

3329 W. Pinhook Rd.
Lafayette, LA 70508-3506, USA
Tel. 337-233-3982
Fax 337-234-2988

NM OIL CONSERVATION
ARTESIA DISTRICT

PATHFINDER
A Schlumberger Company

MAY 27 2015

RECEIVED

15-42321

DIRECTIONAL SURVEY REPORT

DEVON ENERGY PRODUCTION CO., L.P.

COTTONTAIL 16 STATE COM #001H

EDDY COUNTY, NEW MEXICO

PREPARED BY: MARK TRAHAN

3329 W. Pinhook Rd.
Lafayette, LA 70508-3506, USA
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February 18, 2015

DEVON ENERGY PRODUCTION CO., L.P.
Ms. Judith Barnett
333 W. Sheridan Ave.
Oklahoma City, OK 73102

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 27 2015

RE: DEVON ENERGY PRODUCTION CO., L.P.
COTTONTAIL 16 STATE COM #001H
EDDY COUNTY, NM
RIG: PRECISION 601
API NO.: 30-015-42321
FILE NO.: 14LAF0337

RECEIVED

Dear Ms. Barnett:

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
3 – Original Directional Survey Reports

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 (337) 233-3982.

Sincerely,

A handwritten signature in black ink, appearing to read "MT", written over a horizontal line.

Mark Trahan
M/LWD Service Coordinator
PathFinder, a Schlumberger company

MT:tb

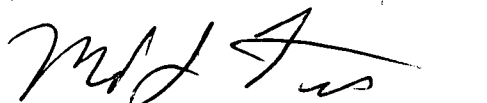
DIRECTIONAL SURVEY COMPANY REPORT:

1. SURVEYING COMPANY: PATHFINDER, A SCHLUMBERGER COMPANY
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) DERIK RICHARD
B) KYLE SCHENKER
3. POSITION OF SAID PERSON(S): (A-B) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 01/18/15 TO 02/01/15
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

DEVON ENERGY PRODUCTION CO., L.P.
COTTONTAIL 16 STATE COM #001H
EDDY COUNTY, NM
RIG: PRECISION 601
API NO.: 30-015-42321

9. SURVEY CERTIFIED FROM: 2,982 TO 13,350 FEET MEASURED DEPTH.

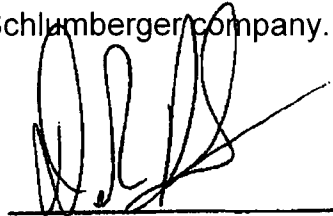
THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 4,826.74 FEET ON A BEARING OF 359.33 DEGREES FROM THE CENTER
OF THE ROTARY TABLE AT A PROJECTED TO BIT DEPTH OF 13,350 FEET, ARE TRUE
AND CORRECT TO THE BEST OF MY KNOWLEDGE.



MARK TRAHAN
M/LWD SERVICE COORCDINATOR

STATE OF LOUISIANA
PARISH OF LAFAYETTE

I, **Derik Richard**, certify that; I am employed by PathFinder, a Schlumberger company; that I did on the day(s) of **01/18/15** through **02/01/15** conduct or supervise the taking of a **Measurement While Drilling** survey from a depth of **2,982 feet to a depth of 13,350 feet**; that the data is true, correct, complete and within the limitations of the tool as set forth by PathFinder, a Schlumberger company; that I am authorized and qualified to make this report; that this survey was conducted at the request of **DEVON ENERGY PRODUCTION CO., L.P.** for the **Cottontail 16 State Com #001H** Well API No. **30-015-42321** in **Eddy County, New Mexico**; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by PathFinder, a Schlumberger company.



PathFinder Field Engineer

PathFinder – a Schlumberger company

BHL Report

Page 01/01
Tie-in Date: 01/18/2015
Date Completed: 02/01/2015

DEVON ENERGY PRODUCTION COMPANY, LP
COTTONTAIL 16 STATE COM No 001H
EDDY COUNTY, NM
API#: 30-015-42321 Rig: Precision 601
PathFinder Office Supervisor: Mark Trahan
PathFinder Field Engineers: Derik Richard
 Kyle Schenker

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.7.23.3196 N LON: 103.59.13.7622 W
GRID Reference: NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 648504.9000 Y: 408708.1000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.33° EAST TO GRID
Vertical Section Plane: 359.27
Survey Vert. Reference: 25.00' Rotary Table To Ground
Altitude: 2968.60' Ground To MSL

Measured Depth	13350.00	(feet)
Inclination	90.31	(deg)
Azimuth	358.39	(deg)
True Vertical Depth	8705.75	(feet)
Vertical Section	4826.74	(feet)
Survey X cord	648448.30	(feet)
Survey Y cord	413534.51	(feet)
Survey Lat	32.13641216 N	(deg)
Survey Lon	103.98728894 W	(deg)
Rectangular Corr. N/S	4826.41 N	(feet)
Rectangular Corr. E/W	56.60 W	(feet)
Closure Distance	4826.74	(feet)
Direction of Closure	359.33	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder – a Schlumberger company

Survey Report

DEVON ENERGY PRODUCTION COMPANY, LP
COTTONTAIL 16 STATE COM No 001H
EDDY COUNTY, NM
API#: 30-015-42321 Rig: Precision 601
PathFinder Office Supervisor: Mark Trahan
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Total Magnetic Correction: 7.33° EAST TO GRID
Vertical Section Plane: 359.27
Survey Vert. Reference: 25.00' Rotary Table To Ground
Altitude: 2968.60' Ground To MSL

