

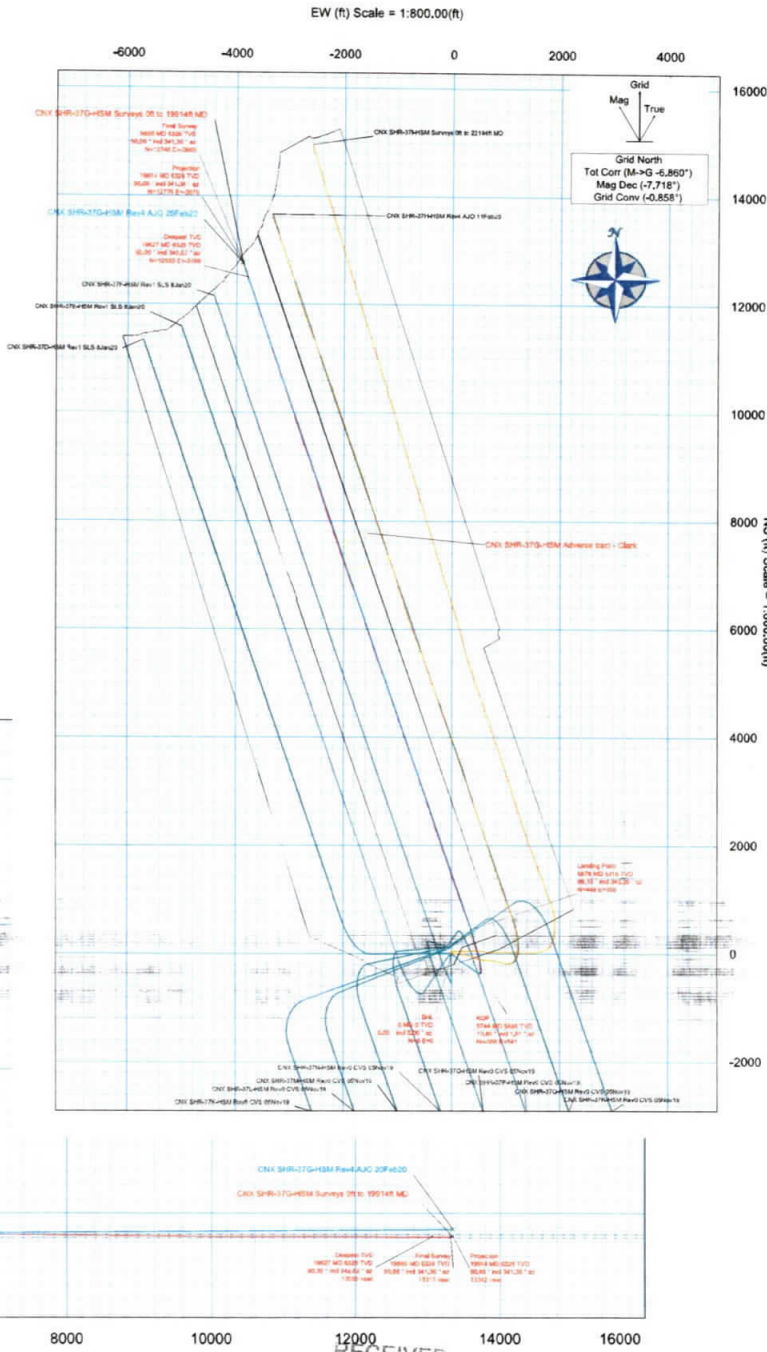
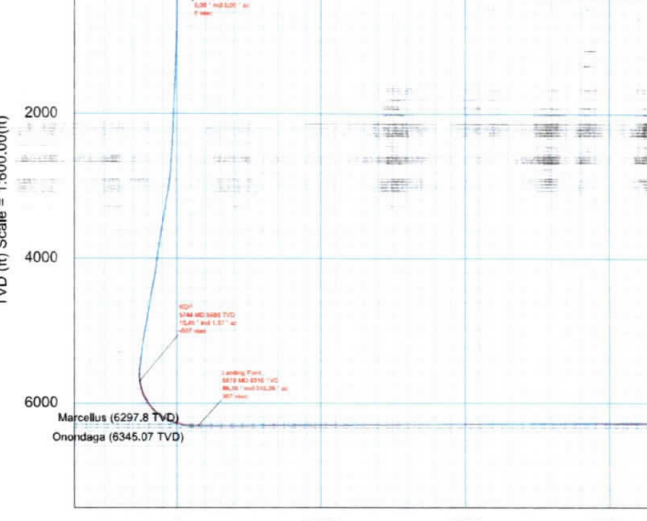
Borehole: Original Borehole		Well: SHR-37G-HSM		Field: WV Tyler County (NAD 27)		Structure: CNX SHR-37 Pad	
Gravity & Magnetic Parameters				Surface Location			
Model: HDGM 2019	Dip: 66.359°	Date: 21-Feb-2020	Surface Location: NAD27 West Virginia State Plane, Northern Zone, US Feet	Lat: N 39 21 11.23	Northing: 313572.859US	Grid Conv: -0.8582"	Miscellaneous
MagDec: -7.718'	FS: 51735.27znT	Gravity FS: 999.33mgn (9.80665 Based)	Longitude: W 80 50 44.14	Easting: 1619503.528US	Scale Fact: 0.99955202	Plan: CNX SHR-37G-HSM Surveys Off to 19914R MD	Slot: SHR-37G-HSM
							TVD Ref: RKB(87R above MSL)

