

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

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

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other		5 Lease Serial No NM-105557							
b Type of Completion ☐ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff Resvr. Other <u>Re Entry & horizontal</u>		6 If Indian, Allottee or Tribe Name							
2 Name of Operator Latigo Petroleum, Inc.		7 Unit or CA Agreement Name and no							
3 Address P.O. Box 10340 Midland TX 79702-7340		8 Lease Name and Well No Goodnight "27" Federal 1 H							
3 a Phone No (Include area code) (432)685-8229		9 API Well No 30-015-22157							
4 Location of Well (Report location clearly and in accordance with Federal requirements)* At Surface 660' FSL & 1980' FWL, Unit N, Sec 27, T23S, R29E At top prod. interval reported below At total depth 751.96' FSL & 331.44 FEL, Unit P, Sec 27, T23S, R29E		10 Field and Pool, or Exploratory Laguna Salado: Bone Spring, South							
14 Date Spudded 05/03/2007		11 Sec, T, R, M, on Block and Survey or Area							
15 Date T D Reached 06/23/2007		12 County or Parish Eddy							
16 Date Completed ☐ D & A ☒ Ready to Prod 07/19/2007		13 State NM							
17 Elevations (DF, RKB, RT, GL)* 3012'									
18 Total Depth MD 10,705' TVD 7,872'		19 Plug Back T D MD TVD							
20 Depth Bridge Plug Set MD TVD									
21 Type of Electric & Other Mechanical Logs Run (Submit copy of each) GR		22 Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ 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"	3-3/8"	48#		363'		650 "C"		Surf	
12-1/4"	10-3/4"	51#		2901'		1200 "C"		Surf	
9-1/2"	7-7/8"	29.7/33.7#		10745'		1825 "C"		6450' TS	
24 Tubing Record									
Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	
2-3/8"	7600'								
25 Producing Intervals									
Formation	Top	Bottom	Perforated Interval	Size	No Holes	Perf Status			
A) 1st Bone Spring Sand	7780' TVD	(Horizontal)	8156-10540		59				
B)									
C)									
D)									
26 Perforation Record									
27 Acid, Fracture, Treatment, Cement Squeeze, Etc									
Depth Interval		Amount and Type of Material							
8156 - 10540		11,000g. 7.5% acid, 1170 bbl 10# slick wtr prepad, 1932 bbls 24# pad, 1984 g. 24# w/2#, 20/40 sand plug, 2746 bbls 24# pad, 2800 bbl 24# w/3#, 3562 bbls 24# w/3#, 3562 bbls 24# pad Ramping 450,000 # 20/40 sand, 50,000 SLC sand							
28 Production - Interval A									
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
7/20/07	7/27/07	24	→	742	1543	241			Flowing
Choke Size	Tbg Press Flwg SI	Csg Press.	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
22/64	1225	2030	→					Producing	
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 page 2)

28b Production - Interval C

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	
			→						

28c Production - Interval D

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	
			→						

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

Sold

30 Summary of Porous Zones (Include Aquifers)

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

31 Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
				Basal Anhydrite	2805'
				Lamar	3032'
				Bell Canyon	3062'
				Cherry Canyon	3945'
				Brushy Canyon	5112'
				Bone Spring	6790
				1st Bone Spring Sand	7780 (TVD)

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.)
 ☐ Geological Report
 ☐ DST Report
 ☒ Directional Survey
☐ Sundry Notice for plugging and cement verification
☐ Core Analysis
☐ Other

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) Lisa HuntTitle Regulatory Analyst

Signature

Lisa HuntDate 07/30/2007

Title 18 U.S.C. Section 101 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 and false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

District I

1625 N. French Dr., Hobbs, NM 88240

District II

1301 W. Grand Avenue, Artesia, NM 88210

District III

1000 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-22157		Pool Code 96857		Pool Name Laguna Salado; Bone Spring, South	
Property Code		Property Name Goodnight "27" Federal			Well Number 1
OGRID No. 227001		Operator Name Latigo Petroleum, Inc.			Elevation 3012'

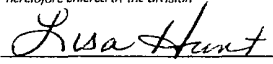
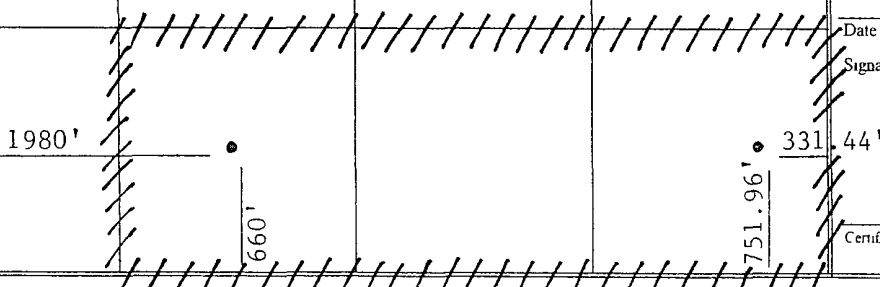
¹⁰ Surface Location

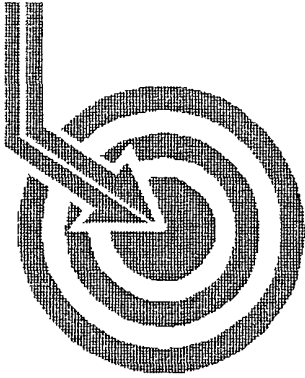
UL or lot no.	Section	Township	Range	Lot 1dn	Feet from the	North/South line	Feet from the	East/West line	County
N	27	23S	29E		660	S	1980	W	Eddy

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot 1dn	Feet from the	North/South line	Feet from the	East/West line	County
P	27	23S	29E		751.96	S	331.44	E	Eddy
Dedicated Acres 120		Joint or Infill		Consolidation Code		Order No.			

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.

16					¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division  Signature Date 07/30/2007	
					Lisa Hunt Printed Name	
					¹⁸ 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.	
					Date of Survey Signature and Seal of Professional Surveyor 	
				Certificate Number		



Scientific Drilling

POGO

Field: Goodnight
Site: Eddy County, NM
Well: Goodnight 27 Federal #1
Wellpath: VH - Job #32K0607479
Survey: 06/10/07

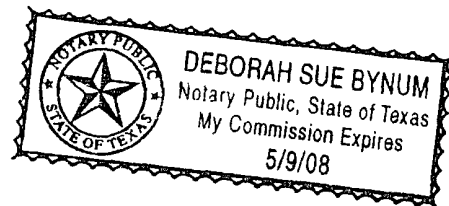
This survey is correct to the best of my knowledge
and is supported by actual field data.

.....*Deborah Sue Bynum*.....Company Representative

Notorized this date 11th of July, 2007.

