

Results of Directional Survey

API number:	30-025-40010			
OGRID:		Operator:	DEVON ENERGY PRODUCTION COMPANY, LP	
		Property:	THISTLE UNIT	# 18H

surface	ULSTR:	C	28	T	23S	R	33E
				150	FNL	1470	FWL

BH Loc	ULSTR:	N	28	T	23S	R	33E
13519	MD	8942.1	TVD	4914	FNL	2501	FWL
				366	FSL		

Top Perf/OH	ULSTR:	C	28	T	23S	R	33E
9568	MD	8923.9	TVD	1039	FNL	1772	FWL

Bot Perf/OH	ULSTR:	N	28	T	23S	R	33E
13408	MD	8945.4	TVD	4783	FNL	2476	FWL
				497	FSL		

	MD	N/S	E/W	VD
	9537	-858.92	293.99	8923.83
TOP PERFS/OH	9568	-888.99	301.51	8923.94
	9632	-951.07	317.05	8924.16
	13362	-4610.27	1001.10	8945.94
BOT PERFS/OH	13408	-4632.95	1005.59	8945.39
	13545	-4700.50	1018.97	8943.77

NEXT TO LAST	13545	-4700.50	1018.97	8943.77
LAST READING	13519	-4764.32	1031.14	8942.07
TD	13519	-4764.32	1031.14	8942.07

Surface Location	150	FN	1470	FW
Projected BHL	4914	FN	2501	FW
Location of				
Top Perfs/OH	1039	FN	1772	FW
Bottom Perfs/OH	4783	FN	2476	FW

SUMMARY of Subsurface Locations

Surface Location	C-28-23S-33E	150	FN	1470	FW	Vert. Depth
Top Perfs/OH	C-28-23S-33E	1039	FN	1772	FW	8923.94
Bottom Perfs/OH	N-28-23S-33E	4783	FN	2476	FW	8945.39
Projected TD	N-28-23S-33E	4914	FN	2501	FW	8942.07

**McVAY DRILLING COMPANY**

P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

Well Name and Num: Thistle Unit 18H
Location: Sec. 28, T23S, R33E
Operator: Devon
Drilling Contractor: McVay Drilling Company

SUR: C-28-23s-33e, 150/N & 1470/W
BHL: N-28-23s-33e, 4914/N & 2501/W
API # 30-025-40010

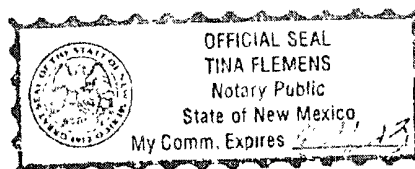
The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.33	245	1.01	6095	81.20	9188	89.10	12065
0.91	442	1.59	6630	87.90	9252	88.90	12158
0.04	692	1.62	7111	90.30	9379	88.40	12250
0.51	935	1.59	7593	89.50	9442	88.00	12713
0.86	1342	1.64	8074	91.20	9632	89.60	12992
1.00	1597	3.00	8360	90.20	9727	91.60	13269
1.10	1848	5.20	8392	86.00	9917	91.20	13362
0.96	2577	10.50	8456	83.90	10046	91.20	13454
1.37	3054	21.40	8552	88.10	10141		
1.80	3532	35.20	8680	89.80	10204		
2.14	3976	40.70	8744	90.90	10362		
1.56	4229	48.60	8807	90.90	10676		
4.13	4485	51.30	8839	90.70	10954		
4.38	4707	56.90	8902	91.40	11231		
4.99	4958	62.70	8966	90.80	11511		
3.90	5084	65.30	9029	90.20	11881		
3.39	5330	67.40	9093	89.10	11973		

By H. H. Crummett Jr.

Subscribed and sworn to before me this 14th day of April, 2011

Tina Flemens
Notary Public, Lea County, New Mexico



SUR: C-28-23s-33e, 150/N & 1470/W
BHL: N-28-23s-33e, 4914/N & 2501/W
API # 30-025-40010

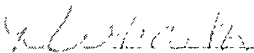
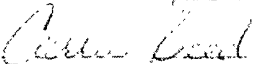
DEVON ENERGY

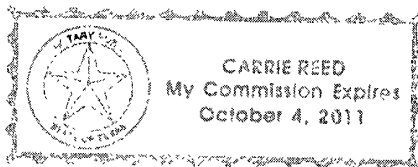
Brinninstool Delaware
Lea County, NM
Thistle Unit #18H
VH - Job #32K0911885

Survey: ActualDROD

SDI Standard Survey Report

This survey is correct to the best of my knowledge and is supported by actual field data.


Notarized this date 4th of October, 2011.

Notary Signature
County of Midland
State of Texas



Scientific Drilling
Directional Drilling Operations

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	DEVON ENERGY	Local Co-ordinate Reference:	Well Thistle Unit #18H
Project:	Brinninstool Delaware	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Thistle Unit #18H	North Reference:	Grid
Wellbore:	VH - Job #32K0911885	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0911885	Database:	EDM-Regulatory

Project	Brinninstool Delaware		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone	New Mexico East 3001		

Site	Lea County NM		
Site Position:		Northing:	457,070.67 usft
From	Lat/Long	Easting:	734,891.74 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 15' 15.549 N
		Longitude:	103° 34' 24.636 W
		Grid Convergence:	0.41

Well	Thistle Unit #18H, Directional (Cudd)		
Well Position	+N/-S	0.0 usft	Northing: 467,323.20 usft
	+E/-W	0.0 usft	Easting: 732,487.92 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 16' 57.170 N
		Longitude:	103° 34' 51.790 W
		Ground Level:	0.0 usft

Wellbore	VH - Job #32K0911885		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	9/17/2011	7.56
		Dip Angle	60.23
		Field Strength	48,651
		(nT)	

Design	VH - Job #32K0911885		
Audit Notes			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
		Direction	168.00
		(°)	

Survey Program	Date	10/23/2011		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.0	8,329.7	Actual/DROP (VH - Job #32K0911885)	Keeper	Keeper Gyro

Survey							
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
100.0	0.21	331.98	100.0	0.2	-0.1	331.98	0.2
150.0	0.16	233.20	150.0	0.2	-0.2	317.35	0.3
199.7	0.23	317.62	199.7	0.2	-0.3	307.12	0.4
250.0	0.17	311.89	250.0	0.4	-0.4	309.64	0.6
299.4	0.27	255.61	299.4	0.4	-0.6	302.22	0.7
349.2	0.25	271.36	349.2	0.4	-0.8	293.14	0.9
399.0	0.32	298.02	399.0	0.4	-1.1	291.70	1.1
449.6	0.41	229.75	449.6	0.4	-1.3	285.63	1.4
498.5	0.34	248.87	498.5	0.2	-1.6	277.29	1.6
549.3	0.35	224.26	549.3	0.0	-1.8	271.17	1.8
598.3	0.33	252.42	598.3	-0.1	-2.1	266.89	2.1

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company: DEVON ENERGY
 Project: Brinninstool Delaware
 Site: Lea County NM
 Well: Thistle Unit #18H
 Wellbore: VH - Job #32K0911885
 Design: VH - Job #32K0911885