Critical Point	MD	INCL	AZM	TVD	VSEC	N/CV90	E/CV90	DBS
SPK	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
80"	5744.00	1.48	1.87	5999.20	-498.84	498.78	541.47	6.43
Marcellus	6070.76	78.82	343.11	6297.30	10.149	250.66	118.23	5.96
Landfill Point	6070.00	86.33	343.00	6297.00	957.40	446.26	352.24	2.80
Onondaga	10160.00	90.84	343.00	6297.00	3603.00	889.60	-178.80	0.19
Marcellus	13002.30	85.27	343.00	6297.30	6933.00	4760.07	-186.18	0.13
Onondaga	19027.00	90.26	343.00	6297.00	12802.00	12903.00	-1366.33	0.80
Final Survey	19846.20	90.26	343.00	6297.00	12933.00	12933.00	-1366.33	0.80
Production	19846.20	90.26	343.00	6297.00	13342.30	12778.00	-1366.33	0.80
Completion	19846.20	90.26	343.00	6297.00	13342.30	12778.00	-1366.33	0.80

WELL	MD	INCL	AZM	TVD	VSEC	N/CV90	E/CV90	DBS
1	5	5	5	5	5	5	5	5
2	30	30	30	30	30	30	30	30
3	30	30	30	30	30	30	30	30
4	30	30	30	30	30	30	30	30
5	30	30	30	30	30	30	30	30

Target Name	Shape	Dimension	Latitude	Longitude	Northing	Easting	TVD	VSEC	N/CV90	E/CV90	DBS
CNX SHR-37G Pad - Boundary	Point	NA	N 39 24 52.86 W 80 50 44.14	20800.76	1619639.13	857.00	21173.69	22437.04	1.8281		
CNX SHR-37G Pad - North A	Point	NA	N 39 21 11.23 W 80 50 44.14	21373.20	1619632.02	857.00	0.00	0.00	0.00		
CNX SHR-37G Pad - North B	Point	NA	N 39 21 11.23 W 80 50 44.14	21373.20	1619632.02	857.00	0.00	0.00	0.00		
CNX SHR-37G Pad - South A	Point	NA	N 39 21 11.23 W 80 50 44.14	21373.20	1619632.02	857.00	0.00	0.00	0.00		
CNX SHR-37G Pad - South B	Point	NA	N 39 21 11.23 W 80 50 44.14	21373.20	1619632.02	857.00	0.00	0.00	0.00		

WELL	MD	INCL	AZM	TVD	VSEC	N/CV90	E/CV90	DBS
CNX SHR-37G Survey Off to 19914R MD								
CNX SHR-37G Survey Off to 21149R MD								
CNX SHR-37G Survey Off to 20F620								
CNX SHR-37G Survey Off to 19914R MD								
CNX SHR-37G Survey Off to 21149R MD								
CNX SHR-37G Survey Off to 20F620								
CNX SHR-37G Survey Off to 19914R MD								
CNX SHR-37G Survey Off to 21149R MD								
CNX SHR-37G Survey Off to 20F620								



Vertical Section (ft) Azim = 341.00° Scale = 1:600.00(ft) Origin = ON/S, 0E/W

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CONTROLLED	
Plan No:	CNX SHR-37G-HSM Surveys Off to 19914R MD
Drawing No:	19914R-MD
Copy Number:	01 of 3
Date:	10-Mar-2020
Drawn By:	J. Purnell
Copy Number:	10

WV Department of Environmental Protection

08/27/2021



CNX SHR-37G-HSM Surveys 0ft to 19914ft MD Survey Geodetic Report

(Def Survey)

