

Statoil - As-Drilled

HALLIBURTON

Sperry Drilling Services

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
6130.30	0.00	0.00	6110.04	80.45	247.97	0.00	0.00	13.44	Start Build
6730.35	60.00	72.02	6606.26	168.89	520.50	10.00	72.02	28.23	End Build
6857.80	60.00	72.02	6669.98	202.96	625.49	0.00	0.00	33.92	Start Build/Turn
7734.20	90.40	344.98	6941.00	880.96	935.94	10.00	-88.17	608.31	End Build/Turn
3734.35	90.40	344.98	6899.00	6675.96	-619.06	0.00	0.00	6608.31	TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting
Ball 2H BHL	6899.00	6675.96	-619.06	14352912.00	1708579.00
Ball 2H LTP	6941.00	880.96	935.94	14347117.00	1710134.00

To convert a Magnetic Direction to a Grid Direction, Subtract 8.70°

Magnetic Model: BGGM2014 Date: 04-Feb-15
Azimuths to Grid North

Surface Location:

Universal Transverse Mercator (US Survey Feet)
Zone 17N (84 W to 78 W)
Elevation: GL 1169.74' + KB 22' @ 1191.74usft (Orion Polaris)

Northing	Easting	Latitude	Longitude
14346236.04	1709198.06	39.505926	-80.756152

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

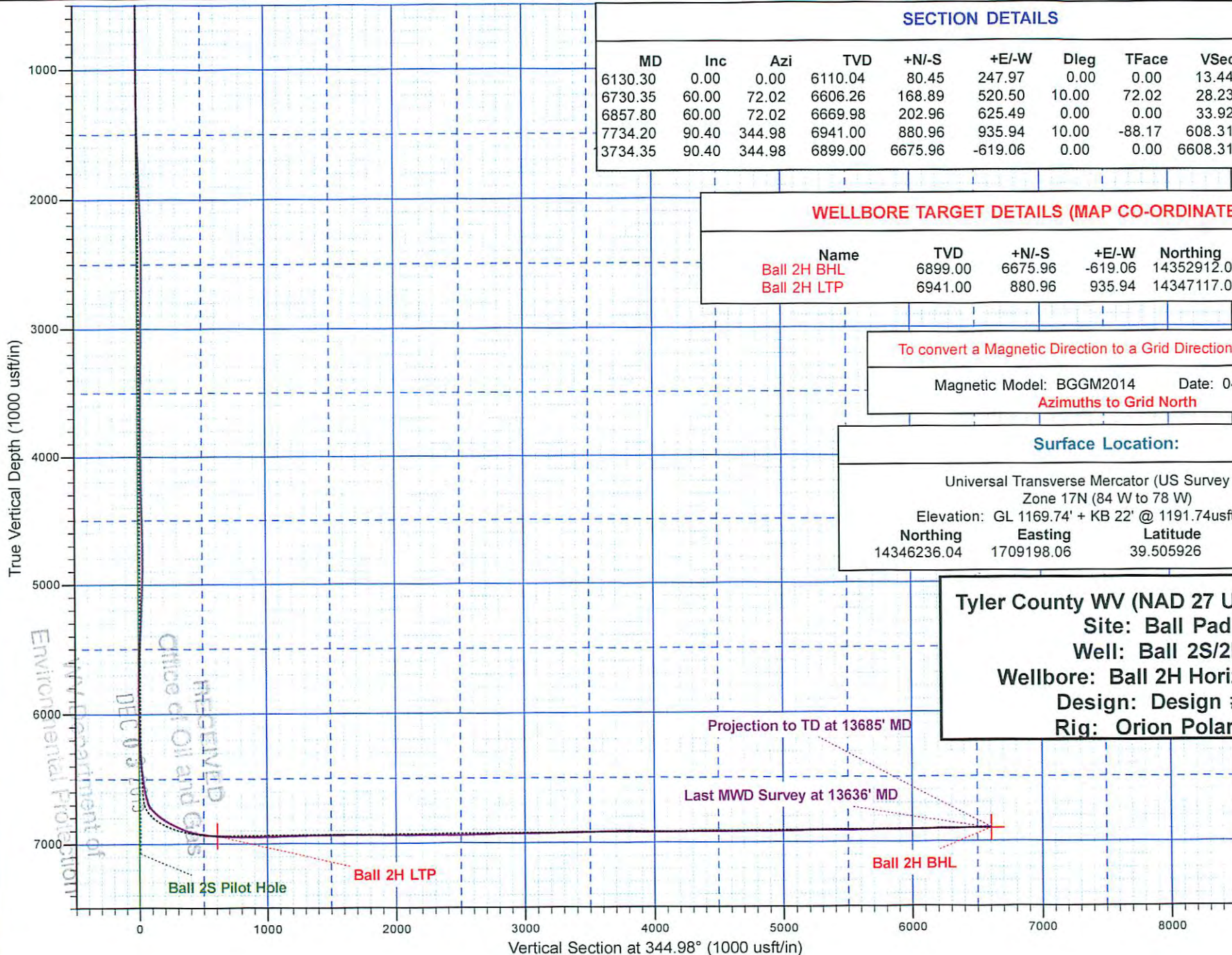
Site: Ball Pad

Well: Ball 2S/2H

Wellbore: Ball 2H Horizontal ST

Design: Design #3

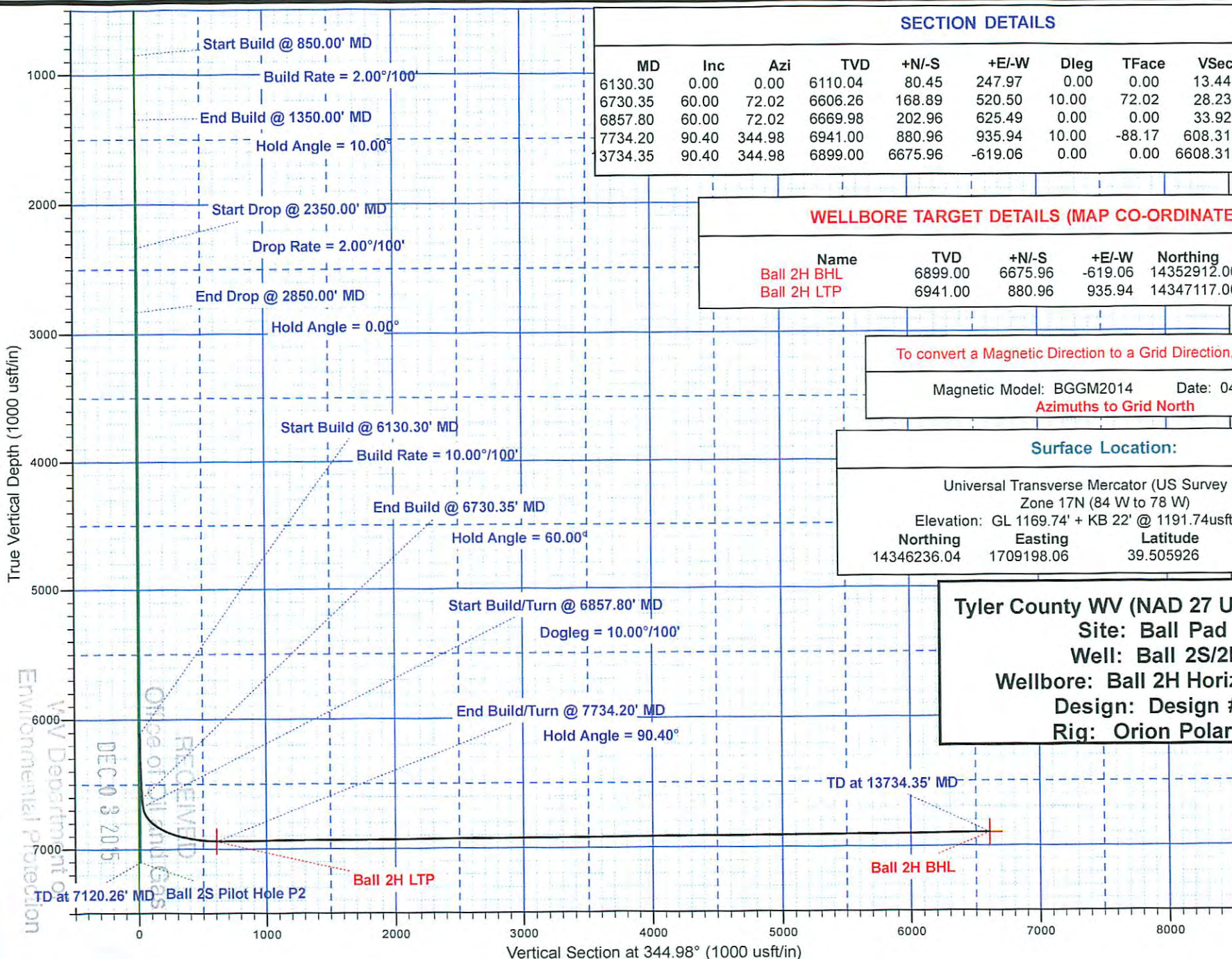
Rig: Orion Polaris



Statoil - Proposed

HALLIBURTON

Sperry Drilling Services



SECTION DETAILS									
MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
6130.35	0.00	0.00	6110.04	80.45	247.97	0.00	0.00	13.44	Start Build
