



SOUTHWESTERN ENERGY
 RIDGETOP LAND VENTURES WTZ 3H
 WETZEL CO, WV
 PVA

Received
 Office of Oil & Gas
 NOV 20 2015

Plan Data for 3H

Plan Point Information:

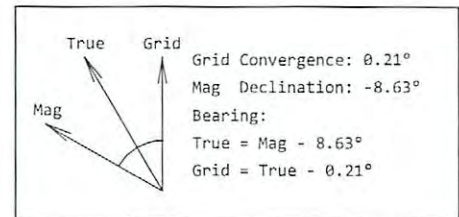
DogLeg	Severity	Unit: %/100.00ft	Position offsets from Slot centre						
MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS	Build	Turn
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(DLSU)	(DLSU)	(DLSU)
3937.00	2.80	182.36	3934.37	12.81	0.10	8.15	0.35	-0.33	-2.20
4000.00	2.80	182.36	3997.29	9.73	-0.02	6.27	0.00	0.00	0.00
4344.96	15.34	130.05	4337.55	-28.22	34.72	-44.74	4.00	3.63	-15.17
6579.36	15.34	130.05	6492.39	-408.43	487.09	-635.66	0.00	0.00	0.00
7896.05	90.00	310.01	7398.00	35.52	-42.04	55.04	8.00	5.67	13.67
12629.75	90.00	310.01	7398.00	3078.92	-3667.73	4788.74	0.00	0.00	0.00

Plan Data for 3H

Target Set Information:
 Name: RIDGETOP 3H TARGETS

Position offsets from Slot centre

Name	TVD	+N/-S	+E/-W	Northing	Easting	Lat	Long
	(USft)	(USft)	(USft)	(USft)	(USft)	(°/'/'")	(°/'/'")
3H LP	7398.00	460.46	-548.56	14405697.50	1731814.78	39°40'1.7"	-80°40'30.8"
3H LP-B	7398.00	35.52	-42.04	14405272.56	1732321.30	39°39'57.5"	-80°40'24.3"
3H PBHL	7398.00	3078.93	-3667.73	14408315.97	1728695.61	39°40'27.7"	-80°41'10.5"



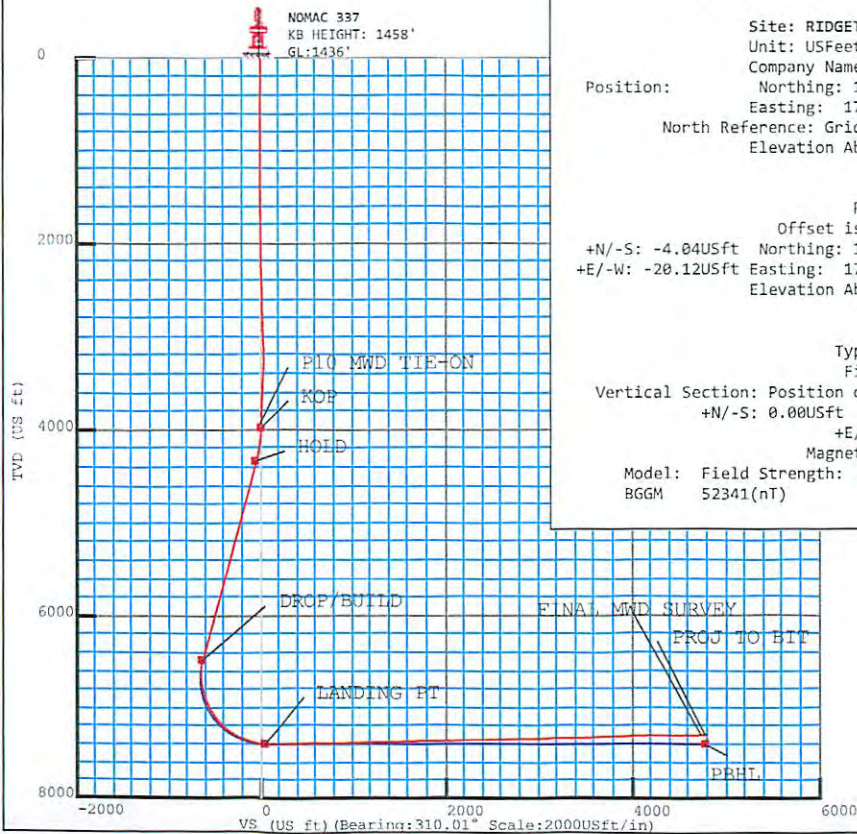
Plan Data for 3H

Field: SOUTHWESTERN_WETZEL CO, WV UTM NAD 83 (17N)
 Map Unit: USft Vertical Reference Datum (VRD): Mean Sea Level
 Projected Coordinate System: NAD83 / UTM zone 17N

