



Weatherford

Evaluation, Drilling & Intervention
10000 West County Rd. 116
P.O. Box 61028
Midland, TX USA 79711
Tel. (432) 561-8892 Fax (432) 561-8895

Devon Energy
333 W. Sheridan Ave
Oklahoma City, OK, 73102

Date: March 27, 2017

Attention: Garrett Glaze

HOBBS OCD

Re: Devon Energy
Well: Thistle Unit 137H
Lea County, New Mexico

JAN 03 2018

RECEIVED

Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

Name & Title Of Surveyor	Well Number	Surveyed Depths	Dates Performed	Type of Survey
Andrew Schmidt	137H	175 MD	3/3/2017	Measurement
MWD Supervisor		17722 MD	3/20/2017	While Drilling

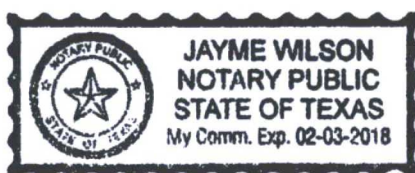
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Jonathan Leger
MWD Ops Coordinator

On this, the 29th day of March, 2017, before me a notary public, the undersigned officer, personally appeared Jonathan Leger, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.

Notary Public



**5D Survey Report**

Devon Energy

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Thistle Unit 137H*
Well Name: *Thistle Unit 137H*
Survey: *Definitive survey*

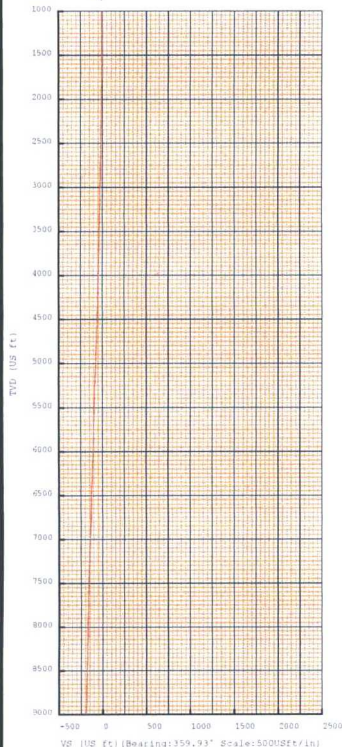
20 March 2017





Weatherford®

Plan Point Information:											
MD	Dogleg Inc	Severity	Unit: Az	TVD	+N/-S	+E/-W	Position offsets from Slot centre		VSc	DLS	Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	Northing	Easting	(USft)	(USft)	(DLSU)
9500.00	1.78	106.78	9475.13	-190.20	568.63	457021.59	781645.63	-190.90	0.65	Tie-on Svy	
9570.00	1.49	105.08	9545.10	-190.75	570.55	457021.04	781645.58	-191.45	0.42	Proj to Bitt	
10382.06	88.94	359.94	10069.26	326.48	582.89	457532.25	781657.92	31.75	11.00	LP	
13656.56	88.94	359.94	10130.01	3594.40	579.21	460806.19	781654.24	3593.69	0.00	Build	
13762.88	90.00	359.94	10131.00	3700.71	579.10	460991.50	781654.34	3700.00	0.00	Build	
15012.88	90.00	359.94	10131.00	4590.71	579.82	462162.50	781652.93	4590.00	0.00	Build	
15055.32	90.42	359.93	10130.84	4993.14	577.86	462284.93	781652.89	4992.44	0.00	Hold	
17735.44	90.42	359.93	10111.00	7673.19	574.76	464804.98	781649.49	7672.44	0.00	PBHL 137H	



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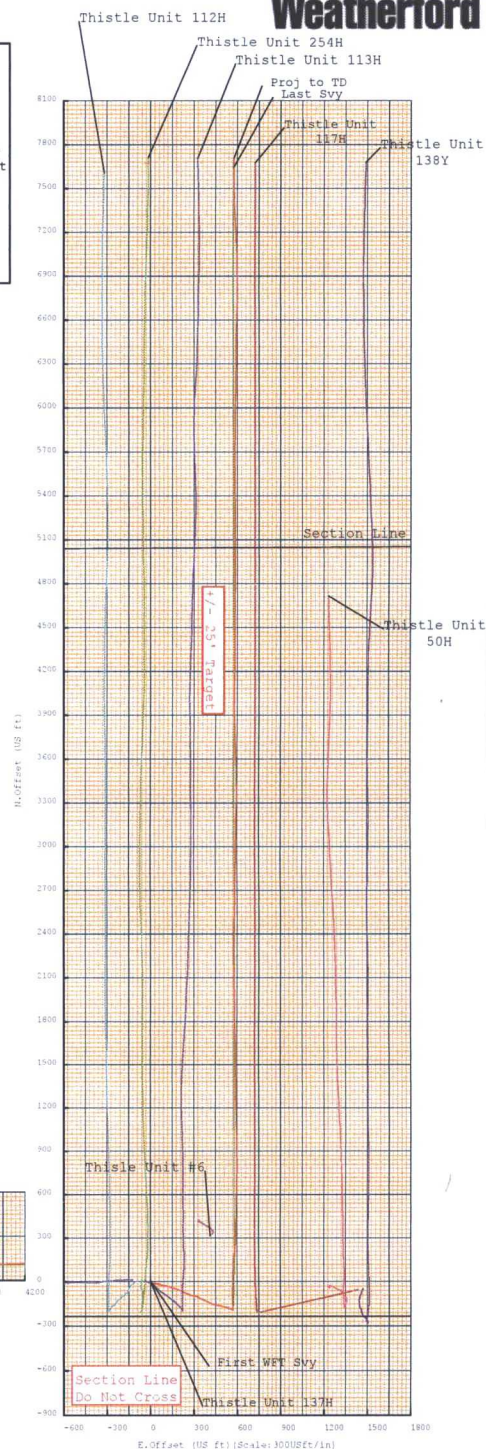
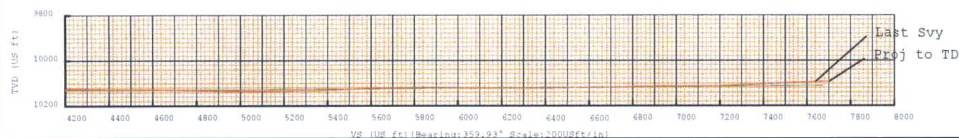
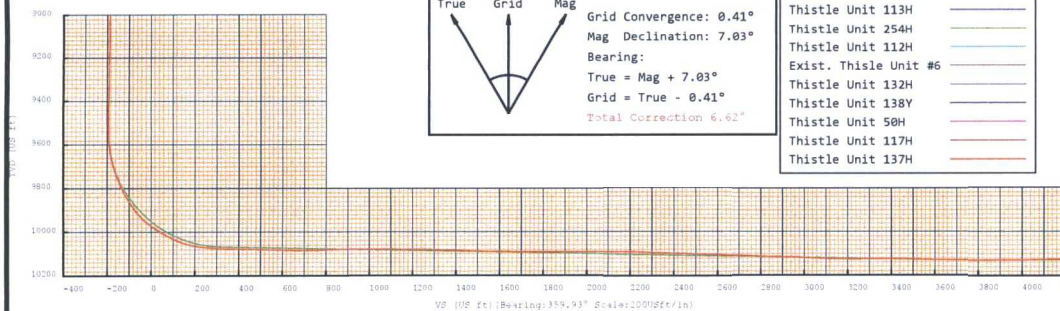
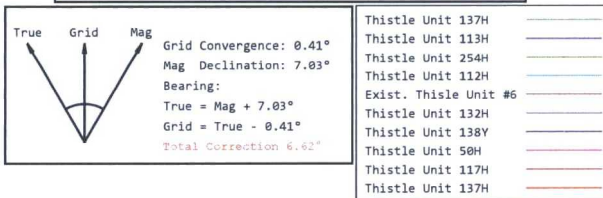
Well: Thistle Unit 137H
Type: Main-Well
File Number:

Plan Folder: P2                      Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft                      Azimuth: 359.93°
+E/-W: 0.00USft

Magnetic Parameters:
Model:      Field Strength: Declination: Dip:      Date:
bggm2016    48806(nT)        7.03°        60.10°    2017-03-03

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Target Set Information:						
Name: Thistle Unit 137H						
Position offsets from Slot centre						
Name	TVD	Elevation	+N/-S	+E/-W	Northing	Easting
	(Usft)	(Usft)	(Usft)	(Usft)	(Usft)	(Usft)
T1 10131.00		-6464.20	3700.71	579.10	460912.50	781654.13
T2 10131.00		-6464.20	4950.71	5787.90	462162.50	786862.93
PBHL 137H 10111.00		-6444.20	7673.19	574.76	464884.98	781649.79





Thistle Unit 137H

Field Name: Lea Co, NM Nad 83 NMEZ	Map Units: US ft		Company Name: Devon Energy	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)			
	Comment:			
Site: Thistle Unit 137H	Units: US ft	North Reference: Grid	Convergence Angle: 0.41	
	Position:	Northing: 457211.79 US ft	Latitude: 32° 15' 16.45"	
		Easting: 781075.03 US ft	Longitude: -103° 33' 28.14"	
	Elevation above MSL:3643.30 US ft			
Comment:				
Slot: Thistle Unit 137H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 457211.79 US ft	Latitude: 32°15'16.45"	
	+E/-W: 0.00 US ft	Easting: 781075.03 US ft	Longitude: -103°33'28.14"	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 3643.30 US ft			
	Comment:			
Well: Thistle Unit 137H	Type:Main well		UWI:	
	File Number:	Comment:		
	Closure Distance:7726.37US ft		Closure Azimuth:4.27°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: 0.00 US ft		+E/-W: 0.00 US ft	Az: 359.93°

