

30-025-39893

DEVON ENERGY

Brinninstool Delaware
Lea County, NM
Thistle Unit #17H
VH - Job #32K1210956

RECEIVED

APR 11 2011
HOBBSD

Survey: Actual

SDI Standard Survey Report

16 December, 2010

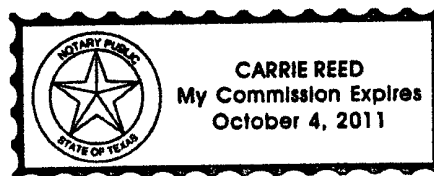
This survey is correct to the best of my knowledge and is supported by actual field data.

Richardson

Notorized this date 3/6 of December, 2010.

Carrie Reed

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 #17H
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 #17H	North Reference:	Grid
Wellbore:	VH - Job #32K1210956	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210956	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 #17H, Directional (Pathfinder)		
Well Position	+N/-S	0.0 usft	Northing: 457,070.67 usft
	+E/-W	0.0 usft	Easting: 734,891.74 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 15' 15.549 N
		Longitude:	103° 34' 24.636 W
		Ground Level:	0.0 usft

Wellbore	VH - Job #32K1210956				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	12/6/2010	7.70	60.23	48,751

Design	VH - Job #32K1210956			
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	348.02

Survey Program	Date	12/16/2010		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,180.0	Actual (VH - Job #32K1210956)	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	0.12	90.69	100.0	0.0	0.1	90.69	0.1
200.0	0.08	34.65	200.0	0.1	0.2	77.57	0.3
300.0	0.12	304.06	300.0	0.2	0.2	49.76	0.3
400.0	0.19	52.38	400.0	0.3	0.2	36.70	0.4
500.0	0.12	298.94	500.0	0.5	0.3	30.67	0.6
600.0	0.05	53.76	600.0	0.6	0.2	22.35	0.6
700.0	0.22	88.80	700.0	0.6	0.5	37.81	0.7
800.0	0.24	113.53	800.0	0.5	0.8	58.79	1.0
900.0	0.34	148.95	900.0	0.2	1.2	81.77	1.2
1,000.0	0.37	134.96	1,000.0	-0.3	1.6	101.21	1.6
1,100.0	0.27	115.28	1,100.0	-0.6	2.0	107.66	2.1

Scientific Drilling International, Inc.
SDI Standard Survey Report

Company:	DEVON ENERGY	Local Co-ordinate Reference:	Well Thistle Unit #17H
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 #17H	North Reference:	Grid
Wellbore:	VH - Job #32K1210956	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210956	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	0.24	192.01	1,200.0	-0.9	2.2	113.45	2.4
1,300.0	0.26	216.51	1,300.0	-1.3	2.0	123.67	2.4
1,400.0	0.15	270.01	1,400.0	-1.5	1.7	131.13	2.3
1,500.0	0.73	334.24	1,500.0	-0.9	1.3	125.35	1.6
1,600.0	0.79	321.06	1,600.0	0.2	0.6	74.65	0.6
1,700.0	0.88	318.33	1,700.0	1.3	-0.3	345.63	1.3
1,800.0	0.91	327.39	1,800.0	2.5	-1.3	333.34	2.8
1,900.0	0.66	326.71	1,899.9	3.7	-2.0	331.30	4.2
2,000.0	0.66	331.66	1,999.9	4.7	-2.6	330.84	5.3
2,100.0	0.51	330.33	2,099.9	5.6	-3.1	330.88	6.4
2,200.0	0.67	331.83	2,199.9	6.5	-3.6	330.92	7.4
2,300.0	0.55	333.82	2,299.9	7.4	-4.1	331.15	8.5
2,400.0	0.62	339.22	2,399.9	8.3	-4.5	331.75	9.5
2,500.0	0.69	333.30	2,499.9	9.4	-4.9	332.21	10.6
2,600.0	0.64	347.79	2,599.9	10.5	-5.3	333.00	11.7
2,700.0	0.67	346.00	2,699.9	11.6	-5.6	334.22	12.9
2,800.0	0.79	354.13	2,799.9	12.8	-5.8	335.66	14.1
2,900.0	1.00	359.53	2,899.9	14.4	-5.9	337.77	15.5
3,000.0	0.96	9.02	2,999.9	16.1	-5.8	340.31	17.1
3,100.0	1.16	1.63	3,099.8	17.9	-5.6	342.66	18.8
3,200.0	1.37	8.42	3,199.8	20.1	-5.4	345.00	20.8
3,300.0	1.52	5.78	3,299.8	22.6	-5.1	347.33	23.2
3,400.0	1.66	3.94	3,399.8	25.4	-4.9	349.18	25.9
3,500.0	1.96	2.93	3,499.7	28.5	-4.7	350.72	28.9
3,600.0	1.98	4.63	3,599.6	32.0	-4.4	352.10	32.3
3,700.0	1.92	3.22	3,699.6	35.4	-4.2	353.22	35.6
3,800.0	0.71	5.87	3,799.6	37.7	-4.0	353.87	37.9
3,900.0	0.61	7.15	3,899.6	38.8	-3.9	354.24	39.0
4,000.0	0.20	316.36	3,999.5	39.5	-4.0	354.25	39.7
4,100.0	0.17	267.93	4,099.5	39.6	-4.2	353.88	39.8
4,200.0	0.32	289.43	4,199.5	39.7	-4.7	353.31	39.9
4,300.0	0.35	312.98	4,299.5	40.0	-5.1	352.67	40.3
4,400.0	0.63	93.80	4,399.5	40.1	-4.8	353.16	40.4
4,500.0	1.80	112.40	4,499.5	39.5	-2.8	355.93	39.6
4,600.0	1.91	116.92	4,599.5	38.1	0.1	0.19	38.1
4,700.0	2.35	118.99	4,699.4	36.4	3.4	5.34	36.6
4,800.0	3.35	120.89	4,799.3	33.9	7.7	12.80	34.8
4,900.0	3.49	123.46	4,899.1	30.7	12.8	22.54	33.3
5,000.0	2.65	123.21	4,999.0	27.8	17.2	31.80	32.7
5,100.0	2.24	128.87	5,098.9	25.3	20.7	39.27	32.7
5,200.0	1.63	136.83	5,198.8	23.0	23.2	45.18	32.7
5,300.0	1.55	137.32	5,298.8	21.0	25.1	50.05	32.7
5,400.0	1.49	136.29	5,398.7	19.1	26.9	54.66	33.0
5,500.0	1.26	133.24	5,498.7	17.4	28.6	58.71	33.4

Scientific Drilling International, Inc.
SDI Standard Survey Report

Company:	DEVON ENERGY	Local Co-ordinate Reference:	Well Thistle Unit #17H
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 #17H	North Reference:	Grid
Wellbore:	VH - Job #32K1210956	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210956	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	1.15	129.81	5,598.7	16.0	30.2	62.09	34.1
5,700.0	1.16	128.15	5,698.7	14.7	31.7	65.12	35.0
5,800.0	1.10	124.67	5,798.6	13.5	33.3	67.88	35.9
5,900.0	0.98	123.08	5,898.6	12.5	34.8	70.21	37.0
6,000.0	0.85	125.73	5,998.6	11.6	36.1	72.17	38.0
6,100.0	0.79	128.81	6,098.6	10.8	37.3	73.90	38.8
6,200.0	0.85	130.20	6,198.6	9.8	38.4	75.61	39.6
6,300.0	0.73	129.52	6,298.6	9.0	39.4	77.19	40.4
6,400.0	0.73	120.94	6,398.6	8.2	40.5	78.50	41.3
6,500.0	0.62	119.25	6,498.6	7.6	41.5	79.57	42.2
6,600.0	0.57	124.46	6,598.6	7.1	42.4	80.50	43.0
6,700.0	0.63	118.39	6,698.6	6.5	43.3	81.39	43.8
6,800.0	0.57	114.06	6,798.5	6.1	44.2	82.16	44.6
6,900.0	0.45	128.95	6,898.5	5.6	45.0	82.86	45.3
7,000.0	0.50	132.13	6,998.5	5.1	45.6	83.62	45.9
7,100.0	0.74	141.81	7,098.5	4.3	46.3	84.70	46.5
7,200.0	0.68	148.36	7,198.5	3.3	47.0	86.01	47.1
7,300.0	0.79	139.19	7,298.5	2.3	47.8	87.30	47.8
7,400.0	0.74	148.22	7,398.5	1.2	48.6	88.60	48.6
7,500.0	0.91	145.68	7,498.5	0.0	49.4	90.02	49.4
7,600.0	0.97	145.25	7,598.5	-1.4	50.3	91.56	50.3
7,700.0	0.84	149.06	7,698.5	-2.7	51.2	93.02	51.2
7,800.0	0.90	153.65	7,798.5	-4.0	51.9	94.44	52.0
7,900.0	1.07	153.01	7,898.4	-5.6	52.6	96.03	52.9
8,000.0	1.22	142.53	7,998.4	-7.2	53.7	97.68	54.2
8,100.0	1.49	140.41	8,098.4	-9.1	55.2	99.35	55.9
8,180.0	1.47	142.01	8,178.4	-10.7	56.5	100.72	57.5