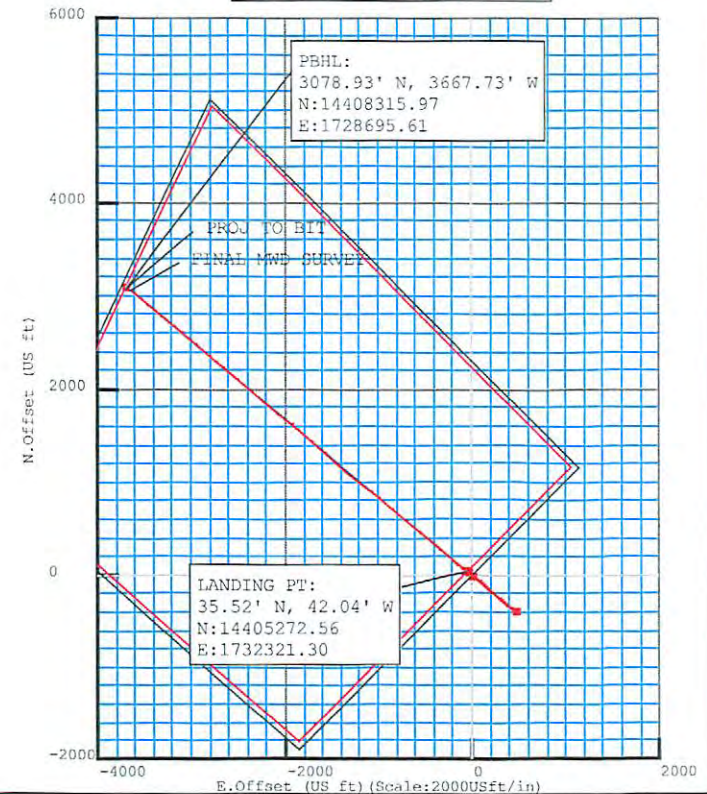
Site: RIDGETOP LAND VENTURES WTZ
 Unit: USFeet TVD Reference:
 Company Name: SOUTHWESTERN ENERGY
 Position: Northing: 14405241.00USft Latitude: 39°39'57.2"
 Easting: 1732383.46USft Longitude: -80°40'23.5"
 North Reference: Grid Grid Convergence: 0.21°
 Elevation Above VRD: 1436.00USft

Slot: 3H
 Position:
 Offset is from Site centre
 +N/-S: -4.04USft Northing: 14405237.04USft Latitude: 39°39'57.2"
 +E/-W: -20.12USft Easting: 1732363.34USft Longitude: -80°40'23.8"
 Elevation Above VRD: 1436.00USft

Well: 3H
 Type: Main-Well
 File Number:
 Vertical Section: Position offset of origin from Slot centre:
 +N/-S: 0.00USft Azimuth: 310.01°
 +E/-W: 0.00USft
 Magnetic Parameters:
 Model: Field Strength: Declination: Dip: Date:
 BGGM 52341(nT) -8.63° 67.07° 2015-03-30



VERTICAL SECTION AZM: 310.01



5D Survey Report

SOUTHWESTERN ENERGY

Field Name: *SOUTHWESTERN_WETZEL CO, WV UTM NAD 83 (17N)*
Site Name: *RIDGETOP LAND VENTURES WTZ*
Well Name: *3H*
Survey: *Definitive Survey*

19 May 2015

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NOV 20 2015



Survey report for 3H

Field Name	Map Units : US ft		Company Name : SOUTHWESTERN ENERGY	
SOUTHWESTERN_WETZ EL CO, WV UTM NAD 83 (17N)	Vertical Reference Datum (VRD) : Mean Sea Level			
	Projected Coordinate System : NAD83 / UTM zone 17N			
	Comment :			
Site Name	Units : US ft	North Reference : Grid	Convergence Angle : 0.21	
RIDGETOP LAND VENTURES WTZ	Position	Northing : 14405241.08 US ft	Latitude : 39.665889	
		Easting : 1732383.46 US ft	Longitude : -80.673194	
	Elevation above Mean Sea Level: 1436.00 US ft			
Comment :				
Slot Name	Position (Offsets relative to Site Centre)			
3H	+N / -S : -4.04 US ft	Northing : 14405237.04 US ft	Latitude : 39.665878	
	+E / -W : -20.12 US ft	Easting : 1732363.34 US ft	Longitude : -80.673266	
	Slot TVD Reference : Ground Elevation			
Elevation above Mean Sea Level : 1436.00 US ft				
Comment :				
Well Name	Type : Main well	UWI :		
3H	Rig Height <i>Drill Floor</i> : 22.00 US ft	Comment :		
	Relative to Mean Sea Level: 1458.00 US ft	Closure Azimuth : 310.013°		
	Closure Distance : 4788.89 US ft			
Vertical Section (Position of Origin Relative to Slot)				
	+N / -S : 0.00 US ft	+E / -W : 0.00 US ft	Az : 310.01°	

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5D Survey Report

Target Set

Name : RIDGETOP 3H TARGETS **Number of Targets :** 3

Comment :

TargetName: 3H LP Shape: Cuboid	Position (Relative to Slot centre) +N / -S : 460.46US ft Northing : 14405697.50 US ft Latitude : 39°40'1.732904" +E / -W : -548.56 US ft Easting : 1731814.78US ft Longitude : -80°40'30.753750"
	TVD (Drill Floor) : 7398.00 US ft Orientation Azimuth : 0.00° Inclination : 0.00° Dimensions Length : 20.00 US ft Breadth : 20.00 US ft Height : 20.00 US ft
TargetName: 3H LP-B Shape: Cuboid	Position (Relative to Slot centre) +N / -S : 35.52US ft Northing : 14405272.56 US ft Latitude : 39°39'57.513476" +E / -W : -42.04 US ft Easting : 1732321.30US ft Longitude : -80°40'24.293772"
	TVD (Drill Floor) : 7398.00 US ft Orientation Azimuth : 0.00° Inclination : 0.00° Dimensions Length : 20.00 US ft Breadth : 20.00 US ft Height : 20.00 US ft
TargetName: 3H PBHL Shape: Cuboid	Position (Relative to Slot centre) +N / -S : 3078.93US ft Northing : 14408315.97 US ft Latitude : 39°40'27.730596" +E / -W : -3667.73 US ft Easting : 1728695.61US ft Longitude : -80°41'10.539276"
	TVD (Drill Floor) : 7398.00 US ft Orientation Azimuth : 0.00° Inclination : 0.00° Dimensions Length : 20.00 US ft Breadth : 20.00 US ft Height : 20.00 US ft