Drill floor:	Survey Name: Definitive Survey			
Rig Height (Drill Floor): 23.50us ft	Elevation above MSL: 3666.80us ft	Inclination: 0.00°	Azimuth: 0.00°	

Survey Name:Definitive Survey				
Date: 03/Nov/2016	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:	
Magnetic Model:				
Model Name: bggm2016	Date: 03/Mar/2017	Field Strength: 48086.9nT	Declination: 7.03°	Dip: 60.10°
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
MWD	0.00	1291.00	WFT MWD Svy 1
MWD	1291.00	5085.00	WFT MWD Svy 2
MWD	5085.00	9500.00	WFT MWD Svy 3
MWD	9500.00	9816.00	WFT MWD Svy 4

5D Survey Report

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD	9816.00	10257.00	WFT MWD Svy 5
MWD	10257.00	16275.00	WFT MWD Svy 6
MWD	16275.00	16841.00	WFT MWD Svy 7
MWD	16841.00	17785.00	WFT MWD Svy 8

Wellpath 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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	457211.79	781075.03	First WFT Svy
175.00	0.35	85.08	175.00	0.05	0.53	0.05	0.20	457211.84	781075.56	
236.00	0.35	82.48	236.00	0.09	0.90	0.09	0.03	457211.88	781075.93	
327.00	0.31	80.13	327.00	0.16	1.42	0.16	0.05	457211.95	781076.45	
418.00	0.29	79.35	418.00	0.25	1.89	0.25	0.02	457212.04	781076.92	
510.00	0.16	123.29	509.99	0.22	2.23	0.22	0.23	457212.01	781077.26	
601.00	0.16	154.85	600.99	0.04	2.39	0.03	0.10	457211.83	781077.42	
692.00	0.16	189.41	691.99	-0.20	2.42	-0.21	0.10	457211.59	781077.45	
783.00	0.20	188.85	782.99	-0.49	2.37	-0.49	0.04	457211.30	781077.40	
874.00	0.22	226.36	873.99	-0.76	2.22	-0.77	0.15	457211.03	781077.25	
965.00	0.29	215.13	964.99	-1.07	1.96	-1.07	0.09	457210.72	781076.99	
1057.00	0.29	253.50	1056.99	-1.33	1.61	-1.33	0.21	457210.46	781076.64	
1149.00	0.07	305.56	1148.99	-1.36	1.34	-1.36	0.28	457210.43	781076.37	
1242.00	0.07	284.29	1241.99	-1.31	1.24	-1.32	0.03	457210.48	781076.27	
1291.00	0.16	249.39	1290.99	-1.33	1.14	-1.33	0.22	457210.46	781076.17	
1451.00	0.40	186.27	1450.99	-1.97	0.87	-1.97	0.22	457209.82	781075.90	
1512.00	0.42	181.40	1511.99	-2.40	0.85	-2.40	0.07	457209.39	781075.88	
1603.00	0.56	160.55	1602.98	-3.15	0.99	-3.15	0.25	457208.64	781076.02	
1694.00	0.78	148.66	1693.98	-4.10	1.46	-4.10	0.28	457207.69	781076.49	
1788.00	0.76	144.91	1787.97	-5.16	2.15	-5.16	0.06	457206.63	781077.18	
1882.00	1.04	129.22	1881.96	-6.21	3.17	-6.21	0.39	457205.58	781078.20	
1977.00	1.40	112.96	1976.94	-7.21	4.90	-7.21	0.52	457204.58	781079.93	
2071.00	1.82	108.14	2070.90	-8.12	7.38	-8.13	0.47	457203.67	781082.41	
2166.00	2.41	104.08	2165.83	-9.07	10.75	-9.09	0.64	457202.72	781085.78	
2261.00	2.77	103.45	2260.74	-10.09	14.92	-10.11	0.38	457201.70	781089.95	
2356.00	3.16	101.03	2355.61	-11.13	19.72	-11.15	0.43	457200.66	781094.75	
2450.00	3.15	100.08	2449.47	-12.08	24.81	-12.11	0.06	457199.71	781099.84	
2545.00	3.44	101.80	2544.31	-13.12	30.17	-13.15	0.32	457198.67	781105.20	
2639.00	3.86	102.61	2638.12	-14.38	36.02	-14.43	0.45	457197.41	781111.05	
2734.00	3.92	103.11	2732.90	-15.82	42.30	-15.87	0.07	457195.97	781117.33	
2828.00	4.07	103.27	2826.67	-17.31	48.67	-17.37	0.16	457194.48	781123.70	
2923.00	4.56	102.86	2921.40	-18.93	55.64	-18.99	0.52	457192.86	781130.67	
3018.00	4.99	104.09	3016.07	-20.77	63.33	-20.85	0.47	457191.02	781138.36	
3112.00	4.95	105.58	3109.72	-22.86	71.20	-22.94	0.14	457188.93	781146.23	
3207.00	5.11	104.91	3204.35	-25.05	79.23	-25.14	0.18	457186.74	781154.26	
3302.00	4.98	104.04	3298.98	-27.14	87.32	-27.24	0.16	457184.65	781162.35	
3397.00	5.45	103.29	3393.59	-29.17	95.71	-29.29	0.50	457182.62	781170.74	
3491.00	5.39	102.64	3487.17	-31.17	104.37	-31.29	0.09	457180.62	781179.40	
3585.00	5.30	100.66	3580.76	-32.93	112.94	-33.07	0.22	457178.86	781187.97	
3680.00	5.41	102.75	3675.35	-34.73	121.62	-34.88	0.24	457177.06	781196.65	
3775.00	5.20	103.58	3769.94	-36.73	130.17	-36.89	0.24	457175.06	781205.20	
3870.00	4.98	104.03	3864.57	-38.74	138.36	-38.91	0.24	457173.05	781213.39	
3964.00	4.78	105.95	3958.22	-40.81	146.08	-40.99	0.27	457170.98	781221.11	
4059.00	4.57	107.63	4052.91	-43.04	153.50	-43.23	0.26	457168.75	781228.53	
4153.00	4.53	108.05	4146.61	-45.33	160.59	-45.52	0.06	457166.46	781235.62	
4248.00	4.37	107.29	4241.33	-47.57	167.62	-47.77	0.18	457164.22	781242.65	
4343.00	4.12	107.91	4336.07	-49.69	174.32	-49.90	0.27	457162.10	781249.35	
4438.00	4.40	109.09	4430.80	-51.93	181.01	-52.15	0.31	457159.86	781256.04	

