

# Chevron Appalachia Berger 9H Survey 0ft to 12480ft MD Survey Geodetic Report

(Def Survey)

Report Date: March 03, 2015 - 07:59 AM  
 Client: Chevron  
 Field: WV Marshall County (NAD 83)  
 Structure / Slot: Chevron Berger Pad / Berger 9H  
 Well: Berger 9H  
 Borehole: Original Borehole  
 UWI / API#: Unknown / Unknown  
 Survey Name: Chevron Appalachia Berger 9H Survey 0ft to 12480ft MD  
 Survey Date: February 19, 2015  
 Tort / AHD / DDI / ERD Ratio: 209.508 ° / 6669.614 ft / 6.428 / 1.024  
 Coordinate Reference System: NAD83 West Virginia State Plane, Northern Zone, US Feet  
 Location Lat / Long: N 39° 52' 28.11391", W 80° 45' 16.44784"  
 Location Grid N/E Y/X: N 503087.720 ftUS, E 1616402.480 ftUS  
 CRS Grid Convergence Angle: -0.8001 °  
 Grid Scale Factor: 0.99995012  
 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: 1319.470 ft above MSL  
 Seabed / Ground Elevation: 1287.470 ft above MSL  
 Magnetic Declination: -7.763 °  
 Total Gravity Field Strength: 999.3389mgn (9.80665 Based)  
 Gravity Model: GARM  
 Total Magnetic Field Strength: 52738.005 nT  
 Magnetic Dip Angle: 67.318 °  
 Declination Date: February 19, 2015  
 Magnetic Declination Model: HDGM 2014  
 North Reference: True North  
 Grid Convergence Used: 0.0000 °  
 Total Corr Mag North->True North: -7.7629 °  
 Local Coord Referenced To: Well Head

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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	143.00	0.00	-1319.47	0.00	0.00	0.00	N/A	N/A	N/A	503087.72	1616402.48	N 39 52 28.11 W	80 45 16.45
	100.00	0.17	49.45	100.00	-1219.47	-0.05	0.10	0.11	0.17	0.17	0.00	503087.81	1616402.59	N 39 52 28.11 W	80 45 16.45
	130.00	0.21	36.55	130.00	-1189.47	-0.09	0.17	0.18	0.19	0.13	-43.00	503087.89	1616402.66	N 39 52 28.12 W	80 45 16.45
	160.00	0.20	53.36	160.00	-1159.47	-0.13	0.24	0.25	0.20	-0.03	56.03	503087.96	1616402.74	N 39 52 28.12 W	80 45 16.44
	190.00	0.18	54.02	190.00	-1129.47	-0.15	0.30	0.33	0.07	-0.07	2.20	503088.02	1616402.82	N 39 52 28.12 W	80 45 16.44
	220.00	0.14	36.43	220.00	-1099.47	-0.18	0.36	0.39	0.21	-0.13	-58.63	503088.08	1616402.88	N 39 52 28.12 W	80 45 16.44
	250.00	0.10	35.39	250.00	-1069.47	-0.21	0.41	0.43	0.13	-0.13	-3.47	503088.13	1616402.92	N 39 52 28.12 W	80 45 16.44
	280.00	0.04	115.96	280.00	-1039.47	-0.22	0.43	0.46	0.34	-0.20	268.57	503088.14	1616402.94	N 39 52 28.12 W	80 45 16.44
	310.00	0.10	324.51	310.00	-1009.47	-0.24	0.45	0.45	0.45	0.20	-504.83	503088.16	1616402.94	N 39 52 28.12 W	80 45 16.44
	340.00	0.07	45.00	340.00	-979.47	-0.27	0.48	0.45	0.37	-0.10	268.30	503088.19	1616402.93	N 39 52 28.12 W	80 45 16.44