Survey Calculations by RX4 using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
THE FOLLOWING ARE NOV FLOWDRIFT GYRO SURVEYS.												
0.00	0.00	0.00	-0.00	0.00	0.00	0.00 N	0.00 E	32.12314436 N	103.98715616 W	0.01@	51.93	0.00
100.00	0.30	151.00	100.00	100.00	-0.23	0.23 S	0.13 E	32.12314373 N	103.98715576 W	0.26@	149.84	0.30
167.00	0.40	227.00	167.00	67.00	-0.54	0.54 S	0.05 E	32.12314287 N	103.98715604 W	0.54@	175.21	0.65
290.00	0.40	267.00	289.99	123.00	-0.84	0.85 S	0.70 W	32.12314201 N	103.98715844 W	1.10@	219.25	0.22
383.00	0.20	231.00	382.99	93.00	-0.96	0.97 S	1.15 W	32.12314168 N	103.98715989 W	1.50@	229.71	0.29
476.00	0.40	170.00	475.99	93.00	-1.38	1.39 S	1.22 W	32.12314052 N	103.98716012 W	1.85@	221.12	0.38
569.00	0.30	207.00	568.99	93.00	-1.92	1.93 S	1.27 W	32.12313905 N	103.98716031 W	2.31@	213.36	0.26
759.00	0.70	160.00	758.98	190.00	-3.45	3.47 S	1.10 W	32.12313483 N	103.98715977 W	3.64@	197.62	0.28
887.00	0.80	143.00	886.97	128.00	-4.91	4.91 S	0.30 W	32.12313084 N	103.98715718 W	4.92@	183.44	0.19
1045.00	0.50	192.00	1044.96	158.00	-6.47	6.47 S	0.22 E	32.12312656 N	103.98715552 W	6.47@	178.01	0.38
1108.00	0.70	193.00	1107.96	63.00	-7.11	7.11 S	0.08 E	32.12312479 N	103.98715599 W	7.11@	179.35	0.32
1398.00	0.70	165.00	1397.94	290.00	-10.55	10.55 S	0.14 E	32.12311535 N	103.98715583 W	10.55@	179.23	0.12
1487.00	0.70	157.00	1486.93	89.00	-11.58	11.58 S	0.49 E	32.12311252 N	103.98715470 W	11.59@	177.55	0.11
1582.00	0.80	153.00	1581.92	95.00	-12.71	12.70 S	1.02 E	32.12310943 N	103.98715301 W	12.74@	175.40	0.12
1677.00	0.80	143.00	1676.91	95.00	-13.84	13.82 S	1.72 E	32.12310634 N	103.98715076 W	13.93@	172.90	0.15
1772.00	0.70	148.00	1771.91	95.00	-14.87	14.84 S	2.43 E	32.12310352 N	103.98714848 W	15.04@	170.71	0.13
1867.00	0.70	155.00	1866.90	95.00	-15.90	15.86 S	2.98 E	32.12310072 N	103.98714671 W	16.14@	169.35	0.09
1956.00	0.60	179.00	1955.89	89.00	-16.86	16.82 S	3.22 E	32.12309808 N	103.98714595 W	17.12@	169.16	0.32
2045.00	0.40	162.00	2044.89	89.00	-17.62	17.58 S	3.32 E	32.12309599 N	103.98714562 W	17.89@	169.29	0.28
2135.00	0.30	158.00	2134.89	90.00	-18.14	18.10 S	3.51 E	32.12309457 N	103.98714503 W	18.44@	169.03	0.11
2224.00	0.30	176.00	2223.89	89.00	-18.59	18.55 S	3.61 E	32.12309333 N	103.98714470 W	18.90@	168.98	0.10
2314.00	0.60	154.00	2313.88	90.00	-19.25	19.21 S	3.84 E	32.12309152 N	103.98714399 W	19.58@	168.71	0.38
2403.00	1.10	122.00	2402.87	89.00	-20.14	20.08 S	4.76 E	32.12308912 N	103.98714100 W	20.63@	166.65	0.75

PathFinder – a Schlumberger company

Survey Report

DEVON ENERGY PRODUCTION COMPANY, LP
COTTONTAIL 16 STATE COM No 001H
EDDY COUNTY, NM
API#: 30-015-42321 Rig: Precision 601

Page 02/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
2492.00	1.60	124.00	2491.85	89.00	-21.31	21.22 S	6.52 E	32.12308595 N	103.98713534 W	22.20@	162.93	0.56
2581.00	2.00	122.00	2580.80	89.00	-22.85	22.74 S	8.87 E	32.12308175 N	103.98712777 W	24.41@	158.70	0.45
2671.00	2.40	127.00	2670.74	90.00	-24.86	24.71 S	11.70 E	32.12307632 N	103.98711863 W	27.34@	154.66	0.49
2760.00	2.90	119.00	2759.64	89.00	-27.11	26.92 S	15.16 E	32.12307021 N	103.98710749 W	30.90@	150.61	0.70
** TIED INTO NOV FLOWDRIFT GYRO SURVEY AT 2850' MD.												
2850.00	3.10	117.00	2849.52	90.00	-29.37	29.13 S	19.32 E	32.12306410 N	103.98709407 W	34.95@	146.45	0.25
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.												
2982.00	3.17	111.75	2981.32	132.00	-32.43	32.10 S	25.89 E	32.12305587 N	103.98707288 W	41.24@	141.11	0.22
3072.00	2.64	104.69	3071.21	90.00	-33.93	33.55 S	30.21 E	32.12305185 N	103.98705895 W	45.14@	138.00	0.71
3153.00	2.20	103.69	3152.13	81.00	-34.82	34.39 S	33.52 E	32.12304951 N	103.98704825 W	48.03@	135.73	0.54
3242.00	1.76	100.02	3241.08	89.00	-35.50	35.03 S	36.53 E	32.12304772 N	103.98703855 W	50.61@	133.80	0.51
3332.00	1.23	122.26	3331.05	90.00	-36.28	35.79 S	38.70 E	32.12304562 N	103.98703152 W	52.72@	132.76	0.86
3421.00	1.14	128.29	3420.03	89.00	-37.36	36.85 S	40.21 E	32.12304270 N	103.98702668 W	54.54@	132.50	0.17
3511.00	0.44	130.22	3510.02	90.00	-38.15	37.63 S	41.17 E	32.12304055 N	103.98702357 W	55.78@	132.42	0.78
3600.00	0.35	127.49	3599.02	89.00	-38.54	38.01 S	41.65 E	32.12303949 N	103.98702203 W	56.39@	132.38	0.10
3689.00	0.44	117.45	3688.02	89.00	-38.87	38.34 S	42.17 E	32.12303859 N	103.98702036 W	56.99@	132.27	0.13
3779.00	0.35	137.50	3778.02	90.00	-39.24	38.70 S	42.66 E	32.12303760 N	103.98701877 W	57.60@	132.21	0.18
3868.00	0.53	37.81	3867.02	89.00	-39.12	38.57 S	43.10 E	32.12303793 N	103.98701736 W	57.84@	131.83	0.77
3958.00	0.62	38.24	3957.01	90.00	-38.41	37.86 S	43.65 E	32.12303988 N	103.98701556 W	57.79@	130.93	0.10
4047.00	0.53	26.57	4046.01	89.00	-37.67	37.11 S	44.14 E	32.12304193 N	103.98701399 W	57.67@	130.06	0.17
4136.00	0.44	14.41	4135.00	89.00	-36.98	36.42 S	44.41 E	32.12304385 N	103.98701311 W	57.43@	129.35	0.15
4226.00	0.62	8.50	4225.00	90.00	-36.16	35.60 S	44.56 E	32.12304609 N	103.98701260 W	57.04@	128.62	0.21
4310.00	0.44	2.22	4309.00	84.00	-35.39	34.83 S	44.64 E	32.12304822 N	103.98701233 W	56.62@	127.96	0.23
4402.00	0.53	17.40	4400.99	92.00	-34.64	34.07 S	44.78 E	32.12305030 N	103.98701187 W	56.27@	127.26	0.17
4492.00	0.62	1.97	4490.99	90.00	-33.75	33.18 S	44.93 E	32.12305273 N	103.98701140 W	55.85@	126.45	0.20
4581.00	0.53	335.73	4579.98	89.00	-32.90	32.33 S	44.77 E	32.12305508 N	103.98701189 W	55.22@	125.83	0.31
4671.00	0.53	347.30	4669.98	90.00	-32.11	31.54 S	44.51 E	32.12305725 N	103.98701273 W	54.55@	125.32	0.12