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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
4532.00	4.95	109.96	4524.49	-54.50	188.23	-54.73	0.59	457157.29	781263.26	
4626.00	5.27	108.99	4618.12	-57.29	196.12	-57.53	0.35	457154.50	781271.15	
4721.00	5.44	109.23	4712.70	-60.19	204.50	-60.44	0.18	457151.60	781279.53	
4815.00	5.80	112.15	4806.25	-63.45	213.11	-63.71	0.49	457148.34	781288.14	
4910.00	6.22	119.86	4900.73	-67.82	222.02	-68.09	0.96	457143.97	781297.05	
5005.00	6.27	115.34	4995.17	-72.60	231.17	-72.88	0.52	457139.19	781306.20	
5085.00	6.00	115.84	5074.71	-76.29	238.88	-76.59	0.34	457135.50	781313.91	
5284.00	4.72	113.44	5272.83	-84.08	255.75	-84.40	0.65	457127.71	781330.78	
5379.00	4.69	110.71	5367.51	-87.01	262.97	-87.33	0.24	457124.78	781338.00	
5474.00	4.76	108.60	5462.19	-89.64	270.34	-89.97	0.20	457122.15	781345.37	
5568.00	4.86	107.51	5555.86	-92.09	277.83	-92.42	0.14	457119.70	781352.86	
5663.00	5.13	104.46	5650.50	-94.36	285.78	-94.71	0.40	457117.43	781360.81	
5757.00	5.05	102.41	5744.13	-96.29	293.89	-96.65	0.21	457115.50	781368.92	
5851.00	5.17	103.07	5837.75	-98.14	302.06	-98.51	0.14	457113.65	781377.09	
5946.00	5.42	101.18	5932.35	-99.98	310.63	-100.36	0.32	457111.81	781385.66	
6041.00	5.63	110.99	6026.91	-102.52	319.38	-102.91	1.02	457109.27	781394.41	
6135.00	5.43	117.70	6120.47	-106.24	327.63	-106.64	0.72	457105.55	781402.66	
6230.00	4.85	117.56	6215.09	-110.19	335.17	-110.60	0.61	457101.60	781410.20	
6324.00	4.74	116.09	6308.76	-113.73	342.18	-114.15	0.18	457098.06	781417.21	
6419.00	4.40	115.68	6403.46	-117.04	348.99	-117.46	0.36	457094.75	781424.02	
6514.00	4.50	115.24	6498.17	-120.21	355.64	-120.64	0.11	457091.58	781430.67	
6609.00	4.63	112.91	6592.87	-123.29	362.55	-123.73	0.24	457088.50	781437.58	
6703.00	4.78	113.57	6686.56	-126.33	369.63	-126.78	0.17	457085.46	781444.66	
6798.00	4.87	112.94	6781.22	-129.49	376.97	-129.95	0.11	457082.30	781452.00	
6892.00	4.82	110.68	6874.88	-132.44	384.34	-132.90	0.21	457079.35	781459.37	
6987.00	4.73	110.60	6969.55	-135.22	391.74	-135.70	0.09	457076.57	781466.77	
7082.00	4.86	112.33	7064.22	-138.13	399.13	-138.62	0.20	457073.66	781474.16	
7177.00	4.70	113.89	7158.89	-141.23	406.41	-141.73	0.22	457070.56	781481.44	
7271.00	4.58	116.33	7252.58	-144.46	413.30	-144.96	0.25	457067.33	781488.33	
7366.00	4.49	118.39	7347.29	-147.91	419.97	-148.42	0.20	457063.88	781495.00	
7461.00	4.47	115.86	7442.00	-151.29	426.57	-151.81	0.21	457060.50	781501.60	
7555.00	5.13	105.72	7535.67	-154.03	433.91	-154.56	1.14	457057.76	781508.94	
7649.00	5.45	103.27	7629.27	-156.19	442.30	-156.73	0.42	457055.60	781517.33	
7744.00	4.36	103.59	7723.92	-158.08	450.20	-158.63	1.15	457053.71	781525.23	
7839.00	4.66	105.31	7818.62	-159.94	457.43	-160.50	0.35	457051.85	781532.46	
7933.00	6.05	101.66	7912.21	-161.95	465.97	-162.52	1.52	457049.84	781541.00	
8028.00	5.78	100.16	8006.70	-163.81	475.58	-164.39	0.33	457047.98	781550.61	
8122.00	5.25	102.38	8100.27	-165.57	484.44	-166.16	0.61	457046.22	781559.47	
8217.00	4.43	101.78	8194.93	-167.25	492.28	-167.85	0.86	457044.54	781567.31	
8312.00	5.49	101.02	8289.57	-168.86	500.33	-169.48	1.12	457042.93	781575.36	
8406.00	5.08	104.17	8383.17	-170.74	508.78	-171.36	0.53	457041.05	781583.81	
8501.00	4.87	104.04	8477.81	-172.75	516.77	-173.38	0.22	457039.04	781591.80	
8596.00	4.85	105.52	8572.47	-174.80	524.55	-175.44	0.13	457036.99	781599.58	
8691.00	4.55	108.35	8667.15	-177.06	532.00	-177.71	0.40	457034.73	781607.03	
8785.00	4.06	109.76	8760.89	-179.36	538.67	-180.02	0.53	457032.43	781613.70	
8879.00	3.60	109.56	8854.68	-181.48	544.58	-182.14	0.49	457030.31	781619.61	
8973.00	3.04	110.96	8948.52	-183.36	549.69	-184.03	0.60	457028.43	781624.72	
9068.00	2.53	108.69	9043.41	-184.93	554.03	-185.61	0.55	457026.86	781629.06	
9162.00	2.19	111.52	9137.33	-186.25	557.66	-186.93	0.38	457025.54	781632.69	
9257.00	2.00	113.93	9232.26	-187.59	560.87	-188.28	0.22	457024.20	781635.90	
9352.00	1.79	106.45	9327.21	-188.68	563.81	-189.37	0.34	457023.11	781638.84	
9446.00	2.13	108.21	9421.16	-189.65	566.87	-190.34	0.37	457022.14	781641.90	
9500.00	1.78	106.78	9475.13	-190.20	568.63	-190.90	0.65	457021.59	781643.66	
9534.00	1.71	134.69	9509.11	-190.71	569.50	-191.41	2.48	457021.08	781644.53	
9581.00	1.57	34.34	9556.10	-190.67	570.36	-191.37	5.36	457021.12	781645.39	
9628.00	5.79	4.16	9602.99	-187.77	570.89	-188.47	9.58	457024.02	781645.92	
9675.00	10.85	357.54	9649.49	-180.99	570.87	-181.68	10.94	457030.80	781645.90	
9722.00	15.25	356.32	9695.26	-170.39	570.29	-171.09	9.38	457041.40	781645.32	
9769.00	19.67	354.56	9740.08	-156.34	569.14	-157.04	9.47	457055.45	781644.17	

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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
9816.00	23.89	356.48	9783.72	-138.96	567.81	-139.65	9.10	457072.83	781642.84	
9863.00	28.47	358.21	9825.89	-118.25	566.87	-118.95	9.88	457093.54	781641.90	
9911.00	32.26	0.76	9867.30	-94.00	566.68	-94.69	8.34	457117.79	781641.71	
9946.00	36.38	2.10	9896.20	-74.28	567.19	-74.97	11.97	457137.51	781642.22	
9973.00	40.62	2.89	9917.32	-57.49	567.92	-58.18	15.81	457154.30	781642.95	
10004.00	45.37	2.59	9939.99	-36.38	568.93	-37.07	15.34	457175.41	781643.96	
10036.00	50.76	1.89	9961.37	-12.60	569.86	-13.30	16.92	457199.19	781644.89	
10067.00	54.86	1.11	9980.10	12.08	570.50	11.38	13.38	457223.87	781645.53	
10099.00	57.80	1.60	9997.84	38.70	571.13	38.00	9.28	457250.49	781646.16	
10131.00	60.28	1.47	10014.30	66.13	571.86	65.43	7.76	457277.92	781646.89	
10163.00	63.36	2.27	10029.41	94.32	572.79	93.62	9.87	457306.11	781647.82	
10194.00	67.07	3.87	10042.41	122.42	574.30	121.71	12.85	457334.21	781649.33	
10226.00	72.02	5.32	10053.59	152.29	576.71	151.59	16.04	457364.08	781651.74	
10257.00	77.81	6.68	10061.65	182.05	579.84	181.34	19.15	457393.84	781654.87	
10285.00	81.51	6.55	10066.68	209.40	583.01	208.69	13.22	457421.19	781658.04	
10317.00	82.70	5.51	10071.07	240.92	586.34	240.21	4.92	457452.71	781661.37	
10411.00	88.04	1.06	10078.66	334.41	591.69	333.68	7.38	457546.20	781666.72	
10506.00	89.02	1.71	10081.10	429.34	593.99	428.62	1.24	457641.13	781669.02	
10601.00	88.60	1.02	10083.07	524.30	596.25	523.57	0.85	457736.09	781671.28	
10695.00	89.02	1.19	10085.02	618.26	598.06	617.53	0.48	457830.05	781673.09	
10790.00	90.84	0.87	10085.14	713.24	599.77	712.51	1.95	457925.03	781674.80	
10885.00	91.96	359.71	10082.82	808.21	600.25	807.47	1.70	458020.00	781675.28	
10979.00	91.12	359.34	10080.29	902.17	599.47	901.43	0.98	458113.96	781674.50	
11073.00	89.93	358.98	10079.43	996.15	598.10	995.42	1.32	458207.94	781673.13	
11168.00	89.44	358.52	10079.95	1091.13	596.02	1090.40	0.71	458302.92	781671.05	
11262.00	88.88	359.17	10081.33	1185.10	594.13	1184.37	0.91	458396.89	781669.16	
11356.00	89.44	359.50	10082.71	1279.08	593.04	1278.35	0.69	458490.87	781668.07	
11451.00	88.11	358.92	10084.74	1374.05	591.73	1373.32	1.53	458585.84	781666.76	
11546.00	88.46	358.85	10087.58	1468.99	589.88	1468.26	0.38	458680.78	781664.91	
11640.00	88.60	359.88	10090.00	1562.95	588.84	1562.23	1.11	458774.74	781663.87	
11735.00	89.30	358.84	10091.74	1657.92	587.78	1657.21	1.32	458869.71	781662.81	
11830.00	89.58	358.81	10092.66	1752.90	585.83	1752.18	0.30	458964.69	781660.86	
11925.00	89.65	358.82	10093.30	1847.88	583.87	1847.16	0.07	459059.67	781658.90	
12020.00	90.63	358.86	10093.07	1942.86	581.94	1942.14	1.03	459154.65	781656.97	
12115.00	90.28	359.39	10092.32	2037.84	580.49	2037.13	0.67	459249.63	781655.52	
12209.00	89.51	358.97	10092.49	2131.83	579.15	2131.12	0.93	459343.62	781654.18	
12303.00	89.02	359.07	10093.69	2225.81	577.54	2225.10	0.53	459437.60	781652.57	
12398.00	87.62	359.88	10096.48	2320.76	576.67	2320.06	1.70	459532.55	781651.70	
12493.00	88.67	0.42	10099.55	2415.71	576.92	2415.00	1.24	459627.50	781651.95	
12587.00	87.69	1.59	10102.54	2509.65	578.56	2508.94	1.62	459721.44	781653.59	
12682.00	88.32	1.83	10105.85	2604.54	581.40	2603.83	0.71	459816.33	781656.43	
12777.00	87.20	1.23	10109.56	2699.44	583.93	2698.72	1.34	459911.23	781658.96	
12871.00	87.55	1.05	10113.87	2793.32	585.80	2792.60	0.42	460005.11	781660.83	
12966.00	89.37	1.81	10116.42	2888.25	588.17	2887.53	2.08	460100.04	781663.20	
13061.00	87.41	0.71	10119.09	2983.18	590.26	2982.46	2.37	460194.97	781665.29	
13155.00	87.06	0.40	10123.62	3077.07	591.17	3076.35	0.50	460288.86	781666.20	
13249.00	89.16	1.89	10126.72	3170.99	593.05	3170.26	2.74	460382.78	781668.08	
13344.00	90.35	1.60	10127.13	3265.95	595.94	3265.21	1.29	460477.74	781670.97	
13439.00	90.91	359.98	10126.08	3360.93	597.25	3360.19	1.80	460572.72	781672.28	
13533.00	89.02	358.97	10126.14	3454.92	596.39	3454.19	2.28	460666.71	781671.42	
13628.00	88.88	358.33	10127.88	3549.87	594.15	3549.15	0.69	460761.66	781669.18	
13720.00	87.90	357.13	10130.47	3641.76	590.51	3641.04	1.68	460853.55	781665.54	
13815.00	89.93	357.82	10132.27	3736.65	586.32	3735.93	2.26	460948.44	781661.35	
13909.00	90.63	358.14	10131.81	3830.59	583.01	3829.87	0.82	461042.38	781658.04	
14004.00	90.28	359.19	10131.05	3925.56	580.80	3924.85	1.17	461137.35	781655.83	
14098.00	91.89	359.97	10129.27	4019.53	580.11	4018.82	1.90	461231.32	781655.14	
14192.00	90.35	0.55	10127.43	4113.51	580.54	4112.80	1.75	461325.30	781655.57	
14287.00	90.63	0.73	10126.62	4208.50	581.60	4207.79	0.35	461420.29	781656.63	
14381.00	88.88	359.95	10127.02	4302.50	582.15	4301.78	2.04	461514.29	781657.18	