6730.35	60.00	72.02	6606.26	168.89	520.50	10.00	72.02	28.23	End Build
6857.80	60.00	72.02	6669.98	202.96	625.49	0.00	0.00	33.92	Start Build/Turn
7734.20	90.40	344.98	6941.00	880.96	935.94	10.00	-88.17	608.31	End Build/Turn
3734.35	90.40	344.98	6899.00	6675.96	-619.06	0.00	0.00	6608.31	TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N-S	+E-W	Northing	Easting
Ball 2H BHL	6899.00	6675.96	-619.06	14352912.00	1708579.00
Ball 2H LTP	6941.00	880.96	935.94	14347117.00	1710134.00

To convert a Magnetic Direction to a Grid Direction, Subtract 8.70°

Magnetic Model: BGM2014 Date: 04-Feb-15
Azimuths to Grid North

Surface Location:

Universal Transverse Mercator (US Survey Feet)
 Zone 17N (84 W to 78 W)
 Elevation: GL 1169.74' + KB 22' @ 1191.74usft (Orion Polaris)

Northing	Easting	Latitude	Longitude
14346236.04	1709198.06	39.505926	-80.756152

Tyler County WV (NAD 27 UTM 17N us ft)
 Site: Ball Pad
 Well: Ball 2S/2H
 Wellbore: Ball 2H Horizontal ST
 Design: Design #3
 Rig: Orion Polaris

Environmental Protection
 WV Department of
 Environmental Protection
 RECEIVED
 Office of Oil and Gas
 DEC 03 2015

TD at 7120.26' MD - Ball 2S Pilot Hole P2

Survey Report

Company: Statoil
 Well: Ball 2H
 API: 47-9502176
 County: Tyler County
 State: West Virginia

Rig: Orion Polaris 14
 Job Number: CR-XX-0902151452
 Engineer: C. Deck, J. Hixon
 VS Direction: 344.98
 North Reference: Grid

Tie-on Survey Data:		Surface			
MD	INC	AZI	TVD	N/S	E/W
388	0.28	69.09	388.00	-0.21	1.08

