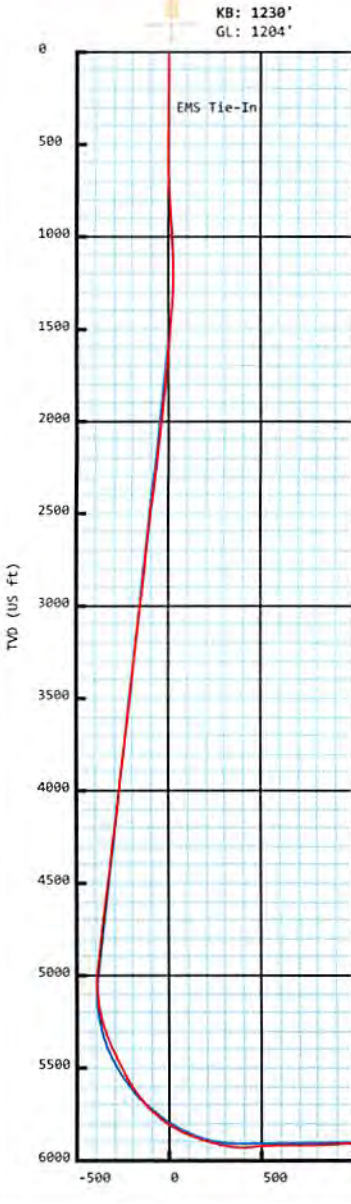




Southwestern Energy®
 Alan H Degarmo BRK 5H
 Brooke Co, WV
 SDC 40

Plan vs Actual



Plan Data for Alan H Degarmo BRK 5H

Plan Point Information:									
MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS	Toolface	Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(DLSU)	(°)	(°)
0.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.0	0.0
26.00	0.00	0.00	26.00	-0.00	0.00	0.00	0.00	0.0	0.0 KB Offset
600.00	0.00	0.00	600.00	-0.00	0.00	0.00	0.00	0.0	0.0 Nudge KOP
850.00	5.00	340.00	849.68	10.24	-3.73	10.90	2.00	340.0	Build/Turn
1570.23	11.00	104.12	1565.70	23.04	52.47	2.50	2.00	140.6	Hold
5073.00	11.00	104.12	5004.11	-140.02	700.63	-383.96	0.00	0.0	Curve KOP 7° DLS
6178.31	70.00	333.34	5871.66	379.89	545.57	156.83	7.00	226.8	Build/Turn 9° DLS
6408.73	90.74	333.17	5910.00	581.65	443.89	381.71	9.00	359.5	Landing Point
12782.18	90.74	333.17	5828.00	6268.72	-2432.11	6723.99	0.00	0.0	PBHL AHD5H

Target Set Information:
 Name: Alan H Degarmo BRK 5H
 Position offsets from Slot centre

Name	TVD	+N/-S	+E/-W	Northing	Easting	Lat	Long
	(USft)	(USft)	(USft)	(USft)	(USft)	(°)	(°)
LP AHD5H	5910.00	426.09	522.56	14617185.86	1760344.45	40.247596	-80.570209
PBHL AHD5H	5828.00	6268.72	-2432.11	14623028.49	1757389.78	40.263679	-80.580698

Plan Data for Alan H Degarmo BRK 5H

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

Site: Alan H Degarmo Pad
 Unit: USFeet TVD Reference:
 Company Name: SOUTHWESTERN ENERGY
 Position: Northing: 14616754.85USft Latitude: 40.246420°
 Easting: 1759766.13USft Longitude: -80.572289°
 North Reference: Grid Grid Convergence: 0.28°
 Elevation Above VRD: 1204.00USft

Slot: Alan H Degarmo BRK 5H
 Position:
 Offset is from Site centre
 +N/-S: 4.92USft Northing: 14616759.77USft Latitude: 40.246433°
 +E/-W: 55.76USft Easting: 1759821.89USft Longitude: -80.572089°
 Elevation Above VRD: 1204.00USft

