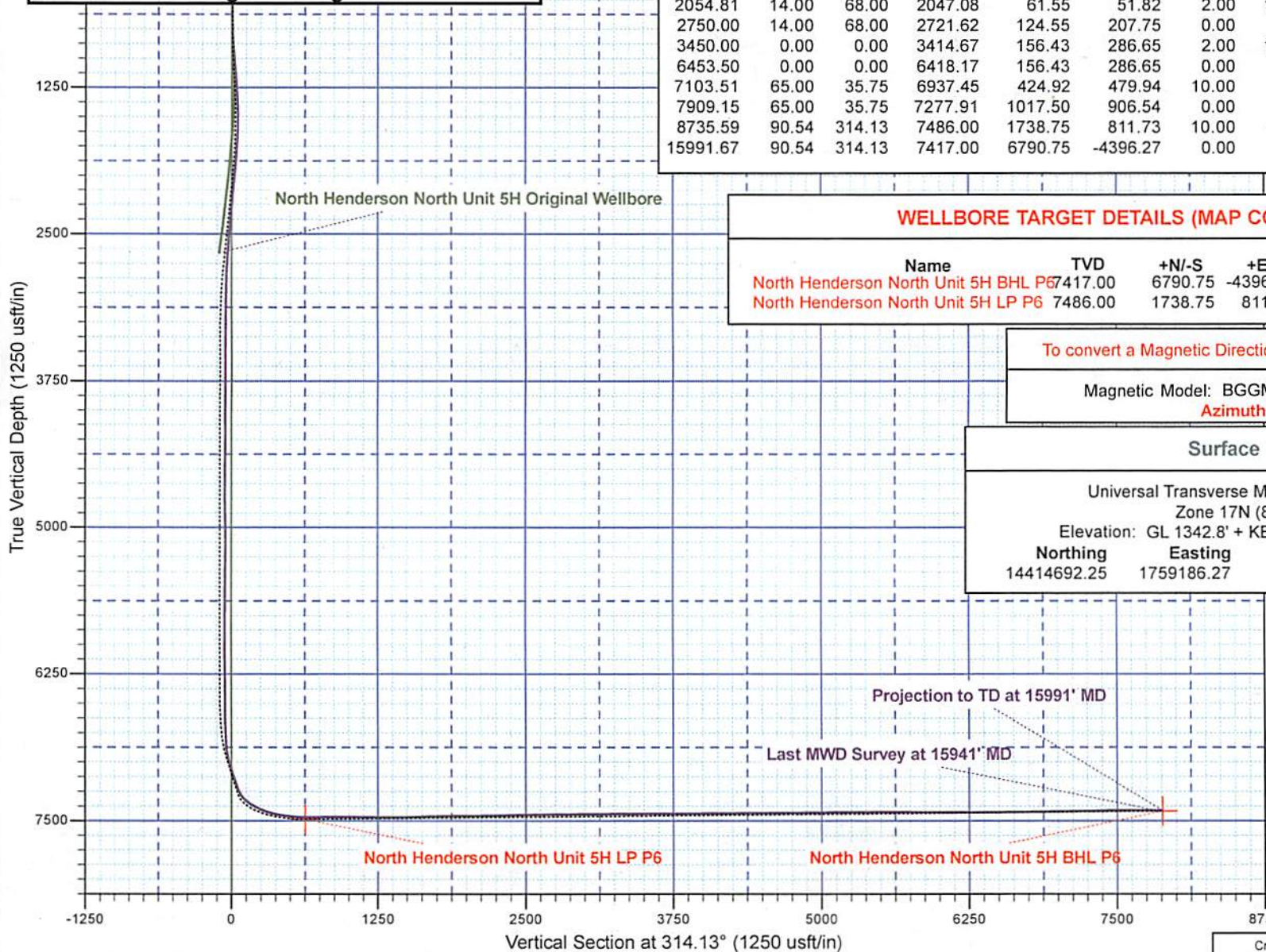


Wetzel County WV  
 Site: North Henderson North Unit Pad  
 Well: North Henderson North Unit 5H  
 Wellbore: Sidetrack  
 Design: Design #8

### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1000.00	2.30	324.88	999.79	14.68	-8.39	0.00	0.00	16.24	Start ST
1100.00	3.53	280.00	1099.67	16.85	-12.58	2.50	-85.30	20.76	End Build
1200.00	3.53	280.00	1199.48	17.92	-18.64	0.00	0.00	25.86	Start Build/Turn
2054.81	14.00	68.00	2047.08	61.55	51.82	2.00	154.15	5.67	End Build/Turn
2750.00	14.00	68.00	2721.62	124.55	207.75	0.00	0.00	-62.39	Start Drop
3450.00	0.00	0.00	3414.67	156.43	286.65	2.00	180.00	-96.83	End Drop
6453.50	0.00	0.00	6418.17	156.43	286.65	0.00	0.00	-96.83	Start Build
7103.51	65.00	35.75	6937.45	424.92	479.94	10.00	35.75	-48.61	End Build
7909.15	65.00	35.75	7277.91	1017.50	906.54	0.00	0.00	57.79	Start Build/Turn
8735.59	90.54	314.13	7486.00	1738.75	811.73	10.00	-85.94	628.05	End Build/Turn
15991.67	90.54	314.13	7417.00	6790.75	-4396.27	0.00	0.00	7883.80	TD



### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
North Henderson North Unit 5H BHL P6	7417.00	6790.75	-4396.27	14421483.00	1754790.00
North Henderson North Unit 5H LP P6	7486.00	1738.75	811.73	14416431.00	1759998.00

To convert a Magnetic Direction to a Grid Direction, Subtract 8.99°

Magnetic Model: BGGM2015 Date: 22-Jun-15  
 Azimuths to Grid North

### Surface Location:

Universal Transverse Mercator (US Survey Feet)  
 Zone 17N (84 W to 78 W)  
 Elevation: GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)

Northing	Easting	Latitude	Longitude
14414692.25	1759186.27	39.693424	-80.577794

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**HALLIBURTON**

Sperry Drilling

# Statoil

Wetzel County WV (NAD 27 UTM 17N us ft)

North Henderson North Unit Pad

North Henderson North Unit 5H - Slot North Henderson 5H

Sidetrack

Design: Sidetrack Surveys

## Standard Survey Report

09 July, 2015

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Survey Report

WV Department of  
Environmental Protection

<b>Company:</b>	Statoil	<b>Local Co-ordinate Reference:</b>	Well North Henderson North Unit 5H - Slot North Henderson 5H
<b>Project:</b>	Wetzel County WV (NAD 27 UTM 17N us ft)	<b>TVD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Site:</b>	North Henderson North Unit Pad	<b>MD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Well:</b>	North Henderson North Unit 5H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Wetzel County WV (NAD 27 UTM 17N us ft)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	North Henderson North Unit Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,414,677.53 usft	<b>Latitude:</b>	39.693384
<b>From:</b>	Map	<b>Easting:</b>	1,759,189.60 usft	<b>Longitude:</b>	-80.577782
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.27 °

<b>Well</b>	North Henderson North Unit 5H - Slot North Henderson 5H					
<b>Well Position</b>	+N/-S	0.00 usft	<b>Northing:</b>	14,414,692.25 usft	<b>Latitude:</b>	39.693424
	+E/-W	0.00 usft	<b>Easting:</b>	1,759,186.27 usft	<b>Longitude:</b>	-80.577794
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	1,342.80 usft

<b>Wellbore</b>	Sidetrack				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	6/22/2015	-8.72	67.04	52,344

<b>Design</b>	Sidetrack Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	640.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	314.13	