Report Date: March 10, 2020 - 11:43 AM
Client: CNX
Field: WV Tyler County (NAD 27)
Structure / Slot: CNX SHR-37 Pad / SHR-37G-HSM
Well: SHR-37G-HSM
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: CNX SHR-37G-HSM Surveys 0ft to 19914ft MD
Survey Date: February 21, 2020
Tort / AHD / DDI / ERD Ratio: 244.862 ° / 14530.034 ft / 7.049 / 2.296
Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
Location Lat / Long: N 39° 21' 11.22924", W 80° 50' 44.14247"
Location Grid N/E Y/X: N 313572.849 ftUS, E 1619503.520 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: 51735.272 nT
Magnetic Dip Angle: 66.359 °
Declination Date: February 21, 2020
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: -0.8582 °
Total Corr Mag North->Grid North: -6.8599 °
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 ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	313572.85	1619503.52	N 39 21 11.23	W 80 50 44.14
	100.00	0.53	342.82	100.00	0.46	0.44	-0.14	0.53	313573.29	1619503.38	N 39 21 11.23	W 80 50 44.14
	125.00	0.53	340.12	125.00	0.69	0.66	-0.21	0.10	313573.51	1619503.31	N 39 21 11.24	W 80 50 44.15
	150.00	0.52	333.16	150.00	0.92	0.87	-0.30	0.26	313573.72	1619503.22	N 39 21 11.24	W 80 50 44.15
	175.00	0.41	336.78	175.00	1.12	1.05	-0.39	0.46	313573.90	1619503.13	N 39 21 11.24	W 80 50 44.15
	200.00	0.32	347.03	200.00	1.28	1.20	-0.44	0.44	313574.05	1619503.08	N 39 21 11.24	W 80 50 44.15
	225.00	0.35	5.32	224.99	1.42	1.35	-0.45	0.44	313574.20	1619503.07	N 39 21 11.24	W 80 50 44.15
	250.00	0.34	11.45	249.99	1.55	1.50	-0.42	0.15	313574.35	1619503.10	N 39 21 11.25	W 80 50 44.15
	275.00	0.16	335.34	274.99	1.65	1.60	-0.42	0.92	313574.45	1619503.10	N 39 21 11.25	W 80 50 44.15
	300.00	0.12	343.26	299.99	1.71	1.66	-0.45	0.18	313574.51	1619503.07	N 39 21 11.25	W 80 50 44.15
	325.00	0.21	14.80	324.99	1.78	1.73	-0.44	0.50	313574.58	1619503.08	N 39 21 11.25	W 80 50 44.15
	350.00	0.08	198.05	349.99	1.80	1.76	-0.44	1.16	313574.60	1619503.08	N 39 21 11.25	W 80 50 44.15
	375.00	0.10	177.92	374.99	1.77	1.72	-0.44	0.15	313574.57	1619503.08	N 39 21 11.25	W 80 50 44.15
	400.00	0.18	197.21	399.99	1.71	1.66	-0.45	0.37	313574.51	1619503.07	N 39 21 11.25	W 80 50 44.15
	505.00	0.25	34.55	504.99	1.72	1.69	-0.37	0.40	313574.54	1619503.15	N 39 21 11.25	W 80 50 44.15
	600.00	0.67	137.70	599.99	1.33	1.45	0.12	0.81	313574.30	1619503.64	N 39 21 11.24	W 80 50 44.14
	694.00	1.09	142.35	693.98	-0.02	0.33	1.04	0.45	313573.18	1619504.56	N 39 21 11.23	W 80 50 44.13
	789.00	1.22	166.75	788.96	-1.88	-1.37	1.82	0.53	313571.48	1619505.34	N 39 21 11.22	W 80 50 44.12
	883.00	1.29	155.99	882.94	-3.93	-3.31	2.48	0.26	313569.54	1619506.00	N 39 21 11.20	W 80 50 44.11
	978.00	1.57	145.52	977.91	-6.25	-5.36	3.65	0.40	313567.49	1619507.17	N 39 21 11.18	W 80 50 44.09
	1072.00	2.35	120.73	1071.86	-8.96	-7.40	6.04	1.21	313565.45	1619509.56	N 39 21 11.16	W 80 50 44.06
	1167.00	2.99	119.57	1166.75	-12.31	-9.62	9.87	0.68	313563.23	1619513.39	N 39 21 11.14	W 80 50 44.02
	1261.00	3.03	123.41	1260.62	-16.11	-12.20	14.07	0.22	313560.65	1619517.59	N 39 21 11.11	W 80 50 43.96
	1355.00	3.83	116.41	1354.45	-20.32	-14.96	18.96	0.96	313557.89	1619522.48	N 39 21 11.08	W 80 50 43.90
	1450.00	3.81	101.65	1449.24	-24.19	-17.01	24.89	1.03	313555.84	1619528.41	N 39 21 11.06	W 80 50 43.82
	1544.00	3.12	96.58	1543.07	-26.88	-17.93	30.49	0.80	313554.92	1619534.01	N 39 21 11.06	W 80 50 43.75
	1639.00	2.91	117.22	1637.94	-29.74	-19.33	35.20	1.16	313553.52	1619538.72	N 39 21 11.04	W 80 50 43.69
	1733.00	3.54	142.20	1731.80	-34.21	-22.72	39.11	1.62	313550.13	1619542.62	N 39 21 11.01	W 80 50 43.64

