

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

Gravity & Magnetic Parameters	Surface Location	NAD27 West Virginia State Plane, Northern Zone, US Feet	Miscellaneous
Model: HDGM 2019 Dip: 66.390° Data: 27-Dec-2019 MagDec: -7.713° FS: 51769.593T Gravity FS: 999.321mgN (0.80965 Based)	Lat: N 39 22 17.88 Lon: W 80 50 7.99	Northing: 320252.28RUS Easting: 1622442.67RUS Grid Conv: -0.8518' Scale Fact: 0.99995055	Slot: SHR-38J-HSM TVD Ref: RKB(1040.0ft above MSL) Plan: CNX SHR-38J-HSM Gyro+MWD 0' to 16655' MD

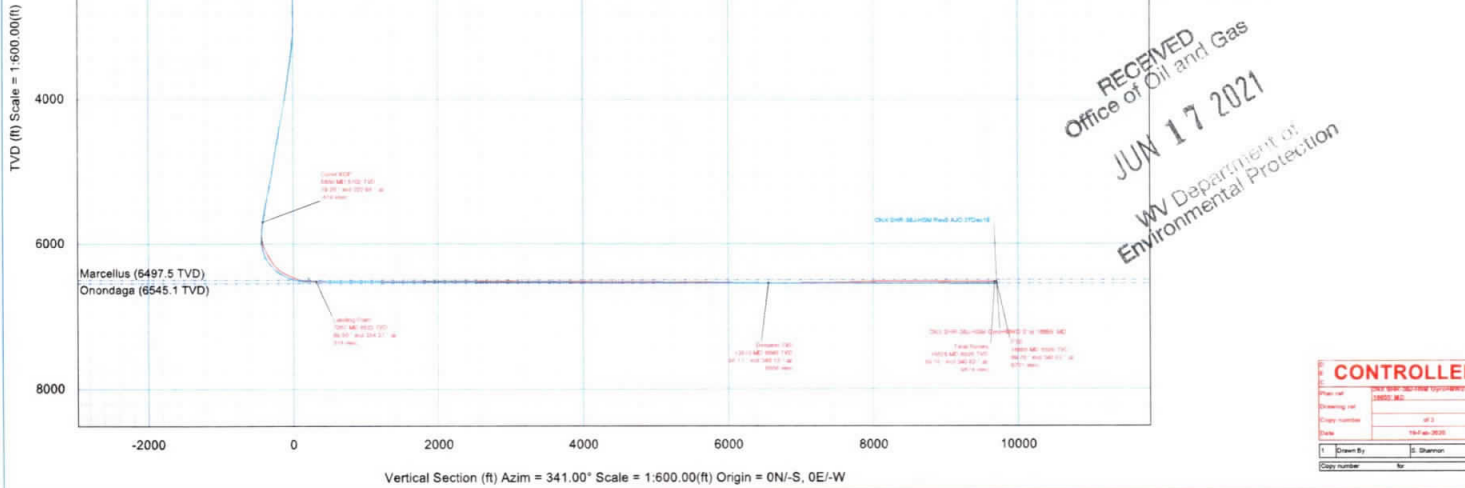
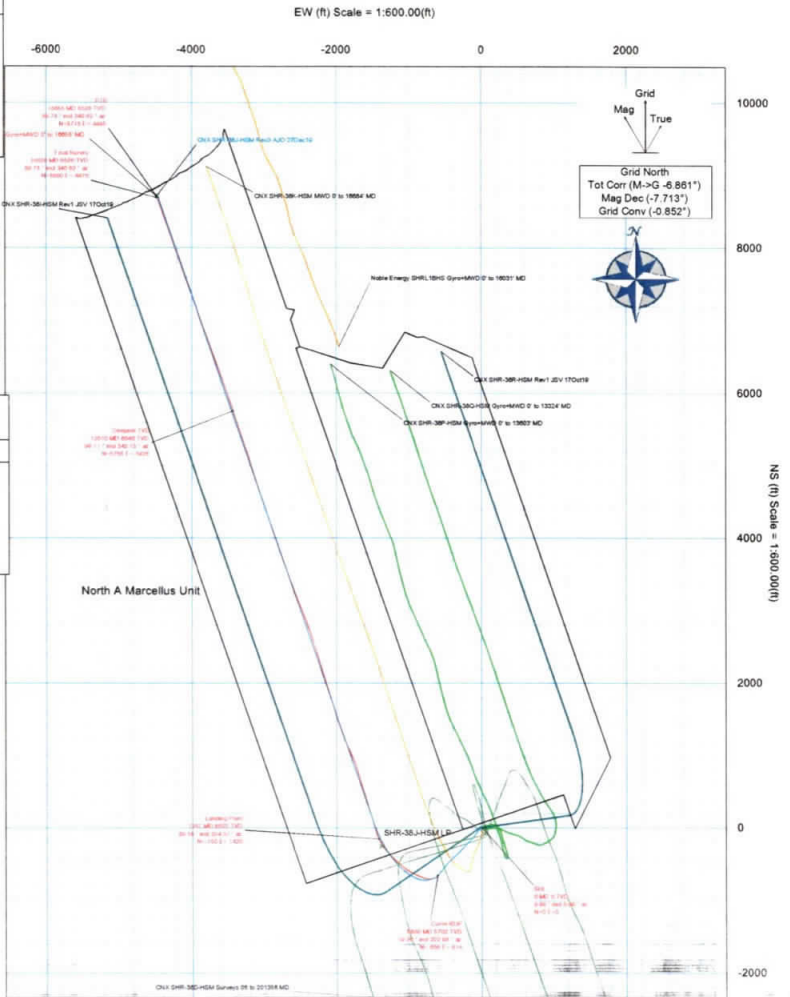
Critical Point	MD	MCL	ASW	TVD	VSEC	Wcyl(V)	Ecyl(V)	DLR
SPC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Curve x OP	8460.00	19.20	222.96	1701.88	-419.03	-664.70	-814.24	1.84
Landing Point	7287.00	89.88	334.37	8621.82	317.88	-163.06	-1433.28	0.03
Current TVD	13810.00	90.11	342.13	8640.48	8506.43	1764.55	-2428.92	0.81
Final Survey	19028.00	89.78	340.82	8626.72	8673.89	8959.99	-4476.79	0.96
PTB	19088.00	88.78	340.82	8626.83	8700.86	8718.43	-4484.75	0.00