Deborah Sue Bynum
Notary Signature

County of Midland
State of Texas





Scientific Drilling International

Survey Report

Company: POGO	Date: 06/26/2007	Time: 20:58:36	Page: 1
Field: Goodnight	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: Goodnight 27 Federal #1	Section (VS) Reference:	Well (0.00N,0.00E,90.00Azi)	
Wellpath: VH - Job #32K0607479	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 06/10/07	Start Date: 06/10/2007
Company: Scientific Drilling Internatio	Engineer: Gonzales w/GeoGyro
Tool: Keeper;Keeper Gyro	Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.17	286.19	100.00	-0.14	0.04	-0.14	0.17	0.15	286.19
200.00	0.21	21.79	200.00	-0.22	0.25	-0.22	0.28	0.33	319.38
300.00	0.36	281.58	300.00	-0.46	0.49	-0.46	0.45	0.67	316.79
400.00	0.20	307.02	400.00	-0.90	0.65	-0.90	0.20	1.12	305.90
500.00	0.43	319.34	500.00	-1.29	1.04	-1.29	0.24	1.66	309.04
600.00	0.31	264.39	599.99	-1.80	1.30	-1.80	0.36	2.22	305.86
700.00	0.30	311.48	699.99	-2.27	1.45	-2.27	0.24	2.69	302.59
800.00	0.06	267.21	799.99	-2.52	1.62	-2.52	0.26	2.99	302.79
900.00	0.34	265.15	899.99	-2.86	1.59	-2.86	0.28	3.28	299.08
1000.00	0.32	299.11	999.99	-3.40	1.70	-3.40	0.19	3.81	296.59
1100.00	0.41	308.24	1099.99	-3.93	2.06	-3.93	0.11	4.44	297.68
1200.00	0.38	324.52	1199.99	-4.40	2.55	-4.40	0.12	5.09	300.11
1300.00	0.47	299.61	1299.98	-4.95	3.02	-4.95	0.20	5.80	301.43
1400.00	0.49	300.37	1399.98	-5.68	3.44	-5.68	0.02	6.64	301.25
1500.00	0.47	292.79	1499.98	-6.42	3.82	-6.42	0.07	7.47	300.73
1600.00	0.46	288.47	1599.97	-7.18	4.10	-7.18	0.04	8.27	299.75
1700.00	0.47	323.54	1699.97	-7.81	4.56	-7.81	0.28	9.04	300.30
1800.00	0.33	287.98	1799.97	-8.32	4.98	-8.32	0.28	9.70	300.89
1900.00	0.28	293.42	1899.97	-8.82	5.17	-8.82	0.06	10.22	300.35
2000.00	0.27	281.22	1999.96	-9.28	5.31	-9.28	0.06	10.69	299.78
2100.00	0.58	322.00	2099.96	-9.82	5.75	-9.82	0.41	11.38	300.37
2200.00	0.24	293.46	2199.96	-10.32	6.24	-10.32	0.39	12.06	301.14
2300.00	0.11	309.93	2299.96	-10.59	6.38	-10.59	0.14	12.36	301.07
2400.00	0.27	315.22	2399.96	-10.83	6.61	-10.83	0.16	12.69	301.40
2500.00	0.29	96.99	2499.96	-10.74	6.75	-10.74	0.53	12.69	302.13
2600.00	0.37	106.22	2599.96	-10.18	6.63	-10.18	0.10	12.15	303.05
2700.00	0.51	137.66	2699.95	-9.57	6.21	-9.57	0.27	11.41	302.96
2800.00	0.44	113.95	2799.95	-8.92	5.72	-8.92	0.21	10.60	302.67
2900.00	0.58	118.09	2899.95	-8.12	5.33	-8.12	0.14	9.72	303.25
3000.00	0.58	127.10	2999.94	-7.27	4.78	-7.27	0.09	8.71	303.33
3100.00	0.59	124.19	3099.94	-6.44	4.19	-6.44	0.03	7.69	303.02
3200.00	0.60	125.08	3199.93	-5.59	3.60	-5.59	0.01	6.65	302.77
3300.00	0.63	122.16	3299.92	-4.70	3.01	-4.70	0.04	5.58	302.62
3400.00	0.54	120.01	3399.92	-3.82	2.48	-3.82	0.09	4.56	302.94
3500.00	0.58	120.34	3499.91	-2.98	1.99	-2.98	0.04	3.58	303.69
3600.00	0.64	121.32	3599.91	-2.06	1.44	-2.06	0.06	2.52	304.89
3700.00	0.58	124.60	3699.90	-1.17	0.86	-1.17	0.07	1.45	306.37
3800.00	0.67	129.11	3799.90	-0.30	0.21	-0.30	0.10	0.36	304.42
3900.00	0.59	124.13	3899.89	0.58	-0.45	0.58	0.10	0.73	127.95
4000.00	0.63	119.56	3999.89	1.48	-1.01	1.48	0.06	1.80	124.29
4100.00	0.52	120.22	4099.88	2.35	-1.51	2.35	0.11	2.80	122.70
4200.00	0.55	127.75	4199.88	3.13	-2.03	3.13	0.08	3.73	123.05
4300.00	0.62	123.25	4299.87	3.96	-2.62	3.96	0.08	4.75	123.55
4400.00	0.64	124.16	4399.86	4.87	-3.23	4.87	0.02	5.85	123.58
4500.00	0.68	130.35	4499.86	5.79	-3.93	5.79	0.08	7.00	124.20
4600.00	0.53	128.33	4599.85	6.60	-4.60	6.60	0.15	8.05	124.89
4700.00	0.65	126.29	4699.85	7.42	-5.23	7.42	0.12	9.08	125.15
4800.00	0.55	131.34	4799.84	8.24	-5.88	8.24	0.11	10.12	125.51



Scientific Drilling International

Survey Report

Company: POGO	Date: 06/26/2007	Time: 20:58:36	Page: 2
Field: Goodnight	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: Goodnight 27 Federal #1	Section (VS) Reference:	Well (0.00N,0.00E,90.00Azi)	
Wellpath: VH - Job #32K0607479	Survey Calculation Method:	Minimum Curvature	Db: Sybase

