

<b>Borehole:</b>	<b>Well:</b>	<b>Field:</b>	<b>Structure:</b>
Original Borehole	SHR-37H-HSM	WV Tyler County (NAD 27)	CNX SHR-37 Pad

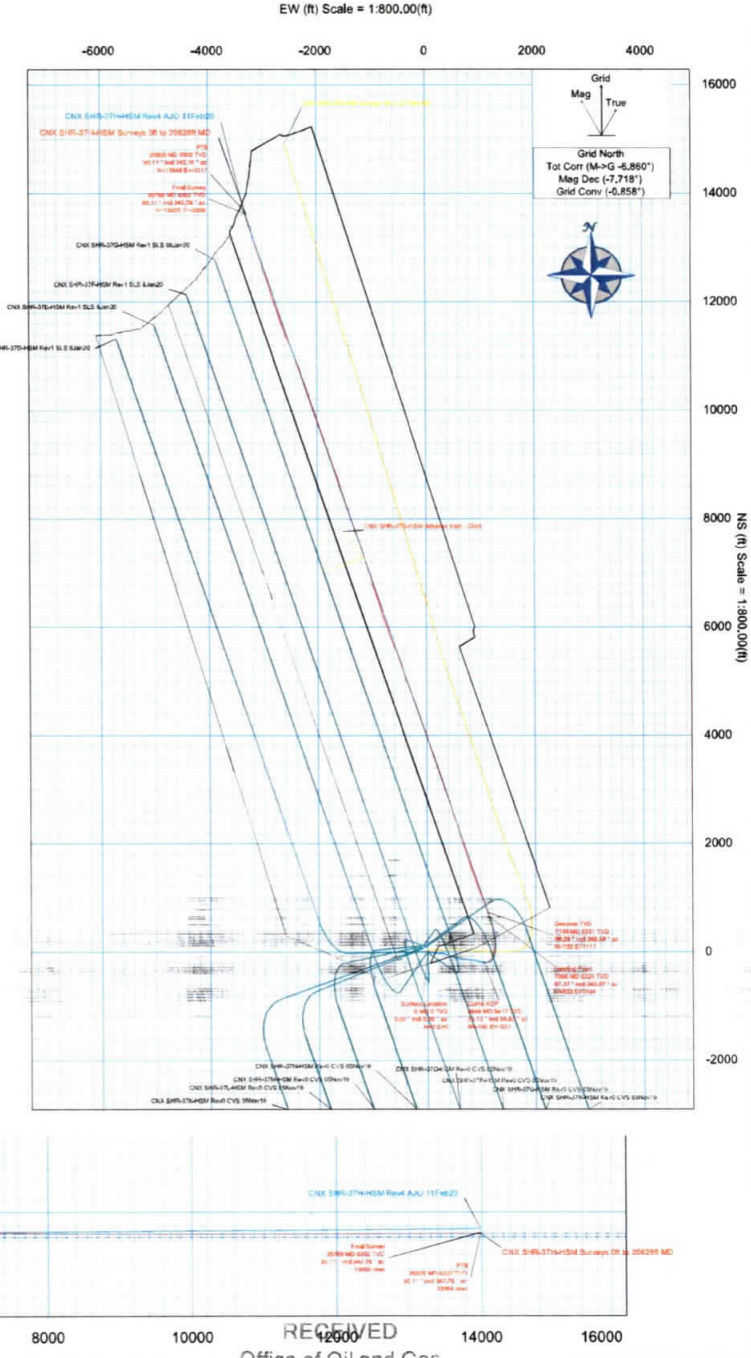
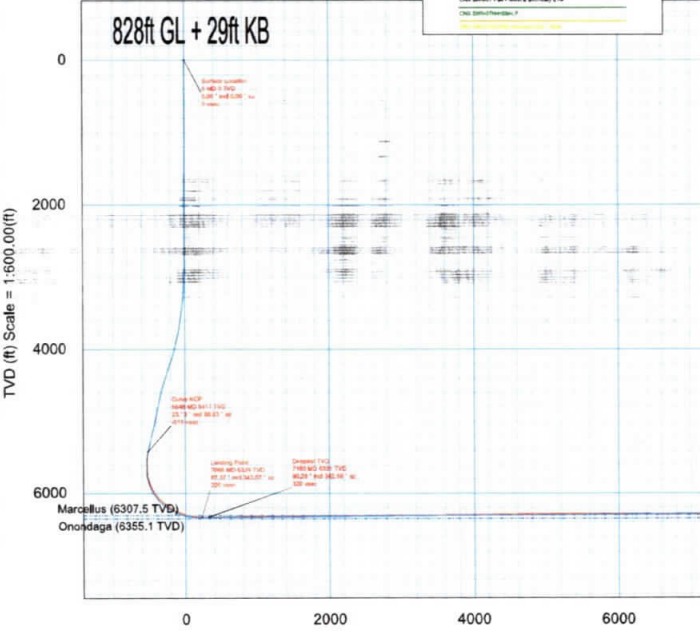
<b>Gravity &amp; Magnetic Parameters</b>		<b>Surface Location</b>		<b>NAD27 West Virginia State Plane, Northern Zone, US Feet</b>		<b>Miscellaneous</b>	
Model:	HJGM 2019	Dip:	66.362°	Date:	11-Feb-2020	Lat:	N 39 21 11.39
Mag Dec:	-7.718°	FS:	51738.161Nt	Gravity FS:	999.338mgN (S.80665 Based)	Northing:	313589.03RUS
						Grid Conv:	-6.8582°
						Scale Fact:	0.99995202
						Plan:	CNX SHR-37H-HSM Surveys 01 to 208281 MD
						Slot:	SHR-37H-HSM
						TVD Ref:	RKB(857R above MSL)