MD	INC	AZI	TVD	N/S	E/W	DLS	VS
492	0.10	345.20	492.00	-0.03	1.29	0.28	-0.36
584	0.51	54.62	584.00	0.29	1.61	0.53	-0.14
676	1.15	68.08	675.99	0.87	2.80	0.72	0.12
767	1.77	76.67	766.96	1.54	5.01	0.72	0.19
860	2.56	77.14	859.89	2.33	8.43	0.85	0.06
951	3.90	76.86	950.74	3.48	13.42	1.48	-0.11
1044	5.24	73.14	1043.45	5.43	20.57	1.47	-0.08
1135	6.27	70.23	1133.99	8.32	29.22	1.18	0.46
1228	7.48	67.87	1226.32	12.32	39.61	1.34	1.64
1321	8.18	69.85	1318.45	16.88	51.43	0.80	2.98
1417	10.06	68.76	1413.23	22.27	65.66	1.97	4.50
1512	10.03	66.89	1506.77	28.53	81.01	0.34	6.56
1608	9.60	63.88	1601.37	35.34	95.89	0.70	9.28
1702	8.76	60.34	1694.16	42.33	109.15	1.07	12.60
1798	9.40	61.86	1788.96	49.65	122.42	0.70	16.23
1894	10.75	63.24	1883.48	57.38	137.32	1.43	19.83
1989	10.88	63.13	1976.79	65.42	153.22	0.14	23.47
2084	10.44	63.24	2070.15	73.34	168.90	0.47	27.06
2180	10.94	63.68	2164.49	81.30	184.84	0.53	30.62
2275	11.22	63.89	2257.72	89.36	201.22	0.30	34.16
2371	10.28	70.03	2352.03	96.40	217.65	1.54	36.70
2467	8.82	71.74	2446.70	101.63	232.69	1.55	37.85
2556	7.40	75.81	2534.81	105.17	244.73	1.71	38.16
2648	6.32	82.96	2626.15	107.25	255.50	1.50	37.37
2682	6.24	83.43	2659.95	107.69	259.20	0.29	36.84
2778	4.05	87.35	2755.55	108.44	267.76	2.31	35.34
2874	1.36	113.43	2851.44	108.14	272.19	3.01	33.91
2969	0.43	172.20	2946.43	107.34	273.28	1.26	32.85
3064	0.67	202.73	3041.43	106.47	273.12	0.39	32.05
3158	0.88	199.79	3135.42	105.28	272.66	0.23	31.03
3253	0.68	207.68	3230.41	104.10	272.15	0.24	30.02

RECEIVED
 Office of Oil and Gas
 DECEMBER 2015
 WV Department of
 Environmental Protection
 01/08/2016