	370.00	0.08	18.43	370.00	-949.47	-0.29	0.51	0.47	0.12	0.03	-88.57	503088.23	1616402.95	N 39 52 28.12 W	80 45 16.44
	400.00	0.08	3.76	400.00	-919.47	-0.33	0.55	0.48	0.07	0.00	-48.90	503088.27	1616402.96	N 39 52 28.12 W	80 45 16.44
	430.00	0.14	351.87	430.00	-889.47	-0.38	0.61	0.47	0.21	0.20	-39.63	503088.32	1616402.96	N 39 52 28.12 W	80 45 16.44
	460.00	0.09	338.74	460.00	-859.47	-0.44	0.67	0.46	0.19	-0.17	-43.77	503088.38	1616402.95	N 39 52 28.12 W	80 45 16.44
	490.00	0.16	338.91	490.00	-829.47	-0.50	0.73	0.43	0.23	0.23	0.57	503088.44	1616402.92	N 39 52 28.12 W	80 45 16.44
	520.00	0.20	347.66	520.00	-799.47	-0.60	0.82	0.41	0.16	0.13	29.17	503088.53	1616402.90	N 39 52 28.12 W	80 45 16.44
	550.00	0.20	339.78	550.00	-769.47	-0.70	0.92	0.38	0.09	0.00	-26.27	503088.63	1616402.87	N 39 52 28.12 W	80 45 16.44
	580.00	0.18	343.30	580.00	-739.47	-0.80	1.01	0.35	0.08	-0.07	11.73	503088.73	1616402.84	N 39 52 28.12 W	80 45 16.44
	610.00	0.24	337.47	610.00	-709.47	-0.91	1.12	0.31	0.21	0.20	-19.43	503088.83	1616402.80	N 39 52 28.12 W	80 45 16.44
	640.00	0.22	348.40	640.00	-679.47	-1.03	1.23	0.27	0.16	-0.07	36.43	503088.95	1616402.77	N 39 52 28.13 W	80 45 16.44
	670.00	0.25	348.83	670.00	-649.47	-1.15	1.35	0.25	0.10	0.10	1.43	503089.07	1616402.75	N 39 52 28.13 W	80 45 16.44
Gyro	690.00	0.24	344.27	690.00	-629.47	-1.23	1.44	0.23	0.11	-0.05	-22.80	503089.15	1616402.73	N 39 52 28.13 W	80 45 16.44
	715.00	0.25	29.12	715.00	-604.47	-1.32	1.53	0.24	0.75	0.04	179.40	503089.25	1616402.74	N 39 52 28.13 W	80 45 16.44
	755.00	0.23	342.94	755.00	-564.47	-1.45	1.69	0.26	0.47	-0.05	-115.45	503089.40	1616402.76	N 39 52 28.13 W	80 45 16.44
	810.00	0.27	8.62	810.00	-509.47	-1.67	1.92	0.25	0.21	0.07	46.69	503089.64	1616402.75	N 39 52 28.13 W	80 45 16.44
	905.00	0.19	35.08	905.00	-414.47	-1.95	2.27	0.37	0.14	-0.08	27.85	503089.99	1616402.88	N 39 52 28.14 W	80 45 16.44
	1000.00	0.22	62.73	1000.00	-319.47	-2.05	2.48	0.62	0.11	0.03	29.11	503090.19	1616403.14	N 39 52 28.14 W	80 45 16.44
	1094.00	0.22	32.58	1093.99	-225.48	-2.16	2.72	0.88	0.12	0.00	-32.07	503090.43	1616403.40	N 39 52 28.14 W	80 45 16.44
	1189.00	1.81	127.01	1188.98	-130.49	-0.97	1.97	2.18	1.94	1.67	99.40	503089.66	1616404.69	N 39 52 28.13 W	80 45 16.42
Drilling Office 2.7.1043.0	1284.00	3.43	138.45	1283.88	-35.58	-0.98	2.08	2.08	2.08	2.08	2.08	503088.59	1616407.73	N 39 52 28.10 W	80 45 16.42



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 ° ' ")
	1379.00	5.43	148.02	1378.59	59.12	10.15	-7.00	9.53	2.24	2.11	10.07	503002.59	1616411.91	N 39 52 28.04 W	80 45 16.33
	1474.00	5.77	150.90	1473.14	153.67	19.33	-14.99	14.23	0.46	0.36	3.03	503002.54	1616416.50	N 39 52 27.97 W	80 45 16.27