Point	Mag	Decl	Corr	Mag	Decl	Corr	Mag	Decl	Corr
001	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
002	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
003	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
004	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
005	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
006	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
007	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
008	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
009	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
010	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0

Point	Mag	Decl	Corr	Mag	Decl	Corr	Mag	Decl	Corr
1	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
2	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
3	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
4	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0
5	60.0	6.0	6.0	60.0	6.0	6.0	60.0	6.0	6.0

Target Description	Shape	Dimension	Latitude	Longitude	Height	Easting	TVD	Yloc	Plan (X-Y)	FC (FFI)
CNX SHR-37H-HSM Well 1 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 2 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 3 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 4 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 5 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00

Target Description	Shape	Dimension	Latitude	Longitude	Height	Easting	TVD	Yloc	Plan (X-Y)	FC (FFI)
CNX SHR-37H-HSM Well 1 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 2 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 3 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 4 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00
CNX SHR-37H-HSM Well 5 SLS 8400	Point	NA	N 39 21 11.23	W 80 50 44.14	2137.25	161949.12	857.00	-18.13	161949.12	857.00



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Office of Oil and Gas

JUL 12 2021

Environmental Protection

**CONTROLLED**

Plan No: 208281 MD

Drawing No: 01

Scale: 1:800

Date: 06/28/2020

Drawn By: J. Shannon

Check Number: 10

08/27/2021



# CNX SHR-37H-HSM Surveys 0ft to 20828ft MD Survey Geodetic Report

(Def Survey)

**Report Date:** March 10, 2020 - 12:35 PM  
**Client:** CNX  
**Field:** WV Tyler County (NAD 27)  
**Structure / Slot:** CNX SHR-37 Pad / SHR-37H-HSM  
**Well:** SHR-37H-HSM  
**Borehole:** Original Borehole  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** CNX SHR-37H-HSM Surveys 0ft to 20828ft MD  
**Survey Date:** February 11, 2020  
**Tort / AHD / DDI / ERD Ratio:** 279.606 ° / 15776.231 ft / 7.162 / 2.492  
**Coordinate Reference System:** NAD27 West Virginia State Plane, Northern Zone, US Feet  
**Location Lat / Long:** N 39° 21' 11.38742", W 80° 50' 44.29520"  
**Location Grid N/E Y/X:** N 313589.030 ftUS, E 1619491.764 ftUS  
**CRS Grid Convergence Angle:** -0.8582 °  
**Grid Scale Factor:** 0.99995202  
**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:** 857.000 ft above MSL  
**Seabed / Ground Elevation:** 828.000 ft above MSL  
**Magnetic Declination:** -7.718 °  
**Total Gravity Field Strength:** 999.3376mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 51738.161 nT  
**Magnetic Dip Angle:** 66.362 °  
**Declination Date:** February 11, 2020  
**Magnetic Declination Model:** HDGM 2019  
**North Reference:** Grid North  
**Grid Convergence Used:** -0.8582 °  
**Total Corr Mag North->Grid North:** -6.8596 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Surface Location	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	313589.03	1619491.76	N 39 21 11.39	W 80 50 44.30
	100.00	0.30	28.40	100.00	0.18	0.23	0.12	0.30	313589.26	1619491.89	N 39 21 11.39	W 80 50 44.29
	125.00	0.37	14.15	125.00	0.29	0.37	0.18	0.43	313589.40	1619491.94	N 39 21 11.39	W 80 50 44.29
	150.00	0.38	354.93	150.00	0.44	0.53	0.19	0.50	313589.56	1619491.95	N 39 21 11.39	W 80 50 44.29
	175.00	0.39	326.26	175.00	0.60	0.68	0.13	0.76	313589.71	1619491.90	N 39 21 11.39	W 80 50 44.29
	200.00	0.44	320.41	200.00	0.77	0.83	0.02	0.26	313589.86	1619491.79	N 39 21 11.40	W 80 50 44.30
	225.00	0.48	328.59	225.00	0.96	0.99	-0.09	0.31	313590.02	1619491.67	N 39 21 11.40	W 80 50 44.30
	250.00	0.35	346.14	250.00	1.14	1.15	-0.16	0.72	313590.18	1619491.60	N 39 21 11.40	W 80 50 44.30
	275.00	0.22	3.42	275.00	1.26	1.27	-0.18	0.62	313590.30	1619491.58	N 39 21 11.40	W 80 50 44.30
	300.00	0.21	0.27	300.00	1.35	1.37	-0.18	0.06	313590.40	1619491.59	N 39 21 11.40	W 80 50 44.30
	325.00	0.21	27.99	325.00	1.43	1.45	-0.15	0.40	313590.48	1619491.61	N 39 21 11.40	W 80 50 44.30
	350.00	0.15	346.54	350.00	1.49	1.53	-0.14	0.56	313590.56	1619491.62	N 39 21 11.40	W 80 50 44.30
	375.00	0.01	266.57	375.00	1.52	1.56	-0.15	0.59	313590.59	1619491.61	N 39 21 11.40	W 80 50 44.30
	399.00	0.08	185.32	399.00	1.51	1.54	-0.15	0.33	313590.57	1619491.61	N 39 21 11.40	W 80 50 44.30
	504.00	0.56	33.14	503.99	1.76	1.90	0.12	0.60	313590.93	1619491.88	N 39 21 11.41	W 80 50 44.29
	599.00	0.40	30.81	598.99	2.25	2.57	0.54	0.17	313591.60	1619492.31	N 39 21 11.41	W 80 50 44.29
	683.00	0.10	326.91	692.99	2.55	2.92	0.67	0.39	313591.95	1619492.43	N 39 21 11.42	W 80 50 44.29
	787.00	0.11	3.88	786.99	2.71	3.08	0.63	0.07	313592.11	1619492.39	N 39 21 11.42	W 80 50 44.29
	882.00	0.35	29.45	881.99	2.98	3.42	0.78	0.27	313592.45	1619492.54	N 39 21 11.42	W 80 50 44.29
	976.00	0.16	133.35	975.99	3.06	3.58	1.01	0.45	313592.61	1619492.78	N 39 21 11.42	W 80 50 44.28
	1071.00	0.75	107.46	1070.98	2.57	3.31	1.70	0.64	313592.34	1619493.47	N 39 21 11.42	W 80 50 44.27
	1166.00	0.82	126.85	1165.98	1.64	2.71	2.84	0.29	313591.74	1619494.60	N 39 21 11.41	W 80 50 44.26
	1260.00	1.02	137.69	1259.96	0.31	1.69	3.94	0.28	313590.72	1619495.71	N 39 21 11.40	W 80 50 44.25
	1354.00	0.92	136.22	1353.95	-1.14	0.53	5.03	0.11	313589.56	1619496.79	N 39 21 11.39	W 80 50 44.23
	1449.00	0.78	122.81	1448.94	-2.34	-0.37	6.10	0.26	313588.66	1619497.86	N 39 21 11.38	W 80 50 44.22
	1543.00	0.92	97.37	1542.93	-3.18	-0.82	7.38	0.42	313588.21	1619499.15	N 39 21 11.38	W 80 50 44.20
	1638.00	0.73	89.76	1637.92	-3.71	-0.91	8.75	0.23	313588.12	1619500.51	N 39 21 11.38	W 80 50 44.18

