

HOBBS OCD

JUL 22 2011

RECEIVED

DEVON ENERGY

Brinninstool Delaware

Lea County, NM

Thistle Unit #20H

VH - Job #32K0411362

SUR: D-28-23s-33e, 150/N & 150/W
BHL: M-28-23s-33e, 5122/N & 1286/W
API # 30-025-40015

Survey: Actual

SDI Standard Survey Report

13 May, 2011

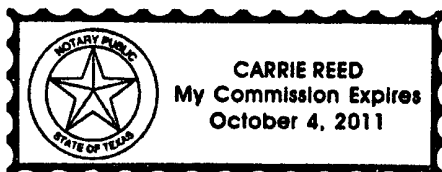
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 17th of May, 2011.

[Signature]

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	DEVON ENERGY	Local Co-ordinate Reference:	Well Thistle Unit #20H
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 #20H	North Reference:	Grid
Wellbore:	VH - Job #32K0411362	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0411362	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 #20H, Directional (CUDD)		
Well Position	+N/-S	0 0 usft	Northing: 467,152 66 usft
	+E/-W	0 0 usft	Easting: 736,523 33 usft
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 16' 55 200 N
		Longitude:	103° 34' 4 800 W
		Ground Level:	0 0 usft

Wellbore	VH - Job #32K0411362				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/20/2011	7 61	60 25	48,693

Design	VH - Job #32K0411362			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	167 99

Survey Program	Date 5/13/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	9,250 0	Actual (VH - Job #32K0411362)	Keeper	Keeper Gyro

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0 0	0 00	0 00	0.0	0.0	0 0	0 00	0 0	
100 0	0 33	250 41	100 0	-0 1	-0 3	250 41	0 3	
200 0	0 38	180 20	200 0	-0 5	-0 5	226 02	0 8	
300 0	0 12	146 41	300 0	-0 9	-0 5	207 30	1 1	
400 0	0 21	247 42	400 0	-1 1	-0 6	208 52	1 3	
500 0	0 32	192 96	500 0	-1 4	-0 8	209 90	1 7	
600 0	0 53	172 90	600 0	-2 2	-0 8	201 02	2 3	
700 0	0 69	167 56	700 0	-3 2	-0 6	191 38	3 3	
800 0	0 51	159 99	800 0	-4 2	-0 4	184 96	4 2	
900 0	0 45	174 31	900 0	-5 0	-0 2	182 00	5 0	
1,000 0	0 48	197 19	1,000 0	-5 8	-0 3	182 56	5 8	
1,100 0	0 45	237 63	1,100 0	-6 4	-0 7	186 34	6 5	

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Company:	DEVON ENERGY	Local Co-ordinate Reference:	Well Thistle Unit #20H
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 #20H	North Reference:	Grid
Wellbore:	VH - Job #32K0411362	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0411362	Database:	EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	0 10	176 53	1,200 0	-6 7	-1 0	188 80	6 8
1,300 0	0 20	102 85	1,300 0	-6 9	-0 9	187 20	6 9
1,400 0	0 44	72 17	1,400 0	-6 8	-0 3	182 79	6 8
1,500 0	0 35	98 10	1,500 0	-6 7	0 3	177 13	6 7
1,600 0	0 42	18 20	1,600 0	-6 4	0 8	173 29	6 4
1,700 0	0 40	37 91	1,700 0	-5 8	1 1	169 39	5 9
1,800 0	0 65	344 26	1,800 0	-5 0	1 1	167 02	5 1
1,900 0	0 49	337 98	1,900 0	-4 0	0 8	168 33	4 1
2,000 0	0 54	334 75	1,999 9	-3 2	0 5	171 67	3 2
2,100 0	0 63	313 49	2,099 9	-2 4	-0 1	183 17	2 4
2,200 0	0 66	309 66	2,199 9	-1 6	-1 0	210 68	1 9
2,300 0	0 65	307 97	2,299 9	-0 9	-1 9	243 59	2 1
2,400 0	0 65	312 32	2,399 9	-0 2	-2 7	265 91	2 7
2,500 0	0 63	312 03	2,499 9	0 6	-3 6	278 86	3 6
2,600 0	0 63	310 08	2,599 9	1 3	-4 4	286 22	4 6
2,700 0	0 53	307 55	2,699 9	1 9	-5 2	290 28	5 5
2,800 0	0 63	308 10	2,799 9	2 5	-6 0	292 98	6 5
2,900 0	0 52	311 52	2,899 9	3 2	-6 7	295 19	7 5
3,000 0	0 65	311 46	2,999 9	3 9	-7 5	297 14	8 4
3,100 0	0 53	303 95	3,099 9	4 5	-8 3	298 32	9 5
3,200 0	0 50	282 56	3,199 9	4 8	-9 1	297 91	10 3
3,300 0	0 51	282 70	3,299 9	5 0	-10 0	296 72	11 2
3,400 0	0 38	275 69	3,399 9	5 2	-10 8	295 63	11 9
3,500 0	0 21	248 93	3,499 9	5 1	-11 3	294 49	12 4
3,600 0	0 10	264 55	3,599 9	5 1	-11 5	293 70	12 6
3,700 0	0 26	293 79	3,699 9	5 1	-11 8	293 51	12 9
3,800 0	0 22	26 25	3,799 9	5 4	-11 9	294 35	13 1
3,900 0	0 27	278 07	3,899 9	5 6	-12 1	294 90	13 3
4,000 0	0 36	245 11	3,999 9	5 5	-12 6	293 61	13 7
4,100 0	0 53	244 27	4,099 9	5 2	-13 3	291 26	14 3
4,200 0	0 45	254 03	4,199 9	4 9	-14 1	289 04	14 9
4,300 0	0 12	174 35	4,299 9	4 7	-14 5	287 84	15 2
4,400 0	0 71	140 73	4,399 9	4 1	-14 1	286 14	14 6
4,500 0	1 39	137 63	4,499 8	2 7	-12 8	281 84	13 1
4,600 0	1 32	138 02	4,599 8	0 9	-11 3	274 77	11 3
4,700 0	2 02	117 10	4,699 8	-0 7	-8 9	265 39	9 0
4,800 0	2 59	106 30	4,799 7	-2 2	-5 2	247 42	5 6
4,900 0	3 18	107 15	4,899 6	-3 6	-0 4	185 77	3 6
5,000 0	3 28	104 30	4,999 4	-5 1	5 1	135 42	7 2
5,100 0	2 30	108 59	5,099 3	-6 5	9 7	123 65	11 7
5,200 0	1 87	114 65	5,199 2	-7 8	13 1	120 73	15 3
5,300 0	1 48	110 75	5,299 2	-8 9	15 8	119 48	18 2
5,400 0	1 51	109 67	5,399 1	-9 8	18 3	118 32	20 7
5,500 0	1 45	109 85	5,499 1	-10 7	20 7	117 37	23 3