Local Co-ordinate Reference: Well Thistle Unit #18H
 TVD Reference: WELL @ 0 0usft (Original Well Elev)
 MD Reference: WELL @ 0 0usft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
649.2	0.35	224.32	649.2	-0.3	-2.3	263.41	2.3
699.9	0.31	244.81	699.9	-0.4	-2.6	260.28	2.6
749.2	0.32	247.64	749.2	-0.5	-2.8	258.96	2.9
799.1	0.29	277.02	799.1	-0.6	-3.1	259.18	3.1
848.9	0.18	273.53	848.9	-0.6	-3.3	260.18	3.3
899.6	0.33	290.31	899.6	-0.5	-3.5	261.68	3.5
948.7	0.28	311.63	948.7	-0.4	-3.7	264.14	3.7
999.8	0.44	293.09	999.8	-0.2	-4.0	266.84	4.0
1,049.4	0.49	272.54	1,049.4	-0.1	-4.4	268.22	4.4
1,099.9	0.67	262.11	1,099.9	-0.2	-4.9	268.04	4.9
1,148.8	0.58	266.65	1,148.8	-0.2	-5.4	267.67	5.4
1,199.9	0.69	257.56	1,199.9	-0.3	-6.0	267.10	6.0
1,248.6	0.63	256.31	1,248.6	-0.4	-6.5	266.23	6.5
1,299.8	0.70	250.03	1,299.8	-0.6	-7.1	265.14	7.1
1,348.7	0.79	261.80	1,348.7	-0.8	-7.7	264.41	7.7
1,399.6	0.73	265.90	1,399.6	-0.8	-8.4	264.36	8.4
1,448.2	0.78	270.82	1,448.2	-0.8	-9.0	264.65	9.0
1,499.1	1.02	274.59	1,499.1	-0.8	-9.8	265.32	9.8
1,549.8	0.95	274.78	1,549.7	-0.7	-10.7	266.08	10.7
1,598.3	0.94	268.64	1,598.2	-0.7	-11.5	266.48	11.5
1,649.4	0.98	279.32	1,649.3	-0.6	-12.3	267.00	12.3
1,698.7	0.94	281.95	1,698.6	-0.5	-13.1	267.85	13.1
1,748.3	1.00	275.95	1,748.2	-0.4	-13.9	268.51	14.0
1,799.4	0.86	283.56	1,799.3	-0.2	-14.8	269.12	14.8
1,849.8	0.98	277.48	1,849.7	-0.1	-15.6	269.70	15.6
1,900.0	0.88	283.51	1,899.9	0.1	-16.4	270.22	16.4
1,949.1	0.89	283.44	1,949.0	0.2	-17.1	270.80	17.1
1,999.4	0.77	299.90	1,999.3	0.5	-17.8	271.61	17.8
2,049.8	0.71	290.59	2,049.7	0.8	-18.4	272.43	18.4
2,098.1	0.68	310.48	2,098.0	1.1	-18.9	273.25	18.9
2,149.8	0.70	303.56	2,149.7	1.4	-19.4	274.26	19.4
2,198.6	0.65	308.70	2,198.5	1.8	-19.8	275.13	19.9
2,249.4	0.66	308.53	2,249.3	2.1	-20.3	276.04	20.4
2,299.4	0.72	302.90	2,299.3	2.5	-20.8	276.85	20.9
2,349.5	0.74	310.49	2,349.4	2.9	-21.3	277.70	21.5
2,398.8	0.69	302.33	2,398.7	3.2	-21.8	278.47	22.0
2,449.2	0.86	298.29	2,449.1	3.6	-22.4	279.10	22.6
2,499.6	0.75	301.67	2,499.4	3.9	-23.0	279.72	23.3
2,549.4	0.74	306.77	2,549.2	4.3	-23.5	280.36	23.9
2,599.8	0.78	300.13	2,599.6	4.7	-24.1	280.97	24.5
2,650.0	0.84	309.59	2,649.8	5.1	-24.6	281.63	25.2
2,699.9	0.79	304.31	2,699.7	5.5	-25.2	282.30	25.8
2,749.7	0.87	310.63	2,749.5	5.9	-25.8	282.97	26.4
2,798.6	0.80	315.05	2,798.4	6.4	-26.3	283.72	27.1

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company: DEVON ENERGY
 Project: Brinninstool Delaware
 Site: Lea County, NM
 Well: Thistle Unit #18H
 Wellbore: VH - Job #32K0911885
 Design: VH - Job #32K0911885

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database

Well Thistle Unit #18H
 WELL @ 0.0usft (Original Well Elev)
 WELL @ 0.0usft (Original Well Elev)
 Grid
 Minimum Curvature
 EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
2,848.8	0.77	317.52	2,848.6	6.9	-26.8	264.49	27.7
2,899.9	0.87	313.48	2,899.7	7.4	-27.3	265.25	28.3
2,948.9	0.86	325.20	2,948.7	8.0	-27.8	266.06	28.9
2,998.7	0.81	325.90	2,998.5	8.6	-28.2	266.96	29.5
3,049.9	0.89	329.10	3,049.7	9.2	-28.6	267.90	30.0
3,099.4	0.99	330.63	3,099.2	9.9	-29.0	268.92	30.6
3,148.8	1.05	340.35	3,148.6	10.7	-29.4	290.09	31.3
3,198.9	1.13	340.18	3,198.7	11.6	-29.7	291.41	31.9
3,248.1	1.23	348.00	3,247.9	12.6	-29.9	292.83	32.5
3,299.9	1.41	354.93	3,299.6	13.8	-30.1	294.59	33.1
3,349.1	1.42	352.95	3,348.8	15.0	-30.2	296.36	33.8
3,398.4	1.59	3.33	3,398.1	16.3	-30.3	298.26	34.4
3,449.4	1.85	11.32	3,449.1	17.8	-30.1	300.61	34.9
3,499.3	2.16	16.19	3,499.0	19.5	-29.7	303.31	35.5
3,548.8	2.31	18.37	3,548.4	21.3	-29.1	306.25	36.1
3,599.1	2.60	18.73	3,598.7	23.4	-28.4	309.45	36.8
3,649.6	2.68	23.07	3,649.1	25.5	-27.6	312.82	37.6
3,699.4	2.74	23.66	3,698.9	27.7	-26.6	316.13	38.4
3,749.1	2.76	23.66	3,748.5	29.9	-25.7	319.33	39.4
3,798.9	2.36	25.74	3,798.3	31.9	-24.8	322.20	40.4
3,849.3	2.10	26.98	3,848.6	33.7	-23.9	324.65	41.3
3,899.5	1.97	22.56	3,898.8	35.3	-23.1	326.75	42.2
3,949.2	1.97	24.31	3,948.5	36.9	-22.5	328.65	43.2
3,998.9	2.00	21.10	3,998.1	38.4	-21.8	330.45	44.2
4,049.2	1.81	25.40	4,048.4	40.0	-21.1	332.14	45.2
4,098.5	1.83	24.67	4,097.7	41.4	-20.5	333.69	46.2
4,149.1	1.73	27.11	4,148.3	42.8	-19.8	335.19	47.2
4,199.1	1.82	30.62	4,198.2	44.2	-19.0	336.68	48.1
4,249.7	1.93	43.97	4,248.8	45.5	-18.0	338.36	48.9
4,299.0	2.32	57.62	4,298.1	46.6	-16.6	340.37	49.5
4,348.9	2.76	72.25	4,347.9	47.5	-14.6	342.89	49.7
4,398.9	3.17	80.01	4,397.9	48.1	-12.1	345.87	49.6
4,449.3	3.63	84.89	4,448.2	48.5	-9.2	349.31	49.4
4,499.9	3.62	87.91	4,498.7	48.7	-6.0	353.02	49.1
4,549.8	3.54	90.08	4,548.5	48.8	-2.8	356.66	48.8
4,598.2	3.75	90.11	4,596.8	48.7	0.2	0.27	48.8
4,649.8	3.90	95.98	4,648.3	48.6	3.7	4.32	48.7
4,698.8	4.27	97.99	4,697.1	48.1	7.1	8.42	48.7
4,749.9	4.55	99.90	4,748.1	47.5	11.0	13.04	48.8
4,798.8	4.74	100.64	4,796.8	46.8	14.9	17.66	49.1
4,849.9	4.94	101.00	4,847.7	46.0	19.1	22.59	49.8
4,899.9	4.98	102.67	4,897.5	45.1	23.4	27.38	50.8
4,949.5	4.50	105.50	4,947.0	44.1	27.3	31.79	51.9
4,999.5	4.12	104.31	4,996.8	43.2	31.0	35.67	53.1