ENVIRONMENTAL PROTECTION  
 JUL 12 2021  
 WV Tyler County

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (%/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	1732.00	0.54	87.13	1731.91	-4.03	-0.89	9.79	0.20	313588.14	1619501.55	N 39 21 11.38 W	80 50 44.17
	1827.00	0.91	110.46	1826.91	-4.63	-1.13	10.94	0.49	313587.90	1619502.70	N 39 21 11.38 W	80 50 44.16
	1921.00	0.57	111.24	1920.90	-5.41	-1.56	12.08	0.36	313587.47	1619503.84	N 39 21 11.37 W	80 50 44.14
	2015.00	0.50	82.34	2014.89	-5.79	-1.67	12.92	0.29	313587.36	1619504.68	N 39 21 11.37 W	80 50 44.13
	2110.00	0.43	125.14	2109.89	-6.16	-1.82	13.62	0.36	313587.21	1619505.38	N 39 21 11.37 W	80 50 44.12
	2204.00	0.42	75.70	2203.89	-6.47	-1.94	14.24	0.38	313587.09	1619506.01	N 39 21 11.37 W	80 50 44.11
	2295.00	0.37	101.23	2294.89	-6.65	-1.92	14.85	0.20	313587.11	1619506.62	N 39 21 11.37 W	80 50 44.11
	2303.00	0.09	40.45	2302.89	-6.66	-1.92	14.88	4.19	313587.11	1619506.65	N 39 21 11.37 W	80 50 44.11
	2401.00	0.05	168.71	2400.89	-6.66	-1.90	14.94	0.13	313587.13	1619506.71	N 39 21 11.37 W	80 50 44.10
	2495.00	0.39	205.56	2494.89	-6.93	-2.23	14.81	0.37	313586.80	1619506.58	N 39 21 11.37 W	80 50 44.11
	2590.00	0.34	255.66	2589.88	-7.14	-2.59	14.40	0.33	313586.44	1619506.16	N 39 21 11.36 W	80 50 44.11
	2684.00	0.37	275.78	2683.88	-6.99	-2.63	13.83	0.14	313586.40	1619505.59	N 39 21 11.36 W	80 50 44.12
	2779.00	0.51	284.26	2778.88	-6.63	-2.49	13.11	0.16	313586.54	1619504.88	N 39 21 11.36 W	80 50 44.13
	2873.00	1.75	98.14	2872.87	-7.05	-2.60	14.13	2.40	313586.44	1619505.89	N 39 21 11.36 W	80 50 44.11
	2967.00	4.59	99.82	2966.72	-9.52	-3.44	19.26	3.02	313585.59	1619511.02	N 39 21 11.36 W	80 50 44.05
	3062.00	6.61	93.55	3061.26	-13.45	-4.43	28.46	2.22	313584.60	1619520.22	N 39 21 11.35 W	80 50 43.93
	3157.00	8.40	93.20	3155.44	-18.17	-5.15	40.85	1.88	313583.88	1619532.61	N 39 21 11.34 W	80 50 43.77
	3251.00	9.92	96.83	3248.24	-24.29	-6.50	55.74	1.73	313582.53	1619547.50	N 39 21 11.33 W	80 50 43.58
	3345.00	11.86	101.74	3340.54	-32.76	-9.43	73.24	2.29	313579.60	1619565.00	N 39 21 11.31 W	80 50 43.36
	3439.00	15.42	102.02	3431.88	-44.14	-14.00	94.93	3.79	313575.03	1619586.69	N 39 21 11.26 W	80 50 43.08
	3534.00	18.89	95.97	3522.65	-57.15	-18.23	122.59	4.10	313570.80	1619614.34	N 39 21 11.23 W	80 50 42.73
	3627.00	21.58	90.84	3609.90	-69.31	-20.05	154.67	3.46	313568.99	1619646.42	N 39 21 11.21 W	80 50 42.32
	3725.00	24.83	89.56	3699.96	-81.98	-20.15	193.27	3.36	313568.88	1619685.03	N 39 21 11.22 W	80 50 41.83
	3819.00	27.28	95.03	3784.42	-97.04	-21.89	234.48	3.65	313567.14	1619726.23	N 39 21 11.21 W	80 50 41.31
	3914.00	26.22	98.82	3869.25	-115.54	-26.84	276.94	1.92	313562.20	1619768.69	N 39 21 11.16 W	80 50 40.77
	4008.00	24.05	103.88	3954.36	-135.47	-34.44	316.09	3.41	313554.59	1619807.84	N 39 21 11.09 W	80 50 40.27
	4103.00	23.08	111.81	4041.46	-158.16	-46.00	352.18	3.49	313543.03	1619843.93	N 39 21 10.98 W	80 50 39.80
	4197.00	25.21	114.93	4127.23	-184.09	-61.29	387.45	2.64	313527.74	1619879.19	N 39 21 10.84 W	80 50 39.35
	4291.00	27.17	113.62	4211.58	-212.51	-78.33	425.27	2.17	313510.71	1619917.01	N 39 21 10.68 W	80 50 38.87