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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 #20H	North Reference:	Grid
Wellbore:	VH - Job #32K0411362	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0411362	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,600.0	1.46	111.22	5,599.1	-11.6	23.1	116.70	25.8	
5,700.0	1.32	111.81	5,699.0	-12.5	25.3	116.26	28.2	
5,800.0	1.16	110.70	5,799.0	-13.3	27.3	115.90	30.4	
5,900.0	1.03	103.98	5,899.0	-13.9	29.2	115.41	32.3	
6,000.0	1.25	107.77	5,999.0	-14.4	31.1	114.87	34.2	
6,100.0	1.18	108.55	6,099.0	-15.1	33.1	114.48	36.3	
6,200.0	1.01	117.06	6,198.9	-15.8	34.8	114.38	38.3	
6,300.0	1.00	120.97	6,298.9	-16.6	36.4	114.58	40.0	
6,400.0	0.83	118.09	6,398.9	-17.4	37.8	114.78	41.6	
6,500.0	0.89	118.22	6,498.9	-18.1	39.1	114.89	43.1	
6,600.0	0.82	119.75	6,598.9	-18.9	40.4	115.03	44.6	
6,700.0	0.86	120.79	6,698.9	-19.6	41.7	115.20	46.0	
6,800.0	0.66	118.72	6,798.9	-20.3	42.8	115.33	47.4	
6,900.0	0.75	123.52	6,898.9	-20.9	43.9	115.48	48.6	
7,000.0	0.61	130.31	6,998.9	-21.6	44.8	115.74	49.7	
7,100.0	0.46	131.13	7,098.9	-22.2	45.5	116.01	50.6	
7,200.0	0.45	128.91	7,198.9	-22.7	46.1	116.23	51.4	
7,300.0	0.61	116.11	7,298.8	-23.2	46.9	116.32	52.3	
7,400.0	0.70	132.05	7,398.8	-23.8	47.8	116.50	53.5	
7,500.0	0.81	139.19	7,498.8	-24.8	48.8	116.95	54.7	
7,600.0	0.94	147.65	7,598.8	-26.0	49.7	117.65	56.1	
7,700.0	1.19	160.56	7,698.8	-27.7	50.4	118.77	57.5	
7,800.0	1.63	166.80	7,798.8	-30.1	51.1	120.46	59.3	
7,900.0	1.39	180.79	7,898.7	-32.7	51.4	122.42	60.9	
8,000.0	1.52	181.64	7,998.7	-35.2	51.4	124.42	62.3	
8,100.0	1.69	182.93	8,098.7	-38.0	51.3	126.55	63.8	
8,200.0	1.71	183.96	8,198.6	-41.0	51.1	128.72	65.5	
8,300.0	1.61	187.68	8,298.6	-43.8	50.8	130.80	67.1	
8,400.0	1.60	189.31	8,398.5	-46.6	50.4	132.78	68.6	
8,500.0	1.78	179.36	8,498.5	-49.5	50.2	134.64	70.5	
8,600.0	1.59	185.15	8,598.5	-52.5	50.1	136.35	72.5	
8,700.0	1.49	185.64	8,698.4	-55.1	49.8	137.91	74.3	
8,800.0	1.48	195.75	8,798.4	-57.7	49.3	139.47	75.9	
8,900.0	1.23	192.80	8,898.4	-60.0	48.7	140.90	77.3	
9,000.0	1.18	192.13	8,998.3	-62.0	48.3	142.10	78.6	
9,100.0	1.27	180.94	9,098.3	-64.1	48.0	143.16	80.1	
9,200.0	0.85	183.90	9,198.3	-66.0	48.0	143.98	81.6	
9,250.0	1.18	200.63	9,248.3	-66.8	47.8	144.45	82.2	



Project: Brinninstool Delaware
 Lea County, NM
 Well: Thistle Unit #20H
 Wellbore: VH - Job #32K0411362
 Design: VH - Job #32K0411362