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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 ° ' ")
	1828.00	3.87	135.33	1826.60	-39.88	-27.32	43.16	0.58	313545.53	1619546.67	N 39 21 10.97 W	80 50 43.59
	1922.00	2.78	132.82	1920.44	-44.75	-31.12	47.06	1.17	313541.73	1619550.58	N 39 21 10.93 W	80 50 43.54
	2017.00	2.32	116.32	2015.35	-48.14	-33.54	50.47	0.91	313539.31	1619553.99	N 39 21 10.91 W	80 50 43.49
	2111.00	1.97	116.64	2109.28	-50.65	-35.11	53.62	0.37	313537.74	1619557.14	N 39 21 10.89 W	80 50 43.45
	2205.00	3.09	125.84	2203.19	-53.87	-37.30	57.13	1.26	313535.55	1619560.65	N 39 21 10.87 W	80 50 43.41
	2277.00	3.72	127.40	2275.06	-57.39	-39.84	60.57	0.89	313533.01	1619564.09	N 39 21 10.84 W	80 50 43.36
	2401.00	4.49	111.97	2398.75	-63.92	-44.10	68.27	1.08	313528.75	1619571.79	N 39 21 10.80 W	80 50 43.27
	2495.00	4.26	125.98	2492.48	-69.19	-47.53	74.51	1.16	313525.33	1619578.02	N 39 21 10.77 W	80 50 43.19
	2590.00	3.89	139.67	2587.24	-75.09	-52.06	79.45	1.09	313520.80	1619582.96	N 39 21 10.73 W	80 50 43.12
	2684.00	4.06	140.65	2681.01	-81.18	-57.06	83.62	0.19	313515.79	1619587.14	N 39 21 10.68 W	80 50 43.07
	2779.00	4.99	135.03	2775.71	-88.04	-62.58	88.67	1.08	313510.27	1619592.19	N 39 21 10.62 W	80 50 43.00
	2873.00	6.54	131.82	2869.24	-96.39	-69.05	95.55	1.68	313503.81	1619599.07	N 39 21 10.56 W	80 50 42.91
	2967.00	8.89	128.95	2962.38	-107.22	-77.18	105.19	2.53	313495.67	1619608.71	N 39 21 10.48 W	80 50 42.79
	3062.00	10.77	126.91	3055.98	-120.80	-87.13	118.00	2.01	313485.73	1619621.51	N 39 21 10.39 W	80 50 42.62
	3157.00	11.34	132.59	3149.22	-136.36	-98.78	131.97	1.29	313474.07	1619635.49	N 39 21 10.27 W	80 50 42.44
	3251.00	10.68	140.54	3241.49	-152.66	-111.76	144.31	1.76	313461.09	1619647.83	N 39 21 10.15 W	80 50 42.28
	3345.00	10.35	136.09	3333.92	-168.47	-124.57	155.71	0.93	313448.29	1619659.22	N 39 21 10.02 W	80 50 42.14
	3440.00	11.12	129.30	3427.26	-184.01	-136.52	168.71	1.56	313436.34	1619672.23	N 39 21 9.91 W	80 50 41.97
	3534.00	11.98	121.77	3519.36	-199.28	-147.40	184.02	1.84	313425.46	1619687.53	N 39 21 9.80 W	80 50 41.77
	3630.00	11.08	124.30	3613.42	-214.39	-157.84	200.12	1.08	313415.01	1619703.63	N 39 21 9.70 W	80 50 41.57
	3725.00	10.86	123.93	3706.69	-228.85	-167.98	215.08	0.24	313404.87	1619718.59	N 39 21 9.60 W	80 50 41.37
	3819.00	12.78	127.11	3798.69	-244.55	-179.20	230.72	2.16	313393.66	1619734.23	N 39 21 9.49 W	80 50 41.17
	3914.00	11.72	121.80	3891.53	-260.75	-190.62	247.30	1.63	313382.23	1619750.81	N 39 21 9.38 W	80 50 40.96
	4008.00	9.82	110.86	3983.88	-273.29	-198.51	262.91	2.96	313374.35	1619766.42	N 39 21 9.31 W	80 50 40.76
	4103.00	9.50	116.46	4077.53	-284.07	-204.89	277.50	1.04	313367.97	1619781.01	N 39 21 9.25 W	80 50 40.57
	4197.00	10.69	122.96	4170.08	-296.47	-213.09	291.76	1.75	313359.77	1619795.27	N 39 21 9.17 W	80 50 40.39
	4291.00	12.22	124.70	4262.20	-311.35	-223.50	307.26	1.67	313349.36	1619810.76	N 39 21 9.07 W	80 50 40.19
	4386.00	13.90	122.05	4354.74	-328.33	-235.28	325.19	1.88	313337.58	1619828.70	N 39 21 8.95 W	80 50 39.96
	4480.00	12.83	125.08	4446.20	-345.56	-247.27	343.31	1.36	313325.59	1619846.81	N 39 21 8.84 W	80 50 39.73
	4575.00	11.55	124.90	4539.05	-361.79	-258.77	359.74	1.35	313314.09	1619863.24	N 39 21 8.73 W	80 50 39.51
	4669.00	11.50	126.99	4631.16	-377.16	-269.79	374.94	0.45	313303.07	1619878.44	N 39 21 8.62 W	80 50 39.32
	4764.00	12.55	125.87	4724.07	-393.45	-281.54	390.87	1.13	313291.32	1619894.37	N 39 21 8.50 W	80 50 39.11
	4858.00	13.60	124.21	4815.64	-410.66	-293.74	408.29	1.19	313279.13	1619911.78	N 39 21 8.39 W	80 50 38.89
	4952.00	12.32	120.62	4907.24	-427.15	-305.06	426.06	1.61	313267.81	1619929.55	N 39 21 8.28 W	80 50 38.66
	5047.00	11.60	120.12	5000.18	-442.09	-315.01	443.04	0.77	313257.85	1619946.54	N 39 21 8.18 W	80 50 38.44
	5141.00	10.73	126.62	5092.40	-456.46	-324.98	458.24	1.63	313247.89	1619961.74	N 39 21 8.09 W	80 50 38.25
	5236.00	11.04	126.34	5185.69	-471.24	-335.64	472.66	0.33	313237.22	1619976.16	N 39 21 7.98 W	80 50 38.06
	5330.00	10.33	121.99	5278.06	-485.19	-345.44	487.06	1.14	313227.43	1619990.56	N 39 21 7.89 W	80 50 37.88
	5422.00	10.16	107.34	5368.61	-496.41	-352.23	501.81	2.83	313220.64	1620005.30	N 39 21 7.82 W	80 50 37.69
	5460.00	10.74	109.51	5405.98	-500.60	-354.41	508.34	1.84	313218.46	1620011.84	N 39 21 7.80 W	80 50 37.60
	5555.00	10.56	115.58	5499.35	-512.22	-361.13	524.54	1.20	313211.74	1620028.03	N 39 21 7.74 W	80 50 37.40
	5649.00	6.65	53.80	5592.45	-516.67	-361.63	536.73	10.03	313211.23	1620040.22	N 39 21 7.73 W	80 50 37.24
	5744.00	10.45	1.97	5686.50	-506.98	-349.75	541.47	8.63	313223.11	1620044.96	N 39 21 7.85 W	80 50 37.18
	5839.00	17.13	354.66	5778.72	-485.32	-327.19	540.46	7.25	313245.68	1620043.96	N 39 21 8.08 W	80 50 37.20
	5933.00	23.54	352.89	5866.81	-453.47	-294.74	536.88	6.85	313278.13	1620040.37	N 39 21 8.40 W	80 50 37.25
	6028.00	30.11	355.19	5951.54	-411.76	-252.11	532.56	6.99	313320.75	1620036.06	N 39 21 8.82 W	80 50 37.32
	6122.00	37.41	355.89	6029.64	-361.24	-200.07	528.53	7.78	313372.79	1620032.03	N 39 21 9.33 W	80 50 37.38
	6217.00	46.39	351.31	6100.29	-299.38	-137.15	521.25	9.98	313435.71	1620024.75	N 39 21 9.95 W	80 50 37.48
	6311.00	54.54	345.95	6160.11	-227.60	-66.22	506.79	9.72	313506.63	1620010.28	N 39 21 10.65 W	80 50 37.68
	6405.00	62.03	344.58	6209.49	-147.92	11.05	486.43	8.06	313583.90	1619989.92	N 39 21 11.41 W	80 50 37.95
	6499.00	68.25	343.46	6248.99	-62.79	92.99	462.94	6.70	313665.84	1619966.43	N 39 21 12.22 W	80 50 38.27
	6594.00	74.05	343.47	6279.67	26.99	179.14	437.36	6.11	313751.98	1619940.86	N 39 21 13.06 W	80 50 38.61
	6689.00	79.70	343.64	6301.23	119.38	267.84	411.18	5.95	313840.68	1619914.68	N 39 21 13.94 W	80 50 38.96
	6783.00	86.64	343.62	6312.40	212.56	357.34	384.89	7.38	313930.17	1619888.39	N 39 21 14.82 W	80 50 39.31
Landing Point	6878.00	89.10	343.39	6315.93	307.40	448.36	357.94	2.60	314021.18	1619861.44	N 39 21 15.71 W	80 50 39.67
	6972.00	89.05	341.91	6317.45	401.34	538.07	329.91	1.58	314110.89	1619833.42	N 39 21 16.60 W	80 50 40.05
	7067.00	89.89	339.02	6318.33	496.32	627.58	298.15	3.17	314200.40	1619801.66	N 39 21 17.48 W	80 50 40.47
	7161.00	90.11	339.99	6318.33	590.29	715.63	265.24	1.06	314288.45	1619768.75	N 39 21 18.34 W	80 50 40.90