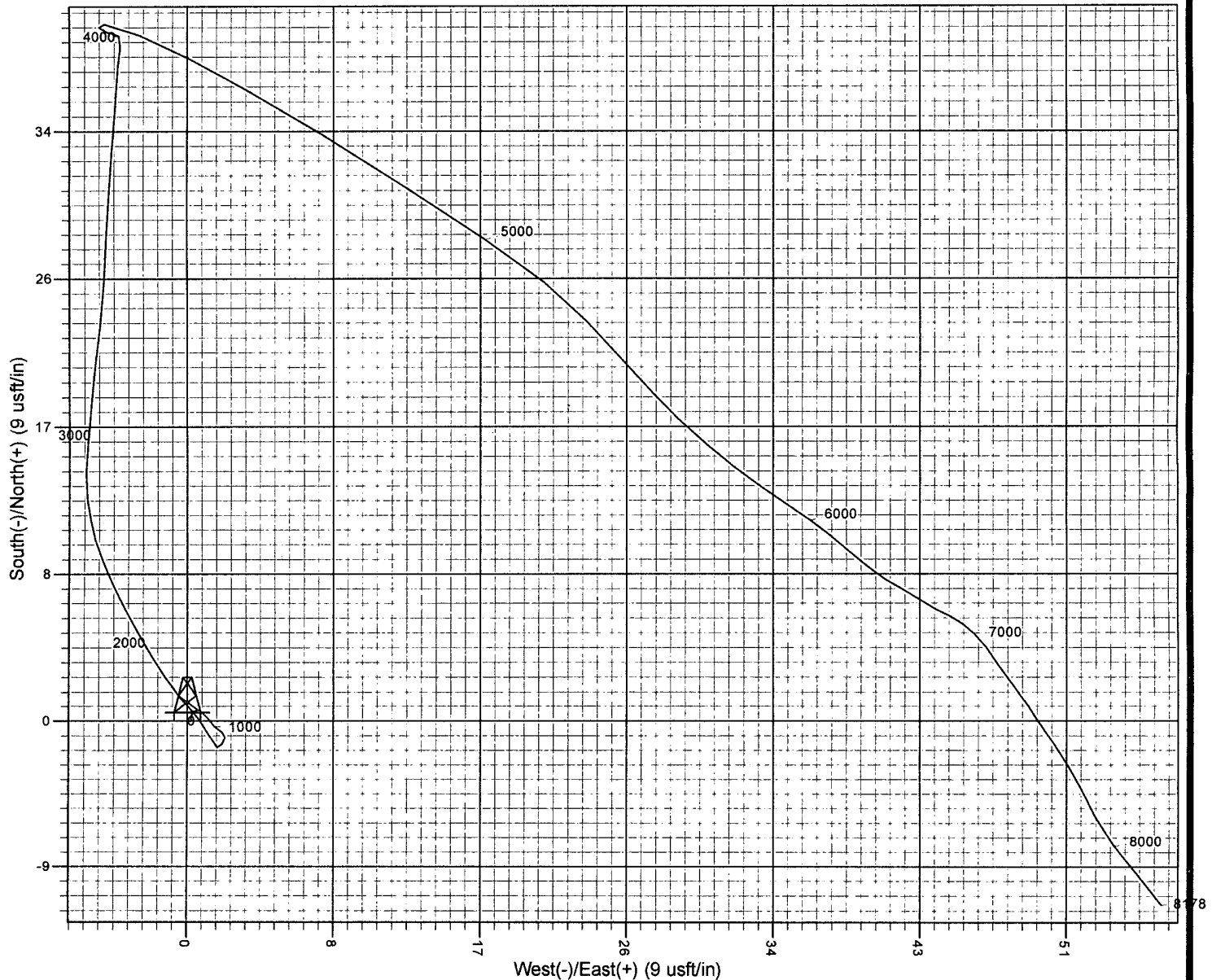
Project: Brinninstool Delaware
Lea County, NM
Well: Thistle Unit #17H
Wellbore: VH - Job #32K1210956
Design: VH - Job #32K1210956



Azimuths to Grid North
True North: -0.41°
Magnetic North: 7.30°
Magnetic Field
Strength: 48751.1nT
Dip Angle: 60.23°
Date: 12/6/2010
Model: BGGM2010

WELL DETAILS: Thistle Unit #17H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	457070.67	734891.74	32° 15' 15.549 N	103° 34' 24.636 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

Pathfinder

6213 W. Interstate 20
Midland, Texas. 79706
Tel. 432.687.1647
Fax 432.687.1544

PATHFINDER

A Schlumberger Company

January 6, 2011

Devon Energy
20 N. Broadway
Oklahoma City, OK

RECEIVED
APR 11 2011
HOBBSOCO

RE: Devon Energy
Thistle Unit #17H
API: 30-025-39893
Lea County, NM
RIG: MCVAY 8
FIELD: Brinninstool; Delaware
PES FILE NO.: 700001025-WT-WT

To whom it may concern:

We hereby certify that the enclosed Original Field Survey Data contained in this report represents to the best of our knowledge, a true and accurate survey of the well at the time the survey was run.

DIRECTIONAL SURVEY DATA
1 – Original survey report
2 – Survey report copies

We appreciate the opportunity to work with you and we look forward to your business support. If you have any questions, I can be reached at (432) 687-1647

Sincerely,


FRANCISCO SINISTERRA
M/LWD Service Coordinator
PathFinder Energy Services

ML:sh



An Operating Unit of Smith International, Inc.

RECEIVED

APR 11 2011

HOBBSOCD

DIRECTIONAL SURVEY REPORT

DEVON ENERGY

THISTLE UNIT #17H

LEA COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

Pathfinder Energy Services, Inc.
6213 W. Interstate 20 • Midland, TX • 79706
(432) 681-6000

Pathfinder

6213 W. Interstate 20
Midland, Texas. 79706
Tel. 432.687.1647
Fax 432.687.1544



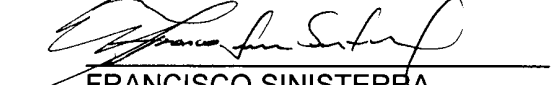
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) FRED KNAAK
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 12-07-10 TO 12-30-10
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

DEVON ENERGY
THISTLE UNIT #17H
LEA COUNTY, NM
RIG: MCVAY 8

9. SURVEY CERTIFIED FROM: 8347 TO 13817 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 5091.93 FEET ON A BEARING OF 348.09 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 13869 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


FRANCISCO SINISTERRA
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 12/07/2010
Date Completed: 12/30/2010

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
Rig:McVAY 8
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:FRED KNAAK
RICHARD PAGE
KOLEY THURMAN

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.15.15.0331 N LON:103.34.24.3810 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 776246.4600 Y: 457033.8200
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.26° EAST TO GRID
Vertical Section Plane: 348.02
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude:3654.00' Ground To MSL

