

SOUTHWESTERN ENERGY

Location: Wetzell County, WV
 Slot: Slot #03
 Well: William Ritchea WTZ 3H
 Facility: William Ritchea WTZ 3H PWB
 Wellbore: William Ritchea WTZ 3H PWB

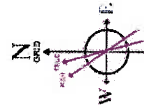
Plot reference wellpath is William Ritchea WTZ 3H PWB Ex-01
 True vertical depths are referenced to Rig on Slot #03 (RKB)
 Measured depths are referenced to Rig on Slot #03 (RKB)
 Rig on Slot #03 (RKB) to Mean Sea Level: 1566 feet
 Mean Sea Level to Mud line (At Slot #03): -1564 feet
 Coordinates are in feet referenced to Slot
 Grid System: NAD83 / UTM Zone 17 North, US feet
 North Reference: Grid north
 Scale: True distance
 Depths are in feet
 Created by: thomsauze on 5/4/2015

Scale 1 inch = 1500 ft

0 750 1500 2250 3000 3750 4500 5250 6000 6750 7500

True Vertical Depth (ft)

Tie On: 0.00° Inc. 22.00ft MD, 22.00ft TVD, 0.00ft VS



BGGM (1946.0 to 2016.0) Dir: 67.07° Field: S2322.4 NT
 Magnetic North is 8.64 degrees West of True North (at 4/17/2015)
 Grid North is 0.22 degrees East of True North
 To convert from Grid North to True North, add 8.86 degrees
 To correct azimuth from Magnetic to Grid subtract 8.86 degrees

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 Office of Oil and Gas
 FEB 10 2017
 WV Department of
 Environmental Protection

End of 3D Arc: 91.41° Inc. 7966.85ft MD, 7556.00ft TVD, 439.22ft VS
 William Ritchea WTZ 3H LP Rev-2

End of Tangent: 0.00° Inc. 6189.00ft MD, 6189.00ft TVD, 0.00ft VS

4.00°/100ft

End of Build: 26.79° Inc. 6857.98ft MD, 6833.87ft TVD, -114.02ft VS

10.00°/100ft

End of 3D Arc: 91.41° Inc. 15566.85ft MD, 7368.86ft TVD, 8036.92ft VS
 William Ritchea WTZ 3H BHL Rev-2

End of Tangent: 0.00° N, 0.00° E

1/20/2017

Well Profile Data

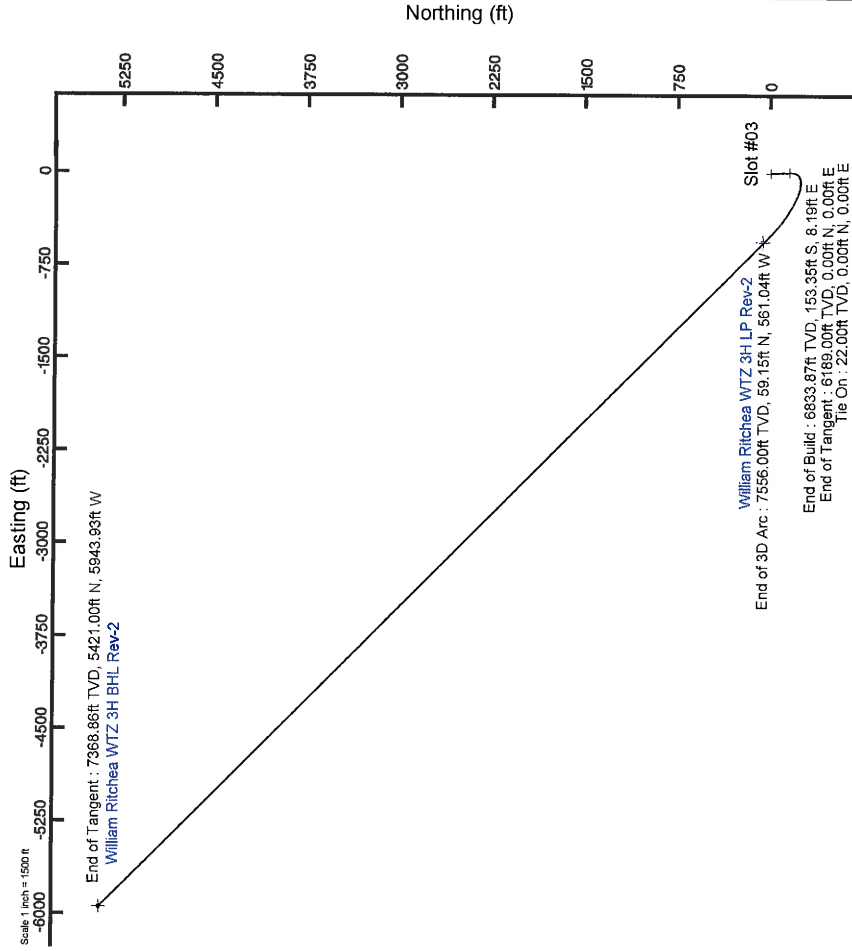
Design Comment	MD (ft)	Inc (°)	AS (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	22.00	0.000	176.944	22.00	0.00	0.00	0.00	0.00
End of Tangent	6189.00	0.000	176.944	6189.00	0.00	0.00	0.00	0.00
End of Build	6857.98	26.789	176.944	6833.87	-153.35	8.19	4.00	-114.02
End of 3D Arc	7966.85	91.411	314.888	7556.00	59.15	-591.04	10.00	439.22
End of Tangent	15566.85	91.411	314.888	7368.86	5421.00	-5943.93	0.00	8036.92

