

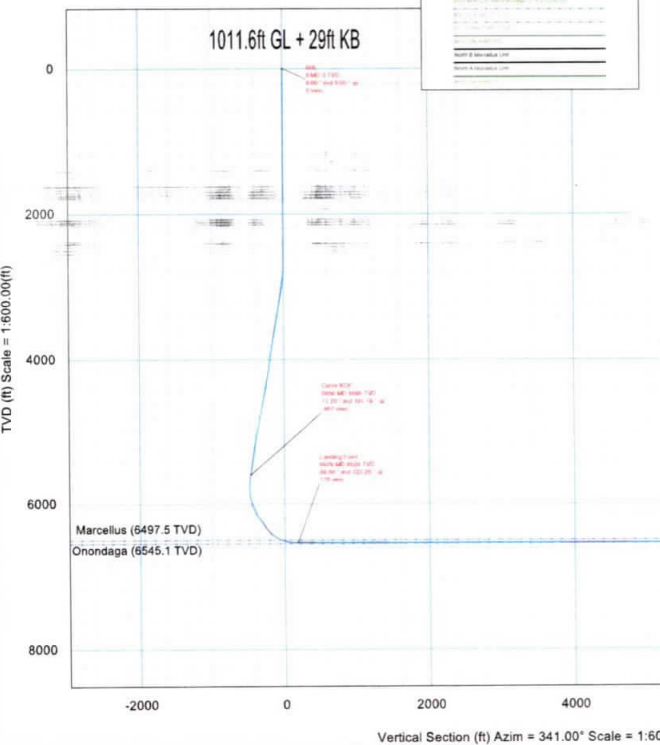
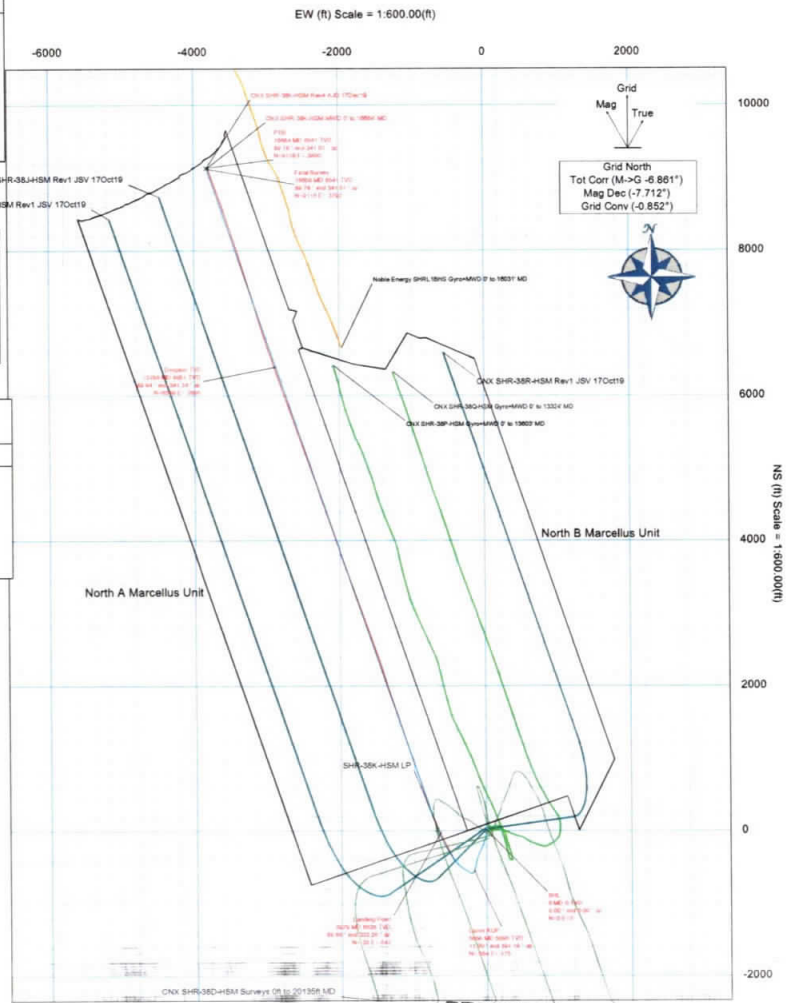
Borehole: Original Borehole	Well: SHR-38K-HSM	Field: WV Tyler County (NAD 27)	Structure: Patterson 563
---------------------------------------	-----------------------------	---	------------------------------------