Scientific Drilling International, Inc.
SDI Standard Survey Report



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Wellbore: VH - Job #32K0911885
Design: VH - Job #32K0911885

Local Co-ordinate Reference: Well Thistle Unit #18H
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MD Reference: WELL @ 0 0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,048.1	3.75	106.73	5,045.3	42.3	34.2	38.97	54.4
5,099.3	3.87	106.61	5,096.4	41.3	37.5	42.20	55.7
5,149.3	3.17	109.40	5,146.3	40.4	40.4	45.01	57.1
5,199.9	2.79	110.49	5,196.8	39.5	42.8	47.36	58.2
5,249.1	2.78	110.23	5,246.0	38.6	45.1	49.41	59.4
5,299.1	2.87	110.53	5,295.9	37.8	47.4	51.45	60.6
5,348.0	2.81	114.04	5,344.8	36.9	49.6	53.41	61.8
5,398.7	2.69	112.34	5,395.4	35.9	51.9	55.32	63.1
5,448.7	2.71	112.34	5,445.4	35.0	54.1	57.08	64.4
5,499.0	2.49	114.91	5,495.6	34.1	56.1	58.74	65.7
5,549.6	2.46	116.69	5,546.2	33.1	58.1	60.31	66.9
5,598.7	2.43	116.31	5,595.2	32.2	60.0	61.77	68.1
5,649.8	2.38	115.37	5,646.3	31.3	61.9	63.21	69.4
5,698.7	2.49	115.10	5,695.1	30.4	63.8	64.54	70.7
5,748.6	2.27	116.32	5,745.0	29.5	65.7	65.82	72.0
5,798.8	2.37	117.42	5,795.1	28.6	67.5	67.06	73.3
5,848.6	2.17	115.60	5,844.9	27.7	69.2	68.21	74.6
5,898.7	2.15	117.14	5,895.0	26.8	70.9	69.27	75.8
5,949.8	1.87	116.36	5,946.0	26.0	72.5	70.25	77.1
6,000.1	1.86	121.70	5,996.3	25.2	74.0	71.16	78.1
6,077.2	1.72	122.24	6,073.4	24.0	76.0	72.50	79.7
6,172.6	1.59	121.99	6,168.7	22.5	78.3	73.97	81.5
6,265.3	1.58	122.88	6,261.4	21.1	80.5	75.29	83.2
6,360.9	1.34	107.19	6,357.0	20.1	82.7	76.35	85.1
6,456.5	1.33	99.34	6,452.5	19.6	84.8	77.01	87.1
6,552.1	1.34	119.49	6,548.1	18.8	86.9	77.77	88.9
6,647.6	1.61	128.22	6,643.6	17.5	88.9	78.89	90.6
6,743.2	1.46	122.74	6,739.1	16.0	91.0	80.05	92.4
6,838.8	1.32	123.18	6,834.7	14.7	93.0	81.01	94.1
6,936.8	1.17	129.79	6,932.7	13.5	94.7	81.91	95.6
7,031.7	1.14	137.65	7,027.6	12.1	96.0	82.80	96.8
7,127.3	1.19	142.39	7,123.2	10.6	97.3	83.76	97.9
7,222.8	1.08	144.71	7,218.6	9.1	98.4	84.70	98.8
7,319.2	1.25	149.67	7,315.0	7.5	99.5	85.70	99.8
7,415.7	1.25	153.64	7,411.5	5.6	100.5	86.80	100.6
7,512.2	1.29	149.35	7,508.0	3.7	101.5	87.89	101.6
7,607.1	1.42	142.65	7,602.8	1.9	102.8	88.95	102.8
7,703.3	1.33	143.75	7,699.0	0.0	104.1	89.98	104.1
7,799.5	1.55	145.67	7,795.2	-1.9	105.5	91.05	105.5
7,895.7	1.44	146.04	7,891.3	-4.0	106.9	92.15	107.0
7,991.9	1.41	142.71	7,987.5	-6.0	108.3	93.14	108.5
8,088.2	1.32	145.45	8,083.8	-7.8	109.7	94.07	110.0
8,184.4	1.17	141.16	8,180.0	-9.5	110.9	94.89	111.3
8,279.0	0.98	151.88	8,274.6	-11.0	111.9	95.59	112.4
8,310.7	0.95	155.84	8,306.2	-11.4	112.1	95.82	112.7

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company: DEVON ENERGY
Project: Brinninstool Delaware
Site: Lea County, NM
Well: Thistle Unit #18H
Wellbore: VH - Job #32K0911885
Design: VH - Job #32K0911885

Local Co-ordinate Reference.
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Thistle Unit #18H
WELL @ 0.0usft (Original Well Elev)
WELL @ 0.0usft (Original Well Elev)
Grid
Minimum Curvature
EDM Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
8,329.7	0.97	159.92	8,325.2	-11.7	112.3	95.96	112.9



Scientific Drilling
Directional Drilling Operations

Project: Brinninstool Delaware
Lea County, NM
Well: Thistle Unit #18H
Wellbore: VH - Job #32K0911885
Design: VH - Job #32K0911885