	4386.00	29.46	105.62	4295.24	-240.49	-93.32	467.66	4.66	313495.72	1619959.40	N 39 21 10.53 W	80 50 38.32
	4480.00	30.74	106.36	4376.56	-267.52	-106.31	512.98	1.42	313482.73	1620004.71	N 39 21 10.41 W	80 50 37.75
	4575.00	33.05	99.24	4457.24	-293.84	-117.31	561.86	4.64	313471.73	1620053.60	N 39 21 10.31 W	80 50 37.12
	4669.00	31.81	96.18	4536.59	-316.52	-124.09	611.80	2.19	313464.94	1620103.53	N 39 21 10.25 W	80 50 36.48
	4764.00	29.78	93.96	4618.19	-336.37	-128.42	660.23	2.45	313460.62	1620151.96	N 39 21 10.22 W	80 50 35.87
	4858.00	27.93	94.79	4700.52	-354.36	-131.87	705.46	2.01	313457.17	1620197.19	N 39 21 10.19 W	80 50 35.29
	4952.00	27.96	98.64	4783.56	-373.47	-137.02	749.19	1.92	313452.02	1620240.92	N 39 21 10.14 W	80 50 34.73
	5050.00	25.71	96.82	4871.00	-393.39	-143.00	793.02	2.44	313446.04	1620284.74	N 39 21 10.09 W	80 50 34.17
	5144.00	23.78	95.36	4956.37	-410.09	-147.19	832.13	2.15	313441.85	1620323.86	N 39 21 10.06 W	80 50 33.68
	5240.00	24.15	99.09	5044.10	-427.32	-152.10	870.80	1.62	313436.94	1620362.52	N 39 21 10.01 W	80 50 33.18
	5333.00	23.71	104.80	5129.12	-446.68	-159.88	907.67	2.53	313429.16	1620399.39	N 39 21 9.94 W	80 50 32.71
	5428.00	23.25	105.60	5216.25	-467.95	-169.80	944.19	0.59	313419.24	1620435.91	N 39 21 9.85 W	80 50 32.24
	5522.00	23.97	104.51	5302.38	-489.03	-179.58	980.55	0.90	313409.46	1620472.26	N 39 21 9.76 W	80 50 31.78
	5583.00	24.99	101.10	5357.90	-502.33	-185.16	1005.19	2.86	313403.88	1620496.90	N 39 21 9.71 W	80 50 31.47
	5648.00	23.13	98.63	5417.25	-515.14	-189.72	1031.29	3.25	313399.32	1620523.00	N 39 21 9.66 W	80 50 31.13
	5743.00	22.36	82.43	5504.95	-527.39	-190.14	1067.69	6.62	313398.90	1620559.40	N 39 21 9.67 W	80 50 30.67
	5838.00	22.47	69.39	5592.83	-530.46	-181.36	1102.61	5.23	313407.67	1620594.32	N 39 21 9.76 W	80 50 30.23
	5932.00	22.63	64.92	5679.65	-528.04	-167.37	1135.81	1.83	313421.66	1620627.52	N 39 21 9.90 W	80 50 29.81
	6026.00	24.45	44.16	5765.94	-517.29	-145.67	1165.84	9.02	313443.37	1620657.55	N 39 21 10.12 W	80 50 29.43
	6121.00	27.05	27.46	5851.58	-493.47	-112.30	1189.58	8.06	313476.74	1620681.29	N 39 21 10.45 W	80 50 29.13
	6215.00	33.10	18.08	5932.93	-458.21	-68.87	1207.43	8.13	313520.17	1620699.13	N 39 21 10.89 W	80 50 28.91
	6310.00	39.85	11.72	6009.31	-411.28	-14.32	1221.68	8.14	313574.71	1620713.39	N 39 21 11.43 W	80 50 28.74
	6404.00	47.96	9.56	6076.97	-354.63	49.71	1233.62	8.79	313638.74	1620725.32	N 39 21 12.06 W	80 50 28.60
	6498.00	51.54	3.59	6137.72	-289.92	120.93	1241.73	6.15	313709.96	1620733.43	N 39 21 12.77 W	80 50 28.51
	6593.00	56.29	3.59	6193.74	-217.26	197.56	1241.09	8.35	313786.58	1620732.79	N 39 21 13.52 W	80 50 28.54
	6688.00	63.27	352.68	6241.58	-137.41	279.13	1232.69	7.85	313868.14	1620724.40	N 39 21 14.33 W	80 50 28.66
	6782.00	70.10	348.21	6278.80	-52.33	364.15	1218.29	8.50	313953.16	1620710.00	N 39 21 15.17 W	80 50 28.86
	6876.00	78.27	344.86	6304.41	37.61	452.00	1197.20	9.34	314041.01	1620688.91	N 39 21 16.03 W	80 50 29.14
	6971.00	82.30	343.37	6320.43	131.08	542.04	1171.57	4.51	314131.04	1620663.28	N 39 21 16.92 W	80 50 29.49