MD	INC	AZI	TVD	N/S	E/W	DLS	VS
3349	1.06	213.42	3326.40	102.86	271.40	0.41	29.01
3444	1.02	218.60	3421.38	101.47	270.39	0.10	27.93
3539	0.74	210.64	3516.37	100.28	269.55	0.32	27.00
3634	0.74	222.99	3611.36	99.30	268.82	0.17	26.24
3730	0.64	232.13	3707.36	98.52	267.97	0.15	25.70
3826	0.47	240.38	3803.35	97.99	267.20	0.20	25.40
3921	0.38	253.56	3898.35	97.71	266.56	0.14	25.29
4017	0.57	288.48	3994.35	97.77	265.80	0.35	25.55
4112	0.67	293.15	4089.34	98.14	264.83	0.12	26.15
4207	0.57	315.84	4184.33	98.70	263.99	0.28	26.91
4301	1.00	338.22	4278.33	99.79	263.36	0.55	28.13
4397	1.34	348.89	4374.31	101.67	262.83	0.42	30.08
4491	1.52	339.08	4468.28	103.91	262.18	0.32	32.41
4587	1.41	335.84	4564.25	106.17	261.24	0.14	34.85
4681	1.16	290.09	4658.22	107.56	259.87	1.09	36.54
4777	1.51	261.62	4754.20	107.71	257.70	0.77	37.25
4872	2.47	229.25	4849.14	106.19	254.91	1.52	36.50
4967	2.87	234.63	4944.04	103.48	251.43	0.49	34.79
5061	2.88	235.06	5037.92	100.77	247.58	0.02	33.17
5156	3.00	221.88	5132.80	97.55	243.96	0.72	31.00
5251	3.58	192.09	5227.65	92.79	241.68	1.88	26.99
5347	3.59	188.46	5323.46	86.89	240.61	0.24	21.56
5442	2.78	183.83	5418.31	81.65	240.02	0.90	16.66
5535	3.50	194.19	5511.17	76.65	239.17	0.98	12.05
5630	3.33	197.66	5606.00	71.21	237.62	0.28	7.19
5725	1.80	197.10	5700.91	67.15	236.34	1.61	3.60
5844	1.55	54.58	5819.89	66.29	237.11	2.67	2.58
5908	4.85	68.22	5883.78	67.80	240.33	5.25	3.20
6004	3.90	65.68	5979.50	70.65	247.07	1.00	4.21
6098	3.40	74.05	6073.31	72.74	252.67	0.78	4.77
6130	5.33	72.86	6105.21	73.43	255.00	6.03	4.84
6161	8.39	69.05	6135.99	74.67	258.49	9.97	5.13
6193	11.28	66.65	6167.51	76.74	263.55	9.13	5.82
6289	19.82	66.27	6259.91	87.03	287.11	8.89	9.65
6384	25.44	65.29	6347.57	102.05	320.41	5.93	15.53
6478	33.39	64.83	6429.39	121.52	362.22	8.46	23.50
6573	43.43	66.41	6503.73	145.77	415.95	10.63	32.99
6668	54.93	67.91	6565.73	173.55	482.13	12.16	42.67
6763	57.98	67.19	6618.22	203.79	555.29	3.28	52.92
6857	58.39	64.44	6667.78	236.51	628.14	2.52	65.65
6952	65.33	57.64	6712.59	277.15	701.26	9.65	85.95
7048	65.75	48.42	6752.42	329.64	770.96	8.76	118.58
7143	64.67	38.70	6792.33	392.01	830.32	9.36	163.44
7238	67.10	28.96	6831.22	463.96	878.45	9.70	220.45
7334	68.54	18.42	6867.55	545.23	914.07	10.27	289.72

MD	INC	AZI	TVD	N/S	E/W	DLS	VS
7429	71.18	9.09	6900.32	631.76	935.19	9.63	367.81