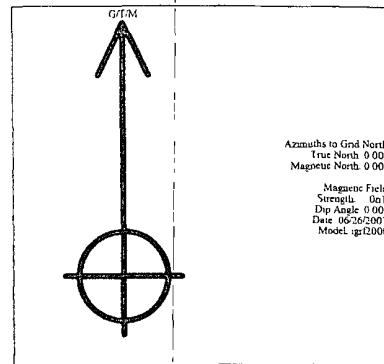
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.00	0.62	126.23	4899.84	9.04	-6.52	9.04	0.09	11.14	125.79
5000.00	0.60	128.41	4999.83	9.88	-7.16	9.88	0.03	12.20	125.93
5100.00	0.67	134.43	5099.82	10.71	-7.90	10.71	0.10	13.31	126.40
5200.00	0.60	139.10	5199.82	11.47	-8.70	11.47	0.09	14.40	127.18
5300.00	0.68	143.61	5299.81	12.17	-9.57	12.17	0.09	15.48	128.20
5400.00	0.83	144.69	5399.80	12.94	-10.64	12.94	0.15	16.75	129.44
5500.00	0.71	147.36	5499.79	13.69	-11.76	13.69	0.13	18.04	130.65
5600.00	0.66	143.52	5599.79	14.37	-12.74	14.37	0.07	19.20	131.57
5700.00	0.71	146.14	5699.78	15.05	-13.72	15.05	0.06	20.37	132.34
5800.00	0.72	150.52	5799.77	15.71	-14.78	15.71	0.06	21.57	133.25
5900.00	0.78	149.06	5899.76	16.37	-15.91	16.37	0.06	22.83	134.19
6000.00	0.91	149.00	5999.75	17.13	-17.17	17.13	0.13	24.25	135.08
6100.00	0.78	145.06	6099.74	17.92	-18.41	17.92	0.14	25.70	135.77
6200.00	1.05	152.56	6199.73	18.74	-19.78	18.74	0.29	27.25	136.56
6300.00	0.90	147.36	6299.72	19.58	-21.26	19.58	0.17	28.90	137.35
6400.00	0.99	150.56	6399.70	20.43	-22.67	20.43	0.10	30.52	137.98
6500.00	0.93	150.60	6499.69	21.25	-24.13	21.25	0.06	32.16	138.63
6600.00	1.06	149.57	6599.67	22.12	-25.64	22.12	0.13	33.86	139.21
6700.00	1.08	145.99	6699.65	23.12	-27.21	23.12	0.07	35.71	139.66
6800.00	1.07	152.86	6799.64	24.07	-28.83	24.07	0.13	37.55	140.14
6900.00	1.02	150.60	6899.62	24.93	-30.43	24.93	0.06	39.34	140.67
7000.00	0.81	130.65	6999.61	25.91	-31.67	25.91	0.38	40.92	140.72
7100.00	0.45	143.46	7099.60	26.68	-32.45	26.68	0.38	42.00	140.57
7200.00	0.42	70.65	7199.60	27.26	-32.64	27.26	0.52	42.52	140.14
7300.00	0.87	20.81	7299.59	27.87	-31.81	27.87	0.68	42.29	138.77
7400.00	0.95	22.18	7399.58	28.45	-30.33	28.45	0.08	41.59	136.83
7500.00	0.97	19.53	7499.57	29.05	-28.77	29.05	0.05	40.88	134.72
7600.00	1.19	353.51	7599.55	29.22	-26.94	29.22	0.53	39.74	132.68
7614.00	1.22	350.66	7613.55	29.17	-26.64	29.17	0.48	39.51	132.40

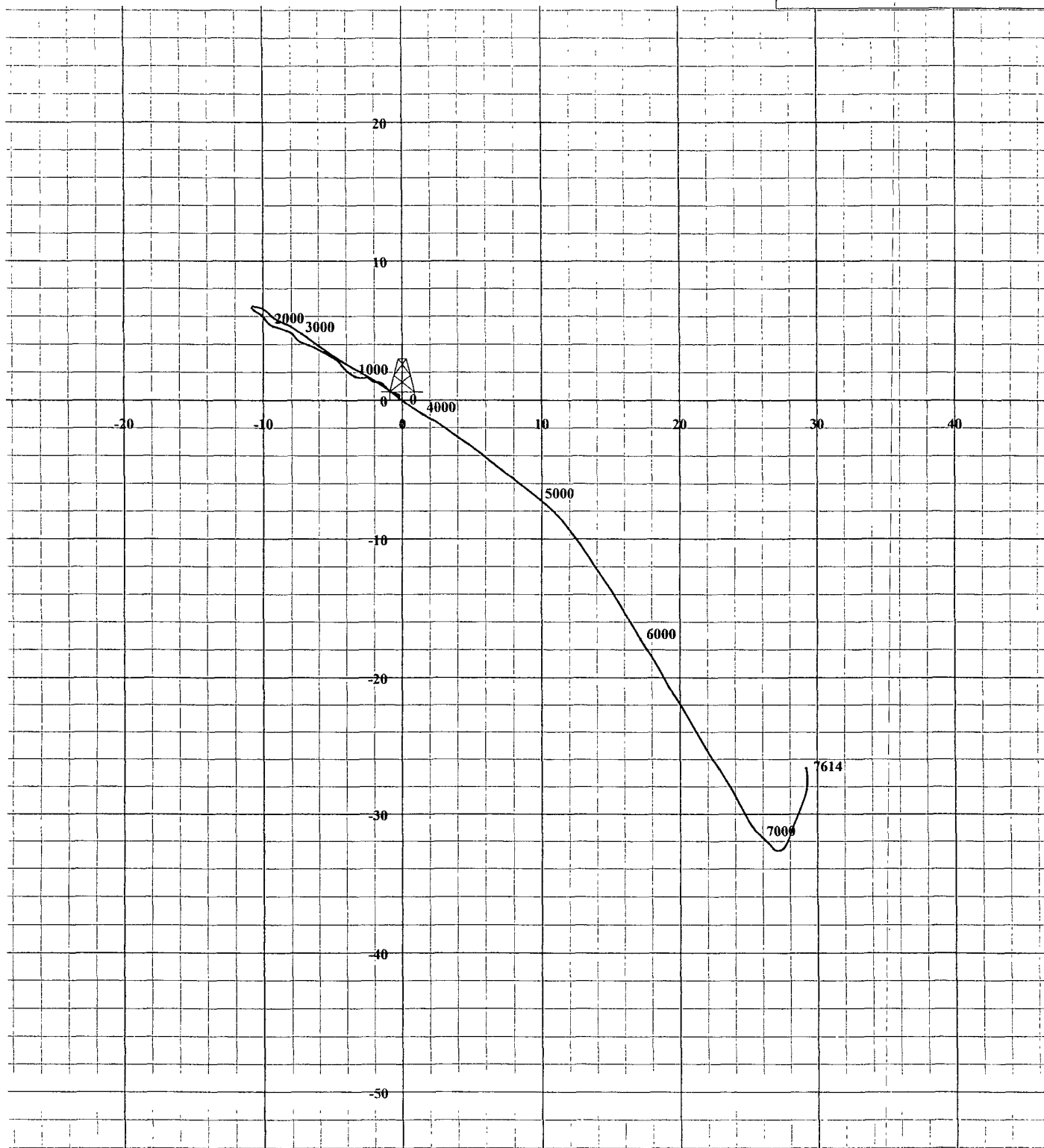


Scientific
Drilling

Field: Goodnight
Site: Eddy County, NM
Well: Goodnight 27 Federal #1
Wellpath: VH - Job #32K0607479
Survey: 06/10/07



South(-)/North(+) [5ft/in]



West(-)/East(+) [5ft/in]

DIRECTIONAL SURVEY REPORT

POGO PRODUCING

GOODNIGHT 27 FED #1H

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

432-681-6000
FAX 432-687-1544
WWW.PATHFINDER-ES.COM



6213 W. County Road 112 • Midland, TX 79706 • Phone: 432-681-6000 • Fax: 432-687-1544

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JOHN PATTERSON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 04/20/07 TO 04/29/07
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
GOODNIGHT 27 FED #1H
EDDY COUNTY, NM
RIG: PATTERSON #78
9. SURVEY CERTIFIED FROM: 7678 TO 10651 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 2974.96 FEET ON A BEARING OF 88.22 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 10710 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

A handwritten signature in black ink, appearing to read "Francisco Sinisterra".

