

Results of Directional Survey

API number:	30-025-40072		
OGRID:		Operator:	DEVON ENERGY PRODUCTION COMPANY, LP
		Property:	SHINNERY 14 FEDERAL # 10H

surface	ULSTR:	H	14	T 18S	R 32E
				2110 FNL	330 FEL

BH Loc	ULSTR:	E	14	T 18S	R 32E
13128	MD	9133.3	TVD	2001 FNL	801 FWL
					4479 FEL

Top Perf/OH	ULSTR:	H	14	T 18S	R 32E
8859	MD	8843.2	TVD	2150 FNL	345 FEL

Bot Perf/OH	ULSTR:	E	14	T 18S	R 32E
13077	MD	9135.1	TVD	2004 FNL	852 FWL
					4428 FEL

	MD	N/S	E/W	VD
	8849	-39.73	-9.51	8834.77
TOP PERFS/OH	8859	-40.49	-14.87	8843.17
	8881	-42.16	-26.67	8861.66
	13041	104.49	-4062.24	9136.41
BOT PERFS/OH	13077	106.29	-4098.17	9135.12
	13128	108.83	-4149.08	9133.29

NEXT TO LAST	13041	104.49	-4062.24	9136.41
LAST READING	13128	108.83	-4149.08	9133.29
TD	13128	108.83	-4149.08	9133.29

Surface Location	2110 FN	330 FE
Projected BHL	2001 FN	4479 FE
Location of		
Top Perfs/OH	2150 FN	345 FE
Bottom Perfs/OH	2004 FN	4428 FE

SUMMARY of Subsurface Locations

Surface Location	H-14-18S-32E	2110 FN	330 FE	Vert. Depth
Top Perfs/OH	H-14-18S-32E	2150 FN	345 FE	8843.17
Bottom Perfs/OH	E-14-18S-32E	2004 FN	4428 FE	9135.12
Projected TD	E-14-18S-32E	2001 FN	4479 FE	9133.29

FEB 05 2013

**McVAY DRILLING COMPANY**

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

HOBBS OCD**JAN 02 2013****RECEIVED**

Well Name and Num: Shinnery 14 Fed 10H
Location: Sec. 14, T18S, R32E
Operator: Devon
Drilling Contractor: McVay Drilling Company

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:

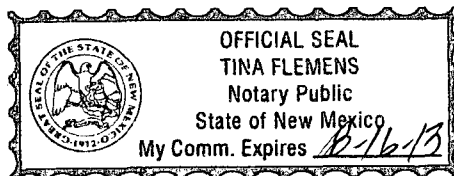
<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.26	235	5.28	8659	91.98	9801	91.19	12556
0.52	495	19.70	8754	92.42	10086		
1.17	760	30.95	8849	90.48	10276		
0.95	1005	34.65	8881	90.40	10466		
0.66	1316	41.15	8975	90.48	10561		
1.50	2045	44.58	9039	88.99	10656		
1.40	2516	48.45	9102	88.72	10751		
1.30	2994	50.74	9134	89.25	10941		
0.60	4423	52.94	9170	89.68	11036		
0.70	4899	55.93	9233	92.68	11226		
0.20	5517	58.30	9263	93.03	11321		
0.40	5987	58.30	9263	91.98	11416		
0.90	6468	63.05	9326	91.10	11605		
0.60	6943	66.83	9357	90.31	12080		
0.80	7443	63.05	9326	90.57	12270		
1.70	7894	71.58	9390	90.66	12365		
2.00	8364	76.06	9421	90.75	12460		

SUR: H-14-18s-32e, 2110/N & 330/E
BHL: E-14-18s-32e, 2001/N & 4479/E
API # 30-025-40072

By: Hunter C. Crouch

Subscribed and sworn to before me this 9th day of October, 2012

Tina Flemens
Notary Public, Lea County, New Mexico





Company: Devon Energy Production Co., LP
Lease/Well: Shinnery 14 Federal No. / 010H
Location: S14 T18s R32e
Rig Name: McVay 8
State/County: New Mexico / Lea
Latitude: 32.75
GRID North is 0.33 Degrees East of True North
VS-Azi: 270.00 Degrees



SUR: H-14-18s-32e, 2110/N & 330/E
BHL: E-14-18s-32e, 2001/N & 4479/E
API # 30-025-40072

RKB : 18'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...ry 14 fed #10h gyro survey.ut