Survey Name :Definitive Survey

Date : 16/Mar/2015 **Survey Tool :** **Comment :** **Company :**

Magnetic Model

Model Name: Default **Date:** 19/Feb/2015 **Field Strength:** 50000.0 nT **Declination:** 0.00° **Dip:** 0.00°

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5D Survey Report NOV 20 2015

Survey Tool Ranges			
Name	Start MD (us ft)	End MD (us ft)	Source Survey
EMS	0.00	781.00	MSS
MWD	781.00	12607.00	WFT MWD

Well path created using minimum curvature

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	14405237	1732363.	0.00	0.00	0.00	0.00	0.00	0.00	
							.04	34							
218.00	1.20	71.66	217.98	0.72	2.17	-1.20	14405237	1732365.	0.55	0.55	71.66	218.00	-0.00	0.00	
							.76	51							
308.00	0.60	211.36	307.98	0.61	2.82	-1.76	14405237	1732366.	1.89	-0.67	166.82	90.00	-0.00	0.00	
							.65	16							
406.00	0.70	150.26	405.97	-0.35	2.85	-2.40	14405236	1732366.	0.68	0.10	246.88	98.00	-0.00	0.00	
							.69	19							
501.00	0.70	162.76	500.97	-1.40	3.31	-3.43	14405235	1732366.	0.16	0.00	96.25	95.00	-0.00	0.00	
							.64	65							
601.00	0.80	233.96	600.96	-2.40	2.92	-3.78	14405234	1732366.	0.88	0.10	120.28	100.00	-0.00	0.00	
							.64	26							
687.00	0.50	144.26	686.96	-3.06	2.66	-4.00	14405233	1732366.	1.09	-0.35	212.09	86.00	-0.00	0.00	
							.98	00							
781.00	0.60	108.06	780.95	-3.54	3.36	-4.85	14405233	1732366.	0.38	0.11	267.44	94.00	-0.00	0.00	
							.50	70							
883.00	0.27	332.65	882.95	-3.49	3.76	-5.13	14405233	1732367.	0.80	-0.32	193.46	102.00	-0.00	0.00	
							.55	10							
978.00	0.07	10.49	977.95	-3.24	3.67	-4.89	14405233	1732367.	0.23	-0.21	168.69	95.00	-0.00	0.00	
							.80	01							
1073.00	0.25	313.92	1072.95	-3.04	3.53	-4.66	14405234	1732366.	0.23	0.19	287.98	95.00	-0.00	0.00	
							.00	87							
1168.00	0.17	19.56	1167.95	-2.76	3.43	-4.40	14405234	1732366.	0.25	-0.08	139.27	95.00	-0.00	0.00	
							.28	77							
1263.00	0.39	0.70	1262.95	-2.30	3.48	-4.15	14405234	1732366.	0.25	0.23	327.65	95.00	-0.00	0.00	
							.74	82							
1357.00	0.45	19.76	1356.94	-1.64	3.61	-3.82	14405235	1732366.	0.16	0.06	76.48	94.00	-0.00	0.00	
							.40	95							
1452.00	0.56	19.95	1451.94	-0.85	3.89	-3.53	14405236	1732367.	0.12	0.12	0.97	95.00	-0.00	0.00	
							.19	23							