PathFinder – a Schlumberger company

Survey Report

DEVON ENERGY PRODUCTION COMPANY, LP
 COTTONTAIL 16 STATE COM No 001H
 EDDY COUNTY, NM
 API#: 30-015-42321 Rig: Precision 601

Page 03/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
4760.00	0.26	330.11	4758.98	89.00	-31.53	30.97 S	44.32 E	32.12305883 N	103.98701334 W	54.07@	124.94	0.33
4851.00	0.09	352.09	4849.98	91.00	-31.28	30.72 S	44.21 E	32.12305952 N	103.98701370 W	53.83@	124.79	0.20
4941.00	0.18	317.53	4939.98	90.00	-31.10	30.54 S	44.10 E	32.12306000 N	103.98701404 W	53.64@	124.70	0.13
5030.00	0.26	300.16	5028.98	89.00	-30.89	30.34 S	43.83 E	32.12306057 N	103.98701490 W	53.31@	124.69	0.12
5119.00	0.26	328.80	5117.98	89.00	-30.62	30.06 S	43.55 E	32.12306132 N	103.98701580 W	52.92@	124.62	0.14
5209.00	0.35	281.61	5207.97	90.00	-30.38	29.83 S	43.18 E	32.12306196 N	103.98701701 W	52.48@	124.64	0.29
5298.00	0.35	270.90	5296.97	89.00	-30.32	29.77 S	42.64 E	32.12306212 N	103.98701875 W	52.01@	124.93	0.07
5387.00	0.44	229.54	5385.97	89.00	-30.53	29.99 S	42.11 E	32.12306153 N	103.98702047 W	51.70@	125.46	0.33
5477.00	0.70	247.22	5475.97	90.00	-30.95	30.43 S	41.34 E	32.12306034 N	103.98702296 W	51.33@	126.36	0.35
5566.00	0.62	239.15	5564.96	89.00	-31.40	30.89 S	40.42 E	32.12305909 N	103.98702592 W	50.87@	127.38	0.14
5656.00	0.70	245.94	5654.95	90.00	-31.86	31.36 S	39.50 E	32.12305779 N	103.98702890 W	50.44@	128.44	0.12
5745.00	0.88	237.90	5743.95	89.00	-32.43	31.94 S	38.43 E	32.12305619 N	103.98703238 W	49.97@	129.74	0.24
5834.00	0.62	233.98	5832.94	89.00	-33.07	32.59 S	37.46 E	32.12305443 N	103.98703551 W	49.65@	131.02	0.30
5924.00	0.70	226.01	5922.93	90.00	-33.72	33.26 S	36.67 E	32.12305260 N	103.98703807 W	49.51@	132.21	0.13
6013.00	0.88	200.26	6011.92	89.00	-34.73	34.28 S	36.04 E	32.12304980 N	103.98704011 W	49.74@	133.56	0.44
6103.00	0.97	193.00	6101.91	90.00	-36.12	35.67 S	35.63 E	32.12304598 N	103.98704145 W	50.42@	135.03	0.16
6192.00	1.32	206.34	6190.89	89.00	-37.76	37.32 S	35.01 E	32.12304144 N	103.98704348 W	51.17@	136.83	0.49
6281.00	1.06	182.50	6279.88	89.00	-39.50	39.06 S	34.52 E	32.12303666 N	103.98704509 W	52.13@	138.54	0.62
6370.00	0.70	201.73	6368.86	89.00	-40.82	40.39 S	34.28 E	32.12303302 N	103.98704587 W	52.98@	139.68	0.52
6460.00	0.44	198.85	6458.86	90.00	-41.66	41.23 S	33.96 E	32.12303072 N	103.98704689 W	53.42@	140.52	0.29
6549.00	0.70	202.20	6547.86	89.00	-42.48	42.05 S	33.65 E	32.12302845 N	103.98704792 W	53.86@	141.34	0.30
6638.00	0.62	183.93	6636.85	89.00	-43.46	43.04 S	33.41 E	32.12302574 N	103.98704870 W	54.48@	142.18	0.25
6728.00	0.79	195.11	6726.84	90.00	-44.54	44.12 S	33.22 E	32.12302276 N	103.98704934 W	55.23@	143.03	0.24
6817.00	0.26	288.45	6815.84	89.00	-45.07	44.65 S	32.86 E	32.12302131 N	103.98705048 W	55.44@	143.65	0.95
6906.00	0.70	19.07	6904.84	89.00	-44.49	44.07 S	32.85 E	32.12302290 N	103.98705052 W	54.97@	143.30	0.84
6996.00	0.97	19.58	6994.83	90.00	-43.26	42.84 S	33.28 E	32.12302630 N	103.98704910 W	54.25@	142.15	0.30
7085.00	0.97	37.65	7083.82	89.00	-41.96	41.53 S	34.00 E	32.12302988 N	103.98704679 W	53.67@	140.70	0.34

PathFinder – a Schlumberger company

Survey Report

DEVON ENERGY PRODUCTION COMPANY, LP
COTTONTAIL 16 STATE COM No 001H
EDDY COUNTY, NM
API#: 30-015-42321 Rig: Precision 601