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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 ° ° °)
	7256.00	90.34	340.05	6317.96	685.28	804.91	232.78	0.25	314377.72	1619736.29	N 39 21 19.22	W 80 50 41.33
	7351.00	90.39	339.43	6317.35	780.25	894.03	199.88	0.65	314466.84	1619703.39	N 39 21 20.09	W 80 50 41.77
	7445.00	90.34	340.34	6316.75	874.23	982.30	167.56	0.97	314555.10	1619671.07	N 39 21 20.96	W 80 50 42.20
	7540.00	90.06	340.47	6316.42	969.22	1071.79	135.70	0.32	314644.59	1619639.21	N 39 21 21.84	W 80 50 42.62
	7634.00	90.28	340.30	6316.14	1063.22	1160.34	104.14	0.30	314733.13	1619607.66	N 39 21 22.71	W 80 50 43.04
	7729.00	90.78	340.97	6315.26	1158.21	1249.96	72.64	0.88	314822.75	1619576.16	N 39 21 23.59	W 80 50 43.46
	7824.00	90.28	340.70	6314.39	1253.21	1339.69	41.46	0.60	314912.47	1619544.97	N 39 21 24.47	W 80 50 43.87
	7918.00	90.28	340.71	6313.93	1347.20	1428.41	10.40	0.01	315001.19	1619513.92	N 39 21 25.35	W 80 50 44.28
	8013.00	90.22	341.39	6313.51	1442.20	1518.26	-20.45	0.72	315091.03	1619483.07	N 39 21 26.23	W 80 50 44.69
	8107.00	90.50	341.14	6312.92	1536.20	1607.28	-50.65	0.40	315180.05	1619452.88	N 39 21 27.11	W 80 50 45.09
	8202.00	90.11	340.86	6312.41	1631.20	1697.10	-81.57	0.51	315269.86	1619421.95	N 39 21 27.99	W 80 50 45.50
	8296.00	90.45	341.82	6311.96	1725.19	1786.16	-111.65	1.08	315358.92	1619391.88	N 39 21 28.86	W 80 50 45.90
	8391.00	90.34	340.66	6311.30	1820.19	1876.11	-142.20	1.23	315448.86	1619361.33	N 39 21 29.75	W 80 50 46.31
	8484.00	90.34	340.16	6310.75	1913.18	1963.72	-173.38	0.54	315536.47	1619330.15	N 39 21 30.61	W 80 50 46.72
	8579.00	90.39	341.03	6310.14	2008.18	2053.32	-204.94	0.92	315626.07	1619298.59	N 39 21 31.49	W 80 50 47.14
	8673.00	90.56	342.17	6309.36	2102.17	2142.51	-234.61	1.23	315715.25	1619268.92	N 39 21 32.37	W 80 50 47.54
	8768.00	90.39	341.15	6308.58	2197.16	2232.68	-264.50	1.09	315805.42	1619239.03	N 39 21 33.25	W 80 50 47.94
	8863.00	90.50	340.70	6307.84	2292.15	2322.46	-295.55	0.49	315895.20	1619207.99	N 39 21 34.14	W 80 50 48.35
	8957.00	90.45	341.20	6307.06	2386.15	2411.31	-326.23	0.53	315984.04	1619177.31	N 39 21 35.01	W 80 50 48.76
	9146.00	90.34	342.04	6305.76	2575.13	2590.66	-385.82	0.45	316163.38	1619117.72	N 39 21 36.77	W 80 50 49.55
	9241.00	90.22	341.23	6305.29	2670.12	2680.82	-415.75	0.86	316253.54	1619087.79	N 39 21 37.66	W 80 50 49.95
	9335.00	90.28	340.82	6304.88	2764.12	2769.71	-446.32	0.44	316342.42	1619057.23	N 39 21 38.53	W 80 50 50.35
	9429.00	90.39	341.65	6304.33	2858.12	2858.72	-476.55	0.89	316431.42	1619026.99	N 39 21 39.41	W 80 50 50.75
	9524.00	90.50	341.06	6303.59	2953.11	2948.73	-506.93	0.63	316521.43	1618996.62	N 39 21 40.29	W 80 50 51.16
	9618.00	90.22	339.88	6303.00	3047.11	3037.31	-538.35	1.29	316610.01	1618965.20	N 39 21 41.17	W 80 50 51.57
	9807.00	90.67	342.52	6301.54	3236.08	3216.21	-599.25	1.42	316788.90	1618904.30	N 39 21 42.92	W 80 50 52.38
	9901.00	90.56	340.99	6300.53	3330.07	3305.48	-628.68	1.63	316878.16	1618874.88	N 39 21 43.80	W 80 50 52.78
	9996.00	90.50	341.71	6299.65	3425.06	3395.48	-659.05	0.76	316968.16	1618844.50	N 39 21 44.69	W 80 50 53.18
	10090.00	90.62	340.74	6298.73	3519.05	3484.48	-689.31	1.04	317057.15	1618814.25	N 39 21 45.56	W 80 50 53.58
	10279.00	90.50	341.06	6296.88	3708.04	3663.06	-751.15	0.18	317235.73	1618752.41	N 39 21 47.32	W 80 50 54.40
	10374.00	90.56	341.15	6296.00	3803.04	3752.94	-781.91	0.11	317325.60	1618721.65	N 39 21 48.20	W 80 50 54.81
	10468.00	90.28	340.76	6295.31	3897.04	3841.79	-812.58	0.51	317414.45	1618690.98	N 39 21 49.08	W 80 50 55.22
	10563.00	91.18	340.58	6294.10	3992.03	3931.43	-844.03	0.97	317504.08	1618659.54	N 39 21 49.96	W 80 50 55.64
	10657.00	90.22	340.91	6292.96	4086.02	4020.16	-875.02	1.08	317592.81	1618628.54	N 39 21 50.83	W 80 50 56.05
	10751.00	90.39	340.98	6292.46	4180.02	4109.01	-905.71	0.20	317681.65	1618597.85	N 39 21 51.70	W 80 50 56.46
	10845.00	90.56	341.69	6291.68	4274.01	4198.06	-935.79	0.78	317770.70	1618567.77	N 39 21 52.58	W 80 50 56.86
	10940.00	90.34	340.89	6290.93	4369.01	4288.04	-966.27	0.87	317860.67	1618537.30	N 39 21 53.46	W 80 50 57.26
	11034.00	90.39	341.27	6290.33	4463.00	4376.96	-996.74	0.41	317949.59	1618506.83	N 39 21 54.34	W 80 50 57.67
	11129.00	90.22	341.07	6289.83	4558.00	4466.87	-1027.41	0.28	318039.50	1618476.17	N 39 21 55.22	W 80 50 58.07
	11318.00	90.11	340.89	6289.28	4747.00	4645.55	-1089.00	0.11	318218.17	1618414.57	N 39 21 56.98	W 80 50 58.89
	11412.00	89.89	340.72	6289.28	4841.00	4734.33	-1119.91	0.30	318306.94	1618383.67	N 39 21 57.85	W 80 50 59.30
	11507.00	90.17	341.34	6289.23	4936.00	4824.17	-1150.79	0.72	318396.77	1618352.79	N 39 21 58.73	W 80 50 59.71
	11602.00	90.22	340.47	6288.91	5031.00	4913.94	-1181.86	0.92	318486.54	1618321.11	N 39 21 59.62	W 80 51 0.13
	11696.00	90.22	340.23	6288.55	5124.99	5002.46	-1213.47	0.26	318575.06	1618290.71	N 39 22 0.49	W 80 51 0.55
	11791.00	89.89	341.10	6288.46	5219.99	5092.10	-1244.93	0.98	318664.70	1618258.65	N 39 22 1.37	W 80 51 0.96
	11885.00	90.28	339.57	6288.32	5313.98	5180.62	-1276.56	1.68	318753.21	1618227.02	N 39 22 2.24	W 80 51 1.38
	11980.00	90.11	340.55	6287.99	5408.96	5269.92	-1308.96	1.05	318842.51	1618194.63	N 39 22 3.12	W 80 51 1.81
	12074.00	90.11	341.00	6287.81	5502.96	5358.68	-1339.91	0.48	318931.26	1618163.68	N 39 22 3.99	W 80 51 2.22
	12169.00	90.17	340.85	6287.58	5597.96	5448.46	-1370.96	0.17	319021.04	1618132.63	N 39 22 4.87	W 80 51 2.64
	12263.00	90.06	341.11	6287.39	5691.96	5537.33	-1401.59	0.30	319109.90	1618102.00	N 39 22 5.74	W 80 51 3.04
	12357.00	89.61	341.92	6287.66	5785.96	5626.48	-1431.39	0.99	319199.05	1618072.20	N 39 22 6.62	W 80 51 3.44
	12452.00	89.83	341.61	6288.13	5880.95	5716.71	-1461.12	0.40	319289.27	1618042.47	N 39 22 7.51	W 80 51 3.83
	12546.00	89.89	340.73	6288.36	5974.95	5805.68	-1491.46	0.94	319378.23	1618012.14	N 39 22 8.38	W 80 51 4.24
	12640.00	89.44	340.47	6288.91	6068.94	5894.34	-1522.68	0.55	319466.89	1617980.91	N 39 22 9.25	W 80 51 4.65
	12735.00	89.50	341.81	6289.78	6163.93	5984.23	-1553.39	1.41	319556.78	1617950.21	N 39 22 10.14	W 80 51 5.06
	12829.00	89.44	341.43	6290.65	6257.93	6073.43	-1583.03	0.41	319645.98	1617920.57	N 39 22 11.02	W 80 51 5.46
	13018.00	89.50	340.98	6292.40	6446.92	6252.35	-1643.92	0.24	319824.88	1617859.69	N 39 22 12.77	W 80 51 6.26
	13112.00	89.50	341.95	6293.22	6540.91	6341.46	-1673.80	1.03	319914.00	1617829.81	N 39 22 13.65	W 80 51 6.66