Comments	MD (ft)	Incl (°)	Azim (°)	Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (*/100R)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Landing Point	7066.00	87.37	343.07		6328.98	225.60	632.60	1144.27	5.35	314221.60	1620635.97	N 39 21 17.81	W 80 50 29.85
	7160.00	90.28	342.68		6330.91	319.52	722.40	1116.60	3.12	314311.40	1620608.30	N 39 21 18.69	W 80 50 30.22
	7255.00	91.23	341.32		6329.66	414.49	812.74	1087.24	1.75	314401.73	1620578.95	N 39 21 19.58	W 80 50 30.61
	7350.00	91.40	338.63		6327.48	509.44	901.97	1054.72	2.84	314490.95	1620546.44	N 39 21 20.46	W 80 50 31.04
	7444.00	91.46	337.24		6325.13	603.27	989.05	1019.42	1.48	314578.03	1620511.14	N 39 21 21.31	W 80 50 31.51
	7539.00	91.12	338.32		6322.99	698.10	1076.97	983.51	1.19	314665.95	1620475.22	N 39 21 22.18	W 80 50 31.98
	7633.00	90.62	341.32		6321.57	792.06	1165.18	951.09	3.24	314754.15	1620442.81	N 39 21 23.04	W 80 50 32.41
	7728.00	90.78	339.97		6320.41	887.05	1254.80	919.61	1.43	314843.77	1620411.33	N 39 21 23.92	W 80 50 32.83
	7822.00	91.01	340.73		6318.94	981.03	1343.32	888.00	0.84	314932.28	1620379.72	N 39 21 24.79	W 80 50 33.25
	7917.00	90.90	340.99		6317.35	1076.01	1433.05	856.86	0.30	315022.01	1620348.58	N 39 21 25.68	W 80 50 33.66
	8012.00	90.17	341.62		6316.47	1171.01	1523.04	826.41	1.01	315111.99	1620318.13	N 39 21 26.56	W 80 50 34.07
	8106.00	90.50	341.11		6315.92	1265.00	1612.11	796.37	0.65	315201.06	1620288.10	N 39 21 27.44	W 80 50 34.47
	8201.00	90.84	342.66		6314.81	1359.98	1702.39	766.84	1.67	315291.33	1620258.56	N 39 21 28.32	W 80 50 34.86
	8295.00	90.28	341.78		6313.89	1453.96	1791.89	738.14	1.11	315380.83	1620229.86	N 39 21 29.20	W 80 50 35.24
	8389.00	90.50	341.93		6313.25	1547.94	1881.22	708.86	0.28	315470.15	1620200.59	N 39 21 30.08	W 80 50 35.63
	8483.00	90.34	342.39		6312.56	1641.92	1970.69	680.07	0.52	315559.63	1620171.80	N 39 21 30.96	W 80 50 36.01
	8578.00	90.39	342.54		6311.95	1736.89	2061.28	651.44	0.17	315650.21	1620143.18	N 39 21 31.85	W 80 50 36.40
	8672.00	90.73	342.08		6311.03	1830.86	2150.83	622.88	0.61	315739.75	1620114.61	N 39 21 32.74	W 80 50 36.78
	8767.00	90.22	341.92		6310.25	1925.84	2241.18	593.53	0.56	315830.09	1620085.26	N 39 21 33.62	W 80 50 37.17
	8861.00	90.45	341.31		6309.70	2019.83	2330.38	563.88	0.69	315919.29	1620055.62	N 39 21 34.50	W 80 50 37.56
	8956.00	90.39	341.88		6309.00	2114.82	2420.51	533.89	0.60	316009.42	1620025.62	N 39 21 35.39	W 80 50 37.96
	9050.00	90.56	341.95		6308.22	2208.81	2509.87	504.71	0.20	316098.77	1619996.45	N 39 21 36.27	W 80 50 38.35
	9145.00	90.22	341.99		6307.58	2303.79	2600.20	475.30	0.36	316189.10	1619967.04	N 39 21 37.15	W 80 50 38.74
	9239.00	89.94	341.60		6307.44	2397.78	2689.49	445.94	0.51	316278.39	1619937.68	N 39 21 38.03	W 80 50 39.13
	9334.00	90.39	342.01		6307.17	2492.77	2779.74	416.27	0.64	316368.63	1619908.02	N 39 21 38.92	W 80 50 39.53
	9428.00	90.45	341.71		6306.48	2586.76	2869.07	387.01	0.33	316457.96	1619878.75	N 39 21 39.80	W 80 50 39.92
	9523.00	90.06	341.77		6306.06	2681.75	2959.28	357.24	0.42	316548.17	1619848.99	N 39 21 40.69	W 80 50 40.31
	9617.00	90.50	341.96		6305.60	2775.74	3048.61	327.98	0.51	316637.49	1619819.73	N 39 21 41.56	W 80 50 40.70
	9711.00	90.39	341.47		6304.87	2869.73	3137.86	298.49	0.53	316726.74	1619790.24	N 39 21 42.44	W 80 50 41.09
	9806.00	90.11	341.58		6304.45	2964.72	3227.97	268.39	0.32	316816.84	1619760.14	N 39 21 43.33	W 80 50 41.49
	9900.00	90.39	341.61		6304.04	3058.72	3317.16	238.71	0.30	316906.02	1619730.46	N 39 21 44.20	W 80 50 41.89
	9995.00	90.45	341.78		6303.35	3153.71	3407.35	208.87	0.19	316996.21	1619700.63	N 39 21 45.09	W 80 50 42.29
	10089.00	90.06	341.22		6302.93	3247.70	3496.49	179.05	0.73	317085.34	1619670.80	N 39 21 45.97	W 80 50 42.68
	10184.00	90.22	340.15		6302.70	3342.70	3586.14	147.63	1.14	317174.99	1619639.38	N 39 21 46.85	W 80 50 43.10
	10278.00	89.78	340.50		6302.70	3436.69	3674.65	115.98	0.60	317263.50	1619607.74	N 39 21 47.72	W 80 50 43.52
	10373.00	90.67	340.91		6302.32	3531.69	3764.31	84.59	1.03	317353.16	1619576.35	N 39 21 48.60	W 80 50 43.94
	10467.00	90.56	340.70		6301.32	3625.68	3853.08	53.68	0.25	317441.92	1619545.44	N 39 21 49.47	W 80 50 44.35
	10556.00	89.94	340.84		6300.49	3814.68	4031.53	-8.57	0.34	317529.36	1619483.20	N 39 21 51.23	W 80 50 45.17
	10844.00	90.62	340.44		6299.57	4002.67	4208.90	-70.89	0.42	317797.72	1619420.88	N 39 21 52.97	W 80 50 46.00
	10939.00	90.45	340.91		6298.69	4097.67	4298.54	-102.32	0.53	317887.36	1619389.45	N 39 21 53.85	W 80 50 46.42
	11033.00	90.45	340.38		6297.95	4191.66	4387.23	-133.48	0.56	317976.04	1619358.30	N 39 21 54.72	W 80 50 46.83
	11127.00	90.39	340.70		6297.26	4285.66	4475.86	-164.79	0.35	318064.66	1619326.98	N 39 21 55.60	W 80 50 47.25
	11316.00	90.78	339.27		6295.33	4474.61	4653.43	-229.47	0.78	318242.22	1619262.30	N 39 21 57.34	W 80 50 48.10
	11411.00	90.78	340.60		6294.03	4569.58	4742.65	-262.06	1.40	318331.44	1619229.71	N 39 21 58.22	W 80 50 48.54
	11600.00	90.62	340.50		6291.73	4758.56	4920.85	-324.99	0.10	318509.64	1619166.79	N 39 21 59.97	W 80 50 49.37
	11695.00	90.50	340.21		6290.80	4853.55	5010.32	-356.93	0.33	318599.10	1619134.85	N 39 22 0.85	W 80 50 49.79
	11790.00	90.50	340.26		6289.97	4948.54	5099.72	-389.05	0.05	318688.49	1619102.73	N 39 22 1.73	W 80 50 50.22
	11884.00	90.73	340.46		6288.96	5042.53	5188.24	-420.65	0.32	318777.01	1619071.14	N 39 22 2.60	W 80 50 50.64
	12073.00	90.28	340.68		6287.29	5231.52	5366.47	-483.51	0.27	318955.23	1619008.27	N 39 22 4.35	W 80 50 51.47
	12167.00	90.56	341.00		6286.60	5325.51	5455.26	-514.37	0.45	319044.02	1618977.42	N 39 22 5.22	W 80 50 51.88
	12262.00	89.89	337.17		6286.23	5420.44	5543.99	-548.27	4.09	319132.74	1618943.52	N 39 22 6.09	W 80 50 52.33
	12356.00	89.66	338.52		6286.60	5514.30	5631.04	-583.72	1.46	319219.79	1618908.07	N 39 22 6.95	W 80 50 52.80
	12451.00	89.72	338.54		6287.11	5609.21	5719.45	-618.49	0.07	319308.19	1618873.30	N 39 22 7.82	W 80 50 53.26
	12545.00	89.78	340.43		6287.57	5703.17	5807.48	-651.43	2.01	319396.22	1618840.37	N 39 22 8.68	W 80 50 53.70
	12639.00	89.78	339.36		6287.98	5797.15	5895.75	-683.74	1.14	319484.49	1618808.06	N 39 22 9.55	W 80 50 54.12
	12734.00	89.06	341.52		6288.12	5892.14	5985.26	-715.55	2.29	319574.00	1618776.25	N 39 22 10.43	W 80 50 54.55
	12828.00	89.83	340.61		6288.21	5986.14	6074.18	-746.05	1.00	319662.90	1618745.75	N 39 22 11.30	W 80 50 54.95
	12922.00	89.00	341.57		6288.35	6080.13	6163.10	-776.51	1.04	319751.82	1618715.29	N 39 22 12.18	W 80 50 55.36

