

REFERENCE WELLPATH IDENTIFICATION	
Operator	SWN PRODUCTION COMPANY, LLC
Field	William Ritchea WTZ 405H
Facility	William Ritchea WTZ Pad
Slot	405H
Well	William Ritchea WTZ 405H
API	47103035780000
Wellbore	William Ritchea WTZ 405H AWB

REPORT SETUP INFORMATION	
Projection System	NAD83 / UTM Zone 17 North, US feet
North Reference	Grid
Scale	0.999611
Convergence at slot	0.22° East
Software System	WellArchitect® 6.0
User	Tranlam
Report Generated	6/20/2023 at 3:08:26 PM
Database	WA_MPL_EASTERNUS_Defn

	Local coordinates			Grid coordinates			Geographic coordinates		
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude			
Slot Location	-24.94	11.67	1736275.30	14406582.59	39°40'10.3203"N	80°39'33.6487"W			
Facility Reference Pt			1736263.63	14406607.52	39°40'10.5672"N	80°39'33.7968"W			
Field Reference Pt			0.00	0.00	0°00'0.0000"	85°29'19.4780"W			

WELLPATH DATUM	
Calculation method	Minimum curvature
Horizontal Reference Pt	Slot
Vertical Reference Pt	SDC 41 (KB)
MD Reference Pt	SDC 41 (KB)
Field Vertical Reference	Mean Sea Level
	SDC 41 (KB) to Facility Vertical Datum
	SDC 41 (KB) to Mean Sea Level
	SDC 41 (KB) to Ground Level at Slot (405H)
	Section Origin
	Section Azimuth
	1589.00ft
	1589.00ft
	26.00ft
	N 0.00, E 0.00 ft
	305.98°

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Environmental Protection

Actual Wellpath Report

William Ritchea WTZ 405H awp Proj: 17194'
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REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	William Ritchea WTZ 405H
Field	Wetzel	API	47103035780000
Facility	William Ritchea WTZ Pad	Wellbore	William Ritchea WTZ 405H AWB
Slot	405H		

WELLPATH DATA (190 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Comments
0.00†	0.000	82.830	0.00	0.00	0.00	0.00	1736275.30	14406582.59	39°40'10.3203"N	80°39'33.6487"W	0.00	0.000	0.00	
26.00	0.000	82.830	26.00	0.00	0.00	0.00	1736275.30	14406582.59	39°40'10.3203"N	80°39'33.6487"W	0.00	0.000	0.00	
188.00	0.090	82.830	188.00	-0.09	0.02	0.13	1736275.43	14406582.61	39°40'10.3205"N	80°39'33.6471"W	0.13	82.830	0.06	
235.00	0.200	97.140	235.00	-0.19	0.01	0.24	1736275.54	14406582.60	39°40'10.3204"N	80°39'33.6456"W	0.24	87.587	0.24	
326.00	0.050	24.140	326.00	-0.32	0.03	0.42	1736275.72	14406582.62	39°40'10.3206"N	80°39'33.6434"W	0.42	86.334	0.21	
418.00	0.130	50.570	418.00	-0.34	0.13	0.52	1736275.81	14406582.72	39°40'10.3216"N	80°39'33.6421"W	0.52	75.867	0.10	
510.00	0.100	110.550	510.00	-0.44	0.17	0.67	1736275.97	14406582.76	39°40'10.3222"N	80°39'33.6401"W	0.69	75.957	0.13	
558.00	0.160	50.200	558.00	-0.50	0.20	0.76	1736277.45	14406582.79	39°40'10.3172"N	80°39'33.6390"W	0.79	75.568	0.29	
687.00	1.240	116.380	686.99	-1.92	-0.31	2.15	1736277.65	14406582.28	39°40'10.3172"N	80°39'33.6212"W	2.17	98.174	0.92	
