

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DEC 5 2007

FORM APPROVED.
OMB NO. 1004-0137
Expires March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

LEASE DESIGNATION AND SERIAL NO
NM 94651

1a. TYPE OF WELL: ☒ OIL WELL ☐ GAS WELL ☐ DRY ☐ OTHER		6 IF INDIAN, ALLOTTEE OR TRIBE NAME	
b. TYPE OF COMPLETION ☒ NEW WELL ☐ WORK OVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF RESVR. ☐ OTHER		7 UNIT AGREEMENT NAME	
2. NAME OF OPERATOR Pogo Producing Company		8 FARM OR LEASE NAME, WELL NO Vortec 27, Well #2 H	
3. ADDRESS OF OPERATOR P.O. Box 10340, Midland, TX 79702		9 API NO. 30 015 35492	
3A PHONE NO (include area code) 432 685-8100		10. FIELD AND POOL, OR EXPLORATORY E. Pierce Crossing BS	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface 2010' FNL & 380 FEL At top prod. interval reported below " At total depth "		11 SEC., T, R, M. OR BLOCK AND SURVEY OR AREA Sec 27, T24S, R29E	
12 COUNTY OR PARISH Eddy County		13 STATE NM	
14. DATE SPUDDED 8/31/2007	15 DATE T D REACHED 10/09/2007	16 DATE COMPLETED ☐ D & A ☒ READY TO PROD 11/06/2007	17 ELEVATIONS (DF, RKB, RT, GR, ETC.) GR 2919'
18. TOTAL DEPTH, MD & TVD 11,376' MD; 7300' TVD		19. PLUG, BACK T.D.: MD 11,270' TVD	
20 DEPTH BRIDGE PLUG SET MD TVD		21 TYPE ELECTRIC & OTHER MECHANICAL LOGS RUN (SUBMIT COPY OF EACH) GR/CCL/CBL	
22 WAS WELL CORED? WAS DST RUN? DIRECTIONAL SURVEY?		☐ NO ☒ YES (SUBMIT ANALYSIS) ☐ NO ☒ YES (SUBMIT REPORT) ☐ NO ☒ YES (SUBMIT COPY)	

23. CASING AND LINER RECORD (REPORT ALL STRINGS SET IN WELL)

HOLE SIZE	SIZE / GRADE	WT. (#/FT.)	TOP (MD)	BOTTOM (MD)	STAGE CEMENTER DEPTH	NO. OF SKS & TYPE OF CEMENT	SLURRY VOL (BBL)	CEMENT TOP*	AMOUNT PULLED
17 1/2"	13 3/8" J55	48#	0	550'		500 sx C	12.6-14.6	surface	none
12 1/4"	9 5/8" J55	36#	0	2920'		950 sx C	11.8-14.8	surface	none
8 1/2-7 7/8"	5 1/2" J55	17#	0	11,376'		2250 sx C	11.8-15.6	TOC @ 2400'	none

24. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER DEPTH (MD)	SIZE	DEPTH SET (MD)	PACKER DEPTH (MD)	SIZE	DEPTH SET (MD)	PACKER DEPTH (MD)
2 7/8"	7200'							

25. PRODUCING INTERVALS

FORMATION	TOP	BOTTOM	PERFORATED RECORD	SIZE	NO HOLES	PERF STATUS
A) Bone Spring	7981'	11,180'	7981-8275; 8541-8820-8932; 9084-9190-9304-9625-9981;	3 3/8" guns	59 holes	producing
B)			10,240-10,729; 10,901-11,180'			
C)						
D)						

27. ACID, FRACTURE, TREATMENT CEMENT SQUEEZE, Etc.

DEPTH INTERVAL	AMOUNT AND TYPE OF MATERIAL
7981-11,180'	6000 gals 7 1/2% acid

28. PRODUCTION INTERVAL A 7981-11,180'

DATE FIRST PRODUCED	TEST DATE	HOURS TESTED	TEST PRODUCTION	OIL BBL	GAS MCF	WATER BBL	OIL GRAVITY CORR API	GAS GRAVITY	PRODUCTION METHOD
11-6-07	11-10-07	24	→	520	1056	301	40	.850	flowing
CHOKE SIZE	TBG PRESS FLWG. J325	CSG PRESS	24 HR RATE	OIL BBL	GAS MCF	WATER BBL	GAS OIL RATIO	WELL STATUS	
20/64"		2450	→					Producing	

28a. PRODUCTION INTERVAL B

DATE FIRST PRODUCED	TEST DATE	HOURS TESTED	TEST PRODUCTION	OIL BBL	GAS MCF	WATER BBL	OIL GRAVITY CORR API	GAS GRAVITY	PRODUCTION METHOD
			→						
CHOKE SIZE	TBG PRESS. FLWG. SI	CSG. PRESS	24 HR RATE	OIL BBL	GAS MCF	WATER BBL	GAS OIL RATIO	WELL STATUS	
			→						

*(See Instructions and Spaces for Additional Data on Reverse Side)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. AN	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press. Flwg. SI	Csg. Press.	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. APT	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press. Flwg. SI	Csg. Press.	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						

29. Disposition of Gas (Solid, used for fuel, vented, etc)
Vented during test

30. Summary of Porous Zones (Include Aquifers)

Show all important zones of porosity and contents thereof. Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time too open, flowing and shut-in pressures and recoveries

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc	Name	Top
					Meas Depth
				Basal Anhydrite	2760
				Lamar	2997
				Bell Canyon	3024
				Cherry Canyon	3895
				Manz	4025
				Brushy Canyon	5120
				Bone Spring	6740
				1st Bone Spring	7698

32. Additional remarks (include plugging procedure)

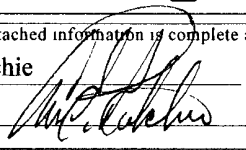
33. Indicate which items have been attached by placing a check in the appropriate boxes

- ☒ Electrical/Mechanical Logs (1 full set req'd)
 ☐ Geologic Report
 ☐ DST Report
 ☐ Directional Survey
 ☐ Sundry Notice for plugging and cement verification
 ☐ Core Analysis
 ☒ Other- Inclination

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) Ann E. Ritchie

Title Regulatory Agent (432) 684-6381

Signature 

Date 12-3-07

Title 18 U S C Section 1001 and Title 43 U S C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

(Continued on page 3)

(Form 3160-4, page 2)

OPERATOR
WELL/LEASE
COUNTY

Pogo Producing Co.
Vortec 27 #2H
Eddy

Rig: 78

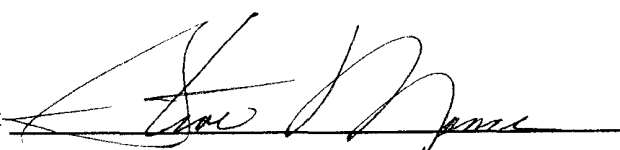
RECEIVED

NOV 05 2007

STATE OF NEW MEXICO
DEVIATION REPORT

MIDLAND

138	0.50
256	1.00
407	3.00
466	3.00
550	3.00
640	2.75
708	3.25
797	2.50
909	2.50
980	1.75
1,144	0.25
1,365	1.75
1,558	1.75
1,717	1.00
1,909	1.00
2,069	1.00
2,228	1.00
2,389	2.00
2,484	1.25
2,580	2.00
2,675	2.00
2,772	1.75
2,867	1.75
3,118	1.75
3,469	1.25
3,789	1.25
4,108	0.75
4,430	1.00
4,748	1.25
5,069	1.50
5,386	1.75
5,705	1.25
5,959	1.50
6,280	1.00
6,600	1.25
6,920	1.50
7,270	4.00