Gravity & Magnetic Parameters Model: HDGM 2019 Dip: 86.402° Date: 15-Dec-2019 MagDec: -7.712° FS: 51773.109NT Gravity FS: 999.321mgN (9.80665 Based)	Surface Location NAD27 West Virginia State Plane, Northern Zone, US Feet Let: N 39 22 17.49 Northing: 329233.16RUS Grid Conv: -0.8518" Lon: W 80 50 7.92 Easting: 162248.53RUS Scale Fact: 0.99995055	Miscellaneous Slot: SHR-38K-HSM TVD Ref: RKB(1040.8ft above MSL) Plan: CNX SHR-38K-HSM MWD 0' to 16564' MD
---	---	---

Critical Point	MD	INCL	AZM	TVD	VSEC	W-YPSI	S-YPSI	DLR
BHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CurveKick	5495.00	11.20	191.19	5494.99	-490.80	-463.87	-179.00	2.08
Marcellus	6796.43	72.04	332.44	6467.50	-30.70	-216.59	-443.44	8.80
Landing Point	6976.00	80.00	333.26	6527.74	178.28	-34.54	-441.72	8.86
Onondaga	13183.87	80.20	340.94	6546.10	6369.82	6800.38	-2868.08	0.14
Chopped TVD	13788.00	80.94	341.34	6561.19	6663.90	6300.18	-2894.96	0.91
Chonage	14787.82	91.14	342.12	6546.10	7982.90	7361.20	-3201.17	1.14
Final Survey	16564.00	80.78	341.01	6541.10	8893.82	9115.85	-3791.83	1.10
PTB	16984.00	88.78	341.01	6541.20	9878.82	9139.29	-3796.96	0.90

PART	Seq	Survey Tool	Vendor/Tool	Hole Size	Casing Size	Expected	MD From	MD To	Survey	EDU Size	EDU Size	Comments
1	1	NAL_NDSH-HSHOT-Cheek Only		30	30		0	29	166.425	1.251	1.25	
1	2	NAL_NDSH-HSHOT-Cheek Only		30	30		29	29	Aut Shts	1.281	1.25	
1	3	NAL_NDSH-HSHOT		30	30		29	661.61	Aut Shts	2.086	1.384	
1	4	NAL_MWD-HOH_BLR		30	30		661.61	6608	Aut Shts	16.402	7.041	
1	5	NAL_MWD_1A_DEG		30	30		6608	16564	Aut Shts	327.884	11.873	

Surface Location		Grid Coord		Local Coord						
Northing:	329233.16	Easting:	162248.534	Latitude:	N 39 22 17.49					
Longitude:	W 80 50 7.92	WGS Azimuth:	341.08							
Target Name	Shape	Dimension	Latitude	Longitude	Northing	Easting	TVD	VSEC	W-YPSI	S-YPSI
North B Marcellus Unit	Playline	N/A	N 39 22 17.88	W 80 50 8.07	320271.40	1622406.90	1040.80	36.80	38.24	-11.73
North A Marcellus Unit	Playline	N/A	N 39 22 17.88	W 80 50 8.07	320271.40	1622406.90	1040.80	36.80	38.24	-11.73
SHR-38K-HSM BHL	Point	N/A	N 39 22 47.18	W 80 50 8.28	320098.08	1618036.40	6460.00	9878.84	9132.89	-3819.33
SHR-38K-HSM LP	Point	N/A	N 39 22 17.84	W 80 50 18.68	320248.86	1621790.87	6460.00	238.90	16.86	-478.00



RECEIVED
Office of Oil and Gas
JUN 17 2021
WV Department of
Environmental Protection

CONTROLLED	
Drawn By:	J. Shannon
Checked By:	
Copy Number:	1 of 1
Date:	18-Jun-2020
Copy number:	1 of 1

CNX SHR-38K-HSM MWD 0' to 16684' MD Survey Report

(Def Survey)