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JUL 12 2021

Office of Oil and Gas

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 ° ° °)
	13207.00	89.27	339.65	6294.24	6635.90	6431.17	-1705.03	2.43	320003.70	1617798.57	N 39 22 14.53 W	80 51 7.08
	13301.00	89.33	341.20	6295.39	6729.88	6519.73	-1736.53	1.65	320092.25	1617767.08	N 39 22 15.40 W	80 51 7.50
	13396.00	89.33	340.91	6296.50	6824.87	6609.36	-1767.99	1.15	320181.87	1617735.62	N 39 22 16.28 W	80 51 7.91
	13584.00	89.22	339.91	6298.88	7012.83	6786.02	-1832.26	0.12	320358.53	1617671.36	N 39 22 18.02 W	80 51 8.76
	13679.00	89.50	340.51	6299.94	7107.81	6875.40	-1864.42	0.70	320447.90	1617639.20	N 39 22 18.90 W	80 51 9.19
	13774.00	89.10	340.12	6301.10	7202.80	6964.84	-1896.42	0.59	320537.34	1617607.20	N 39 22 19.78 W	80 51 9.62
	13868.00	89.38	340.58	6302.35	7296.78	7053.36	-1928.02	0.57	320625.85	1617575.59	N 39 22 20.65 W	80 51 10.04
	13963.00	89.38	340.49	6303.38	7391.77	7142.92	-1959.68	0.09	320715.41	1617543.94	N 39 22 21.53 W	80 51 10.46
	14057.00	89.10	340.04	6304.62	7485.76	7231.39	-1991.42	0.56	320803.88	1617512.20	N 39 22 22.40 W	80 51 10.88
	14151.00	89.44	340.87	6305.82	7579.75	7319.97	-2022.86	0.95	320892.45	1617480.76	N 39 22 23.27 W	80 51 11.29
	14340.00	89.05	340.78	6308.31	7768.73	7498.47	-2084.93	0.21	321070.94	1617418.69	N 39 22 25.02 W	80 51 12.12
	14435.00	89.22	341.75	6309.75	7863.71	7588.42	-2115.44	1.04	321160.89	1617388.18	N 39 22 25.91 W	80 51 12.52
	14529.00	89.44	340.74	6310.85	7957.71	7677.42	-2145.66	1.10	321249.89	1617357.96	N 39 22 26.78 W	80 51 12.93
	14624.00	89.78	341.37	6311.49	8052.70	7767.27	-2176.50	0.75	321339.74	1617327.12	N 39 22 27.67 W	80 51 13.34
	14718.00	89.50	340.80	6312.08	8146.70	7856.20	-2206.98	0.68	321428.65	1617296.65	N 39 22 28.54 W	80 51 13.74
	14812.00	89.38	340.11	6313.00	8240.69	7944.78	-2238.42	0.75	321517.23	1617265.21	N 39 22 29.41 W	80 51 14.16
	14906.00	89.50	341.46	6313.92	8334.68	8033.53	-2269.36	1.44	321605.98	1617234.28	N 39 22 30.28 W	80 51 14.57
	15001.00	89.66	341.28	6314.62	8429.68	8123.55	-2299.70	0.25	321696.00	1617203.93	N 39 22 31.17 W	80 51 14.97
	15096.00	89.61	341.16	6315.22	8524.68	8213.49	-2330.29	0.14	321785.93	1617173.35	N 39 22 32.05 W	80 51 15.38
	15190.00	89.61	341.39	6315.86	8618.67	8302.52	-2360.46	0.24	321874.95	1617143.18	N 39 22 32.93 W	80 51 15.78
	15378.00	89.55	341.26	6317.24	8806.67	8480.61	-2420.66	0.08	322053.04	1617082.98	N 39 22 34.68 W	80 51 16.58
	15472.00	89.72	341.63	6317.84	8900.66	8569.72	-2450.57	0.43	322142.14	1617053.07	N 39 22 35.56 W	80 51 16.98
	15567.00	89.55	341.73	6318.44	8995.65	8659.91	-2480.43	0.21	322232.32	1617023.21	N 39 22 36.44 W	80 51 17.38
	15662.00	89.66	341.96	6319.10	9090.64	8750.18	-2510.03	0.27	322322.59	1616993.62	N 39 22 37.33 W	80 51 17.77
	15757.00	89.78	341.34	6319.56	9185.63	8840.34	-2539.94	0.66	322412.75	1616963.71	N 39 22 38.22 W	80 51 18.17
	15851.00	89.55	341.08	6320.11	9279.63	8929.33	-2570.21	0.37	322501.73	1616933.43	N 39 22 39.09 W	80 51 18.57
	16041.00	89.61	341.10	6321.51	9469.62	9109.07	-2631.79	0.03	322681.47	1616871.86	N 39 22 40.86 W	80 51 19.39
	16229.00	89.61	339.17	6322.79	9657.59	9285.87	-2695.67	1.03	322858.26	1616807.99	N 39 22 42.60 W	80 51 20.24
	16323.00	89.66	339.96	6323.38	9751.56	9373.96	-2728.49	0.84	322946.34	1616775.17	N 39 22 43.46 W	80 51 20.67
