

SOUTHWESTERN ENERGY

Location: Wetzell County, WV
 Slot: Slot #01
 Field: Wetzell
 Well: William Ritchea Wtz 1H
 Facility: William Ritchea Wtz Pad
 Wellbore: William Ritchea Wtz 1H PWB

Plot reference wellbore is William Ritchea Wtz 1H PWB Ex-02
True vertical depths are referenced to Rig on Slot #01 (RKB)
Measured depths are referenced to Rig on Slot #01 (RKB)
North Reference: Grid north
Scale: True distance
Depths are in feet
Created by: thomsnuc on 5/20/2015



Well Profile Data

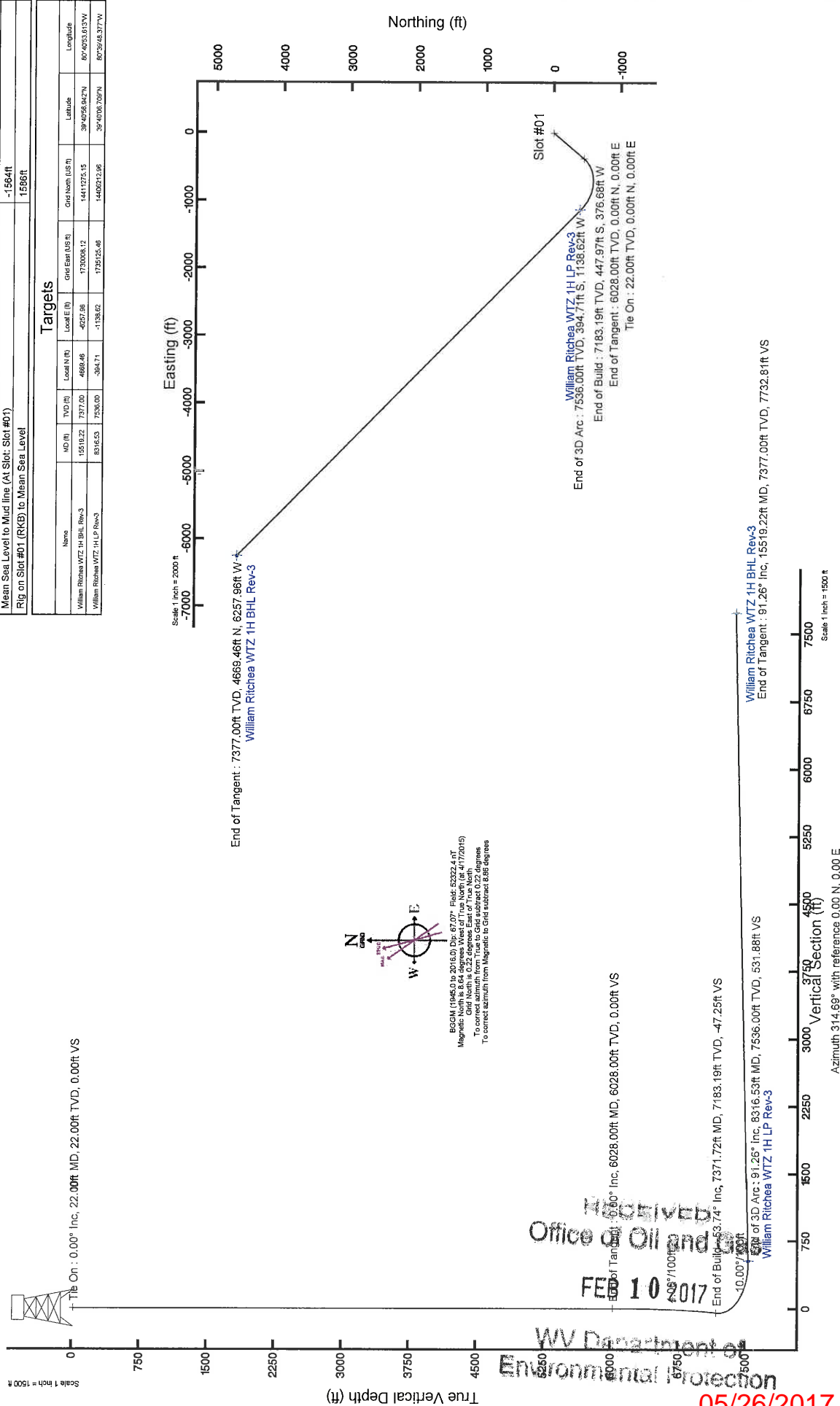
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	22.00	0.000	220.060	22.00	0.00	0.00	0.00	0.00
End of Tangent	6028.00	0.000	220.060	6028.00	0.00	0.00	0.00	0.00
End of Build	7371.72	53.739	220.060	7183.19	-447.97	-376.68	4.00	-47.25
End of 3D Arc	8316.53	91.265	314.690	7536.00	-394.71	-1138.62	10.00	531.88
End of Tangent	15519.22	91.265	314.690	7377.00	4669.46	-8257.96	0.00	7732.81

Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
William Ritchea Wtz Pad	1736263.630	14406607.520	39°40'10.567"N	80°39'33.797"W
Slot	Local E (ft)	Grid North (US ft)	Latitude	Longitude
Slot #01	0.00	1736263.630	39°40'10.567"N	80°39'33.797"W
Rig on Slot #01 (RKB) to Mud line (At Slot: Slot #01)	22ft			
Mean Sea Level to Mud line (At Slot: Slot #01)	-1564ft			
Rig on Slot #01 (RKB) to Mean Sea Level	1586ft			

Targets

Name	MD (ft)	TVD (ft)	Local E (ft)	Local N (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
William Ritchea Wtz 1H BHL Rev-3	15519.22	7377.00	-4669.46	-4027.86	1736263.12	14411275.15	39°40'56.642"N	80°40'53.013"W
William Ritchea Wtz 1H LP Rev-3	8316.53	7536.00	-394.71	-1138.62	1736263.66	14409213.96	39°40'56.769"N	80°39'48.377"W



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05/29/2017

William Ritchea Wtz 1H BHL Rev-3
 End of Tangent: 91.26° Inc, 15519.22ft MD, 7377.00ft TVD, 7732.81ft VS



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot #01
Area	Wetzel County, WV	William Ritchea WTZ 1H
Field	Wetzel	William Ritchea WTZ 1H PWB
Facility	William Ritchea WTZ Pad	

REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	Thomsuzc
Scale	0.999611	Report Generated	5/20/2015 at 3:09:32 PM
Convergence at slot	0.22° East	Database/Source file	W_A_Eastern_US/William_Ritchea_WTZ_1H_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W
Facility Reference Pt			1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on Slot #01 (RKB) to Facility Vertical Datum	22.00ft
Horizontal Reference Pt	Slot	Rig on Slot #01 (RKB) to Mean Sea Level	1586.00ft
Vertical Reference Pt	Rig on Slot #01 (RKB)	Rig on Slot #01 (RKB) to Mud Line at Slot (Slot #01)	22.00ft
MD Reference Pt	Rig on Slot #01 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference Pt	Mean Sea Level	Section Azimuth	314.69°

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #01
Area	Wetzel County, WV	Well	William Ritchea WTZ 1H
Field	Wetzel	Wellbore	William Ritchea WTZ 1H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (160 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]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	220.060	0.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
22.00†	0.000	220.060	22.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
122.00†	0.000	220.060	122.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
222.00†	0.000	220.060	222.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
322.00†	0.000	220.060	322.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
422.00†	0.000	220.060	422.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
522.00†	0.000	220.060	522.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
622.00†	0.000	220.060	622.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
722.00†	0.000	220.060	722.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
822.00†	0.000	220.060	822.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
922.00†	0.000	220.060	922.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1022.00†	0.000	220.060	1022.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1122.00†	0.000	220.060	1122.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1222.00†	0.000	220.060	1222.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1322.00†	0.000	220.060	1322.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1422.00†	0.000	220.060	1422.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1522.00†	0.000	220.060	1522.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1622.00†	0.000	220.060	1622.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1722.00†	0.000	220.060	1722.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1822.00†	0.000	220.060	1822.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
1922.00†	0.000	220.060	1922.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2022.00†	0.000	220.060	2022.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2122.00†	0.000	220.060	2122.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2222.00†	0.000	220.060	2222.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2322.00†	0.000	220.060	2322.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2422.00†	0.000	220.060	2422.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2522.00†	0.000	220.060	2522.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2622.00†	0.000	220.060	2622.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2722.00†	0.000	220.060	2722.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
2822.00†	0.000	220.060	2822.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00