<b>Survey Program</b>	<b>Date</b>	7/9/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
86.34	640.00	MS Gyro 17-1/2" Hole (Wellbore #1)	NSG-CT_csg+cent	Continuous gyro in casing + centrollers	
670.00	1,472.00	Gyros (Sidetrack)	NSG-CT_WL	Continuous north-seeking gyro on wireline	
1,513.00	15,991.00	Sperry MWD (Sidetrack)	MWD	Fixed:v2:standard declination	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86.34	0.45	335.53	86.34	0.31	-0.14	0.32	0.52	0.52	0.00	
179.00	0.55	332.63	179.00	1.03	-0.50	1.08	0.11	0.11	-3.13	
271.00	0.68	335.03	270.99	1.92	-0.93	2.00	0.14	0.14	2.61	
363.00	0.76	334.02	362.98	2.97	-1.43	3.09	0.09	0.09	-1.10	
455.00	0.65	334.76	454.98	3.99	-1.92	4.15	0.12	-0.12	0.80	

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Survey Report

<b>Company:</b>	Statoil	<b>Local Co-ordinate Reference:</b>	Well North Henderson North Unit 5H - Slot North Henderson 5H
<b>Project:</b>	Wetzel County WV (NAD 27 UTM 17N us ft)	<b>TVD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Site:</b>	North Henderson North Unit Pad	<b>MD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Well:</b>	North Henderson North Unit 5H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
547.00	0.58	333.40	546.97	4.87	-2.35	5.08	0.08	-0.08	-1.48	
640.00	0.57	338.26	639.97	5.72	-2.73	5.95	0.05	-0.01	5.23	
670.00	0.52	308.40	669.96	5.95	-2.89	6.22	0.95	-0.17	-99.53	
700.00	0.49	323.08	699.96	6.13	-3.08	6.48	0.44	-0.10	48.93	
728.00	0.70	335.74	727.96	6.39	-3.22	6.76	0.88	0.75	45.21	
760.00	0.98	315.90	759.96	6.76	-3.49	7.21	1.25	0.87	-62.00	
790.00	2.25	310.07	789.95	7.32	-4.12	8.06	4.26	4.23	-19.43	
820.00	3.98	292.52	819.90	8.10	-5.53	9.61	6.52	5.77	-58.50	
852.00	4.85	288.22	851.81	8.95	-7.84	11.86	2.91	2.72	-13.44	
883.00	5.04	285.14	882.69	9.72	-10.40	14.23	1.05	0.61	-9.94	
911.00	5.03	284.64	910.58	10.35	-12.78	16.37	0.16	-0.04	-1.79	
940.00	5.17	283.38	939.47	10.97	-15.28	18.60	0.62	0.48	-4.34	
972.00	5.35	280.14	971.33	11.57	-18.15	21.08	1.09	0.56	-10.12	