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Comments	MD (ft)	Incl (°)	Azim (°)	Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	13017.00	90.11	341.65		6288.26	6175.13	6253.25	-806.48	0.14	319841.97	1618685.32	N 39 22 13.07	W 80 50 55.76
	13111.00	89.89	341.73		6288.26	6269.12	6342.49	-836.01	0.25	319931.20	1618655.79	N 39 22 13.94	W 80 50 56.15
	13205.00	90.06	341.98		6288.30	6363.11	6431.82	-865.29	0.32	320020.53	1618626.52	N 39 22 14.82	W 80 50 56.54
	13300.00	89.16	342.27		6288.94	6458.09	6522.23	-894.44	1.00	320110.93	1618597.36	N 39 22 15.71	W 80 50 56.93
	13394.00	89.66	342.03		6289.91	6552.07	6611.70	-923.26	0.59	320200.40	1618568.55	N 39 22 16.59	W 80 50 57.31
	13489.00	89.55	342.31		6290.57	6647.04	6702.13	-952.34	0.32	320290.83	1618539.47	N 39 22 17.48	W 80 50 57.70
	13583.00	89.66	342.54		6291.21	6741.01	6791.74	-980.73	0.27	320380.43	1618511.09	N 39 22 18.36	W 80 50 58.08
	13678.00	89.61	344.03		6291.82	6835.93	6882.72	-1008.05	1.57	320471.41	1618483.77	N 39 22 19.26	W 80 50 58.44
	13772.00	89.27	342.03		6292.74	6929.86	6972.62	-1035.48	2.16	320561.30	1618456.33	N 39 22 20.14	W 80 50 58.81
	13867.00	89.61	341.69		6293.67	7024.85	7062.90	-1065.06	0.51	320651.57	1618426.76	N 39 22 21.03	W 80 50 59.20
	13961.00	89.50	342.16		6294.40	7118.83	7152.25	-1094.22	0.51	320740.93	1618397.60	N 39 22 21.91	W 80 50 59.59
	14056.00	89.16	341.63		6295.51	7213.81	7242.54	-1123.74	0.66	320831.21	1618368.08	N 39 22 22.80	W 80 50 59.98
	14245.00	89.50	342.21		6297.72	7402.78	7422.20	-1182.39	0.36	321010.86	1618309.43	N 39 22 24.56	W 80 51 0.77
	14339.00	89.22	341.06		6298.77	7496.76	7511.40	-1212.01	1.26	321100.06	1618279.82	N 39 22 25.44	W 80 51 1.16
	14433.00	89.83	341.45		6299.55	7590.76	7600.41	-1242.21	0.77	321189.06	1618249.61	N 39 22 26.31	W 80 51 1.56
	14528.00	89.78	341.24		6299.87	7685.76	7690.42	-1272.60	0.23	321279.07	1618219.23	N 39 22 27.20	W 80 51 1.97
	14623.00	89.50	340.54		6300.47	7780.75	7780.19	-1303.70	0.79	321368.83	1618188.13	N 39 22 28.08	W 80 51 2.38
	14716.00	89.72	340.53		6301.10	7873.75	7867.87	-1334.69	0.24	321456.50	1618157.14	N 39 22 28.94	W 80 51 2.79
	14811.00	89.44	340.54		6301.80	7968.74	7957.44	-1366.35	0.29	321546.07	1618125.49	N 39 22 29.82	W 80 51 3.21
	14905.00	89.72	340.80		6302.49	8062.74	8046.13	-1397.46	0.41	321634.76	1618094.37	N 39 22 30.70	W 80 51 3.62
	15094.00	89.89	341.74		6303.13	8251.73	8225.12	-1458.15	0.51	321813.74	1618033.69	N 39 22 32.46	W 80 51 4.43
	15189.00	89.66	341.84		6303.50	8346.72	8315.36	-1487.84	0.26	321903.98	1618004.00	N 39 22 33.34	W 80 51 4.83
	15282.00	89.94	342.54		6303.83	8439.70	8403.91	-1516.28	0.81	321992.52	1617975.56	N 39 22 34.21	W 80 51 5.20
	15377.00	89.50	341.77		6304.29	8534.68	8494.33	-1545.39	0.93	322082.94	1617946.45	N 39 22 35.10	W 80 51 5.59
	15471.00	89.94	342.62		6304.75	8628.66	8583.83	-1574.13	1.02	322172.43	1617917.71	N 39 22 35.98	W 80 51 5.98
	15566.00	89.94	342.28		6304.85	8723.63	8674.41	-1602.78	0.36	322263.00	1617889.06	N 39 22 36.87	W 80 51 6.36
	15661.00	90.00	341.74		6304.90	8818.61	8764.76	-1632.12	0.57	322353.35	1617859.72	N 39 22 37.76	W 80 51 6.75
	15755.00	89.72	340.58		6305.13	8912.61	8853.72	-1662.48	1.27	322442.31	1617829.37	N 39 22 38.64	W 80 51 7.15
	15850.00	89.94	340.63		6305.41	9007.61	8943.33	-1694.02	0.24	322531.91	1617797.83	N 39 22 39.52	W 80 51 7.57