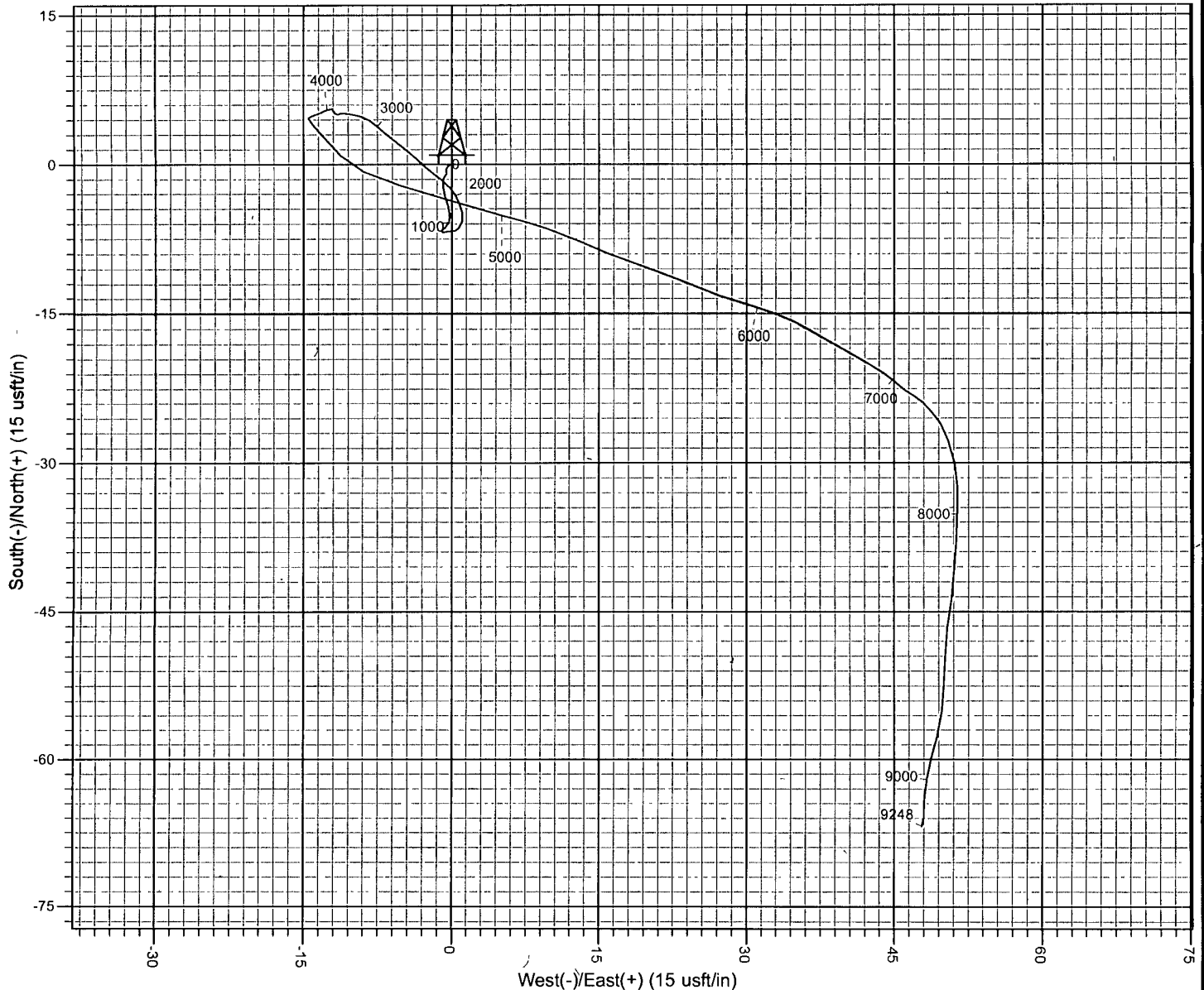


Azimuths to Grid North
 True North -0 41°
 Magnetic North 7 20°

Magnetic Field
 Strength 48693 3snT
 Dip Angle 60 25°
 Date 4/20/2011
 Model IGRF2010

WELL DETAILS: Thistle Unit #20H
 WELL @ 0.0usft (Original Well Elev)
 Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	467152.66	736523.33	32° 16' 55.200 N	103° 34' 4.800 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



Scientific Drilling

Gyroscopic Survey Report
for
DEVON

HOBBS OCD

JUL 22 2011

RECEIVED

Well Location	LEA COUNTY, NEW MEXICO
Well Name	THISTLE UNIT 20H
Rig Name	McVAY #8
Survey Date	4/20/2011
Latitude	32.28 deg
North Reference	Grid North
Grid Correction	-0.41 deg
Depth Reference	19.66' KB
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 167.99Azim (deg)
Definitive Survey	FINAL OUTRUN SURVEY
Operator	ADAM WILLIAMSON

Comments

SUR: D-28-23s-33e, 150/N & 150/W
BHL: M-28-23s-33e, 5122/N & 1286/W
API # 30-025-40015