Francisco Sinisterra
M/LWD SERVICE COORDINATOR

PATHFINDER

ENERGY SERVICES

DIRECTIONAL SURVEY INFORMATION

Prepared By: Francisco Sinisterra

Name of Client: Pogo Producing

Attention: _____

☐ Directional Only Job OR ☒ Logging Job

Name(s) of Persons Performing Surveys:

A) John Patterson D) _____
B) Chris Carson E) _____
C) _____ F) _____

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

Date(s) Survey was Performed: From 13-Jun To 22-Jun

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

IDENTIFICATION OF WELL:

Client: Pogo Producing Rig Name: Patterson #78
Well No.: Laguna Grande Goodnight 27 Fed #1H API No.: 30-01522157
Location: Eddy County Job No.: 101006470 WT-WT
State: NM

TEXAS RAILROAD COMMISSION INFORMATION:

Field: _____

Abstract No.: _____
Well Plat Survey Co.: _____

Surveys Performed From 7678 Feet TO 10651 Feet

MMS / ASCII / LAS Diskette Filename: _____

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOW THE WELL TO BE DISPLACED AT 2969.98
FEET ON A BEARING OF 88.23 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT
A PROJECTED DEPTH OF 10705 FEET, ARE TRUE AND
CORRECT TO THE BEST OF MY KNOWLEDGE.

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 06/17/2007
Date Completed: 06/23/2007

POGO PRODUCING
GOODNIGHT 27 FED #1H
EDDY COUNTY, NM
Rig:PATTERSON 78
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:JOHN PATTERSON
CHRIS CARSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.15.53.1000 N LON:104.58.31.1988 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 301555.6759 Y: 460627.3935
North Aligned To:GRID NORTH
Total Magnetic Correction: 9.02° EAST TO GRID
Vertical Section Plane: 90.00
Survey Vert. Reference: 0.00' Rotary Table To Ground
Altitude:3012.00' Ground To MSL

Measured Depth	10705.00	(feet)
Inclination	86.70	(deg)
Azimuth	85.56	(deg)
True Vertical Depth	7871.96	(feet)
Course Length	54.00	(feet)
Vertical Section	2968.55	(feet)
Rectangular Corr. N/S	91.96 N	(feet)
Rectangular Corr. E/W	2968.55 E	(feet)
Closure Distance	2969.98	(feet)
Direction of Closure	88.23	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING
GOODNIGHT 27 FED #1H
EDDY COUNTY, NM

Rig: PATTERSON 78

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: JOHN PATTERSON
CHRIS CARSON

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.15.53.1000 N LON: 104.58.31.1988 W
Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 301555.6759 Y: 460627.3935
North Aligned To: GRID NORTH
Total Magnetic Correction: 9.02° EAST TO GRID
Vertical Section Plane: 90.00
Survey Vert. Reference: 0.00' Rotary Table To Ground
Altitude: 3012.00' Ground To MSL

Survey Calculations by PathCalc v1.95U 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-IN TO SCIENTIFIC GYRO SURVEY @ 7614' MD.										
7614.00	1.22	350.66	7613.54	0.00	29.17	26.64 S	29.17 E	39.50@	132.40	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
7678.00	18.99	85.78	7676.38	64.00	39.54	25.19 S	39.54 E	46.88@	122.50	29.90
7709.00	24.62	83.94	7705.15	31.00	51.00	24.13 S	51.00 E	56.42@	115.32	18.29
7739.00	31.39	83.12	7731.62	30.00	64.99	22.54 S	64.99 E	68.79@	109.13	22.60
7770.00	37.64	81.93	7757.15	31.00	82.39	20.24 S	82.39 E	84.84@	103.80	20.28
7801.00	43.79	81.43	7780.64	31.00	102.39	17.31 S	102.39 E	103.84@	99.59	19.87
7831.00	50.47	83.20	7801.03	30.00	124.17	14.39 S	124.17 E	125.00@	96.61	22.68
7862.00	57.16	86.31	7819.33	31.00	149.07	12.13 S	149.07 E	149.56@	94.65	23.05
7893.00	63.49	90.16	7834.67	31.00	175.97	11.33 S	175.97 E	176.33@	93.68	23.09
7923.00	70.43	93.11	7846.41	30.00	203.54	12.14 S	203.54 E	203.90@	93.41	24.84
7954.00	77.29	94.10	7855.02	31.00	233.24	14.01 S	233.24 E	233.66@	93.44	22.34
7982.00	82.92	94.75	7859.83	28.00	260.73	16.14 S	260.73 E	261.23@	93.54	20.24
8013.00	87.49	95.99	7862.42	31.00	291.48	19.03 S	291.48 E	292.10@	93.74	15.27
8043.00	87.23	96.15	7863.80	30.00	321.28	22.20 S	321.28 E	322.05@	93.95	1.02
8074.00	87.32	96.27	7865.28	31.00	352.06	25.55 S	352.06 E	352.99@	94.15	0.48
8105.00	86.97	95.91	7866.82	31.00	382.85	28.84 S	382.85 E	383.94@	94.31	1.62
8137.00	87.58	96.03	7868.34	32.00	414.64	32.16 S	414.64 E	415.89@	94.44	1.94
8166.00	88.90	96.21	7869.23	29.00	443.46	35.25 S	443.46 E	444.86@	94.54	4.59
8197.00	89.16	96.32	7869.76	31.00	474.27	38.63 S	474.27 E	475.84@	94.66	0.91
8258.00	88.90	96.11	7870.79	61.00	534.91	45.24 S	534.91 E	536.81@	94.83	0.55
8289.00	89.08	96.05	7871.34	31.00	565.73	48.52 S	565.73 E	567.80@	94.90	0.61
8320.00	88.55	96.30	7871.98	31.00	596.54	51.85 S	596.54 E	598.79@	94.97	1.89
8350.00	88.46	96.17	7872.76	30.00	626.35	55.11 S	626.35 E	628.77@	95.03	0.53
8381.00	88.64	96.14	7873.55	31.00	657.16	58.43 S	657.16 E	659.76@	95.08	0.59
8442.00	89.34	96.24	7874.62	61.00	717.80	65.01 S	717.80 E	720.74@	95.17	1.16