1,003.00	5.32	281.95	1,002.20	12.12	-20.98	23.49	0.55	-0.10	5.84	
1,094.00	4.69	286.74	1,092.85	14.06	-28.67	30.37	0.83	-0.69	5.26	
1,187.00	4.56	303.89	1,185.55	17.22	-35.38	37.38	1.49	-0.14	18.44	
1,280.00	4.12	331.12	1,278.30	22.21	-40.06	44.22	2.24	-0.47	29.28	
1,377.00	5.13	4.73	1,375.00	29.58	-41.38	50.30	2.93	1.04	34.65	
1,472.00	5.92	30.70	1,469.57	38.03	-38.53	54.14	2.73	0.83	27.34	
1,513.00	6.37	43.04	1,510.34	41.51	-35.90	54.67	3.40	1.10	30.10	
1,607.00	7.90	56.35	1,603.61	48.90	-26.96	53.40	2.39	1.63	14.16	
1,702.00	9.61	69.17	1,697.51	55.34	-14.11	48.66	2.72	1.80	13.49	
1,798.00	9.38	68.58	1,792.19	61.05	0.66	42.03	0.26	-0.24	-0.61	
1,893.00	10.97	68.29	1,885.70	67.22	16.26	35.13	1.67	1.67	-0.31	
1,988.00	11.91	69.03	1,978.81	74.07	33.81	27.30	1.00	0.99	0.78	
2,083.00	13.44	68.75	2,071.49	81.58	53.26	18.58	1.61	1.61	-0.29	
2,179.00	13.83	69.08	2,164.79	89.72	74.37	9.09	0.41	0.41	0.34	
2,273.00	12.04	65.47	2,256.40	97.80	93.79	0.78	2.09	-1.90	-3.84	
2,368.00	13.15	66.87	2,349.11	106.16	112.74	-7.00	1.21	1.17	1.47	
2,463.00	13.41	66.29	2,441.57	114.84	132.77	-15.33	0.31	0.27	-0.61	
2,557.00	13.58	64.27	2,532.98	124.01	152.69	-23.25	0.53	0.18	-2.15	
2,653.00	13.40	62.45	2,626.33	134.05	172.70	-30.62	0.48	-0.19	-1.90	
2,727.00	12.00	60.97	2,698.52	141.75	187.03	-35.55	1.94	-1.89	-2.00	
2,814.00	10.44	59.09	2,783.85	150.19	201.71	-40.20	1.84	-1.79	-2.16	
2,845.00	9.89	58.23	2,814.36	153.03	206.38	-41.58	1.84	-1.77	-2.77	
2,941.00	7.93	54.73	2,909.20	161.20	218.80	-44.80	2.12	-2.04	-3.65	
3,036.00	6.49	51.97	3,003.45	168.29	228.38	-46.74	1.56	-1.52	-2.91	
3,131.00	5.30	50.23	3,097.94	174.40	235.98	-47.94	1.27	-1.25	-1.83	
3,227.00	4.08	59.49	3,193.62	178.97	242.33	-49.32	1.49	-1.27	9.65	
3,323.00	3.67	55.83	3,289.40	182.43	247.81	-50.84	0.50	-0.43	-3.81	
3,419.00	2.81	50.60	3,385.25	185.65	252.17	-51.73	0.95	-0.90	-5.45	
3,514.00	1.46	75.19	3,480.18	187.44	255.14	-52.62	1.69	-1.42	25.88	