WV Department of Environmental Protection

05/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #01
Area	Wetzel County, WV	Well	William Ritchea WTZ 1H
Field	Wetzel	Wellbore	William Ritchea WTZ 1H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (160 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]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2922.00†	0.000	220.060	2922.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3022.00†	0.000	220.060	3022.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3122.00†	0.000	220.060	3122.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3222.00†	0.000	220.060	3222.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3322.00†	0.000	220.060	3322.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3422.00†	0.000	220.060	3422.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3522.00†	0.000	220.060	3522.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3622.00†	0.000	220.060	3622.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3722.00†	0.000	220.060	3722.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3822.00†	0.000	220.060	3822.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
3922.00†	0.000	220.060	3922.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4022.00†	0.000	220.060	4022.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4122.00†	0.000	220.060	4122.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4222.00†	0.000	220.060	4222.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4322.00†	0.000	220.060	4322.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4422.00†	0.000	220.060	4422.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4522.00†	0.000	220.060	4522.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4622.00†	0.000	220.060	4622.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4722.00†	0.000	220.060	4722.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4822.00†	0.000	220.060	4822.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
4922.00†	0.000	220.060	4922.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5022.00†	0.000	220.060	5022.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5122.00†	0.000	220.060	5122.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5222.00†	0.000	220.060	5222.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5322.00†	0.000	220.060	5322.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5422.00†	0.000	220.060	5422.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5502.00†	0.000	220.060	5522.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5602.00†	0.000	220.060	5622.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5702.00†	0.000	220.060	5722.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
5802.00†	0.000	220.060	5822.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00

Office of Oil and Gas
 05/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #01
SOUTHWESTERN ENERGY	Well	William Ritchea WTZ 1H
Wetzel County, WV	Wellbore	William Ritchea WTZ 1H PWB
Wetzel		
William Ritchea WTZ Pad		