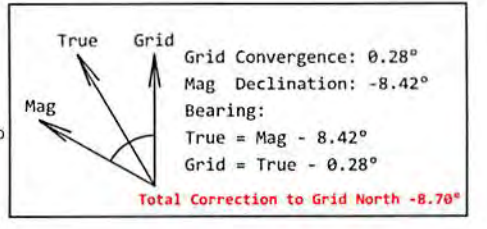
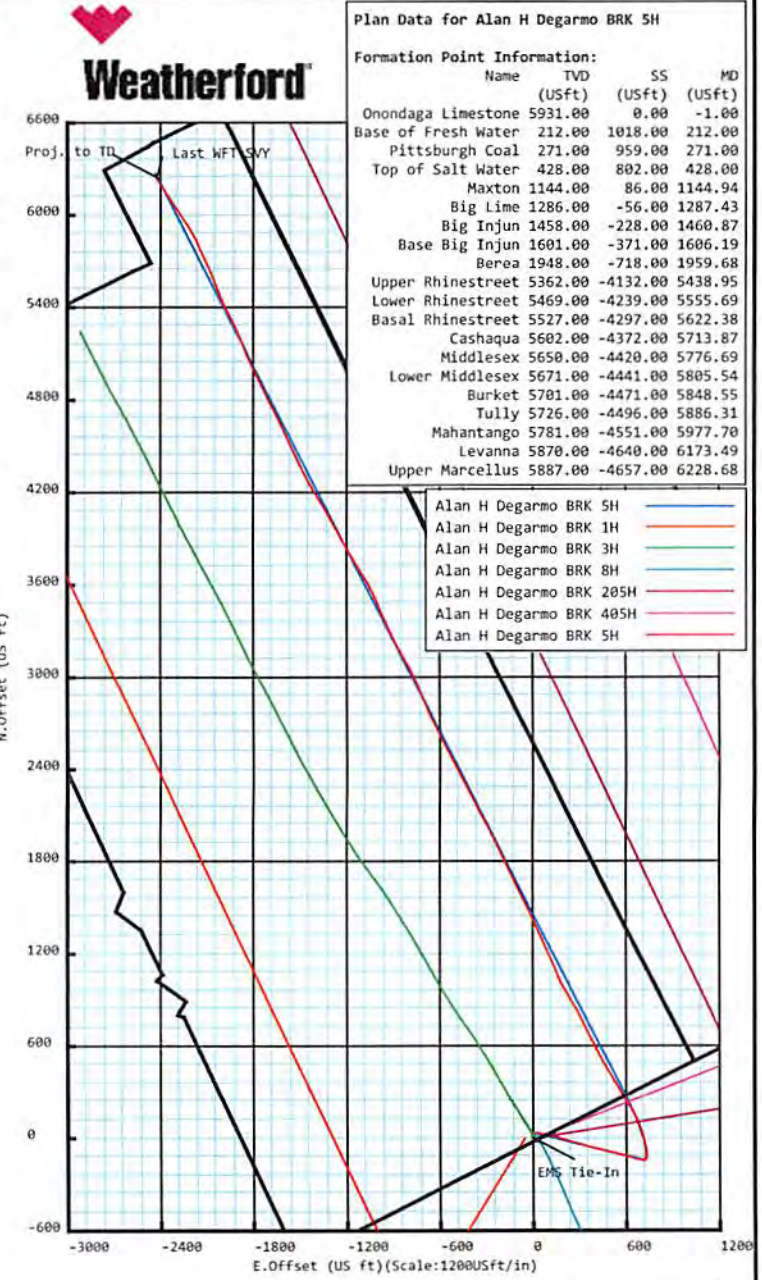
Well: Alan H Degarmo BRK 5H
 Type: Main-Well
 File Number:

Plan Folder: P1 Plan: P1:V3
 Vertical Section: Position offset of origin from Slot centre:
 +N/-S: -0.00USft Azimuth: 338.79°
 +E/-W: 0.00USft

Magnetic Parameters:
 Model: Field Strength: Declination: Dip: Date:
 HDGM 52616(nT) -8.42° 67.72° 2017-10-14

Drawing By: Gary Rhodes Date: 17 October 2017
 Office Name: MidCon DS
 Address: 7725 W. Reno Ave, Ste. #220
 Oklahoma City, OK 73127
 Phone: +1.405.720.4257

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**5D Survey Report**

SOUTHWESTERN ENERGY

Field Name: *SOUTHWESTERN_BROOKE CO, WV UTM NAD 83
(17N)*

Site Name: *Alan H Degarmo Pad*

Well Name: *Alan H Degarmo BRK 5H*

Survey: *Definitive survey*

8 November 2017



Alan H Degarmo BRK 5H

Map Units: US ft	Company Name: SOUTHWESTERN ENERGY
Field Name:	Vertical Reference Datum (VRD):
SOUTHWESTER N_BROOKE CO, WV UTM NAD 83 (17N)	Projected Coordinate System: NAD83 / UTM zone 17N
	Comment:

Site:	Units: US ft	North Reference: Grid	Convergence Angle: 0.28
	Position:	Northing: 14616754.85 US ft	Latitude: 40.246420
	Easting: 1759766.13 US ft	Longitude: -80.572289	
Alan H Degarmo Pad	Elevation above Field Reference: 1204.00 US ft		
	Comment:		

Slot:	Position (Relative to Site Centre)		
	+N/-S: 4.92 US ft	Northing: 14616759.77 US ft	Latitude: 40.246433
	+E/-W: 55.76 US ft	Easting: 1759821.89 US ft	Longitude: -80.572089
	Elevation above Field Reference: 1204.00 US ft		
Alan H Degarmo BRK 5H	Comment:		

Well:	Type: Main well	UWI:
	File Number:	Comment:
	Closure Distance: 6704.95 US ft	Closure Azimuth: 338.74°
	Vertical Section: Position of Origin (Relative to Slot centre)	
Alan H Degarmo BRK 5H	+N/-S: -0.00 US ft	+E/-W: 0.00 US ft Az: 338.79°

Drill floor: Survey Name: Definitive Survey	Rig Height (Drill Floor): 26.00 US ft	Elevation above Field Reference: 1230.00 US ft	Inclination: 0.00°	Azimuth: 0.00°
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Survey Name: Definitive Survey			
Date: 13/Oct/2017	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:

Magnetic Model:				
Model Name: HDGM	Date: 14/Oct/2017	Field Strength: 52616.0nT	Declination: -8.42°	Dip: 67.72°

Tie Point:					
MD: 0.00 US ft	Inclination: 0.00°	Azimuth: 0.00°	TVD: 0.00 US ft	North Offset: -0.00 US ft	East Offset: 0.00 US ft

Survey Tool Ranges:			
Name	Start MD(USft)	End MD(USft)	Source Survey
EMS	0.00	324.00	EMS
MWD	324.00	595.00	WFT MWD_01-1
MFAC_US_V2	595.00	685.00	WFT MWD_01-MFAC-1
MWD	685.00	1242.00	WFT MWD_01-2
MFAC_US_V2	1242.00	1334.00	WFT MWD_01-MFAC-2
MWD	1334.00	1427.00	WFT MWD_01-3
MFAC_US_V2	1427.00	1626.00	WFT MWD_01-MFAC-3
MWD	1626.00	6217.00	WFT MWD_02
MWD	6217.00	12058.00	WFT MWD_03

SD Survey Report

Survey Tool Ranges:

Name	Start MD(usft)	End MD(usft)	Source Survey
MWD	12058.00	12772.00	WFT MWD_04

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	0.00	-0.00	0.00	40.246433	-80.572089	0.00	
175.00	0.50	96.61	175.00	-0.36	-0.09	0.76	40.246433	-80.572086	0.29	
212.00	0.46	100.89	212.00	-0.51	-0.13	1.06	40.246433	-80.572085	0.15	Base of Fresh Water :
264.00	0.40	108.41	264.00	-0.74	-0.23	1.44	40.246433	-80.572084	0.15	
271.00	0.42	104.02	271.00	-0.77	-0.24	1.49	40.246432	-80.572083	0.51	Pittsburgh Coal :
324.00	0.60	81.31	323.99	-0.94	-0.25	1.95	40.246432	-80.572082	0.51	EMS Tie-In
414.00	0.81	96.07	413.99	-1.33	-0.25	3.05	40.246432	-80.572078	0.31	
428.01	0.82	96.83	428.00	-1.42	-0.27	3.24	40.246432	-80.572077	0.11	Top of Salt Water :
504.00	0.88	100.62	503.98	-1.99	-0.44	4.36	40.246432	-80.572073	0.11	
595.00	0.72	36.93	594.97	-2.05	-0.11	5.39	40.246433	-80.572069	0.94	
685.00	2.39	352.04	684.93	0.07	2.20	5.47	40.246439	-80.572069	2.16	
778.00	4.18	348.09	777.78	5.30	7.44	4.50	40.246454	-80.572073	1.94	
870.00	4.01	356.63	869.54	11.68	13.93	3.62	40.246471	-80.572076	0.69	
963.00	3.73	20.34	962.34	17.04	20.01	4.48	40.246488	-80.572072	1.73	
1056.00	4.52	37.21	1055.10	21.22	25.77	7.75	40.246504	-80.572061	1.55	
1145.17	4.47	52.30	1144.00	24.05	30.69	12.63	40.246517	-80.572043	1.32	Maxton :
1149.00	4.48	52.95	1147.82	24.13	30.87	12.86	40.246518	-80.572042	1.32	
1242.00	4.33	76.99	1240.55	24.62	33.85	19.18	40.246526	-80.572019	1.98	
1287.59	4.66	90.44	1286.00	23.69	34.23	22.71	40.246527	-80.572007	2.42	Big Lime :
1334.00	5.22	101.77	1332.24	21.85	33.78	26.66	40.246526	-80.571993	2.42	
1427.00	6.86	104.98	1424.72	16.27	31.48	36.17	40.246519	-80.571959	1.80	
1460.54	7.58	102.99	1458.00	13.84	30.47	40.26	40.246516	-80.571944	2.28	Big Injun :
1520.00	8.88	100.27	1516.84	9.24	28.77	48.60	40.246512	-80.571914	2.28	
1605.43	10.92	96.61	1601.00	2.02	26.66	63.13	40.246506	-80.571862	2.50	Base Big Injun :
1613.00	11.10	96.35	1608.43	1.35	26.50	64.56	40.246505	-80.571857	2.50	
1626.00	11.40	96.10	1621.18	0.18	26.22	67.09	40.246504	-80.571848	2.34	
1734.00	11.48	96.70	1727.03	-9.75	23.83	88.37	40.246497	-80.571772	0.13	
1827.00	11.50	100.14	1818.17	-18.90	21.12	106.69	40.246490	-80.571706	0.74	
1920.00	11.47	106.64	1909.31	-29.40	16.84	124.68	40.246478	-80.571642	1.39	
1959.47	11.40	106.21	1948.00	-34.17	14.63	132.18	40.246472	-80.571615	0.28	Berea :
2012.00	11.31	105.62	1999.50	-40.42	11.79	142.13	40.246464	-80.571579	0.28	
2105.00	10.51	109.92	2090.82	-51.46	6.45	158.89	40.246449	-80.571519	1.23	
2198.00	10.21	109.94	2182.30	-62.46	0.75	174.61	40.246433	-80.571463	0.32	
2291.00	10.00	108.74	2273.86	-73.07	-4.66	190.00	40.246418	-80.571408	0.32	
2383.00	11.10	108.12	2364.30	-83.81	-9.98	205.99	40.246403	-80.571351	1.20	
2476.00	11.18	107.72	2455.55	-95.15	-15.51	223.08	40.246388	-80.571290	0.12	
2569.00	10.94	106.36	2546.82	-106.19	-20.74	240.14	40.246373	-80.571229	0.38	
2662.00	10.51	104.38	2638.20	-116.51	-25.33	256.82	40.246360	-80.571169	0.61	
2754.00	10.19	103.08	2728.70	-125.98	-29.26	272.88	40.246349	-80.571111	0.43	
2847.00	10.71	105.30	2820.16	-135.75	-33.40	289.23	40.246338	-80.571053	0.71	
2940.00	10.49	106.78	2911.57	-146.10	-38.12	305.67	40.246324	-80.570994	0.38	
3033.00	11.15	106.73	3002.92	-156.84	-43.15	322.38	40.246310	-80.570934	0.71	
3125.00	10.93	107.24	3093.22	-167.73	-48.30	339.23	40.246296	-80.570874	0.26	
3218.00	10.10	106.98	3184.65	-178.26	-53.30	355.45	40.246282	-80.570816	0.89	
3310.00	10.87	104.35	3275.12	-188.29	-57.80	371.57	40.246270	-80.570758	0.99	
3403.00	10.68	103.91	3366.48	-198.34	-62.05	388.43	40.246258	-80.570698	0.22	
3496.00	11.20	104.67	3457.79	-208.59	-66.41	405.54	40.246245	-80.570637	0.58	
3589.00	10.84	104.84	3549.07	-219.03	-70.93	422.73	40.246233	-80.570575	0.39	
3681.00	10.97	105.34	3639.41	-229.34	-75.46	439.53	40.246220	-80.570515	0.17	