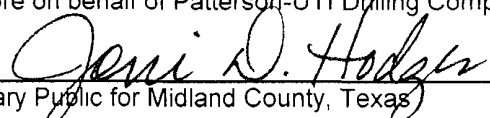
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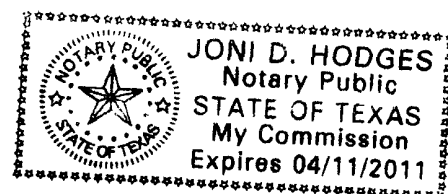
STATE OF TEXAS

COUNTY OF MIDLAND

The foregoing instrument was acknowledged before me on
Moore on behalf of Patterson-UTI Drilling Company LLC

November 2, 2007, by Steve


Notary Public for Midland County, Texas
My Commission Expires: 4/11/11





DIRECTIONAL SURVEY REPORT

POGO PRODUCING

VORTEC 27 #2

EDDY COUNTY, NEW MEXICO

PREPARED BY: CODY MEBANE

Pathfinder Energy Services, Inc.
6213 W. County Road 112 • Midland, TX • 79706
(432)681-6000

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) CHRIS PARSONS
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 09/23/07 TO 10/09/07
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

POGO PRODUCING
VORTEC 27 #2
EDDY COUNTY, NM
RIG: PATTERSON 78

9. SURVEY CERTIFIED FROM: 6874 TO 11304 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 3869.61 FEET ON A BEARING OF 268.09 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 11376 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



CODY MEBANE
M/LWD SERVICE COORDINATOR

PATHFINDER

ENERGY SERVICES

DIRECTIONAL SURVEY INFORMATION

FAXED OCT 12 2007

APPROVED OCT 12 2007

Prepared By: CODY MEBANE

Name of Client: POGO PRODUCING

Attention: _____

☐ Directional Only Job OR ☒ Logging Job

Name(s) of Persons Performing Surveys:

A) CHRIS PARSONS D) _____
B) _____ E) _____
C) _____ F) _____

Positions of Said Persons: Surveyors / Field Engineers: Other _____

Date(s) Survey was Performed: From 23-Sep To 9-Oct

Type of Survey Performed: (Specify if other than MWD) _____

IDENTIFICATION OF WELL:

Client:	<u>Pogo Producing</u>	Rig Name:	<u>Patterson 78</u>
Well No.:	<u>Vortec 27 #2</u>	API No.:	<u>30-015-35492</u>
Location:	<u>Eddy County</u>	Job No.:	<u>101006775-WT-WT</u>
State:	<u>N.M.</u>		

TEXAS RAILROAD COMMISSION INFORMATION:

Field: Pierce Crossing - Bone Spring, East

Abstract No.: _____

Well Plat Survey Co.: _____

Surveys Performed From 6874 Feet TO 11304 Feet

MMS / ASCII / LAS Diskette Filename: _____

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOW THE WELL TO BE DISPLACED AT 3869.61
FEET ON A BEARING OF 268.09 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT
A PROJECTED DEPTH OF 11376 FEET, ARE TRUE AND
CORRECT TO THE BEST OF MY KNOWLEDGE.

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 09/23/2007
Date Completed: 10/09/2007

POGO PRODUCING CO.
VORTEC 27 #2
EDDY COUNTY, NM
Rig:PATTERSON #78
PathFinder Office Supervisor: Cody Mebane
PathFinder Field Engineers:Chris Parsons

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.11.23.9894 N LON:103.57.52.4621 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 614077.8000 Y: 433036.6000
North Aligned To:GRID NORTH
Total Magnetic Correction: 8.00° EAST TO GRID
Vertical Section Plane: 270.35
Survey Vert. Reference: 22.00' Rotary Table To Ground
Altitude:2915.00' Ground To MSL

Measured Depth	11376.00	(feet)
Inclination	91.19	(deg)
Azimuth	269.30	(deg)
True Vertical Depth	7746.48	(feet)
Vertical Section	3866.59	(feet)
Survey X cord	610210.34	(feet)
Survey Y cord	432907.39	(feet)
Survey Lat	32.18967769 N	(deg)
Survey Lon	103.97707566 W	(deg)
Rectangular Corr. N/S	129.21 S	(feet)
Rectangular Corr. E/W	3867.46 W	(feet)
Closure Distance	3869.61	(feet)
Direction of Closure	268.09	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING CO.

VORTEC 27 #2

EDDY COUNTY, NM

Rig: PATTERSON #78

PathFinder Office Supervisor: Cody Mebane

PathFinder Field Engineers: Chris Parsons

Survey Horiz. Reference: WELLHEAD

Ref Coordinates: LAT: 32.11.23.9894 N LON: 103.57.52.4621 W

Reference: NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 614077.8000 Y: 433036.6000

North Aligned To: GRID NORTH

Total Magnetic Correction: 8.00° EAST TO GRID

Vertical Section Plane: 270.35

Survey Vert. Reference: 22.00' Rotary Table To Ground

Altitude: 2915.00' Ground To MSL

Survey Calculations by RX5 V5.11F using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Retangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
TIE INTO SCIENTIFIC GYRO SURVEY @ 6780' MD.										
6780.00	1.02	196.74	6777.70	0.00	52.82	64.16 S	53.21 W	83.35@	219.67	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6874.00	1.58	177.41	6871.68	94.00	52.99	66.26 S	53.39 W	85.09@	218.86	0.75
6971.00	1.58	190.20	6968.64	97.00	53.15	68.91 S	53.57 W	87.28@	217.86	0.36
7066.00	2.02	215.79	7063.59	95.00	54.34	71.56 S	54.78 W	90.12@	217.44	0.95
7162.00	3.96	206.69	7159.46	96.00	56.79	75.89 S	57.26 W	95.07@	217.03	2.07
7260.00	4.22	208.42	7257.21	98.00	59.99	82.08 S	60.49 W	101.97@	216.39	0.29
7289.00	3.96	216.96	7286.14	29.00	61.09	83.82 S	61.60 W	104.03@	216.31	2.28
7321.00	6.51	250.08	7318.01	32.00	63.45	85.32 S	63.98 W	106.64@	216.86	12.05
7353.00	10.99	261.75	7349.63	32.00	68.17	86.38 S	68.70 W	110.37@	218.50	14.99
7385.00	14.60	265.75	7380.83	32.00	75.21	87.12 S	75.75 W	115.44@	221.01	11.61
7418.00	17.59	269.07	7412.53	33.00	84.34	87.51 S	84.88 W	121.91@	224.13	9.48
7450.00	20.22	271.78	7442.81	32.00	94.71	87.41 S	95.24 W	129.28@	227.46	8.66
7482.00	23.04	272.59	7472.55	32.00	106.50	86.96 S	107.03 W	137.90@	230.91	8.86
7514.00	26.38	274.50	7501.62	32.00	119.85	86.12 S	120.38 W	148.01@	234.42	10.73
7546.00	29.99	276.11	7529.82	32.00	134.90	84.71 S	135.42 W	159.73@	237.97	11.53
7578.00	33.68	276.50	7557.00	32.00	151.69	82.85 S	152.20 W	173.29@	241.44	11.55
7610.00	36.93	275.32	7583.11	32.00	170.09	80.96 S	170.59 W	188.82@	244.61	10.38
7642.00	40.01	273.54	7608.16	32.00	189.94	79.43 S	190.43 W	206.33@	247.36	10.23
7674.00	43.44	271.98	7632.04	32.00	211.22	78.41 S	211.70 W	225.76@	249.68	11.20
7705.00	47.31	271.11	7653.81	31.00	233.27	77.82 S	233.75 W	246.37@	251.59	12.64
7737.00	51.70	270.66	7674.59	32.00	257.60	77.45 S	258.08 W	269.45@	253.30	13.76
7769.00	56.01	270.50	7693.46	32.00	283.44	77.19 S	283.91 W	294.22@	254.79	13.48
7801.00	60.15	270.32	7710.38	32.00	310.59	77.00 S	311.07 W	320.45@	256.10	12.95