Survey Report

Well Name:		THISTLE UNIT 20H							
Survey:		FINAL OUTFRAN SURVEY							
Survey Date:		4/20/2011							
MD	Inc	Azim	TVD	VS	Northing	Easting	DLS	Closure Distance	Closure Angle
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.33	250.41	100.00	0.04	-0.10	-0.27	0.33	0.28	250.41
200.00	0.38	180.20	200.00	0.40	-0.53	-0.54	0.41	0.75	225.55
300.00	0.12	146.41	300.00	0.82	-0.95	-0.48	0.30	1.06	206.99
400.00	0.21	247.42	400.00	0.95	-1.10	-0.60	0.26	1.25	208.51
500.00	0.32	192.96	500.00	1.24	-1.45	-0.83	0.26	1.67	209.95
600.00	0.53	172.90	599.99	1.96	-2.18	-0.84	0.25	2.33	201.10
700.00	0.69	167.56	699.99	3.02	-3.23	-0.65	0.18	3.29	191.44
800.00	0.51	159.99	799.98	4.07	-4.24	-0.37	0.20	4.25	184.99
900.00	0.45	174.31	899.98	4.90	-5.04	-0.18	0.13	5.05	182.03
1000.00	0.48	197.19	999.98	5.65	-5.83	-0.26	0.19	5.84	182.58
1100.00	0.45	237.63	1099.97	6.15	-6.44	-0.72	0.32	6.48	186.35
1200.00	0.10	176.53	1199.97	6.37	-6.74	-1.04	0.41	6.82	188.79
1300.00	0.20	102.85	1299.97	6.54	-6.87	-0.87	0.20	6.92	187.20
1400.00	0.44	72.17	1399.97	6.57	-6.79	-0.33	0.29	6.80	182.82
1500.00	0.35	98.10	1499.97	6.64	-6.71	0.33	0.20	6.72	177.18
1600.00	0.42	18.20	1599.97	6.43	-6.41	0.74	0.49	6.45	173.39
1700.00	0.40	37.91	1699.96	5.89	-5.79	1.07	0.14	5.89	169.51
1800.00	0.65	344.26	1799.96	5.10	-4.97	1.14	0.52	5.10	167.14
1900.00	0.49	337.98	1899.95	4.11	-4.03	0.82	0.16	4.11	168.48
2000.00	0.54	334.75	1999.95	3.23	-3.21	0.46	0.06	3.24	171.85
2100.00	0.63	313.49	2099.94	2.32	-2.40	-0.14	0.24	2.40	183.43
2200.00	0.66	309.66	2199.94	1.41	-1.65	-0.99	0.05	1.92	210.82
2300.00	0.65	307.97	2299.93	0.53	-0.94	-1.87	0.02	2.09	243.36
2400.00	0.65	312.32	2399.93	-0.36	-0.21	-2.74	0.05	2.74	265.62
2500.00	0.63	312.03	2499.92	-1.27	0.54	-3.57	0.02	3.61	278.64
2600.00	0.63	310.08	2599.91	-2.15	1.26	-4.39	0.02	4.57	286.05
2700.00	0.53	307.55	2699.91	-2.94	1.90	-5.18	0.10	5.52	290.14
2800.00	0.63	308.10	2799.90	-3.71	2.52	-5.99	0.10	6.50	292.86
2900.00	0.52	311.52	2899.90	-4.50	3.17	-6.76	0.11	7.46	295.09
3000.00	0.65	311.46	2999.89	-5.33	3.84	-7.53	0.13	8.45	297.05
3100.00	0.53	303.95	3099.89	-6.11	4.48	-8.33	0.15	9.46	298.24
3200.00	0.50	282.56	3199.88	-6.62	4.83	-9.14	0.19	10.33	297.84
3300.00	0.51	282.70	3299.88	-6.99	5.02	-10.00	0.02	11.19	296.65
3400.00	0.38	275.69	3399.88	-7.28	5.15	-10.77	0.14	11.94	295.56
3500.00	0.21	248.93	3499.88	-7.35	5.12	-11.27	0.21	12.38	294.42
3600.00	0.10	264.55	3599.87	-7.33	5.04	-11.53	0.12	12.58	293.62
3700.00	0.26	293.79	3699.87	-7.47	5.12	-11.82	0.18	12.88	293.43
3800.00	0.22	26.25	3799.87	-7.75	5.38	-11.94	0.34	13.10	294.26



Survey Report

Well Name:		THISTLE UNIT 20H									
Survey:		FINAL OUTFRAN SURVEY									
Survey Date:		4/20/2011									
MD	Inc	Azim	TVD	VS	Northing	Easting	DLS	Closure Distance	Closure Angle		
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	deg		
3900.00	0.27	278.07	3899.87	-7.98	5.58	-12.09	0.39	13.32	294.78		
4000.00	0.36	245.11	3999.87	-7.99	5.49	-12.61	0.20	13.75	293.52		
4100.00	0.53	244.27	4099.87	-7.81	5.16	-13.30	0.17	14.27	291.18		
4200.00	0.45	254.03	4199.87	-7.67	4.85	-14.10	0.11	14.91	288.97		
4300.00	0.12	174.35	4299.86	-7.54	4.63	-14.47	0.45	15.19	287.75		
4400.00	0.71	140.73	4399.86	-6.89	4.05	-14.07	0.61	14.64	286.05		
4500.00	1.39	137.63	4499.84	-5.29	2.67	-12.86	0.68	13.13	281.74		
4600.00	1.32	138.02	4599.82	-3.25	0.92	-11.27	0.07	11.31	274.68		
4700.00	2.02	117.10	4699.77	-1.14	-0.73	-8.94	0.92	8.97	265.30		
4800.00	2.59	106.30	4799.69	1.04	-2.17	-5.20	0.71	5.64	247.35		
4900.00	3.18	107.15	4899.57	3.46	-3.62	-0.38	0.60	3.64	186.06		
5000.00	3.28	104.30	4999.41	6.08	-5.15	5.04	0.19	7.20	135.61		
5100.00	2.30	108.59	5099.29	8.37	-6.49	9.71	1.00	11.68	123.77		
5200.00	1.87	114.65	5199.22	10.36	-7.81	13.09	0.48	15.24	120.82		
5300.00	1.48	110.75	5299.18	12.04	-8.95	15.78	0.40	18.14	119.56		
5400.00	1.51	109.67	5399.14	13.43	-9.85	18.24	0.04	20.73	118.38		
5500.00	1.45	109.85	5499.11	14.79	-10.73	20.67	0.06	23.29	117.43		
5600.00	1.46	111.22	5599.08	16.16	-11.62	23.05	0.04	25.81	116.75		
5700.00	1.32	111.81	5699.05	17.49	-12.50	25.30	0.14	28.22	116.30		
5800.00	1.16	110.70	5799.03	18.68	-13.29	27.31	0.16	30.38	115.95		
5900.00	1.03	103.98	5899.01	19.63	-13.87	29.14	0.18	32.27	115.45		
6000.00	1.25	107.77	5998.99	20.56	-14.42	31.05	0.23	34.23	114.91		
6100.00	1.18	108.55	6098.97	21.63	-15.08	33.06	0.07	36.34	114.51		
6200.00	1.01	117.06	6198.95	22.70	-15.80	34.82	0.24	38.24	114.41		
6300.00	1.00	120.97	6298.93	23.85	-16.65	36.35	0.07	39.99	114.61		
6400.00	0.83	118.09	6398.92	24.92	-17.44	37.74	0.18	41.58	114.81		
6500.00	0.89	118.22	6498.91	25.88	-18.15	39.06	0.06	43.07	114.92		
6600.00	0.82	119.75	6598.90	26.86	-18.87	40.36	0.07	44.55	115.06		
6700.00	0.86	120.79	6698.89	27.84	-19.61	41.62	0.04	46.01	115.22		
6800.00	0.66	118.72	6798.88	28.72	-20.26	42.77	0.20	47.33	115.35		
6900.00	0.75	123.52	6898.87	29.56	-20.90	43.82	0.11	48.55	115.50		
7000.00	0.61	130.31	6998.86	30.45	-21.61	44.77	0.16	49.71	115.76		
7100.00	0.46	131.13	7098.86	31.19	-22.22	45.48	0.15	50.62	116.04		
7200.00	0.45	128.91	7198.85	31.82	-22.73	46.08	0.02	51.38	116.25		
7300.00	0.61	116.11	7298.85	32.45	-23.21	46.87	0.21	52.30	116.34		
7400.00	0.70	132.05	7398.84	33.28	-23.85	47.81	0.20	53.43	116.52		
7500.00	0.81	139.19	7498.84	34.40	-24.80	48.72	0.14	54.67	116.98		
7600.00	0.94	147.65	7598.82	35.79	-26.03	49.63	0.18	56.04	117.68		