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SD Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
6402.00	87.04	332.09	5927.88	371.99	560.96	417.42	40.247968	-80.570583	10.07	
6433.00	91.17	332.98	5928.36	402.80	588.45	403.13	40.248044	-80.570634	13.63	
6495.00	95.50	333.87	5924.76	464.40	643.80	375.45	40.248196	-80.570732	7.13	
6588.00	92.16	334.06	5918.54	556.85	727.16	334.72	40.248426	-80.570877	3.60	
6680.00	89.94	332.89	5916.86	648.44	809.46	293.65	40.248652	-80.571022	2.73	
6773.00	90.74	329.24	5916.31	740.57	890.83	248.66	40.248876	-80.571182	4.02	
6866.00	91.54	329.24	5914.46	832.26	970.73	201.11	40.249096	-80.571351	0.86	
6959.00	93.14	338.53	5910.65	924.74	1054.07	160.25	40.249326	-80.571496	10.13	
7051.00	91.79	336.14	5906.69	1016.62	1138.88	124.83	40.249559	-80.571622	2.98	
7144.00	90.80	335.63	5904.59	1109.47	1223.74	86.84	40.249792	-80.571756	1.20	
7237.00	90.86	337.25	5903.24	1202.38	1308.98	49.68	40.250027	-80.571888	1.74	
7330.00	90.99	334.92	5901.74	1295.26	1393.97	11.98	40.250261	-80.572022	2.51	
7422.00	90.80	334.25	5900.31	1387.00	1477.06	-27.49	40.250490	-80.572162	0.76	
7515.00	90.43	334.78	5899.31	1479.73	1561.01	-67.51	40.250721	-80.572304	0.69	
7608.00	90.43	334.31	5898.61	1572.47	1644.98	-107.48	40.250952	-80.572446	0.51	
7701.00	90.43	334.22	5897.91	1665.18	1728.75	-147.86	40.251182	-80.572589	0.10	
7793.00	90.56	334.43	5897.12	1756.90	1811.66	-187.72	40.251410	-80.572730	0.27	
7886.00	90.49	334.52	5896.27	1849.63	1895.58	-227.79	40.251641	-80.572872	0.12	
7979.00	91.48	333.64	5894.67	1942.30	1979.21	-268.43	40.251872	-80.573017	1.42	
8071.00	89.51	332.28	5893.87	2033.81	2061.15	-310.25	40.252097	-80.573165	2.60	
8164.00	90.18	332.61	5894.12	2126.24	2143.60	-353.28	40.252324	-80.573318	0.80	
8257.00	90.62	332.41	5893.47	2218.68	2226.09	-396.20	40.252551	-80.573470	0.52	
8349.00	90.43	332.75	5892.63	2310.13	2307.75	-438.57	40.252776	-80.573621	0.42	
8442.00	90.37	332.32	5891.98	2402.58	2390.27	-481.46	40.253003	-80.573773	0.47	
8534.00	90.56	332.78	5891.23	2494.03	2471.91	-523.87	40.253228	-80.573924	0.54	
8627.00	90.31	332.69	5890.53	2586.50	2554.57	-566.47	40.253456	-80.574075	0.29	
8720.00	90.06	334.05	5890.23	2679.09	2637.71	-608.15	40.253684	-80.574223	1.49	
8812.00	89.88	334.03	5890.28	2770.77	2720.42	-648.43	40.253912	-80.574366	0.20	
8905.00	90.62	336.53	5889.87	2863.59	2804.89	-687.31	40.254144	-80.574504	2.80	
8998.00	90.62	338.20	5888.86	2956.55	2890.72	-723.10	40.254381	-80.574630	1.80	
9091.00	90.80	337.23	5887.71	3049.52	2976.77	-758.37	40.254617	-80.574755	1.06	
9183.00	90.80	331.33	5886.43	3141.19	3059.61	-798.27	40.254845	-80.574897	6.41	
9276.00	90.74	330.26	5885.18	3233.27	3140.78	-843.64	40.255069	-80.575058	1.15	
9369.00	90.56	332.70	5884.12	3325.50	3222.48	-888.04	40.255294	-80.575216	2.63	
9461.00	90.62	334.93	5883.17	3417.15	3305.03	-928.63	40.255521	-80.575360	2.42	
9554.00	90.74	336.00	5882.07	3509.98	3389.62	-967.25	40.255754	-80.575497	1.16	
9647.00	90.71	337.73	5880.89	3602.92	3475.14	-1003.78	40.255989	-80.575626	1.86	
9739.00	89.82	333.81	5880.47	3694.77	3559.01	-1041.53	40.256220	-80.575760	4.37	
9832.00	90.62	329.13	5880.11	3786.98	3640.70	-1085.94	40.256445	-80.575918	5.11	
9925.00	90.56	328.42	5879.15	3878.56	3720.22	-1134.15	40.256664	-80.576089	0.77	
10017.00	91.41	331.20	5877.57	3969.41	3799.72	-1180.40	40.256883	-80.576254	3.16	
10110.00	90.79	331.38	5875.79	4061.59	3881.27	-1225.06	40.257107	-80.576412	0.69	
10203.00	90.93	330.85	5874.39	4153.75	3962.69	-1269.98	40.257331	-80.576572	0.59	
10296.00	91.23	331.40	5872.64	4245.90	4044.11	-1314.89	40.257556	-80.576732	0.67	
10388.00	90.80	329.17	5871.01	4336.87	4124.00	-1360.48	40.257776	-80.576894	2.47	
10481.00	90.80	328.26	5869.71	4428.42	4203.47	-1408.77	40.257994	-80.577065	0.98	
10574.00	92.47	332.79	5867.05	4520.39	4284.37	-1454.50	40.258217	-80.577228	5.19	
10667.00	91.42	333.45	5863.90	4612.88	4367.28	-1496.52	40.258445	-80.577377	1.33	
10760.00	91.48	335.09	5861.54	4705.55	4451.03	-1536.88	40.258676	-80.577520	1.76	
10852.00	90.92	335.64	5859.62	4797.37	4534.63	-1575.22	40.258906	-80.577656	0.85	
10945.00	90.44	334.73	5858.51	4890.18	4619.04	-1614.25	40.259138	-80.577795	1.11	
11038.00	90.55	333.18	5857.71	4982.84	4702.59	-1655.08	40.259368	-80.577940	1.67	
11131.00	90.43	333.72	5856.91	5075.43	4785.78	-1696.65	40.259597	-80.578087	0.59	
11223.00	90.06	334.56	5856.52	5167.12	4868.56	-1736.77	40.259825	-80.578230	1.00	
11316.00	90.43	334.44	5856.12	5259.86	4952.50	-1776.81	40.260056	-80.578372	0.42	
11409.00	90.74	334.19	5855.17	5352.57	5036.31	-1817.12	40.260287	-80.578515	0.43	
11501.00	90.12	337.27	5854.48	5444.43	5120.17	-1854.93	40.260518	-80.578649	3.41	
11594.00	89.81	337.61	5854.54	5537.40	5206.05	-1890.60	40.260754	-80.578775	0.49	
11687.00	90.26	334.02	5854.48	5630.26	5290.87	-1928.70	40.260987	-80.578910	3.89	