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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
14476.00	89.30	0.24	10128.53	4397.48	582.31	4396.77	0.54	461609.27	781657.34	
14570.00	90.35	0.45	10128.82	4491.48	582.88	4490.76	1.14	461703.27	781657.91	
14666.00	89.86	0.33	10128.64	4587.48	583.53	4586.76	0.53	461799.27	781658.56	
14761.00	88.74	0.52	10129.80	4682.47	584.24	4681.75	1.20	461894.26	781659.27	
14855.00	88.67	0.43	10131.93	4776.44	585.01	4775.72	0.12	461988.23	781660.04	
14950.00	88.53	0.55	10134.25	4871.41	585.83	4870.69	0.19	462083.20	781660.86	
15045.00	89.58	0.01	10135.82	4966.39	586.29	4965.67	1.24	462178.18	781661.32	
15139.00	90.00	359.80	10136.16	5060.39	586.14	5059.67	0.50	462272.18	781661.17	
15234.00	90.42	0.04	10135.81	5155.39	586.00	5154.67	0.51	462367.18	781661.03	
15329.00	90.28	359.56	10135.23	5250.39	585.67	5249.67	0.53	462462.18	781660.70	
15424.00	91.61	359.44	10133.67	5345.37	584.84	5344.65	1.41	462557.16	781659.87	
15518.00	92.66	359.08	10130.16	5439.29	583.63	5438.58	1.18	462651.08	781658.66	
15612.00	91.96	359.74	10126.38	5533.21	582.66	5532.50	1.02	462745.00	781657.69	
15707.00	92.24	0.05	10122.89	5628.15	582.49	5627.43	0.44	462839.94	781657.52	
15802.00	90.14	0.79	10120.92	5723.12	583.18	5722.40	2.34	462934.91	781658.21	
15897.00	91.05	0.83	10119.94	5818.10	584.53	5817.38	0.96	463029.89	781659.56	
15991.00	88.67	0.85	10120.16	5912.09	585.91	5911.36	2.53	463123.88	781660.94	
16086.00	88.95	0.95	10122.14	6007.05	587.40	6006.33	0.31	463218.84	781662.43	
16181.00	89.44	0.93	10123.47	6102.03	588.96	6101.31	0.52	463313.82	781663.99	
16275.00	90.00	0.57	10123.93	6196.02	590.19	6195.29	0.71	463407.81	781665.22	
16368.00	90.28	0.57	10123.70	6289.02	591.11	6288.29	0.30	463500.81	781666.14	
16463.00	90.14	0.66	10123.36	6384.01	592.13	6383.28	0.18	463595.80	781667.16	
16558.00	91.19	0.66	10122.25	6479.00	593.22	6478.27	1.11	463690.79	781668.25	
16652.00	90.84	1.54	10120.59	6572.96	595.03	6572.23	1.01	463784.75	781670.06	
16747.00	91.33	1.67	10118.79	6667.91	597.69	6667.17	0.53	463879.70	781672.72	
16841.00	91.12	1.44	10116.78	6761.85	600.24	6761.11	0.33	463973.64	781675.27	
16936.00	90.91	359.46	10115.10	6856.83	600.99	6856.09	2.10	464068.62	781676.02	
17031.00	90.63	358.83	10113.82	6951.81	599.57	6951.07	0.73	464163.60	781674.60	
17125.00	89.65	358.13	10113.59	7045.77	597.07	7045.04	1.28	464257.56	781672.10	
17220.00	90.56	357.25	10113.42	7140.69	593.25	7139.96	1.33	464352.48	781668.28	
17315.00	92.31	356.34	10111.04	7235.51	587.94	7234.79	2.08	464447.30	781662.97	
17410.00	92.87	356.89	10106.74	7330.25	582.33	7329.53	0.83	464542.04	781657.36	
17505.00	92.10	358.43	10102.63	7425.08	578.46	7424.36	1.81	464636.87	781653.49	
17599.00	91.61	359.31	10099.58	7519.01	576.61	7518.30	1.07	464730.80	781651.64	
17722.00	92.03	359.85	10095.68	7641.94	575.70	7641.23	0.56	464853.73	781650.73	Last Svy
17785.00	92.03	359.85	10093.44	7704.90	575.54	7704.19	0.00	464916.69	781650.57	Proj to TD



Devon Energy
Thistle Unit 137H
Lea Co, NM



Plan Data for Thistle Unit 137H

Plan Point Information:									
Dogleg Severity Unit: */100.00ft									
Position offsets from Slot centre									
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
9500.00	1.78	106.78	9475.13	-190.20	568.63	457021.59	781643.66	-190.90	0.65 Tie-on Svy
9570.00	1.49	105.08	9545.10	-190.75	570.55	457021.04	781645.58	-191.45	0.42 Proj to Bit
10382.06	88.94	359.94	10069.26	320.46	582.89	457532.25	781657.92	319.75	11.00 LP
13656.56	88.94	359.94	10130.01	359.40	579.21	460806.19	781654.24	3593.69	0.00 Build
13762.88	90.00	359.94	10131.00	3700.71	579.10	460912.50	781654.13	3700.00	1.00 Hold
15012.88	90.00	359.94	10131.00	4950.71	577.90	462162.50	781652.93	4950.00	0.00 Build
15055.32	90.42	359.93	10130.84	4993.14	577.86	462204.93	781652.89	4992.44	1.00 Hold
17735.44	90.42	359.93	10111.00	7673.19	574.76	464884.98	781649.79	7672.48	0.00 PBHL 137H

Plan Data for Thistle Unit 137H

Field: Lea Co, NM Nad 83 NMEZ
Map Unit: USFt Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)

Site: Thistle Unit 137H

Unit: USFeet TVD Reference:
Company Name: Devon Energy
Position: Northing: 457211.79USft Latitude: 32.254570°
Easting: 781075.03USft Longitude: -103.557817°
North Reference: Grid Grid Convergence: 0.41°
Elevation Above VRD: 3643.30USft

Slot: Thistle Unit 137H

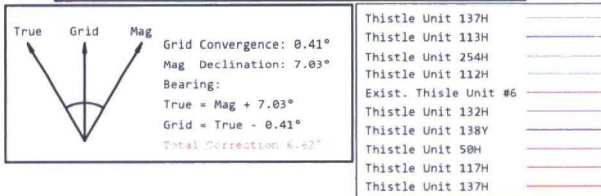
Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 457211.79USft Latitude: 32.254570°
+E/-W: 0.00USft Easting: 781075.03USft Longitude: -103.557817°
Elevation Above VRD: 3643.30USft