WELLPATH DATA (160 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]	Build Rate [°/100ft]	Turn Rate [°/100ft]
5922.00†	0.000	220.060	5922.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
6022.00†	0.000	220.060	6022.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
6028.00	0.000	220.060	6028.00	0.00	0.00	0.00	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W	0.00	0.000	0.00	0.00	0.00
6122.00†	3.759	220.060	6121.93	-0.25	-2.36	-1.98	1736261.65	14406605.16	39°40'10.544"N	80°39'33.822"W	3.08	220.060	4.00	4.00	0.00
6222.00†	7.759	220.060	6221.41	-1.06	-10.04	-8.44	1736255.19	14406597.49	39°40'10.468"N	80°39'33.905"W	13.11	220.060	4.00	4.00	0.00
6322.00†	11.758	220.060	6319.94	-2.43	-23.01	-19.35	1736244.29	14406584.52	39°40'10.341"N	80°39'34.045"W	30.06	220.060	4.00	4.00	0.00
6422.00†	15.757	220.060	6417.05	-4.35	-41.21	-34.65	1736229.00	14406566.33	39°40'10.161"N	80°39'34.242"W	53.84	220.060	4.00	4.00	0.00
6522.00†	19.756	220.060	6512.27	-6.81	-64.54	-54.27	1736209.38	14406543.00	39°40'09.931"N	80°39'34.494"W	84.33	220.060	4.00	4.00	0.00
6622.00†	23.756	220.060	6605.13	-9.80	-92.91	-78.12	1736185.54	14406514.65	39°40'09.652"N	80°39'34.800"W	121.39	220.060	4.00	4.00	0.00
6722.00†	27.755	220.060	6695.17	-13.31	-126.16	-106.08	1736157.59	14406481.41	39°40'09.324"N	80°39'35.159"W	164.83	220.060	4.00	4.00	0.00
6822.00†	31.754	220.060	6781.97	-17.31	-164.13	-138.02	1736125.67	14406443.45	39°40'08.950"N	80°39'35.570"W	214.45	220.060	4.00	4.00	0.00
6922.00†	35.753	220.060	6865.10	-21.80	-206.65	-173.77	1736089.93	14406400.95	39°40'08.531"N	80°39'36.029"W	270.00	220.060	4.00	4.00	0.00
7022.00†	39.753	220.060	6944.15	-26.74	-253.50	-213.16	1736050.55	14406354.12	39°40'08.070"N	80°39'36.535"W	331.21	220.060	4.00	4.00	0.00
7122.00†	43.752	220.060	7018.74	-32.11	-304.46	-256.01	1736007.72	14406303.18	39°40'07.568"N	80°39'37.085"W	397.79	220.060	4.00	4.00	0.00
7222.00†	47.751	220.060	7088.50	-37.89	-359.27	-302.10	1735961.65	14406248.39	39°40'07.028"N	80°39'37.678"W	469.41	220.060	4.00	4.00	0.00
7322.00†	51.750	220.060	7153.10	-44.06	-417.68	-351.21	1735912.55	14406190.00	39°40'06.453"N	80°39'38.308"W	545.72	220.060	4.00	4.00	0.00
7422.00†	53.750	220.060	7183.19	-47.25	-447.97	-376.68	1735887.10	14406159.73	39°40'06.154"N	80°39'38.635"W	585.29	220.060	4.00	4.00	0.00
7522.00†	53.750	226.296	7212.95	-48.32	-477.51	-404.40	1735859.39	14406130.20	39°40'05.863"N	80°39'38.991"W	625.74	220.261	10.00	0.02	12.40
7622.00†	54.722	238.570	7271.54	-37.37	-526.78	-468.54	1735795.27	14406080.95	39°40'05.379"N	80°39'39.814"W	705.00	221.652	10.00	0.97	12.27
7722.00†	56.892	250.379	7327.87	-9.35	-562.22	-543.02	1735720.83	14406045.52	39°40'05.031"N	80°39'40.768"W	781.64	224.005	10.00	2.17	11.81
7822.00†	60.117	261.489	7380.22	34.89	-582.75	-625.55	1735638.32	14406025.00	39°40'04.831"N	80°39'41.825"W	854.94	227.029	10.00	3.22	11.11
7922.00†	64.200	271.817	7427.01	94.00	-587.75	-713.65	1735550.26	14406020.00	39°40'04.785"N	80°39'42.951"W	924.52	230.525	10.00	4.09	10.33
8022.00†	68.976	281.403	7466.81	166.18	-577.07	-804.62	1735459.32	14406030.67	39°40'04.894"N	80°39'44.114"W	990.16	234.352	10.00	4.77	9.59
8122.00†	74.238	290.366	7498.42	249.26	-551.03	-895.71	1735368.27	14406056.70	39°40'05.155"N	80°39'45.278"W	1051.63	238.401	10.00	5.27	8.96
8222.00†	79.854	298.862	7520.86	340.69	-510.42	-984.15	1735279.86	14406097.29	39°40'05.560"N	80°39'46.407"W	1108.64	242.587	10.00	5.61	8.50
8322.00†	85.674	307.059	7533.47	437.70	-456.48	-1067.25	1735196.79	14406151.21	39°40'06.096"N	80°39'47.467"W	1160.78	246.843	10.00	5.82	8.20
8422.00†	91.265	314.690	7536.00	531.88	-394.71	-1138.62	1735125.46	14406212.96	39°40'06.709"N	80°39'48.377"W	1205.09	250.881	10.00	5.91	8.07
8522.00†	91.265	314.690	7535.88	537.35	-390.86	-1142.51	1735121.57	14406216.81	39°40'06.747"N	80°39'48.426"W	1207.52	251.114	0.00	0.00	0.00
8622.00†	91.265	314.690	7533.67	637.33	-320.55	-1213.58	1735050.52	14406287.09	39°40'07.444"N	80°39'49.332"W	1255.21	255.204	0.00	0.00	0.00
8722.00†	91.265	314.690	7531.46	737.30	-250.24	-1284.66	1734979.47	14406357.37	39°40'08.142"N	80°39'50.237"W	1308.81	258.977	0.00	0.00	0.00