	1569.00	5.92	153.63	1567.64	248.17	28.97	-23.55	18.73	0.33	0.16	2.87	503003.91	1616420.88	N 39 52 27.88 W	80 45 16.21
	1664.00	6.10	157.13	1662.12	342.65	38.91	-32.59	22.87	0.43	0.19	3.68	503005.42	1616424.89	N 39 52 27.79 W	80 45 16.15
	1759.00	4.11	148.03	1756.74	437.27	47.31	-40.13	26.63	2.26	-2.09	-9.58	503007.23	1616428.55	N 39 52 27.72 W	80 45 16.11
	1854.00	2.25	142.48	1851.59	532.12	52.48	-44.50	29.57	1.98	-1.96	-5.84	503009.02	1616431.42	N 39 52 27.67 W	80 45 16.07
	1949.00	1.96	138.98	1946.53	627.06	55.83	-47.20	31.77	0.33	-0.31	-3.68	503010.08	1616433.59	N 39 52 27.65 W	80 45 16.04
	2044.00	1.95	137.43	2041.47	722.00	58.89	-49.62	33.93	0.06	-0.01	-0.63	503011.64	1616435.71	N 39 52 27.62 W	80 45 16.01
	2138.00	1.91	133.45	2135.42	815.95	61.83	-51.87	36.15	0.15	-0.04	-0.23	503013.25	1616437.90	N 39 52 27.60 W	80 45 15.98
	2233.00	1.15	135.78	2230.38	910.91	64.17	-53.64	37.97	0.80	-0.80	-0.45	503014.85	1616439.69	N 39 52 27.58 W	80 45 15.96
	2328.00	0.63	139.22	2325.37	1005.90	65.55	-54.72	38.97	0.55	-0.55	-3.36	503016.41	1616440.68	N 39 52 27.57 W	80 45 15.95
	2423.00	0.54	152.01	2420.37	1100.90	66.49	-55.51	39.52	0.17	-0.09	-3.4	503018.05	1616441.22	N 39 52 27.57 W	80 45 15.94
	2518.00	0.41	136.22	2515.36	1195.89	67.26	-56.15	39.97	0.19	-0.14	-16.6	503019.68	1616441.66	N 39 52 27.56 W	80 45 15.94
	2613.00	0.28	166.70	2610.36	1290.89	67.80	-56.63	40.26	0.23	-0.14	32.0	503021.32	1616441.94	N 39 52 27.55 W	80 45 15.93
	2660.00	0.21	134.06	2657.36	1337.89	68.00	-56.80	40.34	0.33	-0.15	-69.4	503023.00	1616442.03	N 39 52 27.55 W	80 45 15.93
	2796.00	0.04	162.03	2793.36	1473.89	68.27	-57.02	40.54	0.13	-0.13	20.57	503024.64	1616442.22	N 39 52 27.55 W	80 45 15.93
	2891.00	0.19	290.81	2888.36	1568.89	68.20	-56.99	40.40	0.23	0.16	135.56	503026.28	1616442.08	N 39 52 27.55 W	80 45 15.93
	2986.00	0.36	2983.63	2983.36	1663.89	67.88	-56.83	39.98	0.18	0.18	0.88	503027.92	1616441.66	N 39 52 27.55 W	80 45 15.94
	3080.00	0.52	302.01	3077.36	1757.89	67.32	-56.49	39.34	0.19	0.17	11.02	503029.56	1616441.03	N 39 52 27.56 W	80 45 15.94
	3175.00	0.52	309.62	3172.35	1852.88	66.59	-55.99	38.64	0.07	0.00	8.01	503031.20	1616440.34	N 39 52 27.56 W	80 45 15.95
	3270.00	0.51	316.26	3267.35	1947.88	65.81	-55.41	38.02	0.06	-0.01	6.99	503032.84	1616439.72	N 39 52 27.57 W	80 45 15.96
	3364.00	0.44	330.79	3361.35	2041.88	65.06	-54.79	37.55	0.15	-0.07	15.46	503034.48	1616439.26	N 39 52 27.57 W	80 45 15.97
	3459.00	0.50	334.90	3456.34	2136.87	64.29	-54.10	37.20	0.07	0.06	4.33	503036.12	1616438.92	N 39 52 27.58 W	80 45 15.97