Report Date: February 19, 2020 - 04:33 PM
Client: CNX
Field: WV Tyler County (NAD 27)
Structure / Slot: CNX SHR-38 Pad / SHR-38K-HSM
Well: SHR-38K-HSM
Borehole: Original Borehole
UWI / AP##: Unknown / Unknown
Survey Name: CNX SHR-38K-HSM MWD 0' to 16684' MD
Survey Date: December 15, 2019
Tort / AHD / DDI / ERD Ratio: 263.487' / 11074.166 ft / 6.871 / 1.690
Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
Location Lat / Long: N 39° 22' 17.487444 W 80° 50' 7.915117
Location Grid N/E Y/X: N 320233.160 RUS; E 1622448.534 RUS
CRS Grid Convergence Angle: -0.8518°
CRS Grid Scale Factor: 0.99995055
Version / Patch: 2.10.787.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 341.000° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 1040.600 ft above MSL
Original Borehole: 1011.000 ft above MSL
Magnetic Declination: -7.712°
Total Gravity Field Strength: 999.3213mg (g.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 51773.109 nT
Magnetic Dip Angle: 66.402°
Declination Date: December 15, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: -0.8518°
Total Corr Mag North-Grid North: -6.8606°
Local Coord Referenced To: Well Head

Table with columns: Comments, MD (ft), Incl, Azim Grid (ft), TVD (ft), TVDSS (ft), VSEC (ft), NS (ft), EW (ft), DLS (ft/100ft), TF (ft/100ft), BR (ft/100ft), TR (ft/100ft), Northing (RUS), Easting (RUS), Latitude (°), Longitude (°), Directional (°), Ditch Index. The table contains a large number of rows representing survey data points.

Curve KOP
Marcellus
Landing Point

REVENUE
OFFICE OF THE COMMISSIONER OF REVENUE
JUN 17 2021
Environmental Data Protection

