



Target Set Information:
 Name: Dechant State 37N-W36HZ
 Position offsets from Slot centre

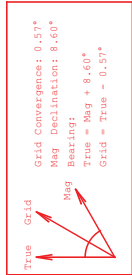
Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Lat (°)	Long Shape (°)
Dechant State 37N-W36HZ PBHL	6938.00	-4690.50	531.77	40.175600	-104.608823
Dechant State 37N-W36HZ Rev. PBHL	6938.00	-4687.00	607.69	40.175610	-104.608551

Formation Point Information:

Name	TVD Elevation (USft)	MD (USft)
Parman	3805.00	1028.00
Sussex	4375.00	458.00
Sharon Springs	6768.00	-1935.00
Niobrara A	6826.00	-1993.00
Niobrara B	6845.00	-2012.00
Niobrara C	6913.00	-2080.00

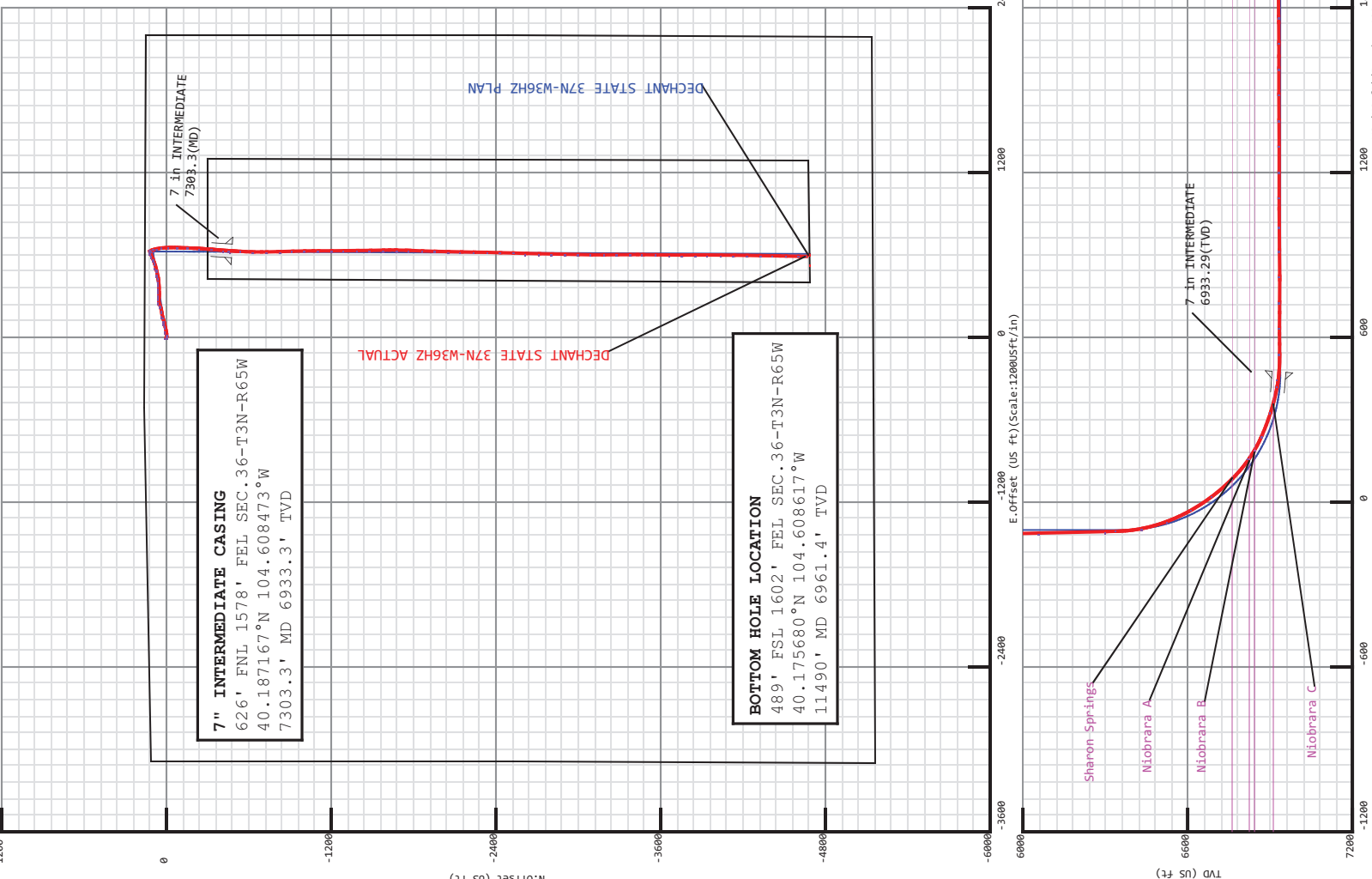
Casing Point Information:

Name	MD (USft)	TVD (USft)
7 in INTERMEDIATE	7303.30	6933.29



Survey Point Information:
 DogLeg Severity Unit: °/100.00ft

MD (USft)	Inc (°)	Az (°)	TVD (USft)	+N/-S (USft)	+E/-W (USft)	VSec (USft)	DLS Toolface (DUSU)	Position offsets from Slot centre (USft)	Annotation
638.00	0.09	253.09	638.00	0.46	-1.81	-0.45	0.86	162.8R	TIE ON TO SURFACE GYRO
772.00	0.38	144.45	772.00	0.07	-1.66	-0.06	0.31	120.4L	FIRST WFT MWD+LFR SURVEY
11436.00	84.13	180.96	6955.89	-4607.48	590.31	4605.29	0.98	150.2L	LAST WFT MWD+LFR SURVEY
11490.00	84.13	180.96	6961.41	-4661.19	589.41	4659.00	0.00	0.0R	PROJECTION TO TD





FINAL SURVEYS



5D Survey Report

Andarko Petroleum

Field Name: *Wattenberg*
Site Name: *Dechant 28-36HZ Pad*
Well Name: *DECHANT STATE 37N-W36HZ*
Survey: *Definitive Survey*





Surveys for the DECHANT STATE 37N-W36HZ

Units : US ft	North Reference : True	Convergence Angle : 0.57
Position	Northing : 1312719.83 US ft	Latitude : 40.188394
	Easting : 3248388.95 US ft	Longitude : -104.610912
Site TVD Reference : 25' RKB (H&P 307)		
Elevation above: 4808.00 US ft		
Comment :		

Slot Name	Position (Offsets relative to Site Centre)
Dechant State 37N-W36HZ	
+N / -S : 29.87 US ft	Northing : 1312750.22 US ft
+E / -W : 51.96 US ft	Easting : 3248440.61 US ft
Elevation above : 4808.00 US ft	
Comment :	

Well Name	UWI :
DECHANT STATE 37N-W36HZ	
Type : Main well	Comment :
Rig Height Drill Floor : 25.00 US ft	Closure Azimuth : 172.793°
Relative to : 4833.00 US ft	+E / -W : 0.00 US ft
Closure Distance : 4698.31 US ft	Az : 180.21°
Vertical Section (Position of Origin Relative to Slot)	
	+N / -S : 0.00 US ft

5D Survey Report

Target Set**Name :** Dechant State 37N-W36HZ **Number of Targets :** 3**Comment :**

TargetName: Dechant State 37N-W36HZ PBHL	+N / -S : -4690.50US ft +E / -W : 531.77 US ft	Position (Relative to centre) Northing : 1308065.29 US ft Easting : 3249019.38US ft	Latitude : 40°10'32.159959" Longitude : -104°36'31.762800"
Shape: Cuboid	TVD (Drill Floor) : 6938.00 US ft	Azimuth : 0.00° Length : 1.00 US ft	Inclination : 0.00° Breadth : 1.00 US ft
Orientation	Dimensions		Height : 1.00 US ft
TargetName: Dechant State 37N-W36HZ Rev. PBHL	+N / -S : -4687.00US ft +E / -W : 607.69 US ft	Position (Relative to centre) Northing : 1308069.55 US ft Easting : 3249095.26US ft	Latitude : 40°10'32.194492" Longitude : -104°36'30.784747"
Shape: Cuboid	TVD (Drill Floor) : 6938.00 US ft	Azimuth : 0.00° Length : 1.00 US ft	Inclination : 0.00° Breadth : 1.00 US ft
Orientation	Dimensions		Height : 1.00 US ft
TargetName: Dechant State 37N-W36HZ Rev. PBHL 2	+N / -S : -4687.00US ft +E / -W : 607.69 US ft	Position (Relative to centre) Northing : 1308069.55 US ft Easting : 3249095.26US ft	Latitude : 40°10'32.194460" Longitude : -104°36'30.784752"
Shape: Cuboid	TVD (Drill Floor) : 6848.00 US ft	Azimuth : 0.00° Length : 1.00 US ft	Inclination : 0.00° Breadth : 1.00 US ft
Orientation	Dimensions		Height : 1.00 US ft