Page 04/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
7175.00	0.88	47.09	7173.80	90.00	-40.90	40.46 S	34.97 E	32.12303283 N	103.98704364 W	53.47@	139.16	0.20
7264.00	0.88	58.31	7262.79	89.00	-40.09	39.63 S	36.05 E	32.12303508 N	103.98704014 W	53.58@	137.71	0.19
7353.00	0.44	4.42	7351.79	89.00	-39.40	38.93 S	36.66 E	32.12303700 N	103.98703817 W	53.48@	136.72	0.80
7443.00	0.70	277.44	7441.79	90.00	-38.97	38.52 S	36.14 E	32.12303815 N	103.98703984 W	52.82@	136.82	0.90
7532.00	1.32	272.61	7530.77	89.00	-38.84	38.40 S	34.58 E	32.12303848 N	103.98704488 W	51.67@	138.00	0.70
7603.00	1.06	260.35	7601.76	71.00	-38.89	38.47 S	33.11 E	32.12303830 N	103.98704961 W	50.76@	139.28	0.51
7692.00	0.79	253.33	7690.74	89.00	-39.19	38.79 S	31.71 E	32.12303745 N	103.98705414 W	50.10@	140.73	0.33
7782.00	0.88	240.07	7780.73	90.00	-39.69	39.31 S	30.52 E	32.12303602 N	103.98705800 W	49.77@	142.17	0.24
7871.00	1.06	240.19	7869.72	89.00	-40.43	40.06 S	29.21 E	32.12303397 N	103.98706223 W	49.58@	143.90	0.20
7960.00	0.62	277.24	7958.71	89.00	-40.76	40.41 S	28.02 E	32.12303302 N	103.98706608 W	49.17@	145.26	0.76
8050.00	0.79	333.00	8048.71	90.00	-40.14	39.79 S	27.26 E	32.12303472 N	103.98706854 W	48.23@	145.59	0.75
8139.00	1.49	332.31	8137.69	89.00	-38.56	38.22 S	26.44 E	32.12303904 N	103.98707116 W	46.48@	145.33	0.79
8168.00	4.40	347.37	8166.65	29.00	-37.13	36.80 S	26.02 E	32.12304295 N	103.98707250 W	45.07@	144.74	10.30
8198.00	7.03	345.25	8196.50	30.00	-34.22	33.90 S	25.30 E	32.12305092 N	103.98707479 W	42.31@	143.27	8.79
8228.00	9.23	345.25	8226.19	30.00	-30.11	29.80 S	24.22 E	32.12306221 N	103.98707824 W	38.40@	140.90	7.33
8258.00	11.96	346.82	8255.68	30.00	-24.74	24.45 S	22.90 E	32.12307694 N	103.98708245 W	33.50@	136.87	9.15
8294.00	14.51	346.81	8290.72	36.00	-16.69	16.42 S	21.02 E	32.12309902 N	103.98708844 W	26.68@	128.00	7.08
8318.00	16.09	346.63	8313.87	24.00	-10.51	10.26 S	19.57 E	32.12311597 N	103.98709308 W	22.09@	117.67	6.59
8347.00	19.52	349.39	8341.47	29.00	-1.81	1.59 S	17.74 E	32.12313983 N	103.98709888 W	17.82@	95.11	12.18
8377.00	21.72	351.95	8369.55	30.00	8.63	8.84 N	16.04 E	32.12316850 N	103.98710426 W	18.32@	61.15	7.92
8407.00	24.18	353.18	8397.18	30.00	20.25	20.44 N	14.54 E	32.12320040 N	103.98710901 W	25.08@	35.42	8.35
8437.00	26.82	354.54	8424.25	30.00	33.11	33.28 N	13.16 E	32.12323571 N	103.98711331 W	35.79@	21.58	9.01
8469.00	29.11	355.75	8452.51	32.00	48.07	48.23 N	11.90 E	32.12327682 N	103.98711724 W	49.67@	13.86	7.37
8499.00	31.13	356.85	8478.46	30.00	63.11	63.25 N	10.93 E	32.12331812 N	103.98712021 W	64.19@	9.81	6.98
8529.00	34.29	358.47	8503.70	30.00	79.31	79.45 N	10.28 E	32.12336264 N	103.98712215 W	80.11@	7.37	10.93
8559.00	37.64	358.91	8527.98	30.00	96.92	97.06 N	9.88 E	32.12341106 N	103.98712326 W	97.56@	5.81	11.20
8589.00	40.10	359.04	8551.33	30.00	115.75	115.88 N	9.54 E	32.12346280 N	103.98712415 W	116.27@	4.71	8.20

PathFinder – a Schlumberger company

Survey Report

DEVON ENERGY PRODUCTION COMPANY, LP
COTTONTAIL 16 STATE COM No 001H
EDDY COUNTY, NM
API#: 30-015-42321 Rig: Precision 601

Page 05/07

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8616.00	43.88	359.01	8571.40	27.00	133.81	133.94 N	9.24 E	32.12351244 N	103.98712495 W	134.25@	3.94	14.00
8646.00	47.04	358.48	8592.44	30.00	155.19	155.31 N	8.77 E	32.12357120 N	103.98712625 W	155.56@	3.23	10.61
8676.00	50.65	358.27	8612.18	30.00	177.77	177.89 N	8.12 E	32.12363327 N	103.98712809 W	178.07@	2.61	12.04
8706.00	54.26	358.92	8630.46	30.00	201.55	201.66 N	7.54 E	32.12369863 N	103.98712972 W	201.80@	2.14	12.15
8736.00	58.56	359.91	8647.05	30.00	226.53	226.64 N	7.29 E	32.12376730 N	103.98713026 W	226.76@	1.84	14.59
8766.00	62.17	0.60	8661.88	30.00	252.60	252.72 N	7.41 E	32.12383897 N	103.98712961 W	252.82@	1.68	12.20
8795.00	66.04	1.42	8674.54	29.00	278.67	278.79 N	7.88 E	32.12391066 N	103.98712784 W	278.91@	1.62	13.59
8826.00	70.96	1.54	8685.90	31.00	307.48	307.62 N	8.62 E	32.12398988 N	103.98712514 W	307.74@	1.61	15.87
8855.00	75.45	2.22	8694.28	29.00	335.21	335.36 N	9.53 E	32.12406613 N	103.98712190 W	335.49@	1.63	15.64
8885.00	79.14	2.24	8700.88	30.00	364.43	364.60 N	10.67 E	32.12414649 N	103.98711792 W	364.75@	1.68	12.30
8915.00	82.31	2.75	8705.71	30.00	393.99	394.17 N	11.96 E	32.12422778 N	103.98711345 W	394.35@	1.74	10.70
8943.00	84.50	2.48	8708.93	28.00	421.75	421.96 N	13.23 E	32.12430415 N	103.98710906 W	422.16@	1.80	7.88
9031.00	89.43	1.75	8713.59	88.00	509.49	509.75 N	16.47 E	32.12454544 N	103.98709768 W	510.01@	1.85	5.66
9120.00	90.75	359.67	8713.44	89.00	598.46	598.73 N	17.57 E	32.12479005 N	103.98709319 W	598.99@	1.68	2.77
9209.00	90.84	359.20	8712.21	89.00	687.45	687.72 N	16.70 E	32.12503467 N	103.98709511 W	687.92@	1.39	0.54
9298.00	91.54	358.02	8710.36	89.00	776.42	776.67 N	14.54 E	32.12527921 N	103.98710115 W	776.81@	1.07	1.54
9388.00	91.89	357.62	8707.67	90.00	866.35	866.57 N	11.12 E	32.12552635 N	103.98711127 W	866.64@	0.73	0.59
9477.00	92.86	357.43	8703.98	89.00	955.24	955.41 N	7.28 E	32.12577060 N	103.98712276 W	955.43@	0.44	1.11
9566.00	91.28	356.58	8700.77	89.00	1044.10	1044.22 N	2.63 E	32.12601479 N	103.98713685 W	1044.23@	0.14	2.02
9654.00	90.66	356.56	8699.28	88.00	1131.99	1132.05 N	2.64 W	32.12625627 N	103.98715294 W	1132.05@	359.87	0.71
9743.00	91.19	357.95	8697.84	89.00	1220.92	1220.94 N	6.90 W	32.12650064 N	103.98716578 W	1220.95@	359.68	1.67
9833.00	91.63	358.10	8695.62	90.00	1310.88	1310.85 N	10.00 W	32.12674784 N	103.98717487 W	1310.89@	359.56	0.52
9922.00	90.92	358.01	8693.64	89.00	1399.83	1399.78 N	13.02 W	32.12699232 N	103.98718370 W	1399.84@	359.47	0.80
10013.00	88.90	357.75	8693.79	91.00	1490.80	1490.71 N	16.38 W	32.12724231 N	103.98719363 W	1490.80@	359.37	2.24
10103.00	88.99	357.84	8695.44	90.00	1580.76	1580.63 N	19.85 W	32.12748952 N	103.98720388 W	1580.76@	359.28	0.14
10192.00	89.60	358.36	8696.54	89.00	1669.73	1669.58 N	22.80 W	32.12773404 N	103.98721249 W	1669.73@	359.22	0.90
10282.00	90.48	358.80	8696.48	90.00	1759.72	1759.55 N	25.03 W	32.12798139 N	103.98721876 W	1759.72@	359.19	1.09