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
1547.00	0.49	354.01	1546.94	-0.01	4.01	-3.08	14405237 .03	1732367. 35	0.26	-0.07	240.89	95.00	-0.00	0.00	
1642.00	0.74	14.51	1641.93	0.99	4.12	-2.52	14405238 .03	1732367. 46	0.35	0.26	51.91	95.00	-0.00	0.00	
1737.00	0.97	3.58	1736.92	2.39	4.32	-1.78	14405239 .43	1732367. 66	0.30	0.24	319.11	95.00	-0.00	0.00	
1832.00	1.11	355.69	1831.91	4.11	4.30	-0.66	14405241 .15	1732367. 64	0.21	0.15	310.36	95.00	-0.00	0.00	
1927.00	1.15	6.68	1926.89	5.97	4.35	0.51	14405243 .01	1732367. 69	0.23	0.04	85.07	95.00	-0.00	0.00	
2023.00	1.60	7.63	2022.86	8.26	4.64	1.76	14405245 .30	1732367. 98	0.47	0.47	3.37	96.00	-0.00	0.00	
2118.00	1.75	6.35	2117.82	11.01	4.97	3.27	14405248 .05	1732368. 31	0.16	0.16	345.35	95.00	-0.00	0.00	
2212.00	1.83	7.13	2211.77	13.93	5.32	4.88	14405250 .97	1732368. 66	0.09	0.09	17.33	94.00	-0.00	0.00	
2307.00	2.17	3.87	2306.71	17.23	5.63	6.77	14405254 .27	1732368. 97	0.38	0.36	339.86	95.00	-0.00	0.00	
2402.00	2.40	353.33	2401.64	21.00	5.52	9.27	14405258 .04	1732368. 86	0.50	0.24	293.36	95.00	-0.00	0.00	
2497.00	2.83	353.31	2496.54	25.30	5.01	12.43	14405262 .34	1732368. 35	0.45	0.45	359.87	95.00	-0.00	0.00	
2592.00	2.64	358.23	2591.43	29.82	4.67	15.59	14405266 .86	1732368. 01	0.32	-0.20	131.42	95.00	-0.00	0.00	
2687.00	2.31	358.01	2686.34	33.92	4.54	18.33	14405270 .96	1732367. 88	0.35	-0.35	181.54	95.00	-0.00	0.00	
2782.00	2.47	2.73	2781.26	37.88	4.57	20.85	14405274 .92	1732367. 91	0.27	0.17	53.27	95.00	-0.00	0.00	
2877.00	2.74	356.72	2876.16	42.19	4.54	23.65	14405279 .23	1732367. 88	0.40	0.28	311.64	95.00	-0.00	0.00	
2918.00	2.73	352.69	2917.12	44.14	4.36	25.04	14405281 .18	1732367. 70	0.47	-0.02	265.01	41.00	-0.00	0.00	
3090.00	3.10	349.72	3088.89	52.77	3.01	31.63	14405289 .81	1732366. 35	0.23	0.22	336.31	172.00	-0.00	0.00	
3185.00	1.07	334.67	3183.83	56.10	2.17	34.41	14405293 .14	1732365. 51	2.20	-2.14	187.66	95.00	-0.00	0.00	
3280.00	1.61	186.00	3278.82	61.65	3.65	34.47	14405292 .62	1732364. 99	2.72	0.57	198.90	95.00	-0.00	0.00	

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Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
3375.00	4.29	180.13	3373.68	50.70	1.50	31.44	14405287 .74	1732364. 84	2.84	2.82	350.63	95.00	0.00	0.00	
3470.00	4.84	179.72	3468.38	43.14	1.51	26.57	14405280 .18	1732364. 85	0.58	0.58	356.40	95.00	-0.00	0.00	
3565.00	4.35	181.89	3563.07	35.53	1.41	21.76	14405272 .57	1732364. 75	0.55	-0.52	161.55	95.00	0.00	0.00	
3660.00	3.85	182.87	3657.83	28.74	1.14	17.61	14405265 .78	1732364. 48	0.53	-0.53	172.51	95.00	-0.00	-0.00	
3755.00	3.47	184.17	3752.64	22.69	0.77	14.00	14405259 .73	1732364. 11	0.41	-0.40	168.33	95.00	-0.00	-0.00	
3850.00	3.09	184.27	3847.48	17.27	0.37	10.82	14405254 .31	1732363. 71	0.40	-0.40	179.19	95.00	-0.00	-0.00	
3937.00	2.80	182.36	3934.37	12.81	0.10	8.15	14405249 .85	1732363. 44	0.35	-0.33	197.74	87.00	-0.00	-0.00	
4040.00	4.35	150.59	4037.17	6.89	1.92	2.96	14405243 .93	1732365. 26	2.39	1.50	291.46	103.00	-1.28	1.05	
4135.00	7.68	137.82	4131.64	-0.96	7.95	-6.71	14405236 .08	1732371. 29	3.76	3.51	331.67	95.00	-2.50	1.51	
4230.00	11.06	128.48	4225.36	-11.33	19.35	-22.11	14405225 .71	1732382. 69	3.89	3.56	331.12	95.00	-3.40	2.21	
4325.00	14.35	125.64	4318.03	-23.87	36.06	-42.96	14405213 .17	1732399. 40	3.52	3.46	347.86	95.00	-3.62	3.91	
4420.00	14.24	123.44	4410.08	-37.17	55.38	-66.31	14405199 .87	1732418. 72	0.58	-0.12	257.49	95.00	-2.33	6.22	
4514.00	15.16	122.75	4501.01	-50.19	75.36	-89.99	14405186 .85	1732438. 70	1.00	0.98	348.89	94.00	-1.55	9.21	
4609.00	15.48	130.75	4592.64	-65.18	95.42	-114.99	14405171 .86	1732458. 76	2.25	0.34	85.26	95.00	-0.16	10.76	
4705.00	15.05	132.62	4685.25	-81.99	114.29	-140.25	14405155 .05	1732477. 63	0.68	-0.45	132.03	96.00	0.28	10.04	
4799.00	14.57	133.89	4776.13	-98.45	131.79	-164.24	14405138 .59	1732495. 13	0.62	-0.51	146.54	94.00	1.31	8.63	
4894.00	15.67	130.54	4867.84	-115.07	150.16	-188.99	14405121 .97	1732513. 50	1.48	1.16	319.91	95.00	1.20	7.78	
4989.00	15.19	131.53	4959.42	-131.66	169.22	-214.26	14405105 .38	1732532. 56	0.58	-0.51	151.72	95.00	1.16	7.33	
5084.00	15.75	132.41	5050.98	-148.61	188.06	-239.59	14405088 .43	1732551. 40	0.64	0.59	23.17	95.00	1.03	6.46	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
5178.00	15.91	133.62	5141.41	-166.10	206.81	-265.19	14405070 .94	1732570. 15	0.39	0.17	64.72	94.00	0.30	5.16	
5273.00	16.26	133.75	5232.69	-184.28	225.84	-291.46	14405052 .76	1732589. 18	0.37	0.37	5.94	95.00	-0.98	3.57	
5368.00	14.58	132.09	5324.27	-201.50	244.32	-316.68	14405035 .54	1732607. 66	1.83	-1.77	193.92	95.00	-1.23	2.26	
5463.00	15.03	132.43	5416.12	-217.82	262.29	-340.94	14405019 .22	1732625. 63	0.48	0.47	11.09	95.00	-0.36	1.29	
5557.00	15.57	132.98	5506.78	-234.65	280.51	-365.71	14405002 .39	1732643. 85	0.59	0.57	15.31	94.00	-0.32	0.14	
5652.00	14.98	132.02	5598.43	-251.56	298.96	-390.72	14404985 .48	1732662. 30	0.68	-0.62	202.74	95.00	-0.23	-0.94	
5747.00	14.78	129.55	5690.24	-267.49	317.43	-415.10	14404969 .55	1732680. 77	0.70	-0.21	251.31	95.00	0.57	-1.26	
5842.00	15.61	130.01	5781.92	-283.42	336.56	-440.00	14404953 .62	1732699. 90	0.88	0.87	8.49	95.00	0.79	-1.16	
5937.00	15.97	130.78	5873.34	-300.18	356.25	-465.85	14404936 .86	1732719. 59	0.44	0.38	30.57	95.00	0.02	-1.32	
6032.00	16.26	129.70	5964.60	-317.21	376.38	-492.22	14404919 .83	1732739. 72	0.44	0.31	313.53	95.00	-1.24	-1.41	
6127.00	15.42	129.73	6056.00	-333.78	396.32	-518.15	14404903 .26	1732759. 66	0.88	-0.88	179.46	95.00	-2.08	-1.26	
6222.00	14.48	128.88	6147.78	-349.31	415.28	-542.66	14404887 .73	1732778. 62	1.02	-0.99	192.72	95.00	-1.43	-0.97	
6316.00	14.74	129.61	6238.74	-364.31	433.64	-566.36	14404872 .73	1732796. 98	0.34	0.28	35.66	94.00	-0.25	-0.61	
6411.00	16.28	130.87	6330.28	-380.73	453.03	-591.76	14404856 .31	1732816. 37	1.66	1.62	12.95	95.00	-0.55	-0.70	
6466.00	16.43	131.18	6383.05	-390.89	464.71	-607.25	14404846 .15	1732828. 05	0.32	0.27	30.35	55.00	-1.54	-0.95	
6526.00	16.11	129.78	6440.65	-401.81	477.49	-624.06	14404835 .23	1732840. 83	0.84	-0.53	230.12	60.00	-2.49	-1.11	
6558.00	16.00	129.37	6471.40	-407.44	484.31	-632.91	14404829 .60	1732847. 65	0.49	-0.34	225.67	32.00	-2.88	-1.06	
6589.00	13.36	131.74	6501.39	-412.54	490.29	-640.76	14404824 .50	1732853. 63	8.73	-8.52	168.33	31.00	-2.64	-1.01	
6621.00	8.91	136.78	6532.78	-416.81	494.75	-646.92	14404820 .23	1732858. 09	14.22	-13.91	170.13	32.00	-1.57	-1.31	