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 N (ft)	Grid East (US ft)	Latitude	Longitude
Slot #03	-1.41	1736277.700	39°40'10.553"N	80°39'33.617"W
Rig on Slot #03 (RKB) to Mud line (At Slot #03)			22ft	
Mean Sea Level to Mud line (At Slot #03)			-1564ft	
Rig on Slot #03 (RKB) to Mean Sea Level			1566ft	

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
William Ritchea WTZ 3H BHL Rev-2	15566.85	7368.86	5421.00	-5943.93	1736263.63	14406607.52	39°40'10.567"N	80°39'33.797"W
William Ritchea WTZ 3H LP Rev-2	7966.85	7556.00	59.15	-591.04	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W



William Ritchea WTZ 3H BHL Rev-2
 End of Tangent: 91.41° Inc. 15566.85ft MD, 7368.86ft TVD, 8036.92ft VS

Scale 1 inch = 1500 ft

0 750 1500 2250 3000 3750 4500 5250 6000 6750 7500 8250

Vertical Section (ft)

Azimuth: 314.89° with reference 0.00 N, 0.00 E

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot #03
Area	Wetzel County, WV	William Ritchea WTZ 3H
Field	Wetzel	William Ritchea WTZ 3H 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	5/4/2015 at 9:55:18 AM
Convergence at slot	0.22° East	Database/Source file	WA_Eastern_US/William_Ritchea_WTZ_3H_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-1.41	14.08	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"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 #03 (RKB) to Facility Vertical Datum	22.00ft
Horizontal Reference Pt	Slot	Rig on Slot #03 (RKB) to Mean Sea Level	1586.00ft
Vertical Reference Pt	Rig on Slot #03 (RKB)	Rig on Slot #03 (RKB) to Mud Line at Slot (Slot #03)	22.00ft
MD Reference Pt	Rig on Slot #03 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference Pt	Mean Sea Level	Section Azimuth	314.89°

SWN
Southwestern Energy
Department of
Well Path Protection
Office of Oil and Gas
IT TO OIL AND GAS
5/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #03
Area	Wetzel County, WV	Well	William Ritchea WTZ 3H
Field	Wetzel	Wellbore	William Ritchea WTZ 3H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (161 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	176.944	0.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
22.00	0.000	176.944	22.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
122.00†	0.000	176.944	122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
222.00†	0.000	176.944	222.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
322.00†	0.000	176.944	322.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
422.00†	0.000	176.944	422.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
522.00†	0.000	176.944	522.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
622.00†	0.000	176.944	622.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
722.00†	0.000	176.944	722.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
822.00†	0.000	176.944	822.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
922.00†	0.000	176.944	922.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1022.00†	0.000	176.944	1022.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1122.00†	0.000	176.944	1122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1222.00†	0.000	176.944	1222.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1322.00†	0.000	176.944	1322.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1422.00†	0.000	176.944	1422.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1522.00†	0.000	176.944	1522.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1622.00†	0.000	176.944	1622.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1722.00†	0.000	176.944	1722.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1822.00†	0.000	176.944	1822.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
1922.00†	0.000	176.944	1922.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2022.00†	0.000	176.944	2022.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2122.00†	0.000	176.944	2122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2222.00†	0.000	176.944	2222.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2322.00†	0.000	176.944	2322.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2422.00†	0.000	176.944	2422.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2522.00†	0.000	176.944	2522.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2622.00†	0.000	176.944	2622.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2752.00†	0.000	176.944	2722.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
2852.00†	0.000	176.944	2822.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00

