



# Chevron Appalachia Berger 1H Survey 0ft to 13417ft MD Survey Geodetic Report

(Def Survey)

**Report Date:** February 17, 2015 - 11:39 AM  
**Client:** Chevron  
**Field:** WV Marshall County (NAD 83)  
**Structure / Slot:** Chevron Berger Pad / Berger 1H  
**Well:** Berger 1H  
**Borehole:** Original Borehole  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Chevron Appalachia Berger 1H Survey 0ft to 13417ft MD  
**Survey Date:** February 04, 2015  
**Tort / AHD / DDI / ERD Ratio:** 270.552 ° / 7762.527 ft / 6.636 / 1.191  
**Coordinate Reference System:** NAD83 West Virginia State Plane, Northern Zone, US Feet  
**Location Lat / Long:** N 39° 52' 28.69227", W 80° 45' 16.27796"  
**Location Grid N/E Y/X:** N 503146.050 ftUS, E 1616416.540 ftUS  
**CRS Grid Convergence Angle:** -0.8001 °  
**Grid Scale Factor:** 0.99995013  
**Version / Patch:** 2.7.1043.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 157.194 ° (True North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** KB  
**TVD Reference Elevation:** 1319.490 ft above MSL  
**Seabed / Ground Elevation:** 1287.490 ft above MSL  
**Magnetic Declination:** -8.607 °  
**Total Gravity Field Strength:** 999.3389mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 52462.039 nT  
**Magnetic Dip Angle:** 67.259 °  
**Declination Date:** February 04, 2015  
**Magnetic Declination Model:** BGGM 2014  
**North Reference:** True North  
**Grid Convergence Used:** 0.0000 °  
**Total Corr Mag North->True North:** -8.6066 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	55.00	0.00	-1319.49	0.00	0.00	0.00	N/A	N/A	N/A	503146.05	1616416.54	N 39 52 28.69 W	80 45 16.28
	30.00	0.06	192.67	30.00	-1289.49	0.01	-0.02	0.00	0.20	0.20	0.00	503146.03	1616416.54	N 39 52 28.69 W	80 45 16.28
	60.00	0.09	213.87	60.00	-1259.49	0.04	-0.05	-0.02	0.13	0.10	70.67	503146.00	1616416.52	N 39 52 28.69 W	80 45 16.28
	90.00	0.16	202.53	90.00	-1229.49	0.08	-0.11	-0.05	0.25	0.23	-37.80	503145.94	1616416.49	N 39 52 28.69 W	80 45 16.28
	120.00	0.18	174.95	120.00	-1199.49	0.16	-0.19	-0.06	0.28	0.07	-91.93	503145.86	1616416.48	N 39 52 28.69 W	80 45 16.28
	150.00	0.27	190.68	150.00	-1169.49	0.26	-0.31	-0.07	0.36	0.30	52.43	503145.74	1616416.47	N 39 52 28.69 W	80 45 16.28
	180.00	0.24	183.79	180.00	-1139.49	0.37	-0.44	-0.09	0.14	-0.10	-22.97	503145.61	1616416.45	N 39 52 28.69 W	80 45 16.28
	210.00	0.24	185.72	210.00	-1109.49	0.49	-0.57	-0.10	0.03	0.00	6.43	503145.48	1616416.43	N 39 52 28.69 W	80 45 16.28
	240.00	0.25	190.84	240.00	-1079.49	0.60	-0.69	-0.12	0.08	0.03	17.07	503145.36	1616416.41	N 39 52 28.69 W	80 45 16.28
	270.00	0.23	197.68	270.00	-1049.49	0.70	-0.82	-0.15	0.12	-0.07	22.80	503145.24	1616416.38	N 39 52 28.68 W	80 45 16.28
	300.00	0.23	205.96	300.00	-1019.49	0.78	-0.93	-0.19	0.11	0.00	27.60	503145.12	1616416.34	N 39 52 28.68 W	80 45 16.28