	16418.00	89.89	340.39	6323.76	9846.55	9463.32	-2760.70	0.51	323035.70	1616742.95	N 39 22 44.34 W	80 51 21.10
	16512.00	89.94	341.31	6323.90	9940.54	9552.12	-2791.54	0.98	323124.49	1616712.12	N 39 22 45.21 W	80 51 21.51
	16701.00	90.00	341.80	6324.00	10129.54	9731.41	-2851.34	0.26	323303.77	1616652.32	N 39 22 46.98 W	80 51 22.31
	16796.00	90.00	342.03	6324.00	10224.52	9821.72	-2880.83	0.24	323394.08	1616622.83	N 39 22 47.86 W	80 51 22.70
	16890.00	89.89	341.53	6324.09	10318.51	9911.00	-2910.22	0.54	323483.36	1616593.45	N 39 22 48.74 W	80 51 23.09
	17079.00	90.00	342.15	6324.27	10507.49	10090.59	-2969.13	0.33	323662.93	1616534.54	N 39 22 50.51 W	80 51 23.87
	17173.00	90.00	341.52	6324.27	10601.48	10179.90	-2998.43	0.67	323752.24	1616505.24	N 39 22 51.39 W	80 51 24.27
	17268.00	89.78	341.29	6324.45	10696.48	10269.94	-3028.72	0.34	323842.28	1616474.95	N 39 22 52.27 W	80 51 24.67
	17457.00	89.83	341.98	6325.09	10885.47	10449.32	-3088.27	0.37	324021.64	1616415.40	N 39 22 54.04 W	80 51 25.46
	17551.00	89.72	340.87	6325.46	10979.46	10538.42	-3118.21	1.19	324110.74	1616385.46	N 39 22 54.91 W	80 51 25.86
	17740.00	89.89	340.74	6326.11	11168.46	10716.91	-3180.35	0.11	324289.22	1616323.33	N 39 22 56.67 W	80 51 26.69
	17835.00	89.89	341.65	6326.29	11263.46	10806.84	-3210.98	0.96	324379.15	1616292.70	N 39 22 57.55 W	80 51 27.09
	17929.00	89.89	340.81	6326.47	11357.45	10895.84	-3241.22	0.89	324468.14	1616262.46	N 39 22 58.43 W	80 51 27.49
	18023.00	90.00	339.62	6326.56	11451.44	10984.29	-3273.04	1.27	324556.59	1616230.64	N 39 22 59.29 W	80 51 27.92
	18118.00	89.83	341.47	6326.70	11546.44	11073.86	-3304.68	1.96	324646.15	1616199.01	N 39 23 0.18 W	80 51 28.34
	18212.00	89.78	341.02	6327.02	11640.44	11162.87	-3334.90	0.48	324735.16	1616168.78	N 39 23 1.05 W	80 51 28.74
	18307.00	89.94	341.69	6327.25	11735.43	11252.88	-3365.27	0.73	324825.17	1616138.41	N 39 23 1.94 W	80 51 29.14
	18401.00	90.06	341.50	6327.25	11829.43	11342.07	-3394.95	0.24	324914.35	1616108.74	N 39 23 2.81 W	80 51 29.54
	18496.00	90.00	342.01	6327.20	11924.42	11432.30	-3424.70	0.54	325004.57	1616079.00	N 39 23 3.70 W	80 51 29.93
	18591.00	90.06	342.03	6327.15	12019.40	11522.66	-3454.02	0.07	325094.93	1616049.67	N 39 23 4.59 W	80 51 30.33
	18684.00	89.94	340.72	6327.15	12112.40	11610.78	-3483.72	1.41	325183.05	1616019.97	N 39 23 5.45 W	80 51 30.72
	18779.00	89.83	340.97	6327.34	12207.40	11700.52	-3514.89	0.29	325272.79	1615988.80	N 39 23 6.34 W	80 51 31.13
	18874.00	89.89	340.81	6327.57	12302.40	11790.29	-3545.99	0.18	325362.55	1615957.70	N 39 23 7.22 W	80 51 31.55
	18968.00	89.83	340.70	6327.80	12396.40	11879.03	-3576.98	0.13	325451.29	1615926.72	N 39 23 8.09 W	80 51 31.96
	19063.00	90.06	341.37	6327.90	12491.40	11968.88	-3607.85	0.75	325541.13	1615895.85	N 39 23 8.97 W	80 51 32.37
	19156.00	90.00	341.68	6327.85	12584.39	12057.08	-3637.32	0.34	325629.33	1615866.38	N 39 23 9.84 W	80 51 32.76
	19250.00	90.00	340.94	6327.85	12678.39	12146.13	-3667.44	0.79	325718.37	1615836.26	N 39 23 10.72 W	80 51 33.16
	19344.00	89.94	341.26	6327.90	12772.39	12235.06	-3697.89	0.35	325807.30	1615805.81	N 39 23 11.59 W	80 51 33.57
	19439.00	89.89	341.17	6328.04	12867.39	12325.00	-3728.48	0.11	325897.23	1615775.22	N 39 23 12.48 W	80 51 33.97