Survey Report

Well Name: THISTLE UNIT 20H

Survey: FINAL OUTRUN SURVEY

Survey Date: 4/20/2011

MD ft	Inc deg	Azim deg	TVD ft	VS ft	Northing ft	Easting ft	DLS deg/100ft	Closure Distance ft	Closure Angle deg
7700.00	1.19	160.56	7698.81	37.59	-27.71	50.42	0.34	57.53	118.79
7800.00	1.63	166.80	7798.78	40.05	-30.08	51.09	0.47	59.28	120.49
7900.00	1.39	180.79	7898.74	42.65	-32.67	51.40	0.44	60.90	122.45
8000.00	1.52	181.64	7998.71	45.12	-35.21	51.34	0.13	62.25	124.44
8100.00	1.69	182.93	8098.67	47.83	-38.00	51.23	0.17	63.78	126.57
8200.00	1.71	183.96	8198.63	50.68	-40.96	51.05	0.04	65.45	128.74
8300.00	1.61	187.68	8298.58	53.44	-43.84	50.76	0.15	67.07	130.82
8400.00	1.60	189.31	8398.54	56.06	-46.61	50.35	0.05	68.61	132.79
8500.00	1.78	179.36	8498.50	58.88	-49.53	50.14	0.34	70.48	134.65
8600.00	1.59	185.15	8598.46	61.73	-52.47	50.03	0.25	72.50	136.36
8700.00	1.49	185.64	8698.42	64.30	-55.15	49.78	0.10	74.29	137.93
8800.00	1.48	195.75	8798.39	66.68	-57.68	49.30	0.26	75.88	139.48
8900.00	1.23	192.80	8898.36	68.79	-59.97	48.71	0.26	77.26	140.91
9000.00	1.18	192.13	8998.34	70.70	-62.02	48.26	0.05	78.58	142.11
9100.00	1.27	180.94	9098.32	72.73	-64.14	48.02	0.26	80.12	143.18
9200.00	0.85	183.90	9198.30	74.52	-65.99	47.95	0.43	81.57	143.99
9250.00	1.18	200.63	9248.29	75.31	-66.84	47.75	0.88	82.14	144.46

HOBBES OGD
JUL 22 2011
devon

Project Lea Co., New Mexico (Nad 83)
Site Thistle Unit #20H
Well Thistle Unit #20H
Wellbore Lateral #1
Design Design #2



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SECTION DETAILS										
Stn	MD	Inc	Azi	TVD	+N-S	+E-W	DLog	TFace	VSec	Target
1	8400.00	1.60	189.31	8398.54	-46.61	50.35	0.00	0.00	56.07	
2	8467.05	1.60	189.31	8465.57	-48.46	50.05	0.00	0.00	57.81	
3	9349.61	89.75	168.37	9023.55	-608.13	159.57	10.00	-20.95	628.03	
4	13806.42	89.75	168.37	9043.00	-4973.42	1057.95	0.00	0.00	5084.70	PBHL - TD (TU#20H) #2