	3554.00	0.69	328.57	3551.34	2231.87	63.31	-53.23	36.73	0.21	0.20	-6.66	503037.76	1616438.46	N 39 52 27.59 W	80 45 15.98
	3649.00	0.77	316.97	3646.33	2326.86	62.14	-52.28	35.99	0.18	0.08	-12.21	503039.40	1616437.74	N 39 52 27.60 W	80 45 15.99
	3743.00	0.73	318.69	3740.32	2420.85	60.98	-51.37	35.17	0.05	-0.04	1.83	503041.04	1616436.92	N 39 52 27.61 W	80 45 16.00
	3838.00	0.76	316.27	3835.31	2515.84	59.82	-50.46	34.33	0.05	0.03	-2.55	503042.68	1616436.10	N 39 52 27.62 W	80 45 16.01
	3933.00	0.81	312.14	3930.30	2610.83	58.62	-49.55	33.40	0.08	0.05	-4.35	503044.32	1616435.18	N 39 52 27.62 W	80 45 16.02
	4028.00	0.80	304.06	4025.29	2705.82	57.46	-48.73	32.35	0.12	-0.01	-8.51	503045.96	1616434.14	N 39 52 27.63 W	80 45 16.03
	4123.00	0.90	302.51	4120.28	2800.81	56.29	-47.96	31.17	0.11	0.11	-1.63	503047.60	1616432.98	N 39 52 27.64 W	80 45 16.05
	4218.00	0.76	298.97	4215.27	2895.80	55.18	-47.25	29.99	0.16	-0.15	-3.73	503049.24	1616431.81	N 39 52 27.65 W	80 45 16.06
	4313.00	0.57	297.02	4310.27	2990.80	54.32	-46.73	29.02	0.20	-0.20	-2.05	503050.88	1616430.84	N 39 52 27.65 W	80 45 16.08
	4408.00	0.43	298.58	4405.26	3085.79	53.69	-46.34	28.28	0.15	-0.15	1.64	503052.52	1616430.11	N 39 52 27.66 W	80 45 16.09
	4503.00	0.33	290.76	4500.26	3180.79	53.22	-46.08	27.72	0.12	-0.11	-8.23	503054.16	1616429.55	N 39 52 27.66 W	80 45 16.09
	4597.00	0.44	300.85	4594.26	3274.79	52.74	-45.80	27.15	0.14	0.12	10.73	503055.80	1616428.99	N 39 52 27.66 W	80 45 16.10
	4692.00	0.69	303.92	4689.26	3369.79	51.97	-45.29	26.36	0.26	0.26	3.23	503057.44	1616428.21	N 39 52 27.67 W	80 45 16.11
	4786.00	0.80	301.33	4783.25	3463.78	50.96	-44.63	25.33	0.12	0.12	-2.76	503059.08	1616427.19	N 39 52 27.67 W	80 45 16.12
	4881.00	0.83	314.41	4878.24	3558.77	49.79	-43.81	24.28	0.20	0.03	13.77	503060.72	1616426.14	N 39 52 27.68 W	80 45 16.14
	4976.00	0.90	313.57	4973.23	3653.76	48.47	-42.81	23.24	0.07	0.07	-0.88	503062.36	1616425.12	N 39 52 27.69 W	80 45 16.15
	5071.00	0.93	307.76	5068.22	3748.75	47.12	-41.82	22.09	0.10	0.03	-6.12	503064.00	1616423.99	N 39 52 27.70 W	80 45 16.16
	5165.00	0.93	305.01	5162.20	3842.73	45.81	-40.92	20.87	0.05	0.00	-2.93	503065.64	1616422.77	N 39 52 27.71 W	80 45 16.18
	5208.00	0.97	305.31	5205.20	3885.73	45.20	-40.51	20.28	0.09	0.09	0.70	503067.28	1616422.19	N 39 52 27.71 W	80 45 16.19
	5305.00	2.46	277.37	5302.15	3982.68	43.46	-39.77	17.55	1.72	1.54	-28.80	503068.92	1616419.47	N 39 52 27.72 W	80 45 16.22
	5400.00	8.71	254.53	5396.66	4077.19	41.52	-41.43	8.58	6.86	6.58	-24.04	503070.56	1616410.48	N 39 52 27.70 W	80 45 16.34
	5495.00	16.36	243.52	5489.34	4169.87	41.45	-49.32	-10.35	8.40	8.05	-11.59	503072.20	1616391.44	N 39 52 27.63 W	80 45 16.58