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SD Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (%/100US ft)	Comment
11780.00	89.75	332.37	5854.47	5722.81	5373.88	-1970.64	40.261216	-80.579059	1.86	
11872.00	90.86	336.73	5853.98	5814.54	5456.92	-2010.16	40.261444	-80.579200	4.89	
11965.00	90.68	339.29	5852.73	5907.51	5543.14	-2044.98	40.261681	-80.579323	2.76	
12058.00	91.05	337.23	5851.33	6000.49	5629.51	-2079.42	40.261919	-80.579445	2.25	
12151.00	91.91	334.01	5848.93	6093.30	5714.18	-2117.79	40.262152	-80.579581	3.58	
12243.00	91.11	337.31	5846.50	6185.12	5797.96	-2155.69	40.262383	-80.579715	3.69	
12336.00	87.54	330.70	5847.60	6277.72	5881.49	-2196.42	40.262613	-80.579860	8.08	
12429.00	88.89	325.97	5850.50	6369.11	5960.58	-2245.20	40.262830	-80.580034	5.29	
12522.00	89.45	326.85	5851.85	6459.93	6038.04	-2296.64	40.263044	-80.580217	1.12	
12614.00	90.00	326.55	5852.29	6549.89	6114.94	-2347.15	40.263256	-80.580396	0.68	
12707.00	90.37	328.15	5851.99	6641.03	6193.24	-2397.33	40.263471	-80.580575	1.77	
12749.00	90.80	328.35	5851.56	6682.32	6228.95	-2419.43	40.263570	-80.580653	1.13	Last WFT SVY
12772.00	91.05	328.47	5851.19	6704.94	6248.54	-2431.47	40.263624	-80.580696	1.21	Proj. to TD

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