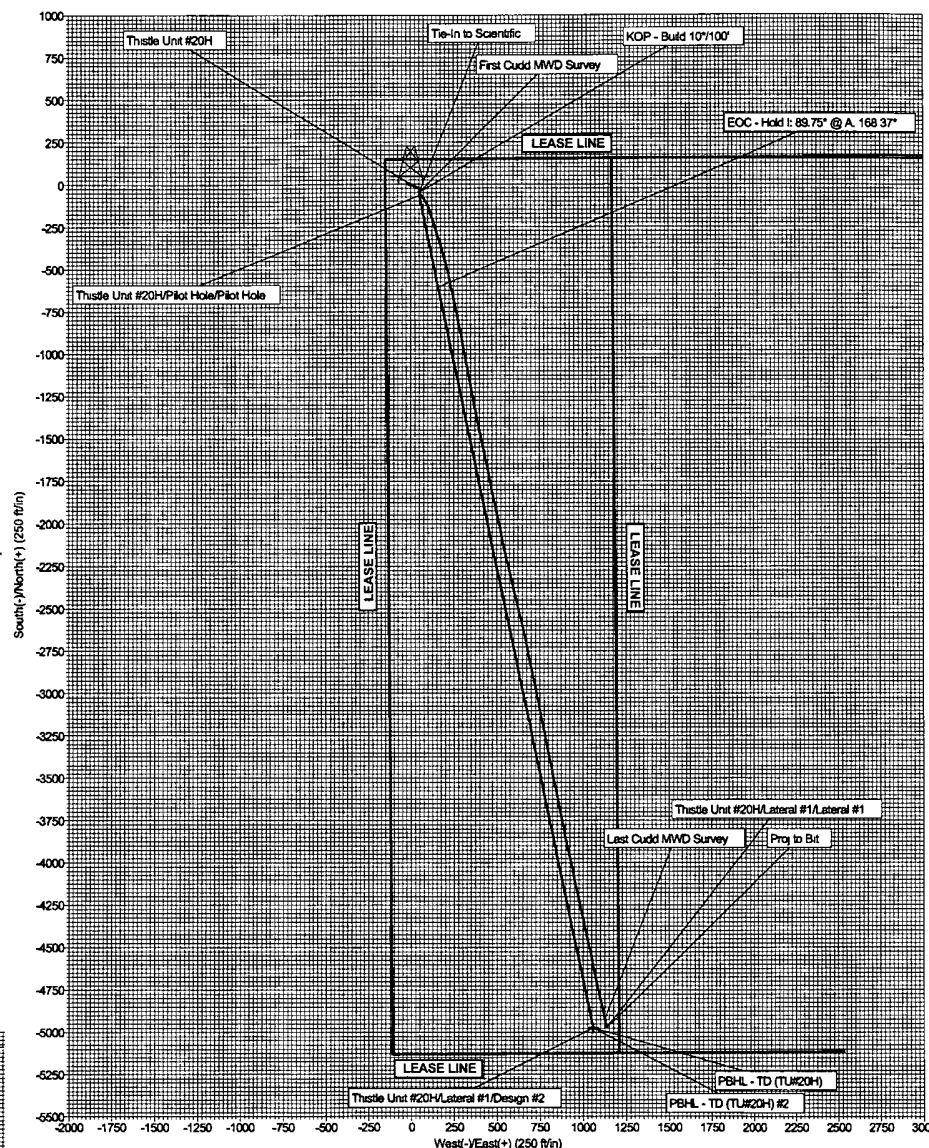
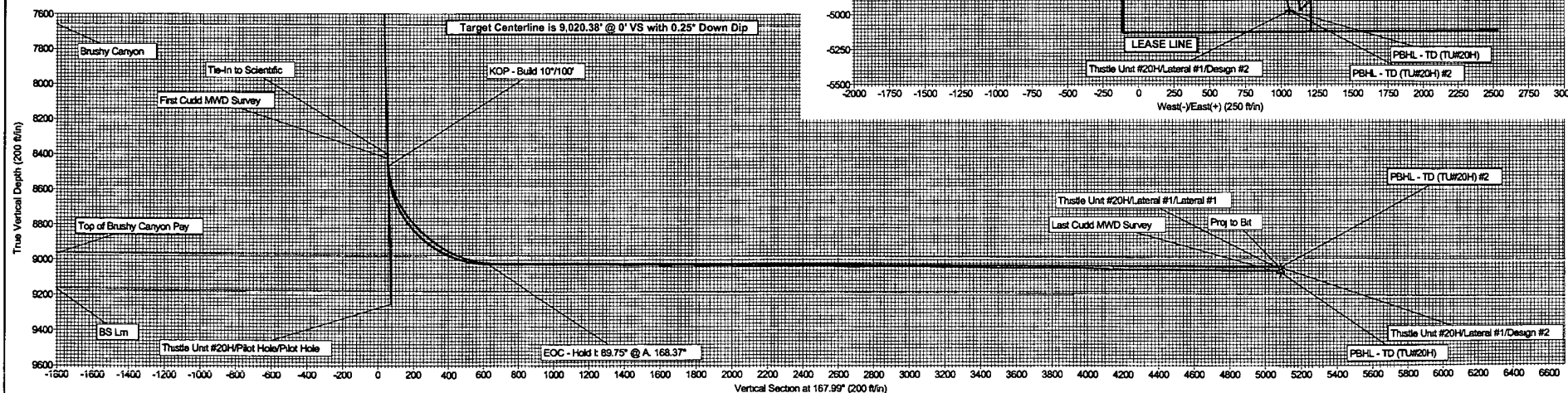
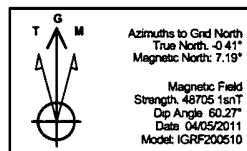
WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)								
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape Point
PBHL - TD (TU#20H) #2	9043.00	-4973.42	1057.95	462340.65	778846.13	32° 16' 7.362" N	103° 33' 53.667" W	

ANNOTATIONS			
TVD	MD	Annotation	
8465.57	8467.05	KOP - Build 10°/100'	
9023.55	9349.61	EOC - Hold t 89.75° @ A. 168.37°	

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 Eastern Zone
System Datum	Mean Sea Level

WELL DETAILS: Thistle Unit #20H						
Ground Level: 3696.00						
WELL @ 3715.00ft (Original Well Elev)						
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	467314.06	777788.18	32° 16' 56.849" N	103° 34' 5.575" W	

Plan: Design #2 (Thistle Unit #20H/Lateral #1)	
Created By: Mike Starkley	Date: 9/21, May 05 2011
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____



SUR: D-28-23s-33e, 150/N & 150/W
BHL: M-28-23s-33e, 5122/N & 1286/W
API # 30-025-40015

Thistle Unit #20H_Final MWD Survey_Report_05-05-11.txt
Cudd Drilling & Measurement Services

Devon Energy
Thistle Unit #20H - Cudd MWD Survey #1

HOBBS OCD

Lea Co., New Mexico (Nad 83)
Thistle Unit #20H
Your Ref:

JUL 22 2011

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Measured Dogleg Depth Rate (ft) (°/100ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)
8400.00	1.60	189.31	8398.54	46.61 S	50.35 E	56.07
0.00						
8423.00	1.80	179.90	8421.53	47.29 S	50.30 E	56.72
1.49						
8518.00	9.90	150.50	8515.97	55.90 S	54.33 E	65.98
8.82						
8550.00	13.60	143.40	8547.30	61.32 S	57.93 E	72.03
12.39						
8582.00	17.50	142.50	8578.12	68.16 S	63.10 E	79.80
12.21						
8614.00	21.30	143.90	8608.30	76.68 S	69.46 E	89.45
11.96						
8646.00	25.00	145.90	8637.72	86.98 S	76.68 E	101.03
11.82						
8678.00	28.50	149.10	8666.29	99.13 S	84.39 E	114.52
11.82						
8710.00	31.60	154.20	8693.99	113.23 S	91.96 E	129.89
12.54						
8741.00	34.50	158.40	8719.97	128.72 S	98.73 E	146.44
11.92						
8773.00	36.80	161.00	8745.98	146.21 S	105.19 E	164.89
8.61						
8804.00	39.60	161.50	8770.34	164.36 S	111.35 E	183.93
9.09						
8836.00	42.20	161.60	8794.52	184.23 S	117.98 E	204.75
8.13						
8868.00	44.20	161.50	8817.85	205.01 S	124.91 E	226.51
6.25						
8898.00	45.80	161.70	8839.06	225.14 S	131.61 E	247.59
5.35						
8930.00	48.40	162.40	8860.84	247.44 S	138.83 E	270.91
8.28						
8963.00	51.60	162.90	8882.05	271.56 S	146.36 E	296.07
9.77						
8995.00	54.30	163.20	8901.33	295.99 S	153.81 E	321.52
8.47						
9027.00	56.70	162.80	8919.45	321.21 S	161.52 E	347.79
7.57						
9059.00	59.30	162.80	8936.41	347.13 S	169.54 E	374.81
8.13						
9090.00	62.10	163.50	8951.58	373.00 S	177.38 E	401.75
9.24						
9122.00	65.20	164.30	8965.78	400.55 S	185.32 E	430.34
9.94						
9154.00	68.20	165.10	8978.44	428.90 S	193.08 E	459.68

Thistle Unit #20H_Final MWD Survey_Report_05-05-11.txt

9.65						
9186.00	71.70	165.90	8989.40	458.00 S	200.60 E	489.71
11.19						
9218.00	75.00	166.80	8998.57	487.78 S	207.83 E	520.35
10.66						
9250.00	78.10	167.30	9006.01	518.11 S	214.80 E	551.47
9.81						
9282.00	80.30	167.90	9012.01	548.81 S	221.55 E	582.90
7.12						
9314.00	82.10	167.90	9016.91	579.73 S	228.18 E	614.52
5.63						
9346.00	84.10	168.20	9020.75	610.81 S	234.76 E	646.28
6.32						
9378.00	86.80	168.60	9023.29	642.05 S	241.17 E	678.18
8.53						
9409.00	88.10	167.80	9024.67	672.37 S	247.51 E	709.15
4.92						
9441.00	88.50	167.80	9025.62	703.63 S	254.26 E	741.13
1.25						
9473.00	89.90	168.30	9026.06	734.93 S	260.89 E	773.13
4.65						
9505.00	91.60	168.60	9025.64	766.28 S	267.30 E	805.12
5.39						
9537.00	91.90	168.90	9024.67	797.65 S	273.54 E	837.11
1.33						
9569.00	92.30	168.80	9023.50	829.02 S	279.72 E	869.08
1.29						
9601.00	92.40	169.10	9022.18	860.41 S	285.85 E	901.05
0.99						
9633.00	91.40	169.80	9021.12	891.85 S	291.70 E	933.02
3.81						
9665.00	91.10	170.10	9020.42	923.35 S	297.29 E	965.00
1.33						
9697.00	90.50	169.70	9019.98	954.85 S	302.90 E	996.97
2.25						
9729.00	90.60	169.60	9019.67	986.33 S	308.65 E	1028.96
0.44						
9761.00	89.80	168.70	9019.56	1017.75 S	314.67 E	1060.95
3.76						
9793.00	89.80	169.20	9019.67	1049.16 S	320.80 E	1092.95
1.56						
9826.00	89.00	169.30	9020.02	1081.58 S	326.96 E	1125.94
2.44						
9858.00	89.10	169.10	9020.55	1113.01 S	332.95 E	1157.93
0.70						
9888.00	89.30	169.10	9020.96	1142.46 S	338.63 E	1187.92
0.67						
9920.00	89.80	169.10	9021.22	1173.89 S	344.68 E	1219.91
1.56						
9952.00	89.90	169.30	9021.30	1205.32 S	350.67 E	1251.90
0.70						
9984.00	88.80	169.70	9021.66	1236.78 S	356.50 E	1283.89
3.66						
10016.00	87.70	169.60	9022.64	1268.24 S	362.25 E	1315.86
3.45						
10048.00	87.90	169.20	9023.87	1299.67 S	368.13 E	1347.83
1.40						
10079.00	88.20	169.30	9024.92	1330.11 S	373.91 E	1378.80
1.02						
10110.00	88.40	168.90	9025.84	1360.54 S	379.77 E	1409.78
1.44						
10142.00	88.60	168.90	9026.68	1391.93 S	385.93 E	1441.77
0.63						