Well: Thistle Unit 137H

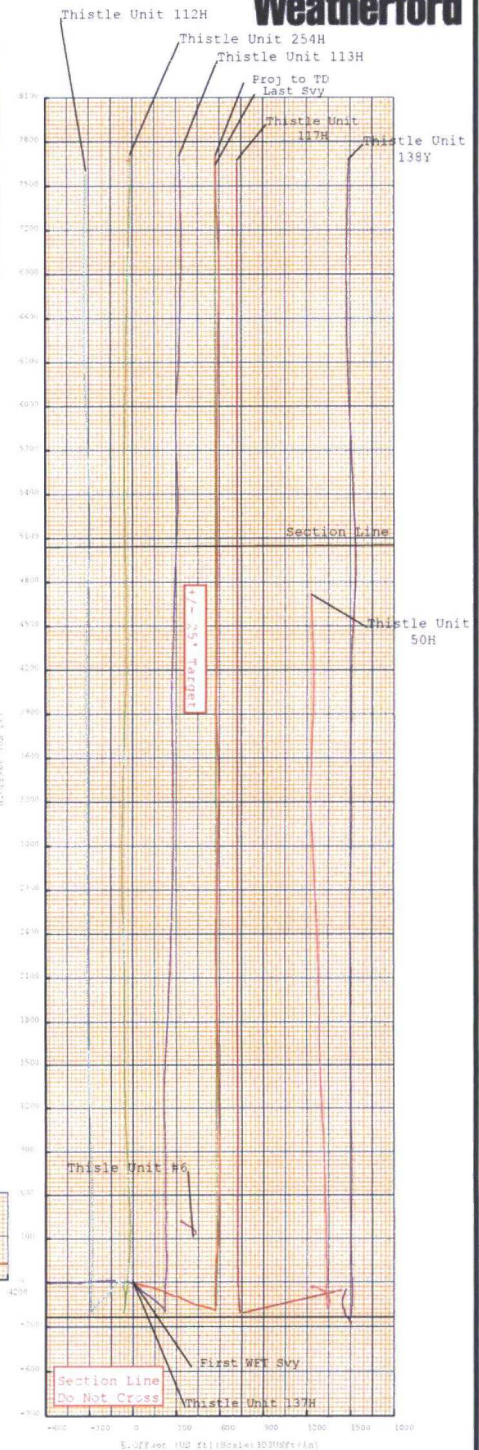
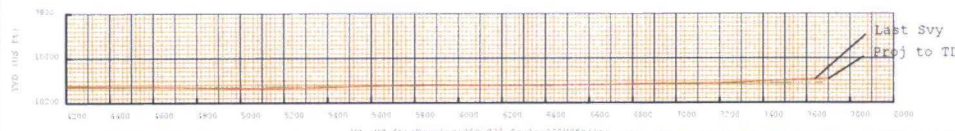
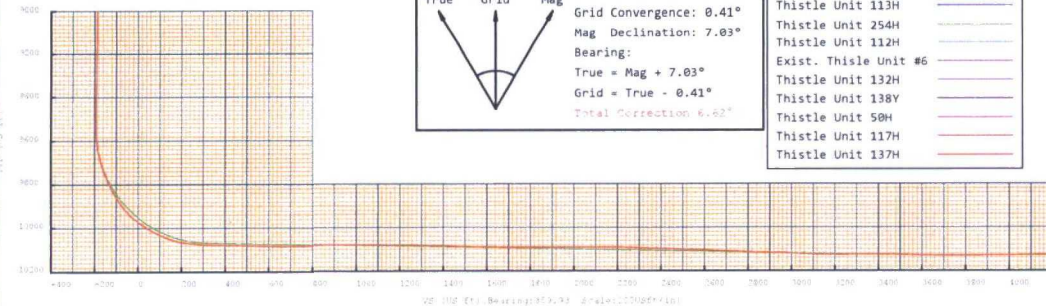
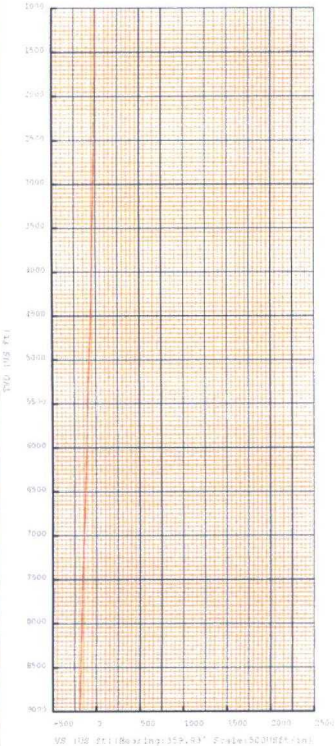
Type: Main-Well
File Number:
Plan Folder: P2 Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 359.93°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
bggm2016 48086(nT) 7.03° 60.10° 2017-03-03

Plan Data for Thistle Unit 137H

Target Set Information:						
Name: Thistle Unit 137H						
Position offsets from Slot centre						
Name	TVD	Elevation	+N/-S	+E/-W	Northing	Easting
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)
T1	10131.00	-6464.20	3700.71	579.10	460912.50	781654.13
T2	10131.00	-6464.20	4950.71	577.90	462162.50	786862.93
PBHL 137H	10111.00	-6444.20	7673.19	574.76	464884.98	781649.79



Thistle Unit 137H	---
Thistle Unit 113H	---
Thistle Unit 254H	---
Thistle Unit 112H	---
Exist. Thistle Unit #6	---
Thistle Unit 132H	---
Thistle Unit 138V	---
Thistle Unit 50H	---
Thistle Unit 117H	---
Thistle Unit 137H	---





Weatherford[®]

Evaluation, Drilling & Intervention

10000 West County Rd. 116

P.O. Box 61028

Midland, TX USA 79711

Tel. (432) 561-8892 Fax (432) 561-8895

Devon Energy
333 W. Sheridan Ave
Oklahoma City, OK, 73102

Date: March 27, 2017

Attention: Garrett Glaze

Re: Devon Energy
Well: Thistle Unit 137H
Lea County, New Mexico

Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

<u>Name & Title Of Surveyor</u>	<u>Well Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Andrew Schmidt	137H	175 MD	3/3/2017	Measurement
MWD Supervisor		17722 MD	3/20/2017	While Drilling

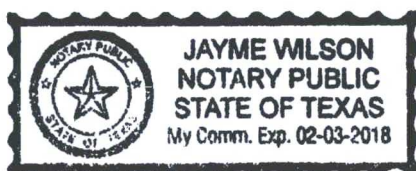
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.



Jonathan Leger
MWD Ops Coordinator

On this, the 29th day of March, 2017, before me a notary public, the undersigned officer, personally appeared Jonathan Leger known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.


Notary Public

**5D Survey Report**

Devon Energy**Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Thistle Unit 137H***Well Name:** *Thistle Unit 137H***Survey:** *Definitive survey*

20 March 2017





Devon Energy
Thistle Unit 137H
Lea Co, NM



Plan Data for Thistle Unit 137H

Plan Point Information:											
DogLeg Severity Unit: */100.00ft											
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS	Comments	
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)		
9500.00	1.78	106.78	9475.13	-190.20	568.63	457021.59	781643.66	-190.90	0.65	Tie-on Svy	
9570.00	1.49	105.08	9545.10	-190.75	570.55	457021.04	781645.58	-191.45	0.42	Proj to Bit	
10382.06	88.94	359.94	10069.26	320.46	582.89	457532.25	781657.92	319.75	11.00	LP	
13656.56	88.94	359.94	10130.01	3594.40	579.21	460806.19	781654.24	3593.69	0.00	Build	
13762.88	90.00	359.94	10131.00	3700.71	579.10	460912.50	781654.13	3700.00	1.00	Hold	
15012.88	90.00	359.94	10131.00	4950.71	577.90	462162.50	781652.93	4950.00	0.00	Build	
15055.32	90.42	359.93	10130.84	4993.14	577.86	462204.93	781652.89	4992.44	1.00	Hold	
17735.44	90.42	359.93	10111.00	7673.19	574.76	464884.98	781649.79	7672.48	0.00	PBHL 137H	

Plan Data for Thistle Unit 137H

Field: Lea Co, NM Nad 83 NMEZ
Map Unit: USFt Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)

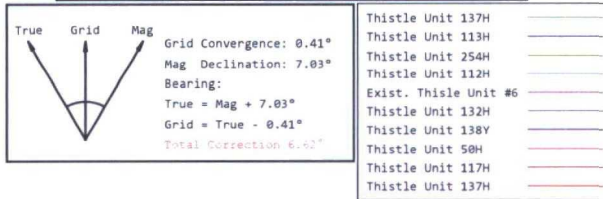
Site: Thistle Unit 137H
Unit: USFeet TVD Reference:
Company Name: Devon Energy
Position: Northing: 457211.79USft Latitude: 32.254570°
Easting: 781075.03USft Longitude: -103.557817°
North Reference: Grid Grid Convergence: 0.41°
Elevation Above VRD: 3643.30USft

Slot: Thistle Unit 137H
Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 457211.79USft Latitude: 32.254570°
+E/-W: 0.00USft Easting: 781075.03USft Longitude: -103.557817°
Elevation Above VRD: 3643.30USft