Survey Name : Definitive Survey**Date :** 25/Jan/2013**Survey Tool :****Comment :****Company :****Magnetic Model****Model Name:** BGGM**Date:** 25/Jan/2013**Field Strength:** 52816.3 nT**Declination:** 8.60°**Dip:** 66.83°

5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor)															
ID (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Eastings (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
2330.00	11.21	79.10	2313.76	36.68	196.28	1312788.86	3248636.52	40.188577	-104.610023	0.59	94.00	-37.40	-15.09	4.61	
2415.00	10.08	73.58	2407.12	40.77	213.33	1312793.13	3248653.52	40.188588	-104.609962	1.60	95.00	-104.609962	-16.62	4.41	
2519.00	9.31	70.06	2499.78	45.69	228.37	1312798.20	3248668.51	40.188601	-104.609909	1.03	94.00	-46.53	-16.63	6.01	
2614.00	9.52	72.93	2593.50	50.62	243.10	1312803.27	3248683.19	40.188615	-104.609856	0.54	95.00	-51.51	-15.49	9.54	
2708.00	10.28	79.33	2686.10	54.45	258.77	1312807.26	3248698.83	40.188625	-104.609800	1.42	94.00	-55.40	-14.13	12.54	
2803.00	10.50	95.00	2779.56	55.27	275.73	1312808.25	3248715.77	40.188628	-104.609739	2.97	95.00	-56.28	-11.10	14.15	
2898.00	10.05	93.51	2873.04	54.01	292.63	1312807.16	3248732.68	40.188624	-104.609679	0.55	95.00	-55.08	-12.28	10.09	
2992.00	9.38	92.18	2965.69	53.21	308.47	1312806.52	3248748.53	40.188622	-104.609622	0.75	94.00	-54.34	-12.33	6.46	
3087.00	10.97	89.10	3059.20	53.06	325.24	1312806.54	3248765.31	40.188622	-104.609562	1.77	95.00	-54.25	-13.09	3.08	
3182.00	10.38	87.92	3152.55	53.51	342.84	1312807.17	3248782.89	40.188623	-104.609499	0.66	95.00	-54.77	-14.38	0.66	
3276.00	9.71	86.97	3245.11	54.24	359.21	1312808.06	3248799.26	40.188625	-104.609440	0.73	94.00	-55.56	-14.54	-1.40	
3370.00	11.41	87.55	3337.51	55.06	376.42	1312809.05	3248816.46	40.188627	-104.609379	1.81	94.00	-56.43	-15.56	-3.02	
3465.00	10.52	85.22	3430.78	56.18	394.45	1312810.35	3248834.48	40.188630	-104.609314	1.05	95.00	-57.63	-17.06	-5.22	
3560.00	9.66	85.96	3524.31	57.46	411.05	1312811.80	3248851.06	40.188634	-104.609255	0.92	95.00	-58.97	-17.33	-6.31	
3654.00	10.63	79.81	3616.84	59.55	427.45	1312814.06	3248867.44	40.188639	-104.609196	1.55	94.00	-61.12	-16.76	-8.59	
3749.00	9.48	78.46	3710.38	62.67	443.74	1312817.34	3248883.70	40.188648	-104.609138	1.24	95.00	-64.30	-16.65	-8.43	
3844.00	10.78	77.79	3803.90	66.11	460.09	1312820.94	3248900.01	40.188657	-104.609079	1.37	95.00	-67.80	-16.79	-7.78	
3938.00	10.57	78.46	3896.27	69.70	477.12	1312824.70	3248917.10	40.188667	-104.609018	0.26	94.00	-71.45	-18.00	-6.74	
4033.00	10.48	76.59	3989.67	73.44	494.07	1312828.61	3248933.91	40.188678	-104.608958	0.37	95.00	-75.25	-18.68	-6.32	