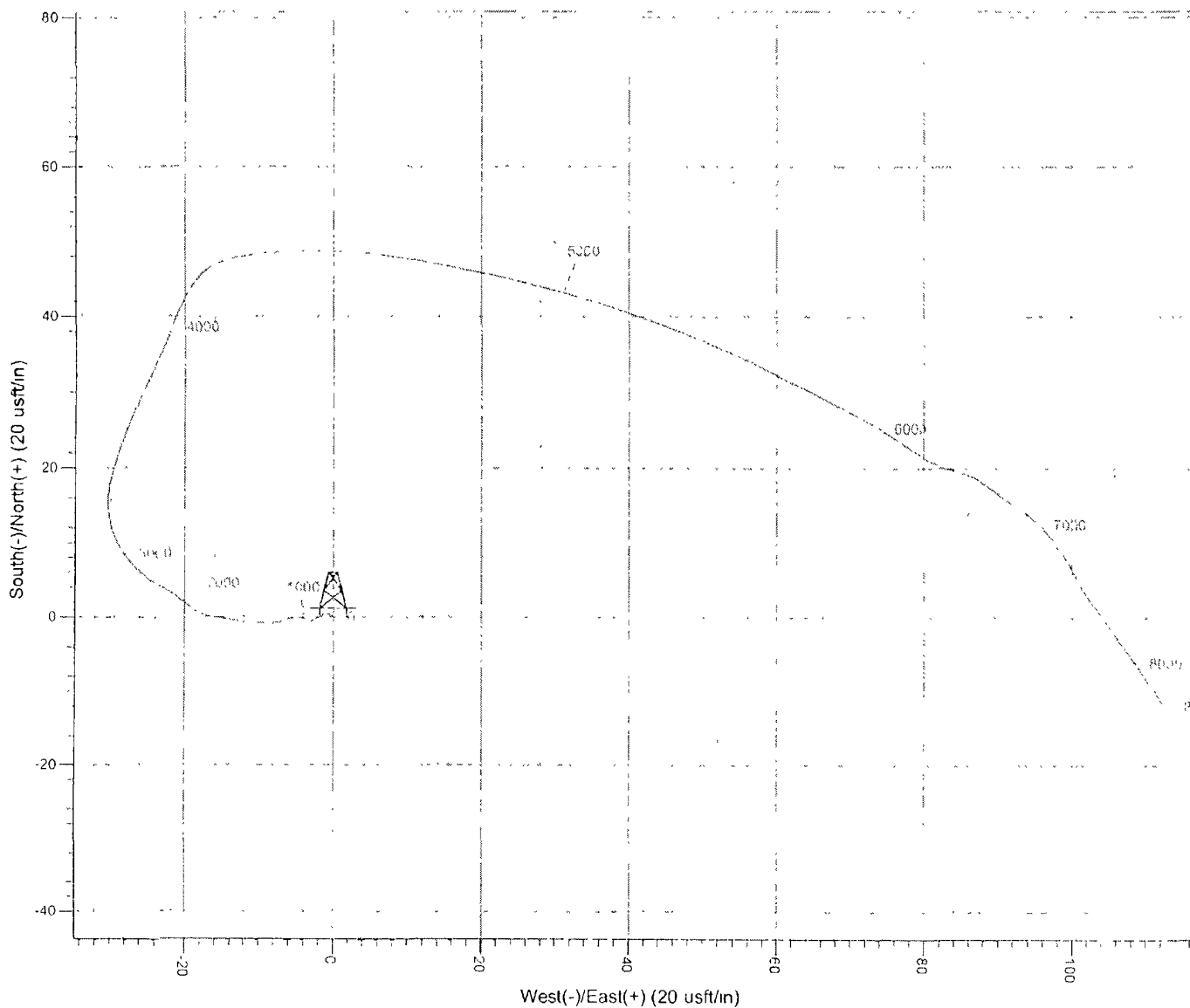


Azimuths to Grid North
True North -41.40°
Magnetic North -7.10°

Magnetic Field
Strength: 49650 Gauss
Dip Angle: 60.23°
Date: 01/17/2011
Model: IGRF 2010

WELL DETAILS: Thistle Unit #18H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	467323.20	732487.92	32° 16' 57.170 N	103° 34' 51.790 W	



PROJECT DETAILS: Brinninstool Delaware
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

SITE DETAILS: Lea County, NM
Site Centre Latitude: 32° 15' 15.549 N
Longitude: 103° 34' 24.636 W
Positional Uncertainty: 0.0
Convergence: 0.41
Local North: Grid



Project Lea Co. New Mexico (Nad 83)
Site Thiede Unit 18H
Well Thiede Unit 18H
Wellsbore Lateral #1
Design Design #2



SECTION DETAILS

Sec	MD	Inc	Az	TVD	+N-S	+E-W	Trueg	VFace	VSec	Target
1	8329.70	0.97	58.92	8325.24	-11.73	112.27	0.00	0.00	25.37	
2	8363.20	0.97	58.92	8358.74	-12.25	112.46	0.00	0.00	25.37	
3	9257.70	89.71	58.24	8922.12	-571.80	220.36	10.00	9.32	505.22	
4	13727.00	89.71	169.24	9545.00	-4959.46	1055.83	0.00	0.00	5940.41	PBHL - TD (TH18H)

ANNOTATIONS

TVD	MD	Annotation
8358.74	8363.20	KOP - Build 10°/100'
8922.12	9250.70	EOC - Hold 1 89.71° @ A 169.24°

PROJECT DETAILS

Lea Co. New Mexico (Nad 83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico East Zone
System Datum: Mean Sea Level

WELLSBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

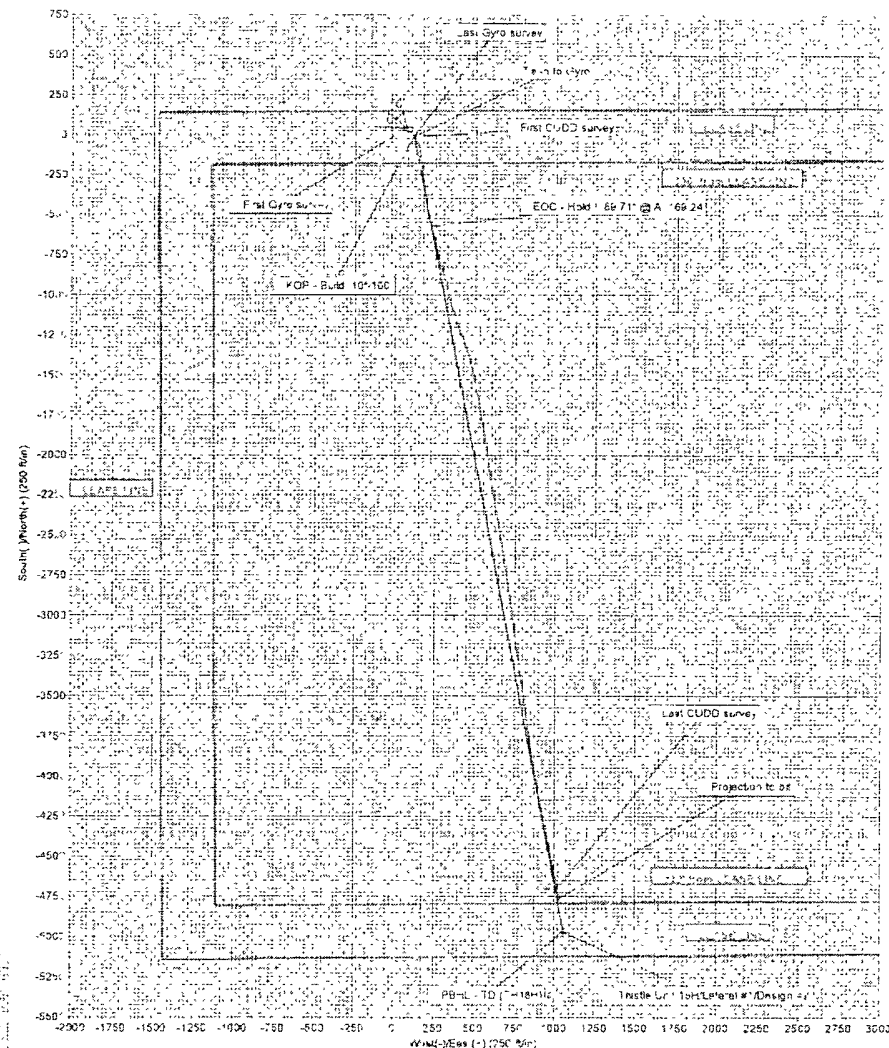
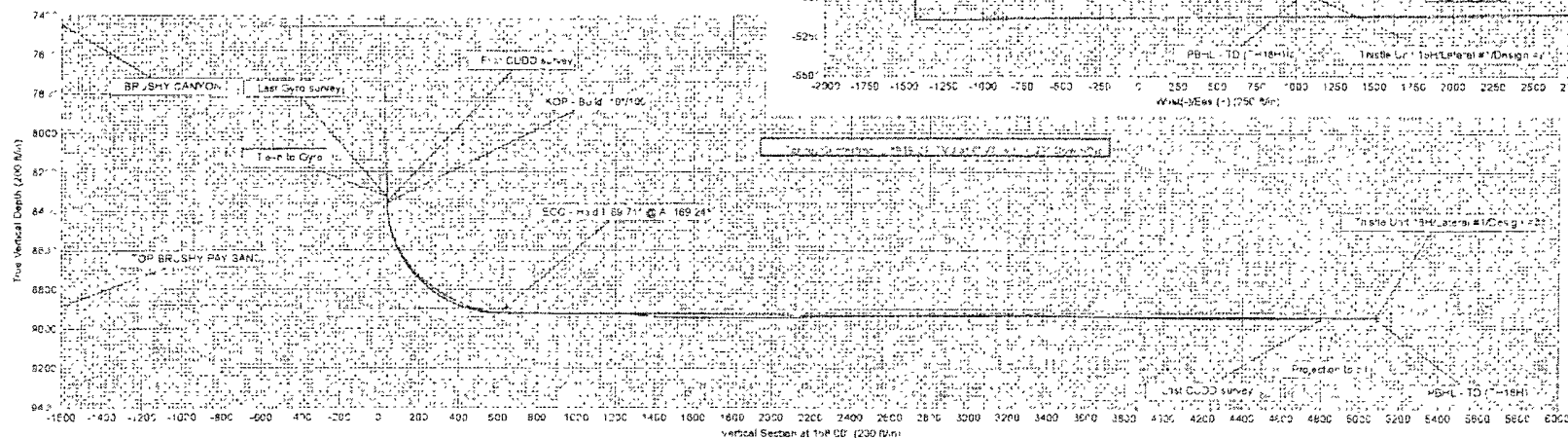
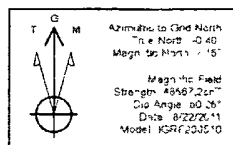
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
PBHL - TD (TH18H)	9545.00	-4959.46	1055.83	467358.76	774576.24	32° 19' 7.916" N 103° 34' 38.898" W		Point