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING
GOODNIGHT 27 FED #1H
EDDY COUNTY, NM
RIG:PATTERSON 78

Page 02/04

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)
8534.00	91.45	95.76	7873.99	92.00	809.29	74.62 S	809.29 E	812.72@	95.27	2.35
8564.00	88.29	94.60	7874.06	30.00	839.16	77.33 S	839.16 E	842.71@	95.27	11.22
8630.00	86.61	92.29	7876.99	66.00	904.97	81.29 S	904.97 E	908.61@	95.13	4.32
8661.00	86.44	92.34	7878.87	31.00	935.89	82.54 S	935.89 E	939.52@	95.04	0.57
8692.00	86.53	92.27	7880.77	31.00	966.80	83.79 S	966.80 E	970.43@	94.95	0.37
8723.00	85.56	90.66	7882.91	31.00	997.72	84.58 S	997.72 E	1001.30@	94.85	6.05
8749.00	85.30	90.21	7884.98	26.00	1023.63	84.78 S	1023.63 E	1027.14@	94.73	1.99
8779.00	89.60	90.79	7886.32	30.00	1053.60	85.04 S	1053.60 E	1057.02@	94.61	14.46
8810.00	91.36	90.94	7886.06	31.00	1084.59	85.51 S	1084.59 E	1087.96@	94.51	5.70
8841.00	90.84	90.87	7885.46	31.00	1115.58	86.00 S	1115.58 E	1118.89@	94.41	1.69
8871.00	89.78	89.72	7885.30	30.00	1145.58	86.15 S	1145.58 E	1148.81@	94.30	5.21
8906.00	89.25	89.53	7885.60	35.00	1180.58	85.92 S	1180.58 E	1183.70@	94.16	1.61
8937.00	88.02	88.78	7886.33	31.00	1211.56	85.46 S	1211.56 E	1214.57@	94.04	4.65
8968.00	87.93	88.52	7887.43	31.00	1242.53	84.73 S	1242.53 E	1245.42@	93.90	0.89
8998.00	88.20	88.02	7888.44	30.00	1272.50	83.83 S	1272.50 E	1275.26@	93.77	1.89
9029.00	90.48	87.68	7888.80	31.00	1303.48	82.67 S	1303.48 E	1306.10@	93.63	7.44
9056.00	91.71	87.35	7888.28	27.00	1330.45	81.50 S	1330.45 E	1332.94@	93.51	4.72
9086.00	92.59	87.73	7887.16	30.00	1360.40	80.21 S	1360.40 E	1362.76@	93.37	3.19
9117.00	92.77	87.29	7885.71	31.00	1391.33	78.86 S	1391.33 E	1393.57@	93.24	1.53
9148.00	93.30	86.70	7884.07	31.00	1422.25	77.24 S	1422.25 E	1424.34@	93.11	2.56
9178.00	93.56	86.48	7882.27	30.00	1452.14	75.46 S	1452.14 E	1454.10@	92.97	1.13
9209.00	94.00	86.80	7880.23	31.00	1483.02	73.65 S	1483.02 E	1484.85@	92.84	1.75
9240.00	94.26	86.37	7878.00	31.00	1513.89	71.81 S	1513.89 E	1515.59@	92.72	1.62
9270.00	94.09	86.17	7875.81	30.00	1543.74	69.86 S	1543.74 E	1545.32@	92.59	0.87
9301.00	93.91	85.06	7873.65	31.00	1574.58	67.49 S	1574.58 E	1576.02@	92.45	3.62
9332.00	94.18	85.98	7871.46	31.00	1605.40	65.08 S	1605.40 E	1606.72@	92.32	3.09
9363.00	93.42	85.17	7869.41	31.00	1636.24	62.69 S	1636.24 E	1637.44@	92.19	3.58
9393.00	93.39	85.16	7867.63	30.00	1666.08	60.17 S	1666.08 E	1667.17@	92.07	0.11
9424.00	91.28	85.19	7866.36	31.00	1696.95	57.56 S	1696.95 E	1697.92@	91.94	6.81

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING
GOODNIGHT 27 FED #1H
EDDY COUNTY, NM
RIG:PATTERSON 78

Page 03/04

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)
9455.00	91.45	84.87	7865.62	31.00	1727.82	54.88 S	1727.82 E	1728.69@	91.82	1.17
9485.00	91.71	84.41	7864.80	30.00	1757.68	52.08 S	1757.68 E	1758.45@	91.70	1.76
9516.00	91.71	84.81	7863.87	31.00	1788.53	49.17 S	1788.53 E	1789.20@	91.57	1.29
9547.00	90.40	84.67	7863.30	31.00	1819.39	46.32 S	1819.39 E	1819.98@	91.46	4.25
9577.00	90.40	84.79	7863.09	30.00	1849.26	43.57 S	1849.26 E	1849.78@	91.35	0.40
9608.00	90.22	84.23	7862.92	31.00	1880.12	40.60 S	1880.12 E	1880.56@	91.24	1.90
9639.00	90.40	84.33	7862.76	31.00	1910.97	37.51 S	1910.97 E	1911.33@	91.12	0.66
9670.00	90.22	84.24	7862.59	31.00	1941.81	34.43 S	1941.81 E	1942.12@	91.02	0.65
9700.00	90.04	83.96	7862.52	30.00	1971.65	31.34 S	1971.65 E	1971.90@	90.91	1.11
9730.00	89.69	83.77	7862.59	30.00	2001.48	28.14 S	2001.48 E	2001.68@	90.81	1.33
9761.00	88.81	83.25	7863.00	31.00	2032.28	24.63 S	2032.28 E	2032.43@	90.69	3.30
9792.00	88.81	82.74	7863.64	31.00	2063.04	20.85 S	2063.04 E	2063.15@	90.58	1.64
9823.00	88.46	82.89	7864.38	31.00	2093.79	16.98 S	2093.79 E	2093.86@	90.46	1.23
9853.00	88.90	82.38	7865.07	30.00	2123.53	13.13 S	2123.53 E	2123.57@	90.35	2.24
9884.00	89.16	82.32	7865.60	31.00	2154.25	9.01 S	2154.25 E	2154.27@	90.24	0.86
9915.00	89.96	82.01	7865.83	31.00	2184.96	4.78 S	2184.96 E	2184.97@	90.13	2.77
9945.00	90.22	82.32	7865.79	30.00	2214.68	0.69 S	2214.68 E	2214.68@	90.02	1.35
9976.00	90.40	82.24	7865.62	31.00	2245.40	3.47 N	2245.40 E	2245.40@	89.91	0.64
10007.00	91.36	82.00	7865.14	31.00	2276.10	7.72 N	2276.10 E	2276.12@	89.81	3.19
10038.00	91.54	81.47	7864.36	31.00	2306.77	12.18 N	2306.77 E	2306.80@	89.70	1.81
10069.00	90.57	81.95	7863.79	31.00	2337.44	16.65 N	2337.44 E	2337.50@	89.59	3.49
10099.00	90.22	82.24	7863.58	30.00	2367.16	20.77 N	2367.16 E	2367.25@	89.50	1.52
10130.00	90.22	82.14	7863.46	31.00	2397.87	24.98 N	2397.87 E	2398.00@	89.40	0.32
10161.00	90.40	82.08	7863.29	31.00	2428.57	29.24 N	2428.57 E	2428.75@	89.31	0.61
10191.00	91.01	82.44	7862.93	30.00	2458.30	33.28 N	2458.30 E	2458.52@	89.22	2.36
10222.00	91.19	82.22	7862.33	31.00	2489.02	37.42 N	2489.02 E	2489.30@	89.14	0.92
10253.00	90.22	82.15	7861.95	31.00	2519.72	41.63 N	2519.72 E	2520.07@	89.05	3.14
10283.00	90.31	82.17	7861.81	30.00	2549.44	45.72 N	2549.44 E	2549.85@	88.97	0.31
10314.00	90.48	82.46	7861.60	31.00	2580.17	49.87 N	2580.17 E	2580.65@	88.89	1.08

PathFinder Energy Services, Inc.