WV Department of

05/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #03
Area	Wetzel County, WV	Well	William Ritchea WTZ 3H
Field	Wetzel	Wellbore	William Ritchea WTZ 3H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (161 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	176.944	2922.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3022.00†	0.000	176.944	3022.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3122.00†	0.000	176.944	3122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3222.00†	0.000	176.944	3222.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3322.00†	0.000	176.944	3322.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3422.00†	0.000	176.944	3422.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3522.00†	0.000	176.944	3522.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3622.00†	0.000	176.944	3622.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3722.00†	0.000	176.944	3722.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3822.00†	0.000	176.944	3822.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
3922.00†	0.000	176.944	3922.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4022.00†	0.000	176.944	4022.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4122.00†	0.000	176.944	4122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4222.00†	0.000	176.944	4222.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4322.00†	0.000	176.944	4322.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4422.00†	0.000	176.944	4422.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4522.00†	0.000	176.944	4522.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4622.00†	0.000	176.944	4622.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4722.00†	0.000	176.944	4722.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4822.00†	0.000	176.944	4822.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
4922.00†	0.000	176.944	4922.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5022.00†	0.000	176.944	5022.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5122.00†	0.000	176.944	5122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5222.00†	0.000	176.944	5222.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5322.00†	0.000	176.944	5322.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5422.00†	0.000	176.944	5422.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5522.00†	0.000	176.944	5522.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5622.00†	0.000	176.944	5622.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5722.00†	0.000	176.944	5722.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
5822.00†	0.000	176.944	5822.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00

05/26/2017

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Area	Wetzel County, WV	Well	William Ritchea WTZ 3H
Field	Wetzel	Wellbore	William Ritchea WTZ 3H PWB
Facility	William Ritchea WTZ Pad		