779.00	3.730	124.230	778.89	-5.90	-2.43	5.52	1736280.81	14406580.16	39°40'10.2961"N	80°39'33.5783"W	6.03	113.814	2.73	
870.00	6.700	125.990	869.51	-14.16	-7.22	12.26	1736287.56	14406575.37	39°40'10.2485"N	80°39'33.4923"W	14.23	120.494	3.27	
962.00	9.880	122.820	960.54	-27.42	-14.65	23.24	1736298.53	14406567.94	39°40'10.1746"N	80°39'33.3522"W	27.47	122.235	3.49	
1053.00	12.750	116.260	1049.76	-45.11	-23.33	38.81	1736314.09	14406559.27	39°40'10.0883"N	80°39'33.1535"W	45.28	121.013	3.45	
1144.00	15.360	110.670	1138.03	-66.64	-32.03	59.10	1736334.37	14406550.57	39°40'10.0016"N	80°39'32.8945"W	67.22	118.458	3.23	
1234.00	17.620	106.190	1224.33	-90.96	-40.04	83.33	1736358.60	14406542.57	39°40'9.9215"N	80°39'32.5850"W	92.45	115.661	2.88	
1326.00	20.060	104.740	1311.39	-118.77	-47.93	111.97	1736387.23	14406534.67	39°40'9.8424"N	80°39'32.2192"W	121.80	113.176	2.70	
1418.00	22.750	105.160	1397.04	-150.11	-56.60	144.40	1736419.65	14406526.01	39°40'9.7555"N	80°39'31.8048"W	155.10	111.404	2.93	
1510.00	25.640	105.930	1480.95	-185.44	-66.72	180.72	1736455.95	14406515.90	39°40'9.6542"N	80°39'31.3409"W	192.64	110.264	3.16	
1601.00	28.270	106.580	1562.06	-224.27	-78.28	220.32	1736495.53	14406504.35	39°40'9.5385"N	80°39'30.8351"W	233.81	109.560	2.91	
1691.00	31.090	107.070	1640.24	-266.37	-91.18	262.96	1736538.16	14406491.44	39°40'9.4093"N	80°39'30.2903"W	278.32	109.124	3.14	
1783.00	32.890	108.670	1718.27	-312.69	-106.15	309.34	1736584.52	14406476.48	39°40'9.2596"N	80°39'29.6980"W	327.05	108.940	2.16	
1873.00	33.590	108.130	1793.54	-359.72	-121.72	356.15	1736631.31	14406460.92	39°40'9.1040"N	80°39'29.1001"W	376.38	108.869	0.84	
1964.00	34.180	105.500	1869.09	-407.63	-136.39	404.71	1736679.85	14406446.26	39°40'8.9572"N	80°39'28.4799"W	427.07	108.624	1.74	
2058.00	35.050	104.650	1946.45	-457.51	-150.27	456.27	1736731.39	14406432.38	39°40'8.8181"N	80°39'27.8212"W	480.38	108.229	1.06	
2149.00	34.990	104.520	2020.98	-506.13	-163.42	506.81	1736781.91	14406419.23	39°40'8.6862"N	80°39'27.1756"W	532.50	107.872	0.11	
2239.00	34.790	104.790	2094.80	-554.09	-176.44	556.61	1736831.70	14406406.22	39°40'8.5556"N	80°39'26.5393"W	583.91	107.588	0.28	
2331.00	34.670	105.370	2170.41	-603.05	-190.08	607.22	1736882.28	14406392.58	39°40'8.4190"N	80°39'25.8928"W	636.28	107.382	0.38	
2421.00	34.790	104.720	2244.38	-650.94	-203.39	656.74	1736931.78	14406379.28	39°40'8.2856"N	80°39'25.2602"W	687.51	107.207	0.43	
2512.00	34.230	104.510	2319.36	-698.95	-216.40	706.63	1736981.65	14406366.28	39°40'8.1551"N	80°39'24.6229"W	739.02	107.027	0.63	
2602.00	35.800	103.390	2393.07	-746.81	-228.84	756.74	1737031.75	14406353.84	39°40'8.0303"N	80°39'23.9826"W	790.59	106.825	1.88	