	330.00	0.26	212.34	330.00	-989.49	0.86	-1.04	-0.25	0.14	0.10	21.27	503145.01	1616416.27	N 39 52 28.68 W	80 45 16.28
	360.00	0.25	230.16	360.00	-959.49	0.92	-1.14	-0.34	0.27	-0.03	59.40	503144.92	1616416.18	N 39 52 28.68 W	80 45 16.28
	390.00	0.31	220.42	390.00	-929.49	0.97	-1.24	-0.44	0.25	0.20	-32.47	503144.81	1616416.08	N 39 52 28.68 W	80 45 16.28
	420.00	0.34	228.75	420.00	-899.49	1.04	-1.36	-0.56	0.19	0.10	27.77	503144.69	1616415.96	N 39 52 28.68 W	80 45 16.29
	450.00	0.40	233.14	450.00	-869.49	1.09	-1.48	-0.71	0.22	0.20	14.63	503144.58	1616415.81	N 39 52 28.68 W	80 45 16.29
	480.00	0.41	232.03	480.00	-839.49	1.15	-1.61	-0.88	0.04	0.03	-3.70	503144.45	1616415.64	N 39 52 28.68 W	80 45 16.29
	510.00	0.46	245.80	509.99	-809.50	1.18	-1.73	-1.08	0.39	0.17	45.90	503144.34	1616415.44	N 39 52 28.68 W	80 45 16.29
	540.00	0.59	236.82	539.99	-779.50	1.21	-1.86	-1.32	0.51	0.43	-29.93	503144.21	1616415.20	N 39 52 28.67 W	80 45 16.29
	570.00	0.68	239.86	569.99	-749.50	1.26	-2.04	-1.60	0.32	0.30	10.13	503144.04	1616414.91	N 39 52 28.67 W	80 45 16.30
	600.00	0.69	233.91	599.99	-719.50	1.32	-2.23	-1.90	0.24	0.03	-19.83	503143.84	1616414.61	N 39 52 28.67 W	80 45 16.30
	630.00	0.74	244.37	629.99	-689.50	1.37	-2.42	-2.22	0.47	0.17	34.87	503143.66	1616414.29	N 39 52 28.67 W	80 45 16.31
	660.00	0.61	259.69	659.98	-659.51	1.35	-2.54	-2.55	0.74	-0.43	51.07	503143.55	1616413.95	N 39 52 28.67 W	80 45 16.31
	690.00	0.43	327.15	689.98	-629.51	1.20	-2.47	-2.77	1.99	-0.60	224.87	503143.62	1616413.74	N 39 52 28.67 W	80 45 16.31
Drilling Office 2.7.1043.0	700.00	0.57	348.69	699.98	-600.00	1.20	-2.50	-2.80	2.32	-0.60	215.40	503143.70	1616413.71	N 39 52 28.67 W	80 45 16.31

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	758.00	1.14	22.56	757.98	-561.51	0.43	-1.57	-2.64	1.27	0.98	58.40	503144.51	1616413.88	N 39 52 28.68 W	80 45 16.31
	807.00	1.93	19.41	806.96	-512.53	-0.52	-0.34	-2.17	1.62	1.61	-6.43	503145.74	1616414.36	N 39 52 28.69 W	80 45 16.31
	901.00	2.30	33.44	900.90	-418.59	-2.75	2.72	-0.61	0.67	0.39	14.93	503148.78	1616415.97	N 39 52 28.72 W	80 45 16.29
	996.00	2.85	27.80	995.80	-323.69	-5.30	6.40	1.54	0.64	0.58	-5.94	503152.43	1616418.17	N 39 52 28.76 W	80 45 16.26
	1091.00	3.04	27.73	1090.67	-228.82	-8.40	10.72	3.82	0.20	0.20	-0.07	503156.72	1616420.51	N 39 52 28.80 W	80 45 16.23
	1196.00	4.51	30.54	1195.44	-124.05	-12.64	16.74	7.21	1.41	1.40	2.68	503162.69	1616423.98	N 39 52 28.86 W	80 45 16.19
	1281.00	6.30	37.83	1280.06	-39.43	-16.92	23.30	11.77	2.25	2.11	8.58	503169.19	1616428.63	N 39 52 28.92 W	80 45 16.13
	1375.00	7.64	52.00	1373.37	53.88	-21.09	31.23	19.86	2.31	1.43	15.07	503176.99	1616436.83	N 39 52 29.00 W	80 45 16.02
	1470.00	8.36	61.96	1467.45	147.96	-23.37	38.36	30.93	1.64	0.76	10.48	503183.97	1616448.00	N 39 52 29.07 W	80 45 15.88
	1565.00	7.15	63.03	1561.58	242.09	-24.43	44.29	42.30	1.28	-1.27	1.13	503189.74	1616459.45	N 39 52 29.13 W	80 45 15.74