Measured Depth	13869.00	(feet)
Inclination	94.18	(deg)
Azimuth	345.09	(deg)
True Vertical Depth	8901.77	(feet)
Vertical Section	5091.93	(feet)
Survey X cord	775195.43	(feet)
Survey Y cord	462016.10	(feet)
Survey Lat	32.26789080 N	(deg)
Survey Lon	103.57672525 W	(deg)
Rectangular Corr. N/S	4982.28 N	(feet)
Rectangular Corr. E/W	1051.03 W	(feet)
Closure Distance	5091.93	(feet)
Direction of Closure	348.09	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION

THISTLE UNIT #17H OWB

LEA COUNTY, NM

Rig:McVAY 8

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: FRED KNAAK

RICHARD PAGE

KOLEY THURMAN

Survey Calculations by RX5 V6.03C using Minimum Curvature

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.15.15.0331 N LON:103.34.24.3810 W

GRID Reference:NAD83 new mexico east Transverse Mercator

Ref GRID Coord: X: 776246.4600 Y: 457033.8200

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.26°EAST TO GRID

Vertical Section Plane: 348.02

Survey Vert. Reference: 19.00' Kelly Bushing To Ground

Altitude:3654.00' Ground To MSL

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL		Closure		DLS
						Rectangular (ft)	Offsets (ft)	Dist (ft)	Dir (deg)	
THE FOLLOWING ARE SCIENTIFIC DRILLING GYRO SURVEYS.										
0.00	0.00	0.00	-0.00	0.00	0.01	0.02 N	0.04 E	0.04@	65.63	0.00
100.00	0.12	90.69	100.00	100.00	-0.01	0.02 N	0.14 E	0.14@	83.54	0.12
200.00	0.08	34.65	200.00	100.00	0.01	0.07 N	0.29 E	0.30@	75.88	0.10
300.00	0.12	304.06	300.00	100.00	0.13	0.19 N	0.24 E	0.31@	51.93	0.14
400.00	0.19	52.38	400.00	100.00	0.28	0.35 N	0.29 E	0.45@	39.31	0.25
500.00	0.12	298.94	500.00	100.00	0.42	0.50 N	0.32 E	0.60@	33.01	0.26
600.00	0.05	53.76	600.00	100.00	0.51	0.58 N	0.27 E	0.64@	24.97	0.15
700.00	0.22	88.80	700.00	100.00	0.49	0.61 N	0.50 E	0.78@	39.26	0.18
800.00	0.24	113.53	800.00	100.00	0.33	0.53 N	0.88 E	1.03@	59.08	0.10
900.00	0.34	148.95	900.00	100.00	-0.07	0.19 N	1.22 E	1.24@	81.22	0.20
1000.00	0.37	134.96	999.99	100.00	-0.62	0.29 S	1.61 E	1.63@	100.35	0.09
1100.00	0.27	115.28	1099.99	100.00	-1.03	0.62 S	2.05 E	2.14@	106.90	0.15
1200.00	0.24	192.01	1199.99	100.00	-1.37	0.93 S	2.22 E	2.40@	112.70	0.32
1300.00	0.26	216.51	1299.99	100.00	-1.71	1.31 S	2.04 E	2.43@	122.82	0.11
1400.00	0.15	270.01	1399.99	100.00	-1.83	1.50 S	1.77 E	2.32@	130.18	0.21
1500.00	0.73	334.24	1499.99	100.00	-1.19	0.92 S	1.36 E	1.65@	124.08	0.68
1600.00	0.79	321.06	1599.98	100.00	0.05	0.19 N	0.65 E	0.68@	74.10	0.19
1700.00	0.88	318.33	1699.97	100.00	1.33	1.30 N	0.29 W	1.33@	347.43	0.10
1800.00	0.91	327.39	1799.96	100.00	2.74	2.54 N	1.23 W	2.82@	334.20	0.14
1900.00	0.66	326.71	1899.95	100.00	4.02	3.69 N	1.97 W	4.18@	331.88	0.25
2000.00	0.66	331.66	1999.94	100.00	5.11	4.68 N	2.56 W	5.33@	331.30	0.06
2100.00	0.51	330.33	2099.93	100.00	6.08	5.57 N	3.05 W	6.35@	331.26	0.15
2200.00	0.67	331.83	2199.93	100.00	7.07	6.47 N	3.55 W	7.38@	331.25	0.16
2300.00	0.55	333.82	2299.92	100.00	8.10	7.42 N	4.04 W	8.45@	331.44	0.12
2400.00	0.62	339.22	2399.92	100.00	9.10	8.36 N	4.44 W	9.46@	332.00	0.09

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8

Page 02/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
2500.00	0.69	333.30	2499.91	100.00	10.21	9.40 N	4.91 W	10.60@	332.44	0.10
2600.00	0.64	347.79	2599.90	100.00	11.35	10.48 N	5.29 W	11.74@	333.21	0.17
2700.00	0.67	346.00	2699.90	100.00	12.50	11.60 N	5.55 W	12.86@	334.41	0.04
2800.00	0.79	354.13	2799.89	100.00	13.77	12.85 N	5.77 W	14.08@	335.84	0.16
2900.00	1.00	359.53	2899.88	100.00	15.31	14.41 N	5.84 W	15.55@	337.93	0.23
3000.00	0.96	9.02	2999.86	100.00	16.94	16.11 N	5.72 W	17.09@	340.45	0.17
3100.00	1.16	1.63	3099.85	100.00	18.71	17.95 N	5.56 W	18.79@	342.79	0.24
3200.00	1.37	8.42	3199.82	100.00	20.81	20.14 N	5.35 W	20.84@	345.11	0.26
3300.00	1.52	5.78	3299.79	100.00	23.20	22.64 N	5.05 W	23.20@	347.44	0.16
3400.00	1.66	3.94	3399.75	100.00	25.85	25.41 N	4.81 W	25.86@	349.27	0.15
3500.00	1.96	2.93	3499.70	100.00	28.90	28.56 N	4.63 W	28.93@	350.80	0.30
3600.00	1.98	4.63	3599.64	100.00	32.21	31.99 N	4.40 W	32.29@	352.17	0.06
3700.00	1.92	3.22	3699.58	100.00	35.48	35.39 N	4.17 W	35.63@	353.29	0.08
3800.00	0.71	5.87	3799.56	100.00	37.69	37.67 N	4.01 W	37.89@	353.93	1.21
3900.00	0.61	7.15	3899.55	100.00	38.78	38.82 N	3.88 W	39.01@	354.29	0.10
4000.00	0.20	316.36	3999.55	100.00	39.43	39.47 N	3.93 W	39.67@	354.31	0.51
4100.00	0.17	267.93	4099.55	100.00	39.60	39.59 N	4.20 W	39.82@	353.94	0.15
4200.00	0.32	289.43	4199.55	100.00	39.78	39.68 N	4.61 W	39.95@	353.37	0.17
4300.00	0.35	312.98	4299.54	100.00	40.17	39.98 N	5.10 W	40.31@	352.73	0.14
4400.00	0.63	93.80	4399.54	100.00	40.27	40.15 N	4.77 W	40.44@	353.22	0.93
4500.00	1.80	112.40	4499.52	100.00	39.23	39.52 N	2.77 W	39.62@	355.98	1.22
4600.00	1.91	116.92	4599.47	100.00	37.30	38.17 N	0.16 E	38.17@	0.25	0.18
4700.00	2.35	118.99	4699.40	100.00	34.91	36.42 N	3.44 E	36.58@	5.40	0.45
4800.00	3.35	120.89	4799.27	100.00	31.58	33.92 N	7.74 E	34.80@	12.86	1.00
4900.00	3.49	123.46	4899.09	100.00	27.42	30.75 N	12.79 E	33.30@	22.59	0.21
5000.00	2.65	123.21	4998.95	100.00	23.61	27.80 N	17.26 E	32.73@	31.84	0.84
5100.00	2.24	128.87	5098.86	100.00	20.46	25.31 N	20.72 E	32.71@	39.31	0.48
5200.00	1.63	136.83	5198.80	100.00	17.73	23.05 N	23.21 E	32.71@	45.21	0.67