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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	176.944	5922.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
6022.00†	0.000	176.944	6022.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
6122.00†	0.000	176.944	6122.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
6189.00	0.000	176.944	6189.00	0.00	0.00	0.00	1736277.70	14406606.11	39°40'10.553"N	80°39'33.617"W	0.00	0.000	0.00	0.00	0.00
6222.00†	1.321	176.944	6222.00	-0.28	-0.38	0.02	1736277.72	14406605.73	39°40'10.549"N	80°39'33.617"W	0.38	176.944	4.00	4.00	0.00
6322.00†	5.326	176.944	6321.81	-4.59	-6.17	0.33	1736278.03	14406599.94	39°40'10.492"N	80°39'33.613"W	6.18	176.944	4.00	4.00	0.00
6422.00†	9.330	176.944	6420.97	-14.06	-18.90	1.01	1736278.71	14406587.21	39°40'10.366"N	80°39'33.605"W	18.93	176.944	4.00	4.00	0.00
6522.00†	13.335	176.944	6519.00	-28.64	-38.52	2.06	1736279.76	14406567.60	39°40'10.172"N	80°39'33.592"W	38.58	176.944	4.00	4.00	0.00
6622.00†	17.339	176.944	6615.42	-48.28	-64.93	3.47	1736281.16	14406541.21	39°40'09.911"N	80°39'33.576"W	65.02	176.944	4.00	4.00	0.00
6722.00†	21.344	176.944	6709.76	-72.87	-97.99	5.23	1736282.93	14406508.15	39°40'09.584"N	80°39'33.555"W	98.13	176.944	4.00	4.00	0.00
6822.00†	25.348	176.944	6801.55	-102.28	-137.56	7.34	1736285.04	14406468.61	39°40'09.193"N	80°39'33.530"W	137.75	176.944	4.00	4.00	0.00
6857.88	26.789	176.944	6833.87	-114.02	-153.35	8.19	1736285.88	14406452.82	39°40'09.037"N	80°39'33.520"W	153.57	176.944	4.00	4.00	0.00
6922.00†	22.758	188.867	6892.02	-132.04	-180.02	7.05	1736284.74	14406426.16	39°40'08.773"N	80°39'33.535"W	180.15	177.759	10.00	-6.30	18.62
7022.00†	19.075	185.209	6985.62	-146.20	-212.56	-5.39	1736272.31	14406393.63	39°40'08.452"N	80°39'33.696"W	212.63	181.452	10.00	-3.68	26.34
7122.00†	20.063	184.523	7080.08	-142.97	-233.15	-30.45	1736247.26	14406373.05	39°40'08.250"N	80°39'34.018"W	235.13	187.441	10.00	0.99	30.02
7222.00†	25.177	182.838	7172.53	-122.47	-241.16	-67.37	1736210.35	14406365.05	39°40'08.172"N	80°39'34.490"W	250.39	195.609	10.00	5.11	22.61
7322.00†	33.522	182.837	7260.17	-85.30	-236.34	-115.04	1736162.71	14406369.86	39°40'08.221"N	80°39'35.099"W	262.85	205.954	10.00	7.35	14.20
7422.00†	40.908	182.837	7340.32	-32.60	-218.85	-172.00	1736105.77	14406387.35	39°40'08.396"N	80°39'35.827"W	278.35	218.165	10.00	8.39	9.17
7522.00†	49.807	182.837	7410.55	34.03	-189.21	-236.52	1736041.27	14406416.97	39°40'08.692"N	80°39'36.651"W	302.89	231.341	10.00	8.90	6.44
7622.00†	58.979	182.837	7468.73	112.57	-148.32	-306.65	1735971.17	14406457.84	39°40'09.098"N	80°39'37.545"W	340.64	244.187	10.00	9.17	4.92
7722.00†	68.309	182.837	7513.10	200.63	-97.43	-380.25	1735897.60	14406508.71	39°40'09.604"N	80°39'38.484"W	392.53	255.628	10.00	9.32	4.04
7822.00†	77.714	182.837	7542.30	295.53	-38.09	-455.08	1735822.80	14406568.04	39°40'10.193"N	80°39'39.438"W	456.67	265.216	10.00	9.41	3.54