WELL DETAILS

Thiede Unit 18H					
Ground Level					
3682.00					
WELL - 3701.00R, Original Well Elev					
+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.00	0.00	467338.22	773823.31	32° 16' 57.166" N	103° 34' 51.791" W

Plan Design #2 Thiede Unit 18H Lateral #1

Created By: Eric Minchew	Date: 8/14 September 30, 2011
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____





SUR: C-28-23s-33e, 150/N & 1470/W
BHL: N-28-23s-33e, 4914/N & 2501/W
API # 30-025-40010

Devon Energy Production Co, LP

Lea Co., New Mexico (Nad 83)

Thistle Unit 18H

Thistle Unit 18H

30-025-40010-0000

Lateral #1

Survey: Lateral #1

Standard Survey Report

30 September, 2011



CUDD Drilling and Measurement Survey Report

Company: Devon Energy Production Co, LP
Project: Lea Co., New Mexico (Nad 83)
Site: Thistle Unit 18H
Well: Thistle Unit 18H
Wellbore: Lateral #1
Design: Lateral #1

Local Co-ordinate Reference: Site Thistle Unit 18H
TVD Reference: WELL @ 3701.00ft (Original Well Elev)
MD Reference: WELL @ 3701.00ft (Original Well Elev)
North Reference: Grd
Survey Calculation Method: Minimum Curvature
Database: EDM 5000 1 Single User Db

Project: Lea Co., New Mexico (Nad 83)

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site: Thistle Unit 18H, Sec 28, T-23S, R33E

Site Position: Northing: 467,338.22 usft Latitude: 32° 16' 57.166 N
From: Map Easting: 773,820.30 usft Longitude: 103° 34' 51.791 W
Position Uncertainty: 0.00 ft Slot Radius: 13 3/16 " Grid Convergence: 0.40

Well: Thistle Unit 18H

Well Position: +N/-S 0.00 ft Northing: 467,338.22 usft Latitude: 32° 16' 57.166 N
+E/-W 0.00 ft Easting: 773,820.30 usft Longitude: 103° 34' 51.791 W
Position Uncertainty: 0.00 ft Wellhead Elevation: 3,701.00 ft Ground Level: 3,682.00 ft

Wellbore: Lateral #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	8/22/2011	7.56	60.26	48,667

Design: Lateral #1

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	168.00

Survey Program Date: 9/30/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	8,329.70	Gyro (Lateral #1)	NS-GYRO-MS	North sensing gyrocompassing m/s
8,360.00	13,519.00	Lateral #1 (Lateral #1)	CUDD MWD	MWD - Standard CUDD MWD

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,329.70	0.97	159.92	8,325.24	-11.73	112.27	34.81	0.00	0.00	0.00
Tie-in to Gyro									
8,360.00	3.00	163.30	8,355.52	-12.73	112.58	35.86	6.71	6.70	11.16
First CUDD survey									
8,392.00	5.20	153.80	8,387.44	-14.83	113.46	38.10	7.17	6.88	-29.69
8,424.00	7.70	144.10	8,419.24	-17.87	115.36	41.46	8.50	7.81	-30.31
8,456.00	10.50	145.50	8,450.83	-22.01	118.27	46.12	8.78	8.75	4.38
8,488.00	13.50	150.60	8,482.13	-27.67	121.76	52.38	9.93	9.38	15.94
8,520.00	17.30	153.60	8,512.97	-35.19	125.71	60.55	12.13	11.88	9.38



CUDD Drilling and Measurement

Survey Report

Company: Devon Energy Production Co, LP
Project: Lea Co , New Mexico (Nad 83)
Site: Thistle Unit 18H
Well: Thistle Unit 18H
Wellbore: Lateral #1
Design: Lateral #1