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8

Page 03/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
5300.00	1.55	137.32	5298.76	100.00	15.35	21.01 N	25.10 E	32.74@	50.07	0.08
5400.00	1.49	136.29	5398.73	100.00	13.08	19.08 N	26.92 E	33.00@	54.67	0.07
5500.00	1.26	133.24	5498.70	100.00	11.07	17.39 N	28.62 E	33.49@	58.72	0.24
5600.00	1.15	129.81	5598.68	100.00	9.38	15.99 N	30.19 E	34.16@	62.09	0.13
5700.00	1.16	128.15	5698.66	100.00	7.81	14.72 N	31.76 E	35.00@	65.13	0.03
5800.00	1.10	124.67	5798.64	100.00	6.34	13.55 N	33.34 E	35.99@	67.88	0.09
5900.00	0.98	123.08	5898.62	100.00	5.03	12.54 N	34.85 E	37.04@	70.21	0.12
6000.00	0.85	125.73	5998.61	100.00	3.88	11.64 N	36.17 E	37.99@	72.16	0.14
6100.00	0.79	128.81	6098.60	100.00	2.80	10.77 N	37.31 E	38.83@	73.89	0.08
6200.00	0.85	130.20	6198.59	100.00	1.68	9.86 N	38.41 E	39.66@	75.60	0.06
6300.00	0.73	129.52	6298.58	100.00	0.59	8.98 N	39.47 E	40.48@	77.18	0.12
6400.00	0.73	120.94	6398.57	100.00	-0.34	8.25 N	40.51 E	41.34@	78.49	0.11
6500.00	0.62	119.25	6498.56	100.00	-1.13	7.66 N	41.52 E	42.22@	79.55	0.11
6600.00	0.57	124.46	6598.56	100.00	-1.85	7.11 N	42.41 E	43.00@	80.48	0.07
6700.00	0.63	118.39	6698.55	100.00	-2.56	6.57 N	43.30 E	43.80@	81.38	0.09
6800.00	0.57	114.06	6798.55	100.00	-3.21	6.10 N	44.24 E	44.66@	82.15	0.08
6900.00	0.45	128.95	6898.54	100.00	-3.81	5.65 N	45.00 E	45.35@	82.84	0.18
7000.00	0.50	132.13	6998.54	100.00	-4.47	5.11 N	45.63 E	45.91@	83.61	0.06
7100.00	0.74	141.81	7098.53	100.00	-5.40	4.31 N	46.35 E	46.55@	84.68	0.26
7200.00	0.68	148.36	7198.53	100.00	-6.54	3.30 N	47.06 E	47.18@	85.99	0.10
7300.00	0.79	139.19	7298.52	100.00	-7.70	2.27 N	47.82 E	47.88@	87.28	0.16
7400.00	0.74	148.22	7398.51	100.00	-8.91	1.20 N	48.61 E	48.63@	88.58	0.13
7500.00	0.91	145.68	7498.50	100.00	-10.26	0.00 S	49.40 E	49.40@	90.00	0.17
7600.00	0.97	145.25	7598.48	100.00	-11.77	1.35 S	50.33 E	50.35@	91.54	0.06
7700.00	0.84	149.06	7698.47	100.00	-13.25	2.68 S	51.19 E	51.26@	92.99	0.14
7800.00	0.90	153.65	7798.46	100.00	-14.70	4.01 S	51.92 E	52.07@	94.42	0.09
7900.00	1.07	153.01	7898.44	100.00	-16.36	5.55 S	52.69 E	52.98@	96.01	0.17
8000.00	1.22	142.53	7998.42	100.00	-18.22	7.22 S	53.76 E	54.24@	97.65	0.26

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8

Page 04/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8100.00	1.49	140.41	8098.40	100.00	-20.34	9.07 S	55.24 E	55.98@	99.32	0.27
** TIE IN TO SCIENTIFIC DRILLING GYRO SURVEY AT 8180'MD.										
8180.00	1.47	142.01	8178.37	80.00	-22.18	10.68 S	56.53 E	57.53@	100.70	0.06
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
8347.00	1.58	144.69	8345.31	167.00	-26.22	14.25 S	59.18 E	60.87@	103.54	0.08
8378.00	1.67	144.36	8376.30	31.00	-27.03	14.96 S	59.69 E	61.54@	104.07	0.29
8410.00	0.70	102.88	8408.29	32.00	-27.54	15.39 S	60.15 E	62.09@	104.35	3.86
8442.00	2.20	9.29	8440.28	32.00	-27.05	14.82 S	60.44 E	62.23@	103.78	7.34
8474.00	5.10	357.57	8472.22	32.00	-25.07	12.80 S	60.48 E	61.82@	101.95	9.31
8506.00	8.18	350.42	8504.00	32.00	-21.39	9.13 S	60.04 E	60.73@	98.64	9.95
8538.00	11.43	349.19	8535.53	32.00	-15.95	3.77 S	59.07 E	59.19@	93.65	10.18
8570.00	15.21	348.32	8566.66	32.00	-8.58	3.46 N	57.62 E	57.73@	86.56	11.83
8602.00	18.82	348.19	8597.25	32.00	0.79	12.63 N	55.72 E	57.13@	77.23	11.28
8634.00	22.07	347.88	8627.23	32.00	11.96	23.56 N	53.40 E	58.36@	66.19	10.16
8666.00	24.97	347.00	8656.57	32.00	24.73	36.02 N	50.61 E	62.12@	54.56	9.13
8698.00	27.79	345.55	8685.24	32.00	38.94	49.83 N	47.23 E	68.66@	43.47	9.04
8730.00	31.04	344.92	8713.11	32.00	54.63	65.02 N	43.22 E	78.08@	33.61	10.20
8762.00	34.47	345.00	8740.02	32.00	71.92	81.74 N	38.73 E	90.45@	25.35	10.72
8794.00	37.90	345.79	8765.84	32.00	90.79	100.02 N	33.97 E	105.63@	18.76	10.82
8826.00	41.50	346.58	8790.46	32.00	111.22	119.87 N	29.10 E	123.35@	13.65	11.36
8858.00	44.76	347.25	8813.81	32.00	133.09	141.18 N	24.15 E	143.23@	9.71	10.29
8891.00	47.48	348.10	8836.68	33.00	156.87	164.41 N	19.08 E	165.51@	6.62	8.45
8923.00	50.65	348.85	8857.64	32.00	181.04	188.10 N	14.25 E	188.64@	4.33	10.06
8955.00	54.43	348.88	8877.10	32.00	206.43	213.01 N	9.35 E	213.22@	2.51	11.81
8987.00	57.60	348.60	8894.99	32.00	232.96	239.03 N	4.17 E	239.07@	1.00	9.93
9019.00	59.97	348.18	8911.57	32.00	260.33	265.84 N	1.34 W	265.84@	359.71	7.49
9051.00	62.61	347.76	8926.94	32.00	288.39	293.29 N	7.19 W	293.37@	358.60	8.33
9064.00	64.28	348.21	8932.75	13.00	300.02	304.66 N	9.61 W	304.81@	358.19	13.21
9097.00	68.15	347.93	8946.06	33.00	330.21	334.20 N	15.85 W	334.57@	357.28	11.75