4127.00	10.07	73.80	4082.17	77.72	510.27	1312833.05	3248950.08	40.188689	-104.608900	0.69	94.00	-79.59	-18.92	-5.56	
4222.00	9.70	71.93	4175.76	82.52	525.86	1312838.01	3248965.61	40.188703	-104.608844	0.52	95.00	-84.45	-18.73	-3.82	
4317.00	9.27	72.74	4269.46	87.27	540.77	1312842.91	3248980.48	40.188716	-104.608790	0.47	95.00	-89.25	-18.09	-1.06	
4411.00	8.10	69.72	4362.38	91.81	554.22	1312847.59	3248993.88	40.188728	-104.608742	1.34	94.00	-93.84	-16.15	0.82	
4506.00	7.59	67.91	4456.50	96.47	566.24	1312852.36	3249005.85	40.188741	-104.608699	0.68	95.00	-98.54	-12.94	3.85	
4601.00	7.29	67.07	4550.71	101.15	577.54	1312857.15	3249017.10	40.188754	-104.608659	0.25	95.00	-103.26	-9.16	7.55	
4695.00	6.67	66.04	4644.01	105.69	588.02	1312861.80	3249027.54	40.188766	-104.608621	0.67	94.00	-107.84	-5.11	11.45	
4790.00	5.87	66.64	4738.44	109.85	597.52	1312866.06	3249037.00	40.188778	-104.608587	0.84	95.00	-112.04	-1.99	14.99	
4885.00	5.24	66.00	4833.00	113.54	605.94	1312869.83	3249045.38	40.188788	-104.608557	0.67	95.00	-115.76	-1.05	17.68	
4979.00	4.77	65.07	4926.64	116.94	613.41	1312873.30	3249052.81	40.188797	-104.608530	0.51	94.00	-119.18	-2.36	19.65	
5074.00	4.49	64.21	5021.33	120.22	620.34	1312876.65	3249059.71	40.188806	-104.608506	0.30	95.00	-122.49	-6.11	20.83	
5168.00	2.34	76.44	5115.16	122.27	625.52	1312878.76	3249064.87	40.188812	-104.608487	2.40	94.00	-124.56	-5.81	22.54	
5263.00	1.03	85.06	5210.11	122.80	628.25	1312879.31	3249067.60	40.188813	-104.608477	1.40	95.00	-125.10	-5.14	23.44	
5357.00	0.43	306.15	5304.11	123.08	628.81	1312879.60	3249068.15	40.188814	-104.608475	1.47	94.00	-125.38	-11.25	-21.60	
5736.00	1.47	162.67	5683.07	119.28	629.11	1312875.80	3249068.49	40.188803	-104.608474	0.48	379.00	-121.58	18.17	9.82	
6114.00	1.54	151.02	6060.94	110.21	633.01	1312866.77	3249072.49	40.188779	-104.608460	0.08	378.00	-112.53	5.99	12.31	
6358.00	1.44	160.79	6304.86	104.44	635.61	1312861.03	3249075.14	40.188763	-104.608451	0.11	244.00	-106.77	1.70	11.67	
6396.00	1.31	163.78	6342.85	103.57	635.89	1312860.16	3249075.43	40.188760	-104.608450	0.39	38.00	-105.90	1.39	11.59	
6490.00	11.97	162.80	6436.09	93.20	639.08	1312849.82	3249078.72	40.188732	-104.608439	11.34	94.00	-95.54	-5.34	12.92	
6585.00	21.07	168.32	6527.07	67.01	645.47	1312823.70	3249085.37	40.188660	-104.608416	9.71	95.00	-69.38	-11.92	18.38	
6680.00	29.60	174.99	6612.87	26.83	650.98	1312783.58	3249091.29	40.188550	-104.608396	9.46	95.00	-29.22	-16.11	24.84	
6774.00	37.26	178.41	6691.27	-24.82	653.80	1312731.96	3249094.63	40.188408	-104.608386	8.39	94.00	22.42	-18.48	28.64	