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING CO.
VORTEC 27 #2
EDDY COUNTY, NM
RIG:PATTERSON #78

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Retangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
7832.00	63.31	270.81	7725.06	31.00	337.89	76.73 S	338.36 W	346.95@	257.22	10.29
7863.00	66.21	270.69	7738.27	31.00	365.93	76.36 S	366.40 W	374.27@	258.23	9.36
7895.00	69.03	269.74	7750.46	32.00	395.51	76.25 S	395.99 W	403.26@	259.10	9.23
7927.00	70.79	269.51	7761.45	32.00	425.56	76.45 S	426.04 W	432.84@	259.83	5.54
7959.00	73.78	269.27	7771.18	32.00	456.04	76.77 S	456.51 W	462.92@	260.45	9.37
7991.00	75.45	269.39	7779.67	32.00	486.88	77.13 S	487.36 W	493.43@	261.01	5.23
8023.00	78.52	269.94	7786.88	32.00	518.06	77.32 S	518.54 W	524.27@	261.52	9.74
8055.00	82.92	270.17	7792.04	32.00	549.63	77.28 S	550.11 W	555.51@	262.00	13.77
8087.00	85.82	270.94	7795.18	32.00	581.47	76.98 S	581.95 W	587.02@	262.47	9.37
8119.00	86.88	270.72	7797.21	32.00	613.40	76.51 S	613.88 W	618.63@	262.90	3.38
8173.00	90.13	272.81	7798.62	54.00	667.36	74.85 S	667.83 W	672.01@	263.61	7.15
8205.00	90.22	272.81	7798.52	32.00	699.33	73.28 S	699.79 W	703.62@	264.02	0.28
8237.00	90.22	272.55	7798.40	32.00	731.30	71.78 S	731.75 W	735.27@	264.40	0.81
8301.00	89.87	272.64	7798.35	64.00	795.25	68.89 S	795.69 W	798.67@	265.05	0.56
8333.00	89.87	271.58	7798.42	32.00	827.24	67.71 S	827.67 W	830.43@	265.32	3.31
8396.00	90.13	270.00	7798.42	63.00	890.23	66.84 S	890.66 W	893.16@	265.71	2.54
8428.00	91.01	269.74	7798.11	32.00	922.23	66.91 S	922.66 W	925.08@	265.85	2.87
8460.00	91.10	270.00	7797.52	32.00	954.22	66.99 S	954.65 W	957.00@	265.99	0.86
8524.00	91.54	270.27	7796.04	64.00	1018.21	66.83 S	1018.63 W	1020.82@	266.25	0.81
8588.00	91.36	269.12	7794.42	64.00	1082.18	67.18 S	1082.61 W	1084.69@	266.45	1.82
8652.00	91.01	269.12	7793.10	64.00	1146.15	68.16 S	1146.59 W	1148.61@	266.60	0.55
8716.00	91.01	268.95	7791.97	64.00	1210.12	69.24 S	1210.57 W	1212.55@	266.73	0.27
8780.00	91.54	269.12	7790.55	64.00	1274.09	70.31 S	1274.55 W	1276.48@	266.84	0.87
8844.00	91.54	269.04	7788.83	64.00	1338.05	71.34 S	1338.51 W	1340.41@	266.95	0.13
8908.00	91.98	269.04	7786.86	64.00	1402.01	72.41 S	1402.48 W	1404.34@	267.04	0.69
8940.00	92.07	268.77	7785.73	32.00	1433.98	73.02 S	1434.45 W	1436.31@	267.09	0.89
9004.00	92.77	268.60	7783.03	64.00	1497.89	74.49 S	1498.37 W	1500.23@	267.15	1.12
9068.00	92.68	267.98	7779.99	64.00	1561.78	76.40 S	1562.27 W	1564.14@	267.20	0.98
9132.00	92.42	267.54	7777.14	64.00	1625.65	78.90 S	1626.16 W	1628.07@	267.22	0.80
9228.00	94.26	267.80	7771.55	96.00	1721.38	82.79 S	1721.91 W	1723.90@	267.25	1.93

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING CO.
VORTEC 27 #2
EDDY COUNTY, NM
RIG:PATTERSON #78