05/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #01
Area	Wetzel County, WV	Well	William Ritchea WTZ 1H
Field	Wetzel	Wellbore	William Ritchea WTZ 1H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (160 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]	Build Rate [°/100ft]	Turn Rate [°/100ft]
8622.00†	91.265	314.690	7529.26	837.28	-179.94	-1355.73	1734908.43	14406427.66	39°40'08.839"N	80°39'51.143"W	1367.62	262.440	0.00	0.00	0.00
8722.00†	91.265	314.690	7527.05	937.25	-109.63	-1426.81	1734837.38	14406497.94	39°40'09.537"N	80°39'52.048"W	1431.02	265.606	0.00	0.00	0.00
8822.00†	91.265	314.690	7524.84	1037.23	-39.32	-1497.89	1734766.33	14406568.22	39°40'10.234"N	80°39'52.954"W	1498.40	268.496	0.00	0.00	0.00
8922.00†	91.265	314.690	7522.63	1137.21	30.99	-1568.96	1734695.28	14406638.50	39°40'10.932"N	80°39'53.859"W	1569.27	271.132	0.00	0.00	0.00
9022.00†	91.265	314.690	7520.43	1237.18	101.30	-1640.04	1734624.24	14406708.78	39°40'11.629"N	80°39'54.765"W	1643.16	273.535	0.00	0.00	0.00
9122.00†	91.265	314.690	7518.22	1337.16	171.61	-1711.11	1734553.19	14406779.06	39°40'12.327"N	80°39'55.671"W	1719.70	275.727	0.00	0.00	0.00
9222.00†	91.265	314.690	7516.01	1437.13	241.92	-1782.19	1734482.14	14406849.35	39°40'13.024"N	80°39'56.576"W	1798.53	277.730	0.00	0.00	0.00
9322.00†	91.265	314.690	7513.80	1537.11	312.23	-1853.26	1734411.09	14406919.63	39°40'13.722"N	80°39'57.482"W	1879.38	279.563	0.00	0.00	0.00
9422.00†	91.265	314.690	7511.60	1637.08	382.54	-1924.34	1734340.05	14406989.91	39°40'14.419"N	80°39'58.387"W	1961.99	281.243	0.00	0.00	0.00
9522.00†	91.265	314.690	7509.39	1737.06	452.85	-1995.41	1734269.00	14407060.19	39°40'15.117"N	80°39'59.293"W	2046.15	282.786	0.00	0.00	0.00
9622.00†	91.265	314.690	7507.18	1837.04	523.16	-2066.49	1734197.95	14407130.47	39°40'15.814"N	80°40'00.198"W	2131.68	284.207	0.00	0.00	0.00
9722.00†	91.265	314.690	7504.97	1937.01	593.47	-2137.56	1734126.90	14407200.76	39°40'16.512"N	80°40'01.104"W	2218.42	285.517	0.00	0.00	0.00
9822.00†	91.265	314.690	7502.77	2036.99	663.78	-2208.64	1734055.85	14407271.04	39°40'17.209"N	80°40'02.010"W	2306.23	286.727	0.00	0.00	0.00
9922.00†	91.265	314.690	7500.56	2136.96	734.09	-2279.72	1733984.81	14407341.32	39°40'17.907"N	80°40'02.915"W	2394.99	287.849	0.00	0.00	0.00
10022.00†	91.265	314.690	7498.35	2236.94	804.40	-2350.79	1733913.76	14407411.60	39°40'18.604"N	80°40'03.821"W	2484.61	288.890	0.00	0.00	0.00
10122.00†	91.265	314.690	7496.14	2336.91	874.71	-2421.87	1733842.71	14407481.88	39°40'19.301"N	80°40'04.727"W	2574.98	289.858	0.00	0.00	0.00
10222.00†	91.265	314.690	7493.94	2436.89	945.02	-2492.94	1733771.66	14407552.17	39°40'19.999"N	80°40'05.632"W	2666.05	290.761	0.00	0.00	0.00
10322.00†	91.265	314.690	7491.73	2536.86	1015.32	-2564.02	1733700.62	14407622.45	39°40'20.696"N	80°40'06.538"W	2757.73	291.603	0.00	0.00	0.00
10422.00†	91.265	314.690	7489.52	2636.84	1085.63	-2635.09	1733629.57	14407692.73	39°40'21.394"N	80°40'07.443"W	2849.97	292.391	0.00	0.00	0.00
10522.00†	91.265	314.690	7487.31	2736.82	1155.94	-2706.17	1733558.52	14407763.01	39°40'22.091"N	80°40'08.349"W	2942.71	293.130	0.00	0.00	0.00