	Thistle Unit	#20H_Final	MWD	Survey_Report_05-05-11.txt		
10173.00	89.00	168.70	9027.33	1422.33 S	391.95 E	1472.76
1.44						
10205.00	89.10	168.30	9027.86	1453.69 S	398.33 E	1504.75
1.29						
10237.00	89.30	168.20	9028.31	1485.01 S	404.84 E	1536.75
0.70						
10301.00	89.80	167.90	9028.81	1547.62 S	418.10 E	1600.75
0.91						
10364.00	90.40	167.90	9028.70	1609.22 S	431.30 E	1663.74
0.95						
10426.00	90.10	167.70	9028.43	1669.82 S	444.40 E	1725.74
0.58						
10490.00	88.80	168.80	9029.04	1732.48 S	457.44 E	1789.74
2.66						
10554.00	89.80	168.80	9029.83	1795.25 S	469.86 E	1853.73
1.56						
10617.00	90.60	168.30	9029.61	1857.00 S	482.37 E	1916.72
1.50						
10680.00	89.20	168.20	9029.72	1918.68 S	495.20 E	1979.72
2.23						
10741.00	88.50	168.60	9030.94	1978.42 S	507.46 E	2040.71
1.32						
10803.00	89.60	168.30	9031.97	2039.15 S	519.88 E	2102.69
1.84						
10864.00	89.20	167.90	9032.61	2098.84 S	532.45 E	2163.69
0.93						
10926.00	89.80	168.00	9033.15	2159.47 S	545.40 E	2225.69
0.98						
10987.00	90.10	167.80	9033.20	2219.11 S	558.18 E	2286.69
0.59						
11049.00	90.00	166.80	9033.15	2279.60 S	571.81 E	2348.68
1.62						
11110.00	90.10	167.00	9033.09	2339.01 S	585.64 E	2409.67
0.37						
11172.00	89.10	166.60	9033.53	2399.37 S	599.80 E	2471.65
1.74						
11233.00	88.80	166.60	9034.64	2458.70 S	613.93 E	2532.63
0.49						
11295.00	89.00	166.60	9035.83	2519.00 S	628.30 E	2594.60
0.32						
11356.00	89.10	167.20	9036.85	2578.40 S	642.12 E	2655.58
1.00						
11418.00	90.40	168.10	9037.12	2638.97 S	655.38 E	2717.57
2.55						
11480.00	90.60	168.40	9036.58	2699.66 S	668.00 E	2779.57
0.58						
11541.00	90.70	168.30	9035.88	2759.40 S	680.32 E	2840.57
0.23						
11604.00	90.60	167.70	9035.17	2821.02 S	693.42 E	2903.56
0.97						
11666.00	89.80	168.10	9034.95	2881.64 S	706.42 E	2965.56
1.44						
11727.00	89.60	168.60	9035.27	2941.39 S	718.73 E	3026.56
0.88						
11789.00	88.90	169.00	9036.08	3002.20 S	730.77 E	3088.55
1.30						
11851.00	89.30	169.60	9037.06	3063.11 S	742.28 E	3150.52
1.16						
11911.00	89.80	169.60	9037.53	3122.13 S	753.12 E	3210.50
0.83						
11973.00	89.00	168.70	9038.18	3183.01 S	764.79 E	3272.48
1.94						
12035.00	88.50	168.50	9039.53	3243.78 S	777.04 E	3334.46

Thistle Unit #20H_Final MWD Survey_Report_05-05-11.txt

0.87							
12097.00	89.30	168.20	9040.72	3304.49 S	789.55 E	3396.45	
1.38							
12159.00	89.30	168.70	9041.48	3365.23 S	801.97 E	3458.44	
0.81							
12220.00	89.50	168.60	9042.12	3425.03 S	813.97 E	3519.43	
0.37							
12282.00	89.80	168.60	9042.50	3485.81 S	826.23 E	3581.43	
0.48							
12343.00	90.10	168.60	9042.55	3545.60 S	838.28 E	3642.42	
0.49							
12405.00	90.10	168.70	9042.44	3606.39 S	850.48 E	3704.42	
0.16							
12466.00	89.80	168.50	9042.49	3666.19 S	862.54 E	3765.42	
0.59							
12529.00	89.80	168.40	9042.71	3727.91 S	875.16 E	3828.41	
0.16							
12591.00	89.00	169.00	9043.36	3788.70 S	887.30 E	3890.40	
1.61							
12653.00	89.00	169.00	9044.44	3849.56 S	899.13 E	3952.39	
0.00							
12714.00	88.30	168.60	9045.88	3909.38 S	910.98 E	4013.36	
1.32							
12776.00	87.70	168.00	9048.05	3970.05 S	923.54 E	4075.32	
1.37							
12838.00	88.10	168.50	9050.32	4030.71 S	936.16 E	4137.28	
1.03							
12899.00	88.20	168.60	9052.29	4090.47 S	948.26 E	4198.25	
0.23							
12960.00	89.00	167.80	9053.78	4150.16 S	960.73 E	4259.23	
1.85							
13021.00	89.30	168.10	9054.68	4209.81 S	973.47 E	4320.22	
0.70							
13083.00	90.10	167.50	9055.01	4270.40 S	986.57 E	4382.22	
1.61							
13144.00	89.70	167.90	9055.11	4330.00 S	999.56 E	4443.22	
0.93							
13206.00	89.80	168.10	9055.38	4390.65 S	1012.45 E	4505.22	
0.36							
13268.00	89.60	167.40	9055.71	4451.24 S	1025.61 E	4567.21	
1.17							
13329.00	89.10	168.50	9056.40	4510.89 S	1038.34 E	4628.21	
1.98							
13391.00	88.70	168.60	9057.59	4571.64 S	1050.65 E	4690.19	
0.67							
13452.00	88.90	168.30	9058.87	4631.39 S	1062.86 E	4751.18	
0.59							
13514.00	89.10	167.90	9059.95	4692.05 S	1075.64 E	4813.17	
0.72							
13576.00	89.50	168.10	9060.71	4752.69 S	1088.53 E	4875.16	
0.72							
13668.00	89.70	167.80	9061.35	4842.66 S	1107.74 E	4967.16	
0.39							
13745.00	90.20	167.70	9061.42	4917.91 S	1124.07 E	5044.16	
0.66							
13800.00	90.20	167.70	9061.23	4971.65 S	1135.79 E	5099.16	
0.00							

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to WELL. Northings and Eastings are relative to Site.

Thistle Unit #20H_Final MWD Survey_Report_05-05-11.txt

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Slot and calculated along an Azimuth of 167.991° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.

Central meridian is -104.333°.

Grid Convergence at Surface is 0.409°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 13800.00ft., the Bottom Hole Displacement is 5099.73ft., in the Direction of 167.991° (Grid).