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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 ° ' ")
	19533.00	89.89	341.28	6328.22	12961.39	12414.00	-3758.74	0.12	325986.22	1615744.97	N 39 23 13.35 W	80 51 34.38
	19627.00	90.00	342.02	6328.31	13055.38	12503.22	-3788.33	0.80	326075.44	1615715.38	N 39 23 14.23 W	80 51 34.77
	19722.00	90.06	341.98	6328.26	13150.37	12593.57	-3817.69	0.08	326165.79	1615686.02	N 39 23 15.12 W	80 51 35.16
	19816.00	90.06	341.69	6328.16	13244.36	12682.88	-3846.99	0.31	326255.10	1615656.72	N 39 23 16.00 W	80 51 35.55
Final Survey	19885.00	90.06	341.36	6328.09	13313.35	12748.32	-3868.86	0.48	326320.54	1615634.86	N 39 23 16.64 W	80 51 35.84
Projection	19914.00	90.06	341.36	6328.06	13342.35	12775.80	-3878.13	0.00	326348.01	1615625.59	N 39 23 16.91 W	80 51 35.97

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-37G-HSM Surveys 0ft to 19914ft MD
	1	29.000	29.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / CNX SHR-37G-HSM Surveys 0ft to 19914ft MD
	1	29.000	375.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / CNX SHR-37G-HSM Surveys 0ft to 19914ft MD
	1	375.000	5422.000	Act Stns	30.000	30.000	NAL_MWD-NON_SLB	Original Borehole / CNX SHR-37G-HSM Surveys 0ft to 19914ft MD
	1	5422.000	19914.000	Act Stns	30.000	30.000	NAL_MWD_1.0_DEG	Original Borehole / CNX SHR-37G-HSM Surveys 0ft to 19914ft MD

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