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVD55 (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	TF (ft)	BR (ft/100ft)	TR (ft/100ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	Directional Diff (ft)	Index
	10000.00	90.00	340.55	6531.19	5400.59	3205.00	2828.07	-1631.01	0.18	142.31L	0.00	0.17	325061.08	162081.81	30.732221	-80.841446		0.18
	10103.00	90.76	340.38	6531.36	5400.76	3208.96	2919.86	-1602.64	0.30	70.43R	-0.23	-0.18	323149.80	162078.18	30.730429	-80.841554		0.19
	10108.00	86.04	340.83	6531.61	5401.01	3393.90	3006.27	-1693.90	0.50	177.66L	0.17	0.47	323239.27	162075.64	30.730760	-80.841881		0.20
	10263.00	80.06	340.28	6531.81	5401.01	3488.98	3095.85	-1725.61	0.59	102.3L	0.13	-0.58	323238.85	162072.01	30.730921	-80.841764		0.20
	10388.00	89.89	339.50	6531.85	5401.05	3583.97	3185.05	-1758.27	0.84	47.46L	-0.16	-0.22	323411.05	162066.35	30.730157	-80.841865		0.22
	10483.00	90.00	338.38	6531.74	5401.14	3678.92	3274.00	-1791.64	0.17	80R	0.12	-0.13	323507.00	162058.90	30.730435	-80.842016		0.23
	10577.00	90.00	336.45	6531.74	5401.14	3772.89	3362.00	-1824.69	0.07	65.53R	0.00	0.07	323564.99	162052.94	30.730788	-80.842129		0.24
	10672.00	89.84	340.07	6531.79	5401.19	3867.87	3451.14	-1857.55	0.88	6.12R	-0.08	0.85	323684.12	162056.08	30.730921	-80.842287		0.26
	10768.00	90.22	340.10	6531.96	5401.08	3961.88	3539.51	-1890.57	0.30	158.98L	0.30	0.03	323772.49	162058.09	30.731104	-80.842478		0.27
	10860.00	89.83	339.85	6531.65	5401.02	4055.85	3627.85	-1921.08	0.44	96.8L	-0.41	-0.18	323880.83	162052.95	30.731406	-80.842505		0.28
	10956.00	89.80	339.81	6531.85	5401.25	4150.83	3717.06	-1954.36	0.16	40R	-0.05	-0.15	323950.03	162048.27	30.731648	-80.842603		0.29
	11046.00	89.80	341.16	6532.03	5401.43	4244.82	3805.96	-1986.76	1.44	94.34L	0.00	1.44	324038.82	162046.88	30.731890	-80.842701		0.31
	11143.00	89.83	340.37	6532.26	5401.68	4338.82	3894.41	-2018.16	0.84	114.44L	-0.06	-0.84	324127.37	162041.81	30.732133	-80.842803		0.32
	11237.00	90.78	340.26	6532.58	5401.98	4432.81	3982.92	-2048.39	0.13	84.17R	-0.05	-0.12	324215.87	162040.25	30.732375	-80.842901		0.33
	11332.00	89.83	340.75	6532.90	5402.30	4527.81	4072.47	-2080.10	0.52	81.07R	0.05	0.52	324305.42	162038.55	30.732617	-80.843008		0.34
	11426.00	89.84	341.45	6533.06	5402.48	4621.81	4161.40	-2110.54	0.75	95.28L	0.12	0.74	324394.35	162038.10	30.732859	-80.843116		0.35
	11520.00	89.83	340.25	6533.28	5402.68	4715.80	4250.20	-2141.97	1.27	135R	-0.12	-1.27	324483.14	162037.27	30.733101	-80.843224		0.36
	11615.00	89.80	340.83	6533.70	5403.10	4810.80	4339.88	-2173.32	0.25	83.72R	-0.18	0.18	324572.60	162037.32	30.733343	-80.843330		0.37
	11706.00	89.78	341.52	6534.16	5403.56	4904.80	4428.53	-2203.97	1.17	101.31L	0.13	1.16	324661.46	162037.48	30.733585	-80.843437		0.39
	11804.00	89.81	340.87	6534.67	5404.07	4999.76	4518.40	-2234.74	0.91	43.96R	-0.18	-0.89	324750.33	162037.59	30.733827	-80.843545		0.40
	11900.00	89.89	340.94	6535.06	5404.48	5094.79	4608.12	-2265.96	0.41	93.77R	0.29	0.28	324841.04	162037.87	30.734069	-80.843653		0.41
	11993.00	89.83	341.85	6535.31	5404.71	5188.79	4697.20	-2296.97	0.97	90L	-0.06	0.97	324930.12	162038.15	30.734311	-80.843761		0.43
	12088.00	89.83	340.30	6535.59	5404.96	5283.78	4787.07	-2328.76	1.83	147.53L	0.00	-1.83	325019.98	162038.12	30.734553	-80.843869		0.44
	12182.00	89.72	340.23	6535.96	5405.36	5377.78	4875.54	-2358.52	0.79	123.18R	-0.12	-0.77	325109.85	162038.14	30.734795	-80.843977		0.45
	12276.00	89.85	340.48	6536.38	5405.86	5471.77	4964.07	-2388.11	1.33	90.43L	-0.18	0.28	325199.98	162038.54	30.735037	-80.844085		0.46
	12371.00	90.00	340.12	6536.84	5406.34	5566.76	5053.51	-2422.13	0.01	108.42R	0.47	-0.39	325289.61	162039.09	30.735279	-80.844193		0.47
	12466.00	89.72	341.07	6537.17	5406.57	5661.76	5143.12	-2453.99	1.04	79.16L	-0.29	1.00	325379.01	162039.67	30.735521	-80.844301		0.48
	12561.00	89.89	340.18	6537.48	5406.89	5756.75	5232.73	-2485.21	0.18	94.96R	0.18	-0.94	325468.35	162040.39	30.735763	-80.844409		0.49