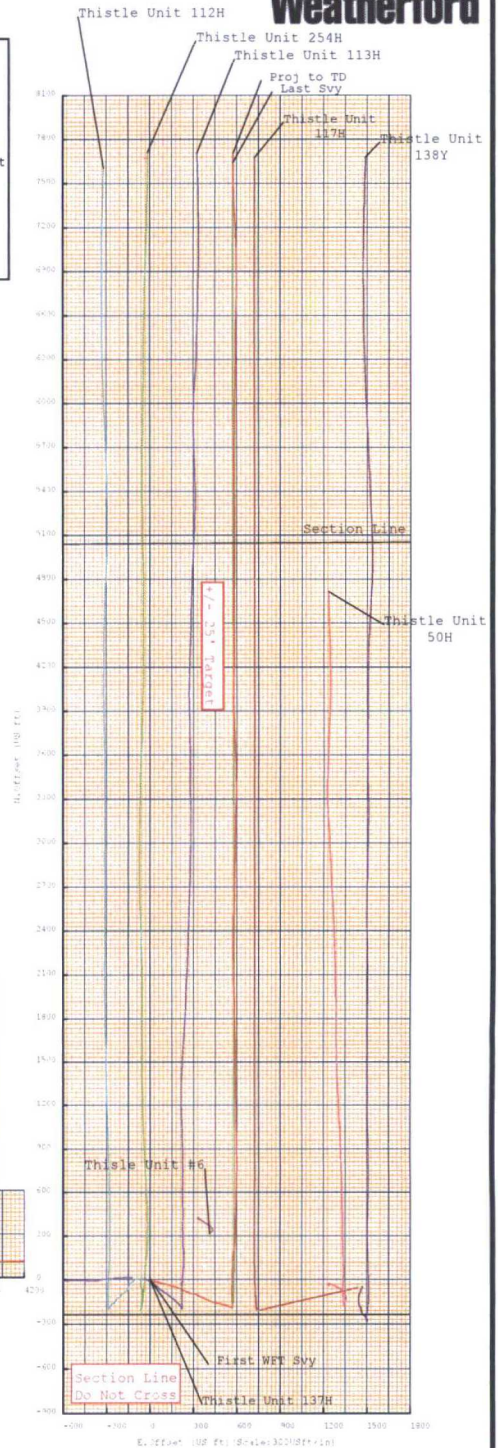
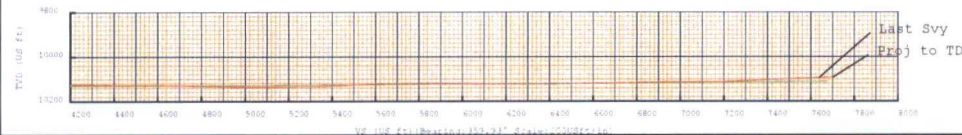
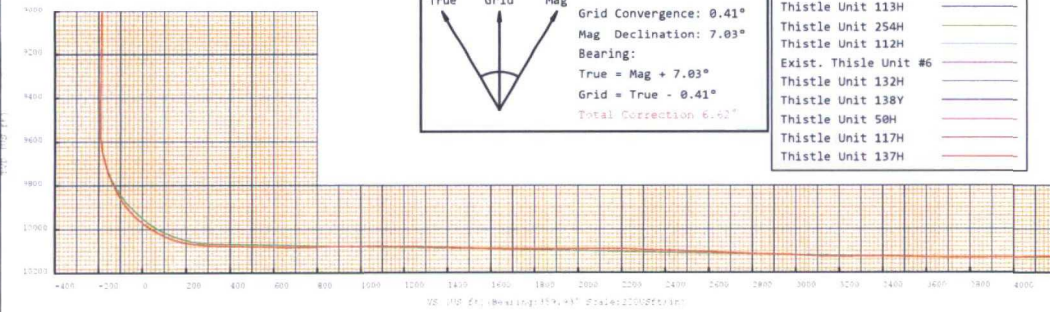
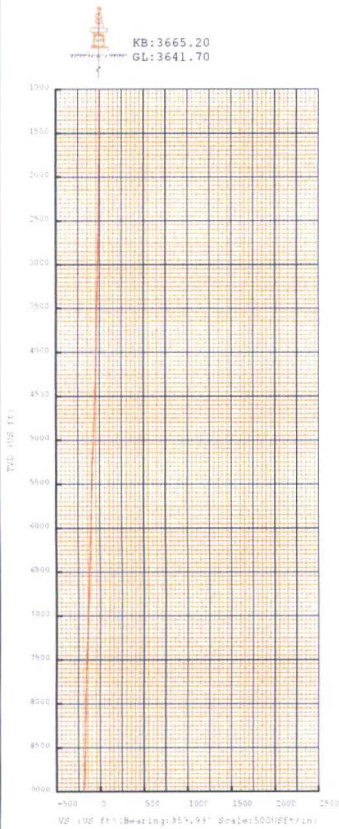
Well: Thistle Unit 137H
Type: Main-Well
File Number:
Plan Folder: P2 Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 359.93°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
bggm2016 48086(nT) 7.03° 60.10° 2017-03-03

Plan Data for Thistle Unit 137H

Target Set Information:						
Name: Thistle Unit 137H						
Position offsets from Slot centre						
Name	TVD Elevation	+N/-S	+E/-W	Northing	Easting	
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	
T1 10131.00	-6464.20	3700.71	579.10	460912.50	781654.13	
T2 10131.00	-6464.20	4950.71	5787.90	462162.50	786862.93	
PBHL 137H 10111.00	-6444.20	7673.19	574.76	464884.98	781649.79	



- Thistle Unit 137H
- Thistle Unit 113H
- Thistle Unit 254H
- Thistle Unit 112H
- Exist. Thistle Unit #6
- Thistle Unit 132H
- Thistle Unit 138Y
- Thistle Unit 50H
- Thistle Unit 117H
- Thistle Unit 137H





Thistle Unit 137H

Field Name: Lea Co, NM Nad 83 NMEZ	Map Units: US ft		Company Name: Devon Energy	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)			
	Comment:			
Site: Thistle Unit 137H	Units: US ft	North Reference: Grid	Convergence Angle: 0.41	
	Position:	Northing: 457211.79 US ft	Latitude: 32° 15' 16.45"	
		Easting: 781075.03 US ft	Longitude: -103° 33' 28.14"	
	Elevation above MSL:3643.30 US ft			
Comment:				
Slot: Thistle Unit 137H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 457211.79 US ft	Latitude: 32°15'16.45"	
	+E/-W: 0.00 US ft	Easting: 781075.03 US ft	Longitude: -103°33'28.14"	
	Slot TVD Reference: Ground Elevation			
Elevation above MSL: 3643.30 US ft				
Comment:				
Well: Thistle Unit 137H	Type:Main well		UWI:	
	File Number:	Comment:		
	Closure Distance:7726.37US ft		Closure Azimuth:4.27°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
+N/-S: 0.00 US ft		+E/-W: 0.00 US ft	Az: 359.93°	

Drill floor: Survey Name: Definitive Survey			
Rig Height (Drill Floor): 23.50 US ft	Elevation above MSL: 3666.80 US ft	Inclination: 0.00°	Azimuth: 0.00°

Survey Name: Definitive Survey			
Date: 03/Nov/2016	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:
Magnetic Model:			
Model Name: bggm2016	Date: 03/Mar/2017	Field Strength: 48086.9 nT	Declination: 7.03° Dip: 60.10°
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
MWD	0.00	1291.00	WFT MWD Svy 1
MWD	1291.00	5085.00	WFT MWD Svy 2
MWD	5085.00	9500.00	WFT MWD Svy 3
MWD	9500.00	9816.00	WFT MWD Svy 4

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Survey Tool Ranges:

Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD	9816.00	10257.00	WFT MWD Svy 5
MWD	10257.00	16275.00	WFT MWD Svy 6
MWD	16275.00	16841.00	WFT MWD Svy 7
MWD	16841.00	17785.00	WFT MWD Svy 8

Wellpath 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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	457211.79	781075.03	First WFT Svy
175.00	0.35	85.08	175.00	0.05	0.53	0.05	0.20	457211.84	781075.56	
236.00	0.35	82.48	236.00	0.09	0.90	0.09	0.03	457211.88	781075.93	
327.00	0.31	80.13	327.00	0.16	1.42	0.16	0.05	457211.95	781076.45	
418.00	0.29	79.35	418.00	0.25	1.89	0.25	0.02	457212.04	781076.92	
510.00	0.16	123.29	509.99	0.22	2.23	0.22	0.23	457212.01	781077.26	
601.00	0.16	154.85	600.99	0.04	2.39	0.03	0.10	457211.83	781077.42	
692.00	0.16	189.41	691.99	-0.20	2.42	-0.21	0.10	457211.59	781077.45	
783.00	0.20	188.85	782.99	-0.49	2.37	-0.49	0.04	457211.30	781077.40	
874.00	0.22	226.36	873.99	-0.76	2.22	-0.77	0.15	457211.03	781077.25	
965.00	0.29	215.13	964.99	-1.07	1.96	-1.07	0.09	457210.72	781076.99	
1057.00	0.29	253.50	1056.99	-1.33	1.61	-1.33	0.21	457210.46	781076.64	
1149.00	0.07	305.56	1148.99	-1.36	1.34	-1.36	0.28	457210.43	781076.37	
1242.00	0.07	284.29	1241.99	-1.31	1.24	-1.32	0.03	457210.48	781076.27	
1291.00	0.16	249.39	1290.99	-1.33	1.14	-1.33	0.22	457210.46	781076.17	
1451.00	0.40	186.27	1450.99	-1.97	0.87	-1.97	0.22	457209.82	781075.90	
1512.00	0.42	181.40	1511.99	-2.40	0.85	-2.40	0.07	457209.39	781075.88	
1603.00	0.56	160.55	1602.98	-3.15	0.99	-3.15	0.25	457208.64	781076.02	
1694.00	0.78	148.66	1693.98	-4.10	1.46	-4.10	0.28	457207.69	781076.49	
1788.00	0.76	144.91	1787.97	-5.16	2.15	-5.16	0.06	457206.63	781077.18	
1882.00	1.04	129.22	1881.96	-6.21	3.17	-6.21	0.39	457205.58	781078.20	
1977.00	1.40	112.96	1976.94	-7.21	4.90	-7.21	0.52	457204.58	781079.93	
2071.00	1.82	108.14	2070.90	-8.12	7.38	-8.13	0.47	457203.67	781082.41	
2166.00	2.41	104.08	2165.83	-9.07	10.75	-9.09	0.64	457202.72	781085.78	
2261.00	2.77	103.45	2260.74	-10.09	14.92	-10.11	0.38	457201.70	781089.95	
2356.00	3.16	101.03	2355.61	-11.13	19.72	-11.15	0.43	457200.66	781094.75	
2450.00	3.15	100.08	2449.47	-12.08	24.81	-12.11	0.06	457199.71	781099.84	
2545.00	3.44	101.80	2544.31	-13.12	30.17	-13.15	0.32	457198.67	781105.20	
2639.00	3.86	102.61	2638.12	-14.38	36.02	-14.43	0.45	457197.41	781111.05	
2734.00	3.92	103.11	2732.90	-15.82	42.30	-15.87	0.07	457195.97	781117.33	
2828.00	4.07	103.27	2826.67	-17.31	48.67	-17.37	0.16	457194.48	781123.70	
2923.00	4.56	102.86	2921.40	-18.93	55.64	-18.99	0.52	457192.86	781130.67	
3018.00	4.99	104.09	3016.07	-20.77	63.33	-20.85	0.47	457191.02	781138.36	
3112.00	4.95	105.58	3109.72	-22.86	71.20	-22.94	0.14	457188.93	781146.23	
3207.00	5.11	104.91	3204.35	-25.05	79.23	-25.14	0.18	457186.74	781154.26	
3302.00	4.98	104.04	3298.98	-27.14	87.32	-27.24	0.16	457184.65	781162.35	
3397.00	5.45	103.29	3393.59	-29.17	95.71	-29.29	0.50	457182.62	781170.74	
3491.00	5.39	102.64	3487.17	-31.17	104.37	-31.29	0.09	457180.62	781179.40	
3585.00	5.30	100.66	3580.76	-32.93	112.94	-33.07	0.22	457178.86	781187.97	
3680.00	5.41	102.75	3675.35	-34.73	121.62	-34.88	0.24	457177.06	781196.65	
3775.00	5.20	103.58	3769.94	-36.73	130.17	-36.89	0.24	457175.06	781205.20	
3870.00	4.98	104.03	3864.57	-38.74	138.36	-38.91	0.24	457173.05	781213.39	
3964.00	4.78	105.95	3958.22	-40.81	146.08	-40.99	0.27	457170.98	781221.11	
4059.00	4.57	107.63	4052.91	-43.04	153.50	-43.23	0.26	457168.75	781228.53	
4153.00	4.53	108.05	4146.61	-45.33	160.59	-45.52	0.06	457166.46	781235.62	
4248.00	4.37	107.29	4241.33	-47.57	167.62	-47.77	0.18	457164.22	781242.65	
4343.00	4.12	107.91	4336.07	-49.69	174.32	-49.90	0.27	457162.10	781249.35	
4438.00	4.40	109.09	4430.80	-51.93	181.01	-52.15	0.31	457159.86	781256.04	