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API	47103035780000
Wellbore	William Ritchea WTZ 405H AWB

WELLPATH DATA (190 stations)														
MD	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Comments
2694.00	35.710	102.380	2467.73	-796.26	-240.82	809.14	1737084.13	14406341.86	39°40'7.9098"N	80°39'23.3131"W	844.22	106.575	0.65	
2784.00	34.440	102.150	2541.39	-843.61	-251.81	859.68	1737134.64	14406330.88	39°40'7.7993"N	80°39'22.6673"W	895.80	106.326	1.42	
2875.00	33.480	103.740	2616.86	-890.39	-263.19	909.22	1737184.16	14406319.50	39°40'7.6850"N	80°39'22.0344"W	946.55	106.144	1.44	
2965.00	34.240	105.340	2691.60	-937.06	-275.79	957.75	1737232.68	14406306.91	39°40'7.5587"N	80°39'21.4144"W	996.67	106.064	1.30	
3056.00	35.220	104.700	2766.39	-985.47	-289.22	1007.83	1737282.73	14406293.49	39°40'7.4240"N	80°39'20.7747"W	1048.50	106.012	1.15	
3146.00	36.070	104.200	2839.53	-1034.26	-302.30	1058.61	1737333.50	14406280.41	39°40'7.2928"N	80°39'20.1259"W	1100.93	105.937	1.00	
3230.00	36.470	103.550	2907.25	-1080.30	-314.22	1106.86	1737381.72	14406268.50	39°40'7.1732"N	80°39'19.5095"W	1150.59	105.848	0.66	
3359.00	36.890	102.950	3010.71	-1151.37	-331.88	1181.86	1737456.70	14406250.84	39°40'6.9958"N	80°39'18.5512"W	1227.58	105.685	0.43	
3448.00	37.110	100.710	3081.79	-1200.23	-342.85	1234.28	1737509.10	14406239.87	39°40'6.8854"N	80°39'17.8814"W	1281.01	105.524	1.53	
3540.00	37.750	99.370	3154.85	-1250.51	-352.60	1289.34	1737564.13	14406230.13	39°40'6.7870"N	80°39'17.1778"W	1336.68	105.295	1.13	
3630.00	38.740	96.770	3225.53	-1299.73	-360.40	1344.49	1737619.26	14406222.33	39°40'6.7078"N	80°39'16.4730"W	1391.96	105.006	2.10	
3721.00	40.400	93.140	3295.69	-1349.37	-365.38	1402.22	1737676.97	14406217.36	39°40'6.6564"N	80°39'15.7349"W	1449.04	104.605	3.13	
3812.00	41.280	89.240	3364.54	-1398.21	-366.59	1461.69	1737736.42	14406216.14	39°40'6.6421"N	80°39'14.9745"W	1506.96	104.079	2.96	
3904.00	41.380	86.300	3433.63	-1445.94	-364.23	1522.39	1737797.09	14406218.51	39°40'6.6632"N	80°39'14.1982"W	1565.35	103.455	2.11	
3994.00	41.410	85.410	3501.15	-1491.44	-359.93	1581.74	1737856.43	14406222.80	39°40'6.7034"N	80°39'13.4389"W	1622.18	102.819	0.65	
4085.00	41.260	85.590	3569.48	-1537.16	-355.21	1641.66	1737916.32	14406227.52	39°40'6.7477"N	80°39'12.6725"W	1679.65	102.209	0.21	
4176.00	41.570	84.950	3637.72	-1582.79	-350.25	1701.65	1737976.29	14406232.48	39°40'6.7945"N	80°39'11.9051"W	1737.32	101.631	0.58	
4268.00	41.410	85.800	3706.64	-1629.06	-345.33	1762.40	1738037.01	14406237.39	39°40'6.8408"N	80°39'11.1280"W	1795.92	101.086	0.64	
4360.00	41.330	85.840	3775.68	-1675.53	-340.90	1823.04	1738097.63	14406241.83	39°40'6.8823"N	80°39'10.3523"W	1854.64	100.592	0.09	
4452.00	41.290	85.700	3844.79	-1721.91	-336.42	1883.61	1738158.17	14406246.30	39°40'6.9242"N	80°39'9.5775"W	1913.42	100.126	0.11	
4544.00	41.250	85.560	3913.93	-1768.15	-331.79	1944.12	1738218.66	14406250.93	39°40'6.9676"N	80°39'8.8035"W	1972.23	99.685	0.11	
4635.00	40.960	85.750	3982.50	-1813.77	-327.26	2003.77	1738278.29	14406255.46	39°40'7.0101"N	80°39'8.0404"W	2030.32	99.276	0.35	
4726.00	41.400	85.540	4050.99	-1859.44	-322.71	2063.52	1738338.01	14406260.00	39°40'7.0528"N	80°39'7.2762"W	2088.60	98.888	0.51	
4817.00	42.350	86.480	4118.75	-1905.99	-318.49	2124.11	1738398.58	14406264.23	39°40'7.0922"N	80°39'6.5011"W	2147.86	98.527	1.25	
4908.00	42.310	86.200	4186.03	-1953.18	-314.58	2185.27	1738459.71	14406268.14	39°40'7.1285"N	80°39'5.7189"W	2207.79	98.192	0.21	
5000.00	42.320	86.810	4254.06	-2000.99	-310.80	2247.09	1738521.55	14406271.91	39°40'7.1635"N	80°39'4.9282"W	2268.48	97.875	0.45	
5092.00	42.360	86.810	4322.06	-2049.03	-307.35	2308.95	1738583.35	14406275.36	39°40'7.1952"N	80°39'4.1368"W	2329.32	97.582	0.04	
5182.00	42.140	87.220	4388.68	-2096.08	-304.20	2369.38	1738643.76	14406278.51	39°40'7.2240"N	80°39'3.3639"W	2388.83	97.316	0.39	
5273.00	42.000	87.060	4456.23	-2143.57	-301.16	2430.28	1738704.63	14406281.55	39°40'7.2517"N	80°39'2.5850"W	2448.87	97.064	0.19	
5363.00	41.790	87.060	4523.22	-2190.33	-298.08	2490.30	1738764.63	14406284.63	39°40'7.2799"N	80°39'1.8173"W	2508.08	96.826	0.23	

Actual Wellpath Report
William Ritchea WTZ 405H awp Proj: 17194'

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Field	Wetzel	API	47103035780000
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Slot	405H		