	5590.00	21.81	239.60	5579.09	4259.62	44.65	-64.23	-37.57	5.89	5.74	-4.13	503073.84	1616364.02	N 39 52 27.48 W	80 45 16.93
	5685.00	27.61	231.46	5665.38	4345.91	52.96	-86.90	-70.05	7.07	6.11	-8.57	503075.48	1616331.23	N 39 52 27.26 W	80 45 17.35
	5779.00	33.06	228.66	5746.48	4427.01	67.03	-117.44	-106.37	5.99	5.80	-2.98	502971.79	1616294.49	N 39 52 26.95 W	80 45 17.81
	5875.00	36.49	231.29	5825.33	4505.86	83.18	-152.59	-148.32	3.90	3.57	2.74	502937.22	1616252.06	N 39 52 26.61 W	80 45 18.35
	5969.00	32.45	218.23	5902.92	4583.45	103.08	-189.95	-185.80	8.94	-4.30	-13.89	502903.39	1616214.06	N 39 52 26.24 W	80 45 18.83
	6064.00	34.29	198.90	5982.48	4663.01	135.50	-235.42	-210.31	11.32	1.94	-20.35	502855.27	1616188.91	N 39 52 25.79 W	80 45 19.15
	6159.00	36.58	195.44	6059.88	4740.41	177.72	-288.04	-226.52	3.20	2.41	-3.64	502807.11	1616171.97	N 39 52 25.27 W	80 45 19.35
	6253.00	42.21	187.89	6132.54	4813.07	226.94	-346.40	-238.33	7.86	5.99	-8.03	502744.70	1616159.35	N 39 52 24.69 W	80 45 19.50
	6348.00	47.92	185.11	6199.62	4880.15	283.39	-412.18	-245.65	8.59	8.01	-2.93	502678.03	1616150.89	N 39 52 24.03 W	80 45 19.60

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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 ° ' ")
	6443.00	54.43	179.84	6259.17	4939.70	352.50	-487.05	-248.89	8.10	6.85	-5.55	502604.22	1616146.82	N 39 52 23.30	W 80 45 19.64
	6538.00	61.64	174.47	6309.46	4989.99	428.21	-567.44	-244.75	8.97	7.59	-5.65	502523.79	1616149.85	N 39 52 22.51	W 80 45 19.59
	6633.00	66.39	167.63	6351.11	5031.64	511.05	-651.68	-231.38	8.18	5.00	-7.20	502439.37	1616162.04	N 39 52 21.67	W 80 45 19.42
	6728.00	73.51	162.67	6383.67	5064.20	599.36	-737.83	-208.44	8.95	7.49	-5.22	502352.91	1616183.77	N 39 52 20.82	W 80 45 19.12
	6823.00	79.67	156.73	6405.71	5086.24	691.59	-824.40	-176.36	8.89	6.48	-6.25	502265.91	1616214.64	N 39 52 19.97	W 80 45 18.71
	6917.00	82.48	148.68	6420.32	5100.85	784.08	-906.83	-133.79	8.97	2.99	-8.56	502182.89	1616256.05	N 39 52 19.15	W 80 45 18.16
	7012.00	83.10	144.28	6432.25	5112.78	876.66	-985.38	-81.76	4.64	0.65	-4.63	502103.63	1616306.98	N 39 52 18.38	W 80 45 17.50
	7107.00	89.16	143.32	6438.66	5119.19	968.82	-1061.83	-25.80	6.46	6.38	-1.01	502026.41	1616361.86	N 39 52 17.62	W 80 45 16.78
	7202.00	90.04	143.90	6439.32	5119.85	1061.16	-1138.30	30.56	1.11	0.93	0.61	501949.16	1616417.14	N 39 52 16.86	W 80 45 16.06
	7297.00	88.29	144.00	6440.70	5121.23	1153.62	-1215.10	86.46	1.85	-1.84	0.11	501871.60	1616471.96	N 39 52 16.11	W 80 45 15.34
	7392.00	88.64	144.01	6443.25	5123.78	1246.08	-1291.93	142.27	0.37	0.37	0.01	501793.99	1616526.69	N 39 52 15.35	W 80 45 14.62