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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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
4532.00	4.95	109.96	4524.49	-54.50	188.23	-54.73	0.59	457157.29	781263.26	
4626.00	5.27	108.99	4618.12	-57.29	196.12	-57.53	0.35	457154.50	781271.15	
4721.00	5.44	109.23	4712.70	-60.19	204.50	-60.44	0.18	457151.60	781279.53	
4815.00	5.80	112.15	4806.25	-63.45	213.11	-63.71	0.49	457148.34	781288.14	
4910.00	6.22	119.86	4900.73	-67.82	222.02	-68.09	0.96	457143.97	781297.05	
5005.00	6.27	115.34	4995.17	-72.60	231.17	-72.88	0.52	457139.19	781306.20	
5085.00	6.00	115.84	5074.71	-76.29	238.88	-76.59	0.34	457135.50	781313.91	
5284.00	4.72	113.44	5272.83	-84.08	255.75	-84.40	0.65	457127.71	781330.78	
5379.00	4.69	110.71	5367.51	-87.01	262.97	-87.33	0.24	457124.78	781338.00	
5474.00	4.76	108.60	5462.19	-89.64	270.34	-89.97	0.20	457122.15	781345.37	
5568.00	4.86	107.51	5555.86	-92.09	277.83	-92.42	0.14	457119.70	781352.86	
5663.00	5.13	104.46	5650.50	-94.36	285.78	-94.71	0.40	457117.43	781360.81	
5757.00	5.05	102.41	5744.13	-96.29	293.89	-96.65	0.21	457115.50	781368.92	
5851.00	5.17	103.07	5837.75	-98.14	302.06	-98.51	0.14	457113.65	781377.09	
5946.00	5.42	101.18	5932.35	-99.98	310.63	-100.36	0.32	457111.81	781385.66	
6041.00	5.63	110.99	6026.91	-102.52	319.38	-102.91	1.02	457109.27	781394.41	
6135.00	5.43	117.70	6120.47	-106.24	327.63	-106.64	0.72	457105.55	781402.66	
6230.00	4.85	117.56	6215.09	-110.19	335.17	-110.60	0.61	457101.60	781410.20	
6324.00	4.74	116.09	6308.76	-113.73	342.18	-114.15	0.18	457098.06	781417.21	
6419.00	4.40	115.68	6403.46	-117.04	348.99	-117.46	0.36	457094.75	781424.02	
6514.00	4.50	115.24	6498.17	-120.21	355.64	-120.64	0.11	457091.58	781430.67	
6609.00	4.63	112.91	6592.87	-123.29	362.55	-123.73	0.24	457088.50	781437.58	
6703.00	4.78	113.57	6686.56	-126.33	369.63	-126.78	0.17	457085.46	781444.66	
6798.00	4.87	112.94	6781.22	-129.49	376.97	-129.95	0.11	457082.30	781452.00	
6892.00	4.82	110.68	6874.88	-132.44	384.34	-132.90	0.21	457079.35	781459.37	
6987.00	4.73	110.60	6969.55	-135.22	391.74	-135.70	0.09	457076.57	781466.77	
7082.00	4.86	112.33	7064.22	-138.13	399.13	-138.62	0.20	457073.66	781474.16	
7177.00	4.70	113.89	7158.89	-141.23	406.41	-141.73	0.22	457070.56	781481.44	
7271.00	4.58	116.33	7252.58	-144.46	413.30	-144.96	0.25	457067.33	781488.33	
7366.00	4.49	118.39	7347.29	-147.91	419.97	-148.42	0.20	457063.88	781495.00	
7461.00	4.47	115.86	7442.00	-151.29	426.57	-151.81	0.21	457060.50	781501.60	
7555.00	5.13	105.72	7535.67	-154.03	433.91	-154.56	1.14	457057.76	781508.94	
7649.00	5.45	103.27	7629.27	-156.19	442.30	-156.73	0.42	457055.60	781517.33	
7744.00	4.36	103.59	7723.92	-158.08	450.20	-158.63	1.15	457053.71	781525.23	
7839.00	4.66	105.31	7818.62	-159.94	457.43	-160.50	0.35	457051.85	781532.46	
7933.00	6.05	101.66	7912.21	-161.95	465.97	-162.52	1.52	457049.84	781541.00	
8028.00	5.78	100.16	8006.70	-163.81	475.58	-164.39	0.33	457047.98	781550.61	
8122.00	5.25	102.38	8100.27	-165.57	484.44	-166.16	0.61	457046.22	781559.47	
8217.00	4.43	101.78	8194.93	-167.25	492.28	-167.85	0.86	457044.54	781567.31	
8312.00	5.49	101.02	8289.57	-168.86	500.33	-169.48	1.12	457042.93	781575.36	
8406.00	5.08	104.17	8383.17	-170.74	508.78	-171.36	0.53	457041.05	781583.81	
8501.00	4.87	104.04	8477.81	-172.75	516.77	-173.38	0.22	457039.04	781591.80	
8596.00	4.85	105.52	8572.47	-174.80	524.55	-175.44	0.13	457036.99	781599.58	
8691.00	4.55	108.35	8667.15	-177.06	532.00	-177.71	0.40	457034.73	781607.03	
8785.00	4.06	109.76	8760.89	-179.36	538.67	-180.02	0.53	457032.43	781613.70	
8879.00	3.60	109.56	8854.68	-181.48	544.58	-182.14	0.49	457030.31	781619.61	
8973.00	3.04	110.96	8948.52	-183.36	549.69	-184.03	0.60	457028.43	781624.72	
9068.00	2.53	108.69	9043.41	-184.93	554.03	-185.61	0.55	457026.86	781629.06	
9162.00	2.19	111.52	9137.33	-186.25	557.66	-186.93	0.38	457025.54	781632.69	
9257.00	2.00	113.93	9232.26	-187.59	560.87	-188.28	0.22	457024.20	781635.90	
9352.00	1.79	106.45	9327.21	-188.68	563.81	-189.37	0.34	457023.11	781638.84	
9446.00	2.13	108.21	9421.16	-189.65	566.87	-190.34	0.37	457022.14	781641.90	
9500.00	1.78	106.78	9475.13	-190.20	568.63	-190.90	0.65	457021.59	781643.66	
9534.00	1.71	134.69	9509.11	-190.71	569.50	-191.41	2.48	457021.08	781644.53	
9581.00	1.57	34.34	9556.10	-190.67	570.36	-191.37	5.36	457021.12	781645.39	
9628.00	5.79	4.16	9602.99	-187.77	570.89	-188.47	9.58	457024.02	781645.92	
9675.00	10.85	357.54	9649.49	-180.99	570.87	-181.68	10.94	457030.80	781645.90	
9722.00	15.25	356.32	9695.26	-170.39	570.29	-171.09	9.38	457041.40	781645.32	
9769.00	19.67	354.56	9740.08	-156.34	569.14	-157.04	9.47	457055.45	781644.17	