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Survey Report

WV Department of  
Environmental Protection

<b>Company:</b>	Statoil	<b>Local Co-ordinate Reference:</b>	Well North Henderson North Unit 5H - Slot North Henderson 5H
<b>Project:</b>	Wetzel County WV (NAD 27 UTM 17N us ft)	<b>TVD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Site:</b>	North Henderson North Unit Pad	<b>MD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Well:</b>	North Henderson North Unit 5H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
3,609.00	0.81	64.83	3,575.16	188.04	256.92	-53.48	0.71	-0.68	-10.91	
3,704.00	0.42	28.46	3,670.16	188.63	257.69	-53.62	0.56	-0.41	-38.28	
3,800.00	0.51	347.31	3,766.15	189.35	257.77	-53.17	0.35	0.09	-42.86	
3,894.00	0.45	312.24	3,860.15	190.01	257.40	-52.45	0.31	-0.06	-37.31	
3,989.00	0.50	304.31	3,955.15	190.49	256.78	-51.67	0.09	0.05	-8.35	
4,085.00	0.50	304.81	4,051.14	190.97	256.09	-50.84	0.00	0.00	0.52	
4,179.00	0.51	298.03	4,145.14	191.40	255.39	-50.04	0.06	0.01	-7.21	
4,273.00	1.26	160.67	4,239.13	190.62	255.36	-50.56	1.78	0.80	-146.13	
4,368.00	1.20	165.15	4,334.11	188.67	255.96	-52.35	0.12	-0.06	4.72	
4,463.00	0.88	159.92	4,429.10	187.03	256.47	-53.86	0.35	-0.34	-5.51	
4,558.00	0.71	187.66	4,524.09	185.76	256.64	-54.86	0.44	-0.18	29.20	
4,653.00	1.05	214.09	4,619.08	184.45	256.07	-55.36	0.55	0.36	27.82	
4,747.00	1.33	225.57	4,713.06	182.98	254.81	-55.49	0.39	0.30	12.21	
4,842.00	1.60	253.41	4,808.03	181.83	252.75	-54.81	0.79	0.28	29.31	
4,938.00	2.47	253.30	4,903.97	180.85	249.49	-53.15	0.91	0.91	-0.11	
5,033.00	3.56	246.25	4,998.83	179.07	244.83	-51.04	1.21	1.15	-7.42	
5,130.00	4.35	236.01	5,095.60	175.80	239.02	-49.15	1.09	0.81	-10.56	
5,235.00	5.41	212.81	5,200.23	169.42	233.03	-49.30	2.11	1.01	-22.10	
5,330.00	6.61	220.71	5,294.71	161.51	227.04	-50.50	1.53	1.26	8.32	
5,424.00	5.66	212.48	5,388.17	153.50	221.02	-51.76	1.37	-1.01	-8.76	
5,519.00	2.52	207.55	5,482.92	147.69	217.54	-53.31	3.32	-3.31	-5.19	
5,615.00	2.63	212.98	5,578.82	143.97	215.37	-54.33	0.28	0.11	5.66	
5,711.00	2.01	217.48	5,674.74	140.79	213.14	-54.96	0.67	-0.65	4.69	
5,807.00	0.72	234.24	5,770.71	139.10	211.63	-55.04	1.39	-1.34	17.46	
5,901.00	1.62	64.88	5,864.70	139.32	212.35	-55.41	2.48	0.96	-180.17	
5,996.00	2.55	51.64	5,959.64	141.20	215.22	-56.16	1.10	0.98	-13.94	
6,091.00	2.03	42.44	6,054.56	143.75	218.02	-56.39	0.67	-0.55	-9.68	
6,187.00	1.63	31.88	6,150.51	146.17	219.89	-56.05	0.54	-0.42	-11.00	
6,281.00	1.14	17.59	6,244.49	148.20	220.87	-55.35	0.63	-0.52	-15.20	
6,376.00	1.15	3.28	6,339.47	150.05	221.21	-54.30	0.30	0.01	-15.06	
6,471.00	5.83	39.72	6,434.27	154.71	224.35	-53.31	5.21	4.93	38.36	
6,567.00	12.04	45.57	6,529.06	165.48	234.63	-53.18	6.53	6.47	6.09	
6,660.00	18.28	41.33	6,618.78	183.24	251.21	-52.72	6.81	6.71	-4.56	
6,754.00	27.06	41.43	6,705.44	210.40	275.14	-50.98	9.34	9.34	0.11	
6,850.00	36.15	40.22	6,787.11	248.47	307.94	-48.02	9.49	9.47	-1.26	
6,945.00	46.69	41.06	6,858.25	296.06	348.85	-44.25	11.11	11.09	0.88	
7,040.00	58.56	38.98	6,915.82	353.84	397.22	-38.74	12.61	12.49	-2.19	
7,135.00	67.11	37.44	6,959.15	420.21	449.42	-29.98	9.11	9.00	-1.62	
7,231.00	67.04	37.04	6,996.55	490.60	502.93	-19.38	0.39	-0.07	-0.42	
7,325.00	66.60	36.40	7,033.55	559.87	554.59	-8.23	0.78	-0.47	-0.68	
7,420.00	67.04	36.83	7,070.94	629.96	606.68	3.19	0.62	0.46	0.45	
7,515.00	67.45	35.99	7,107.69	700.47	658.68	14.96	0.92	0.43	-0.88	