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8

Page 05/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
9129.00	71.84	348.11	8957.00	32.00	360.27	363.61 N	22.09 W	364.28@	356.52	11.54
9161.00	75.53	348.38	8965.99	32.00	390.98	393.67 N	28.35 W	394.69@	355.88	11.56
9193.00	79.23	348.61	8972.98	32.00	422.20	424.26 N	34.58 W	425.67@	355.34	11.58
9225.00	83.10	348.81	8977.90	32.00	453.81	455.27 N	40.77 W	457.09@	354.88	12.11
9257.00	85.65	349.05	8981.03	32.00	485.65	486.52 N	46.88 W	488.77@	354.50	8.00
9276.00	87.05	349.00	8982.24	19.00	504.61	505.13 N	50.49 W	507.65@	354.29	7.37
9309.00	88.11	348.97	8983.64	33.00	537.57	537.49 N	56.79 W	540.49@	353.97	3.21
9341.00	88.46	349.15	8984.59	32.00	569.56	568.90 N	62.86 W	572.36@	353.69	1.23
9373.00	88.55	349.14	8985.43	32.00	601.54	600.32 N	68.88 W	604.25@	353.45	0.28
9405.00	88.46	348.78	8986.26	32.00	633.52	631.71 N	75.01 W	636.15@	353.23	1.16
9437.00	88.64	348.42	8987.07	32.00	665.51	663.07 N	81.33 W	668.04@	353.01	1.26
9469.00	88.37	348.14	8987.91	32.00	697.50	694.39 N	87.83 W	699.93@	352.79	1.22
9533.00	90.04	347.94	8988.80	64.00	761.49	757.00 N	101.09 W	763.72@	352.39	2.63
9597.00	90.75	347.77	8988.36	64.00	825.49	819.56 N	114.56 W	827.53@	352.04	1.14
9661.00	91.71	347.66	8986.98	64.00	889.47	882.08 N	128.17 W	891.34@	351.73	1.51
9725.00	91.71	347.24	8985.07	64.00	953.44	944.52 N	142.07 W	955.15@	351.45	0.66
9788.00	91.71	346.72	8983.19	63.00	1016.40	1005.88 N	156.26 W	1017.94@	351.17	0.82
9852.00	91.80	346.32	8981.23	64.00	1080.35	1068.08 N	171.17 W	1081.71@	350.90	0.64
9917.00	91.28	346.77	8979.48	65.00	1145.31	1131.28 N	186.29 W	1146.51@	350.65	1.06
9979.00	91.45	347.07	8978.01	62.00	1207.28	1191.65 N	200.31 W	1208.37@	350.46	0.56
10043.00	91.01	347.38	8976.63	64.00	1271.25	1254.05 N	214.46 W	1272.26@	350.30	0.84
10075.00	90.75	347.41	8976.14	32.00	1303.25	1285.28 N	221.45 W	1304.21@	350.22	0.82
10107.00	91.63	347.82	8975.48	32.00	1335.24	1316.52 N	228.31 W	1336.17@	350.16	3.03
10139.00	92.86	348.31	8974.22	32.00	1367.22	1347.81 N	234.92 W	1368.13@	350.11	4.14
10171.00	94.62	348.73	8972.14	32.00	1399.15	1379.10 N	241.28 W	1400.05@	350.08	5.65
10203.00	96.29	349.07	8969.09	32.00	1430.99	1410.36 N	247.41 W	1431.89@	350.05	5.32
10267.00	96.81	348.90	8961.79	64.00	1494.57	1472.77 N	259.56 W	1495.47@	350.01	0.85
10329.00	97.43	348.27	8954.11	62.00	1556.09	1533.07 N	271.73 W	1556.97@	349.95	1.42

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8

Page 06/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
10393.00	95.67	347.99	8946.81	64.00	1619.67	1595.29 N	284.81 W	1620.52@	349.88	2.78
10425.00	94.44	347.81	8943.99	32.00	1651.54	1626.46 N	291.49 W	1652.37@	349.84	3.88
10456.00	93.56	347.19	8941.83	31.00	1682.46	1656.65 N	298.18 W	1683.27@	349.80	3.47
10548.62	92.38	346.43	8937.03	92.62	1774.94	1746.70 N	319.29 W	1775.65@	349.64	1.51
10611.00	93.73	346.46	8933.70	62.38	1837.20	1807.26 N	333.89 W	1837.84@	349.53	2.17
10672.00	92.00	345.52	8930.66	61.00	1898.09	1866.37 N	348.64 W	1898.65@	349.42	3.23
10733.00	91.98	345.38	8928.54	61.00	1958.99	1925.38 N	363.95 W	1959.47@	349.30	0.23
10796.00	90.57	345.54	8927.14	63.00	2021.91	1986.34 N	379.77 W	2022.32@	349.18	2.25
10858.00	90.04	345.76	8926.81	62.00	2083.85	2046.41 N	395.13 W	2084.20@	349.07	0.93
10919.00	89.60	347.29	8927.00	61.00	2144.83	2105.72 N	409.35 W	2145.14@	349.00	2.61
10981.00	89.52	348.08	8927.47	62.00	2206.83	2166.30 N	422.57 W	2207.12@	348.96	1.28
11043.00	89.25	347.66	8928.14	62.00	2268.82	2226.91 N	435.60 W	2269.11@	348.93	0.81
11104.00	88.64	347.75	8929.26	61.00	2329.81	2286.50 N	448.58 W	2330.09@	348.90	1.01
11166.00	88.20	348.68	8930.97	62.00	2391.79	2347.17 N	461.24 W	2392.06@	348.88	1.66
11227.00	88.64	349.09	8932.65	61.00	2452.76	2407.00 N	473.00 W	2453.03@	348.88	0.98
11289.00	87.76	349.42	8934.60	62.00	2514.71	2467.88 N	484.55 W	2515.00@	348.89	1.52
11350.00	87.58	348.97	8937.08	61.00	2575.65	2527.75 N	495.98 W	2575.95@	348.90	0.79
11413.00	87.32	348.98	8939.88	63.00	2638.58	2589.53 N	508.01 W	2638.89@	348.90	0.41
11475.00	87.85	348.70	8942.50	62.00	2700.51	2650.30 N	520.00 W	2700.83@	348.90	0.97
11536.00	88.11	347.87	8944.65	61.00	2761.47	2709.99 N	532.38 W	2761.79@	348.89	1.43
11597.00	88.20	347.49	8946.61	61.00	2822.44	2769.56 N	545.39 W	2822.74@	348.86	0.64
11659.00	88.29	347.20	8948.51	62.00	2884.41	2830.02 N	558.97 W	2884.69@	348.83	0.49
11722.00	88.46	346.89	8950.30	63.00	2947.37	2891.39 N	573.08 W	2947.64@	348.79	0.56
11783.00	88.55	346.12	8951.89	61.00	3008.33	2950.69 N	587.31 W	3008.57@	348.74	1.27
11845.00	88.20	346.88	8953.65	62.00	3070.28	3010.95 N	601.78 W	3070.50@	348.70	1.35
11906.00	87.41	347.12	8955.98	61.00	3131.23	3070.34 N	615.49 W	3131.43@	348.66	1.35
11968.00	87.23	346.68	8958.88	62.00	3193.15	3130.66 N	629.53 W	3193.33@	348.63	0.77
12029.00	87.67	347.69	8961.59	61.00	3254.08	3190.08 N	643.05 W	3254.25@	348.60	1.80