Survey Report

POGO PRODUCING
GOODNIGHT 27 FED #1H
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 Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
10345.00	90.40	82.67	7861.36	31.00	2610.90	53.88 N	2610.90 E	2611.46@	88.82	0.72
10375.00	90.51	82.57	7861.12	30.00	2640.65	57.73 N	2640.65 E	2641.29@	88.75	0.50
10406.00	90.22	82.37	7860.92	31.00	2671.39	61.80 N	2671.39 E	2672.10@	88.67	1.14
10437.00	89.25	82.83	7861.07	31.00	2702.13	65.79 N	2702.13 E	2702.93@	88.61	3.46
10468.00	88.53	83.31	7861.67	31.00	2732.89	69.53 N	2732.89 E	2733.78@	88.54	2.79
10498.00	88.81	83.19	7862.36	30.00	2762.68	73.05 N	2762.68 E	2763.64@	88.49	1.02
10529.00	88.46	83.78	7863.10	31.00	2793.47	76.57 N	2793.47 E	2794.52@	88.43	2.21
10560.00	88.11	84.38	7864.03	31.00	2824.29	79.77 N	2824.29 E	2825.42@	88.38	2.24
10590.00	87.05	84.84	7865.30	30.00	2854.13	82.58 N	2854.13 E	2855.32@	88.34	3.85
10621.00	86.44	84.99	7867.06	31.00	2884.96	85.32 N	2884.96 E	2886.22@	88.31	2.03
10651.00	86.70	85.56	7868.85	30.00	2914.80	87.79 N	2914.80 E	2916.12@	88.27	2.09
STRAIGHT LINE PROJECTION TO BIT @ 10705' MD.										
10705.00	86.70	85.56	7871.96	54.00	2968.55	91.96 N	2968.55 E	2969.98@	88.23	0.00

FINDER

ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT:	Pogo Producing		
LEASE / WELL No.:	Laguna Grande	Goodnight 27 Fed #1H	
WELL LOCATION:			
COUNTY / STATE / COUNTRY:	Eddy	NM	USA
RIG:	Patterson #78		
API WELL No:	30-01522157		
JOB No:	101006470 WT-WT		
P O. / AFE No			
DIRECTIONAL COMPANY:	Pathfinder Energy Services		

WELL SITE INFORMATION

MAGNETIC DECLINATION:			
On Wall Plat:	LHD Calculated: 9.016781	Agreed Upon:	9.02
X = 301555 583100	Feet	Y = 460627 394000	Feet
SITE LATITUDE: 32.26475	SITE LONGITUDE: 104.975333		
GRID SYSTEM: TRUE ☐ UTM ☐ LAMBERT ☒	ZONE: New Mexico East		
PROPOSED DRIFT DIRECTION: #	90		
KELLY BUSHING ELEVATION:	20 feet		
ALTITUDE: 3012	Feet	WATER DEPTH: 0	Feet

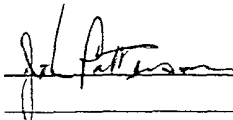
TIE-IN SURVEY

MEASURED DEPTH:	7614
DRIFT ANGLE:	1.22
DRIFT DIRECTION:	350.66
TRUE VERTICAL DEPTH:	7613.54
VERTICAL SECTION:	
RECTANGULAR COORDINATE (N / S) :	-26.64
RECTANGULAR COORDINATE (E / W) :	29.17
CLOSURE DISTANCE / DIRECTION:	
SURVEY CALCULATION METHOD:	AA ☐ MC ☐ RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	Scientific Gyro
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO

WELL PLAN

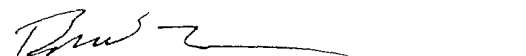
KICKOFF DEPTH:	7610'	TOTAL DEPTH:	10728
KICKOFF ANGLE:	1.22 deg	MAX ANGLE:	90

PES Engineers:



**Signature of both field engineers required if applicable

Directional Driller:



DATE: 6-13-07



MAGNETIC DECLINATION / TOOLFACE OFFSET WORKSHEET

Client	Pogo Producing	LWD Run No	1
Well	Goodnight 27 Fed #1H 30-01522157	DTA No	
Location		HDAS No	
Rig	Patterson #78	TrkrElec No	
Job No.	101006470 WT-WT		

Magnetic Declination:

GRID SYSTEM USED: TRUE ☐ UTM ☐ LAMBERT ☒ ZONE New Mexico East
X = 301555 5831 Y = 460627.394
SITE LATITUDE: 32.26475 SITE LONGITUDE 104 975333

Magnetic Declination:

On Wall Plat
LWD Calculated 9 016781

Directional Driller Approval: [Signature]
LWD Engineers Approval: [Signature]
Supervisor Approval: [Signature]

Agreed Upon: 9.02

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

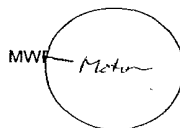
$$\text{TOOL FACE OFFSET} = \frac{\text{Distance from M/LWD to Motor}}{\text{Circumference}} \times 360^\circ$$

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: MWD

OTF Protractor: 0

Offset Tool Face Used = 0

M/LWD Engineer #1: [Signature]

M/LWD Engineer #2: [Signature]

Directional Driller: [Signature]

PATHFINDER

ENERGY SERVICES

MAGNETIC DECLINATION / TOOLFACE OFFSET WORKSHEET

Client:	Pogo Producing	LWD Run No	2
Well	Goodnight 27 Fed #1H 30-01522157	DTA No	
Location:		HDAS No	
Rig	Patterson #78	TrkrElec No	
Job No	101006470 WT-WT		

Magnetic Declination:

GRID SYSTEM USED	TRUE ☐ UTM ☐ LAMBERT ☐ ZONE ☒	New Mexico East
X =	301555 5831	Y =
SITE LATITUDE	32 26475	SITE LONGITUDE
		104.975333

Magnetic Declination:

On Wall Plat _____
LWD Calculated 9 016781

Directional Driller Approval: Brown
LWD Engineers Approval: John Patterson
Supervisor Approval: _____

Agreed Upon: 9 02

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

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

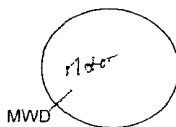
ToolFace Offset Using Protractor:

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.

RD0°

Distance from M/LWD to Motor: 0

Circumference: 0



V- Door

OTF Estimate: 0

OTF Calculated _____ MWD OTF Protractor 0

Offset Tool Face Used = 0

M/LWD Engineer #1: John Patterson

M/LWD Engineer #2: _____

Directional Driller: Brown

PATHFINDER

ENERGY SERVICES

MAGNETIC DECLINATION / TOOLFACE OFFSET WORKSHEET

Client	Pogo Producing	LWD Run No	3
Well	Goodnight 27 Fed #1H 30-01522157	DTA No	
Location		HDAS No	
Rig	Patterson #78	TrkrElec No	
Job No	101006470 WT-WT		

Magnetic Declination:

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

X = 301555.5831 Y = 460627.394

SITE LATITUDE: 32.26475 SITE LONGITUDE: 104.975333

Magnetic Declination:

On Wall Plat: _____

LWD Calculated: 9.016781 Directional Driller Approval: *[Signature]*

Agreed Upon: 9.02 LWD Engineers Approval: *[Signature]*

Supervisor Approval: *[Signature]*

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

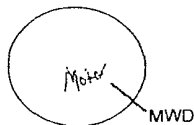
$$\text{TOOL FACE OFFSET} = \frac{\text{Distance from M/LWD to Motor}}{\text{Circumference}} \times 360^\circ$$

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



OTF Estimate: 0 OTF Calculated _____ MWD OTF Protractor 0

Offset Tool Face Used = 0

M/LWD Engineer #1: *[Signature]*

M/LWD Engineer #2: _____

Directional Driller: *[Signature]*

RD0

PATHFINDER

ENERGY SERVICES

MAGNETIC DECLINATION / TOOLFACE OFFSET WORKSHEET

Client	Pogo Producing	LWD Run No	4
Well	Laguna Grande Goodnight 27 Fed #1H	DTA No:	
Location:		HDAS No	
Rig	Patterson #78	TrkrElec No	
Job No	101006470 WT-WT		

Magnetic Declination:

GRID SYSTEM USED	TRUE ☐ UTM ☐ LAMBERT ☒ ZONE.	New Mexico East
X =	301555 5831	Y= 460627 394
SITE LATITUDE	32 26475	SITE LONGITUDE 104 975333

Magnetic Declination:

On Wall Plat:
LWD Calculated: 9.016781

Directional Driller Approval: *[Signature]*
LWD Engineers Approval: *[Signature]*
Supervisor Approval: *[Signature]*

Agreed Upon: 9 02

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.