5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor)															
ID (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Eastings (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
6869.00	44.98	182.62	6762.80	-87.21	653.07	1312669.56	3249094.52	40.188237	-104.608388	8.63	95.00	84.82	-17.25	29.10	
6963.00	55.06	181.46	6823.12	-159.10	650.56	1312597.65	3249092.73	40.188039	-104.608397	10.76	94.00	156.72	-16.73	26.56	
7058.00	66.27	183.37	6869.59	-241.71	647.00	1312515.01	3249090.00	40.187812	-104.608410	11.93	95.00	239.34	-16.98	23.46	
7153.00	72.54	184.68	6902.99	-330.37	640.74	1312426.29	3249084.63	40.187569	-104.608433	6.72	95.00	328.02	-15.75	17.43	
7247.00	78.88	184.47	6926.18	-421.12	633.48	1312335.47	3249078.28	40.187320	-104.608459	6.75	94.00	418.80	-9.15	10.26	
7277.00	83.48	183.99	6930.78	-450.68	631.29	1312305.89	3249076.39	40.187239	-104.608466	15.41	30.00	448.36	-6.67	8.15	
7369.00	90.74	183.16	6935.42	-542.32	625.57	1312214.20	3249071.59	40.186987	-104.608487	7.94	92.00	540.03	-2.59	2.76	
7463.00	89.88	180.74	6934.91	-636.26	622.37	1312120.23	3249069.33	40.186729	-104.608498	2.73	94.00	633.97	-3.10	-0.09	
7552.00	89.44	179.14	6935.46	-730.25	622.47	1312026.24	3249070.37	40.186471	-104.608498	1.77	94.00	727.97	-2.54	0.35	
7652.00	90.49	178.65	6935.52	-825.24	624.30	1311931.29	3249073.16	40.186211	-104.608491	1.22	95.00	822.94	-2.48	2.52	
7747.00	90.33	178.60	6934.84	-920.21	626.58	1311836.34	3249076.39	40.185950	-104.608483	0.18	95.00	917.90	-3.16	5.15	
7835.00	90.44	178.42	6934.25	-1008.17	628.87	1311748.40	3249079.56	40.185708	-104.608475	0.24	88.00	1005.86	-3.75	7.76	
7936.00	90.19	180.02	6933.70	-1109.16	630.25	1311647.43	3249081.94	40.185431	-104.608470	1.60	101.00	1106.84	-4.31	9.50	
8031.00	89.74	180.01	6933.75	-1204.16	630.22	1311552.44	3249082.87	40.185170	-104.608470	0.47	95.00	1201.84	-4.25	9.82	
8125.00	90.43	179.27	6933.61	-1298.16	630.81	1311458.45	3249084.41	40.184912	-104.608468	1.08	94.00	1295.84	-4.39	10.76	
8220.00	90.19	179.19	6933.10	-1393.15	632.09	1311363.48	3249086.63	40.184652	-104.608464	0.27	95.00	1390.82	-4.90	12.38	
8314.00	90.06	179.15	6932.90	-1487.14	633.45	1311269.51	3249088.94	40.184394	-104.608459	0.14	94.00	1484.80	-5.11	14.08	
8409.00	89.94	178.76	6932.90	-1582.12	635.18	1311174.55	3249091.62	40.184133	-104.608453	0.43	95.00	1579.78	-5.11	16.16	
8504.00	90.37	180.89	6932.64	-1677.11	635.47	1311079.56	3249092.87	40.183872	-104.608452	2.29	95.00	1674.77	-5.37	16.80	
8598.00	90.74	182.15	6931.73	-1771.07	632.98	1310985.58	3249091.31	40.183614	-104.608461	1.40	94.00	1768.74	-6.28	14.64	
8693.00	90.06	182.15	6931.07	-1866.00	629.42	1310890.62	3249088.70	40.183354	-104.608473	0.72	95.00	1863.68	-6.94	11.43	
8788.00	90.12	181.41	6930.92	-1960.96	626.46	1310795.64	3249086.70	40.183093	-104.608484	0.78	95.00	1958.65	-7.09	8.83	
8882.00	89.81	181.18	6930.97	-2054.93	624.34	1310701.65	3249085.52	40.182835	-104.608491	0.41	94.00	2052.63	-7.03	7.05	
8977.00	89.81	181.41	6931.29	-2149.91	622.19	1310606.66	3249084.33	40.182574	-104.608499	0.24	95.00	2147.61	-6.72	5.25	
9071.00	89.63	180.87	6931.75	-2243.89	620.32	1310512.66	3249083.40	40.182316	-104.608506	0.61	94.00	2241.60	-6.26	3.72	
9166.00	89.75	181.08	6932.26	-2338.87	618.71	1310417.67	3249082.74	40.182055	-104.608512	0.25	95.00	2336.59	-5.74	2.45	
9261.00	90.19	181.62	6932.31	-2433.85	616.47	1310322.68	3249081.45	40.181795	-104.608520	0.73	95.00	2431.57	-5.69	0.56	
9355.00	90.18	181.68	6932.01	-2527.81	613.76	1310228.69	3249079.69	40.181537	-104.608529	0.06	94.00	2525.54	-6.00	-1.80	
9450.00	90.31	181.44	6931.60	-2622.77	611.18	1310133.71	3249078.05	40.181276	-104.608539	0.29	95.00	2620.51	-6.40	-4.04	
9544.00	90.68	181.25	6930.79	-2716.74	608.97	1310039.72	3249076.79	40.181018	-104.608547	0.44	94.00	2714.49	-7.21	-5.91	
9639.00	91.17	181.47	6929.26	-2811.71	606.86	1309944.74	3249075.63	40.180758	-104.608554	0.52	95.00	2809.46	-8.74	-7.67	
9734.00	90.31	181.47	6928.03	-2906.67	604.56	1309849.76	3249074.28	40.180497	-104.608562	0.92	95.00	2904.43	-9.97	-9.62	
9828.00	90.18	180.89	6927.63	-3000.65	602.62	1309755.77	3249073.29	40.180239	-104.608569	0.63	94.00	2998.42	-10.38	-11.22	
9923.00	90.12	180.57	6927.38	-3095.64	601.41	1309660.77	3249073.03	40.179978	-104.608574	0.34	95.00	3093.41	-10.62	-12.08	
10017.00	89.38	179.70	6927.79	-3189.64	601.19	1309566.77	3249073.75	40.179720	-104.608574	1.22	94.00	3187.41	-10.21	-11.96	
10112.00	89.82	179.66	6928.45	-3284.63	601.72	1309471.79	3249075.23	40.179459	-104.608573	0.47	95.00	3282.40	-9.55	-11.08	
10207.00	90.68	179.43	6928.04	-3379.63	602.48	1309376.80	3249076.94	40.179198	-104.608570	0.94	95.00	3377.40	-9.97	-9.98	
10301.00	91.48	181.03	6926.27	-3473.61	602.10	1309282.83	3249077.51	40.178941	-104.608571	1.90	94.00	3471.38	-11.73	-10.02	
10396.00	91.42	180.57	6923.86	-3568.57	600.77	1309187.86	3249077.13	40.178680	-104.608576	0.49	95.00	3566.34	-14.13	-11.00	
10490.00	90.56	180.50	6922.24	-3662.55	599.90	1309093.87	3249077.20	40.178422	-104.608579	0.92	94.00	3660.32	-15.76	-11.53	
10585.00	89.75	180.00	6921.98	-3757.54	599.48	1308998.87	3249077.74	40.178161	-104.608581	1.00	95.00	3755.32	-16.02	-11.60	