10622.00†	91.265	314.690	7485.11	2836.79	1226.25	-2777.24	1733487.47	14407833.29	39°40'22.789"N	80°40'09.255"W	3035.91	293.823	0.00	0.00	0.00
10722.00†	91.265	314.690	7482.90	2936.77	1296.56	-2848.32	1733416.43	14407903.58	39°40'23.486"N	80°40'10.160"W	3129.54	294.475	0.00	0.00	0.00
10822.00†	91.265	314.690	7480.69	3036.74	1366.87	-2919.39	1733345.38	14407973.86	39°40'24.184"N	80°40'11.066"W	3223.54	295.089	0.00	0.00	0.00
10922.00†	91.265	314.690	7478.48	3136.72	1437.18	-2990.47	1733274.33	14408044.14	39°40'24.881"N	80°40'11.972"W	3317.89	295.668	0.00	0.00	0.00
11022.00†	91.265	314.690	7476.28	3236.69	1507.49	-3061.54	1733203.28	14408114.42	39°40'25.578"N	80°40'12.877"W	3412.56	296.215	0.00	0.00	0.00
11122.00†	91.265	314.690	7474.07	3336.67	1577.80	-3132.62	1733132.24	14408184.70	39°40'26.276"N	80°40'13.783"W	3507.53	296.733	0.00	0.00	0.00
11222.00†	91.265	314.690	7471.86	3436.65	1648.11	-3203.70	1733061.19	14408254.98	39°40'26.973"N	80°40'14.689"W	3602.77	297.223	0.00	0.00	0.00
11322.00†	91.265	314.690	7469.65	3536.62	1718.42	-3274.77	1732990.14	14408325.27	39°40'27.671"N	80°40'15.594"W	3698.25	297.688	0.00	0.00	0.00
11422.00†	91.265	314.690	7467.45	3636.60	1788.73	-3345.85	1732919.09	14408395.55	39°40'28.368"N	80°40'16.500"W	3793.97	298.129	0.00	0.00	0.00
11522.00†	91.265	314.690	7465.24	3736.57	1859.04	-3416.92	1732848.05	14408465.83	39°40'29.066"N	80°40'17.406"W	3889.91	298.549	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #01
Area	Wetzel County, WV	Well	William Ritchea WTZ 1H
Field	Wetzel	Wellbore	William Ritchea WTZ 1H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (160 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]	Build Rate [°/100ft]	Turn Rate [°/100ft]
11622.00†	91.265	314.690	7463.03	3836.55	1929.35	-3488.00	1732777.00	14408536.11	39°40'29.763"N	80°40'18.312"W	3986.04	298.949	0.00	0.00	0.00
11722.00†	91.265	314.690	7460.82	3936.52	1999.66	-3559.07	1732705.95	14408606.39	39°40'30.460"N	80°40'19.217"W	4082.36	299.329	0.00	0.00	0.00
11822.00†	91.265	314.690	7458.62	4036.50	2069.97	-3630.15	1732634.90	14408766.68	39°40'31.158"N	80°40'20.123"W	4178.84	299.692	0.00	0.00	0.00
11922.00†	91.265	314.690	7456.41	4136.47	2140.28	-3701.22	1732563.86	14408746.96	39°40'31.855"N	80°40'21.029"W	4275.49	300.039	0.00	0.00	0.00
12022.00†	91.265	314.690	7454.20	4236.45	2210.58	-3772.30	1732492.81	14408817.24	39°40'32.553"N	80°40'21.934"W	4372.29	300.371	0.00	0.00	0.00
12122.00†	91.265	314.690	7451.99	4336.43	2280.89	-3843.37	1732421.76	14408887.52	39°40'33.250"N	80°40'22.840"W	4469.23	300.687	0.00	0.00	0.00
12222.00†	91.265	314.690	7449.79	4436.40	2351.20	-3914.45	1732350.71	14408957.80	39°40'33.948"N	80°40'23.746"W	4566.30	300.991	0.00	0.00	0.00
12322.00†	91.265	314.690	7447.58	4536.38	2421.51	-3985.52	1732279.67	14409028.09	39°40'34.645"N	80°40'24.652"W	4663.49	301.282	0.00	0.00	0.00
12422.00†	91.265	314.690	7445.37	4636.35	2491.82	-4056.60	1732208.62	14409098.37	39°40'35.342"N	80°40'25.557"W	4760.80	301.561	0.00	0.00	0.00