Minimum Curvature Method

Report Date/Time: 9/27/2012 / 11:21

Vaughn Energy Services

Gardendale, Texas

432-563-5444

Surveyor: Dustin Wedel

Shinnery 14 Federal No. 010H / API 30-025-40072

HOBBS OCD

JAN 02 2013

RECEIVED

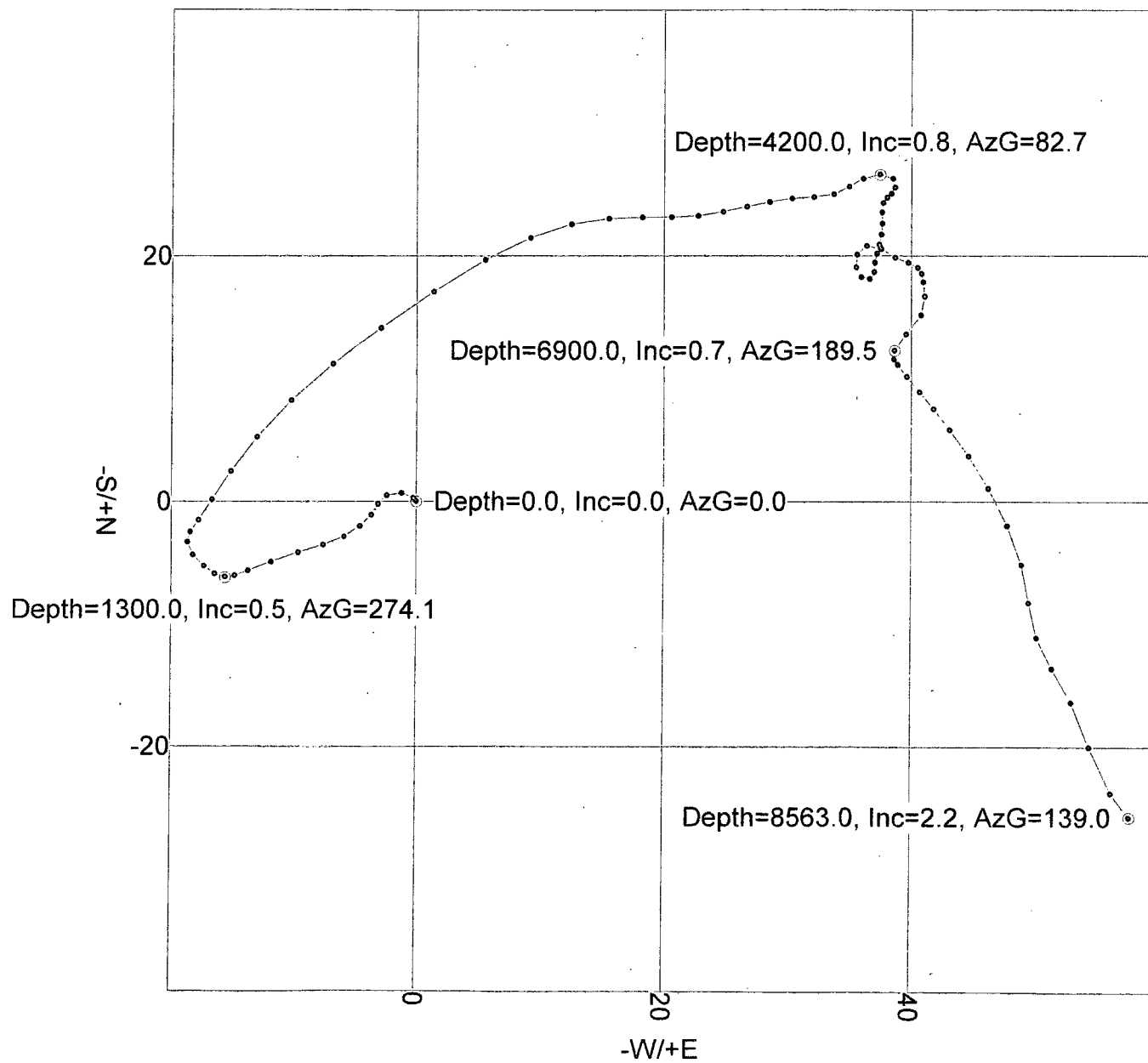
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.41	319.08	100.00	0.27	-0.23	0.23	0.35	319.08	0.41
200.00	0.81	278.16	199.99	0.64	-1.17	1.17	1.33	298.62	0.57
300.00	0.67	240.74	299.99	0.45	-2.38	2.38	2.42	280.81	0.49
400.00	0.52	203.32	399.98	-0.25	-3.06	3.06	3.07	265.41	0.40
500.00	0.67	216.80	499.98	-1.13	-3.59	3.59	3.76	252.55	0.20
600.00	0.82	230.29	599.97	-2.05	-4.49	4.49	4.93	245.44	0.23
700.00	0.99	242.20	699.95	-2.91	-5.80	5.80	6.49	243.36	0.25
800.00	1.16	254.12	799.94	-3.59	-7.54	7.54	8.35	244.54	0.28
900.00	1.28	251.92	899.91	-4.21	-9.58	9.58	10.46	246.25	0.13
1000.00	1.40	249.72	999.89	-4.98	-11.78	11.78	12.79	247.08	0.13
1100.00	0.91	249.37	1099.87	-5.68	-13.67	13.67	14.80	247.42	0.48
1200.00	0.43	249.03	1199.86	-6.10	-14.76	14.76	15.97	247.55	0.48
1300.00	0.50	274.11	1299.86	-6.20	-15.54	15.54	16.73	248.25	0.21
1400.00	0.57	299.20	1399.85	-5.93	-16.41	16.41	17.45	250.15	0.24
1500.00	0.68	309.60	1499.85	-5.31	-17.30	17.30	18.10	252.95	0.16
1600.00	0.79	320.00	1599.84	-4.40	-18.20	18.20	18.73	256.40	0.17
1700.00	0.61	358.97	1699.83	-3.34	-18.65	18.65	18.95	259.84	0.49
1800.00	0.44	37.94	1799.83	-2.51	-18.42	18.42	18.59	262.25	0.39

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.91	34.92	1899.82	-1.55	-17.74	17.74	17.80	264.99	0.47
2000.00	1.38	31.90	1999.80	0.12	-16.64	16.64	16.65	270.41	0.47
2100.00	1.80	35.62	2099.76	2.42	-15.09	15.09	15.29	279.11	0.43
2200.00	2.22	39.35	2199.70	5.20	-12.95	12.95	13.95	291.87	0.44
2300.00	2.47	45.67	2299.62	8.20	-10.17	10.17	13.07	308.89	0.36
2400.00	2.72	52.00	2399.51	11.17	-6.76	6.76	13.06	328.83	0.38
2500.00	2.88	54.07	2499.39	14.11	-2.85	2.85	14.40	348.57	0.19
2600.00	3.04	56.13	2599.26	17.06	1.38	-1.38	17.12	4.64	0.19
2700.00	2.58	61.50	2699.14	19.62	5.57	-5.57	20.39	15.84	0.53
2800.00	2.13	66.86	2799.05	21.42	9.25	-9.25	23.34	23.36	0.51
2900.00	1.88	76.88	2898.99	22.52	12.56	-12.56	25.79	29.14	0.43
3000.00	1.63	86.90	2998.95	22.97	15.58	-15.58	27.76	34.14	0.39
3100.00	1.45	88.68	3098.91	23.08	18.26	-18.26	29.43	38.35	0.19
3200.00	1.26	90.47	3198.88	23.10	20.62	-20.62	30.97	41.76	0.19
3300.00	1.20	83.76	3298.86	23.20	22.76	-22.76	32.50	44.45	0.16
3400.00	1.14	77.05	3398.84	23.54	24.77	-24.77	34.17	46.45	0.15
3500.00	1.10	77.85	3498.82	23.97	26.67	-26.67	35.86	48.06	0.04
3600.00	1.06	78.66	3598.80	24.35	28.52	-28.52	37.50	49.51	0.04
3700.00	1.04	84.07	3698.79	24.63	30.33	-30.33	39.07	50.93	0.10
3800.00	1.02	89.49	3798.77	24.73	32.12	-32.12	40.53	52.41	0.10
3900.00	0.87	71.44	3898.76	24.98	33.73	-33.73	41.97	53.48	0.33
4000.00	0.73	53.40	3998.75	25.60	34.96	-34.96	43.33	53.79	0.29
4100.00	0.78	68.05	4098.74	26.24	36.11	-36.11	44.63	54.00	0.20
4200.00	0.84	82.70	4198.73	26.59	37.47	-37.47	45.94	54.64	0.21
4300.00	0.61	143.56	4298.72	26.25	38.51	-38.51	46.61	55.72	0.76
4400.00	0.38	204.42	4398.72	25.53	38.69	-38.69	46.35	56.58	0.54
4500.00	0.31	219.61	4498.72	25.02	38.38	-38.38	45.81	56.90	0.11
4600.00	0.24	234.80	4598.72	24.69	38.04	-38.04	45.35	57.01	0.10
4700.00	0.38	204.62	4698.71	24.26	37.72	-37.72	44.85	57.25	0.21
4800.00	0.53	174.43	4798.71	23.50	37.63	-37.63	44.36	58.02	0.28
4900.00	0.52	181.73	4898.71	22.59	37.66	-37.66	43.92	59.04	0.07
5000.00	0.50	189.03	4998.70	21.70	37.58	-37.58	43.40	59.99	0.07
5100.00	0.46	193.40	5098.70	20.88	37.42	-37.42	42.85	60.84	0.06
5200.00	0.42	197.77	5198.70	20.14	37.21	-37.21	42.31	61.58	0.05
5300.00	0.43	188.22	5298.69	19.42	37.05	-37.05	41.83	62.34	0.07
5400.00	0.45	178.67	5398.69	18.65	37.00	-37.00	41.44	63.24	0.07
5500.00	0.47	246.92	5498.69	18.10	36.63	-36.63	40.86	63.70	0.52
5600.00	0.50	315.16	5598.68	18.25	35.94	-35.94	40.31	63.08	0.55
5700.00	0.57	347.23	5698.68	19.04	35.53	-35.53	40.31	61.81	0.30