PathFinder – a Schlumberger company

Survey Report

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EDDY COUNTY, NM
API#: 30-015-42321 Rig: Precision 601

Page 06/07

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10371.00	89.52	358.80	8696.48	89.00	1848.72	1848.53 N	26.89 W	32.12822600 N	103.98722386 W	1848.72@	359.17	1.08
10460.00	88.72	358.98	8697.84	89.00	1937.71	1937.50 N	28.61 W	32.12847059 N	103.98722850 W	1937.71@	359.15	0.92
10550.00	88.72	358.89	8699.85	90.00	2027.68	2027.46 N	30.29 W	32.12871790 N	103.98723297 W	2027.69@	359.14	0.10
10639.00	89.52	359.60	8701.22	89.00	2116.67	2116.44 N	31.46 W	32.12896251 N	103.98723584 W	2116.67@	359.15	1.20
10728.00	90.75	0.21	8701.01	89.00	2205.66	2205.44 N	31.61 W	32.12920715 N	103.98723539 W	2205.66@	359.18	1.54
10818.00	90.31	0.04	8700.18	90.00	2295.65	2295.43 N	31.41 W	32.12945454 N	103.98723382 W	2295.65@	359.22	0.52
10907.00	88.90	0.48	8700.79	89.00	2384.63	2384.43 N	31.01 W	32.12969917 N	103.98723159 W	2384.63@	359.25	1.66
10996.00	88.64	359.95	8702.70	89.00	2473.60	2473.41 N	30.67 W	32.12994376 N	103.98722959 W	2473.60@	359.29	0.66
11084.00	88.29	359.12	8705.06	88.00	2561.56	2561.37 N	31.39 W	32.13018557 N	103.98723098 W	2561.56@	359.30	1.02
11175.00	89.78	359.54	8706.59	91.00	2652.55	2652.35 N	32.45 W	32.13043567 N	103.98723348 W	2652.55@	359.30	1.70
11264.00	90.31	357.78	8706.52	89.00	2741.54	2741.32 N	34.53 W	32.13068027 N	103.98723928 W	2741.54@	359.28	2.07
11354.00	90.66	358.98	8705.76	90.00	2831.52	2831.28 N	37.08 W	32.13092758 N	103.98724656 W	2831.52@	359.25	1.39
11443.00	91.10	358.72	8704.39	89.00	2920.51	2920.25 N	38.86 W	32.13117217 N	103.98725141 W	2920.51@	359.24	0.57
11532.00	91.01	358.78	8702.75	89.00	3009.49	3009.22 N	40.80 W	32.13141674 N	103.98725676 W	3009.49@	359.22	0.12
11622.00	90.31	358.47	8701.72	90.00	3099.48	3099.18 N	42.96 W	32.13166407 N	103.98726280 W	3099.48@	359.21	0.85
11715.00	88.55	358.12	8702.64	93.00	3192.46	3192.13 N	45.73 W	32.13191960 N	103.98727077 W	3192.46@	359.18	1.93
11804.00	88.81	358.17	8704.69	89.00	3281.42	3281.06 N	48.61 W	32.13216409 N	103.98727915 W	3281.42@	359.15	0.30
11894.00	88.55	357.52	8706.77	90.00	3371.36	3370.98 N	51.99 W	32.13241128 N	103.98728915 W	3371.38@	359.12	0.78
11983.00	88.72	358.60	8708.89	89.00	3460.32	3459.90 N	55.00 W	32.13265574 N	103.98729796 W	3460.33@	359.09	1.23
12072.00	89.25	359.87	8710.46	89.00	3549.30	3548.87 N	56.19 W	32.13290034 N	103.98730087 W	3549.32@	359.09	1.55
12162.00	89.69	359.48	8711.30	90.00	3639.29	3638.87 N	56.70 W	32.13314773 N	103.98730159 W	3639.31@	359.11	0.65
12251.00	91.45	1.43	8710.41	89.00	3728.26	3727.85 N	56.00 W	32.13339233 N	103.98729838 W	3728.27@	359.14	2.95
12340.00	92.15	1.74	8707.62	89.00	3817.15	3816.77 N	53.54 W	32.13363674 N	103.98728951 W	3817.15@	359.20	0.86
12430.00	90.40	1.57	8705.61	90.00	3907.04	3906.71 N	50.94 W	32.13388395 N	103.98728018 W	3907.04@	359.25	1.95
12519.00	90.31	1.25	8705.06	89.00	3995.98	3995.68 N	48.75 W	32.13412850 N	103.98727218 W	3995.98@	359.30	0.37
12607.00	90.48	1.61	8704.45	88.00	4083.91	4083.65 N	46.55 W	32.13437030 N	103.98726418 W	4083.92@	359.35	0.45
12696.00	89.78	0.71	8704.25	89.00	4172.86	4172.63 N	44.75 W	32.13461488 N	103.98725743 W	4172.87@	359.39	1.28

PathFinder – a Schlumberger company

Survey Report

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 EDDY COUNTY, NM
 API#: 30-015-42321 Rig: Precision 601

Page 07/07

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12787.00	89.52	0.55	8704.81	91.00	4263.84	4263.62 N	43.75 W	32.13486500 N	103.98725325 W	4263.85@	359.41	0.34
12877.00	89.52	359.83	8705.56	90.00	4353.82	4353.62 N	43.45 W	32.13511239 N	103.98725136 W	4353.84@	359.43	0.80
12966.00	89.78	359.08	8706.11	89.00	4442.82	4442.61 N	44.30 W	32.13535703 N	103.98725317 W	4442.84@	359.43	0.89
13055.00	90.04	357.94	8706.25	89.00	4531.81	4531.58 N	46.61 W	32.13560162 N	103.98725972 W	4531.82@	359.41	1.31
13145.00	89.96	357.89	8706.25	90.00	4621.78	4621.52 N	49.89 W	32.13584888 N	103.98726937 W	4621.79@	359.38	0.10
13234.00	90.04	357.94	8706.25	89.00	4710.76	4710.46 N	53.12 W	32.13609340 N	103.98727890 W	4710.76@	359.35	0.11
13290.00	90.31	358.39	8706.07	56.00	4766.75	4766.43 N	54.92 W	32.13624727 N	103.98728412 W	4766.75@	359.34	0.94
STRAIGHT LINE PROJECTION TO THE BIT AT 13350' MD.												
13350.00	90.31	358.39	8705.75	60.00	4826.74	4826.41 N	56.60 W	32.13641216 N	103.98728894 W	4826.74@	359.33	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 – a Schlumberger company and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.