	12655.00	89.33	340.20	6538.15	5407.53	5851.74	5321.17	-2517.06	0.80	133.70L	0.00	0.02	325558.00	162041.00	30.736005	-80.844517		0.50
	12750.00	89.10	339.96	6538.43	5408.83	5946.72	5410.48	-2548.43	0.35	70.58R	-0.24	-0.25	325647.30	162041.99	30.736247	-80.844625		0.51
	12844.00	89.16	340.13	6540.88	5500.28	6039.70	5498.82	-2581.50	0.19	19.98L	0.06	0.18	325737.01	162043.18	30.736489	-80.844733		0.52
	12938.00	89.27	340.09	6542.15	5501.55	6133.87	5587.21	-2613.45	0.12	94.96R	0.12	-0.04	325826.86	162044.37	30.736731	-80.844841		0.53
	13032.00	89.22	340.79	6543.40	5502.80	6228.86	5676.72	-2645.28	0.74	75.96R	-0.05	0.74	325916.71	162045.56	30.736973	-80.844949		0.54
	13127.00	89.27	340.90	6544.64	5504.04	6323.85	5765.53	-2676.06	0.22	83.43L	0.00	0.21	326006.56	162046.75	30.737215	-80.845057		0.55
	13221.00	89.23	340.94	6545.89	5505.29	6418.85	5854.31	-2706.84	0.14	90L	0.06	-0.13	326096.41	162047.94	30.737457	-80.845165		0.56
	13316.00	89.33	340.87	6547.14	5506.54	6509.80	5943.10	-2737.62	0.56	80.02R	0.15	0.55	326186.26	162049.13	30.737699	-80.845273		0.57
	13410.00	89.55	341.80	6547.82	5507.22	6605.83	6032.83	-2768.94	1.35	94.12L	0.23	1.33	326276.11	162050.32	30.737941	-80.845381		0.58
	13505.00	89.44	340.07	6548.05	5508.05	6700.82	6122.58	-2800.12	1.01	90L	-0.12	-1.01	326365.96	162051.51	30.738183	-80.845489		0.59
	13599.00	89.44	339.83	6548.57	5508.87	6794.80	6210.85	-2832.37	0.29	94.96R	0.00	-0.29	326455.81	162052.70	30.738425	-80.845597		0.60
	13694.00	89.33	340.74	6550.56	5509.99	6888.50	6300.27	-2864.44	1.00	44.53R	-0.12	0.90	326545.66	162053.89	30.738667	-80.845705		0.61
	13788.00	89.84	341.34	6551.19	5510.58	6983.59	6389.16	-2896.48	0.81	70.56R	-0.85	0.64	326635.51	162055.08	30.738909	-80.845813		0.62
	13883.00	90.06	341.88	6551.19	5510.58	7078.58	6478.26	-2928.51	1.31	90R	0.10	1.31	326725.36	162056.27	30.739151	-80.845921		0.63
	13977.00	90.06	341.06	6551.09	5510.49	7172.57	6568.51	-2959.80	0.07	82.71L	0.00	-0.07	326815.21	162057.46	30.739393	-80.846029		0.64
	14072.00	90.17	340.88	6550.90	5510.30	7267.57	6658.51	-2990.03	0.01	135L	0.12	-0.01	326905.06	162058.65	30.739635	-80.846137		0.65
	14167.00	90.11	340.83	6550.87	5510.07	7362.57	6748.26	-3020.17	0.00	42.27R	-0.06	-0.06	326994.91	162059.84	30.739877	-80.846245		0.66
	14261.00	90.22	340.83	6550.40	5509.80	7457.57	6838.01	-3049.26	0.16	86.26R	0.10	0.16	327084.76	162061.03	30.740119	-80.846353		0.67
	14356.00	90.28	342.91	6549.98	5509.36	7552.57	6927.37	-3078.46	0.11	93.81L	-0.06	0.11	327174.61	162062.22	30.740361	-80.846461		0.68
	14451.00	90.22	342.01	6548.57	5508.87	7647.57	7017.95	-3108.06	0.95	78.91R	-0.00	-0.95	327264.46	162063.41	30.740603	-80.846569		0.69
	14545.00	90.78	344.87	6548.75	5508.15	7742.42	7108.04	-3138.88	3.10	121.45R	0.00	3.04	327354.31	162064.60	30.740845	-80.846677		0.70
	14640.00	90.45	345.41	6547.72	5507.13	7835.17	7198.85	-3169.24	0.87	124.07L	-0.35	0.57	327444.16	162065.79	30.741087	-80.846785		0.71
	14734.00	91.18	342.25	6546.58	5505.75	7920.01	7289.25	-3181.94	2.83	93.17L	-0.78	-2.72	327534.01	162066.98	30.741329	-80.846893		0.72
	14797.02	91.14	342.12	6546.10	5505.00	7992.00	7381.20	-3201.17	1.14	93.18L	-0.00	-1.14	327623.86	162068.17	30.741571	-80.847001		0.73
	14829.00	91.12	341.77	6544.49	5503.89	8023.96	7480.74	-3220.80	1.14	83.01R	-0.06	-1.14	327713.71	162069.36	30.741813	-80.847109		0.74
	14924.00	91.18	342.25	6542.58	5501.98	8118.95	7571.08	-3240.13	0.52	78.84R	0.00	0.52	327803.56	162070.55	30.742055	-80.847217		0.75
	15018.00	91.35	343.21	6540.51	5499.91	8212.86	7660.82	-3258.02	1.08	170.85R	0.18	1.01	327893.41	162071.74	30.742297	-80.847325		0.76
	15113.00	90.17	343.40	6538.25	5498.65	8307.78	7751.81	-3276.31	1.27	105.57L	-1.24	0.20	327983.26	162072.93	30.742539	-80.847433		0.77
	15208.00	90.00	342.79	6536.10	5496.30	8402.71	7842.70	-3293.93	0.89	108.6R	-0.18	-0.84	328073.11	162074.12	30.742781	-80.847541		0.78
	15302.00	90.34	342.80	6533.82	5494.22	8497.66	7933.45	-3311.03	0.36	108.06L	0.38	0.36	328162.96	162				