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Retangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
9285.00	96.02	268.68	7766.44	57.00	1778.11	84.54 S	1778.66 W	1780.66@	267.28	3.45
9325.00	96.99	268.35	7761.91	40.00	1817.83	85.57 S	1818.38 W	1820.40@	267.31	2.56
9356.00	96.55	268.60	7758.25	31.00	1848.59	86.39 S	1849.16 W	1851.17@	267.33	1.63
9388.00	95.58	270.01	7754.87	32.00	1880.41	86.77 S	1880.97 W	1882.98@	267.36	5.33
9420.00	94.62	271.46	7752.03	32.00	1912.28	86.36 S	1912.84 W	1914.79@	267.41	5.42
9452.00	94.09	271.39	7749.60	32.00	1944.18	85.57 S	1944.74 W	1946.62@	267.48	1.67
9484.00	93.65	271.20	7747.44	32.00	1976.11	84.85 S	1976.66 W	1978.48@	267.54	1.50
9516.00	93.12	270.80	7745.55	32.00	2008.05	84.29 S	2008.60 W	2010.37@	267.60	2.07
9548.00	91.89	270.04	7744.15	32.00	2040.02	84.06 S	2040.57 W	2042.30@	267.64	4.52
9579.00	91.36	270.05	7743.27	31.00	2071.00	84.03 S	2071.55 W	2073.26@	267.68	1.71
9643.00	91.80	270.03	7741.51	64.00	2134.98	83.99 S	2135.53 W	2137.18@	267.75	0.69
9707.00	91.71	268.92	7739.55	64.00	2198.94	84.57 S	2199.50 W	2201.12@	267.80	1.74
9803.00	90.31	268.40	7737.85	96.00	2294.88	86.82 S	2295.45 W	2297.09@	267.83	1.56
9866.00	91.10	267.80	7737.08	63.00	2357.83	88.91 S	2358.41 W	2360.09@	267.84	1.58
9899.00	90.48	267.01	7736.62	33.00	2390.78	90.40 S	2391.37 W	2393.08@	267.84	3.04
9931.00	90.22	267.10	7736.43	32.00	2422.72	92.05 S	2423.33 W	2425.08@	267.82	0.86
9963.00	89.78	267.36	7736.43	32.00	2454.68	93.59 S	2455.29 W	2457.08@	267.82	1.60
10028.00	89.96	267.28	7736.58	65.00	2519.59	96.63 S	2520.22 W	2522.08@	267.80	0.30
10091.00	89.87	267.45	7736.67	63.00	2582.50	99.53 S	2583.16 W	2585.07@	267.79	0.31
10155.00	89.78	267.45	7736.86	64.00	2646.42	102.37 S	2647.09 W	2649.07@	267.79	0.14
10188.00	89.43	267.45	7737.09	33.00	2679.38	103.84 S	2680.06 W	2682.07@	267.78	1.06
10220.00	88.20	267.54	7737.75	32.00	2711.33	105.24 S	2712.02 W	2714.06@	267.78	3.85
10283.00	87.14	269.12	7740.31	63.00	2774.23	107.08 S	2774.94 W	2777.00@	267.79	3.02
10380.00	87.85	269.39	7744.55	97.00	2871.12	108.34 S	2871.84 W	2873.88@	267.84	0.78
10444.00	87.93	270.09	7746.91	64.00	2935.07	108.63 S	2935.79 W	2937.80@	267.88	1.10
10476.00	89.52	269.91	7747.62	32.00	2967.07	108.63 S	2967.78 W	2969.77@	267.90	5.00
10539.00	90.48	270.00	7747.62	63.00	3030.06	108.68 S	3030.78 W	3032.73@	267.95	1.53
10634.00	90.66	268.86	7746.68	95.00	3125.04	109.62 S	3125.77 W	3127.69@	267.99	1.22
10698.00	88.99	268.42	7746.87	64.00	3189.01	111.14 S	3189.75 W	3191.69@	268.00	2.70
10762.00	89.52	268.33	7747.71	64.00	3252.97	112.95 S	3253.72 W	3255.68@	268.01	0.84

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING CO.
VORTEC 27 #2
EDDY COUNTY, NM
RIG:PATTERSON #78

Page 04/04

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Retangular Offsets		Closure Dist Dir		DLS (dg/100ft)
						(ft)	(ft)	(ft)	(deg)	
10857.00	89.78	268.68	7748.29	95.00	3347.92	115.43 S	3348.69 W	3350.68@	268.03	0.46
10953.00	89.69	268.60	7748.73	96.00	3443.87	117.71 S	3444.66 W	3446.67@	268.04	0.13
11049.00	89.78	267.72	7749.17	96.00	3539.80	120.79 S	3540.61 W	3542.67@	268.05	0.92
11145.00	89.96	267.89	7749.39	96.00	3635.71	124.47 S	3636.54 W	3638.67@	268.04	0.26
11241.00	90.57	268.77	7748.95	96.00	3731.65	127.27 S	3732.49 W	3734.66@	268.05	1.12
11304.00	91.19	269.30	7747.98	63.00	3794.62	128.33 S	3795.48 W	3797.64@	268.06	1.29
STRAIGHT LINE PROJECTION TO BIT @ 11376' MD.										
11376.00	91.19	269.30	7746.48	72.00	3866.59	129.21 S	3867.46 W	3869.61@	268.09	0.00

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

POGO PRODUCING COMPANY
VORTEC 27 # 2
EDDY Co., NEW MEXICO
Rig:PATTERSON 78

Mon Sep 17 14:18:37 2007

Coordinates

Latitude: 32.189997 N (32 deg. 11 min. 23.9894 sec.)
Longitude: 103.964573 W (-103 deg. 57 min. 52.4621 sec.)
Elevation: 2932.00 feet.
Calculation Date: Sep/13/2007

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.1864 degrees
Total Magnetic Field: 0.48974 gauss
Magnetic Declination: 8.198805 degrees
Horizontal Intensity: 0.243487 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.198805 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 614077.8000 feet
Y: 433036.6000 feet
True to Grid: (convergence) -0.196451 degrees
Magnetic to Grid: 8.002354 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 8.002354 Degr.

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	Pogo Producing		
LEASE / WELL No.:	E. Pierce Crossing Bone Spring	Vortec 27 #2	
WELL LOCATION:	Eddy County, New Mexico		
COUNTY / STATE / COUNTRY:	Eddy	N.M.	U.S.A.
RIG:	Patterson 78		
API WELL No:	30-015-35492		
JOB No:	101006775-WT-WT		
P.O. / AFE No.	541917		
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

MAGNETIC DECLINATION:			
On Wall Plat:	8	LWD Calculated:	8
		Agreed Upon:	8
X =	614077.800000	Feet	Y = 433036.600000
			Feet
SITE LATITUDE:	32.189997	SITE LONGITUDE:	103.964573
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	270.35		
KELLY BUSHING ELEVATION:	22'		
ALTITUDE:	2932	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	6780
DRIFT ANGLE:	1.02
DRIFT DIRECTION:	196.74
TRUE VERTICAL DEPTH:	6777.7
VERTICAL SECTION:	52.82
RECTANGULAR COORDINATE (N / S) :	-6416
RECTANGULAR COORDINATE (E / W) :	-5321
CLOSURE DISTANCE / DIRECTION:	
SURVEY CALCULATION METHOD:	AA ☐ MC ☒ RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO

WELL PLAN

KICKOFF DEPTH:	TOTAL DEPTH:
KICKOFF ANGLE:	MAX ANGLE:

PES Engineers: CHRIS PARSONS

**Signature of both field engineers required if applicable

Directional Driller: P.A. GONZALEZ

DATE: 23-Sep-2007



MAGNETIC DECLINATION / TOOLFACE OFFSET WORKSHEET

Client:	Pogo Producing	LWD Run No:	1
Well:	E. Pierce Crossing Bone Spring Vortec 27 #2	DTA No:	
Location:	Eddy County, New Mexico	HDAS No:	5745
Rig:	Patterson 78	TrkrElec No:	
Job No:	101006775-WT-WT		

Magnetic Declination:

GRID SYSTEM USED: TRUE ☐ UTM ☐ LAMBERT ☐ ZONE: New Mexico East

X = 614077.8 ft Y = 433036.6 ft

SITE LATITUDE: 32.189997 N SITE LONGITUDE: 103.964573 W

Magnetic Declination:

On Wall Plat: 8

LWD Calculated: 8.002354

Directional Driller Approval: P.A. GONZALEZ

LWD Engineers Approval: CHRIS PARSONS

Supervisor Approval:

Agreed Upon: 8

ToolFace Offset Calculation:

- 1: Ensure all connections between M/LWD are torqued correctly.
- 2: Estimate toolface offset.
- 3: Measure the distance from the M/LWD scribe line to the motor scribe line in a clockwise direction looking down hole.
- 4: Measure the circumference of the tool.
- 5: Calculate Tool Face Offset using.

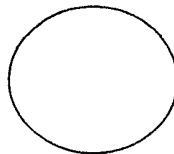
$$\text{TOOL FACE OFFSET} = \frac{\text{Distance from M/LWD to Motor}}{\text{Circumference}} \times 360^\circ$$

ToolFace Offset Using Protractor:

- 1: Hook protractor onto the M/LWD tool.
- 2: Read Tool Face Offset from top of protractor where the motor scribe line intersects protractor.
- 3: If motor scribe line does not intersect protractor flip protractor over and repeat steps 1 and 2.