	7486.00	88.02	144.07	6445.99	5126.52	1337.57	-1367.99	197.45	0.66	-0.66	0.06	501717.18	1616580.79	N 39 52 14.59	W 80 45 13.92
	7581.00	87.85	144.44	6449.41	5129.94	1430.10	-1445.04	252.91	0.43	-0.18	0.39	501639.36	1616635.17	N 39 52 13.83	W 80 45 13.20
	7676.00	87.41	144.00	6453.34	5133.87	1522.60	-1522.04	308.40	0.65	-0.46	-0.46	501561.60	1616689.58	N 39 52 13.07	W 80 45 12.49
	7771.00	89.43	142.26	6455.96	5136.49	1614.70	-1598.01	365.38	2.81	2.13	-1.83	501484.85	1616745.49	N 39 52 12.32	W 80 45 11.76
	7865.00	90.57	141.36	6455.96	5136.49	1705.33	-1671.89	423.49	1.55	1.21	-0.96	501410.17	1616802.56	N 39 52 11.59	W 80 45 11.02
	7960.00	89.96	141.05	6455.52	5136.05	1796.66	-1745.93	483.01	0.72	-0.64	-0.33	501335.31	1616861.04	N 39 52 10.86	W 80 45 10.25
	8055.00	89.52	141.48	6455.95	5136.48	1888.01	-1820.03	542.45	0.65	-0.46	0.45	501260.39	1616919.44	N 39 52 10.13	W 80 45 9.49
	8150.00	89.69	144.61	6456.61	5137.14	1980.11	-1895.94	599.56	3.30	0.18	3.29	501183.70	1616975.48	N 39 52 9.38	W 80 45 8.76
	8245.00	89.34	144.07	6457.41	5137.94	2072.73	-1973.12	654.94	0.68	-0.37	-0.57	501105.75	1617029.77	N 39 52 8.61	W 80 45 8.05
	8340.00	88.46	145.07	6459.23	5139.76	2165.41	-2050.51	710.00	1.40	-0.93	1.05	501027.60	1617083.74	N 39 52 7.85	W 80 45 7.34
	8435.00	88.11	145.56	6462.08	5142.61	2258.34	-2128.59	764.04	0.63	-0.37	0.52	500948.78	1617136.68	N 39 52 7.08	W 80 45 6.65
	8529.00	87.85	145.33	6465.39	5145.92	2350.31	-2205.96	817.32	0.37	-0.28	-0.24	500870.67	1617188.87	N 39 52 6.31	W 80 45 5.97
	8624.00	89.25	144.90	6467.80	5148.33	2443.17	-2283.86	871.64	1.54	1.47	-0.45	500792.03	1617242.09	N 39 52 5.54	W 80 45 5.27
	8719.00	89.34	147.52	6468.96	5149.49	2536.42	-2362.80	924.46	2.76	0.09	2.76	500712.36	1617293.81	N 39 52 4.76	W 80 45 4.59
	8814.00	91.63	148.71	6468.16	5148.69	2630.22	-2443.46	974.64	2.72	2.41	1.25	500631.02	1617342.85	N 39 52 3.97	W 80 45 3.95
	8909.00	89.43	146.57	6467.28	5147.81	2723.88	-2523.69	1025.47	3.23	-2.32	-2.25	500550.09	1617392.56	N 39 52 3.17	W 80 45 3.30
	9003.00	88.90	145.83	6468.65	5149.18	2816.15	-2601.80	1077.76	0.97	-0.56	-0.79	500471.26	1617443.75	N 39 52 2.40	W 80 45 2.63
	9098.00	89.78	145.06	6469.75	5150.28	2909.15	-2680.03	1131.64	1.23	0.93	-0.81	500392.29	1617496.53	N 39 52 1.63	W 80 45 1.93
	9193.00	89.34	144.08	6470.48	5151.01	3001.85	-2757.43	1186.71	1.13	-0.46	-1.03	500314.13	1617550.51	N 39 52 0.86	W 80 45 1.23
	9288.00	89.96	146.24	6471.06	5151.59	3094.75	-2835.40	1240.98	2.37	0.65	2.27	500235.42	1617603.68	N 39 52 0.09	W 80 45 0.53
	9382.00	89.25	146.14	6471.70	5152.23	3187.02	-2913.50	1293.28	0.76	-0.76	-0.11	500156.60	1617654.88	N 39 51 59.32	W 80 44 59.86