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.65	19.29	5798.68	20.07	35.60	-35.60	40.87	60.59	0.34
5900.00	0.73	73.58	5898.67	20.78	36.40	-36.40	41.92	60.28	0.64
6000.00	0.82	127.87	5998.66	20.52	37.58	-37.58	42.82	61.36	0.71
6100.00	0.71	116.23	6098.65	19.81	38.70	-38.70	43.48	62.89	0.19
6200.00	0.59	104.58	6198.65	19.41	39.75	-39.75	44.24	63.98	0.17
6300.00	0.43	135.44	6298.64	19.01	40.52	-40.52	44.76	64.87	0.31
6400.00	0.27	166.30	6398.64	18.51	40.84	-40.84	44.84	65.61	0.24
6500.00	0.53	171.18	6498.64	17.83	40.96	-40.96	44.68	66.48	0.26
6600.00	0.79	176.05	6598.63	16.69	41.08	-41.08	44.34	67.89	0.27
6700.00	1.03	202.76	6698.62	15.17	40.78	-40.78	43.51	69.60	0.48
6800.00	1.28	229.47	6798.60	13.61	39.59	-39.59	41.86	71.02	0.58
6900.00	0.70	189.52	6898.58	12.28	38.64	-38.64	40.54	72.36	0.86
7000.00	0.13	149.57	6998.58	11.58	38.60	-38.60	40.29	73.30	0.61
7100.00	0.51	145.32	7098.58	11.11	38.91	-38.91	40.46	74.06	0.38
7200.00	0.89	141.06	7198.57	10.14	39.65	-39.65	40.93	75.65	0.38
7300.00	0.98	140.75	7298.56	8.88	40.68	-40.68	41.63	77.69	0.09
7400.00	1.07	140.44	7398.54	7.50	41.81	-41.81	42.48	79.83	0.09
7500.00	1.37	143.41	7498.52	5.82	43.12	-43.12	43.51	82.31	0.30
7600.00	1.66	146.38	7598.49	3.65	44.63	-44.63	44.78	85.32	0.31
7700.00	1.84	150.92	7698.44	1.04	46.22	-46.22	46.23	88.71	0.23
7800.00	2.03	155.46	7798.38	-1.98	47.73	-47.73	47.78	92.37	0.24
7900.00	1.88	164.72	7898.32	-5.17	48.90	-48.90	49.17	96.03	0.35
8000.00	1.74	173.99	7998.27	-8.26	49.49	-49.49	50.18	99.48	0.33
8100.00	1.66	159.95	8098.23	-11.14	50.15	-50.15	51.37	102.52	0.42
8200.00	1.59	145.90	8198.19	-13.65	51.42	-51.42	53.20	104.86	0.40
8300.00	2.03	153.75	8298.14	-16.38	52.98	-52.98	55.46	107.18	0.51
8400.00	2.48	161.61	8398.06	-20.03	54.45	-54.45	58.02	110.19	0.54
8500.00	2.29	147.72	8497.98	-23.77	56.20	-56.20	61.02	112.93	0.60
8563.00	2.18	138.98	8560.93	-25.74	57.66	-57.66	63.15	114.06	0.57



Vaughn Energy Services
Gardendale, Texas
432-563-5444
Surveyor: Dustin Wedel
Shinnery 14 Federal No. 010H / API 30-025-40072



VES Survey Date: 09/18/2012



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

SUR: H-14-18s-32e, 2110/N & 330/E
BHL: E-14-18s-32e, 2001/N & 4479/E
API # 30-025-40072

DEVON ENERGY

SHINNERY '14' FEDERAL #10H

LEA COUNTY, NEW MEXICO

PREPARED BY: MARCUS MITCHAM

Pathfinder

6213 WCR 112
Midland, Texas 79706-3725, USA
Tel. (432) 687-1647
Fax (432) 687-1544

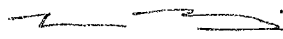


DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) HUEY SANDIFER
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 9/20/12 TO 10/02/12
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY
7. TYPE OF SURVEY(S) PERFORMED: GAMMA-RAY
8. COMPLETE IDENTIFICATION OF WELL:

DEVON ENERGY
SHINNERY '14' FEDERAL #10H
LEA COUNTY, NM
RIG: MCVAY 8
9. SURVEY CERTIFIED FROM: 8,659 TO 13,041 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 4,150.50 FEET ON A BEARING OF 271.50 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 13,128 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



MARCUS MITCHAM
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.
BHL Report

Page 01/01
Tie-in Date: 09/19/2012
Date Completed: 10/02/2012

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072

LEA COUNTY, NM

Rig:McVay 8

PathFinder Office Supervisor: Marcus Mitchum

PathFinder Field Engineers:H. Sandifer

E. Hernandez

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.44.56.0806 N LON:103.43.46.1254 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 726989.0200 Y: 636714.9500
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.22°EAST TO GRID
Vertical Section Plane: 271.25
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude:3825.10' Ground To MSL

Measured Depth	13128.00	(feet)
Inclination	92.06	(deg)
Azimuth	272.86	(deg)
True Vertical Depth	9133.29	(feet)
Vertical Section	4150.46	(feet)
Survey X cord	722839.94	(feet)
Survey Y cord	636823.78	(feet)
Survey Lat	32.74927471 N	(deg)
Survey Lon	103.74297205 W	(deg)
Rectangular Corr. N/S	108.83 N	(feet)
Rectangular Corr. E/W	4149.08 W	(feet)
Closure Distance	4150.50	(feet)
Direction of Closure	271.50	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072
LEA COUNTY, NM
Rig:McVay 8
PathFinder Office Supervisor: Marcus Mitchum
PathFinder Field Engineers: H. Sandifer
E. Hernandez

Page 01/06
Tie-in Date: 09/19/2012
Date Completed: 10/02/2012

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.44.56.0806 N LON:103.43.46.1254 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 726989.0200 Y: 636714.9500
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.22° EAST TO GRID
Vertical Section Plane: 271.25
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude:3825.10' Ground To MSL