5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Eastings (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
10680.00	89.26	179.97	6922.80	-3852.54	599.51	1308903.88	3249078.71	40.177900	-104.608581	0.52	95.00	3850.32	-15.20	-11.23	
10774.00	88.77	180.01	6924.42	-3946.53	599.52	1308809.90	3249079.67	40.177642	-104.608580	0.52	94.00	3944.30	-13.58	-10.87	
10869.00	88.71	180.43	6926.51	-4041.50	599.16	1308714.93	3249080.26	40.177382	-104.608582	0.45	95.00	4039.28	-11.49	-10.89	
10964.00	88.58	180.65	6928.75	-4136.47	598.26	1308619.95	3249080.32	40.177121	-104.608585	0.27	95.00	4134.25	-9.25	-11.43	
11058.00	88.03	180.91	6931.53	-4230.42	596.98	1308526.00	3249079.98	40.176863	-104.608590	0.65	94.00	4228.21	-6.47	-12.37	
11153.00	87.35	180.89	6935.36	-4325.33	595.49	1308431.08	3249079.44	40.176602	-104.608595	0.72	95.00	4323.12	-2.64	-13.51	
11247.00	86.85	180.81	6940.12	-4419.20	594.10	1308337.20	3249078.99	40.176345	-104.608600	0.54	94.00	4416.99	2.11	-14.57	
11342.00	84.93	181.42	6946.93	-4513.93	592.26	1308242.45	3249078.10	40.176085	-104.608607	2.12	95.00	4511.73	8.86	-16.06	
11436.00	84.13	180.96	6955.89	-4607.48	590.31	1308148.89	3249077.09	40.175828	-104.608613	0.98	94.00	4605.29	17.77	-17.66	LAST WFT MWD+IFR SURVEY PROJECTION TO TD
11490.00	84.13	180.96	6961.41	-4661.19	589.41	1308095.17	3249076.73	40.175680	-104.608617	0.00	54.00	4659.00	23.26	-18.37	

Formation Points (Relative to centre, TVD relative to Drill Floor)			
Name	MD (US ft)	TVD (US ft)	E. Offset (US ft)
Parkman	3845.12	3805.00	460.29
Sussex	4423.75	4375.00	555.89
Sharon Springs	6876.41	6768.00	652.83
Niobrara A	6968.07	6826.00	650.45
Niobrara B	7003.69	6845.00	649.42
Niobrara C	7188.76	6913.00	637.96