12522.00†	91.265	314.690	7443.16	4736.33	2562.13	-4127.68	1732137.57	14409168.65	39°40'36.040"N	80°40'26.463"W	4858.21	301.829	0.00	0.00	0.00
12622.00†	91.265	314.690	7440.96	4836.30	2632.44	-4198.75	1732066.52	14409238.93	39°40'36.737"N	80°40'27.369"W	4955.73	302.086	0.00	0.00	0.00
12722.00†	91.265	314.690	7438.75	4936.28	2702.75	-4269.83	1731995.48	14409309.21	39°40'37.435"N	80°40'28.275"W	5053.34	302.333	0.00	0.00	0.00
12822.00†	91.265	314.690	7436.54	5036.26	2773.06	-4340.90	1731924.43	14409379.49	39°40'38.132"N	80°40'29.180"W	5151.05	302.571	0.00	0.00	0.00
12922.00†	91.265	314.690	7434.33	5136.23	2843.37	-4411.98	1731853.38	14409449.78	39°40'38.829"N	80°40'30.086"W	5248.84	302.800	0.00	0.00	0.00
13022.00†	91.265	314.690	7432.13	5236.21	2913.68	-4483.05	1731782.33	14409520.06	39°40'39.527"N	80°40'30.992"W	5346.71	303.021	0.00	0.00	0.00
13122.00†	91.265	314.690	7429.92	5336.18	2983.99	-4554.13	1731711.28	14409590.34	39°40'40.224"N	80°40'31.898"W	5444.66	303.234	0.00	0.00	0.00
13222.00†	91.265	314.690	7427.71	5436.16	3054.30	-4625.20	1731640.24	14409660.62	39°40'40.922"N	80°40'32.803"W	5542.67	303.439	0.00	0.00	0.00
13322.00†	91.265	314.690	7425.50	5536.13	3124.61	-4696.28	1731569.19	14409730.90	39°40'41.619"N	80°40'33.709"W	5640.76	303.637	0.00	0.00	0.00
13422.00†	91.265	314.690	7423.30	5636.11	3194.92	-4767.35	1731498.14	14409801.19	39°40'42.316"N	80°40'34.615"W	5738.92	303.829	0.00	0.00	0.00
13522.00†	91.265	314.690	7421.09	5736.08	3265.23	-4838.43	1731427.09	14409871.47	39°40'43.014"N	80°40'35.521"W	5837.13	304.014	0.00	0.00	0.00
13622.00†	91.265	314.690	7418.88	5836.06	3335.54	-4909.51	1731356.05	14409941.75	39°40'43.711"N	80°40'36.427"W	5935.41	304.192	0.00	0.00	0.00
13722.00†	91.265	314.690	7416.67	5936.04	3405.84	-4980.58	1731285.00	14410012.03	39°40'44.409"N	80°40'37.332"W	6033.74	304.365	0.00	0.00	0.00
13822.00†	91.265	314.690	7414.47	6036.01	3476.15	-5051.66	1731213.95	14410082.31	39°40'45.106"N	80°40'38.238"W	6132.12	304.533	0.00	0.00	0.00
13922.00†	91.265	314.690	7412.26	6135.99	3546.46	-5122.73	1731142.90	14410152.60	39°40'45.803"N	80°40'39.144"W	6230.55	304.695	0.00	0.00	0.00
14022.00†	91.265	314.690	7410.05	6235.96	3616.77	-5193.81	1731071.86	14410222.88	39°40'46.501"N	80°40'40.050"W	6329.03	304.852	0.00	0.00	0.00
14122.00†	91.265	314.690	7407.84	6335.94	3687.08	-5264.88	1731000.81	14410293.16	39°40'47.198"N	80°40'40.956"W	6427.56	305.004	0.00	0.00	0.00
14222.00†	91.265	314.690	7405.64	6435.91	3757.39	-5335.96	1730929.76	14410363.44	39°40'47.895"N	80°40'41.862"W	6526.14	305.152	0.00	0.00	0.00
14322.00†	91.265	314.690	7403.43	6535.89	3827.70	-5407.03	1730858.71	14410433.72	39°40'48.593"N	80°40'42.767"W	6624.75	305.295	0.00	0.00	0.00
14422.00†	91.265	314.690	7401.22	6635.87	3898.01	-5478.11	1730787.67	14410504.00	39°40'49.290"N	80°40'43.673"W	6723.40	305.434	0.00	0.00	0.00
14522.00†	91.265	314.690	7399.01	6735.84	3968.32	-5549.18	1730716.62	14410574.29	39°40'49.988"N	80°40'44.579"W	6822.10	305.569	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot #01
Area	Wetzel County, WV	William Ritchea WTZ 1H
Field	Wetzel	William Ritchea WTZ 1H PWB
Facility	William Ritchea WTZ Pad	