Distance from M/LWD to Motor: 0

Circumference: 0



V- Door

OTF Estimate: 0

OTF Calculated: 0

OTF Protractor: 0

Offset Tool Face Used = 0

M/LWD Engineer #1: CHRIS PARSONS

M/LWD Engineer #2:

Directional Driller: P.A. GONZALEZ

DISTRICT I

1625 N. FRENCH DR., BOBBS, NM 86240

State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NM 88210

OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

DISTRICT III

1000 Rio Brazos Rd., Artec, NM 87410

DISTRICT IV

1620 S. ST. FRANCIS DR., SANTA FE, NM 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 96473	Pool Name PIERCE CROSSING-BONE SPRING, East
Property Code	Property Name VORTEC 27	Well Number 2
OGRID No. 017891	Operator Name POGO PRODUCING COMPANY	Elevation 2915'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	27	24-S	29-E		2010	NORTH	380	EAST	EDDY

Bottom Hole Location If Different From Surface

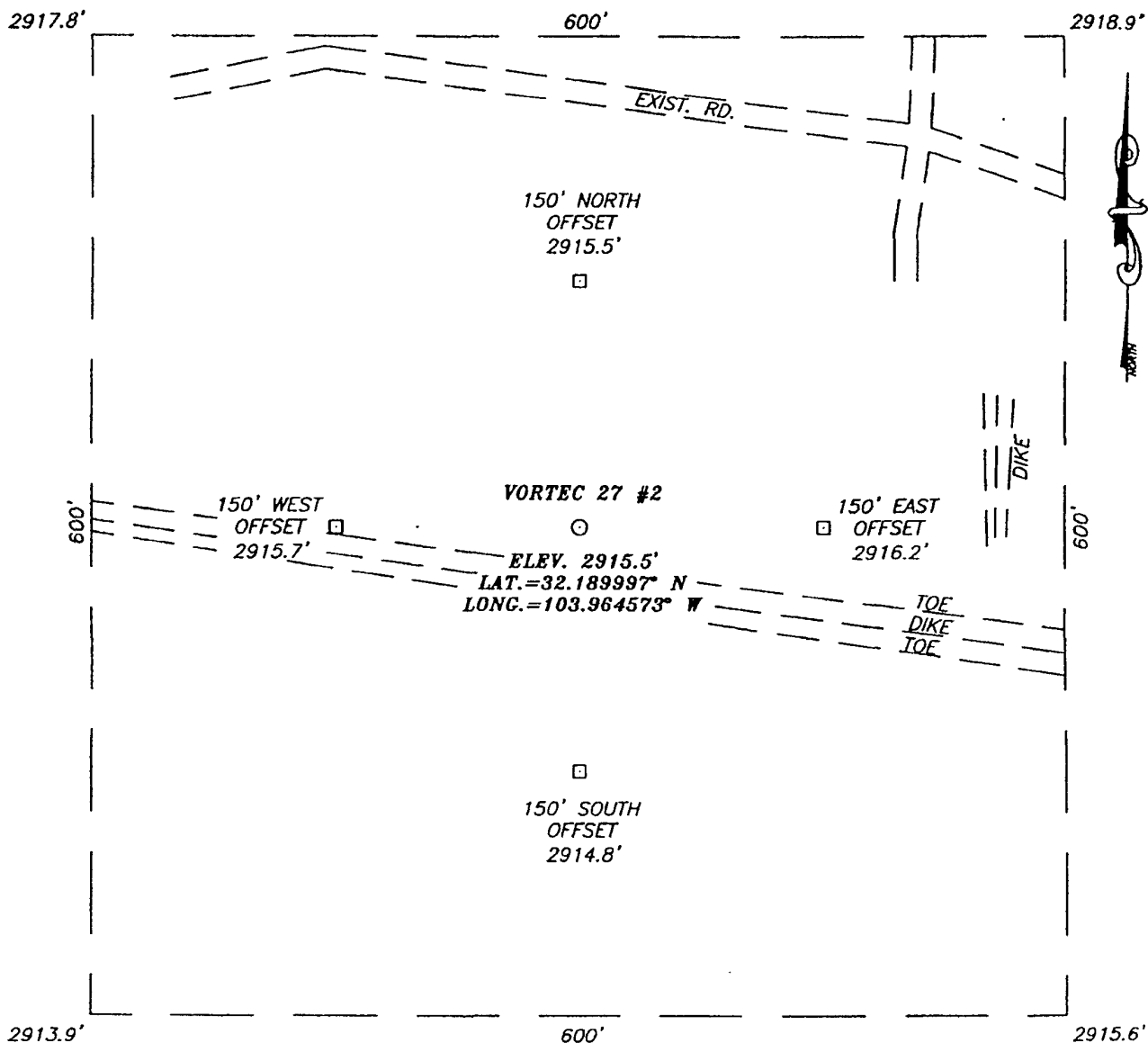
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	27	24-S	29-E		1980	NORTH	660	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

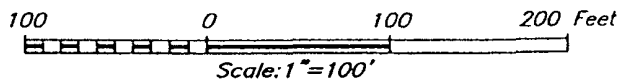
	OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Joe T. Janica</i> Signature Date 03/17/07 Joe T. Janica Printed Name Agent SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. FEBRUARY 8, 2007 Date Surveyed REV. MARCH 16, 2007 AR Signature & Seal of Professional Surveyor: <i>Ronald E. Edson</i> 03/16/07 07.13.0361 Certificate No. GARY EDMON 12641 RONALD E. EDMON 3239
--	--

SECTION 27, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CO. RD. #746
 (MCDONALD RD.) AND CO. RD. #788A (SPURR),
 GO EAST ON MCDONALD RD. APPROX. 2.5 MILES.
 TURN RIGHT AND GO EAST APPROX. 0.9 MILES.
 THIS LOCATION IS APPROX. 250 FEET SOUTH.



PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (505) 393-3117

POGO PRODUCING COMPANY

VORTEC 27 #2
 LOCATED 2010 FEET FROM THE NORTH LINE
 AND 380 FEET FROM THE EAST LINE OF SECTION 27,
 TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO.

