
19049	91.85	1.32	94	11961.7	2485.75	-2469.34	-1605.92	2945.61	213.04	0.77	0.63	0.45
19142	92.32	1.37	93	11958.3	2392.82	-2376.43	-1603.73	2866.94	214.01	0.51	0.51	0.05
19235	91.63	0.00	93	11955.1	2299.87	-2283.49	-1602.62	2789.76	215.06	1.65	-0.74	-1.47
19329	91.68	0.03	94	11952.4	2205.92	-2189.53	-1602.60	2713.37	216.20	0.06	0.05	0.03
19423	90.34	359.88	94	11950.7	2111.94	-2095.55	-1602.67	2638.16	217.41	1.43	-1.43	382.82
19515	90.90	359.91	92	11949.7	2019.95	-2003.55	-1602.84	2565.80	218.66	0.61	0.61	0.03
19609	91.68	359.72	94	11947.6	1925.99	-1909.58	-1603.14	2493.30	220.01	0.85	0.83	-0.20
19702	92.66	359.81	93	11944.1	1833.06	-1816.65	-1603.53	2423.12	221.43	1.06	1.05	0.10
19795	91.20	359.93	93	11941.0	1740.13	-1723.70	-1603.74	2354.38	222.94	1.58	-1.57	0.13
19889	90.95	359.82	94	11939.2	1646.15	-1629.72	-1603.94	2286.62	224.54	0.29	-0.27	-0.12
19982	90.73	359.26	93	11937.8	1553.18	-1536.73	-1604.69	2221.84	226.24	0.65	-0.24	-0.60
20076	91.85	359.17	94	11935.7	1459.23	-1442.77	-1605.98	2158.87	228.06	1.20	1.19	-0.10
20169	90.62	359.64	93	11933.7	1366.27	-1349.80	-1606.94	2098.62	229.97	1.42	-1.32	0.51
20262	90.08	358.98	93	11933.1	1273.30	-1256.81	-1608.06	2040.94	231.99	0.92	-0.58	-0.71
20356	90.98	359.13	94	11932.3	1179.34	-1162.82	-1609.61	1985.70	234.15	0.97	0.96	0.16
20449	91.65	359.53	93	11930.1	1086.38	-1069.85	-1610.70	1933.63	236.41	0.84	0.72	0.43
20543	90.76	359.69	94	11928.2	992.42	-975.88	-1611.34	1883.81	238.80	0.96	-0.95	0.17
20636	91.01	0.34	93	11926.7	899.44	-882.89	-1611.31	1837.34	241.28	0.75	0.27	-386.40
20730	92.24	359.74	94	11924.1	805.48	-788.93	-1611.25	1794.03	243.91	1.46	1.31	382.34
20807	92.38	0.19	77	11921.0	728.55	-711.99	-1611.30	1761.59	246.16	0.61	0.18	-466.95
20901	91.51	0.80	94	11917.8	634.60	-618.05	-1610.48	1725.01	249.00	1.13	-0.93	0.65
20994	88.26	0.87	93	11918.0	541.62	-525.07	-1609.13	1692.63	251.93	3.50	-3.49	0.08
21088	88.49	0.86	94	11920.6	447.66	-431.12	-1607.71	1664.51	254.99	0.24	0.24	-0.01
21181	88.66	0.86	93	11922.9	354.69	-338.16	-1606.31	1641.52	258.11	0.18	0.18	0.00
21275	88.74	0.29	94	11925.1	260.71	-244.19	-1605.37	1623.84	261.35	0.61	0.09	-0.61
21368	88.40	359.62	93	11927.4	167.75	-151.22	-1605.44	1612.55	264.62	0.81	-0.37	386.38
21462	89.44	1.07	94	11929.2	73.77	-57.24	-1604.88	1605.90	267.96	1.90	1.11	-381.44
21555	91.82	1.56	93	11928.1	-19.21	35.72	-1602.74	1603.14	271.28	2.61	2.56	0.53

## Minimum Radius of Curvature

**API:** 17-031-27359      **Well:** HA RA Sum; S Man 7-12HC 001-ALT      **WH Lat:** 31.958538  
**Operator:** GEP Haynesville      **Area:** Haynesville      **Long:** -93.642732  
**Rig:** H&P 444      **Type:** U Lateral      **Magnetic Declination:** 1.10  
**TD:** 22,317'      **Plane of Proposal:** 180.59

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			
21619	91.93	1.39	64	11926.0	-83.17	99.66	-1601.10	1604.20	273.56	0.32	0.17	-0.27
21712	92.21	1.63	93	11922.7	-176.10	192.57	-1598.65	1610.21	276.87	0.40	0.30	0.26
21806	92.63	2.10	94	11918.7	-269.99	286.44	-1595.59	1621.10	280.18	0.67	0.45	0.50
21899	92.63	1.94	93	11914.4	-362.86	379.28	-1592.32	1636.87	283.40	0.17	0.00	-0.17
21993	92.89	2.97	94	11909.9	-456.70	473.08	-1588.30	1657.25	286.59	1.13	0.28	1.10
22086	92.63	2.18	93	11905.4	-549.54	565.88	-1584.12	1682.16	289.66	0.89	-0.28	-0.85
22180	93.22	1.91	94	11900.6	-643.39	659.70	-1580.77	1712.91	292.65	0.69	0.63	-0.29
22256	93.02	1.98	76	11896.5	-719.25	735.54	-1578.20	1741.19	294.99	0.28	-0.26	0.09
22317	93.02	1.98	61	11893.3	-780.15	796.42	-1576.09	1765.89	296.81	0.00	0.00	0.00