7922.00†	87.169	182.837	7555.44	394.39	27.91	-528.88	1735749.03	14406634.01	39°40'10.848"N	80°39'40.379"W	529.61	273.021	10.00	9.45	3.30
8022.00†	91.411	182.837	7556.00†	439.22	59.15	-561.04	1735716.88	14406665.24	39°40'11.158"N	80°39'40.789"W	564.15	276.018	10.00	9.46	3.23
8122.00†	91.411	182.837	7554.64	494.35	98.06	-600.10	1735677.83	14406704.13	39°40'11.544"N	80°39'41.286"W	608.06	279.280	0.00	0.00	0.00
8222.00†	91.411	182.837	7552.18	594.32	168.61	-670.93	1735607.03	14406774.65	39°40'12.244"N	80°39'42.189"W	691.79	284.107	0.00	0.00	0.00
8322.00†	91.411	182.837	7549.72	694.29	239.16	-741.76	1735536.23	14406845.18	39°40'12.944"N	80°39'43.091"W	779.36	287.871	0.00	0.00	0.00
8422.00†	91.411	182.837	7547.25	794.26	309.71	-812.58	1735465.44	14406915.70	39°40'13.644"N	80°39'43.993"W	869.60	290.864	0.00	0.00	0.00
8522.00†	91.411	182.837	7544.79	894.23	380.26	-883.41	1735394.64	14406986.22	39°40'14.344"N	80°39'44.896"W	961.78	293.289	0.00	0.00	0.00
8555.37	91.411	182.837	7542.33	994.20	450.81	-954.24	1735323.84	14407056.74	39°40'15.044"N	80°39'45.798"W	1055.37	295.287	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #03
Area	Wetzel County, WV	Well	William Ritchea WTZ 3H
Field	Wetzel	Wellbore	William Ritchea WTZ 3H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (161 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†	91.411	314.888	7539.87	1094.17	521.36	-1025.07	1735253.04	14407127.27	39°40'15.744"N	80°39'46.700"W	1150.03	296.958	0.00	0.00	0.00
8722.00†	91.411	314.888	7537.41	1194.14	591.91	-1095.89	1735182.24	14407197.79	39°40'16.443"N	80°39'47.603"W	1245.53	298.374	0.00	0.00	0.00
8822.00†	91.411	314.888	7534.94	1294.11	662.46	-1166.72	1735111.44	14407268.31	39°40'17.143"N	80°39'48.505"W	1341.68	299.588	0.00	0.00	0.00
8922.00†	91.411	314.888	7532.48	1394.08	733.01	-1237.55	1735040.64	14407338.84	39°40'17.843"N	80°39'49.408"W	1438.34	300.639	0.00	0.00	0.00
9022.00†	91.411	314.888	7530.02	1494.05	803.56	-1308.38	1734969.84	14407409.36	39°40'18.543"N	80°39'50.310"W	1535.44	301.557	0.00	0.00	0.00
9122.00†	91.411	314.888	7527.56	1594.02	874.12	-1379.20	1734899.04	14407479.88	39°40'19.243"N	80°39'51.212"W	1632.87	302.366	0.00	0.00	0.00
9222.00†	91.411	314.888	7525.09	1693.99	944.67	-1450.03	1734828.24	14407550.41	39°40'19.943"N	80°39'52.115"W	1730.60	303.083	0.00	0.00	0.00
9322.00†	91.411	314.888	7522.63	1793.96	1015.22	-1520.86	1734757.44	14407620.93	39°40'20.643"N	80°39'53.017"W	1828.57	303.724	0.00	0.00	0.00
9422.00†	91.411	314.888	7520.17	1893.93	1085.77	-1591.69	1734686.64	14407691.45	39°40'21.342"N	80°39'53.920"W	1926.75	304.300	0.00	0.00	0.00
9522.00†	91.411	314.888	7517.71	1993.90	1156.32	-1662.51	1734615.84	14407761.98	39°40'22.042"N	80°39'54.822"W	2025.10	304.820	0.00	0.00	0.00
9622.00†	91.411	314.888	7515.24	2093.87	1226.87	-1733.34	1734545.04	14407832.50	39°40'22.742"N	80°39'55.725"W	2123.60	305.291	0.00	0.00	0.00