	15945.00	89.78	340.53		6305.64	9102.60	9032.93	-1725.61	0.20	322621.51	1617766.24	N 39 22 40.40	W 80 51 7.99
	16039.00	89.89	340.55		6305.91	9196.60	9121.56	-1756.93	0.12	322710.13	1617734.93	N 39 22 41.27	W 80 51 8.41
	16134.00	89.94	340.82		6306.05	9291.60	9211.21	-1788.35	0.29	322799.78	1617703.51	N 39 22 42.15	W 80 51 8.82
	16228.00	89.72	340.39		6306.33	9385.60	9299.87	-1819.56	0.51	322888.44	1617672.29	N 39 22 43.02	W 80 51 9.24
	16322.00	89.78	340.77		6306.74	9479.59	9388.53	-1850.82	0.41	322977.09	1617641.04	N 39 22 43.89	W 80 51 9.65
	16417.00	89.72	340.56		6307.16	9574.59	9478.17	-1882.27	0.23	323066.72	1617609.59	N 39 22 44.78	W 80 51 10.07
	16606.00	89.94	341.93		6307.72	9763.58	9657.13	-1943.04	0.73	323245.67	1617548.83	N 39 22 46.54	W 80 51 10.88
	16700.00	89.94	341.22		6307.82	9857.58	9746.31	-1972.75	0.76	323334.85	1617519.12	N 39 22 47.41	W 80 51 11.27
	16889.00	89.83	340.61		6308.20	10046.58	9924.92	-2034.54	0.33	323513.45	1617457.32	N 39 22 49.17	W 80 51 12.10
	17078.00	89.78	341.85		6308.84	10235.57	10103.86	-2095.36	0.66	323692.39	1617396.51	N 39 22 50.93	W 80 51 12.90
	17267.00	89.89	341.56		6309.38	10424.55	10283.31	-2154.68	0.16	323871.82	1617337.19	N 39 22 52.69	W 80 51 13.69
	17361.00	89.89	340.61		6309.56	10518.55	10372.23	-2185.16	1.01	323960.74	1617306.72	N 39 22 53.57	W 80 51 14.10
	17456.00	90.39	340.16		6309.33	10613.55	10461.72	-2217.05	0.71	324050.22	1617274.83	N 39 22 54.45	W 80 51 14.52
	17550.00	89.72	340.07		6309.24	10707.53	10550.11	-2249.02	0.72	324138.61	1617242.86	N 39 22 55.31	W 80 51 14.95
	17644.00	90.17	340.04		6309.33	10801.52	10638.47	-2281.08	0.48	324226.97	1617210.79	N 39 22 56.18	W 80 51 15.37
	17739.00	90.06	340.31		6309.14	10896.51	10727.84	-2313.30	0.31	324316.34	1617178.58	N 39 22 57.06	W 80 51 15.80
	17928.00	90.11	339.54		6308.86	11085.48	10905.36	-2378.18	0.41	324493.84	1617113.71	N 39 22 58.81	W 80 51 16.66
	18117.00	90.00	338.27		6308.68	11274.35	11081.69	-2446.20	0.67	324670.16	1617045.69	N 39 23 0.54	W 80 51 17.56
	18211.00	89.89	339.18		6308.77	11368.27	11169.28	-2480.31	0.98	324757.75	1617011.58	N 39 23 1.40	W 80 51 18.01
	18306.00	90.11	338.48		6308.77	11463.20	11257.87	-2514.61	0.77	324846.34	1616977.28	N 39 23 2.27	W 80 51 18.46
	18400.00	89.83	337.98		6308.82	11557.09	11345.16	-2549.48	0.61	324933.63	1616942.42	N 39 23 3.13	W 80 51 18.93
	18495.00	90.47	338.18		6308.82	11651.97	11433.30	-2584.94	0.42	325021.75	1616906.95	N 39 23 3.99	W 80 51 19.39
	18589.00	90.34	339.17		6308.50	11745.89	11520.86	-2619.12	1.05	325109.31	1616872.77	N 39 23 4.85	W 80 51 19.85
	18683.00	90.06	340.30		6308.27	11839.86	11609.04	-2651.68	1.21	325197.49	1616840.21	N 39 23 5.72	W 80 51 20.28
	18872.00	89.88	340.42		6308.35	12028.85	11787.04	-2715.21	0.11	325375.48	1616776.69	N 39 23 7.47	W 80 51 21.12
	19062.00	89.94	342.20		6308.63	12218.84	11967.02	-2776.09	0.94	325555.45	1616715.81	N 39 23 9.24	W 80 51 21.93
	19155.00	89.94	342.14		6308.73	12311.82	12055.55	-2804.56	0.06	325643.98	1616687.34	N 39 23 10.11	W 80 51 22.31
	19249.00	89.94	342.04		6308.83	12405.80	12145.07	-2833.24	0.21	325733.49	1616658.67	N 39 23 10.99	W 80 51 22.69
	19343.00	89.94	341.97		6308.93	12499.78	12234.55	-2862.04	0.39	325822.96	1616629.86	N 39 23 11.87	W 80 51 23.08