7524	79.06	2.14	6924.72	723.00	944.05	10.89	453.64
7615	85.57	354.30	6936.90	813.02	941.21	11.13	541.32
7706	86.30	345.37	6943.37	902.27	925.20	9.83	631.68
7798	87.55	345.19	6948.31	991.12	901.86	1.37	723.54
7890	90.27	346.51	6950.06	1080.31	879.38	3.29	815.50
7981	91.34	347.36	6948.78	1168.94	858.81	1.50	906.44
8074	89.83	344.38	6947.83	1259.11	836.11	3.59	999.41
8165	91.11	344.33	6947.08	1346.73	811.57	1.40	1090.40
8257	91.68	343.54	6944.84	1435.11	786.11	1.06	1182.35
8349	91.01	343.68	6942.68	1523.35	760.16	0.74	1274.30
8441	91.01	343.29	6941.06	1611.54	734.01	0.42	1366.26
8534	91.21	342.69	6939.26	1700.45	706.81	0.68	1459.18
8625	91.65	343.30	6937.00	1787.45	680.21	0.82	1550.10
8717	90.50	345.27	6935.27	1875.99	655.29	2.47	1642.07
8810	91.18	345.13	6933.91	1965.89	631.53	0.74	1735.06
8905	88.49	344.78	6934.19	2057.62	606.88	2.85	1830.05
8999	89.19	345.09	6936.09	2148.37	582.45	0.82	1924.03
9094	89.09	344.71	6937.51	2240.08	557.70	0.41	2019.02
9189	89.60	345.02	6938.60	2331.78	532.91	0.62	2114.01
9284	91.21	345.51	6937.93	2423.65	508.75	1.77	2209.00
9380	88.66	344.87	6938.04	2516.46	484.21	2.74	2305.00
9475	88.99	345.29	6939.99	2608.23	459.75	0.56	2399.98
9570	89.63	346.13	6941.13	2700.29	436.31	1.12	2494.96
9665	93.23	347.50	6938.76	2792.74	414.66	4.05	2589.86
9761	91.91	344.96	6934.45	2885.87	391.83	2.98	2685.73
9856	92.99	345.24	6930.39	2977.59	367.42	1.17	2780.65
9952	89.09	344.88	6928.65	3070.32	342.68	4.07	2876.61
10048	89.50	343.91	6929.83	3162.77	316.86	1.10	2972.60
10143	91.21	344.55	6929.24	3254.19	291.04	1.93	3067.58
10239	90.67	344.98	6927.67	3346.80	265.82	0.72	3163.57
10333	91.41	344.53	6925.96	3437.48	241.11	0.92	3257.55
10429	91.61	344.32	6923.43	3529.92	215.34	0.30	3353.51
10525	92.32	343.95	6920.15	3622.21	189.11	0.83	3449.45
10620	90.10	344.98	6918.14	3713.71	163.68	2.57	3544.41
10715	90.57	344.71	6917.58	3805.40	138.84	0.57	3639.41
10810	90.87	344.69	6916.38	3897.03	113.77	0.31	3734.40
10905	88.72	346.02	6916.72	3988.93	89.76	2.67	3829.39
10999	88.29	345.89	6919.18	4080.09	66.96	0.49	3923.35
11095	89.90	346.68	6920.70	4173.34	44.20	1.87	4019.31
11190	90.20	346.78	6920.62	4265.81	22.40	0.34	4114.26
11285	90.84	346.90	6919.76	4358.31	0.77	0.68	4209.21
11381	91.55	345.87	6917.76	4451.59	-21.83	1.31	4305.16
11477	89.03	344.57	6917.28	4544.40	-46.32	2.95	4401.14
11573	89.93	344.82	6918.15	4636.99	-71.65	0.98	4497.14