9722.00†	91.411	314.888	7512.78	2193.84	1297.42	-1804.17	1734474.24	14407903.02	39°40'23.442"N	80°39'56.627"W	2222.23	305.721	0.00	0.00	0.00
9822.00†	91.411	314.888	7510.32	2293.81	1367.97	-1875.00	1734403.44	14407973.54	39°40'24.142"N	80°39'57.529"W	2320.98	306.114	0.00	0.00	0.00
9922.00†	91.411	314.888	7507.86	2393.78	1438.52	-1945.82	1734332.64	14408044.07	39°40'24.842"N	80°39'58.432"W	2419.83	306.475	0.00	0.00	0.00
10022.00†	91.411	314.888	7505.39	2493.75	1509.07	-2016.65	1734261.84	14408114.59	39°40'25.541"N	80°39'59.334"W	2518.76	306.808	0.00	0.00	0.00
10122.00†	91.411	314.888	7502.93	2593.72	1579.62	-2087.48	1734191.04	14408185.11	39°40'26.241"N	80°40'00.237"W	2617.78	307.115	0.00	0.00	0.00
10222.00†	91.411	314.888	7500.47	2693.69	1650.17	-2158.31	1734120.24	14408255.64	39°40'26.941"N	80°40'01.139"W	2716.86	307.400	0.00	0.00	0.00
10322.00†	91.411	314.888	7498.01	2793.66	1720.72	-2229.13	1734049.44	14408326.16	39°40'27.641"N	80°40'02.042"W	2816.01	307.665	0.00	0.00	0.00
10422.00†	91.411	314.888	7495.55	2893.63	1791.27	-2299.96	1733978.64	14408396.68	39°40'28.341"N	80°40'02.944"W	2915.22	307.912	0.00	0.00	0.00
10522.00†	91.411	314.888	7493.08	2993.59	1861.82	-2370.79	1733907.84	14408467.21	39°40'29.041"N	80°40'03.847"W	3014.47	308.143	0.00	0.00	0.00
10622.00†	91.411	314.888	7490.62	3093.56	1932.38	-2441.62	1733837.04	14408537.73	39°40'29.741"N	80°40'04.749"W	3113.77	308.359	0.00	0.00	0.00
10722.00†	91.411	314.888	7488.16	3193.53	2002.93	-2512.44	1733766.24	14408608.25	39°40'30.440"N	80°40'05.652"W	3213.11	308.562	0.00	0.00	0.00
10822.00†	91.411	314.888	7485.70	3293.50	2073.48	-2583.27	1733695.44	14408678.77	39°40'31.140"N	80°40'06.554"W	3312.49	308.752	0.00	0.00	0.00
10922.00†	91.411	314.888	7483.23	3393.47	2144.03	-2654.10	1733624.64	14408749.30	39°40'31.840"N	80°40'07.457"W	3411.90	308.932	0.00	0.00	0.00
11022.00†	91.411	314.888	7480.77	3493.44	2214.58	-2724.93	1733553.84	14408819.82	39°40'32.540"N	80°40'08.359"W	3511.35	309.101	0.00	0.00	0.00
11122.00†	91.411	314.888	7478.31	3593.41	2285.13	-2795.75	1733483.04	14408890.34	39°40'33.240"N	80°40'09.262"W	3610.82	309.261	0.00	0.00	0.00
11222.00†	91.411	314.888	7475.85	3693.38	2355.68	-2866.58	1733412.24	14408960.87	39°40'33.939"N	80°40'10.164"W	3710.33	309.412	0.00	0.00	0.00
11322.00†	91.411	314.888	7473.38	3793.35	2426.23	-2937.41	1733341.44	14409031.39	39°40'34.639"N	80°40'11.067"W	3809.85	309.556	0.00	0.00	0.00
11422.00†	91.411	314.888	7470.92	3893.32	2496.78	-3008.24	1733270.64	14409101.91	39°40'35.339"N	80°40'11.969"W	3909.40	309.692	0.00	0.00	0.00
11522.00†	91.411	314.888	7468.46	3993.29	2567.33	-3079.06	1733199.84	14409172.44	39°40'36.039"N	80°40'12.872"W	4008.97	309.821	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #03
Area	Wetzel County, WV	Well	William Ritchea WTZ 3H
Field	Wetzel	Wellbore	William Ritchea WTZ 3H PWB
Facility	William Ritchea WTZ Pad		