	9477.00	90.40	146.59	6471.99	5152.52	3280.33	-2992.59	1345.90	1.30	1.21	0.47	500076.78	1617706.39	N 39 51 58.54	W 80 44 59.19
	9572.00	90.31	146.16	6471.41	5151.94	3373.64	-3071.70	1398.51	0.46	-0.09	-0.45	499996.95	1617757.88	N 39 51 57.76	W 80 44 58.51
	9667.00	89.96	146.24	6471.18	5151.71	3466.89	-3150.64	1451.35	0.38	-0.37	0.08	499917.28	1617809.62	N 39 51 56.98	W 80 44 57.83
	9762.00	89.78	146.30	6471.40	5151.93	3560.17	-3229.65	1504.11	0.20	-0.19	0.06	499837.55	1617861.26	N 39 51 56.20	W 80 44 57.16
	9857.00	89.34	146.53	6472.13	5152.66	3653.49	-3308.79	1556.66	0.52	-0.46	0.24	499757.69	1617912.70	N 39 51 55.41	W 80 44 56.48
	9952.00	88.81	146.38	6473.66	5154.19	3746.82	-3387.95	1609.14	0.58	-0.56	-0.16	499677.80	1617964.08	N 39 51 54.63	W 80 44 55.81
	10046.00	89.78	146.28	6474.82	5155.35	3839.12	-3466.18	1661.25	1.04	1.03	-0.11	499598.86	1618015.09	N 39 51 53.86	W 80 44 55.14
	10141.00	89.43	145.92	6475.47	5156.00	3932.35	-3545.03	1714.24	0.53	-0.37	-0.38	499519.29	1618066.96	N 39 51 53.08	W 80 44 54.46
	10236.00	88.81	144.98	6476.93	5157.46	4025.34	-3623.26	1768.11	1.19	-0.65	-0.99	499440.31	1618119.73	N 39 51 52.31	W 80 44 53.77
	10331.00	88.37	145.45	6479.27	5159.80	4118.25	-3701.26	1822.29	0.68	-0.46	0.49	499361.57	1618172.81	N 39 51 51.54	W 80 44 53.08
	10426.00	87.85	145.76	6482.40	5162.93	4211.26	-3779.61	1875.92	0.64	-0.55	0.33	499282.48	1618225.35	N 39 51 50.76	W 80 44 52.39
	10521.00	89.78	146.12	6484.37	5164.90	4304.41	-3858.29	1929.12	2.07	2.03	0.38	499203.07	1618277.43	N 39 51 49.98	W 80 44 51.71
	10616.00	89.34	146.67	6485.10	5165.63	4397.72	-3937.41	1981.69	0.74	-0.46	0.58	499123.23	1618328.90	N 39 51 49.20	W 80 44 51.03
	10710.00	88.81	147.00	6486.61	5167.14	4490.18	-4016.09	2033.11	0.66	-0.56	0.35	499043.84	1618379.21	N 39 51 48.42	W 80 44 50.37
	10805.00	88.37	147.17	6488.95	5169.48	4583.67	-4095.81	2084.72	0.50	-0.46	0.18	498963.41	1618429.69	N 39 51 47.64	W 80 44 49.71
	10900.00	89.43	147.52	6490.77	5171.30	4677.26	-4175.78	2135.97	1.18	1.12	0.37	498882.74	1618479.82	N 39 51 46.85	W 80 44 49.06
	10995.00	89.60	147.56	6491.58	5172.11	4770.91	-4255.94	2186.95	0.18	0.18	0.04	498801.88	1618529.68	N 39 51 46.05	W 80 44 48.40
	11089.00	91.01	147.16	6491.08	5171.61	4863.52	-4335.09	2237.65	1.56	1.50	-0.43	498722.03	1618579.26	N 39 51 45.27	W 80 44 47.75
	11184.00	90.84	147.53	6489.54	5170.07	4957.11	-4415.06	2288.90	0.43	-0.18	0.39	498641.36	1618629.39	N 39 51 44.48	W 80 44 47.10
	11279.00	90.40	147.83	6488.52	5169.05	5050.80	-4495.34	2339.69	0.56	-0.46	0.32	498560.38	1618679.05	N 39 51 43.69	W 80 44 46.44