Received
Office of Oil & Gas

NOV 20 2015

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
6653.00	5.68	142.45	6564.51	-419.87	497.41	-650.93	14404817 .17	1732860. 75	10.33	-10.09	170.24	32.00	0.09	-2.18	
6684.00	3.08	148.18	6595.42	-421.80	498.79	-653.22	14404815 .24	1732862. 13	8.49	-8.39	173.29	31.00	1.71	-3.40	
6716.00	0.74	134.55	6627.40	-422.67	499.39	-654.24	14404814 .37	1732862. 73	7.40	-7.31	184.23	32.00	4.58	-3.35	
6748.00	1.85	313.34	6659.40	-422.46	499.16	-653.93	14404814 .58	1732862. 50	8.09	3.47	179.14	32.00	-6.68	3.35	
6779.00	4.84	308.25	6690.34	-421.31	497.77	-652.12	14404815 .73	1732861. 11	9.68	9.65	351.78	31.00	-9.05	2.69	
6811.00	7.58	306.97	6722.15	-419.20	495.02	-648.67	14404817 .84	1732858. 36	8.57	8.56	356.47	32.00	-11.45	2.51	
6843.00	9.88	307.68	6753.78	-416.26	491.16	-643.82	14404820 .78	1732854. 50	7.20	7.19	3.03	32.00	-13.74	2.78	
6874.00	12.12	307.25	6784.21	-412.66	486.46	-637.91	14404824 .38	1732849. 80	7.23	7.23	357.69	31.00	-15.85	2.84	
6906.00	14.57	307.20	6815.34	-408.19	480.58	-630.53	14404828 .85	1732843. 92	7.66	7.66	359.71	32.00	-17.88	3.08	
6937.00	16.72	306.72	6845.19	-403.17	473.90	-622.18	14404833 .87	1732837. 24	6.95	6.94	356.32	31.00	-19.73	3.29	
6969.00	19.00	308.76	6875.65	-397.15	466.15	-612.38	14404839 .89	1732829. 49	7.39	7.12	16.32	32.00	-21.27	4.31	
7001.00	21.32	308.52	6905.68	-390.27	457.54	-601.35	14404846 .77	1732820. 88	7.25	7.25	357.85	32.00	-22.77	4.46	
7032.00	23.14	310.03	6934.38	-382.84	448.46	-589.63	14404854 .20	1732811. 80	6.15	5.87	18.13	31.00	-23.81	5.16	
7064.00	24.75	312.21	6963.62	-374.29	438.68	-576.64	14404862 .75	1732802. 02	5.74	5.03	29.79	32.00	-24.31	5.75	
7095.00	26.97	312.05	6991.52	-365.23	428.66	-563.13	14404871 .81	1732792. 00	7.16	7.16	358.13	31.00	-24.63	5.17	
7127.00	29.40	310.83	7019.72	-355.23	417.32	-548.03	14404881 .81	1732780. 66	7.80	7.59	346.12	32.00	-24.86	4.32	
7158.00	30.60	309.65	7046.57	-345.22	405.49	-532.53	14404891 .82	1732768. 83	4.31	3.87	333.31	31.00	-24.63	3.82	
7190.00	32.51	307.17	7073.84	-334.82	392.37	-515.79	14404902 .22	1732755. 71	7.22	5.97	324.74	32.00	-23.86	3.45	
7221.00	35.00	307.76	7099.61	-327.70	378.17	-498.58	14404912 .69	1732742. 04	8.10	8.03	7.75	31.00	-22.75	4.46	