Local Co-ordinate Reference: Site Thistle Unit 18H
TVD Reference: WELL @ 3701.00ft (Original Well Elev)
MD Reference: WELL @ 3701.00ft (Original Well Elev)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature
Database: EDM 5000 1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,552.00	21.40	154.00	8,543.16	-44.70	130.38	70.83	12.82	12.81	1.25
8,584.00	25.70	154.80	8,572.49	-56.23	135.90	83.26	13.47	13.44	2.50
8,616.00	29.80	157.30	8,600.80	-69.85	141.93	97.83	13.32	12.81	7.81
8,648.00	33.50	162.00	8,628.04	-85.59	147.73	114.44	13.89	11.56	14.69
8,680.00	35.20	168.40	8,654.47	-103.03	152.31	132.45	12.47	5.31	20.00
8,712.00	37.80	171.00	8,680.19	-121.76	155.70	151.47	9.45	8.13	8.13
8,744.00	40.70	170.50	8,704.97	-141.74	158.96	171.69	9.12	9.06	-1.56
8,776.00	44.60	172.60	8,728.50	-163.18	162.13	193.32	12.97	12.19	6.56
8,807.00	48.60	173.40	8,749.80	-185.53	164.87	215.75	13.04	12.90	2.58
8,839.00	51.30	174.20	8,770.39	-209.88	167.51	240.12	8.65	8.44	2.50
8,870.00	54.20	173.60	8,789.15	-234.41	170.13	264.66	9.48	9.35	-1.94
8,902.00	56.90	173.90	8,807.25	-260.64	173.00	290.92	8.47	8.44	0.94
8,934.00	60.00	173.80	8,823.99	-287.75	175.93	318.04	9.69	9.69	-0.31
8,966.00	62.70	174.90	8,839.33	-315.69	178.69	345.95	8.96	8.44	3.44
8,999.00	64.00	173.50	8,854.14	-345.04	181.67	375.27	5.47	3.94	-4.24
9,029.00	65.30	172.40	8,866.98	-371.94	185.00	402.28	5.45	4.33	-3.67
9,061.00	67.40	172.50	8,879.82	-401.00	188.85	431.50	6.57	6.56	0.31
9,093.00	70.00	172.80	8,891.44	-430.56	192.66	461.21	8.17	8.13	0.94
9,125.00	73.50	170.60	8,901.46	-460.63	197.05	491.53	12.74	10.94	-6.88
9,155.00	76.60	168.10	8,909.20	-489.11	202.41	520.50	13.10	10.33	-8.33
9,188.00	81.20	167.90	8,915.55	-520.77	209.15	552.88	13.95	13.94	-0.61
9,220.00	84.70	165.70	8,919.48	-551.68	216.40	584.62	12.89	10.94	-6.88
9,252.00	87.90	165.00	8,921.54	-582.58	224.47	616.52	10.24	10.00	-2.19
9,283.00	89.00	166.90	8,922.38	-612.63	232.00	647.48	7.08	3.55	6.13
9,315.00	89.90	166.60	8,922.69	-643.78	239.33	679.47	2.96	2.81	-0.94
9,347.00	90.00	166.90	8,922.72	-674.93	246.66	711.46	0.99	0.31	0.94
9,379.00	90.30	165.20	8,922.63	-705.98	254.38	743.45	5.39	0.94	-5.31
9,410.00	90.50	165.10	8,922.42	-735.95	262.32	774.41	0.72	0.65	-0.32
9,442.00	89.50	165.10	8,922.42	-766.87	270.55	806.36	3.13	-3.13	0.00
9,474.00	89.10	165.90	8,922.81	-797.85	278.56	838.33	2.79	-1.25	2.50
9,505.00	89.40	166.00	8,923.21	-827.92	286.09	869.31	1.02	0.97	0.32
9,537.00	88.40	165.40	8,923.83	-858.92	293.99	901.28	3.64	-3.13	-1.88
9,632.00	91.20	166.50	8,924.16	-951.07	317.05	996.20	3.17	2.95	1.16
9,727.00	90.10	162.70	8,923.08	-1,042.63	342.27	1,091.01	4.16	-1.16	-4.00
9,822.00	88.50	162.50	8,924.24	-1,133.28	370.68	1,185.58	1.70	-1.68	-0.21
9,917.00	86.00	159.00	8,928.80	-1,222.84	401.95	1,279.69	4.52	-2.63	-3.68
10,014.00	83.60	159.90	8,937.59	-1,313.29	435.86	1,375.21	2.64	-2.47	0.93
10,046.00	83.90	161.10	8,941.08	-1,343.27	446.48	1,406.75	3.84	0.94	3.75
10,078.00	85.50	163.30	8,944.03	-1,373.61	456.22	1,438.44	8.48	5.00	6.88
10,110.00	86.50	165.10	8,946.27	-1,404.32	464.91	1,470.29	6.42	3.13	5.63
10,141.00	88.10	166.80	8,947.73	-1,434.36	472.42	1,501.24	7.53	5.16	5.48
10,173.00	89.60	167.90	8,948.37	-1,465.57	479.43	1,533.23	5.81	4.69	3.44
10,204.00	89.80	168.00	8,948.53	-1,495.89	485.90	1,564.23	0.72	0.65	0.32



CUDD Drilling and Measurement Survey Report

Company: Devon Energy Production Co, LP
Project: Lea Co., New Mexico (Nad 83)
Site: Thistle Unit 18H
Well: Thistle Unit 18H
Wellbore: Lateral #1
Design: Lateral #1

Local Co-ordinate Reference: Site Thistle Unit 18H
TVD Reference: WELL @ 3701.00ft (Original Well Elev)
MD Reference: WELL @ 3701.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000 1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,235.00	89.90	168.10	8,948.61	-1,526.22	492.32	1,595.23	0.46	0.32	0.32
10,267.00	91.10	168.80	8,948.33	-1,557.57	498.73	1,627.22	4.34	3.75	2.19
10,299.00	91.70	169.30	8,947.55	-1,588.98	504.80	1,659.21	2.44	1.88	1.56
10,331.00	92.00	168.90	8,946.52	-1,620.38	510.85	1,691.19	1.56	0.94	-1.25
10,362.00	90.90	169.50	8,945.73	-1,650.82	516.66	1,722.17	4.04	-3.55	1.94
10,394.00	90.50	170.50	8,945.34	-1,682.33	522.22	1,754.15	3.37	-1.25	3.13
10,426.00	89.80	171.30	8,945.26	-1,713.93	527.28	1,786.10	3.32	-2.19	2.50
10,457.00	89.80	170.70	8,945.37	-1,744.55	532.13	1,817.06	1.94	0.00	-1.94
10,489.00	89.80	170.20	8,945.48	-1,776.11	537.43	1,849.03	1.56	0.00	-1.56
10,584.00	90.80	171.30	8,944.98	-1,869.87	552.70	1,943.92	1.56	1.05	1.16
10,676.00	90.90	171.30	8,943.62	-1,960.80	566.62	2,035.76	0.11	0.11	0.00
10,769.00	91.60	171.40	8,941.59	-2,052.72	580.60	2,128.57	0.76	0.75	0.11
10,861.00	90.50	170.20	8,939.90	-2,143.52	595.31	2,220.45	1.77	-1.20	-1.30
10,954.00	90.70	170.10	8,938.93	-2,235.14	611.22	2,313.38	0.24	0.22	-0.11
11,047.00	90.90	170.40	8,937.63	-2,326.79	626.97	2,406.30	0.39	0.22	0.32
11,139.00	90.80	170.50	8,936.26	-2,417.50	642.23	2,498.20	0.15	-0.11	0.11
11,231.00	91.40	170.00	8,934.50	-2,508.16	657.80	2,590.11	0.85	0.65	-0.54
11,324.00	91.10	171.00	8,932.47	-2,599.86	673.15	2,683.00	1.12	-0.32	1.08
11,418.00	90.10	171.30	8,931.48	-2,692.73	687.61	2,776.85	1.11	-1.06	0.32
11,511.00	90.80	171.70	8,930.75	-2,784.71	701.36	2,869.67	0.87	0.75	0.43
11,603.00	89.50	172.10	8,930.51	-2,875.79	714.32	2,961.46	1.48	-1.41	0.43
11,695.00	90.50	171.80	8,930.51	-2,966.88	727.20	3,053.24	1.13	1.09	-0.33
11,787.00	89.40	172.30	8,930.59	-3,057.99	739.93	3,145.01	1.31	-1.20	0.54
11,881.00	90.20	171.40	8,930.92	-3,151.04	753.25	3,238.79	1.28	0.85	-0.96
11,973.00	89.10	172.00	8,931.48	-3,242.07	766.53	3,330.60	1.36	-1.20	0.65
12,065.00	89.10	171.90	8,932.93	-3,333.16	779.41	3,422.37	0.11	0.00	-0.11
12,158.00	88.90	171.50	8,934.55	-3,425.17	792.84	3,515.16	0.48	-0.22	-0.43
12,250.00	88.40	171.70	8,936.72	-3,516.16	806.27	3,606.95	0.59	-0.54	0.22
12,343.00	88.50	171.60	8,939.23	-3,608.14	819.77	3,699.73	0.15	0.11	-0.11
12,435.00	88.90	172.20	8,941.32	-3,699.19	832.73	3,791.49	0.78	0.43	0.65
12,527.00	88.20	172.10	8,943.65	-3,790.30	845.29	3,883.22	0.77	-0.76	-0.11
12,621.00	88.70	170.80	8,946.19	-3,883.22	859.26	3,977.01	1.48	0.53	-1.38
12,713.00	88.00	170.20	8,948.84	-3,973.92	874.44	4,068.89	1.00	-0.76	-0.65
12,806.00	89.60	169.80	8,950.79	-4,065.48	890.59	4,161.81	1.77	1.72	-0.43
12,898.00	90.20	169.10	8,950.95	-4,155.93	907.43	4,253.78	1.00	0.65	-0.76
12,992.00	89.60	168.00	8,951.11	-4,248.06	926.09	4,347.77	1.33	-0.64	-1.17
13,084.00	89.40	167.40	8,951.92	-4,337.94	945.69	4,439.77	0.69	-0.22	-0.65
13,177.00	91.80	168.80	8,950.94	-4,428.93	964.86	4,532.75	2.99	2.58	1.51
13,269.00	91.60	168.80	8,948.21	-4,519.14	982.73	4,624.70	0.22	-0.22	0.00
13,362.00	91.20	168.40	8,945.94	-4,610.27	1,001.10	4,717.67	0.61	-0.43	-0.43
13,454.00	91.50	169.20	8,943.77	-4,700.50	1,018.97	4,809.63	0.93	0.33	0.87
Last CUDD survey									
13,519.00	91.50	169.20	8,942.07	-4,764.32	1,031.14	4,874.60	0.00	0.00	0.00
Projection to bit									