	1660.00	5.02	70.11	1656.04	336.55	-24.65	48.38	51.47	2.37	-2.24	7.45	503193.71	1616468.68	N 39 52 29.17 W	80 45 15.62
	1755.00	4.26	64.83	1750.73	431.24	-24.58	51.30	58.58	0.92	-0.80	-5.56	503196.52	1616475.82	N 39 52 29.20 W	80 45 15.53
	1850.00	2.65	71.96	1845.56	526.07	-24.55	53.48	63.86	1.75	-1.69	7.51	503198.63	1616481.14	N 39 52 29.22 W	80 45 15.46
	1945.00	1.86	97.65	1940.48	620.99	-23.58	53.95	67.47	1.33	-0.83	27.04	503199.05	1616484.76	N 39 52 29.23 W	80 45 15.41
	2040.00	2.10	108.95	2035.43	715.94	-21.64	53.18	70.65	0.48	0.25	11.89	503198.24	1616487.92	N 39 52 29.22 W	80 45 15.37
	2135.00	2.78	102.29	2130.34	810.85	-19.16	52.13	74.55	0.77	0.72	-7.01	503197.13	1616491.80	N 39 52 29.21 W	80 45 15.32
	2230.00	1.40	134.96	2225.28	905.79	-16.76	50.82	77.62	1.86	-1.45	34.39	503195.78	1616494.86	N 39 52 29.19 W	80 45 15.28
	2325.00	1.72	157.88	2320.24	1000.75	-14.26	48.68	78.98	0.73	0.34	24.13	503193.62	1616496.18	N 39 52 29.17 W	80 45 15.26
	2420.00	1.57	169.20	2415.20	1095.71	-11.56	46.08	79.76	0.38	-0.16	11.92	503191.01	1616496.93	N 39 52 29.15 W	80 45 15.25
	2515.00	1.86	177.32	2510.16	1190.67	-8.84	43.26	80.07	0.40	0.31	8.55	503188.19	1616497.21	N 39 52 29.12 W	80 45 15.25
	2610.00	1.66	183.47	2605.12	1285.63	-6.16	40.35	80.06	0.29	-0.21	6.47	503185.27	1616497.15	N 39 52 29.09 W	80 45 15.25
	2673.00	2.05	190.13	2668.08	1348.59	-4.40	38.33	79.81	0.71	0.62	10.57	503183.26	1616496.87	N 39 52 29.07 W	80 45 15.25
	2796.00	1.66	186.26	2791.02	1471.53	-0.99	34.39	79.23	0.33	-0.32	-3.15	503179.33	1616496.24	N 39 52 29.03 W	80 45 15.26
	2891.00	0.91	221.96	2886.00	1566.51	0.53	32.46	78.57	1.12	-0.79	37.58	503177.41	1616495.55	N 39 52 29.01 W	80 45 15.27
	2986.00	0.92	259.57	2980.99	1661.50	0.69	31.76	77.32	0.62	0.01	39.59	503176.73	1616494.29	N 39 52 29.01 W	80 45 15.29
	3081.00	1.15	272.47	3075.97	1756.48	0.12	31.66	75.62	0.34	0.24	13.58	503176.65	1616492.59	N 39 52 29.01 W	80 45 15.31
	3175.00	1.33	275.09	3169.95	1850.46	-0.79	31.80	73.59	0.20	0.19	2.79	503176.82	1616490.56	N 39 52 29.01 W	80 45 15.33
	3270.00	1.08	310.28	3264.93	1945.44	-2.11	32.48	71.81	0.81	-0.26	37.04	503177.52	1616488.79	N 39 52 29.01 W	80 45 15.36
	3364.00	1.14	339.57	3358.91	2039.42	-3.83	33.93	70.80	0.60	0.06	31.16	503178.98	1616487.81	N 39 52 29.03 W	80 45 15.37
	3459.00	1.08	336.22	3453.89	2134.40	-5.67	35.63	70.11	0.09	-0.06	-3.53	503180.70	1616487.14	N 39 52 29.04 W	80 45 15.38
	3554.00	1.20	318.63	3548.87	2229.38	-7.51	37.20	69.09	0.39	0.13	-18.52	503182.28	1616486.14	N 39 52 29.06 W	80 45 15.39
	3649.00	1.34	306.92	3643.85	2324.36	-9.41	38.61	67.55	0.31	0.15	-12.33	503183.71	1616484.62	N 39 52 29.07 W	80 45 15.41
	3743.00	1.38	306.05	3737.83	2418.34	-11.33	39.94	65.75	0.05	0.04	-0.93	503185.06	1616482.84	N 39 52 29.09 W	80 45 15.43
	3838.00	1.33	308.42	3832.80	2513.31	-13.27	41.30	63.97	0.08	-0.05	2.49	503186.45	1616481.07	N 39 52 29.10 W	80 45 15.46