Survey Date: 02/08/07	Sheet 1 of 1 Sheets
W.O. Number: 07.11.0155	Dr By: AR
Date: 02/14/07	Disk: 07110155
	Scale: 1"=100'

Pathfinder Energy

Survey Report

Company: Pogo Field: Vortec 27 Site: Vortec 27 #2 Well: Vortec 27 #2 Wellpath: OH	Date: 10/11/2007 Time: 16:31:11 Page: 1 Co-ordinate(NE) Reference: Site: Vortec 27 #2, Grid North Vertical (TVD) Reference: SITE 2936.0 Section (VS) Reference: Well (0.00N,0.00E,270.35Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
--	--

Field: Vortec 27

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone
Coordinate System: Site Centre
Geomagnetic Model: igrf2005

Site: Vortec 27 #2

Site Position:	Northing: 433036.60 ft	Latitude: 32 11 23.989 N	
From: Map	Easting: 614077.80 ft	Longitude: 103 57 52.462 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 2915.00 ft		Grid Convergence: 0.20 deg	

Well: Vortec 27 #2

Slot Name:

Well Position:	+N/-S 0.00 ft	Northing: 433036.60 ft	Latitude: 32 11 23.989 N
	+E/-W 0.00 ft	Easting: 614077.80 ft	Longitude: 103 57 52.462 W
Position Uncertainty: 0.00 ft			

Wellpath: OH

Current Datum: SITE	Height: 2936.00 ft	Drilled From: Surface	
Magnetic Data: 09/17/2007		Tie-on Depth: 0.00 ft	
Field Strength: 48973 nT		Above System Datum: Mean Sea Level	
Vertical Section: Depth From (TVD)		Declination: 8.20 deg	
ft	+N/-S ft	Mag Dip Angle: 60.19 deg	
		+E/-W ft	Direction deg
0.00	0.00	0.00	270.35

Survey: Pathfinder MWD

Start Date: 09/24/2007

Company: Pathfinder Energy
Tool:

Engineer:
Tied-to: From: Definitive Path

Survey: Pathfinder MWD

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
6780.00	1.02	196.74	6777.71	-64.15	-53.16	52.76	0.00	0.00	0.00	
6874.00	1.58	177.41	6871.68	-66.25	-53.34	52.93	0.75	0.60	-20.56	
6971.00	1.58	190.20	6968.64	-68.90	-53.51	53.09	0.36	0.00	13.19	
7066.00	2.02	215.79	7063.60	-71.55	-54.73	54.29	0.95	0.46	26.94	
7162.00	3.96	206.69	7159.46	-75.88	-57.20	56.74	2.07	2.02	-9.48	
7260.00	4.22	208.42	7257.21	-82.07	-60.44	59.94	0.29	0.27	1.77	
7289.00	3.96	216.96	7286.14	-83.81	-61.55	61.04	2.28	-0.90	29.45	
7300.00	4.64	232.24	7297.11	-84.39	-62.13	61.61	12.05	6.16	138.90	KOP @ 7300' MD/TVD, Begin
7321.00	6.51	250.08	7318.01	-85.31	-63.92	63.40	12.05	8.91	84.96	
7353.00	10.99	261.75	7349.63	-86.37	-68.65	68.12	14.99	14.00	36.47	
7385.00	14.60	265.75	7380.83	-87.11	-75.69	75.16	11.61	11.28	12.50	
7418.00	17.59	269.07	7412.54	-87.50	-84.83	84.29	9.48	9.06	10.06	
7450.00	20.22	271.78	7442.81	-87.40	-95.19	94.65	8.66	8.22	8.47	
7482.00	23.04	272.59	7472.55	-86.95	-106.98	106.44	8.86	8.81	2.53	
7514.00	26.38	274.50	7501.62	-86.11	-120.32	119.79	10.73	10.44	5.97	
7546.00	29.99	276.11	7529.82	-84.70	-135.37	134.85	11.53	11.28	5.03	
7578.00	33.68	276.50	7557.00	-82.84	-152.14	151.63	11.55	11.53	1.22	
7610.00	36.93	275.32	7583.11	-80.95	-170.53	170.04	10.38	10.16	-3.69	
7642.00	40.01	273.54	7608.17	-79.42	-190.38	189.89	10.23	9.62	-5.56	
7674.00	43.44	271.98	7632.05	-78.40	-211.65	211.16	11.20	10.72	-4.87	
7705.00	47.31	271.11	7653.82	-77.81	-233.70	233.22	12.64	12.48	-2.81	
7737.00	51.70	270.66	7674.59	-77.44	-258.02	257.55	13.76	13.72	-1.41	
7769.00	56.01	270.50	7693.46	-77.18	-283.86	283.38	13.47	13.47	-0.50	
7801.00	60.15	270.32	7710.38	-76.99	-311.01	310.54	12.95	12.94	-0.56	

Pathfinder Energy

Survey Report

Company: Pogo
Field: Vortec 27
Site: Vortec 27 #2
Well: Vortec 27 #2
Wellpath: OH

Date: 10/11/2007 Time: 16:31:11 Page: 2
Co-ordinate(NE) Reference: Site: Vortec 27 #2, Grid North
Vertical (TVD) Reference: SITE 2936.0
Section (VS) Reference: Well (0.00N,0.00E,270.35Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Pathfinder MWD