Received
Office of Oil & Gas

NOV 20 2015

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
7253.00	37.88	308.67	7125.35	-312.58	363.77	-479.59	14404924 .46	1732727. 11	9.16	9.00	11.00	32.00	-21.63	5.37	
7284.00	40.67	309.65	7149.34	-300.19	348.56	-459.97	14404936 .85	1732711. 90	9.22	9.00	12.92	31.00	-20.64	5.95	
7316.00	43.68	308.76	7173.06	-286.62	331.91	-438.49	14404950 .42	1732695. 25	9.59	9.41	348.44	32.00	-19.94	6.04	
7347.00	46.84	309.56	7194.87	-272.71	314.84	-416.48	14404964 .33	1732678. 18	10.36	10.19	10.48	31.00	-19.40	6.56	
7379.00	49.47	310.67	7216.22	-257.35	296.61	-392.64	14404979 .69	1732659. 95	8.62	8.22	17.83	32.00	-19.00	6.75	
7411.00	51.80	310.88	7236.52	-241.19	277.88	-367.90	14404995 .85	1732641. 22	7.30	7.28	4.05	32.00	-18.58	6.45	
7442.00	54.10	311.57	7255.19	-224.88	259.27	-343.17	14405012 .16	1732622. 61	7.63	7.42	13.67	31.00	-18.00	6.03	
7474.00	56.36	312.85	7273.44	-207.22	239.81	-316.91	14405029 .82	1732603. 15	7.79	7.06	25.32	32.00	-17.21	5.19	
7506.00	59.08	312.66	7290.53	-188.86	219.95	-289.89	14405048 .18	1732583. 29	8.51	8.50	356.57	32.00	-16.45	3.81	
7537.00	61.57	312.18	7305.88	-170.69	200.06	-262.98	14405066 .35	1732563. 40	8.14	8.03	350.37	31.00	-15.72	2.57	
7569.00	64.11	310.93	7320.48	-151.81	178.76	-234.52	14405085 .23	1732542. 10	8.66	7.94	336.07	32.00	-14.93	1.63	
7600.00	66.89	310.22	7333.34	-133.47	157.33	-206.31	14405103 .57	1732520. 67	9.21	8.97	346.77	31.00	-14.19	1.28	
7632.00	68.83	308.96	7345.40	-114.58	134.49	-176.68	14405122 .46	1732497. 83	7.07	6.06	328.73	32.00	-13.31	1.39	
7663.00	70.48	309.17	7356.17	-96.26	111.92	-147.62	14405140 .78	1732475. 26	5.36	5.32	6.84	31.00	-12.03	1.90	
7695.00	72.80	309.30	7366.25	-77.05	88.40	-117.25	14405159 .99	1732451. 74	7.26	7.25	3.06	32.00	-10.39	2.33	
7726.00	75.49	308.71	7374.72	-58.29	65.23	-87.44	14405178 .75	1732428. 57	8.87	8.68	348.00	31.00	-8.79	2.84	
7758.00	77.71	308.66	7382.14	-38.83	40.93	-56.32	14405198 .21	1732404. 27	6.94	6.94	358.74	32.00	-7.07	3.58	
7789.00	79.28	308.82	7388.32	-19.82	17.24	-25.95	14405217 .22	1732380. 58	5.09	5.06	5.72	31.00	-5.06	4.26	
7821.00	81.59	309.18	7393.64	0.03	-7.28	5.60	14405237 .07	1732356. 06	7.30	7.22	8.77	32.00	-2.65	4.83	

Weatherford International Limited
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Office of Oil & Gas
NOV 20 2015