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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
9816.00	23.89	356.48	9783.72	-138.96	567.81	-139.65	9.10	457072.83	781642.84	
9863.00	28.47	358.21	9825.89	-118.25	566.87	-118.95	9.88	457093.54	781641.90	
9911.00	32.26	0.76	9867.30	-94.00	566.68	-94.69	8.34	457117.79	781641.71	
9946.00	36.38	2.10	9896.20	-74.28	567.19	-74.97	11.97	457137.51	781642.22	
9973.00	40.62	2.89	9917.32	-57.49	567.92	-58.18	15.81	457154.30	781642.95	
10004.00	45.37	2.59	9939.99	-36.38	568.93	-37.07	15.34	457175.41	781643.96	
10036.00	50.76	1.89	9961.37	-12.60	569.86	-13.30	16.92	457199.19	781644.89	
10067.00	54.86	1.11	9980.10	12.08	570.50	11.38	13.38	457223.87	781645.53	
10099.00	57.80	1.60	9997.84	38.70	571.13	38.00	9.28	457250.49	781646.16	
10131.00	60.28	1.47	10014.30	66.13	571.86	65.43	7.76	457277.92	781646.89	
10163.00	63.36	2.27	10029.41	94.32	572.79	93.62	9.87	457306.11	781647.82	
10194.00	67.07	3.87	10042.41	122.42	574.30	121.71	12.85	457334.21	781649.33	
10226.00	72.02	5.32	10053.59	152.29	576.71	151.59	16.04	457364.08	781651.74	
10257.00	77.81	6.68	10061.65	182.05	579.84	181.34	19.15	457393.84	781654.87	
10285.00	81.51	6.55	10066.68	209.40	583.01	208.69	13.22	457421.19	781658.04	
10317.00	82.70	5.51	10071.07	240.92	586.34	240.21	4.92	457452.71	781661.37	
10411.00	88.04	1.06	10078.66	334.41	591.69	333.68	7.38	457546.20	781666.72	
10506.00	89.02	1.71	10081.10	429.34	593.99	428.62	1.24	457641.13	781669.02	
10601.00	88.60	1.02	10083.07	524.30	596.25	523.57	0.85	457736.09	781671.28	
10695.00	89.02	1.19	10085.02	618.26	598.06	617.53	0.48	457830.05	781673.09	
10790.00	90.84	0.87	10085.14	713.24	599.77	712.51	1.95	457925.03	781674.80	
10885.00	91.96	359.71	10082.82	808.21	600.25	807.47	1.70	458020.00	781675.28	
10979.00	91.12	359.34	10080.29	902.17	599.47	901.43	0.98	458113.96	781674.50	
11073.00	89.93	358.98	10079.43	996.15	598.10	995.42	1.32	458207.94	781673.13	
11168.00	89.44	358.52	10079.95	1091.13	596.02	1090.40	0.71	458302.92	781671.05	
11262.00	88.88	359.17	10081.33	1185.10	594.13	1184.37	0.91	458396.89	781669.16	
11356.00	89.44	359.50	10082.71	1279.08	593.04	1278.35	0.69	458490.87	781668.07	
11451.00	88.11	358.92	10084.74	1374.05	591.73	1373.32	1.53	458585.84	781666.76	
11546.00	88.46	358.85	10087.58	1468.99	589.88	1468.26	0.38	458680.78	781664.91	
11640.00	88.60	359.88	10090.00	1562.95	588.84	1562.23	1.11	458774.74	781663.87	
11735.00	89.30	358.84	10091.74	1657.92	587.78	1657.21	1.32	458869.71	781662.81	
11830.00	89.58	358.81	10092.66	1752.90	585.83	1752.18	0.30	458964.69	781660.86	
11925.00	89.65	358.82	10093.30	1847.88	583.87	1847.16	0.07	459059.67	781658.90	
12020.00	90.63	358.86	10093.07	1942.86	581.94	1942.14	1.03	459154.65	781656.97	
12115.00	90.28	359.39	10092.32	2037.84	580.49	2037.13	0.67	459249.63	781655.52	
12209.00	89.51	358.97	10092.49	2131.83	579.15	2131.12	0.93	459343.62	781654.18	
12303.00	89.02	359.07	10093.69	2225.81	577.54	2225.10	0.53	459437.60	781652.57	
12398.00	87.62	359.88	10096.48	2320.76	576.67	2320.06	1.70	459532.55	781651.70	
12493.00	88.67	0.42	10099.55	2415.71	576.92	2415.00	1.24	459627.50	781651.95	
12587.00	87.69	1.59	10102.54	2509.65	578.56	2508.94	1.62	459721.44	781653.59	
12682.00	88.32	1.83	10105.85	2604.54	581.40	2603.83	0.71	459816.33	781656.43	
12777.00	87.20	1.23	10109.56	2699.44	583.93	2698.72	1.34	459911.23	781658.96	
12871.00	87.55	1.05	10113.87	2793.32	585.80	2792.60	0.42	460005.11	781660.83	
12966.00	89.37	1.81	10116.42	2888.25	588.17	2887.53	2.08	460100.04	781663.20	
13061.00	87.41	0.71	10119.09	2983.18	590.26	2982.46	2.37	460194.97	781665.29	
13155.00	87.06	0.40	10123.62	3077.07	591.17	3076.35	0.50	460288.86	781666.20	
13249.00	89.16	1.89	10126.72	3170.99	593.05	3170.26	2.74	460382.78	781668.08	
13344.00	90.35	1.60	10127.13	3265.95	595.94	3265.21	1.29	460477.74	781670.97	
13439.00	90.91	359.98	10126.08	3360.93	597.25	3360.19	1.80	460572.72	781672.28	
13533.00	89.02	358.97	10126.14	3454.92	596.39	3454.19	2.28	460666.71	781671.42	
13628.00	88.88	358.33	10127.88	3549.87	594.15	3549.15	0.69	460761.66	781669.18	
13720.00	87.90	357.13	10130.47	3641.76	590.51	3641.04	1.68	460853.55	781665.54	
13815.00	89.93	357.82	10132.27	3736.65	586.32	3735.93	2.26	460948.44	781661.35	
13909.00	90.63	358.14	10131.81	3830.59	583.01	3829.87	0.82	461042.38	781658.04	
14004.00	90.28	359.19	10131.05	3925.56	580.80	3924.85	1.17	461137.35	781655.83	
14098.00	91.89	359.97	10129.27	4019.53	580.11	4018.82	1.90	461231.32	781655.14	
14192.00	90.35	0.55	10127.43	4113.51	580.54	4112.80	1.75	461325.30	781655.57	
14287.00	90.63	0.73	10126.62	4208.50	581.60	4207.79	0.35	461420.29	781656.63	
14381.00	88.88	359.95	10127.02	4302.50	582.15	4301.78	2.04	461514.29	781657.18	

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)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
14476.00	89.30	0.24	10128.53	4397.48	582.31	4396.77	0.54	461609.27	781657.34	
14570.00	90.35	0.45	10128.82	4491.48	582.88	4490.76	1.14	461703.27	781657.91	
14666.00	89.86	0.33	10128.64	4587.48	583.53	4586.76	0.53	461799.27	781658.56	
14761.00	88.74	0.52	10129.80	4682.47	584.24	4681.75	1.20	461894.26	781659.27	
14855.00	88.67	0.43	10131.93	4776.44	585.01	4775.72	0.12	461988.23	781660.04	
14950.00	88.53	0.55	10134.25	4871.41	585.83	4870.69	0.19	462083.20	781660.86	
15045.00	89.58	0.01	10135.82	4966.39	586.29	4965.67	1.24	462178.18	781661.32	
15139.00	90.00	359.80	10136.16	5060.39	586.14	5059.67	0.50	462272.18	781661.17	
15234.00	90.42	0.04	10135.81	5155.39	586.00	5154.67	0.51	462367.18	781661.03	
15329.00	90.28	359.56	10135.23	5250.39	585.67	5249.67	0.53	462462.18	781660.70	
15424.00	91.61	359.44	10133.67	5345.37	584.84	5344.65	1.41	462557.16	781659.87	
15518.00	92.66	359.08	10130.16	5439.29	583.63	5438.58	1.18	462651.08	781658.66	
15612.00	91.96	359.74	10126.38	5533.21	582.66	5532.50	1.02	462745.00	781657.69	
15707.00	92.24	0.05	10122.89	5628.15	582.49	5627.43	0.44	462839.94	781657.52	
15802.00	90.14	0.79	10120.92	5723.12	583.18	5722.40	2.34	462934.91	781658.21	
15897.00	91.05	0.83	10119.94	5818.10	584.53	5817.38	0.96	463029.89	781659.56	
15991.00	88.67	0.85	10120.16	5912.09	585.91	5911.36	2.53	463123.88	781660.94	
16086.00	88.95	0.95	10122.14	6007.05	587.40	6006.33	0.31	463218.84	781662.43	
16181.00	89.44	0.93	10123.47	6102.03	588.96	6101.31	0.52	463313.82	781663.99	
16275.00	90.00	0.57	10123.93	6196.02	590.19	6195.29	0.71	463407.81	781665.22	
16368.00	90.28	0.57	10123.70	6289.02	591.11	6288.29	0.30	463500.81	781666.14	
16463.00	90.14	0.66	10123.36	6384.01	592.13	6383.28	0.18	463595.80	781667.16	
16558.00	91.19	0.66	10122.25	6479.00	593.22	6478.27	1.11	463690.79	781668.25	
16652.00	90.84	1.54	10120.59	6572.96	595.03	6572.23	1.01	463784.75	781670.06	
16747.00	91.33	1.67	10118.79	6667.91	597.69	6667.17	0.53	463879.70	781672.72	
16841.00	91.12	1.44	10116.78	6761.85	600.24	6761.11	0.33	463973.64	781675.27	
16936.00	90.91	359.46	10115.10	6856.83	600.99	6856.09	2.10	464068.62	781676.02	
17031.00	90.63	358.83	10113.82	6951.81	599.57	6951.07	0.73	464163.60	781674.60	
17125.00	89.65	358.13	10113.59	7045.77	597.07	7045.04	1.28	464257.56	781672.10	
17220.00	90.56	357.25	10113.42	7140.69	593.25	7139.96	1.33	464352.48	781668.28	
17315.00	92.31	356.34	10111.04	7235.51	587.94	7234.79	2.08	464447.30	781662.97	
17410.00	92.87	356.89	10106.74	7330.25	582.33	7329.53	0.83	464542.04	781657.36	
17505.00	92.10	358.43	10102.63	7425.08	578.46	7424.36	1.81	464636.87	781653.49	
17599.00	91.61	359.31	10099.58	7519.01	576.61	7518.30	1.07	464730.80	781651.64	
17722.00	92.03	359.85	10095.68	7641.94	575.70	7641.23	0.56	464853.73	781650.73	Last Svy
17785.00	92.03	359.85	10093.44	7704.90	575.54	7704.19	0.00	464916.69	781650.57	Proj to TD