	3933.00	1.11	303.74	3927.78	2608.29	-15.01	42.49	62.34	0.25	-0.23	-4.93	503187.67	1616479.46	N 39 52 29.11 W	80 45 15.48
	4028.00	1.16	309.39	4022.76	2703.27	-16.63	43.61	60.83	0.13	0.05	5.95	503188.81	1616477.97	N 39 52 29.12 W	80 45 15.50
	4123.00	0.80	319.57	4117.74	2798.25	-18.11	44.73	59.66	0.42	-0.38	10.72	503189.94	1616476.81	N 39 52 29.13 W	80 45 15.51
	4218.00	0.73	323.01	4212.74	2893.25	-19.33	45.72	58.86	0.09	-0.07	3.62	503190.94	1616476.03	N 39 52 29.14 W	80 45 15.52
	4313.00	0.71	331.75	4307.73	2988.24	-20.50	46.72	58.22	0.12	-0.02	9.20	503191.95	1616475.40	N 39 52 29.15 W	80 45 15.53
	4408.00	0.71	329.88	4402.72	3083.23	-21.67	47.75	57.64	0.02	0.00	-1.97	503192.99	1616474.84	N 39 52 29.16 W	80 45 15.54
	4503.00	0.74	326.74	4497.71	3178.22	-22.86	48.77	57.01	0.05	0.03	-3.31	503194.02	1616474.23	N 39 52 29.17 W	80 45 15.55
	4598.00	0.88	311.68	4592.70	3273.21	-24.12	49.77	56.13	0.27	0.15	-15.85	503195.03	1616473.36	N 39 52 29.18 W	80 45 15.56
	4692.00	1.21	304.96	4686.69	3367.20	-25.61	50.82	54.78	0.37	0.35	-7.15	503196.09	1616472.02	N 39 52 29.19 W	80 45 15.58
	4786.00	1.46	306.70	4780.66	3461.17	-27.48	52.10	53.01	0.27	0.27	1.85	503197.40	1616470.26	N 39 52 29.21 W	80 45 15.60
	4881.00	1.65	315.47	4875.63	3556.14	-29.80	53.80	51.08	0.32	0.20	9.23	503199.13	1616468.36	N 39 52 29.22 W	80 45 15.62
	4936.00	1.67	325.77	4930.61	3611.12	-31.32	55.03	50.07	0.54	0.04	18.73	503200.37	1616467.37	N 39 52 29.24 W	80 45 15.64
	4987.00	1.54	330.32	4981.59	3662.10	-32.73	56.24	49.31	0.36	-0.25	8.92	503201.59	1616466.63	N 39 52 29.25 W	80 45 15.65
	5082.00	0.10	39.24	5076.57	3757.08	-34.03	57.41	48.73	1.59	-1.52	72.55	503202.77	1616466.07	N 39 52 29.26 W	80 45 15.65
Drilling Office 2.7.1043.0	5177.00	0.08	72.39	5171.57	3852.68	-34.06	57.49	48.85	0.08	-0.02	34.89	503202.85	1616466.18	N 39 52 29.26 W	80 45 15.65

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	5272.00	9.47	46.11	5266.14	3946.65	-36.88	62.94	54.56	9.89	9.88	-27.66	503208.22	1616471.97	N 39 52 29.31	W 80 45 15.58
	5367.00	13.90	42.65	5359.15	4039.66	-44.43	76.76	67.93	4.72	4.66	-3.64	503221.85	1616485.53	N 39 52 29.45	W 80 45 15.41
	5461.00	13.50	48.78	5450.48	4130.99	-52.59	92.30	83.83	1.60	-0.43	6.52	503237.16	1616501.65	N 39 52 29.60	W 80 45 15.20
	5511.00	16.78	33.30	5498.75	4179.26	-58.46	102.18	92.19	10.36	6.56	-30.96	503246.93	1616510.14	N 39 52 29.70	W 80 45 15.10
	5556.00	20.63	28.15	5541.37	4221.88	-67.08	114.61	99.50	9.30	8.56	-11.44	503259.25	1616517.62	N 39 52 29.82	W 80 45 15.00
	5606.00	24.65	36.50	5587.52	4268.03	-77.96	130.77	109.86	10.28	8.04	16.70	503275.26	1616528.21	N 39 52 29.98	W 80 45 14.87
	5651.00	27.87	42.88	5627.88	4308.39	-87.08	146.02	122.61	9.51	7.16	14.18	503290.34	1616541.17	N 39 52 30.14	W 80 45 14.71