WELLPATH DATA (160 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]	Build Rate [°/100ft]	Turn Rate [°/100ft]
14622.00†	91.265	314.690	7396.81	6835.82	4038.63	-5620.26	1730645.57	14410644.57	39°40'50.685"N	80°40'45.485"W	6920.83	305.700	0.00	0.00	0.00
14722.00†	91.265	314.690	7394.60	6935.79	4108.94	-5691.33	1730574.52	14410714.85	39°40'51.382"N	80°40'46.391"W	7019.59	305.828	0.00	0.00	0.00
14822.00†	91.265	314.690	7392.39	7035.77	4179.25	-5762.41	1730503.48	14410785.13	39°40'52.080"N	80°40'47.297"W	7118.39	305.952	0.00	0.00	0.00
14922.00†	91.265	314.690	7390.18	7135.74	4249.56	-5833.49	1730432.43	14410855.41	39°40'52.777"N	80°40'48.202"W	7217.22	306.072	0.00	0.00	0.00
15022.00†	91.265	314.690	7387.98	7235.72	4319.87	-5904.56	1730361.38	14410925.70	39°40'53.474"N	80°40'49.108"W	7316.08	306.190	0.00	0.00	0.00
15122.00†	91.265	314.690	7385.77	7335.70	4390.18	-5975.64	1730290.33	14410995.98	39°40'54.172"N	80°40'50.014"W	7414.98	306.304	0.00	0.00	0.00
15222.00†	91.265	314.690	7383.56	7435.67	4460.49	-6046.71	1730219.29	14411066.26	39°40'54.869"N	80°40'50.920"W	7513.90	306.415	0.00	0.00	0.00
15322.00†	91.265	314.690	7381.35	7535.65	4530.80	-6117.79	1730148.24	14411136.54	39°40'55.566"N	80°40'51.826"W	7612.85	306.523	0.00	0.00	0.00
15422.00†	91.265	314.690	7379.15	7635.62	4601.10	-6188.86	1730077.19	14411206.82	39°40'56.264"N	80°40'52.732"W	7711.82	306.629	0.00	0.00	0.00
15519.22	91.265	314.690	7377.00 ²	7732.81	4669.46	-6257.96	1730008.12	14411275.15	39°40'56.942"N	80°40'53.613"W	7808.07	306.729	0.00	0.00	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
2) William Ritchea WTZ 1H BHL Rev-3	15519.22	7377.00	4669.46	-6257.96	1730008.12	14411275.15	39°40'56.942"N	80°40'53.613"W	point
1) William Ritchea WTZ 1H LP Rev-3	8316.53	7536.00	-394.71	-1138.62	1735125.46	14406212.96	39°40'06.709"N	80°39'48.377"W	point

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