Survey Calculations by RX5 V6.04B using Minimum Curvature

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)
THE FOLLOWING ARE VAUGHN ENERGY SERVICES GYRO SURVEYS.										
100.00	0.41	319.08	100.02	0.00	1.26	0.15 N	1.26 W	1.27@	276.85	0.00
200.00	0.81	278.16	200.01	100.00	2.20	0.52 N	2.19 W	2.25@	283.39	0.57
300.00	0.67	240.74	300.01	100.00	3.41	0.34 N	3.40 W	3.42@	275.65	0.49
400.00	0.52	203.32	400.00	100.00	4.08	0.37 S	4.09 W	4.11@	264.88	0.41
500.00	0.67	216.80	500.00	100.00	4.59	1.25 S	4.62 W	4.79@	254.85	0.20
600.00	0.82	230.29	599.99	100.00	5.47	2.18 S	5.52 W	5.93@	248.48	0.23
700.00	0.99	242.20	699.97	100.00	6.77	3.04 S	6.84 W	7.48@	246.05	0.25
800.00	1.16	254.13	799.96	100.00	8.49	3.72 S	8.57 W	9.34@	246.57	0.28
900.00	1.28	251.92	899.93	100.00	10.51	4.34 S	10.61 W	11.46@	247.75	0.13
1000.00	1.40	249.72	999.91	100.00	12.70	5.11 S	12.82 W	13.80@	248.26	0.13
1100.00	0.91	249.37	1099.89	100.00	14.58	5.81 S	14.71 W	15.81@	248.43	0.49
1200.00	0.43	249.03	1199.88	100.00	15.66	6.23 S	15.80 W	16.98@	248.49	0.48
1300.00	0.50	274.11	1299.88	100.00	16.44	6.33 S	16.59 W	17.75@	249.11	0.21
1400.00	0.57	299.20	1399.87	100.00	17.32	6.06 S	17.45 W	18.48@	250.86	0.24
1500.00	0.68	309.60	1499.87	100.00	18.22	5.44 S	18.35 W	19.13@	253.50	0.16
1600.00	0.79	320.00	1599.86	100.00	19.14	4.53 S	19.25 W	19.77@	256.76	0.17
1700.00	0.61	358.97	1699.85	100.00	19.62	3.47 S	19.70 W	20.00@	260.01	0.50
1800.00	0.44	37.94	1799.85	100.00	19.41	2.63 S	19.47 W	19.65@	262.30	0.39
1900.00	0.91	34.92	1899.84	100.00	18.74	1.68 S	18.78 W	18.86@	264.89	0.47
2000.00	1.38	31.90	1999.82	100.00	17.69	0.01 S	17.69 W	17.69@	269.98	0.47
2100.00	1.80	35.62	2099.78	100.00	16.19	2.29 N	16.14 W	16.30@	278.09	0.43
2200.00	2.22	39.35	2199.72	100.00	14.10	5.07 N	14.00 W	14.89@	289.90	0.44
2300.00	2.47	45.67	2299.63	100.00	11.40	8.07 N	11.23 W	13.83@	305.71	0.36
2400.00	2.72	52.00	2399.53	100.00	8.06	11.04 N	7.82 W	13.52@	324.69	0.38
2500.00	2.88	54.07	2499.41	100.00	4.22	13.97 N	3.91 W	14.51@	344.36	0.19

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072
LEA COUNTY, NM
RIG:McVay 8

Page 02/06

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)
2600.00	3.04	56.13	2599.28	100.00	0.05	16.92 N	0.32 E	16.93@	1.09	0.19
2700.00	2.58	61.50	2699.16	100.00	-4.08	19.48 N	4.50 E	19.99@	13.02	0.53
2800.00	2.13	66.86	2799.07	100.00	-7.72	21.28 N	8.19 E	22.80@	21.05	0.50
2900.00	1.88	76.88	2899.01	100.00	-11.01	22.38 N	11.50 E	25.16@	27.19	0.43
3000.00	1.63	86.90	2998.97	100.00	-14.01	22.83 N	14.51 E	27.05@	32.44	0.39
3100.00	1.45	88.68	3098.93	100.00	-16.69	22.94 N	17.20 E	28.67@	36.86	0.19
3200.00	1.26	90.47	3198.90	100.00	-19.06	22.96 N	19.56 E	30.16@	40.43	0.19
3300.00	1.20	83.76	3298.88	100.00	-21.20	23.06 N	21.70 E	31.67@	43.26	0.16
3400.00	1.14	77.05	3398.86	100.00	-23.20	23.40 N	23.71 E	33.32@	45.38	0.15
3500.00	1.10	77.85	3498.84	100.00	-25.10	23.82 N	25.62 E	34.99@	47.08	0.04
3600.00	1.06	78.66	3598.82	100.00	-26.93	24.21 N	27.47 E	36.61@	48.61	0.04
3700.00	1.04	84.07	3698.81	100.00	-28.74	24.48 N	29.28 E	38.17@	50.09	0.10
3800.00	1.02	89.49	3798.79	100.00	-30.53	24.59 N	31.07 E	39.62@	51.64	0.10
3900.00	0.87	71.44	3898.78	100.00	-32.13	24.84 N	32.68 E	41.05@	52.77	0.33
4000.00	0.73	53.40	3998.77	100.00	-33.35	25.46 N	33.91 E	42.40@	53.10	0.29
4100.00	0.78	68.05	4098.76	100.00	-34.48	26.09 N	35.05 E	43.70@	53.34	0.20
4200.00	1.45	82.70	4198.74	100.00	-36.35	26.51 N	36.94 E	45.47@	54.34	0.72
4300.00	0.61	143.56	4298.72	100.00	-37.93	26.24 N	38.51 E	46.60@	55.73	1.27
4400.00	0.38	204.42	4398.72	100.00	-38.12	25.51 N	38.69 E	46.34@	56.60	0.54
4500.00	0.31	219.61	4498.72	100.00	-37.83	25.00 N	38.38 E	45.80@	56.92	0.12
4600.00	0.24	234.80	4598.72	100.00	-37.49	24.67 N	38.04 E	45.34@	57.03	0.10
4700.00	0.38	204.62	4698.72	100.00	-37.19	24.25 N	37.73 E	44.85@	57.27	0.21
4800.00	0.53	174.43	4798.71	100.00	-37.11	23.49 N	37.63 E	44.36@	58.03	0.28
4900.00	0.52	181.73	4898.71	100.00	-37.16	22.57 N	37.67 E	43.91@	59.07	0.07
5000.00	0.50	189.03	4998.70	100.00	-37.10	21.69 N	37.58 E	43.39@	60.01	0.07
5100.00	0.46	193.40	5098.70	100.00	-36.96	20.87 N	37.42 E	42.85@	60.86	0.05
5200.00	0.42	197.77	5198.70	100.00	-36.77	20.13 N	37.22 E	42.31@	61.60	0.05
5300.00	0.43	188.22	5298.70	100.00	-36.62	19.41 N	37.05 E	41.83@	62.36	0.07

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072
LEA COUNTY, NM
RIG:McVay 8