	5699.00	29.85	45.23	5669.92	4350.43	-96.17	162.66	138.72	4.75	4.13	4.90	503306.75	1616557.51	N 39 52 30.30	W 80 45 14.50
	5746.00	33.87	45.33	5709.83	4390.34	-105.43	180.11	156.35	8.55	8.55	0.21	503323.95	1616575.38	N 39 52 30.47	W 80 45 14.27
	5841.00	44.39	41.96	5783.43	4463.94	-129.52	223.56	197.51	11.29	11.07	-3.55	503366.82	1616617.14	N 39 52 30.90	W 80 45 13.74
	5936.00	46.67	44.98	5849.98	4530.49	-156.76	272.72	244.16	3.30	2.40	3.18	503415.32	1616664.48	N 39 52 31.39	W 80 45 13.15
	6031.00	44.41	53.36	5916.58	4597.09	-177.79	317.04	295.31	6.73	-2.38	8.82	503458.92	1616716.24	N 39 52 31.83	W 80 45 12.49
	6126.00	44.82	71.39	5984.48	4664.99	-183.31	347.69	353.95	13.31	0.43	18.98	503488.75	1616775.30	N 39 52 32.13	W 80 45 11.74
	6220.00	48.59	86.11	6049.11	4729.62	-169.41	360.70	420.74	12.06	4.01	15.66	503500.82	1616842.25	N 39 52 32.26	W 80 45 10.88
	6315.00	55.64	97.39	6107.53	4788.04	-138.04	358.06	495.41	11.94	7.42	11.87	503497.14	1616916.88	N 39 52 32.23	W 80 45 9.92
	6410.00	59.70	105.76	6158.39	4838.90	-92.68	341.85	573.90	8.58	4.27	8.81	503479.84	1616995.13	N 39 52 32.07	W 80 45 8.92
	6505.00	59.25	113.79	6206.70	4887.21	-37.38	314.21	650.81	7.29	-0.47	8.45	503451.13	1617071.65	N 39 52 31.80	W 80 45 7.93
	6600.00	59.39	118.03	6255.19	4935.70	23.99	278.52	724.28	3.84	0.15	4.46	503414.42	1617144.60	N 39 52 31.44	W 80 45 6.99
	6694.00	59.75	119.16	6302.80	4983.31	87.34	239.73	795.44	1.11	0.38	1.20	503374.64	1617215.21	N 39 52 31.06	W 80 45 6.08
	6789.00	63.62	128.14	6347.93	5028.44	156.99	193.36	864.88	9.26	4.07	9.45	503327.31	1617283.99	N 39 52 30.60	W 80 45 5.18
	6884.00	72.40	135.42	6383.50	5064.01	236.48	134.65	930.33	11.65	9.24	7.66	503267.69	1617348.61	N 39 52 30.02	W 80 45 4.35
	6979.00	82.90	141.60	6403.81	5084.32	324.26	65.20	991.62	12.74	11.05	6.51	503197.40	1617408.92	N 39 52 29.34	W 80 45 3.56
	7074.00	81.97	142.61	6416.32	5096.83	415.18	-9.11	1049.46	1.44	-0.98	1.06	503122.29	1617465.71	N 39 52 28.60	W 80 45 2.82
	7169.00	82.04	141.91	6429.53	5110.04	506.08	-83.50	1107.04	0.73	0.07	-0.74	503047.10	1617522.25	N 39 52 27.87	W 80 45 2.08
	7263.00	86.66	141.62	6438.79	5119.30	596.23	-156.96	1164.92	4.92	4.91	-0.31	502972.85	1617579.09	N 39 52 27.14	W 80 45 1.34
	7358.00	86.18	140.41	6444.72	5125.23	687.28	-230.66	1224.57	1.37	-0.51	-1.27	502898.33	1617637.70	N 39 52 26.41	W 80 45 0.57
	7453.00	89.42	141.37	6448.36	5128.87	778.38	-304.31	1284.44	3.56	3.41	1.01	502823.85	1617696.54	N 39 52 25.68	W 80 44 59.80
	7548.00	90.17	141.57	6448.70	5129.21	869.83	-378.62	1343.62	0.82	0.79	0.21	502748.72	1617754.67	N 39 52 24.95	W 80 44 59.04
	7643.00	90.48	140.45	6448.17	5128.68	961.06	-452.46	1403.39	1.22	0.33	-1.18	502674.06	1617813.40	N 39 52 24.22	W 80 44 58.28
	7738.00	89.66	141.76	6448.05	5128.56	1052.34	-526.40	1463.04	1.63	-0.86	1.38	502599.30	1617872.01	N 39 52 23.49	W 80 44 57.51
	7832.00	90.31	142.30	6448.07	5128.58	1143.06	-600.50	1520.87	0.90	0.69	0.57	502524.40	1617928.80	N 39 52 22.76	W 80 44 56.77