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8

Page 07/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
12091.00	87.85	347.46	8964.02	62.00	3316.03	3250.58 N	656.38 W	3316.19@	348.58	0.47
12152.00	88.20	347.30	8966.12	61.00	3376.99	3310.08 N	669.70 W	3377.14@	348.56	0.63
12214.00	89.16	347.19	8967.55	62.00	3438.97	3370.53 N	683.38 W	3439.11@	348.54	1.56
12275.00	89.25	347.57	8968.39	61.00	3499.96	3430.05 N	696.71 W	3500.09@	348.52	0.64
12337.00	90.57	348.02	8968.49	62.00	3561.96	3490.65 N	709.81 W	3562.09@	348.51	2.25
12399.00	91.71	348.14	8967.26	62.00	3623.94	3551.30 N	722.62 W	3624.07@	348.50	1.85
12460.00	92.59	348.46	8964.97	61.00	3684.90	3610.99 N	734.98 W	3685.03@	348.50	1.54
12522.00	92.95	347.84	8961.97	62.00	3746.83	3671.59 N	747.69 W	3746.95@	348.49	1.16
12583.00	93.30	347.77	8958.65	61.00	3807.74	3731.13 N	760.56 W	3807.86@	348.48	0.59
12645.00	91.89	348.25	8955.84	62.00	3869.67	3791.71 N	773.43 W	3869.79@	348.47	2.40
12707.00	91.98	348.01	8953.75	62.00	3931.63	3852.35 N	786.17 W	3931.75@	348.47	0.41
12768.00	92.95	347.93	8951.12	61.00	3992.58	3911.96 N	798.87 W	3992.69@	348.46	1.60
12830.00	92.42	347.74	8948.22	62.00	4054.51	3972.50 N	811.93 W	4054.62@	348.45	0.91
12891.00	92.15	348.34	8945.79	61.00	4115.46	4032.13 N	824.56 W	4115.57@	348.44	1.08
12953.00	91.28	348.14	8943.93	62.00	4177.43	4092.80 N	837.19 W	4177.54@	348.44	1.44
13015.00	91.98	348.02	8942.17	62.00	4239.41	4153.43 N	849.99 W	4239.52@	348.43	1.15
13076.00	92.24	347.82	8939.92	61.00	4300.36	4213.04 N	862.74 W	4300.47@	348.43	0.54
13138.00	92.51	347.54	8937.35	62.00	4362.31	4273.56 N	875.96 W	4362.41@	348.42	0.63
13199.00	92.95	347.30	8934.45	61.00	4423.24	4333.03 N	889.23 W	4423.34@	348.40	0.82
13261.00	92.42	347.00	8931.54	62.00	4485.16	4393.41 N	903.01 W	4485.25@	348.39	0.98
13323.00	92.24	346.85	8929.02	62.00	4547.10	4453.75 N	917.02 W	4547.18@	348.37	0.38
13384.00	92.86	346.82	8926.31	61.00	4608.02	4513.09 N	930.90 W	4608.10@	348.35	1.02
13446.00	93.56	346.22	8922.84	62.00	4669.91	4573.29 N	945.33 W	4669.97@	348.32	1.49
13539.00	91.98	345.75	8918.34	93.00	4762.73	4663.41 N	967.83 W	4762.78@	348.28	1.77
13633.00	91.89	345.45	8915.17	94.00	4856.60	4754.41 N	991.19 W	4856.63@	348.22	0.33
13725.00	92.95	345.41	8911.29	92.00	4948.42	4843.37 N	1014.31 W	4948.44@	348.17	1.15
13817.00	94.18	345.09	8905.56	92.00	5040.13	4932.16 N	1037.69 W	5040.14@	348.12	1.38
STRAIGHT LINE PROJECTION TO BIT DEPTH @ 13869.00' MD.										
13869.00	94.18	345.09	8901.77	52.00	5091.93	4982.28 N	1051.03 W	5091.93@	348.09	0.00

PathFinder Energy Services, Inc.

Survey Report

**DEVON ENERGY CORPORATION
THISTLE UNIT #17H OWB
LEA COUNTY, NM
RIG:McVAY 8**

Page 08/07

- ** The survey data at tie-in point was furnished by a recognized survey company and entered as submitted. Survey stations above the tie-in point represent recalculated data by PathFinder Energy Services, Inc. and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.**



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	DEVON ENERGY		
LEASE / WELL No.:	THISTLE "33"	#17H	
WELL LOCATION:	LEA COUNTY		
COUNTY / STATE / COUNTRY:	LEA	NEW MEXICO	USA
RIG:	MCVAY #8		
API WELL No:	30-025-39893		
JOB No:	700001025-WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER ENERGY		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):					
On Wall Plat:	7.26	LWD Calculated:	7.247	Agreed Upon:	7.26
X = 776246.460000		Feet	Y = 457033.820000		Feet
SITE LATITUDE:	32.254176 N	SITE LONGITUDE:	103.573439 W		
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:			
PROPOSED DRIFT DIRECTION:	348.02				
KELLY BUSHING ELEVATION:	19.0'				
ALTITUDE:	3654	Feet	WATER DEPTH:	NA	Feet

TIE-IN SURVEY

MEASURED DEPTH:	8180		
DRIFT ANGLE:	1.47		
DRIFT DIRECTION:	142.01		
TRUE VERTICAL DEPTH:	8178.37		
VERTICAL SECTION:	-22.19		
RECTANGULAR COORDINATE (N / S):	-10.68		
RECTANGULAR COORDINATE (E / W):	56.53		
CLOSURE DISTANCE / DIRECTION:	57.53	100.7	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC DRILLING		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

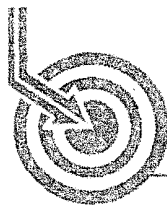
KICKOFF DEPTH:	8400	TOTAL DEPTH:	13865.96
KICKOFF ANGLE:	0	MAX ANGLE:	90.93

PES Engineers: 

**Signature of both field engineers required if applicable

Directional Driller: 

DATE: 6-Dec-2010



Scientific Drilling

Gyroscopic Survey Report for DEVON ENERGY

Well Location	LEA COUNTY, NEW MEXICO
Well Name	THISTLE UNIT #17H
Rig Name	McVAY #8
Survey Date	12/6/2010
Latitude	32.25 deg
North Reference	Grid North
Grid Correction	-0.41 deg
Depth Reference	RKB
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 348.02Azim (deg)
Definitive Survey	FINAL OUTRUN SURVEY
Operator	A.MADRID

Comments



Scientific Drilling

Survey Report

Well Name: THISTLE UNIT #17H
Survey: FINAL OTRUN SURVEY
Survey Date: 12/6/2010

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	0.12	90.69	100.00	-0.02	0.00	0.10	0.12	0.10	90.69
200.00	0.08	34.65	200.00	0.00	0.06	0.25	0.10	0.25	76.97
300.00	0.12	304.06	300.00	0.13	0.18	0.20	0.15	0.26	48.56
400.00	0.19	52.38	400.00	0.28	0.34	0.24	0.26	0.42	35.86
500.00	0.12	298.94	500.00	0.42	0.49	0.28	0.27	0.57	29.97
600.00	0.05	53.76	600.00	0.51	0.57	0.23	0.15	0.61	21.74
700.00	0.22	88.80	700.00	0.49	0.60	0.46	0.18	0.75	37.16
800.00	0.24	113.53	800.00	0.34	0.52	0.84	0.10	0.99	57.91
900.00	0.34	148.95	900.00	-0.06	0.19	1.18	0.20	1.19	81.00
1000.00	0.37	134.96	999.99	-0.62	-0.30	1.56	0.09	1.59	100.87
1100.00	0.27	115.28	1099.99	-1.03	-0.63	2.01	0.15	2.10	107.47
1200.00	0.24	192.01	1199.99	-1.36	-0.93	2.17	0.31	2.37	113.24
1300.00	0.26	216.51	1299.99	-1.70	-1.32	2.00	0.11	2.39	123.38
1400.00	0.15	270.01	1399.99	-1.82	-1.50	1.73	0.21	2.29	130.82
1500.00	0.73	334.24	1499.99	-1.17	-0.92	1.32	0.68	1.61	124.84
1600.00	0.79	321.06	1599.98	0.06	0.19	0.61	0.18	0.64	72.49
1700.00	0.88	318.33	1699.97	1.34	1.30	-0.33	0.10	1.35	345.59
1800.00	0.91	327.39	1799.96	2.75	2.55	-1.27	0.14	2.85	333.42
1900.00	0.66	326.71	1899.95	4.03	3.69	-2.02	0.25	4.21	331.37
2000.00	0.66	331.66	1999.94	5.12	4.68	-2.60	0.06	5.36	330.90
2100.00	0.51	330.33	2099.94	6.09	5.57	-3.10	0.15	6.37	330.93
2200.00	0.67	331.83	2199.93	7.08	6.48	-3.59	0.17	7.41	330.97
2300.00	0.55	333.82	2299.92	8.11	7.42	-4.08	0.13	8.47	331.19
2400.00	0.62	339.22	2399.92	9.11	8.36	-4.49	0.09	9.49	331.78
2500.00	0.69	333.30	2499.91	10.23	9.41	-4.95	0.09	10.63	332.25
2600.00	0.64	347.79	2599.91	11.37	10.49	-5.34	0.17	11.77	333.03
2700.00	0.67	346.00	2699.90	12.51	11.60	-5.60	0.04	12.88	334.25
2800.00	0.79	354.13	2799.89	13.78	12.86	-5.81	0.16	14.11	335.68
2900.00	1.00	359.53	2899.88	15.33	14.42	-5.89	0.23	15.58	337.79
3000.00	0.96	9.02	2999.86	16.97	16.13	-5.76	0.17	17.13	340.34
3100.00	1.16	1.63	3099.85	18.74	17.97	-5.60	0.24	18.82	342.69
3200.00	1.37	8.42	3199.82	20.85	20.17	-5.40	0.26	20.88	345.01
3300.00	1.52	5.78	3299.79	23.23	22.67	-5.09	0.16	23.23	347.35
3400.00	1.66	3.94	3399.75	25.89	25.44	-4.86	0.15	25.90	349.19
3500.00	1.96	2.93	3499.70	28.94	28.60	-4.67	0.30	28.98	350.73
3600.00	1.98	4.63	3599.64	32.25	32.03	-4.44	0.06	32.34	352.10
3700.00	1.92	3.22	3699.58	35.52	35.42	-4.21	0.07	35.67	353.22
3800.00	0.71	5.87	3799.56	37.73	37.71	-4.05	1.21	37.92	353.87