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
7832.00	63.31	270.81	7725.06	-76.72	-338.31	337.83	10.29	10.19	1.58	
7843.20	64.36	270.77	7730.00	-76.58	-348.36	347.89	9.36	9.35	-0.39	PBHL 2
7863.00	66.21	270.69	7738.28	-76.35	-366.35	365.87	9.36	9.35	-0.38	
7895.00	69.03	269.74	7750.46	-76.24	-395.93	395.46	9.23	8.81	-2.97	
7922.61	70.55	269.54	7760.00	-76.40	-421.84	421.37	5.54	5.50	-0.72	PBHL
7927.00	70.79	269.51	7761.45	-76.44	-425.98	425.51	5.54	5.50	-0.71	
7959.00	73.78	269.27	7771.19	-76.76	-456.46	455.98	9.37	9.34	-0.75	
7991.00	75.45	269.39	7779.68	-77.12	-487.31	486.83	5.23	5.22	0.37	
8023.00	78.52	269.94	7786.88	-77.31	-518.48	518.00	9.74	9.59	1.72	
8055.00	82.92	270.17	7792.04	-77.28	-550.06	549.57	13.77	13.75	0.72	
8087.00	85.82	270.94	7795.18	-76.97	-581.90	581.41	9.37	9.06	2.41	
8101.41	86.30	270.84	7796.17	-76.74	-596.27	595.79	3.38	3.31	-0.69	EOC @ 8101' MD, 7800' TVD
8119.00	86.88	270.72	7797.22	-76.50	-613.83	613.35	3.38	3.31	-0.69	
8132.83	87.71	271.26	7797.87	-76.27	-627.64	627.16	7.15	6.02	3.88	EOB @ 8133' MD, 90.63° IN
8173.00	90.13	272.81	7798.63	-74.84	-667.77	667.30	7.15	6.02	3.87	
8205.00	90.22	272.81	7798.53	-73.27	-699.74	699.27	0.28	0.28	0.00	
8237.00	90.22	272.55	7798.41	-71.78	-731.70	731.25	0.81	0.00	-0.81	
8301.00	89.87	272.64	7798.36	-68.88	-795.63	795.20	0.56	-0.55	0.14	
8333.00	89.87	271.58	7798.43	-67.70	-827.61	827.18	3.31	0.00	-3.31	
8396.00	90.13	270.00	7798.43	-66.83	-890.60	890.18	2.54	0.41	-2.51	
8428.00	91.01	269.74	7798.11	-66.90	-922.60	922.18	2.87	2.75	-0.81	
8460.00	91.10	270.00	7797.52	-66.98	-954.60	954.17	0.86	0.28	0.81	
8524.00	91.54	270.27	7796.05	-66.83	-1018.58	1018.15	0.81	0.69	0.42	
8588.00	91.36	269.12	7794.43	-67.17	-1082.56	1082.13	1.82	-0.28	-1.80	
8652.00	91.01	269.12	7793.10	-68.15	-1146.54	1146.10	0.55	-0.55	0.00	
8716.00	91.01	268.95	7791.98	-69.23	-1210.52	1210.07	0.27	0.00	-0.27	
8780.00	91.54	269.12	7790.55	-70.30	-1274.49	1274.04	0.87	0.83	0.27	
8844.00	91.54	269.04	7788.83	-71.33	-1338.46	1338.00	0.12	0.00	-0.12	
8908.00	91.98	269.04	7786.87	-72.40	-1402.42	1401.95	0.69	0.69	0.00	
8940.00	92.07	268.77	7785.74	-73.01	-1434.39	1433.92	0.89	0.28	-0.84	
9004.00	92.77	268.60	7783.03	-74.48	-1498.32	1497.84	1.13	1.09	-0.27	
9068.00	92.68	267.98	7779.99	-76.39	-1562.22	1561.72	0.98	-0.14	-0.97	
9132.00	92.42	267.54	7777.14	-78.89	-1626.11	1625.59	0.80	-0.41	-0.69	
9210.00	93.92	267.75	7772.83	-82.09	-1703.92	1703.38	1.94	1.92	0.27	Begin Build @ 9210' MD, 3
9228.00	94.26	267.80	7771.55	-82.78	-1721.86	1721.32	1.94	1.92	0.27	
9285.00	96.02	268.68	7766.44	-84.53	-1778.60	1778.05	3.45	3.09	1.54	
9325.00	96.99	268.35	7761.91	-85.56	-1818.33	1817.77	2.56	2.42	-0.82	
9339.27	96.79	268.47	7760.20	-85.95	-1832.49	1831.93	1.63	-1.42	0.81	EOB @ 9339' MD, 94° INC,
9356.00	96.55	268.60	7758.26	-86.38	-1849.10	1848.54	1.63	-1.42	0.81	
9388.00	95.58	270.01	7754.88	-86.76	-1880.92	1880.35	5.33	-3.03	4.41	
9420.00	94.62	271.46	7752.03	-86.35	-1912.79	1912.22	5.42	-3.00	4.53	
9452.00	94.09	271.39	7749.60	-85.56	-1944.69	1944.13	1.67	-1.66	-0.22	
9484.00	93.65	271.20	7747.44	-84.84	-1976.61	1976.05	1.50	-1.37	-0.59	
9489.27	93.56	271.13	7747.11	-84.73	-1981.86	1981.31	2.07	-1.66	-1.25	EOH @ 9489' MD, Begin Dro
9516.00	93.12	270.80	7745.55	-84.28	-2008.55	2007.99	2.07	-1.66	-1.25	
9548.00	91.89	270.04	7744.15	-84.05	-2040.51	2039.96	4.52	-3.84	-2.37	
9579.00	91.36	270.05	7743.28	-84.02	-2071.50	2070.95	1.71	-1.71	0.03	
9601.60	91.52	270.04	7742.71	-84.01	-2094.09	2093.54	0.69	0.69	-0.03	EOD @ 9602' MD, 90.63° IN
9643.00	91.80	270.03	7741.51	-83.98	-2135.48	2134.92	0.69	0.69	-0.03	
9707.00	91.71	268.92	7739.55	-84.56	-2199.44	2198.88	1.74	-0.14	-1.73	
9803.00	90.31	268.40	7737.86	-86.81	-2295.40	2294.82	1.56	-1.46	-0.54	
9866.00	91.10	267.80	7737.08	-88.90	-2358.36	2357.77	1.57	1.25	-0.95	
9899.00	90.48	267.01	7736.63	-90.39	-2391.32	2390.72	3.04	-1.88	-2.39	

Pathfinder Energy

Survey Report

Company: Pogo Field: Vortec 27 Site: Vortec 27 #2 Well: Vortec 27 #2 Wellpath: OH	Date: 10/11/2007 Time: 16:31:11 Page: 3 Co-ordinate(NE) Reference: Site: Vortec 27 #2, Grid North Vertical (TVD) Reference: SITE 2936.0 Section (VS) Reference: Well (0.00N,0.00E,270.35Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
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Survey: Pathfinder MWD

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
9931.00	90.22	267.10	7736.43	-92.04	-2423.28	2422.67	0.86	-0.81	0.28	
9963.00	89.78	267.36	7736.43	-93.58	-2455.24	2454.62	1.60	-1.37	0.81	
10028.00	89.96	267.28	7736.58	-96.62	-2520.17	2519.53	0.30	0.28	-0.12	
10091.00	89.87	267.45	7736.67	-99.52	-2583.10	2582.44	0.31	-0.14	0.27	
10155.00	89.79	267.45	7736.86	-102.37	-2647.04	2646.36	0.12	-0.12	0.00	
10188.00	89.43	267.45	7737.09	-103.83	-2680.01	2679.32	1.09	-1.09	0.00	
10220.00	88.20	267.54	7737.75	-105.23	-2711.97	2711.27	3.85	-3.84	0.28	
10283.00	87.14	269.12	7740.31	-107.07	-2774.89	2774.18	3.02	-1.68	2.51	
10380.00	87.85	269.39	7744.55	-108.33	-2871.78	2871.07	0.78	0.73	0.28	
10444.00	87.93	270.09	7746.91	-108.62	-2935.74	2935.02	1.10	0.12	1.09	
10476.00	89.52	269.91	7747.62	-108.62	-2967.73	2967.01	5.00	4.97	-0.56	
10539.00	90.48	270.00	7747.62	-108.67	-3030.73	3030.01	1.53	1.52	0.14	
10634.00	90.66	268.86	7746.67	-109.61	-3125.72	3124.99	1.21	0.19	-1.20	
10698.00	88.99	268.42	7746.87	-111.13	-3189.70	3188.96	2.70	-2.61	-0.69	
10762.00	89.52	268.33	7747.70	-112.95	-3253.67	3252.91	0.84	0.83	-0.14	
10857.00	89.78	268.68	7748.28	-115.42	-3348.63	3347.86	0.46	0.27	0.37	
10953.00	89.69	268.60	7748.73	-117.70	-3444.60	3443.82	0.13	-0.09	-0.08	
11049.00	89.78	267.72	7749.17	-120.78	-3540.55	3539.75	0.92	0.09	-0.92	
11145.00	89.96	267.89	7749.39	-124.46	-3636.48	3635.65	0.26	0.19	0.18	
11241.00	90.57	268.77	7748.94	-127.26	-3732.44	3731.59	1.12	0.64	0.92	
11304.00	91.19	269.30	7747.98	-128.32	-3795.42	3794.56	1.29	0.98	0.84	Final MWD Survey @ 11304'
11376.00	91.19	269.30	7746.48	-129.20	-3867.40	3866.54	0.00	0.00	0.00	Proj. to Bit @ 11376' MD

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	Latitude			Longitude		
								Deg	Min	Sec	Deg	Min	Sec
PBHL 2			7730.00	26.00	-4243.60	433062.60	609834.20	32	11	24.388 N	103	58	41.844 W
PBHL			7760.00	26.00	-4243.60	433062.60	609834.20	32	11	24.388 N	103	58	41.844 W