	7927.00	90.69	141.59	6447.25	5127.76	1234.71	-675.30	1579.43	0.85	0.40	-0.75	502448.80	1617986.30	N 39 52 22.02	W 80 44 56.02
	8022.00	90.55	141.18	6446.22	5126.73	1326.11	-749.53	1638.71	0.46	-0.15	-0.43	502373.75	1618044.54	N 39 52 21.28	W 80 44 55.26
	8117.00	89.28	141.27	6446.36	5126.87	1417.45	-823.59	1698.20	1.34	-1.34	0.09	502298.87	1618102.99	N 39 52 20.55	W 80 44 54.50
	8212.00	89.14	141.72	6447.67	5128.18	1508.89	-897.92	1757.34	0.50	-0.15	0.47	502223.72	1618161.08	N 39 52 19.82	W 80 44 53.74
	8306.00	88.56	140.34	6449.55	5130.06	1599.16	-970.99	1816.45	1.59	-0.62	-1.47	502149.84	1618219.16	N 39 52 19.10	W 80 44 52.98
	8401.00	88.87	141.29	6451.69	5132.20	1690.28	-1044.60	1876.46	1.05	0.33	1.00	502075.40	1618278.13	N 39 52 18.37	W 80 44 52.21
	8496.00	89.14	143.84	6453.34	5133.85	1782.18	-1120.02	1934.19	2.70	0.28	2.68	501999.19	1618334.80	N 39 52 17.62	W 80 44 51.47
	8591.00	88.93	143.17	6454.94	5135.45	1874.46	-1196.38	1990.68	0.74	-0.22	-0.71	501922.05	1618390.22	N 39 52 16.87	W 80 44 50.75
	8686.00	88.14	142.50	6457.36	5137.87	1966.46	-1272.06	2048.05	1.09	-0.83	-0.71	501845.58	1618446.52	N 39 52 16.12	W 80 44 50.01
	8781.00	88.90	143.58	6459.82	5140.33	2058.55	-1347.94	2105.15	1.39	0.80	1.14	501768.91	1618502.56	N 39 52 15.37	W 80 44 49.28
	8875.00	88.94	143.36	6461.59	5142.10	2149.85	-1423.46	2161.09	0.24	0.04	-0.23	501692.62	1618557.44	N 39 52 14.62	W 80 44 48.56
	8970.00	89.21	142.68	6463.12	5143.63	2241.94	-1499.34	2218.23	0.77	0.28	-0.72	501615.96	1618613.51	N 39 52 13.87	W 80 44 47.83
	9065.00	88.32	142.74	6465.17	5145.68	2333.90	-1574.91	2275.77	0.94	-0.94	0.06	501539.60	1618669.98	N 39 52 13.13	W 80 44 47.09
	9160.00	89.90	141.09	6466.65	5147.16	2425.53	-1649.67	2334.36	2.40	1.66	-1.74	501464.04	1618727.52	N 39 52 12.39	W 80 44 46.34
	9254.00	89.14	142.01	6467.43	5147.94	2516.04	-1723.28	2392.81	1.27	-0.81	0.98	501389.62	1618784.93	N 39 52 11.66	W 80 44 45.59
	9349.00	88.83	140.09	6469.12	5149.63	2607.27	-1797.14	2452.52	2.05	-0.33	-2.02	501314.93	1618843.60	N 39 52 10.93	W 80 44 44.82
	9444.00	88.66	141.16	6471.20	5151.71	2698.31	-1870.56	2512.77	1.14	-0.18	1.13	501240.68	1618902.82	N 39 52 10.21	W 80 44 44.05
	9539.00	88.87	142.31	6473.25	5153.98	2785.15	-1945.13	2571.59	1.23	0.22	1.21	501165.30	1618960.59	N 39 52 9.57	W 80 44 43.30

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	9634.00	90.10	143.42	6474.10	5154.61	2881.88	-2020.86	2628.94	1.74	1.29	1.17	501088.78	1619016.87	N 39 52 8.72 W	80 44 42.56
	9729.00	90.41	142.90	6473.68	5154.19	2974.05	-2096.89	2685.90	0.64	0.33	-0.55	501011.97	1619072.76	N 39 52 7.97 W	80 44 41.83
	9824.00	89.86	144.45	6473.45	5153.96	3066.41	-2173.43	2742.17	1.73	-0.58	1.63	500934.66	1619127.95	N 39 52 7.21 W	80 44 41.11
	9919.00	89.66	145.05	6473.85	5154.36	3159.18	-2251.01	2797.00	0.67	-0.21	0.63	500856.32	1619181.69	N 39 52 6.45 W	80 44 40.41