Scientific Drilling

Survey Report

Well Name:		THISTLE UNIT #17H								
Survey:		FINAL OUTFRAN SURVEY								
Survey Date:		12/6/2010								
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	0.61	7.15	3899.55	38.82	38.85	-3.92	0.10	39.05	354.23	
4000.00	0.20	316.36	3999.55	39.47	39.50	-3.98	0.51	39.70	354.25	
4100.00	0.17	267.93	4099.55	39.64	39.62	-4.25	0.16	39.85	353.88	
4200.00	0.32	289.43	4199.55	39.81	39.71	-4.66	0.17	39.98	353.30	
4300.00	0.35	312.98	4299.54	40.21	40.01	-5.14	0.14	40.34	352.67	
4400.00	0.63	93.80	4399.54	40.30	40.18	-4.82	0.93	40.47	353.17	
4500.00	1.80	112.40	4499.52	39.27	39.54	-2.81	1.22	39.64	355.93	
4600.00	1.91	116.92	4599.47	37.33	38.19	0.13	0.18	38.19	0.20	
4700.00	2.35	118.99	4699.40	34.94	36.44	3.41	0.44	36.60	5.35	
4800.00	3.35	120.89	4799.27	31.61	33.95	7.71	1.01	34.81	12.80	
4900.00	3.49	123.46	4899.09	27.45	30.77	12.76	0.20	33.31	22.52	
5000.00	2.65	123.21	4998.95	23.64	27.83	17.23	0.83	32.73	31.77	
5100.00	2.24	128.87	5098.86	20.48	25.33	20.69	0.48	32.71	39.24	
5200.00	1.63	136.83	5198.80	17.76	23.07	23.18	0.67	32.70	45.14	
5300.00	1.55	137.32	5298.76	15.38	21.04	25.07	0.08	32.73	49.99	
5400.00	1.49	136.29	5398.73	13.11	19.11	26.88	0.07	32.98	54.60	
5500.00	1.26	133.24	5498.70	11.11	17.42	28.58	0.24	33.47	58.64	
5600.00	1.15	129.81	5598.68	9.41	16.02	30.15	0.13	34.14	62.02	
5700.00	1.16	128.15	5698.66	7.84	14.75	31.72	0.03	34.98	65.06	
5800.00	1.10	124.67	5798.64	6.37	13.58	33.31	0.09	35.97	67.82	
5900.00	0.98	123.08	5898.62	5.07	12.57	34.82	0.12	37.01	70.15	
6000.00	0.85	125.73	5998.61	3.91	11.67	36.13	0.14	37.97	72.11	
6100.00	0.79	128.81	6098.60	2.83	10.80	37.28	0.07	38.81	73.84	
6200.00	0.85	130.20	6198.59	1.70	9.88	38.39	0.06	39.64	75.56	
6300.00	0.73	129.52	6298.58	0.61	8.99	39.45	0.12	40.46	77.16	
6400.00	0.73	120.94	6398.57	-0.32	8.26	40.49	0.11	41.32	78.47	
6500.00	0.62	119.25	6498.56	-1.12	7.67	41.51	0.11	42.21	79.53	
6600.00	0.57	124.46	6598.56	-1.83	7.12	42.39	0.08	42.99	80.46	
6700.00	0.63	118.39	6698.55	-2.55	6.58	43.29	0.09	43.78	81.36	
6800.00	0.57	114.06	6798.55	-3.20	6.11	44.23	0.08	44.65	82.13	
6900.00	0.45	128.95	6898.54	-3.80	5.66	44.99	0.18	45.34	82.83	
7000.00	0.50	132.13	6998.54	-4.46	5.12	45.62	0.06	45.91	83.60	
7100.00	0.74	141.81	7098.53	-5.40	4.32	46.35	0.26	46.55	84.68	
7200.00	0.68	148.36	7198.52	-6.54	3.30	47.06	0.10	47.17	85.99	
7300.00	0.79	139.19	7298.52	-7.71	2.27	47.82	0.16	47.88	87.28	
7400.00	0.74	148.22	7398.51	-8.91	1.20	48.61	0.13	48.63	88.58	
7500.00	0.91	145.68	7498.50	-10.26	0.00	49.40	0.18	49.40	90.00	
7600.00	0.97	145.25	7598.48	-11.77	-1.36	50.33	0.05	50.35	91.54	



Scientific Drilling

Survey Report

Well Name: THISTLE UNIT #17H
Survey: FINAL OUTFRONT SURVEY
Survey Date: 12/6/2010

MD	Inc	Azim	TVD	VS	Northing	Easting	DLS	Closure Distance	Closure Angle
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	deg
7700.00	0.84	149.06	7698.47	-13.25	-2.68	51.19	0.14	51.26	93.00
7800.00	0.90	153.65	7798.46	-14.71	-4.02	51.92	0.09	52.07	94.43
7900.00	1.07	153.01	7898.44	-16.37	-5.56	52.69	0.16	52.98	96.02
8000.00	1.22	142.53	7998.42	-18.24	-7.23	53.76	0.26	54.25	97.66
8100.00	1.49	140.41	8098.40	-20.35	-9.08	55.24	0.27	55.98	99.33
8180.00	1.47	142.01	8178.37	-22.19	-10.68	56.53	0.06	57.53	100.70

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

DEVON ENERGY
THISTLE UNIT #17H OWB
LEA COUNTY, NM
Rig:McVAY 8

Mon Dec 06 22:28:53 2010

Coordinates

Latitude: 32.254176 N (32 deg. 15 min. 15.0331 sec.)
Longitude: 103.573439 W (-103 deg. 34 min. 24.3810 sec.)
Elevation: 3673.00 feet.
Calculation Date: Dec/06/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.2281 degrees
Total Magnetic Field: 0.48685 gauss
Magnetic Declination: 7.652957 degrees
Horizontal Intensity: 0.241746 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.652957 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 776246.4600 feet
Y: 457033.8200 feet
True to Grid: (convergence) -0.405555 degrees
Magnetic to Grid: 7.247403 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.247403 Degr.

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

DEVON ENERGY
THISTLE UNIT #17H
LEA COUNTY, NEW MEXICO
Rig: McVAY 8

Mon Dec 06 09:13:08 2010

Coordinates

Latitude: 32.254176 N (32 deg. 15 min. 15.0331 sec.)
Longitude: 103.573439 W (-103 deg. 34 min. 24.3810 sec.)
Elevation: 3670.00 feet.
Calculation Date: Dec/06/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.2281 degrees
Total Magnetic Field: 0.48685 gauss
Magnetic Declination: 7.652959 degrees
Horizontal Intensity: 0.241746 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.652959 Degr.