Page 03/06

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)
5400.00	0.45	178.67	5398.69	100.00	-36.59	18.64 N	37.01 E	41.44@	63.26	0.08
5500.00	0.47	246.92	5498.69	100.00	-36.23	18.09 N	36.64 E	40.86@	63.72	0.52
5600.00	0.50	315.16	5598.69	100.00	-35.55	18.24 N	35.95 E	40.31@	63.10	0.54
5700.00	0.57	347.23	5698.68	100.00	-35.11	19.03 N	35.54 E	40.31@	61.83	0.30
5800.00	0.65	19.29	5798.68	100.00	-35.17	20.05 N	35.61 E	40.87@	60.62	0.35
5900.00	0.73	73.58	5898.67	100.00	-35.95	20.77 N	36.41 E	41.92@	60.30	0.63
6000.00	0.82	127.87	5998.66	100.00	-37.13	20.51 N	37.59 E	42.82@	61.38	0.71
6100.00	0.71	116.23	6098.66	100.00	-38.27	19.79 N	38.71 E	43.48@	62.92	0.19
6200.00	0.59	104.58	6198.65	100.00	-39.33	19.39 N	39.76 E	44.24@	64.00	0.18
6300.00	0.43	135.44	6298.64	100.00	-40.10	18.99 N	40.52 E	44.75@	64.89	0.31
6400.00	0.27	166.30	6398.64	100.00	-40.43	18.50 N	40.84 E	44.84@	65.63	0.24
6500.00	0.53	171.18	6498.64	100.00	-40.57	17.81 N	40.97 E	44.67@	66.50	0.26
6600.00	0.79	176.05	6598.63	100.00	-40.71	16.67 N	41.09 E	44.34@	67.92	0.27
6700.00	1.03	202.76	6698.62	100.00	-40.45	15.15 N	40.79 E	43.51@	69.62	0.48
6800.00	1.28	229.47	6798.60	100.00	-39.28	13.60 N	39.59 E	41.86@	71.05	0.59
6900.00	0.70	189.52	6898.59	100.00	-38.36	12.27 N	38.64 E	40.54@	72.39	0.87
7000.00	0.13	149.57	6998.59	100.00	-38.34	11.57 N	38.60 E	40.29@	73.32	0.61
7100.00	0.51	145.32	7098.58	100.00	-38.66	11.10 N	38.91 E	40.46@	74.07	0.38
7200.00	0.89	141.06	7198.58	100.00	-39.42	10.13 N	39.65 E	40.92@	75.66	0.38
7300.00	0.98	140.75	7298.56	100.00	-40.48	8.87 N	40.68 E	41.63@	77.70	0.09
7400.00	1.07	140.44	7398.55	100.00	-41.64	7.49 N	41.81 E	42.48@	79.85	0.09
7500.00	1.37	143.41	7498.52	100.00	-42.98	5.81 N	43.12 E	43.51@	82.33	0.31
7600.00	1.66	146.38	7598.49	100.00	-44.55	3.64 N	44.64 E	44.78@	85.34	0.30
7700.00	1.84	150.92	7698.44	100.00	-46.18	1.03 N	46.22 E	46.23@	88.72	0.23
7800.00	2.03	155.46	7798.38	100.00	-47.77	1.98 S	47.73 E	47.78@	92.38	0.24
7900.00	1.88	164.72	7898.33	100.00	-49.00	5.18 S	48.90 E	49.18@	96.04	0.35
8000.00	1.74	173.99	7998.28	100.00	-49.66	8.27 S	49.49 E	50.18@	99.48	0.32
8100.00	1.66	159.95	8098.23	100.00	-50.38	11.14 S	50.15 E	51.37@	102.52	0.42

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072
LEA COUNTY, NM
RIG:McVay 8

Page 04/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8200.00	1.59	145.90	8198.19	100.00	-51.71	13.65 S	51.42 E	53.20@	104.86	0.40
8300.00	2.03	153.75	8298.14	100.00	-53.33	16.39 S	52.98 E	55.46@	107.19	0.50
8400.00	2.48	161.61	8398.07	100.00	-54.87	20.03 S	54.45 E	58.02@	110.19	0.54
** TIE-IN TO VAUGHN ENERGY SERVICES GYRO SURVEY AT 8500' MD.										
8500.00	2.29	147.72	8497.98	100.00	-56.71	23.77 S	56.20 E	61.02@	112.93	0.61
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
8659.00	5.28	243.67	8656.72	159.00	-51.97	29.71 S	51.34 E	59.31@	120.06	3.75
8691.00	10.64	256.87	8688.41	32.00	-47.80	31.03 S	47.14 E	56.43@	123.36	17.59
8723.00	15.48	259.40	8719.57	32.00	-40.76	32.49 S	40.06 E	51.58@	129.04	15.23
8754.00	19.70	261.47	8749.11	31.00	-31.55	34.03 S	30.82 E	45.91@	137.83	13.76
8786.00	23.65	261.90	8778.84	32.00	-19.90	35.73 S	19.13 E	40.53@	151.84	12.35
8818.00	27.44	262.43	8807.71	32.00	-6.28	37.61 S	5.46 E	38.00@	171.74	11.86
8849.00	30.95	261.45	8834.77	31.00	8.64	39.73 S	9.51 W	40.86@	193.46	11.43
8881.00	34.65	262.41	8861.66	32.00	25.74	42.16 S	26.67 W	49.89@	212.32	11.68
8912.00	38.43	264.08	8886.57	31.00	44.02	44.32 S	45.00 W	63.16@	225.44	12.61
8944.00	40.27	264.34	8911.31	32.00	64.15	46.36 S	65.18 W	79.99@	234.58	5.77
8975.00	41.15	267.68	8934.81	31.00	84.28	47.76 S	85.35 W	97.80@	240.77	7.58
9007.00	43.18	268.87	8958.53	32.00	105.73	48.41 S	106.81 W	117.27@	245.62	6.82
9039.00	44.58	270.07	8981.59	32.00	127.90	48.61 S	128.99 W	137.85@	249.35	5.09
9071.00	46.60	270.82	9003.99	32.00	150.76	48.43 S	151.85 W	159.39@	252.31	6.53
9102.00	48.45	269.74	9024.92	31.00	173.62	48.32 S	174.71 W	181.27@	254.54	6.50
9134.00	50.74	269.73	9045.66	32.00	197.98	48.43 S	199.08 W	204.89@	256.33	7.16
9168.00	52.94	270.01	9066.67	34.00	224.70	48.49 S	225.81 W	230.96@	257.88	6.50
9200.00	54.87	271.33	9085.52	32.00	250.55	48.19 S	251.66 W	256.24@	259.16	6.89
9231.00	55.93	273.53	9103.12	31.00	276.06	47.10 S	277.16 W	281.13@	260.35	6.77
9263.00	58.30	273.70	9120.49	32.00	302.91	45.41 S	303.97 W	307.35@	261.50	7.42
9295.00	60.67	273.62	9136.74	32.00	330.45	43.65 S	331.48 W	334.34@	262.50	7.41
9326.00	63.05	272.65	9151.36	31.00	357.77	42.16 S	358.77 W	361.24@	263.30	8.16
9358.00	66.83	272.21	9164.91	32.00	386.75	40.93 S	387.73 W	389.89@	263.97	11.88