WELLPATH DATA (161 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†	91.411	314.888	7466.00	4093.26	2637.88	-3149.89	1733129.04	14409242.96	39°40'36.739"N	80°40'13.774"W	4108.56	309.945	0.00	0.00	0.00
11722.00†	91.411	314.888	7463.53	4193.23	2708.43	-3220.72	1733058.24	14409313.48	39°40'37.439"N	80°40'14.677"W	4208.16	310.062	0.00	0.00	0.00
11822.00†	91.411	314.888	7461.07	4293.20	2778.98	-3291.55	1732987.44	14409384.01	39°40'38.138"N	80°40'15.579"W	4307.79	310.174	0.00	0.00	0.00
11922.00†	91.411	314.888	7458.61	4393.17	2849.53	-3362.37	1732916.64	14409454.53	39°40'38.838"N	80°40'16.482"W	4407.43	310.281	0.00	0.00	0.00
12022.00†	91.411	314.888	7456.15	4493.14	2920.08	-3433.20	1732845.84	14409525.05	39°40'39.538"N	80°40'17.384"W	4507.08	310.383	0.00	0.00	0.00
12122.00†	91.411	314.888	7453.68	4593.11	2990.64	-3504.03	1732775.04	14409595.57	39°40'40.238"N	80°40'18.287"W	4606.75	310.480	0.00	0.00	0.00
12222.00†	91.411	314.888	7451.22	4693.08	3061.19	-3574.86	1732704.24	14409666.10	39°40'40.938"N	80°40'19.190"W	4706.43	310.574	0.00	0.00	0.00
12322.00†	91.411	314.888	7448.76	4793.05	3131.74	-3645.68	1732633.44	14409736.62	39°40'41.637"N	80°40'20.092"W	4806.12	310.663	0.00	0.00	0.00
12422.00†	91.411	314.888	7446.30	4893.02	3202.29	-3716.51	1732562.64	14409807.14	39°40'42.337"N	80°40'20.995"W	4905.82	310.749	0.00	0.00	0.00
12522.00†	91.411	314.888	7443.84	4992.99	3272.84	-3787.34	1732491.84	14409877.67	39°40'43.037"N	80°40'21.897"W	5005.54	310.832	0.00	0.00	0.00
12622.00†	91.411	314.888	7441.37	5092.96	3343.39	-3858.17	1732421.04	14409948.19	39°40'43.737"N	80°40'22.800"W	5105.26	310.911	0.00	0.00	0.00
12722.00†	91.411	314.888	7438.91	5192.93	3413.94	-3928.99	1732350.24	14410018.71	39°40'44.436"N	80°40'23.702"W	5205.00	310.988	0.00	0.00	0.00
12822.00†	91.411	314.888	7436.45	5292.90	3484.49	-3999.82	1732279.44	14410089.24	39°40'45.136"N	80°40'24.605"W	5304.74	311.061	0.00	0.00	0.00
12922.00†	91.411	314.888	7433.99	5392.87	3555.04	-4070.65	1732208.64	14410159.76	39°40'45.836"N	80°40'25.508"W	5404.49	311.132	0.00	0.00	0.00
13022.00†	91.411	314.888	7431.52	5492.84	3625.59	-4141.48	1732137.84	14410230.28	39°40'46.536"N	80°40'26.410"W	5504.25	311.200	0.00	0.00	0.00
13122.00†	91.411	314.888	7429.06	5592.81	3696.14	-4212.30	1732067.04	14410300.81	39°40'47.236"N	80°40'27.313"W	5604.01	311.266	0.00	0.00	0.00
13222.00†	91.411	314.888	7426.60	5692.78	3766.69	-4283.13	1731996.24	14410371.33	39°40'47.935"N	80°40'28.215"W	5703.79	311.329	0.00	0.00	0.00
13322.00†	91.411	314.888	7424.14	5792.75	3837.24	-4353.96	1731925.45	14410441.85	39°40'48.635"N	80°40'29.118"W	5803.57	311.390	0.00	0.00	0.00
13422.00†	91.411	314.888	7421.67	5892.72	3907.79	-4424.79	1731854.65	14410512.37	39°40'49.335"N	80°40'30.021"W	5903.35	311.450	0.00	0.00	0.00
13522.00†	91.411	314.888	7419.21	5992.69	3978.34	-4495.61	1731783.85	14410582.90	39°40'50.035"N	80°40'30.923"W	6003.15	311.507	0.00	0.00	0.00
13622.00†	91.411	314.888	7416.75	6092.65	4048.90	-4566.44	1731713.05	14410653.42	39°40'50.734"N	80°40'31.826"W	6102.95	311.562	0.00	0.00	0.00
13722.00†	91.411	314.888	7414.29	6192.62	4119.45	-4637.27	1731642.25	14410723.94	39°40'51.434"N	80°40'32.729"W	6202.75	311.616	0.00	0.00	0.00
13822.00†	91.411	314.888	7411.82	6292.59	4190.00	-4708.10	1731571.45	14410794.47	39°40'52.134"N	80°40'33.631"W	6302.56	311.668	0.00	0.00	0.00
13922.00†	91.411	314.888	7409.36	6392.56	4260.55	-4778.92	1731500.65	14410864.99	39°40'52.834"N	80°40'34.534"W	6402.37	311.718	0.00	0.00	0.00
14022.00†	91.411	314.888	7406.90	6492.53	4331.10	-4849.75	1731429.85	14410935.51	39°40'53.534"N	80°40'35.437"W	6502.19	311.767	0.00	0.00	0.00
14122.00†	91.411	314.888	7404.44	6592.50	4401.65	-4920.58	1731359.05	14411006.04	39°40'54.233"N	80°40'36.339"W	6602.02	311.814	0.00	0.00	0.00
14222.00†	91.411	314.888	7401.98	6692.47	4472.20	-4991.41	1731288.25	14411076.56	39°40'54.933"N	80°40'37.242"W	6701.84	311.860	0.00	0.00	0.00
14322.00†	91.411	314.888	7399.51	6792.44	4542.75	-5062.23	1731217.45	14411147.08	39°40'55.633"N	80°40'38.144"W	6801.68	311.904	0.00	0.00	0.00
14422.00†	91.411	314.888	7397.05	6892.41	4613.30	-5133.06	1731146.65	14411217.60	39°40'56.333"N	80°40'39.047"W	6901.51	311.947	0.00	0.00	0.00
14522.00†	91.411	314.888	7394.59	6992.38	4683.85	-5203.89	1731075.85	14411288.13	39°40'57.032"N	80°40'39.950"W	7001.35	311.989	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot #03
Area	Wetzel County, WV	William Ritchea WTZ 3H
Field	Wetzel	William Ritchea WTZ 3H PWB
Facility	William Ritchea WTZ Pad	