CUDD Drilling and Measurement Survey Report

Company: Devon Energy Production Co. LP
Project: Lea Co. New Mexico (Nad 83)
Site: Thistle Unit 18H
Well: Thistle Unit 18H
Wellbore: Lateral #1
Design: Lateral #1

Local Co-ordinate Reference: Site Thistle Unit 18H
TVD Reference: WELL @ 3701 00ft (Original Well Elev)
MD Reference: WELL @ 3701 00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000 1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,329 70	8,325 24	-11.73	112 27	Tie-in to Gyro
8,360 00	8,355 52	-12.73	112 58	First CUDD survey
13,454 00	8,943 77	-4,700 50	1,018 97	Last CUDD survey
13 519 00	8,942 07	-4,764 32	1,031 14	Projection to bit

Checked By: _____ Approved By: _____ Date: _____

Survey Report

MIN CURVATURE CALCULATIONS (SPE-3362)

SUR: C-28-23s-33e, 150/N & 1470/W
BHL: N-28-23s-33e, 4914/N & 2501/W
API # 30-025-40010

OPERATOR: Devon Energy
WELL: Thistle Unit #18H
LOCATION: Lea Co, New Mexico
RIG: McVay #8
Directional Drillers: Jerry Gay / Mike Maraschick
MWD Engineers: Cameron Giacobbe / Mike Cooley

START: 9/17/2011
FINISH: 9/30/2011
JOB #: DO62048LRJY7
Bit to Survey: 53
VERTICAL SECTION AZIMUTH: 168.00
TOTAL CORRECTION: 7.16



STATION	SURVEY						VERT	DLS/			
NUMBER	DEPTH	INC	AZMTH	TVD	N-S	E-W	SECTION	100	C L	B / D	Walk
Tie-In	8329.70	0.97	159.92	8325.24	-11.73	112.27	34.81	0.00			
1	8360.00	3.00	163.30	8355.52	-12.73	112.59	35.86	6.71	30.30	6.70	11.16
2	8392.00	5.20	153.80	8387.44	-14.83	113.47	38.10	7.17	32.00	6.88	-29.69
3	8424.00	7.70	144.10	8419.23	-17.87	115.36	41.47	8.50	32.00	7.81	-30.31
4	8456.00	10.50	145.50	8450.83	-22.01	118.27	46.12	8.78	32.00	8.75	4.38
5	8488.00	13.50	150.60	8482.12	-27.67	121.76	52.38	9.93	32.00	9.38	15.94
6	8520.00	17.30	153.60	8512.97	-35.19	125.71	60.56	12.13	32.00	11.88	9.38
7	8552.00	21.40	154.00	8543.16	-44.70	130.39	70.83	12.82	32.00	12.81	1.25
8	8584.00	25.70	154.80	8572.48	-56.23	135.90	83.26	13.47	32.00	13.44	2.50
9	8616.00	29.80	157.30	8600.80	-69.85	141.93	97.84	13.32	32.00	12.81	7.81
10	8648.00	33.50	162.00	8628.04	-85.60	147.73	114.44	13.89	32.00	11.56	14.69
11	8680.00	35.20	168.40	8654.47	-103.04	152.31	132.45	12.47	32.00	5.31	20.00
12	8712.00	37.80	171.00	8680.19	-121.76	155.70	151.47	9.45	32.00	8.12	8.12
13	8744.00	40.70	170.50	8704.97	-141.74	158.96	171.69	9.12	32.00	9.06	-1.56
14	8776.00	44.60	172.60	8728.50	-163.18	162.13	193.33	12.97	32.00	12.19	6.56
15	8807.00	48.60	173.40	8749.80	-185.53	164.87	215.76	13.04	31.00	12.90	2.58
16	8839.00	51.30	174.20	8770.38	-209.88	167.51	240.13	8.65	32.00	8.44	2.50
17	8870.00	54.20	173.60	8789.15	-234.42	170.14	264.67	9.48	31.00	9.35	-1.94
18	8902.00	56.90	173.90	8807.25	-260.65	173.01	290.92	8.47	32.00	8.44	0.94
19	8934.00	60.00	173.80	8823.99	-287.76	175.93	318.05	9.69	32.00	9.69	-0.31
20	8966.00	62.70	174.90	8839.33	-315.70	178.69	345.95	8.96	32.00	8.44	3.44
21	8999.00	64.00	173.50	8854.13	-345.04	181.67	375.27	5.47	33.00	3.94	-4.24
22	9029.00	65.30	172.40	8866.98	-371.94	185.00	402.28	5.45	30.00	4.33	-3.67
23	9061.00	67.40	172.50	8879.81	-401.00	188.85	431.50	6.57	32.00	6.56	0.31
24	9093.00	70.00	172.80	8891.44	-430.57	192.67	461.22	8.17	32.00	8.12	0.94
25	9125.00	73.50	170.60	8901.46	-460.63	197.06	491.54	12.74	32.00	10.94	-6.88
26	9155.00	76.60	168.10	8909.20	-489.11	202.42	520.51	13.10	30.00	10.33	-8.33
27	9188.00	81.20	167.90	8915.55	-520.78	209.15	552.88	13.95	33.00	13.94	-0.61
28	9220.00	84.70	165.70	8919.48	-551.69	216.40	584.63	12.89	32.00	10.94	-6.88
29	9252.00	87.90	165.00	8921.54	-582.58	224.48	616.52	10.24	32.00	10.00	-2.19
30	9283.00	89.00	166.90	8922.38	-612.64	232.00	647.49	7.08	31.00	3.55	6.13
31	9315.00	89.90	166.60	8922.69	-643.79	239.33	679.48	2.96	32.00	2.81	-0.94
32	9347.00	90.00	166.90	8922.71	-674.93	246.67	711.47	0.99	32.00	0.31	0.94
33	9379.00	90.30	165.20	8922.63	-705.99	254.38	743.45	5.39	32.00	0.94	-5.31
34	9410.00	90.50	165.10	8922.41	-735.95	262.33	774.41	0.72	31.00	0.65	-0.32
35	9442.00	89.50	165.10	8922.41	-766.88	270.56	806.37	3.13	32.00	-3.13	0.00
36	9474.00	89.10	165.90	8922.80	-797.85	278.57	838.34	2.79	32.00	-1.25	2.50
37	9505.00	89.40	166.00	8923.21	-827.92	286.09	869.31	1.02	31.00	0.97	0.32
38	9537.00	88.40	165.40	8923.82	-858.93	293.99	901.28	3.64	32.00	-3.13	-1.87
39	9562.00	91.20	166.50	8924.16	-951.07	317.05	996.21	3.17	95.00	2.95	1.16
40	9727.00	90.10	162.70	8923.08	-1042.64	342.28	1091.02	4.16	95.00	-1.16	-4.00
41	9822.00	88.50	162.50	8924.24	-1133.28	370.68	1185.59	1.70	95.00	-1.68	-0.21
42	9917.00	86.00	159.00	8928.80	-1222.85	401.96	1279.70	4.52	95.00	-2.63	-3.68
43	10014.00	83.60	159.90	8937.59	-1313.29	435.86	1375.21	2.64	97.00	-2.47	0.93
44	10046.00	83.90	161.10	8941.07	-1343.28	446.48	1406.75	3.84	32.00	0.94	3.75
45	10078.00	85.50	163.30	8944.03	-1373.61	456.22	1438.45	8.48	32.00	5.00	6.88
46	10110.00	86.50	165.10	8946.26	-1404.33	464.91	1470.30	6.42	32.00	3.13	5.62
47	10141.00	88.10	166.80	8947.72	-1434.36	472.43	1501.24	7.53	31.00	5.16	5.48
48	10173.00	89.60	167.90	8948.36	-1465.58	479.43	1533.23	5.81	32.00	4.69	3.44
49	10204.00	89.80	168.00	8948.53	-1495.90	485.91	1564.23	0.72	31.00	0.65	0.32
50	10235.00	89.90	168.10	8948.61	-1526.22	492.32	1595.23	0.46	31.00	0.32	0.32