	11374.00	90.13	147.28	6488.08	5168.61	5144.45	-4575.51	2390.66	0.64	-0.28	-0.58	498479.51	1618728.89	N 39 51 42.90	W 80 44 45.79
	11469.00	89.96	147.45	6488.00	5168.59	5230.00	-4659.59	2441.59	0.29	0.18	0.18	498398.81	1618779.00	N 39 51 42.10	W 80 44 45.13



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 ° ' ")
	11564.00	87.85	147.04	6489.82	5170.35	5331.61	-4735.38	2493.28	2.26	-2.22	-0.43	498318.23	1618829.26	N 39 51 41.31 W	80 44 44.47
	11659.00	87.58	146.81	6493.61	5174.14	5425.01	-4814.93	2545.08	0.37	-0.28	-0.24	498237.97	1618879.94	N 39 51 40.53 W	80 44 43.81
	11754.00	88.64	145.65	6496.74	5177.27	5518.22	-4893.85	2597.86	1.65	1.12	-1.22	498158.32	1618931.61	N 39 51 39.75 W	80 44 43.13
	11849.00	88.29	145.79	6499.28	5179.81	5611.29	-4972.32	2651.34	0.40	-0.37	0.15	498079.12	1618984.00	N 39 51 38.97 W	80 44 42.45
	11943.00	87.93	145.97	6502.38	5182.91	5703.42	-5050.10	2704.04	0.43	-0.38	0.19	498000.62	1619035.60	N 39 51 38.20 W	80 44 41.77
	12038.00	88.90	144.21	6505.01	5185.54	5796.26	-5127.97	2758.39	2.11	1.02	-1.85	497922.00	1619088.85	N 39 51 37.43 W	80 44 41.08
	12133.00	88.72	144.28	6506.98	5187.51	5888.83	-5205.05	2813.88	0.20	-0.19	0.07	497844.16	1619143.26	N 39 51 36.67 W	80 44 40.36
	12227.00	89.43	143.12	6508.50	5189.03	5980.22	-5280.79	2869.53	1.45	0.76	-1.23	497767.65	1619197.84	N 39 51 35.92 W	80 44 39.65
	12322.00	88.90	143.04	6509.89	5190.42	6072.34	-5356.74	2926.59	0.56	-0.56	-0.08	497690.92	1619253.83	N 39 51 35.17 W	80 44 38.92
Final Survey	12417.00	88.55	143.73	6512.00	5192.53	6164.57	-5432.97	2983.23	0.81	-0.37	0.73	497613.91	1619309.40	N 39 51 34.42 W	80 44 38.19
Projection to TD	12480.00	88.55	143.73	6513.59	5194.12	6225.82	-5483.75	3020.49	0.00	0.00	0.00	497562.62	1619345.95	N 39 51 33.92 W	80 44 37.71

Survey Type: Def Survey

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

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	12.250	9.625	SLB_NSG+MSHOT-Depth Only	Original Borehole / Chevron Appalachia Berger 9H Survey 0ft to 12480ft MD
	1	32.000	690.000	Act Stns	12.250	9.625	SLB_NSG+MSHOT	Original Borehole / Chevron Appalachia Berger 9H Survey 0ft
	1	690.000	755.000	Act Stns	12.250	9.625	SLB_MWD-STD	Original Borehole / Chevron Appalachia Berger 9H Survey 0ft
	1	755.000	1189.000	Act Stns	12.250	9.625	SLB_INC_ONLY<10	Original Borehole / Chevron Appalachia Berger 9H Survey 0ft
	1	1189.000	12417.000	Act Stns	12.250	9.625	SLB_MWD-STD	Original Borehole / Chevron Appalachia Berger 9H Survey 0ft
	1	12417.000	12480.000	Act Stns	12.250	9.625	SLB_BLIND+TREND	Original Borehole / Chevron Appalachia Berger 9H Survey 0ft