<b>Company:</b>	Statoil	<b>Local Co-ordinate Reference:</b>	Well North Henderson North Unit 5H - Slot North Henderson 5H
<b>Project:</b>	Wetzel County WV (NAD 27 UTM 17N us ft)	<b>TVD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Site:</b>	North Henderson North Unit Pad	<b>MD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Well:</b>	North Henderson North Unit 5H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,610.00	68.09	35.95	7,143.63	771.64	710.33	27.44	0.67	0.67	-0.04
7,705.00	66.85	36.26	7,180.03	842.53	762.03	39.69	1.34	-1.31	0.33
7,801.00	67.43	36.25	7,217.32	913.87	814.35	51.81	0.60	0.60	-0.01
7,895.00	67.55	33.90	7,253.32	984.93	864.24	65.47	2.31	0.13	-2.50
7,991.00	67.44	25.93	7,290.11	1,061.72	908.43	87.23	7.67	-0.11	-8.30
8,087.00	68.10	16.22	7,326.51	1,144.52	940.32	121.99	9.39	0.69	-10.11
8,182.00	69.59	7.99	7,360.84	1,231.06	958.85	168.95	8.23	1.57	-8.66
8,278.00	71.12	359.33	7,393.17	1,321.18	964.58	227.59	8.64	1.59	-9.02
8,373.00	74.64	351.73	7,421.17	1,411.60	957.45	295.66	8.49	3.71	-8.00
8,467.00	79.42	341.48	7,442.31	1,500.53	936.19	372.84	11.78	5.09	-10.90
8,562.00	83.77	332.48	7,456.22	1,586.90	899.45	459.35	10.43	4.58	-9.47
8,656.00	84.08	324.33	7,466.19	1,666.45	850.52	549.86	8.63	0.33	-8.67
8,751.00	91.64	322.31	7,469.73	1,742.52	793.85	643.50	8.24	7.96	-2.13
8,845.00	90.60	315.88	7,467.89	1,813.51	732.35	737.08	6.93	-1.11	-6.84
8,940.00	90.20	312.58	7,467.23	1,879.77	664.29	832.06	3.50	-0.42	-3.47
9,035.00	89.97	314.86	7,467.09	1,945.42	595.63	927.05	2.41	-0.24	2.40
9,130.00	89.06	314.92	7,467.89	2,012.46	528.33	1,022.04	0.96	-0.96	0.06
9,225.00	89.16	315.27	7,469.37	2,079.74	461.27	1,117.02	0.38	0.11	0.37
9,320.00	90.27	315.09	7,469.84	2,147.13	394.31	1,212.00	1.18	1.17	-0.19
9,415.00	89.40	313.73	7,470.12	2,213.60	326.45	1,306.99	1.70	-0.92	-1.43
9,507.00	89.13	312.42	7,471.30	2,276.43	259.26	1,398.97	1.45	-0.29	-1.42
9,599.00	91.78	313.60	7,470.57	2,339.18	191.99	1,490.94	3.15	2.88	1.28
9,692.00	92.79	312.78	7,466.86	2,402.78	124.24	1,583.85	1.40	1.09	-0.88
9,784.00	91.81	313.64	7,463.17	2,465.71	57.24	1,675.76	1.42	-1.07	0.93
9,876.00	90.84	314.45	7,461.04	2,529.66	-8.87	1,767.73	1.37	-1.05	0.88
9,968.00	91.24	313.87	7,459.37	2,593.74	-74.86	1,859.72	0.77	0.43	-0.63
10,061.00	89.90	314.73	7,458.44	2,658.69	-141.41	1,952.71	1.71	-1.44	0.92
10,153.00	89.87	313.44	7,458.63	2,722.69	-207.49	2,044.71	1.40	-0.03	-1.40
10,245.00	90.87	314.50	7,458.03	2,786.56	-273.70	2,136.70	1.58	1.09	1.15
10,337.00	91.84	315.54	7,455.86	2,851.62	-338.71	2,228.66	1.55	1.05	1.13
10,429.00	91.17	313.98	7,453.44	2,916.37	-404.01	2,320.62	1.84	-0.73	-1.70
10,522.00	91.92	315.30	7,450.93	2,981.69	-470.16	2,413.58	1.63	0.81	1.42
10,614.00	90.60	314.32	7,448.91	3,046.51	-535.41	2,505.55	1.79	-1.43	-1.07
10,706.00	91.01	316.22	7,447.62	3,111.86	-600.15	2,597.52	2.11	0.45	2.07
10,801.00	90.60	314.96	7,446.28	3,179.72	-666.62	2,692.48	1.39	-0.43	-1.33
10,897.00	90.77	313.17	7,445.14	3,246.48	-735.59	2,788.47	1.87	0.18	-1.86
10,993.00	89.36	315.08	7,445.03	3,313.31	-804.50	2,884.46	2.47	-1.47	1.99
11,088.00	90.57	314.94	7,445.08	3,380.50	-871.66	2,979.45	1.28	1.27	-0.15
11,183.00	91.61	316.05	7,443.28	3,448.23	-938.24	3,074.40	1.60	1.09	1.17
11,279.00	91.04	314.60	7,441.06	3,516.48	-1,005.72	3,170.35	1.62	-0.59	-1.51
11,374.00	89.76	312.87	7,440.39	3,582.15	-1,074.35	3,265.34	2.27	-1.35	-1.82