Directional Survey

Sub-Division DELAWARE BASIN	County EDDY	Field Name WILLOW LAKE SOUTHEAST	Region DELAWARE BASIN WEST	State/Province NM
Surface Legal Location SEC16 T25S R29E	API/UWI 3001542321	Latitude (") 32° 7' 22.847" N	Longitude (") 103° 59' 12.204" W	Ground Elev M... 2,969.00
				Orig KB Elev (ft) 2,994.00
				Tubing Head Elevation (ft)

Wellbores

Wellbore Name OH	Parent Wellbore OH	SAP Well ID 37647	Vertical Section Direction (") 359.27
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Kick Offs & Key Depths

Date 1/22/2015	Type Kick Off	Top Depth (ftKB) 8,140.0
Actual Deviation Survey FLOW DRIFT/MWD, Proposed? No	Definitive? Yes	Proposed? No
		Proposed Deviation Survey FLOW DRIFT/MWD, Proposed? No

Deviation Survey

Date 1/8/2015		Description FLOW DRIFT/MWD			
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (") 0.00	Azimuth Tie In (") 0.00	NSTie In (ft) 0.00	EWtie In (ft) 0.00

Survey Data

Date	MD (ftKB)	Incl (")	Azm (")	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (*/100ft)	Survey Tool	Survey Company
1/8/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD	FLOW DRIFT
1/8/2015	100.00	0.30	151.00	100.00	-0.23	-0.23	0.13	0.30	MWD	FLOW DRIFT
1/9/2015	167.00	0.40	227.00	167.00	-0.54	-0.54	0.04	0.65	MWD	FLOW DRIFT
1/9/2015	290.00	0.40	267.00	290.00	-0.85	-0.86	-0.70	0.22	MWD	FLOW DRIFT
1/9/2015	383.00	0.20	231.00	382.99	-0.96	-0.98	-1.15	0.29	MWD	FLOW DRIFT
1/9/2015	476.00	0.40	170.00	475.99	-1.38	-1.40	-1.22	0.38	MWD	FLOW DRIFT
1/9/2015	569.00	0.30	207.00	568.99	-1.92	-1.93	-1.28	0.26	MWD	FLOW DRIFT
1/13/2015	759.00	0.70	160.00	758.98	-3.45	-3.47	-1.10	0.29	MWD	FLOW DRIFT
1/13/2015	887.00	0.80	143.00	886.97	-4.91	-4.92	-0.30	0.19	MWD	FLOW DRIFT
1/13/2015	1,045.00	0.50	192.00	1,044.96	-6.47	-6.47	0.22	0.38	MWD	FLOW DRIFT
1/13/2015	1,108.00	0.70	193.00	1,107.96	-7.12	-7.12	0.08	0.32	MWD	FLOW DRIFT
1/13/2015	1,203.00	1.00	175.00	1,202.95	-8.51	-8.51	0.02	0.42	MWD	FLOW DRIFT
1/13/2015	1,298.00	1.10	180.00	1,297.93	-10.25	-10.25	0.09	0.14	MWD	FLOW DRIFT
1/13/2015	1,398.00	0.70	165.00	1,397.92	-11.80	-11.80	0.25	0.46	MWD	FLOW DRIFT
1/13/2015	1,487.00	0.70	157.00	1,486.92	-12.83	-12.82	0.60	0.11	MWD	FLOW DRIFT
1/13/2015	1,582.00	0.80	153.00	1,581.91	-13.96	-13.95	1.13	0.12	MWD	FLOW DRIFT
1/13/2015	1,677.00	0.80	143.00	1,676.90	-15.09	-15.07	1.83	0.15	MWD	FLOW DRIFT
1/13/2015	1,772.00	0.70	148.00	1,771.89	-16.12	-16.09	2.54	0.13	MWD	FLOW DRIFT
1/13/2015	1,867.00	0.70	155.00	1,866.88	-17.14	-17.11	3.09	0.09	MWD	FLOW DRIFT
1/13/2015	1,956.00	0.60	179.00	1,955.88	-18.11	-18.06	3.33	0.32	MWD	FLOW DRIFT
1/13/2015	2,045.00	0.40	162.00	2,044.87	-18.87	-18.83	3.43	0.28	MWD	FLOW DRIFT
1/13/2015	2,135.00	0.30	158.00	2,134.87	-19.39	-19.34	3.62	0.11	MWD	FLOW DRIFT
1/13/2015	2,224.00	0.30	176.00	2,223.87	-19.84	-19.79	3.72	0.11	MWD	FLOW DRIFT
1/13/2015	2,314.00	0.60	154.00	2,313.87	-20.50	-20.45	3.94	0.38	MWD	FLOW DRIFT
1/13/2015	2,403.00	1.10	122.00	2,402.86	-21.38	-21.32	4.87	0.75	MWD	FLOW DRIFT
1/14/2015	2,492.00	1.60	124.00	2,491.83	-22.55	-22.47	6.63	0.56	MWD	FLOW DRIFT
1/14/2015	2,581.00	2.00	122.00	2,580.79	-24.10	-23.99	8.97	0.45	MWD	FLOW DRIFT
1/14/2015	2,671.00	2.40	127.00	2,670.72	-26.10	-25.95	11.81	0.49	MWD	FLOW DRIFT
1/14/2015	2,760.00	2.90	119.00	2,759.63	-28.36	-28.17	15.27	0.70	MWD	FLOW DRIFT
1/14/2015	2,850.00	3.10	117.00	2,849.51	-30.62	-30.38	19.43	0.25	MWD	FLOW DRIFT
1/14/2015	2,982.00	3.17	111.75	2,981.31	-33.68	-33.35	26.00	0.22	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,072.00	2.64	104.69	3,071.19	-35.18	-34.80	30.31	0.71	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,153.00	2.20	103.69	3,152.12	-36.06	-35.64	33.63	0.55	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,242.00	1.76	100.02	3,241.07	-36.74	-36.28	36.63	0.51	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,332.00	1.23	122.26	3,331.04	-37.53	-37.03	38.81	0.86	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,421.00	1.14	128.29	3,420.02	-38.60	-38.09	40.32	0.17	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,511.00	0.44	130.22	3,510.01	-39.39	-38.87	41.28	0.78	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,600.00	0.35	127.49	3,599.01	-39.79	-39.26	41.76	0.10	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,689.00	0.44	117.45	3,688.00	-40.12	-39.58	42.28	0.13	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,779.00	0.35	137.50	3,778.00	-40.48	-39.94	42.77	0.18	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,868.00	0.53	37.81	3,867.00	-40.36	-39.82	43.21	0.77	MWD	PATHFINDER ENERGY SE...
1/14/2015	3,958.00	0.62	38.24	3,957.00	-39.66	-39.11	43.76	0.10	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,047.00	0.53	26.57	4,045.99	-38.92	-38.36	44.24	0.17	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,136.00	0.44	14.41	4,134.99	-38.22	-37.66	44.51	0.15	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,226.00	0.62	8.50	4,224.98	-37.41	-36.84	44.67	0.21	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,310.00	0.44	2.22	4,308.98	-36.64	-36.07	44.75	0.22	MWD	PATHFINDER ENERGY SE...