5D 7.5.9 : 19 May 2015, 17:48:26 UTC

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
7853.00	83.95	309.91	7397.66	20.24	-31.76	37.34	14405257 .28	1732331. 58	7.71	7.37	17.11	32.00	-0.12	5.09	
7884.00	86.18	310.87	7400.33	40.26	-55.28	68.22	14405277 .30	1732308. 06	7.83	7.19	23.26	31.00	2.33	4.88	
7916.00	87.16	311.29	7402.19	61.25	-79.36	100.16	14405298 .29	1732283. 98	3.33	3.06	23.18	32.00	4.19	4.29	
7947.00	87.84	311.41	7403.54	81.71	-102.61	131.12	14405318 .75	1732260. 73	2.23	2.19	10.00	31.00	5.54	3.56	
7979.00	90.25	311.05	7404.07	102.79	-126.67	163.11	14405339 .83	1732236. 67	7.61	7.53	351.50	32.00	6.08	2.88	
8010.00	91.67	311.14	7403.56	123.17	-150.03	194.10	14405360 .21	1732213. 31	4.59	4.58	3.63	31.00	5.55	2.29	
8042.00	92.47	311.11	7402.40	144.20	-174.12	226.07	14405381 .24	1732189. 22	2.50	2.50	357.85	32.00	4.39	1.67	
8137.00	91.66	311.57	7398.98	206.91	-245.40	320.98	14405443 .95	1732117. 94	0.98	-0.85	150.42	95.00	0.98	-0.53	
8233.00	91.17	310.42	7396.61	269.86	-317.83	416.94	14405506 .90	1732045. 51	1.30	-0.51	246.93	96.00	-1.39	-2.18	
8327.00	92.28	310.99	7393.78	331.14	-389.06	510.89	14405568 .18	1731974. 28	1.33	1.18	27.16	94.00	-4.22	-3.32	
8422.00	90.31	309.26	7391.63	392.34	-461.67	605.86	14405629 .38	1731901. 67	2.76	-2.07	221.30	95.00	-6.37	-3.51	
8516.00	89.57	309.29	7391.73	451.85	-534.44	699.85	14405688 .89	1731828. 90	0.79	-0.79	177.68	94.00	-6.27	-2.30	
8610.00	90.68	309.59	7391.52	511.56	-607.03	793.84	14405748 .60	1731756. 31	1.22	1.18	15.12	94.00	-6.48	-1.37	
8705.00	91.42	309.57	7389.78	572.08	-680.24	888.82	14405809 .12	1731683. 10	0.78	0.78	358.45	95.00	-8.22	-0.66	
8800.00	91.73	309.87	7387.17	632.76	-753.29	983.78	14405869 .80	1731610. 05	0.45	0.33	44.05	95.00	-10.82	-0.18	
8894.00	90.80	309.75	7385.10	692.93	-825.48	1077.76	14405929 .97	1731537. 86	1.00	-0.99	187.35	94.00	-12.90	0.15	
8990.00	92.16	309.95	7382.62	754.43	-899.15	1173.72	14405991 .47	1731464. 19	1.43	1.42	8.36	96.00	-15.37	0.42	
9085.00	91.59	310.61	7379.51	815.81	-971.59	1268.67	14406052 .85	1731391. 75	0.92	-0.60	130.82	95.00	-18.48	-0.03	
9180.00	90.62	307.35	7377.67	875.55	-1045.41	1363.62	14406112 .59	1731317. 93	3.58	-1.02	253.46	95.00	-20.32	1.68	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
9275.00	91.66	306.64	7375.78	932.70	-1121.27	1458.47	14406169 .74	1731242. 07	1.33	1.09	325.69	95.00	-22.19	6.67	
9370.00	91.42	307.81	7373.23	990.15	-1196.89	1553.32	14406227 .19	1731166. 45	1.26	-0.25	101.58	95.00	-24.75	11.28	
9464.00	90.86	309.48	7371.36	1048.84	-1270.29	1647.28	14406285 .88	1731093. 05	1.87	-0.60	108.52	94.00	-26.63	13.53	
9559.00	91.29	309.90	7369.58	1109.50	-1343.38	1742.26	14406346 .54	1731019. 96	0.63	0.45	44.32	95.00	-28.41	14.06	
9654.00	91.05	310.52	7367.64	1170.82	-1415.91	1837.24	14406407 .86	1730947. 43	0.70	-0.25	111.16	95.00	-30.36	13.73	
9748.00	90.92	311.95	7366.02	1232.77	-1486.59	1931.20	14406469 .81	1730876. 75	1.53	-0.14	95.18	94.00	-31.98	11.71	
9843.00	91.73	311.84	7363.83	1296.19	-1557.28	2026.12	14406533 .23	1730806. 06	0.86	0.85	352.27	95.00	-34.17	8.59	
9938.00	91.42	311.00	7361.22	1359.01	-1628.49	2121.05	14406596 .05	1730734. 85	0.94	-0.33	249.75	95.00	-36.78	6.26	
10033.00	91.11	311.15	7359.12	1421.42	-1700.09	2216.01	14406658 .46	1730663. 25	0.36	-0.33	154.18	95.00	-38.88	4.49	
10128.00	92.03	311.69	7356.52	1484.24	-1771.30	2310.95	14406721 .28	1730592. 04	1.12	0.97	30.39	95.00	-41.46	2.16	
10223.00	91.23	310.02	7353.81	1546.36	-1843.13	2405.90	14406783 .40	1730520. 21	1.95	-0.84	244.42	95.00	-44.18	0.76	
10317.00	91.11	308.31	7351.89	1605.71	-1915.99	2499.86	14406842 .75	1730447. 35	1.82	-0.13	266.00	94.00	-46.10	2.14	
10412.00	91.23	308.45	7349.95	1664.68	-1990.45	2594.80	14406901 .72	1730372. 89	0.19	0.13	49.39	95.00	-48.03	4.85	
10507.00	91.66	309.67	7347.56	1724.52	-2064.19	2689.76	14406961 .56	1730299. 15	1.36	0.45	70.56	95.00	-50.42	6.42	
10602.00	91.11	310.24	7345.26	1785.51	-2136.99	2784.73	14407022 .55	1730226. 35	0.83	-0.58	133.98	95.00	-52.73	6.51	
10696.00	92.40	310.47	7342.38	1846.35	-2208.58	2878.68	14407083 .39	1730154. 76	1.39	1.37	10.10	94.00	-55.57	5.95	
10791.00	91.17	311.82	7339.42	1908.82	-2280.09	2973.61	14407145 .86	1730083. 25	1.92	-1.29	132.33	95.00	-58.57	4.06	
10886.00	91.23	311.74	7337.43	1972.11	-2350.91	3068.55	14407209 .15	1730012. 43	0.11	0.06	306.88	95.00	-60.55	1.13	
10981.00	90.86	311.26	7335.70	2035.04	-2422.05	3163.50	14407272 .08	1729941. 29	0.64	-0.39	232.37	95.00	-62.29	-1.34	