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072
LEA COUNTY, NM
RIG:McVay 8

Page 05/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS (dg/100ft)
(ft)	(deg)	(deg)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(deg)	(dg/100ft)
9390.00	71.58	272.21	9176.27	32.00	416.65	39.78 S	417.62 W	419.51@	264.56	14.84
9421.00	76.06	272.74	9184.91	31.00	446.41	38.49 S	447.35 W	449.00@	265.08	14.54
9516.00	90.48	273.79	9196.01	95.00	540.44	33.12 S	541.29 W	542.31@	266.50	15.22
9611.00	90.84	273.35	9194.92	95.00	635.36	27.20 S	636.10 W	636.68@	267.55	0.60
9706.00	91.01	273.09	9193.38	95.00	730.29	21.87 S	730.94 W	731.27@	268.29	0.33
9801.00	91.98	271.51	9190.90	95.00	825.24	18.05 S	825.83 W	826.02@	268.75	1.95
9896.00	92.07	271.51	9187.55	95.00	920.18	15.55 S	920.74 W	920.87@	269.03	0.09
9991.00	92.24	271.33	9183.98	95.00	1015.11	13.20 S	1015.64 W	1015.72@	269.26	0.26
10086.00	92.42	270.80	9180.11	95.00	1110.03	11.44 S	1110.54 W	1110.60@	269.41	0.59
10181.00	92.68	270.63	9175.89	95.00	1204.93	10.25 S	1205.44 W	1205.49@	269.51	0.33
10276.00	90.48	270.80	9173.27	95.00	1299.89	9.07 S	1300.39 W	1300.42@	269.60	2.32
10371.00	90.48	270.89	9172.47	95.00	1394.88	7.67 S	1395.38 W	1395.40@	269.69	0.09
10466.00	90.40	272.12	9171.74	95.00	1489.87	5.17 S	1490.34 W	1490.35@	269.80	1.30
10561.00	90.48	271.24	9171.01	95.00	1584.87	2.39 S	1585.30 W	1585.30@	269.91	0.93
10656.00	88.99	272.21	9171.45	95.00	1679.86	0.47 N	1680.25 W	1680.25@	270.02	1.87
10751.00	88.72	272.30	9173.35	95.00	1774.83	4.21 N	1775.16 W	1775.16@	270.14	0.30
10846.00	88.81	272.30	9175.40	95.00	1869.79	8.02 N	1870.06 W	1870.08@	270.25	0.09
10941.00	89.25	273.09	9177.01	95.00	1964.74	12.49 N	1964.94 W	1964.98@	270.36	0.95
11036.00	89.69	273.18	9177.88	95.00	2059.69	17.68 N	2059.79 W	2059.87@	270.49	0.47
11131.00	91.10	273.09	9177.23	95.00	2154.63	22.88 N	2154.64 W	2154.77@	270.61	1.49
11226.00	92.68	273.00	9174.10	95.00	2249.53	27.92 N	2249.46 W	2249.63@	270.71	1.67
11321.00	93.03	273.26	9169.36	95.00	2344.36	33.10 N	2344.20 W	2344.43@	270.81	0.46
11416.00	91.98	272.47	9165.21	95.00	2439.23	37.85 N	2438.98 W	2439.28@	270.89	1.38
11511.00	91.45	272.12	9162.37	95.00	2534.17	41.65 N	2533.87 W	2534.21@	270.94	0.67
11606.00	91.28	272.30	9160.11	95.00	2629.13	45.31 N	2628.77 W	2629.16@	270.99	0.26
11702.00	90.75	272.12	9158.41	96.00	2725.10	49.01 N	2724.68 W	2725.12@	271.03	0.58
11797.00	90.84	272.21	9157.09	95.00	2820.08	52.60 N	2819.60 W	2820.09@	271.07	0.13
11891.00	90.75	271.77	9155.78	94.00	2914.06	55.87 N	2913.54 W	2914.07@	271.10	0.48

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY PRODUCTION COMPANY
SHINNERY 14 FED 10H / API# 30-015-40072
LEA COUNTY, NM
RIG:McVay 8

Page 06/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS (dg/100ft)
(ft)	(deg)	(deg)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(deg)	(dg/100ft)
11986.00	90.48	271.51	9154.76	95.00	3009.06	58.58 N	3008.49 W	3009.06@	271.12	0.39
12081.00	90.31	271.77	9154.11	95.00	3104.05	61.30 N	3103.45 W	3104.06@	271.13	0.33
12175.00	90.48	272.03	9153.46	94.00	3198.04	64.42 N	3197.40 W	3198.05@	271.15	0.33
12270.00	90.57	271.86	9152.59	95.00	3293.03	67.64 N	3292.34 W	3293.03@	271.18	0.20
12365.00	90.66	272.21	9151.57	95.00	3388.02	71.02 N	3387.27 W	3388.02@	271.20	0.38
12460.00	90.75	272.74	9150.40	95.00	3482.99	75.12 N	3482.18 W	3482.99@	271.24	0.57
12556.00	91.19	272.74	9148.78	96.00	3578.94	79.71 N	3578.05 W	3578.94@	271.28	0.46
12650.00	90.83	272.75	9147.12	94.00	3672.89	84.21 N	3671.93 W	3672.90@	271.31	0.38
12745.00	91.14	273.16	9145.49	95.00	3767.84	89.10 N	3766.79 W	3767.84@	271.36	0.54
12840.00	91.38	273.20	9143.40	95.00	3862.76	94.37 N	3861.62 W	3862.77@	271.40	0.26
12935.00	91.93	272.72	9140.65	95.00	3957.68	99.28 N	3956.45 W	3957.70@	271.44	0.77
13028.00	92.64	272.91	9136.95	93.00	4050.57	103.84 N	4049.27 W	4050.60@	271.47	0.79
13041.00	92.06	272.86	9136.41	13.00	4063.55	104.49 N	4062.24 W	4063.58@	271.47	4.48
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 13128'MD.										
13128.00	92.06	272.86	9133.29	87.00	4150.46	108.83 N	4149.08 W	4150.50@	271.50	0.00