Survey Report

M N CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: Devon Energy
WELL: Thistle Unit #18H
LOCATION: Lea Co. New Mexico
RIG: McVay #8
Directional Drillers: Jerry Gay / Mike Maraschick
MWD Engineers: Cameron Giacobbe / Mike Cooley

START: 9/17/2011
FINISH: 9/30/2011
JOB #: DO62048LRJY7
Bit to Survey 53
VERTICAL SECTION AZIMUTH: 168.00
TOTAL CORRECTION: 7.16



STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100	C L	B / D	Walk
51	10267.00	91.10	168.80	8948.33	-1557.57	498.73	1627.23	4.34	32.00	3.75	2.19
52	10299.00	91.70	169.30	8947.55	-1588.98	504.81	1659.21	2.44	32.00	1.88	1.56
53	10331.00	92.00	168.90	8946.51	-1620.39	510.86	1691.19	1.56	32.00	0.94	-1.25
54	10362.00	90.90	169.50	8945.73	-1650.83	516.66	1722.17	4.04	31.00	-3.55	1.94
55	10394.00	90.50	170.50	8945.34	-1682.34	522.22	1754.15	3.37	32.00	-1.25	3.13
56	10426.00	89.80	171.30	8945.25	-1713.94	527.28	1786.11	3.32	32.00	-2.19	2.50
57	10457.00	89.80	170.70	8945.36	-1744.55	532.13	1817.07	1.94	31.00	0.00	-1.94
58	10489.00	89.80	170.20	8945.47	-1776.11	537.44	1849.04	1.56	32.00	0.00	-1.56
59	10584.00	90.80	171.30	8944.98	-1869.87	552.71	1943.92	1.56	95.00	1.05	1.16
60	10676.00	90.90	171.30	8943.61	-1960.80	566.62	2035.76	0.11	92.00	0.11	0.00
61	10769.00	91.60	171.40	8941.58	-2052.72	580.61	2128.58	0.76	93.00	0.75	0.11
62	10861.00	90.50	170.20	8939.90	-2143.52	595.31	2220.45	1.77	92.00	-1.20	-1.30
63	10954.00	90.70	170.10	8938.92	-2235.14	611.22	2313.38	0.24	93.00	0.22	-0.11
64	11047.00	90.90	170.40	8937.62	-2326.79	626.97	2406.30	0.39	93.00	0.22	0.32
65	11139.00	90.80	170.50	8936.26	-2417.51	642.23	2498.21	0.15	92.00	-0.11	0.11
66	11231.00	91.40	170.00	8934.49	-2508.16	657.81	2590.12	0.85	92.00	0.65	-0.54
67	11324.00	91.10	171.00	8932.46	-2599.86	673.15	2683.01	1.12	93.00	-0.32	1.08
68	11418.00	90.10	171.30	8931.48	-2692.74	687.61	2776.86	1.11	94.00	-1.06	0.32
69	11511.00	90.80	171.70	8930.75	-2784.71	701.36	2869.68	0.87	93.00	0.75	0.43
70	11603.00	89.50	172.10	8930.51	-2875.79	714.32	2961.46	1.48	92.00	-1.41	0.43
71	11695.00	90.50	171.80	8930.51	-2966.88	727.21	3053.24	1.13	92.00	1.09	-0.33
72	11787.00	89.40	172.30	8930.59	-3058.00	739.93	3145.01	1.31	92.00	-1.20	0.54
73	11881.00	90.20	171.40	8930.92	-3151.05	753.26	3238.80	1.28	94.00	0.85	-0.96
74	11973.00	89.10	172.00	8931.48	-3242.08	766.54	3330.60	1.36	92.00	-1.20	0.65
75	12065.00	89.10	171.90	8932.92	-3333.16	779.42	3422.37	0.11	92.00	0.00	-0.11
76	12158.00	88.90	171.50	8934.55	-3425.17	792.84	3515.17	0.48	93.00	-0.22	-0.43
77	12250.00	88.40	171.70	8936.71	-3516.16	806.28	3606.96	0.59	92.00	-0.54	0.22
78	12343.00	88.50	171.60	8939.23	-3608.14	819.78	3699.74	0.15	93.00	0.11	-0.11
79	12435.00	88.90	172.20	8941.32	-3699.20	832.74	3791.50	0.78	92.00	0.43	0.65
80	12527.00	88.20	172.10	8943.65	-3790.31	845.30	3883.23	0.77	92.00	-0.76	-0.11
81	12621.00	88.70	170.80	8946.19	-3883.23	859.27	3977.02	1.48	94.00	0.53	-1.38
82	12713.00	88.00	170.20	8948.84	-3973.93	874.45	4068.89	1.00	92.00	-0.76	-0.65
83	12806.00	89.60	169.80	8950.78	-4065.49	890.59	4161.81	1.77	93.00	1.72	-0.43
84	12898.00	90.20	169.10	8950.95	-4155.93	907.44	4253.78	1.00	92.00	0.65	-0.76
85	12992.00	89.60	168.00	8951.11	-4248.06	926.09	4347.78	1.33	94.00	-0.64	-1.17
86	13084.00	89.40	167.40	8951.91	-4337.94	945.69	4439.77	0.69	92.00	-0.22	-0.65
87	13177.00	91.80	168.80	8950.94	-4428.93	964.87	4532.76	2.99	93.00	2.58	1.51
88	13269.00	91.60	168.80	8948.21	-4519.14	982.73	4624.71	0.22	92.00	-0.22	0.00
89	13362.00	91.20	168.40	8945.94	-4610.28	1001.11	4717.67	0.61	93.00	-0.43	-0.43
90	13454.00	91.50	169.20	8943.77	-4700.50	1018.97	4809.64	0.93	92.00	0.33	0.87
PTB	13507.00	91.50	169.20	8942.38	-4752.54	1028.90	4862.61	0.00	53.00	0.00	0.00