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	19437.00	90.17	342.05	6308.84	12593.77	12323.95	-2891.08	0.26	325912.36	1616600.83	N 39 23 12.75 W	80 51 23.46
	19532.00	90.00	341.52	6308.70	12688.76	12414.19	-2920.77	0.59	326002.60	1616571.14	N 39 23 13.64 W	80 51 23.86
	19626.00	90.22	342.33	6308.52	12782.74	12503.55	-2949.93	0.89	326091.95	1616541.98	N 39 23 14.51 W	80 51 24.25
	19815.00	90.06	341.73	6308.05	12971.71	12683.33	-3008.24	0.33	326271.72	1616483.67	N 39 23 16.28 W	80 51 25.02
	20004.00	90.50	340.60	6307.13	13160.70	12862.20	-3069.26	0.64	326450.59	1616422.66	N 39 23 18.04 W	80 51 25.84
	20098.00	90.50	341.53	6306.31	13254.70	12951.11	-3099.76	0.99	326539.49	1616392.16	N 39 23 18.92 W	80 51 26.24
	20192.00	90.73	342.36	6305.30	13348.68	13040.48	-3128.89	0.92	326628.86	1616363.03	N 39 23 19.79 W	80 51 26.63
	20381.00	90.34	342.93	6303.54	13537.59	13220.86	-3185.27	0.37	326809.23	1616306.66	N 39 23 21.57 W	80 51 27.38
	20475.00	90.17	342.59	6303.12	13631.55	13310.64	-3213.13	0.40	326899.00	1616278.80	N 39 23 22.45 W	80 51 27.75
	20569.00	90.28	343.32	6302.75	13725.49	13400.51	-3240.68	0.79	326988.87	1616251.25	N 39 23 23.34 W	80 51 28.12
	20664.00	90.06	342.82	6302.47	13820.43	13491.39	-3268.34	0.58	327079.75	1616223.58	N 39 23 24.23 W	80 51 28.49
	20758.00	89.94	342.35	6302.47	13914.39	13581.08	-3296.48	0.52	327169.43	1616195.45	N 39 23 25.11 W	80 51 28.87
Final Survey	20799.00	90.11	342.76	6302.45	13955.38	13620.20	-3308.77	1.08	327208.55	1616183.16	N 39 23 25.50 W	80 51 29.03
PTB	20828.00	90.11	342.76	6302.39	13984.36	13647.89	-3317.36	0.00	327236.24	1616174.57	N 39 23 25.77 W	80 51 29.15

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	29.000	1/98.425	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / CNX SHR-37H-HSM Surveys 0ft to 20828ft MD
	1	29.000	29.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / CNX SHR-37H-HSM Surveys 0ft to 20828ft MD
	1	29.000	399.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / CNX SHR-37H-HSM Surveys 0ft to 20828ft MD
	1	399.000	5583.000	Act Stns	30.000	30.000	NAL_MWD-NON_SLB	Original Borehole / CNX SHR-37H-HSM Surveys 0ft to 20828ft MD
	1	5583.000	20828.000	Act Stns	30.000	30.000	NAL_MWD_1.0_DEG	Original Borehole / CNX SHR-37H-HSM Surveys 0ft to 20828ft MD

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