** 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 PRODUCTION COMPANY, L.P.		
LEASE / WELL No.:	SHINNERY '14' FED	10H	
WELL LOCATION:	LEA COUNTY, NM		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	MC VAY 8		
API WELL No:	30-015-40072		
JOB No:	12MLD0458		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.22	LWD Calculated:	7.215918
		Agreed Upon:	7.215918
X =	726989.020000	Feet	Y = 636714.950000
			Feet
SITE LATITUDE:	32.748911	SITE LONGITUDE:	-103.729479
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE: NEW MEXICO EASTERN ZONE	
PROPOSED DRIFT DIRECTION:	271.25		
KELLY BUSHING ELEVATION:	19		
ALTITUDE:	3825.1	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	8500		
DRIFT ANGLE:	2.29		
DRIFT DIRECTION:	147.72		
TRUE VERTICAL DEPTH:	8497.98		
VERTICAL SECTION:	-56.2		
RECTANGULAR COORDINATE (N / S) :	-23.77		
RECTANGULAR COORDINATE (E / W) :	56.2		
CLOSURE DISTANCE / DIRECTION:	61.02	112.93	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	VAUGHN ENGERGY SERVICE		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH:	8606.1	TOTAL DEPTH:	13568.3
KICKOFF ANGLE:	0	MAX ANGLE:	90.79

PES Engineers: _____

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: _____



Company: Devon
Rig: McVay 8
Latitude: 32.7489
Longitude: -103.7295
API # 30-025-40072
Date: 9/18/12

Well: Shinnery 14 Fed #10H
Location: Lea Co. NM
North Reference: GRID
RKB: 18 Feet
Surveyor: Dustin Wedel
VS: 270.000

Field copy only not definitive.

Depth	Inc	AzG	N/S	E/W	TVD	DL	VS	CD	Chrg
0.00	0.00	0.00	0.00	0.00	0.00	****	0.00	0.00	0.00
100.00	0.41	319.08	0.27	-0.23	100.00	0.41	0.23	0.35	319.08
200.00	0.81	278.16	0.64	-1.17	199.99	0.57	1.17	1.33	298.62
300.00	0.67	240.74	0.45	-2.38	299.99	0.49	2.38	2.42	280.81
400.00	0.52	203.32	-0.25	-3.06	399.98	0.40	3.06	3.07	265.41
500.00	0.67	216.80	-1.13	-3.59	499.98	0.20	3.59	3.76	252.55
600.00	0.82	230.29	-2.05	-4.49	599.97	0.23	4.49	4.93	245.44
700.00	0.99	242.20	-2.91	-5.80	699.95	0.25	5.80	6.49	243.36
800.00	1.16	254.12	-3.59	-7.54	799.94	0.28	7.54	8.35	244.54
900.00	1.28	251.92	-4.21	-9.58	899.91	0.13	9.58	10.46	246.25
1000.00	1.40	249.72	-4.98	-11.78	999.89	0.13	11.78	12.79	247.08
1100.00	0.91	249.37	-5.68	-13.67	1099.87	0.48	13.67	14.80	247.42
1200.00	0.43	249.03	-6.10	-14.76	1199.86	0.48	14.76	15.97	247.55
1300.00	0.50	274.11	-6.20	-15.54	1299.86	0.21	15.54	16.73	248.25
1400.00	0.57	299.20	-5.93	-16.41	1399.85	0.24	16.41	17.45	250.15
1500.00	0.68	309.60	-5.31	-17.30	1499.85	0.16	17.30	18.10	252.95
1600.00	0.79	320.00	-4.40	-18.20	1599.84	0.17	18.20	18.73	256.40
1700.00	0.61	358.97	-3.34	-18.65	1699.83	0.49	18.65	18.95	259.84
1800.00	0.44	37.94	-2.51	-18.42	1799.83	0.39	18.42	18.59	262.25
1900.00	0.91	34.92	-1.55	-17.74	1899.82	0.47	17.74	17.80	264.99
2000.00	1.38	31.90	0.12	-16.64	1999.80	0.47	16.64	16.65	270.41
2100.00	1.80	35.62	2.42	-15.09	2099.76	0.43	15.09	15.29	279.11
2200.00	2.22	39.35	5.20	-12.95	2199.70	0.44	12.95	13.95	291.87
2300.00	2.47	45.67	8.20	-10.17	2299.62	0.36	10.17	13.07	308.89
2400.00	2.72	52.00	11.17	-6.76	2399.51	0.38	6.76	13.06	328.83
2500.00	2.88	54.07	14.11	-2.85	2499.39	0.19	2.85	14.40	348.57
2600.00	3.04	56.13	17.06	1.38	2599.26	0.19	-1.38	17.12	4.64
2700.00	2.58	61.50	19.62	5.57	2699.14	0.53	-5.57	20.39	15.84
2800.00	2.13	66.86	21.42	9.25	2799.05	0.51	-9.25	23.34	23.36
2900.00	1.88	76.88	22.52	12.56	2898.99	0.43	-12.56	25.79	29.14
3000.00	1.63	86.90	22.97	15.58	2998.95	0.39	-15.58	27.76	34.14
3100.00	1.45	88.68	23.08	18.26	3098.91	0.19	-18.26	29.43	38.35
3200.00	1.26	90.47	23.10	20.62	3198.88	0.19	-20.62	30.97	41.76
3300.00	1.20	83.76	23.20	22.76	3298.86	0.16	-22.76	32.50	44.45
3400.00	1.14	77.05	23.54	24.77	3398.84	0.15	-24.77	34.17	46.45
3500.00	1.10	77.85	23.97	26.67	3498.82	0.04	-26.67	35.86	48.06
3600.00	1.06	78.66	24.35	28.52	3598.80	0.04	-28.52	37.50	49.51
3700.00	1.04	84.07	24.63	30.33	3698.79	0.10	-30.33	39.07	50.93