Directional Survey

Sub-Division DELAWARE BASIN	County EDDY	Field Name WILLOW LAKE SOUTHEAST	Region DELAWARE BASIN WEST	State/Province NM
Surface Legal Location SEC16 T25S R29E	API/UWI 3001542321	Latitude (°) 32° 7' 22.847" N	Longitude (°) 103° 59' 12.204" W	Ground Elev M... 2,969.00
				Orig KB Elev (ft) 2,994.00
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
1/14/2015	4,402.00	0.53	17.40	4,400.98	-35.88	-35.31	44.89	0.17	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,492.00	0.62	1.97	4,490.97	-35.00	-34.43	45.03	0.20	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,581.00	0.53	335.73	4,579.97	-34.14	-33.57	44.88	0.31	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,671.00	0.53	347.30	4,669.96	-33.35	-32.79	44.62	0.12	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,760.00	0.26	330.11	4,758.96	-32.77	-32.21	44.43	0.33	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,851.00	0.09	352.09	4,849.96	-32.52	-31.96	44.31	0.20	MWD	PATHFINDER ENERGY SE...
1/14/2015	4,941.00	0.18	317.53	4,939.96	-32.35	-31.79	44.21	0.13	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,030.00	0.26	300.16	5,028.96	-32.14	-31.58	43.94	0.12	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,119.00	0.26	328.80	5,117.96	-31.86	-31.31	43.66	0.14	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,209.00	0.35	281.61	5,207.96	-31.63	-31.08	43.29	0.29	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,298.00	0.35	270.90	5,296.96	-31.56	-31.02	42.75	0.07	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,387.00	0.44	229.54	5,385.96	-31.77	-31.24	42.22	0.33	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,477.00	0.70	247.22	5,475.95	-32.20	-31.67	41.45	0.35	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,566.00	0.62	239.15	5,564.94	-32.65	-32.13	40.53	0.14	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,656.00	0.70	245.94	5,654.94	-33.11	-32.61	39.61	0.12	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,745.00	0.88	237.90	5,743.93	-33.68	-33.19	38.54	0.24	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,834.00	0.62	233.98	5,832.92	-34.31	-33.84	37.57	0.30	MWD	PATHFINDER ENERGY SE...
1/14/2015	5,924.00	0.70	226.01	5,922.92	-34.97	-34.50	36.78	0.14	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,013.00	0.88	200.26	6,011.91	-35.98	-35.52	36.15	0.44	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,103.00	0.97	193.00	6,101.90	-37.37	-36.91	35.74	0.16	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,192.00	1.32	206.34	6,190.88	-39.01	-38.57	35.12	0.49	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,281.00	1.06	182.50	6,279.86	-40.75	-40.31	34.62	0.62	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,370.00	0.70	201.73	6,368.85	-42.07	-41.64	34.39	0.52	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,460.00	0.44	198.85	6,458.85	-42.90	-42.47	34.07	0.29	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,549.00	0.70	202.20	6,547.84	-43.73	-43.30	33.76	0.29	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,638.00	0.62	183.93	6,636.84	-44.71	-44.28	33.52	0.25	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,728.00	0.79	195.11	6,726.83	-45.79	-45.37	33.32	0.24	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,817.00	0.26	288.45	6,815.83	-46.31	-45.90	32.97	0.95	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,906.00	0.70	19.07	6,904.82	-45.74	-45.32	32.96	0.84	MWD	PATHFINDER ENERGY SE...
1/14/2015	6,996.00	0.97	19.58	6,994.81	-44.50	-44.08	33.39	0.30	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,085.00	0.97	37.65	7,083.80	-43.21	-42.78	34.11	0.34	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,175.00	0.88	47.09	7,173.79	-42.15	-41.70	35.08	0.20	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,264.00	0.88	58.31	7,262.78	-41.33	-40.88	36.16	0.19	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,353.00	0.44	4.42	7,351.77	-40.64	-40.18	36.77	0.80	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,443.00	0.70	277.44	7,441.77	-40.22	-39.76	36.25	0.90	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,532.00	1.32	272.61	7,530.76	-40.08	-39.64	34.69	0.70	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,603.00	1.06	260.35	7,601.74	-40.14	-39.72	33.22	0.51	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,692.00	0.79	253.33	7,690.73	-40.43	-40.03	31.82	0.33	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,782.00	0.88	240.07	7,780.72	-40.94	-40.55	30.63	0.24	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,871.00	1.06	240.19	7,869.71	-41.67	-41.30	29.32	0.20	MWD	PATHFINDER ENERGY SE...
1/14/2015	7,960.00	0.62	277.24	7,958.70	-42.01	-41.65	28.13	0.76	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,050.00	0.79	333.00	8,048.69	-41.38	-41.04	27.36	0.75	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,139.00	1.49	332.31	8,137.67	-39.80	-39.47	26.55	0.79	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,168.00	4.40	347.37	8,166.63	-38.38	-38.05	26.13	10.30	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,198.00	7.03	345.25	8,196.48	-35.47	-35.15	25.41	8.79	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,228.00	9.23	345.25	8,226.18	-31.35	-31.05	24.33	7.33	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,258.00	11.96	346.82	8,255.66	-25.98	-25.69	23.01	9.15	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,294.00	14.51	346.81	8,290.70	-17.94	-17.67	21.13	7.08	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,318.00	16.09	346.63	8,313.85	-11.75	-11.51	19.67	6.59	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,347.00	19.52	349.39	8,341.46	-3.06	-2.83	17.85	12.18	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,377.00	21.72	351.95	8,369.54	7.39	7.59	16.15	7.92	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,407.00	24.18	353.18	8,397.16	19.00	19.19	14.64	8.35	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,437.00	26.82	354.54	8,424.24	31.86	32.03	13.27	9.01	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,437.00	26.82	354.54	8,424.24	31.86	32.03	13.27	9.01	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,469.00	29.11	355.75	8,452.50	46.83	46.98	12.01	7.37	MWD	PATHFINDER ENERGY SE...