JUL 19 2018

Survey Report

WV Department of  
Environmental Protection

<b>Company:</b>	Statoil	<b>Local Co-ordinate Reference:</b>	Well North Henderson North Unit 5H - Slot North Henderson 5H
<b>Project:</b>	Wetzel County WV (NAD 27 UTM 17N us ft)	<b>TVD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Site:</b>	North Henderson North Unit Pad	<b>MD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Well:</b>	North Henderson North Unit 5H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,470.00	90.37	311.99	7,440.29	3,646.92	-1,145.21	3,361.30	1.12	0.64	-0.92
11,565.00	89.70	313.96	7,440.23	3,711.68	-1,214.71	3,456.27	2.19	-0.71	2.07
11,660.00	90.87	315.20	7,439.75	3,778.35	-1,282.38	3,551.26	1.79	1.23	1.31
11,754.00	90.77	314.44	7,438.41	3,844.60	-1,349.04	3,645.25	0.82	-0.11	-0.81
11,848.00	90.13	313.32	7,437.67	3,909.76	-1,416.80	3,739.24	1.37	-0.68	-1.19
11,943.00	90.23	313.15	7,437.37	3,974.83	-1,486.01	3,834.23	0.21	0.11	-0.18
12,037.00	90.87	312.77	7,436.47	4,038.89	-1,554.80	3,928.20	0.79	0.68	-0.40
12,132.00	89.33	311.72	7,436.30	4,102.75	-1,625.12	4,023.15	1.96	-1.62	-1.11
12,227.00	90.54	311.88	7,436.41	4,166.07	-1,695.94	4,118.07	1.28	1.27	0.17
12,323.00	89.09	313.43	7,436.72	4,231.12	-1,766.54	4,214.03	2.21	-1.51	1.61
12,419.00	90.30	314.19	7,437.23	4,297.57	-1,835.81	4,310.03	1.49	1.26	0.79
12,514.00	91.58	314.78	7,435.68	4,364.13	-1,903.58	4,405.01	1.48	1.35	0.62
12,609.00	90.27	313.12	7,434.14	4,430.05	-1,971.96	4,499.99	2.23	-1.38	-1.75
12,705.00	91.21	313.19	7,432.90	4,495.71	-2,041.98	4,595.97	0.98	0.98	0.07
12,800.00	89.60	314.78	7,432.23	4,561.67	-2,110.33	4,690.96	2.38	-1.69	1.67
12,895.00	90.60	315.63	7,432.06	4,629.09	-2,177.27	4,785.94	1.38	1.05	0.89
12,991.00	90.97	314.21	7,430.75	4,696.87	-2,245.23	4,881.92	1.53	0.39	-1.48
13,086.00	90.17	315.56	7,429.80	4,763.90	-2,312.54	4,976.90	1.65	-0.84	1.42
13,181.00	90.94	317.00	7,428.88	4,832.56	-2,378.19	5,071.83	1.72	0.81	1.52
13,277.00	89.43	314.46	7,428.57	4,901.29	-2,445.20	5,167.78	3.08	-1.57	-2.65
13,374.00	90.81	314.89	7,428.37	4,969.49	-2,514.17	5,264.77	1.49	1.42	0.44
13,469.00	90.84	315.99	7,427.00	5,037.17	-2,580.82	5,359.74	1.16	0.03	1.16
13,565.00	91.04	314.29	7,425.43	5,105.20	-2,648.52	5,455.71	1.78	0.21	-1.77
13,659.00	88.96	315.14	7,425.43	5,171.34	-2,715.32	5,549.69	2.39	-2.21	0.90
13,755.00	89.36	314.36	7,426.83	5,238.91	-2,783.49	5,645.68	0.91	0.42	-0.81
13,850.00	90.77	314.15	7,426.73	5,305.21	-2,851.53	5,740.67	1.50	1.48	-0.22
13,945.00	89.06	313.77	7,426.87	5,371.15	-2,919.91	5,835.67	1.84	-1.80	-0.40
14,041.00	89.16	312.99	7,428.36	5,437.08	-2,989.67	5,931.65	0.82	0.10	-0.81
14,137.00	90.10	313.00	7,428.98	5,502.54	-3,059.89	6,027.63	0.98	0.98	0.01
14,232.00	90.84	312.41	7,428.20	5,566.97	-3,129.70	6,122.59	1.00	0.78	-0.62
14,325.00	89.16	314.58	7,428.20	5,630.97	-3,197.16	6,215.58	2.95	-1.81	2.33
14,419.00	90.00	313.78	7,428.89	5,696.48	-3,264.56	6,309.58	1.23	0.89	-0.85
14,514.00	91.28	315.51	7,427.83	5,763.23	-3,332.15	6,404.56	2.27	1.35	1.82
14,608.00	89.93	315.30	7,426.84	5,830.16	-3,398.14	6,498.53	1.45	-1.44	-0.22
14,703.00	90.67	313.93	7,426.34	5,896.88	-3,465.76	6,593.52	1.64	0.78	-1.44
14,799.00	90.27	315.73	7,425.55	5,964.56	-3,533.84	6,689.51	1.92	-0.42	1.87
14,894.00	91.48	316.22	7,424.10	6,032.86	-3,599.85	6,784.44	1.37	1.27	0.52
14,989.00	90.17	313.28	7,422.73	6,099.72	-3,667.30	6,879.42	3.39	-1.38	-3.09
15,083.00	91.11	312.70	7,421.68	6,163.81	-3,736.06	6,973.39	1.18	1.00	-0.62
15,179.00	90.30	313.20	7,420.50	6,229.22	-3,806.32	7,069.36	0.99	-0.84	0.52
15,273.00	91.58	311.70	7,418.96	6,292.65	-3,875.66	7,163.30	2.10	1.36	-1.60
15,369.00	90.67	312.90	7,417.07	6,357.24	-3,946.65	7,259.23	1.57	-0.95	1.25