3800.00	1.02	89.49	24.73	32.12	3798.77	0.10	-32.12	40.53	52.41
3900.00	0.87	71.44	24.98	33.73	3898.76	0.33	-33.73	41.97	53.48
4000.00	0.73	53.40	25.60	34.96	3998.75	0.29	-34.96	43.33	53.79
4100.00	0.78	68.05	26.24	36.11	4098.74	0.20	-36.11	44.63	54.00
4200.00	0.84	82.70	26.59	37.47	4198.73	0.21	-37.47	45.94	54.64
4300.00	0.61	143.56	26.25	38.51	4298.72	0.76	-38.51	46.61	55.72
4400.00	0.38	204.42	25.53	38.69	4398.72	0.54	-38.69	46.35	56.58
4500.00	0.31	219.61	25.02	38.38	4498.72	0.11	-38.38	45.81	56.90
4600.00	0.24	234.80	24.69	38.04	4598.72	0.10	-38.04	45.35	57.01
4700.00	0.38	204.62	24.26	37.72	4698.71	0.21	-37.72	44.85	57.25
4800.00	0.53	174.43	23.50	37.63	4798.71	0.28	-37.63	44.36	58.02
4900.00	0.52	181.73	22.59	37.66	4898.71	0.07	-37.66	43.92	59.04
5000.00	0.50	189.03	21.70	37.58	4998.70	0.07	-37.58	43.40	59.99
5100.00	0.46	193.40	20.88	37.42	5098.70	0.06	-37.42	42.85	60.84
5200.00	0.42	197.77	20.14	37.21	5198.70	0.05	-37.21	42.31	61.58
5300.00	0.43	188.22	19.42	37.05	5298.69	0.07	-37.05	41.83	62.34
5400.00	0.45	178.67	18.65	37.00	5398.69	0.07	-37.00	41.44	63.24
5500.00	0.47	246.92	18.10	36.63	5498.69	0.52	-36.63	40.86	63.70
5600.00	0.50	315.16	18.25	35.94	5598.68	0.55	-35.94	40.31	63.08
5700.00	0.57	347.23	19.04	35.53	5698.68	0.30	-35.53	40.31	61.81
5800.00	0.65	19.29	20.07	35.60	5798.68	0.34	-35.60	40.87	60.59
5900.00	0.73	73.58	20.78	36.40	5898.67	0.64	-36.40	41.92	60.28
6000.00	0.82	127.87	20.52	37.58	5998.66	0.71	-37.58	42.82	61.36
6100.00	0.71	116.23	19.81	38.70	6098.65	0.19	-38.70	43.48	62.89
6200.00	0.59	104.58	19.41	39.75	6198.65	0.17	-39.75	44.24	63.98
6300.00	0.43	135.44	19.01	40.52	6298.64	0.31	-40.52	44.76	64.87
6400.00	0.27	166.30	18.51	40.84	6398.64	0.24	-40.84	44.84	65.61
6500.00	0.53	171.18	17.83	40.96	6498.64	0.26	-40.96	44.68	66.48
6600.00	0.79	176.05	16.69	41.08	6598.63	0.27	-41.08	44.34	67.89
6700.00	1.03	202.76	15.17	40.78	6698.62	0.48	-40.78	43.51	69.60
6800.00	1.28	229.47	13.61	39.59	6798.60	0.58	-39.59	41.86	71.02
6900.00	0.70	189.52	12.28	38.64	6898.58	0.86	-38.64	40.54	72.36
7000.00	0.13	149.57	11.58	38.60	6998.58	0.61	-38.60	40.29	73.30
7100.00	0.51	145.32	11.11	38.91	7098.58	0.38	-38.91	40.46	74.06
7200.00	0.89	141.06	10.14	39.65	7198.57	0.38	-39.65	40.93	75.65
7300.00	0.98	140.75	8.88	40.68	7298.56	0.09	-40.68	41.63	77.69
7400.00	1.07	140.44	7.50	41.81	7398.54	0.09	-41.81	42.48	79.83
7500.00	1.37	143.41	5.82	43.12	7498.52	0.30	-43.12	43.51	82.31
7600.00	1.66	146.38	3.65	44.63	7598.49	0.31	-44.63	44.78	85.32
7700.00	1.84	150.92	1.04	46.22	7698.44	0.23	-46.22	46.23	88.71
7800.00	2.03	155.46	-1.98	47.73	7798.38	0.24	-47.73	47.78	92.37
7900.00	1.88	164.72	-5.17	48.90	7898.32	0.35	-48.90	49.17	96.03
8000.00	1.74	173.99	-8.26	49.49	7998.27	0.33	-49.49	50.18	99.48
8100.00	1.66	159.95	-11.14	50.15	8098.23	0.42	-50.15	51.37	102.52
8200.00	1.59	145.90	-13.65	51.42	8198.19	0.40	-51.42	53.20	104.86
8300.00	2.03	153.75	-16.38	52.98	8298.14	0.51	-52.98	55.46	107.18
8400.00	2.48	161.61	-20.03	54.45	8398.06	0.54	-54.45	58.02	110.19

8500.00	2.29	147.72	-23.77	56.20	8497.98	0.60	-56.20	61.02	112.93
8563.00	2.18	138.98	-25.74	57.66	8560.93	0.57	-57.66	63.15	114.06

HORIZONTAL DISPLACEMENT IS
63.15 FEET AT 114.06 DEGREES

THANK YOU,
DUSTIN WEDEL
VAUGHN ENERGY SERVICES

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

Devon Energy
Shinnery "14" Fed
Lea County, New Mexico
Rig:McVay 8

OFFICE

Mon Sep 17 08:39:57 2012

Coordinates

Latitude: 32.748911 N (32 deg. 44 min. 56.0806 sec.)
Longitude: 103.729479 W (-103 deg. 43 min. 46.1254 sec.)
Elevation: 3844.10 feet.
Calculation Date: Sep/17/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6137 degrees
Total Magnetic Field: 0.48786 gauss
Magnetic Declination: 7.543263 degrees
Horizontal Intensity: 0.239391 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.543263 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 726989.0200 feet
Y: 636714.9500 feet
True to Grid: (convergence) -0.326669 degrees
Magnetic to Grid: 7.216595 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.216595 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

DEVON ENERGY PRODUCTION COMPANY
SHINNERY_14 FED 10H
2ND BONE SPRING UPPER SAND

FIELD

Wed Sep 19 19:11:50 2012

Coordinates

Latitude: 32.748911 N (32 deg. 44 min. 56.0806 sec.)
Longitude: 103.729479 W (-103 deg. 43 min. 46.1254 sec.)
Elevation: 3844.10 feet.
Calculation Date: Sep/19/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6136 degrees
Total Magnetic Field: 0.48786 gauss
Magnetic Declination: 7.542587 degrees
Horizontal Intensity: 0.239389 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.542587 Degs

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 726989.0200 feet
Y: 636714.9500 feet
True to Grid: (convergence) -0.326669 degrees
Magnetic to Grid: 7.215918 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.215918 Degs.



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	DEVON ENERGY PRODUCTION COMPANY, L.P.		
LEASE / WELL No.:	SHINNERY '14' FED	10H	
WELL LOCATION:	LEA COUNTY, NM		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	MC VAY 8		
API WELL No:	30-015-40072		
JOB No:	12MLD0458		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.22	LWD Calculated:	7.215918
		Agreed Upon:	7.215918
X =	726989.020000	Feet	Y = 636714.950000
			Feet
SITE LATITUDE:	32.748911	SITE LONGITUDE:	-103.729479
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE: NEW MEXICO EASTERN ZONE	
PROPOSED DRIFT DIRECTION:	271.25		
KELLY BUSHING ELEVATION:	19		
ALTITUDE:	3825.1	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	8500
DRIFT ANGLE:	2.29
DRIFT DIRECTION:	147.72
TRUE VERTICAL DEPTH:	8497.98
VERTICAL SECTION:	
RECTANGULAR COORDINATE (N / S):	-23.77
RECTANGULAR COORDINATE (E / W):	56.2
CLOSURE DISTANCE / DIRECTION:	
SURVEY CALCULATION METHOD:	AA ☐ MC ☒ RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	VAUGHN ENGERGY SERVICE
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO

WELL PLAN

KICKOFF DEPTH:	8606.1	TOTAL DEPTH:	13568.3
KICKOFF ANGLE:	0	MAX ANGLE:	90.79

PES Engineers: _____

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: _____