PART	Seq	Survey Tool	Vendor/Tool	Hole Size (in)	Casing Size (in)	Expected Max Incl (°)	MD From (ft)	MD To (ft)	Survey Frequency (Hz)	EDU Size (Beam Meters)	SDU Size (Beam Meters)	Comments
1	1	NAL_NDG-HSHOT-Cash Only		30	30		0	79	196.435	1.261	1.26	
1	2	NAL_NDG-HSHOT-Cash Only		30	30		79	28		1.261	1.26	
1	3	NAL_NDG-HSHOT		30	30		28	590		2.336	1.898	
1	4	NAL_MWD-HSM_SLB		30	30		590	5812		Aut Sns	14.378	10.411
1	5	NAL_MWD_1.5_DEG		30	30		5812	16668		Aut Sns	326.37	16.384

Target Name	Class	Dimension	Latitude	Longitude	Northing	Easting	TVD	VSec	Wcyl(V)	Ecyl(V)
North B Marcellus Unit	Payline	N/A	N 39 22 17.88	W 80 50 8.07	320271.40	1622438.80	1940.80	19.90	78.12	-8.87
North A Marcellus Unit	Payline	N/A	N 39 22 17.88	W 80 50 8.07	320271.40	1622438.80	1940.80	19.90	78.12	-8.87
SHR-38J-HSM LP	Point	N/A	N 39 22 19.82	W 80 50 29.88	320064.67	1621090.43	6480.00	219.90	-247.82	1362.31
SHR-38J-HSM BHL	Point	N/A	N 39 23 43.16	W 80 51 8.88	328671.41	1617972.94	6480.00	9000.80	8718.88	-4489.96

1011.6ft GL + 29ft KB

Marcellus (6497.5 TVD)
Onondaga (6545.1 TVD)



CNX SHR-38J-HSM Gyro+MWD 0' to 16655' MD Survey Report

(Def Survey)

Report Date: February 19, 2020 - 01:20 PM
CNX
Field: WV Tyler County (NAD 27)
Structure / Slot: CNX SHR-38 Pad / SHR-38J-HSM
Well: SHR-38J-HSM
Borehole: Original Borehole
UWI / API#: CNX SHR-38J-HSM Gyro+MWD 0' to 16655' MD
Survey Date: December 27, 2019
Tort / AHD / DDI / ERD Ratio: 280.452' / 11345.305' R / 6.909' / 1.735
Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
Location Lat / Long: N 30° 22' 17.87554", W 80° 50' 7.99348"
CRS Grid Convergence Angle: -0.8518"
Grid Scale Factor: 0.99905055
Version / Patch: 2.10.787.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 341.000° (Grid North)
Vertical Section Origin: 0.000 R, 0.000 B
VD Reference Datum: RKB
VD Reference Elevation: 1040.800 R above MSL
Seasid / Ground Elevation: 1011.600 R above MSL
Magnetic Declination: -7.713"
Total Gravity Field Strength: 999.3213mgn (R 80065 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 51769.583 nT
Magnetic Dip Angle: 66.390°
Declination Date: December 27, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: -0.8518"
Local Corr Mag North->Grid North: -0.8609"
Local Coord Referenced To: Well Head

Table with columns: Comments, MD (ft), Incl (°), Azim Grid (°), TVD (ft), TVD55 (ft), VSEC (ft), NS (ft), EW (ft), DLS (ft), TR (ft), Northing (ft), Easting (ft), Latitude (ft), Longitude (ft), Directional (ft), Difficulty Index. The table contains a large amount of data points for the well survey.

Curve KOP

Landing Point



08/27/2021

Table with columns: Comments, MD, Incl, Azim Grid, TVD, TVDSS, VSEC, NS, EW, DLS, TF, BR, TR, Northing, Easting, Latitude, Longitude, Directional. Rows include data for various MD values (e.g., 10014.00 to 10855.00) and a 'Final Survey' section.

Survey Type: Def Survey

Survey Error Model: ICSWGA Rev 0 *** 3-D 95.00% Confidence 2.7955 sigma

Table with columns: Description, Part, MD From (R), MD To (R), EOU Freq, Hole Size, Casing Diameter, Survey Tool Type, Borehole / Survey. Rows describe borehole and survey details for different MD ranges.

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