Directional Survey

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Surface Legal Location SEC16 T25S R29E	API/UWI 3001542321	Latitude (°) 32° 7' 22.847" N	Longitude (°) 103° 59' 12.204" W	Ground Elev M. 2,969.00
				Orig KB Elev (ft) 2,994.00
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
1/22/2015	8,499.00	31.13	356.85	8,478.45	61.86	62.01	11.04	6.98	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,529.00	34.29	358.47	8,503.69	78.06	78.20	10.39	10.93	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,559.00	37.64	358.91	8,527.96	95.68	95.81	9.99	11.20	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,589.00	40.10	359.04	8,551.32	114.50	114.63	9.65	8.20	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,616.00	43.88	359.01	8,571.38	132.56	132.69	9.34	14.00	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,646.00	47.04	358.48	8,592.42	153.94	154.07	8.87	10.61	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,676.00	50.65	358.27	8,612.16	176.52	176.64	8.23	12.04	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,706.00	54.26	358.92	8,630.44	200.30	200.42	7.65	12.16	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,736.00	58.56	359.91	8,647.03	225.29	225.40	7.40	14.59	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,766.00	62.17	0.60	8,661.87	251.35	251.47	7.52	12.20	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,795.00	66.04	1.42	8,674.53	277.42	277.55	7.98	13.58	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,826.00	70.96	1.54	8,685.89	306.24	306.37	8.73	15.88	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,855.00	75.45	2.22	8,694.26	333.96	334.11	9.64	15.64	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,885.00	79.14	2.24	8,700.86	363.19	363.35	10.78	12.30	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,915.00	82.31	2.75	8,705.70	392.74	392.93	12.07	10.70	MWD	PATHFINDER ENERGY SE...
1/22/2015	8,943.00	84.50	2.48	8,708.91	420.51	420.71	13.34	7.88	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,031.00	89.43	1.75	8,713.57	508.25	508.50	16.58	5.66	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,120.00	90.75	359.67	8,713.43	597.21	597.49	17.68	2.77	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,209.00	90.84	359.20	8,712.19	686.20	686.47	16.80	0.54	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,298.00	91.54	358.02	8,710.35	775.18	775.43	14.65	1.54	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,388.00	91.89	357.62	8,707.65	865.11	865.32	11.22	0.59	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,477.00	92.86	357.43	8,703.96	953.99	954.16	7.38	1.11	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,566.00	91.28	356.58	8,700.75	1,042.86	1,042.98	2.74	2.02	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,654.00	90.66	356.56	8,699.26	1,130.75	1,130.81	-2.53	0.70	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,743.00	91.19	357.95	8,697.82	1,219.68	1,219.69	-6.79	1.67	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,833.00	91.63	358.10	8,695.61	1,309.63	1,309.61	-9.89	0.52	MWD	PATHFINDER ENERGY SE...
1/22/2015	9,922.00	90.92	358.01	8,693.63	1,398.59	1,398.54	-12.91	0.80	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,013.00	88.90	357.75	8,693.77	1,489.56	1,489.47	-16.28	2.24	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,103.00	88.99	357.84	8,695.43	1,579.51	1,579.39	-19.74	0.14	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,192.00	89.60	358.36	8,696.52	1,668.48	1,668.33	-22.69	0.90	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,282.00	90.48	358.80	8,696.46	1,758.48	1,758.30	-24.92	1.09	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,371.00	89.52	358.80	8,696.46	1,847.47	1,847.28	-26.78	1.08	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,460.00	88.72	358.98	8,697.83	1,936.46	1,936.25	-28.51	0.92	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,550.00	88.72	358.89	8,699.84	2,026.44	2,026.22	-30.18	0.10	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,639.00	89.52	359.60	8,701.21	2,115.42	2,115.20	-31.35	1.20	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,728.00	90.75	0.21	8,701.00	2,204.42	2,204.19	-31.50	1.54	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,818.00	90.31	0.04	8,700.16	2,294.40	2,294.19	-31.30	0.52	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,907.00	88.90	0.48	8,700.78	2,383.38	2,383.18	-30.90	1.66	MWD	PATHFINDER ENERGY SE...
1/22/2015	10,996.00	88.64	359.95	8,702.69	2,472.35	2,472.16	-30.57	0.66	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,084.00	88.29	359.12	8,705.04	2,560.32	2,560.13	-31.28	1.02	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,175.00	89.78	359.54	8,706.58	2,651.30	2,651.10	-32.34	1.70	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,264.00	90.31	357.78	8,706.51	2,740.29	2,740.08	-34.42	2.07	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,354.00	90.66	358.98	8,705.75	2,830.28	2,830.04	-36.97	1.39	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,443.00	91.10	358.72	8,704.38	2,919.26	2,919.01	-38.75	0.57	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,532.00	91.01	358.78	8,702.74	3,008.24	3,007.97	-40.70	0.12	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,622.00	90.31	358.47	8,701.70	3,098.23	3,097.94	-42.85	0.85	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,715.00	88.55	358.12	8,702.63	3,191.21	3,190.89	-45.62	1.93	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,804.00	88.81	358.17	8,704.68	3,280.17	3,279.82	-48.50	0.30	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,894.00	88.55	357.52	8,706.75	3,370.12	3,369.73	-51.89	0.78	MWD	PATHFINDER ENERGY SE...
1/22/2015	11,983.00	88.72	358.60	8,708.87	3,459.07	3,458.65	-54.90	1.23	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,072.00	89.25	359.87	8,710.45	3,548.05	3,547.63	-56.09	1.55	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,162.00	89.69	359.48	8,711.28	3,638.05	3,637.62	-56.60	0.65	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,251.00	91.45	1.43	8,710.40	3,727.02	3,726.61	-55.89	2.95	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,340.00	92.15	1.74	8,707.60	3,815.90	3,815.53	-53.43	0.86	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,430.00	90.40	1.57	8,705.60	3,905.80	3,905.47	-50.83	1.95	MWD	PATHFINDER ENERGY SE...



Directional Survey

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Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
1/22/2015	12,519.00	90.31	1.25	8,705.05	3,994.73	3,994.44	-48.64	0.37	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,607.00	90.48	1.61	8,704.44	4,082.67	4,082.41	-46.44	0.45	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,696.00	89.78	0.71	8,704.24	4,171.62	4,171.39	-44.64	1.28	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,787.00	89.52	0.55	8,704.79	4,262.59	4,262.38	-43.64	0.34	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,877.00	89.52	359.83	8,705.55	4,352.57	4,352.38	-43.34	0.80	MWD	PATHFINDER ENERGY SE...
1/22/2015	12,966.00	89.78	359.08	8,706.09	4,441.57	4,441.37	-44.19	0.89	MWD	PATHFINDER ENERGY SE...
1/22/2015	13,055.00	90.04	357.94	8,706.23	4,530.56	4,530.34	-46.50	1.31	MWD	PATHFINDER ENERGY SE...
1/22/2015	13,145.00	89.96	357.89	8,706.23	4,620.54	4,620.28	-49.78	0.10	MWD	PATHFINDER ENERGY SE...
1/22/2015	13,234.00	90.04	357.94	8,706.23	4,709.51	4,709.22	-53.02	0.11	MWD	PATHFINDER ENERGY SE...
1/22/2015	13,290.00	90.31	358.39	8,706.06	4,765.50	4,765.19	-54.81	0.94	MWD	PATHFINDER ENERGY SE...
2/1/2015	13,350.00	90.31	358.39	8,705.74	4,825.49	4,825.17	-56.50	0.00	BIT	PATHFINDER ENERGY SE...