	10013.00	90.27	145.27	6473.91	5154.42	3251.11	-2328.16	2850.70	0.69	0.65	0.23	500778.44	1619234.30	N 39 52 5.68 W	80 44 39.72
	10108.00	89.86	144.61	6473.80	5154.31	3343.95	-2405.92	2905.27	0.82	-0.43	-0.69	500699.92	1619287.78	N 39 52 4.91 W	80 44 39.02
	10203.00	90.31	142.66	6473.66	5154.17	3436.29	-2482.41	2961.59	2.11	0.47	-2.05	500622.65	1619343.03	N 39 52 4.16 W	80 44 38.30
	10298.00	89.73	144.00	6473.63	5154.14	3528.52	-2558.61	3018.33	1.54	-0.61	1.41	500545.68	1619398.69	N 39 52 3.40 W	80 44 37.57
	10393.00	89.45	143.40	6474.31	5154.82	3620.90	-2635.17	3074.57	0.70	-0.29	-0.63	500468.34	1619453.85	N 39 52 2.65 W	80 44 36.85
	10487.00	89.62	144.40	6475.07	5155.58	3712.38	-2711.12	3129.95	1.08	0.18	1.06	500391.63	1619508.17	N 39 52 1.90 W	80 44 36.14
	10582.00	89.28	144.07	6475.98	5156.49	3804.95	-2788.20	3185.47	0.50	-0.36	-0.35	500313.79	1619562.60	N 39 52 1.14 W	80 44 35.42
	10677.00	89.38	145.32	6477.09	5157.60	3897.69	-2865.72	3240.37	1.32	0.11	1.32	500235.51	1619616.41	N 39 52 0.37 W	80 44 34.72
	10772.00	88.52	141.07	6478.83	5159.34	3989.83	-2941.76	3297.26	4.56	-0.91	-4.47	500158.69	1619672.23	N 39 51 59.62 W	80 44 33.99
	10867.00	88.87	142.23	6481.00	5161.51	4081.33	-3016.24	3356.19	1.28	0.37	1.22	500083.40	1619730.11	N 39 51 58.88 W	80 44 33.24
	10962.00	89.14	142.90	6482.65	5163.16	4173.24	-3091.66	3413.92	0.76	0.28	0.71	500007.18	1619786.78	N 39 51 58.14 W	80 44 32.50
	11056.00	89.04	141.36	6484.14	5164.65	4263.99	-3165.85	3471.62	1.64	-0.11	-1.64	499932.20	1619843.43	N 39 51 57.40 W	80 44 31.76
	11151.00	88.59	141.65	6486.10	5166.61	4355.44	-3240.19	3530.74	0.56	-0.47	0.31	499857.05	1619901.51	N 39 51 56.67 W	80 44 31.00
	11246.00	89.42	140.94	6487.75	5168.26	4446.79	-3314.31	3590.13	1.15	0.87	-0.75	499782.10	1619959.86	N 39 51 55.94 W	80 44 30.24
	11341.00	88.83	142.65	6489.20	5169.71	4538.36	-3388.95	3648.88	1.90	-0.62	1.80	499706.66	1620017.55	N 39 51 55.20 W	80 44 29.48
	11436.00	88.25	142.89	6491.63	5172.14	4630.34	-3464.57	3706.34	0.66	-0.61	0.25	499630.25	1620073.95	N 39 51 54.45 W	80 44 28.75
	11531.00	90.52	140.65	6492.64	5173.15	4721.90	-3539.18	3765.11	3.36	2.39	-2.36	499554.83	1620131.67	N 39 51 53.71 W	80 44 27.99
	11626.00	89.86	139.93	6492.33	5172.84	4812.79	-3612.26	3825.81	1.03	-0.69	-0.76	499480.91	1620191.34	N 39 51 52.99 W	80 44 27.21
	11720.00	88.32	142.40	6493.82	5174.33	4903.12	-3685.46	3884.74	3.10	-1.64	2.63	499406.89	1620249.24	N 39 51 52.27 W	80 44 26.46
	11815.00	89.55	141.46	6495.59	5176.10	4994.75	-3760.24	3943.31	1.63	1.29	-0.99	499331.31	1620306.75	N 39 51 51.53 W	80 44 25.71
	11910.00	89.11	141.18	6496.70	5177.21	5086.12	-3834.39	4002.68	0.55	-0.46	-0.29	499256.34	1620365.08	N 39 51 50.80 W	80 44 24.95
	12005.00	88.56	142.51	6498.63	5179.14	5177.71	-3909.08	4061.35	1.51	-0.58	1.40	499180.85	1620422.70	N 39 51 50.06 W	80 44 24.19