D
 and Gas
 2015
 ment of
 Protection

MD	INC	AZI	TVD	N/S	E/W	DLS	VS
11669	90.84	345.10	6917.51	4729.70	-96.57	0.99	4593.13
11765	91.75	344.99	6915.34	4822.42	-121.34	0.96	4689.11
11860	88.72	345.17	6914.95	4914.20	-145.80	3.19	4784.10
11956	89.50	345.82	6916.44	5007.13	-169.84	1.06	4880.08
12051	90.87	347.82	6916.14	5099.62	-191.50	2.56	4975.02
12146	92.22	348.23	6913.58	5192.52	-211.20	1.48	5069.85
12241	90.74	347.15	6911.13	5285.30	-231.44	1.93	5164.71
12335	90.97	347.52	6909.72	5377.00	-252.05	0.47	5258.62
12431	89.36	345.01	6909.44	5470.25	-274.85	3.11	5354.58
12526	89.83	344.72	6910.11	5561.95	-299.66	0.58	5449.58
12622	90.24	344.38	6910.05	5654.48	-325.23	0.54	5545.58
12717	90.57	343.47	6909.38	5745.76	-351.53	1.02	5640.56
12813	91.31	343.96	6907.80	5837.90	-378.45	0.92	5736.52
12907	89.90	344.16	6906.80	5928.27	-404.26	1.52	5830.50
13002	90.27	344.09	6906.67	6019.65	-430.25	0.40	5925.49
13098	90.81	343.74	6905.76	6111.89	-456.84	0.67	6021.47
13192	91.55	343.66	6903.83	6202.09	-483.22	0.79	6115.43
13287	90.03	345.42	6902.52	6293.64	-508.54	2.44	6210.41
13383	90.47	344.77	6902.10	6386.40	-533.24	0.81	6306.41
13478	90.64	344.42	6901.18	6477.99	-558.47	0.41	6401.40
13571	91.14	343.67	6899.74	6567.39	-584.03	0.97	6494.37
13636	91.95	344.13	6897.98	6629.82	-602.05	1.43	6559.34
13685	92.56	344.13	6896.06	6676.91	-615.44	1.25	6608.29

RECEIVED
Office of Oil and Gas
DEC 03 2015
WV Department of
Environmental Protection

01/08/2016