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 776246.4600 feet
Y: 457033.8200 feet
True to Grid: (convergence) -0.405555 degrees
Magnetic to Grid: 7.247404 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.247404 Degr.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(505) 393-6161 Fax:(505) 393-0720

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
Permit 119712

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address DEVON ENERGY PRODUCTION COMPANY, LP 20 N Broadway Oklahoma City , OK 73102		2. OGRID Number 6137
4. Property Code 30884		3. API Number 30-025-39893
5. Property Name THISTLE UNIT		6. Well No. 017H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
O	33	23S	33E	O	150	S	1470	E	LEA

8. Pool Information

BRINNINSTOOL,DELAWARE	96193
-----------------------	-------

Additional Well Information

9. Work Type New Well	10. Well Type OIL	11. Cable/Rotary	12. Lease Type State	13. Ground Level Elevation 3654
14. Multiple N	15. Proposed Depth 13800	16. Formation Brushy Canyon	17. Contractor	18. Spud Date
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water
Pit: Liner: Synthetic ☐ mls thick Clay ☐ Pit Volume: bbls Drilling Method: Closed Loop System ☐ Fresh Water ☒ Brine ☐ Diesel/Oil-based ☐ Gas/Air ☐				

19. Proposed Casing and Cement Program

Type	Hole Size	Casing Type	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	1280	1200	0
Intl	12.25	9.625	40	5150	1550	0
Prod	8.75	5.5	17	13800	1870	4650

Casing/Cement Program: Additional Comments

--



Project: Lea County
Site: Thistle "33"
Well: #17H
Wellbore: OH
Plan: Plan #4 (#17H/OH)

PROJECT DETAILS: Lea County
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid



Azimuths to Grid North
True North: -0.41°
Magnetic North: 7.23°

Magnetic Field
Strength: 48716.5snT
Dip Angle: 60.25°
Date: 12/15/2010
Model: IGRF200510

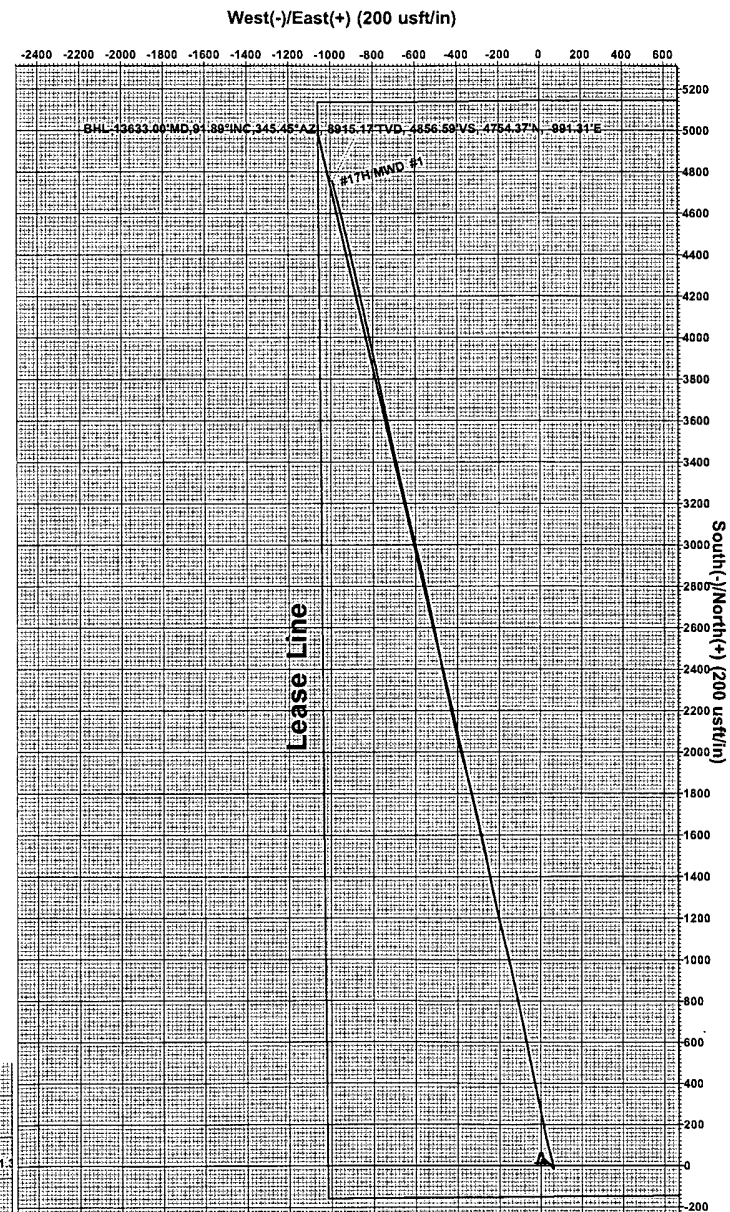
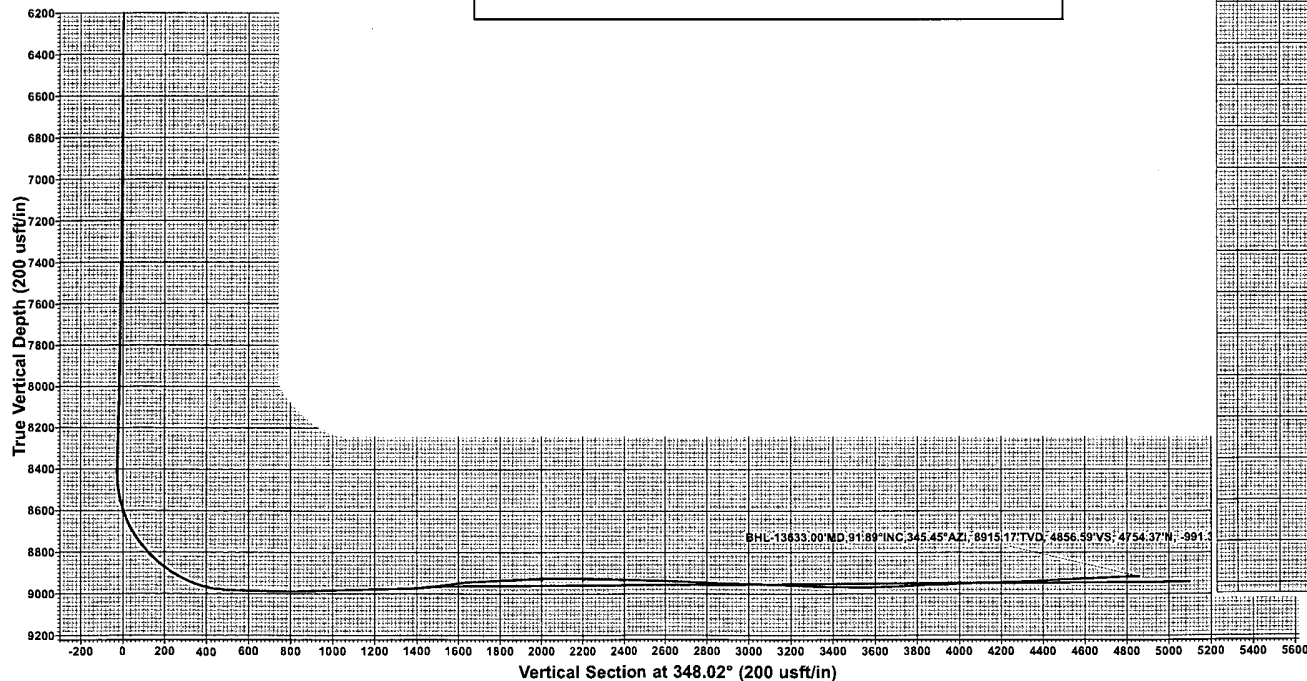
PATHFINDER
A Schlumberger Company

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VFace
10171.00	94.62	348.73	8972.14	1379.08	-241.31	0.00	0.00	1399.13	
20398.62	90.34	347.19	8962.30	1601.43	-288.74	2.00	-160.21	1626.48	
33868.82	90.34	347.19	8942.00	4985.20	-1058.11	0.00	0.00	5096.26	PBHL T33

WELL DETAILS: #17H
Ground Elevation: 3730.00
RKB Elevation: McVay #8 @ 3749.00usft (Original Well Elev)
Rig Name: Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	457933.820	776246.460	32° 15' 15.033 N	103° 34' 24.381 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL T33	8942.00	4985.20	-1058.11	462019.020	775188.350	Point



Plan: Plan #4 (#17H/OH)

Created By: Nate Bingham Date: 9:09, January 03 2011

Job Number: 700001025-WT-WT
Company: Devon Energy
Lease/Well: Thistle Unit #17H
Location: Lea County
Rig Name: McVay #8
State/Country: New Mexico, USA

Declination: 7.26
Grid: North

PATHFINDER