Survey Report

<b>Company:</b>	Statoil	<b>Local Co-ordinate Reference:</b>	Well North Henderson North Unit 5H - Slot North Henderson 5H
<b>Project:</b>	Wetzel County WV (NAD 27 UTM 17N us ft)	<b>TVD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Site:</b>	North Henderson North Unit Pad	<b>MD Reference:</b>	GL 1342.8' + KB 22' @ 1364.80usft (Orion Polaris)
<b>Well:</b>	North Henderson North Unit 5H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
15,464.00	91.92	314.46	7,414.93	6,422.83	-4,015.34	7,354.20	2.10	1.32	1.64	
15,560.00	90.03	313.19	7,413.29	6,489.30	-4,084.58	7,450.18	2.37	-1.97	-1.32	
15,655.00	91.01	314.16	7,412.43	6,554.90	-4,153.29	7,545.17	1.45	1.03	1.02	
15,751.00	89.26	316.02	7,412.20	6,622.88	-4,221.06	7,641.15	2.66	-1.82	1.94	
15,845.00	89.80	314.88	7,412.98	6,689.86	-4,287.00	7,735.12	1.34	0.57	-1.21	
15,941.00	91.55	315.64	7,411.84	6,758.04	-4,354.56	7,831.09	1.99	1.82	0.79	
<b>Last MWD Survey at 15941' MD</b>										
15,991.00	92.46	316.03	7,410.09	6,793.89	-4,389.38	7,881.04	1.98	1.82	0.78	
<b>Projection to TD at 15991' MD</b>										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
15,941.00	7,411.84	6,758.04	-4,354.56	Last MWD Survey at 15941' MD	
15,991.00	7,410.09	6,793.89	-4,389.38	Projection to TD at 15991' MD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

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