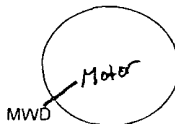
$$\text{TOOL FACE OFFSET} = \frac{\text{Distance from M/LWD to Motor}}{\text{Circumference}} \times 360^\circ$$

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: MWD

OTF Protractor: 0

Offset Tool Face Used = 0

M/LWD Engineer #1: *[Signature]*

M/LWD Engineer #2: *[Signature]*

Directional Driller: *[Signature]*

RD0'

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

POGO PRODUCING
GOODNIGHT 27 FED. # 1H
EDDY Co., NM
Rig:PATTERSON 78

Tue Jun 12 15:02:01 2007

Coordinates

Latitude: 32.264750 N (32 deg. 15 min. 53.1000 sec.)
Longitude: 104.975333 W (-104 deg. 58 min. 31.1999 sec.)
Elevation: 3012.00 feet.
Calculation Date: Jun/12/2007

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.0718 degrees
Total Magnetic Field: 0.48897 gauss
Magnetic Declination: 8.674050 degrees
Horizontal Intensity: 0.243954 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.674050 Degs

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 301555.5831 feet
Y: 460627.3940 feet
True to Grid: (convergence) 0.342731 degrees
Magnetic to Grid: 9.016781 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 9.016781 Degs.

Form 3160-3
(Jul, 1992)

THIS IS A RE-ENTRY
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA
SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

J-06-28
FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1A. TYPE OF WORK

DRILL ☒ *

DEEPEN ☐

12-111-POTASH

b. TYPE OF WELL

*Kick off and drill horizontal hole

OIL WELL ☒

GAS WELL ☐

OTHER

12891

SINGLE ZONE ☐

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

POGO PRODUCING COMPANY RICHARD WRIGHT (432-685-8140)

3. ADDRESS AND TELEPHONE NO.

P.O. BOX 10340 MIDLAND, TEXAS 79702-7340 (432-685-8100)

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface 660' FSL & 1980' FWL SECTION 27 T23S-R29E EDDY CO. NM

At proposed prod zone 660' FSL & 330' FEL T23S-R29E EDDY CO. NM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

Approximately 8 miles East of Loving New Mexico

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)

660'

16. NO. OF ACRES IN LEASE

640

17. NO. OF ACRES ASSIGNED TO THIS WELL

120

18. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

NA

19. PROPOSED DEPTH

MD-10717' MD-7890'

20. ROTARY OR CABLE TOOLS

ROTARY

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3012' GR.

22. APPROX. DATE WORK WILL START*

WHEN APPROVED

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	H-40 13 3/8"	48#	363' *	650 Sx. cemented to surface
12 1/4"	K-55, N-80 10 3/4"	51#	2901' *	1200 Sx. " " "
9 1/2"	O-95 7 7/8"	29.7# & 33.7#	10,745' *	1825 Sx. TOC 6450' Temp Survey.

* These casing strings were run and cemented by previous operator.

If earthen pits are used in association with the drilling of this well, an OCD pit permit must be obtained prior to pit construction.

SEE ATTACHED SHEET FOR DETAIL OF

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Joet. Garcia

Agent

DATE

07/10/06

(This space for Federal or State office use)

PERMIT NO

APPROVAL DATE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. CONDITIONS OF APPROVAL IF ANY.

/s/ Linda S.C. Rundell

STATE DIRECTOR

DEC 19 2008

APPROVED BY

TITLE

DATE

*See Instructions On Reverse Side

APPROVAL FOR 1 YEAR

Exxon Lse. No. _____ NE EXICO OIL CONSERVATION COMMISSION
State Lse. No. _____ WELL LOCATION AND ACREAGE DEDICATION PLAT
Federal Lse. No. **NM 23177** NM-105557
All distances must be from the outer boundaries of the Section.

Form C-102
Supersedes C-128
Effective 1-1-65

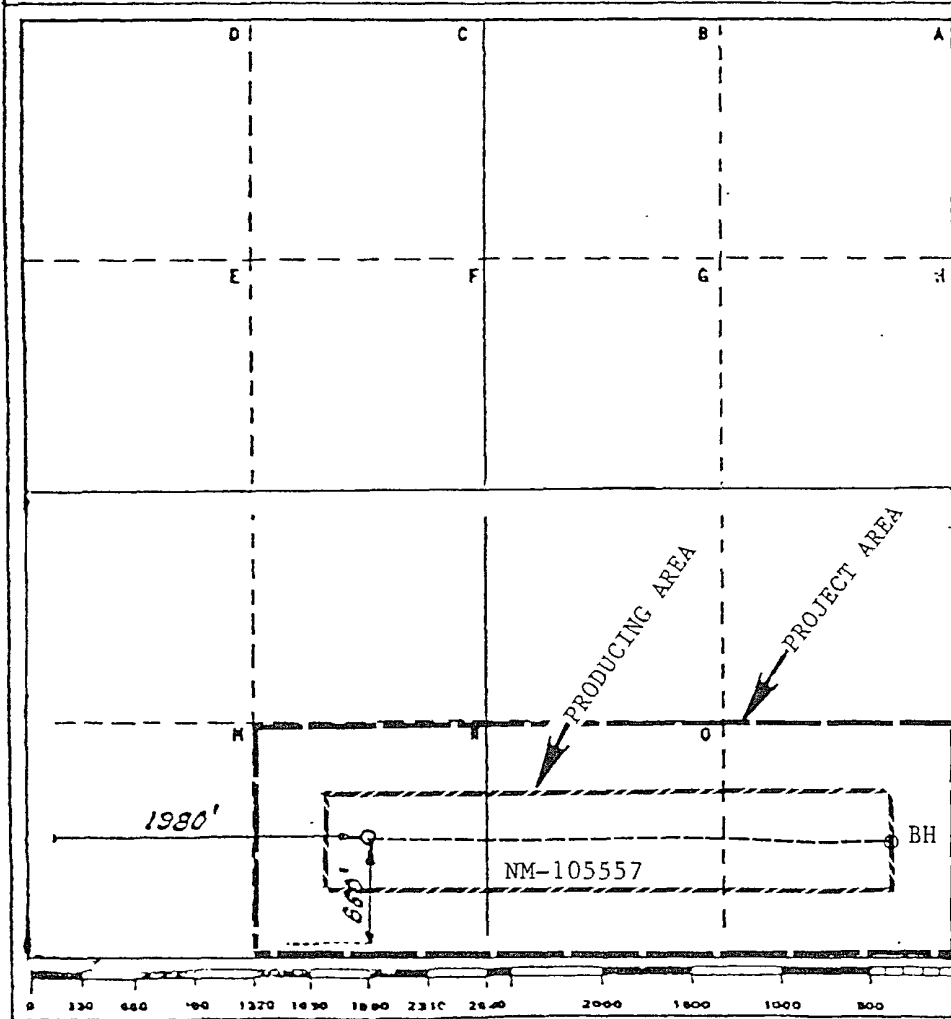
Operator Exxon Corporation		Lease Laguna Grande Unit (Excluded)		Well No. 2
Unit Letter N	Section 27	Township 23-S	Range 29-E	County Eddy
Actual Footage Location of Well: 660 feet from the South line and 1980 feet from the West line				
Ground Level Elev: 3012'	Producing Formation Morrow	Pool Laguna Grande Morrow Gas	Dedicated Acreage: 320 Acres	