WELLPATH DATA (190 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Comments
5454.00	41.710	87.330	4591.12	-2237.56	-295.11	2550.82	1738825.13	14406287.59	39°40'7.3068"N	80°39'1.0432"W	2567.84	96.599	0.22	
5545.00	40.880	86.820	4659.49	-2284.30	-292.05	2610.80	1738885.08	14406290.65	39°40'7.3348"N	80°39'0.2761"W	2627.08	96.383	0.98	
5638.00	41.910	86.230	4729.25	-2331.78	-288.32	2672.18	1738946.43	14406294.38	39°40'7.3693"N	80°38'59.4910"W	2687.69	96.158	1.18	
5729.00	41.230	86.550	4797.33	-2378.31	-284.52	2732.44	1739006.67	14406298.18	39°40'7.4046"N	80°38'58.7202"W	2747.21	95.945	0.78	
5821.00	41.110	86.110	4866.59	-2424.94	-280.64	2792.88	1739067.09	14406302.06	39°40'7.4405"N	80°38'57.9471"W	2806.95	95.738	0.34	
5913.00	41.670	85.960	4935.61	-2471.57	-276.43	2853.56	1739127.75	14406306.26	39°40'7.4798"N	80°38'57.1709"W	2866.92	95.533	0.62	
6003.00	42.200	85.980	5002.56	-2517.64	-272.21	2913.56	1739187.72	14406310.49	39°40'7.5192"N	80°38'56.4034"W	2926.25	95.338	0.59	
6094.00	40.280	85.550	5070.98	-2563.45	-267.78	2973.38	1739247.52	14406314.91	39°40'7.5606"N	80°38'55.6382"W	2985.42	95.146	2.13	
6185.00	41.490	85.770	5139.78	-2608.86	-263.28	3032.77	1739306.89	14406319.42	39°40'7.6029"N	80°38'54.8785"W	3044.18	94.961	1.34	
6276.00	42.160	85.650	5207.59	-2655.16	-258.74	3093.29	1739367.38	14406323.96	39°40'7.6454"N	80°38'54.1044"W	3104.09	94.781	0.74	
6367.00	42.310	84.780	5274.97	-2701.49	-263.63	3154.24	1739428.31	14406329.06	39°40'7.6935"N	80°38'53.3247"W	3164.42	94.597	0.66	
6458.00	42.230	85.440	5342.31	-2747.78	-248.41	3215.23	1739489.27	14406334.27	39°40'7.7427"N	80°38'52.5445"W	3224.81	94.418	0.50	
6548.00	41.200	85.970	5409.49	-2793.47	-243.93	3274.94	1739548.96	14406338.76	39°40'7.7847"N	80°38'51.7806"W	3284.02	94.260	1.21	
6639.00	39.210	85.490	5478.98	-2838.30	-239.56	3333.52	1739607.52	14406343.13	39°40'7.8256"N	80°38'51.0313"W	3342.12	94.110	2.21	
6731.00	39.100	88.310	5550.33	-2883.38	-236.42	3391.51	1739665.49	14406346.27	39°40'7.8544"N	80°38'50.2896"W	3399.74	93.988	1.94	
6823.00	37.080	87.470	5622.73	-2928.05	-234.34	3448.23	1739722.18	14406348.35	39°40'7.8728"N	80°38'49.5642"W	3456.18	93.888	2.27	
6915.00	39.970	88.730	5694.70	-2973.29	-232.46	3505.49	1739779.42	14406350.22	39°40'7.8891"N	80°38'48.8318"W	3513.19	93.794	3.25	
7006.00	39.910	88.750	5764.47	-3019.80	-231.17	3563.90	1739837.80	14406351.51	39°40'7.8995"N	80°38'48.0849"W	3571.39	93.711	0.07	
7097.00	41.330	89.190	5833.55	-3067.11	-230.11	3623.13	1739897.01	14406352.57	39°40'7.9077"N	80°38'47.3274"W	3630.43	93.634	1.59	
7189.00	41.780	89.470	5902.39	-3116.07	-229.40	3684.15	1739958.01	14406353.28	39°40'7.9124"N	80°38'46.5470"W	3691.29	93.563	0.53	
7280.00	42.110	89.570	5970.08	-3164.99	-228.89	3744.98	1740018.81	14406353.79	39°40'7.9151"N	80°38'45.7691"W	3751.96	93.497	0.37	
7372.00	42.220	87.120	6038.27	-3213.89	-227.10	3806.70	1740080.51	14406355.58	39°40'7.9303"N	80°38'44.9797"W	3813.47	93.414	1.79	
7464.00	42.170	87.420	6106.43	-3262.10	-224.16	3868.42	1740142.20	14406358.52	39°40'7.9570"N	80°38'44.1903"W	3874.91	93.316	0.23	
7555.00	41.610	87.530	6174.17	-3309.65	-221.48	3929.12	1740202.88	14406361.19	39°40'7.9811"N	80°38'43.4139"W	3935.36	93.226	0.62	
7647.00	41.350	87.400	6243.10	-3357.33	-218.79	3990.00	1740263.74	14406363.89	39°40'8.0053"N	80°38'42.6353"W	3995.99	93.139	0.30	
7738.00	41.040	86.410	6311.57	-3403.86	-215.55	4049.84	1740323.56	14406367.12	39°40'8.0349"N	80°38'41.8698"W	4055.58	93.047	0.79	
7830.00	42.080	87.410	6380.41	-3451.25	-212.27	4110.79	1740384.48	14406370.40	39°40'8.0650"N	80°38'41.0903"W	4116.26	92.956	1.34	
7921.00	42.090	87.250	6447.95	-3498.88	-209.43	4171.71	1740445.38	14406373.24	39°40'8.0907"N	80°38'40.3111"W	4176.96	92.874	0.12	
8013.00	41.810	87.190	6516.37	-3546.84	-206.44	4233.14	1740506.78	14406376.23	39°40'8.1178"N	80°38'39.5254"W	4238.17	92.792	0.31	
8105.00	42.080	87.150	6584.80	-3594.75	-203.41	4294.56	1740568.18	14406379.26	39°40'8.1454"N	80°38'38.7398"W	4299.37	92.712	0.29	

REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	William Ritchea WTZ 405H
Field	Wetzel	API	47103035780000
Facility	William Ritchea WTZ Pad	Wellbore	William Ritchea WTZ 405H AWB
Slot	405H		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Comments
8196.00	42.090	86.690	6652.34	-3642.11	-200.13	4355.46	1740629.06	14406382.54	39°40'8.1754"N	80°38'37.9608"W	4360.06	92.631	0.34	
8288.00	42.030	86.960	6720.64	-3689.90	-196.72	4417.00	1740690.57	14406385.95	39°40'8.2067"N	80°38'37.1737"W	4421.38	92.550	0.21	
8379.00	41.980	86.840	6788.26	-3737.18	-193.42	4477.81	1740751.35	14406389.24	39°40'8.2369"N	80°38'36.3959"W	4481.98	92.473	0.10	
8471.00	38.500	82.530	6858.49	-3781.85	-188.00	4536.95	1740810.47	14406394.66	39°40'8.2881"N	80°38'35.6393"W	4540.84	92.373	4.84	
8562.00	34.840	68.880	6931.59	-3816.60	-174.93	4589.39	1740862.89	14406407.73	39°40'8.4153"N	80°38'34.9881"W	4592.72	92.183	9.80	
8654.00	31.780	57.960	7008.54	-3839.97	-152.58	4634.49	1740907.97	14406430.07	39°40'8.6344"N	80°38'34.3902"W	4637.00	91.886	7.31	
8745.00	31.950	40.990	7085.98	-3851.07	-121.63	4670.67	1740944.14	14406461.01	39°40'8.9388"N	80°38'33.9259"W	4672.25	91.492	9.82	
8837.00	31.780	17.080	7164.43	-3845.32	-79.93	4693.34	1740967.31	14406502.69	39°40'9.3500"N	80°38'33.6275"W	4694.52	90.976	13.65	
8928.00	34.710	2.030	7240.66	-3823.05	-31.04	4701.81	1740975.27	14406551.56	39°40'9.8329"N	80°38'33.5230"W	4701.92	90.378	9.60	
9020.00	39.290	355.250	7314.15	-3789.38	24.22	4700.33	1740973.79	14406606.80	39°40'10.3791"N	80°38'33.5392"W	4700.39	89.705	6.66	
9114.00	43.990	348.670	7384.41	-3745.92	85.95	4691.44	1740964.90	14406668.51	39°40'10.9895"N	80°38'33.6497"W	4692.23	88.950	6.82	
9206.00	49.650	337.590	7447.45	-3692.45	149.84	4671.75	1740945.22	14406732.38	39°40'11.6217"N	80°38'33.8983"W	4674.15	88.163	10.71	
9298.00	55.950	331.480	7503.07	-3628.09	215.85	4640.14	1740913.62	14406798.35	39°40'12.2752"N	80°38'34.2992"W	4645.16	87.337	8.65	
9389.00	61.900	324.080	7550.07	-3555.78	281.60	4598.51	1740872.01	14406864.08	39°40'12.9267"N	80°38'34.8282"W	4607.13	86.496	9.55	
9481.00	69.550	320.040	7587.88	-3475.25	347.62	4546.93	1740820.45	14406930.07	39°40'13.5812"N	80°38'35.4844"W	4560.20	85.628	9.23	
9572.00	75.610	317.030	7615.11	-3390.54	412.62	4489.44	1740762.99	14406995.05	39°40'14.2258"N	80°38'36.2163"W	4508.37	84.749	7.37	
9664.00	83.560	312.260	7631.74	-3301.18	476.10	4425.10	1740698.67	14407058.50	39°40'14.8557"N	80°38'37.0359"W	4450.64	83.859	10.03	
9755.00	91.020	307.400	7636.04	-3210.58	534.25	4355.36	1740628.96	14407116.64	39°40'15.4332"N	80°38'37.9248"W	4388.01	83.007	9.78	
9847.00	90.580	303.830	7634.76	-3118.61	587.82	4280.59	1740554.21	14407170.17	39°40'15.9654"N	80°38'38.8783"W	4320.76	82.181	3.91	
9938.00	90.580	307.150	7633.84	-3027.63	640.64	4206.51	1740480.16	14407222.98	39°40'16.4904"N	80°38'39.8230"W	4255.01	81.341	3.65	
10030.00	91.880	310.650	7631.86	-2935.78	698.38	4134.94	1740408.62	14407280.70	39°40'17.0639"N	80°38'40.7353"W	4193.50	80.413	4.06	
10121.00	89.820	310.190	7630.51	-2845.07	757.38	4065.67	1740339.38	14407339.67	39°40'17.6496"N	80°38'41.6182"W	4135.62	79.448	2.32	
10213.00	90.890	309.670	7629.94	-2753.29	816.43	3995.13	1740268.86	14407398.70	39°40'18.2359"N	80°38'42.5173"W	4077.69	78.450	1.29	
10304.00	90.180	309.250	7629.09	-2662.47	874.26	3924.87	1740198.64	14407456.50	39°40'18.8102"N	80°38'43.4129"W	4021.06	77.442	0.91	
10396.00	90.770	307.990	7628.33	-2570.57	931.68	3853.00	1740126.79	14407513.90	39°40'19.3805"N	80°38'44.3292"W	3964.04	76.406	1.51	
10488.00	90.460	310.910	7627.34	-2478.75	990.12	3781.97	1740055.79	14407572.33	39°40'19.9609"N	80°38'45.2346"W	3909.43	75.329	3.19	
10579.00	91.320	310.280	7625.93	-2388.06	1049.33	3712.88	1739986.73	14407631.51	39°40'20.5487"N	80°38'46.1151"W	3858.31	74.219	1.17	
10671.00	90.060	312.160	7624.82	-2296.46	1109.95	3643.69	1739917.56	14407692.10	39°40'21.1504"N	80°38'46.9969"W	3808.99	73.058	2.46	
10762.00	93.140	310.710	7622.28	-2205.92	1170.13	3575.50	1739849.40	14407752.27	39°40'21.7479"N	80°38'47.8659"W	3762.10	71.879	3.74	
10854.00	92.120	307.180	7618.06	-2114.15	1227.89	3504.04	1739777.96	14407810.00	39°40'22.3215"N	80°38'48.7770"W	3712.95	70.688	3.99	

REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	William Ritchea WTZ 405H
Field	Wetzel	API	47103035780000
Facility	William Ritchea WTZ Pad	Wellbore	William Ritchea WTZ 405H AWB
Slot	405H		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Comments
10945.00	90.620	305.390	7615.88	-2023.19	1281.73	3430.71	1739704.66	14407863.81	39°40'22.8564"N	80°38'49.7120"W	3662.32	69.514	2.57	
11037.00	91.540	302.930	7614.15	-1931.26	1333.37	3354.60	1739628.59	14407915.44	39°40'23.3697"N	80°38'50.6827"W	3609.88	68.323	2.85	
11128.00	91.320	300.700	7611.88	-1840.53	1381.33	3277.30	1739551.32	14407963.38	39°40'23.8467"N	80°38'51.6689"W	3556.51	67.145	2.46	
11220.00	92.370	297.430	7608.91	-1749.26	1425.99	3196.94	1739470.99	14408008.02	39°40'24.2912"N	80°38'52.6944"W	3500.55	65.961	3.73	
11312.00	91.320	294.960	7605.95	-1658.66	1466.58	3114.44	1739388.52	14408048.59	39°40'24.6955"N	80°38'53.7474"W	3442.47	64.784	2.92	
11403.00	90.770	292.550	7604.29	-1569.74	1503.22	3031.17	1739305.28	14408085.23	39°40'25.0609"N	80°38'54.8105"W	3383.44	63.622	2.72	
11495.00	91.420	293.530	7602.53	-1480.10	1539.22	2946.53	1739220.67	14408121.21	39°40'25.4199"N	80°38'55.8912"W	3324.34	62.418	1.28	
11586.00	92.490	295.630	7599.43	-1390.95	1577.05	2863.83	1739138.00	14408159.02	39°40'25.7970"N	80°38'56.9470"W	3269.34	61.159	2.59	
11678.00	91.850	295.830	7595.94	-1300.48	1616.96	2781.01	1739055.22	14408198.92	39°40'26.1946"N	80°38'58.0041"W	3216.92	59.825	0.73	
11770.00	90.740	295.880	7593.87	-1209.94	1657.07	2698.24	1738972.48	14408239.01	39°40'26.5942"N	80°38'59.0606"W	3166.45	58.445	1.21	
11861.00	91.320	294.860	7592.23	-1120.51	1696.06	2616.03	1738890.31	14408277.98	39°40'26.9826"N	80°39'0.1101"W	3117.73	57.043	1.29	
11953.00	91.140	294.430	7590.25	-1030.33	1734.41	2532.43	1738806.74	14408316.32	39°40'27.3649"N	80°39'1.1773"W	3069.43	55.594	0.51	
12044.00	91.750	295.270	7587.96	-941.07	1772.64	2449.88	1738724.22	14408354.54	39°40'27.7459"N	80°39'2.2311"W	3023.93	54.112	1.14	
12136.00	90.520	297.300	7586.14	-850.41	1813.37	2367.42	1738641.79	14408395.25	39°40'28.1516"N	80°39'3.2837"W	2982.11	52.549	2.58	
12228.00	91.450	300.180	7584.56	-759.16	1857.60	2286.77	1738561.18	14408439.46	39°40'28.5918"N	80°39'4.3129"W	2946.18	50.912	3.29	
12319.00	91.380	300.020	7582.31	-668.67	1903.22	2208.07	1738482.50	14408485.06	39°40'29.0457"N	80°39'5.3172"W	2915.10	49.241	0.19	
12411.00	91.230	299.730	7580.21	-577.22	1949.03	2128.31	1738402.78	14408530.86	39°40'29.5015"N	80°39'6.3349"W	2885.91	47.518	0.35	
12502.00	91.110	301.520	7578.35	-486.64	1995.38	2050.03	1738324.52	14408577.19	39°40'29.9625"N	80°39'7.3338"W	2860.79	45.774	1.97	
12594.00	91.260	301.910	7576.45	-394.91	2043.73	1971.78	1738246.31	14408625.52	39°40'30.4434"N	80°39'8.3321"W	2839.85	43.973	0.45	
12685.00	90.340	307.190	7575.18	-303.98	2095.32	1896.87	1738171.42	14408677.09	39°40'30.9561"N	80°39'9.2877"W	2826.38	42.154	5.89	
12777.00	91.390	304.720	7573.79	-212.00	2149.32	1822.41	1738097.00	14408731.07	39°40'31.4927"N	80°39'10.2372"W	2817.94	40.295	2.92	
12869.00	91.940	308.260	7571.12	-120.06	2204.00	1748.49	1738023.10	14408785.73	39°40'32.0359"N	80°39'11.1799"W	2813.33	38.426	3.89	
12960.00	92.550	308.240	7567.55	-29.20	2260.30	1677.08	1737951.72	14408842.00	39°40'32.5949"N	80°39'12.0904"W	2814.52	36.574	0.67	
13052.00	92.310	309.890	7563.65	62.58	2318.22	1605.71	1737880.39	14408899.90	39°40'33.1701"N	80°39'13.0002"W	2820.01	34.708	1.81	
13143.00	91.720	308.030	7560.45	153.40	2375.40	1535.00	1737809.70	14408957.06	39°40'33.7379"N	80°39'13.9018"W	2828.21	32.871	2.14	
13235.00	92.650	309.030	7556.94	245.24	2432.67	1463.08	1737737.81	14409014.30	39°40'34.3066"N	80°39'14.8187"W	2838.75	31.024	1.48	
13326.00	92.680	310.910	7552.71	335.91	2491.06	1393.42	1737668.18	14409072.67	39°40'34.8663"N	80°39'15.7068"W	2854.29	29.221	2.06	
13418.00	91.720	307.740	7549.18	427.68	2549.31	1322.32	1737597.10	14409130.90	39°40'35.4647"N	80°39'16.6133"W	2871.85	27.416	3.60	
13509.00	92.370	308.240	7545.93	518.56	2605.28	1250.64	1737525.45	14409186.85	39°40'36.0206"N	80°39'17.5272"W	2889.92	25.643	0.90	
13600.00	91.380	307.410	7542.96	609.47	2661.06	1178.80	1737453.64	14409242.61	39°40'36.5746"N	80°39'18.4433"W	2910.47	23.893	1.42	

REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	William Ritchea WTZ 405H
Field	Wetzel	API	47103035780000
Facility	William Ritchea WTZ Pad	Wellbore	William Ritchea WTZ 405H AWB
Slot	405H		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Comments
13692.00	91.480	308.890	7540.66	701.37	2717.87	1106.48	1737381.35	14409299.40	39°40'37.1388"N	80°39'19.3654"W	2934.47	22.152	1.61	
13784.00	91.450	307.800	7538.31	793.26	2774.93	1034.35	1737309.25	14409356.43	39°40'37.7054"N	80°39'20.2852"W	2961.44	20.443	1.18	
13875.00	92.180	310.250	7535.42	884.08	2832.19	963.70	1737238.62	14409413.67	39°40'38.2740"N	80°39'21.1860"W	2991.66	18.792	2.81	
13967.00	93.880	308.060	7530.56	975.80	2890.20	892.46	1737167.41	14409471.66	39°40'38.8500"N	80°39'22.0942"W	3024.85	17.160	3.01	
14058.00	91.820	309.010	7526.04	1066.59	2946.82	821.37	1737096.35	14409528.25	39°40'39.4122"N	80°39'23.0006"W	3059.15	15.575	2.49	
14150.00	92.220	309.210	7522.79	1158.39	3004.81	750.03	1737025.04	14409586.23	39°40'39.9881"N	80°39'23.9102"W	3097.01	14.015	0.49	
14242.00	91.720	308.750	7519.63	1250.21	3062.65	678.56	1736953.59	14409644.04	39°40'40.5624"N	80°39'24.8215"W	3136.92	12.493	0.74	
14333.00	92.740	308.200	7516.09	1341.06	3119.23	607.37	1736882.43	14409700.60	39°40'41.1242"N	80°39'25.7292"W	3177.81	11.019	1.27	
14425.00	92.520	309.420	7511.87	1432.85	3176.83	535.76	1736810.85	14409758.17	39°40'41.6961"N	80°39'26.6423"W	3221.68	9.573	1.35	
14517.00	91.200	308.660	7508.88	1524.66	3234.74	464.34	1736739.46	14409816.06	39°40'42.2712"N	80°39'27.5529"W	3267.90	8.169	1.66	
14608.00	91.380	308.370	7506.83	1615.55	3291.39	393.16	1736668.30	14409872.69	39°40'42.8337"N	80°39'28.4605"W	3314.79	6.812	0.38	
14700.00	90.460	308.090	7505.36	1707.47	3348.32	320.90	1736596.07	14409929.60	39°40'43.3990"N	80°39'29.3819"W	3363.66	5.474	1.05	
14791.00	92.060	308.560	7503.36	1798.37	3404.73	249.53	1736524.73	14409985.99	39°40'43.9593"N	80°39'30.2920"W	3413.86	4.192	1.83	
14883.00	90.710	309.260	7501.13	1890.22	3462.50	177.96	1736453.19	14410043.73	39°40'44.5328"N	80°39'31.2045"W	3467.07	2.942	1.65	
14975.00	90.550	308.750	7500.12	1982.08	3520.40	106.47	1736381.73	14410101.61	39°40'45.1077"N	80°39'32.1160"W	3522.01	1.732	0.58	
15066.00	90.370	308.930	7499.39	2072.97	3577.47	35.60	1736310.88	14410158.66	39°40'45.6744"N	80°39'33.0197"W	3577.64	0.570	0.28	
15158.00	91.200	308.190	7498.13	2164.86	3634.81	-36.34	1736238.98	14410215.97	39°40'46.2438"N	80°39'33.9370"W	3634.99	359.427	1.21	
15249.00	91.540	310.850	7495.95	2255.65	3692.69	-106.51	1736168.84	14410273.84	39°40'46.8185"N	80°39'34.8316"W	3694.23	358.348	2.95	
15341.00	90.710	308.510	7494.15	2347.44	3751.42	-177.29	1736098.08	14410332.54	39°40'47.4015"N	80°39'35.7342"W	3755.61	357.294	2.70	
15432.00	91.290	309.230	7492.56	2438.31	3808.52	-248.13	1736027.27	14410389.62	39°40'47.9685"N	80°39'36.6374"W	3816.59	366.272	1.02	
15524.00	91.050	308.040	7490.68	2530.19	3865.94	-319.98	1735955.45	14410447.02	39°40'48.5387"N	80°39'37.5536"W	3879.16	355.268	1.32	
15616.00	91.720	307.780	7488.46	2622.11	3922.45	-392.54	1735882.91	14410503.51	39°40'49.0999"N	80°39'38.4789"W	3942.05	354.285	0.78	
15707.00	91.410	307.920	7485.97	2713.03	3978.27	-464.37	1735811.11	14410559.30	39°40'49.6542"N	80°39'39.3949"W	4005.28	353.342	0.37	
15799.00	91.290	306.680	7483.80	2804.97	4034.01	-513.53	1735737.98	14410615.02	39°40'50.2077"N	80°39'40.3280"W	4069.66	352.410	1.35	
15890.00	91.780	307.420	7481.37	2895.92	4088.81	-610.14	1735666.40	14410669.80	39°40'50.7521"N	80°39'41.2539"W	4134.09	351.513	0.98	
15982.00	91.350	308.570	7478.85	2987.83	4145.43	-682.61	1735592.96	14410726.39	39°40'51.3143"N	80°39'42.1782"W	4201.25	350.649	1.33	
16073.00	90.950	308.350	7477.03	3078.73	4202.01	-753.85	1735521.74	14410782.96	39°40'51.8762"N	80°39'43.0866"W	4269.10	349.829	0.50	
16165.00	90.950	307.330	7475.50	3170.67	4258.44	-826.50	1735449.13	14410839.37	39°40'52.4366"N	80°39'44.0130"W	4337.91	349.016	1.11	
16257.00	91.660	307.080	7473.41	3262.62	4314.06	-899.75	1735375.90	14410894.96	39°40'52.9899"N	80°39'44.9473"W	4406.89	348.219	0.82	
16348.00	91.380	306.940	7470.99	3353.57	4368.82	-972.39	1735303.29	14410949.70	39°40'53.5328"N	80°39'45.8738"W	4475.72	347.452	0.34	

REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	William Ritchea WTZ 405H
Field	Wetzel	API	47103035780000
Facility	William Ritchea WTZ Pad	Wellbore	William Ritchea WTZ 405H AWB
Slot	405H		

WELLPATH DATA (190 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Comments
16440.00	91.540	308.330	7468.65	3445.50	4424.97	-1045.22	1735230.49	14411005.83	39°40'54.0905"N	80°39'46.8026"W	4546.75	346.710	1.52	
16531.00	91.200	307.910	7466.47	3536.41	4481.13	-1116.79	1735158.94	14411061.97	39°40'54.6482"N	80°39'47.7154"W	4618.20	346.006	0.59	
16623.00	91.510	308.160	7464.30	3628.33	4537.80	-1189.24	1735086.53	14411118.62	39°40'55.2109"N	80°39'48.6392"W	4691.05	345.315	0.43	
16714.00	91.230	307.850	7462.12	3719.24	4593.82	-1260.92	1735014.87	14411174.61	39°40'55.7671"N	80°39'49.5534"W	4763.73	344.651	0.46	
16806.00	91.260	307.870	7460.12	3811.17	4650.27	-1333.54	1734942.28	14411231.04	39°40'56.3277"N	80°39'50.4795"W	4837.70	343.999	0.04	
16898.00	90.950	307.520	7458.35	3903.12	4706.51	-1406.32	1734869.53	14411287.26	39°40'56.8863"N	80°39'51.4077"W	4912.13	343.364	0.51	
16989.00	90.000	308.010	7457.59	3994.07	4762.24	-1478.26	1734797.62	14411342.97	39°40'57.4397"N	80°39'52.3252"W	4986.40	342.755	1.17	
17081.00	90.490	308.150	7457.20	4086.00	4818.98	-1550.67	1734725.23	14411399.68	39°40'58.0031"N	80°39'53.2487"W	5062.33	342.163	0.55	
17169.00	90.060	307.740	7456.78	4173.95	4873.09	-1620.07	1734655.87	14411453.77	39°40'58.5404"N	80°39'54.1337"W	5135.33	341.611	0.68	
17194.00‡	90.060	307.740	7456.75	4198.94	4888.39	-1639.84	1734636.10	14411469.07	39°40'58.6924"N	80°39'54.3859"W	5156.11	341.456	0.00	

HOLE & CASING SECTIONS - Ref Wellbore: William Ritchea WTZ 405H AWB Ref Wellpath: William Ritchea WTZ 405H awp Proj: 17194'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
13.125in Casing	26.00	613.00	587.00	26.00	613.00	0.00	0.00	0.16	1.08

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REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	William Ritchea WTZ 405H
Field	Wetzel	API	47103035780000
Facility	William Ritchea WTZ Pad	Wellbore	William Ritchea WTZ 405H AWB
Slot	405H		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
William Ritchea WTZ 405H wp1	1589.00	1377.14	3313.07	1739587.07	14407959.19	39°40'23.8039"N	80°38'51.2116"W	point
William Ritchea WTZ 405H wp2	1589.00	2014.58	1983.16	1738257.69	14408596.38	39°40'30.1549"N	80°39'8.1880"W	point
William Ritchea WTZ 405H BHL rev2	7469.00	4894.83	-1634.58	1734641.36	14411475.50	39°40'58.7558"N	80°39'54.3183"W	point
William Ritchea WTZ 405H LP rev4	7636.00	540.78	4362.04	1740635.63	14407123.16	39°40'15.4974"N	80°38'37.8391"W	point

WELLPATH COMPOSITION - Ref Wellbore: William Ritchea WTZ 405H AWB Ref Wellpath: William Ritchea WTZ 405H awp Proj: 17194'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
26.00	558.00	OWSG MWD rev2 + HRGM	1 Tally MWD HRGM 17.5" 188' - 558'	William Ritchea WTZ 405H AWB	6/8/2023
558.00	3230.00	OWSG MWD rev2 + HRGM	2 Tally MWD HRGM 12.25" 687' - 3230'	William Ritchea WTZ 405H AWB	6/8/2023
3230.00	17194.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	3 BH ATC MWD HRM Short spacing 8.5" 3359' - 17169'	William Ritchea WTZ 405H AWB	6/8/2023

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