Received
Office of Oil & Gas
NOV 20 2015

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (%/100 US ft)	B.Rate (%/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
11076.00	90.49	310.19	7334.58	2097.02	-2494.04	3258.48	14407334 .06	1729869. 30	1.19	-0.39	250.93	95.00	-63.41	-2.52	
11171.00	91.97	310.72	7332.54	2158.64	-2566.31	3353.46	14407395 .68	1729797. 03	1.65	1.56	19.69	95.00	-65.42	-3.26	
11266.00	91.23	309.78	7329.89	2220.00	-2638.79	3448.42	14407457 .04	1729724. 55	1.26	-0.78	231.79	95.00	-68.09	-3.66	
11361.00	92.84	309.18	7326.52	2280.36	-2712.06	3543.35	14407517 .40	1729651. 28	1.81	1.69	339.58	95.00	-71.40	-2.78	
11456.00	92.41	309.63	7322.17	2340.60	-2785.39	3638.24	14407577 .64	1729577. 95	0.65	-0.45	133.72	95.00	-75.77	-1.78	
11550.00	90.99	311.35	7319.38	2401.61	-2856.84	3732.19	14407638 .65	1729506. 50	2.37	-1.51	129.53	94.00	-78.61	-2.56	
11645.00	90.00	310.27	7318.56	2463.69	-2928.74	3827.18	14407700 .73	1729434. 60	1.54	-1.04	227.49	95.00	-79.44	-3.89	
11740.00	91.60	310.44	7317.23	2525.20	-3001.13	3922.16	14407762 .24	1729362. 21	1.69	1.68	6.06	95.00	-80.74	-4.46	
11835.00	91.85	308.94	7314.37	2585.84	-3074.19	4017.12	14407822 .88	1729289. 15	1.60	0.26	279.49	95.00	-83.59	-3.93	
11930.00	90.31	309.88	7312.58	2646.14	-3147.58	4112.09	14407883 .18	1729215. 76	1.90	-1.62	148.59	95.00	-85.42	-2.94	
12025.00	91.17	310.67	7311.35	2707.55	-3220.05	4207.08	14407944 .59	1729143. 29	1.23	0.91	42.56	95.00	-86.63	-3.37	
12120.00	90.31	310.26	7310.13	2769.19	-3292.32	4302.07	14408006 .23	1729071. 02	1.00	-0.91	205.49	95.00	-87.87	-4.13	
12215.00	91.17	309.65	7308.90	2830.20	-3365.13	4397.06	14408067 .24	1728998. 21	1.11	0.91	324.66	95.00	-89.08	-4.04	
12310.00	91.73	309.24	7306.50	2890.53	-3438.47	4492.02	14408127 .57	1728924. 87	0.73	0.59	323.80	95.00	-91.46	-3.10	
12404.00	90.86	309.03	7304.37	2949.85	-3511.37	4585.99	14408186 .89	1728851. 97	0.95	-0.93	193.57	94.00	-93.62	-1.67	
12500.00	91.48	309.69	7302.41	3010.71	-3585.57	4681.96	14408247 .75	1728777. 77	0.94	0.65	46.78	96.00	-95.56	-0.58	
12554.00	92.28	309.74	7300.64	3045.20	-3627.09	4735.93	14408282 .24	1728736. 25	1.48	1.48	3.57	54.00	-97.28	-0.30	FINAL MWD SURVEY
12607.00	92.28	309.74	7298.53	3079.06	-3667.81	4788.89	14408316 .10	1728695. 53	0.00	0.00	0.00	53.00	-99.38	-0.05	PROJ TO BIT

Weatherford International Limited
 Received
 Office of Oil & Gas

NOV 20 2015

5D 7.5.9 : 19 May 2015, 17:48:26 UTC

5D Survey Report

Formation Points (Relative to Slot centre, TVD relative to Drill Floor)					
Name	TVD (US ft)	MD (US ft)	F.Dip (°)	F.Dir (°)	
BEREA	2421.00	2421.38	0	0	
BURKET	7205.00	7361.97	0	0	
TULLY	7242.00	7419.93	0	0	
HAMILTON	7266.00	7460.73	0	0	
UPPER MARCELLUS	7319.00	7565.62	0	0	
LOWER MARCELLUS	7340.00	7617.35	0	0	
ONONDAGA	7383.00	7762.09	0	0	

Received
 Office of Oil & Gas
 NOV 20 2015