	12100.00	89.90	140.90	6499.91	5180.42	5269.24	-3983.63	4120.22	2.20	1.41	-1.69	499105.49	1620480.52	N 39 51 49.32 W	80 44 23.44
	12195.00	88.52	142.04	6501.22	5181.73	5360.68	-4057.93	4179.39	1.88	-1.45	1.20	499030.37	1620538.64	N 39 51 48.59 W	80 44 22.68
	12289.00	89.14	142.87	6503.14	5183.65	5451.56	-4132.45	4236.66	1.10	0.66	0.88	498955.06	1620594.86	N 39 51 47.85 W	80 44 21.95
	12384.00	89.97	140.50	6503.87	5184.38	5543.09	-4206.98	4295.55	2.64	0.87	-2.49	498879.72	1620652.70	N 39 51 47.11 W	80 44 21.19
	12479.00	88.38	142.32	6505.24	5185.75	5634.49	-4281.22	4354.79	2.54	-1.67	1.92	498804.66	1620710.90	N 39 51 46.38 W	80 44 20.43
	12574.00	89.90	140.89	6506.67	5187.18	5725.98	-4355.66	4413.79	2.20	1.60	-1.51	498729.41	1620768.85	N 39 51 45.64 W	80 44 19.68
	12669.00	88.49	141.96	6508.00	5188.51	5817.40	-4429.92	4473.01	1.86	-1.48	1.13	498654.33	1620827.03	N 39 51 44.91 W	80 44 18.92
	12764.00	89.45	142.42	6509.71	5190.22	5909.14	-4504.96	4531.24	1.12	1.01	0.48	498578.49	1620884.20	N 39 51 44.17 W	80 44 18.17
	12953.00	89.04	141.51	6512.20	5192.71	6091.49	-4653.81	4647.68	0.53	-0.22	-0.48	498428.04	1620998.55	N 39 51 42.70 W	80 44 16.68
	13048.00	89.35	141.49	6513.54	5194.05	6182.94	-4728.15	4706.82	0.33	0.33	-0.02	498352.88	1621056.63	N 39 51 41.96 W	80 44 15.92
	13143.00	89.45	141.45	6514.53	5195.04	6274.38	-4802.46	4765.99	0.11	0.11	-0.04	498277.75	1621114.76	N 39 51 41.23 W	80 44 15.16
	13238.00	89.14	141.18	6515.70	5196.21	6365.74	-4876.62	4825.36	0.43	-0.33	-0.28	498202.79	1621173.09	N 39 51 40.49 W	80 44 14.40
	13333.00	89.24	141.55	6517.04	5197.55	6457.13	-4950.82	4884.67	0.40	0.11	0.39	498127.77	1621231.35	N 39 51 39.76 W	80 44 13.64
Final Survey	13375.00	89.31	141.34	6517.57	5198.08	6497.55	-4983.66	4910.85	0.53	0.17	-0.50	498094.57	1621257.07	N 39 51 39.44 W	80 44 13.30
Projection to TD	13417.00	89.31	141.34	6518.08	5198.59	6537.95	-5016.45	4937.08	0.00	0.00	0.00	498061.41	1621282.84	N 39 51 39.11 W	80 44 12.97

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma

Drilling Office 2.7.1043.0

...Chevron Berger Pad\Berger 1H\Original Borehole\Chevron Appalachia Berger 1H Survey Off to 13417ft MD

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey							
	1	0.000	32.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / Chevron Appalachia Berger 1H Survey 0ft to 13417ft MD							
	1	32.000	700.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Chevron Appalachia Berger 1H Survey 0ft							
	1	700.000	2673.000	Act Stns	12.250	9.625	SLB_MWD-STD	Original Borehole / Chevron Appalachia Berger 1H Survey 0ft							
	1	2673.000	13375.000	Act Stns	8.500	5.500	SLB_MWD-STD	Original Borehole / Chevron Appalachia Berger 1H Survey 0ft							
	1	13375.000	13417.000	Act Stns	8.500	5.500	SLB_BLIND+TREND	Original Borehole / Chevron Appalachia Berger 1H Survey 0ft							