Annotation

MD ft	TVD ft	
7300.00	7297.11	KOP @ 7300' MD/TVD, Begin Build @ 11 35°/100'
8101.41	7796.17	EOC @ 8101' MD, 7800' TVD, Begin Build @ 2°/100'
8132.83	7797.87	EOB @ 8133' MD, 90.63° INC, Hold to TD
9210.00	7772.83	Begin Build @ 9210' MD, 3°/100'
9339.27	7760.20	EOB @ 9339' MD, 94° INC, Begin Hold
9489.27	7747.11	EOH @ 9489' MD, Begin Drop @ 3°/100'
9601.60	7742.71	EOD @ 9602' MD, 90.63° INC, Hold to TD
11304.00	7747.98	Final MWD Survey @ 11304' MD
11376.00	7746.48	Proj. to Bit @ 11376' MD

1881' FNL & 1033 FWC



**POGO PRODUCING
COMPANY**

COMPANY DETAILS

Pogo

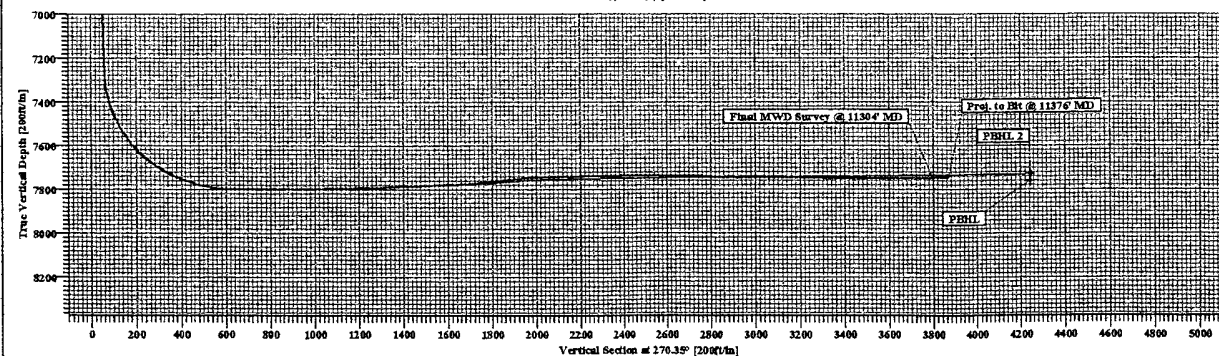
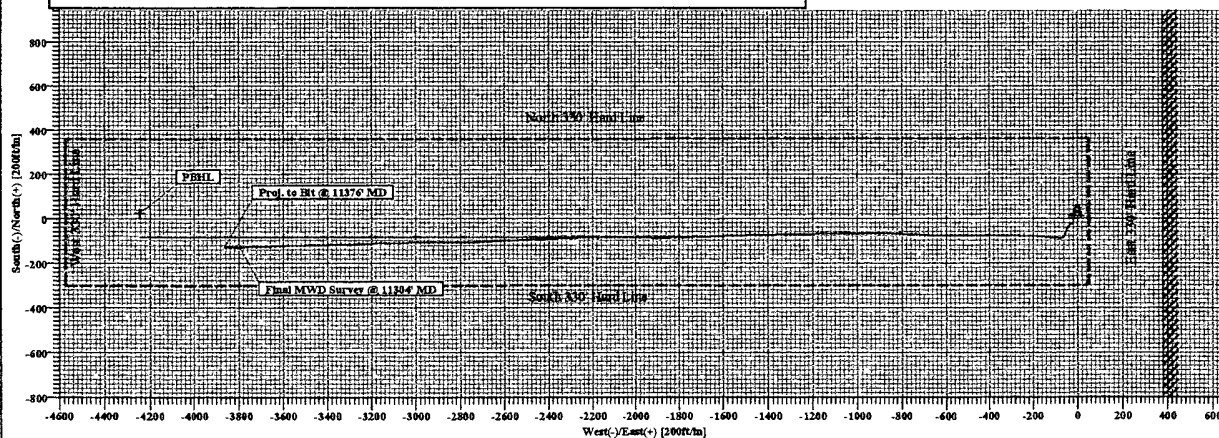
Calculation Method: Minimum Curvature
Error System: Systematic Ellipse
Scan Method: Closest Approach 3D
Error Surface: Elliptical Cone
Warning Method: Error Ratio

PATHFINDER

Field: Vortec 27
Site: Vortec 27 #2
Well: Vortec 27 #2
Wellpath: OH
Survey: Pathfinder MWD

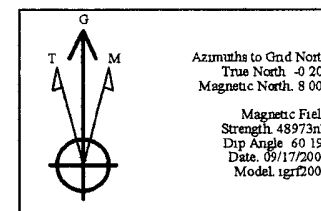
Survey Pathfinder MWD (Vortec 27 #2/OH)

No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
83	10762.00	89.52	268.33	7747.70	-112.95	-3253.67	0.84	-9.64	3252.91
84	10857.00	89.78	268.68	7748.28	-115.42	-3348.63	0.46	53.39	3347.86
85	10953.00	89.69	268.60	7748.73	-117.70	-3444.60	0.13	-138.37	3443.82
86	11049.00	89.78	267.72	7749.17	-120.78	-3540.55	0.92	-84.16	3539.75
87	11145.00	89.96	267.89	7749.39	-124.46	-3636.48	0.26	43.36	3635.65
88	11241.00	90.57	268.77	7748.94	-127.26	-3732.44	1.12	55.27	3731.59
89	11304.00	91.19	269.30	7747.98	-128.32	-3795.42	1.29	40.52	3794.56
90	11376.00	91.19	269.30	7746.48	-129.20	-3867.40	0.00	0.00	3866.54



WELL DETAILS

Name	+N/-S	+E/-W	Northng	Easting	Latitude	Longitude	Slot
Vortec 27 #2	0.00	0.00	433036.60	614077.80	32°11'23.989N	103°57'52.462W	N/A



SITE DETAILS

Vortec 27 #2

Site Centre Northng: 433036.60
Easting: 614077.80

Ground Level: 2915.00
Positional Uncertainty: 0.00
Convergence: 0.20

FIELD DETAILS

Vortec 27

Geodetic System: US State Plane Coordinates System 1927
Ellipsoid: NAD27 (Clarke 1866)
Zone: New Mexico, Eastern Zone
Magnetic Model: igrf2005

System Datum: Mean Sea Level
Local North: Grid North

ANNOTATIONS

No	TVD	MD	Annotation
1	7297.11	7300.00	KOP @ 7300' MD/TVD, Begin Build @ 11.35°/100'
2	7796.17	8101.41	EOC @ 8101' MD, 7800' TVD, Begin Build @ 2°/100'
3	7797.87	8132.83	EOB @ 8133' MD, 90.63° INC, Hold to TD
4	7772.83	9210.00	Begin Build @ 9210' MD, 3°/100'
5	7760.20	9339.27	EOB @ 9339' MD, 94° INC, Begin Hold
6	7747.11	9489.27	EOH @ 9489' MD, Begin Drop @ 3°/100'
7	7742.71	9601.60	EOD @ 9602' MD, 90.63° INC, Hold to TD
8	7747.98	11304.00	Final MWD Survey @ 11304' MD
9	7746.48	11376.00	Proj. to Bit @ 11376' MD

LEGEND

— Vortec 27 #2, OH, Plan #5 Revised TVD
— OH
— Pathfinder MWD