WELLPATH DATA (161 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†	91.411	314.888	7392.13	7092.35	4754.40	-5274.72	1731005.05	14411358.65	39°40'57.732"N	80°40'40.853"W	7101.20	312.030	0.00	0.00	0.00
14722.00†	91.411	314.888	7389.66	7192.32	4824.95	-5345.54	1730934.25	14411429.17	39°40'58.432"N	80°40'41.755"W	7201.04	312.070	0.00	0.00	0.00
14822.00†	91.411	314.888	7387.20	7292.29	4895.50	-5416.37	1730863.45	14411499.70	39°40'59.132"N	80°40'42.658"W	7300.89	312.108	0.00	0.00	0.00
14922.00†	91.411	314.888	7384.74	7392.26	4966.05	-5487.20	1730792.65	14411570.22	39°40'59.831"N	80°40'43.561"W	7400.75	312.146	0.00	0.00	0.00
15022.00†	91.411	314.888	7382.28	7492.23	5036.61	-5558.03	1730721.85	14411640.74	39°41'00.531"N	80°40'44.463"W	7500.60	312.182	0.00	0.00	0.00
15122.00†	91.411	314.888	7379.81	7592.20	5107.16	-5628.85	1730651.05	14411711.27	39°41'01.231"N	80°40'45.366"W	7600.46	312.218	0.00	0.00	0.00
15222.00†	91.411	314.888	7377.35	7692.17	5177.71	-5699.68	1730580.25	14411781.79	39°41'01.931"N	80°40'46.269"W	7700.33	312.253	0.00	0.00	0.00
15322.00†	91.411	314.888	7374.89	7792.14	5248.26	-5770.51	1730509.45	14411852.31	39°41'02.630"N	80°40'47.171"W	7800.19	312.286	0.00	0.00	0.00
15422.00†	91.411	314.888	7372.43	7892.11	5318.81	-5841.34	1730438.65	14411922.84	39°41'03.330"N	80°40'48.074"W	7900.06	312.319	0.00	0.00	0.00
15522.00†	91.411	314.888	7369.96	7992.08	5389.36	-5912.16	1730367.85	14411993.36	39°41'04.030"N	80°40'48.977"W	7999.93	312.351	0.00	0.00	0.00
15566.85	91.411	314.888	7368.86 ²	8036.92	5421.00	-5943.93	1730336.09	14412024.99	39°41'04.344"N	80°40'49.382"W	8044.73	312.366	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 3H PWB Rev-2	15566.85	7368.86	5421.00	-5943.93	1730336.09	14412024.99	39°41'04.344"N	80°40'49.382"W	point
1) William Ritchea WTZ 3H PWB Rev-2	7966.85	7556.00	59.15	-561.04	1735716.88	14406665.24	39°40'11.158"N	80°39'40.789"W	point

SURFACE PROGRAM DATA

Ref Wellbore: William Ritchea WTZ 3H PWB	Ref Wellpath: William Ritchea WTZ 3H PWP Ex-01
Positional Uncertainty Model	Log Name/Comment
22.00	15566.85 NaviTrak (Standard)
	William Ritchea WTZ 3H PWB