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____
If answer is "no," list the owners and tract descriptions which have actually been consolidated. (See reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.

RECEIVED
MAR 30 1977
U.S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

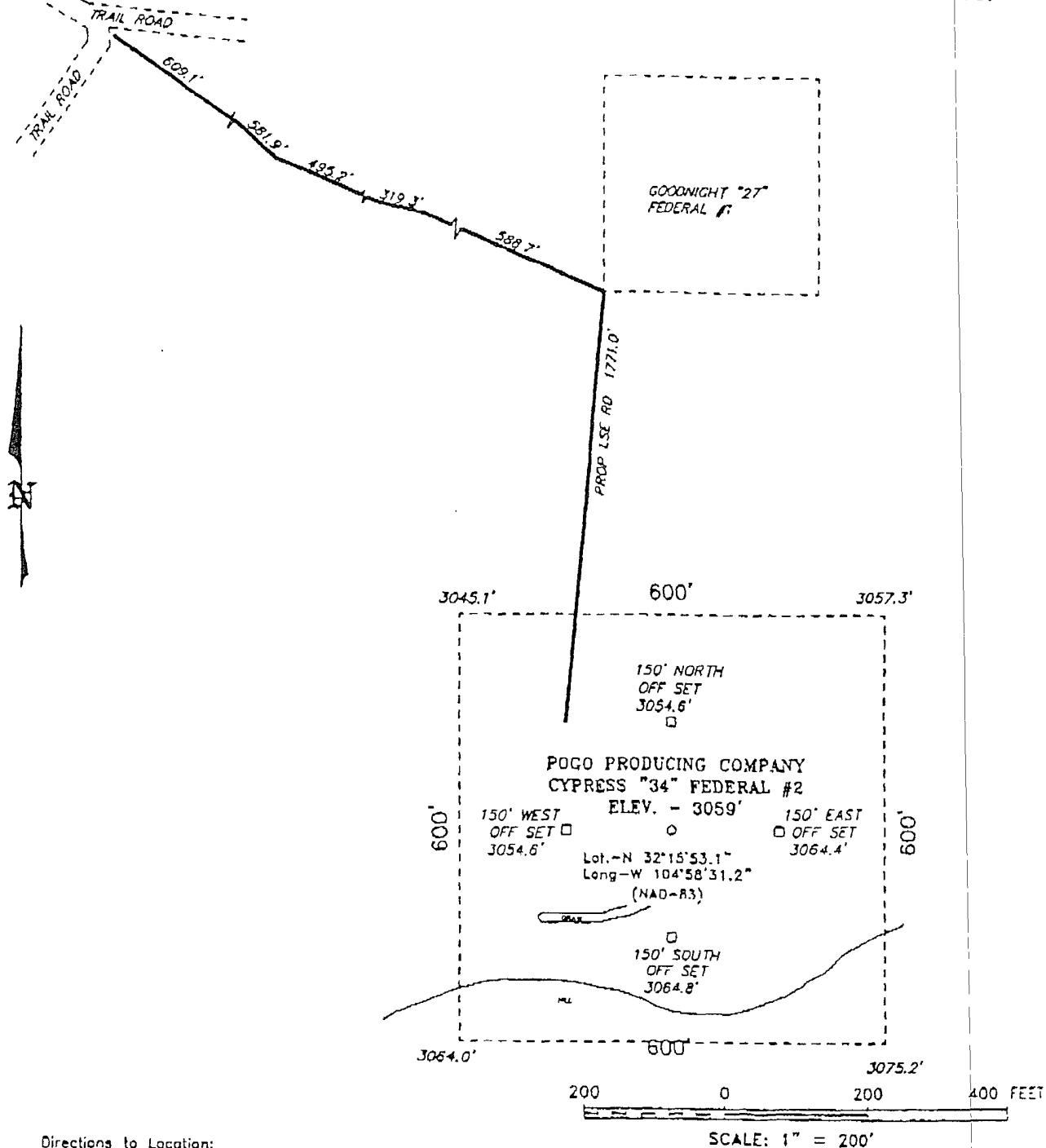


CERTIFICATION	
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.	
Name	<i>Melba Knippling</i>
Position	<i>Proration Specialist</i>
Company	<i>Exxon Corporation</i>
Box	<i>1600 Midland, Texas</i>
Date	<i>3-28-77</i>
I hereby certify that 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 knowledge and belief.	
Date Surveyed	<i>3/24/77</i>
Registered Professional Engineer and/or Land Surveyor <i>H. S. Heston</i>	
Certificate No.	<i>1382</i>

OCT-18-2006 01:25 PM

P. 02

SECTION 34, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY,
NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF CO. RD. 793 (RAWHIDE)
AND STATE HWY 128, PROCEED SOUTH 3.1 MILE TO
END OF PAVEMENT; THENCE WEST 3.3 MILE, THENCE
SOUTH 0.4 MILE TO PROPOSED LEASE ROAD.

POGO PRODUCING CO.

REF: CYPRESS #34 FEDERAL #2 / Well Pad Tap

THE CYPRESS #34 FEDERAL #2 LOCATED 1400' FROM
THE NORTH LINE AND 1800' FROM THE WEST LINE OF
SECTION 34, TOWNSHIP 23 SOUTH, RANGE 29 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

ASIN SURVEYS P.O. BOX 1786-HOBBS, NEW MEXICO

D. Number: 7073 Drawn By: J. SMALL

e: 06-22-2006 Disk: JMS 7073W

Survey Date: 06-21-2006 Sheet 1 of 1 Sheets

[illegible][illegible]

```

Job No. : 32K0607479          TRUE          Proposal : 90.00
  Depth  T.V.D.    V.S.    Inc  Azimuth  Latitude  Departure  D-leg
( Feet ) ( Feet ) ( Feet ) Deg.   Deg.   ( Feet ) ( Feet )  /100
|||||

```

Page 1

GOODNIGHT 27 FED#1.txt

600.00	599.99	-1.80	0.31	264.39	1.30	-1.80	0.36
700.00	699.99	-2.27	0.30	311.48	1.45	-2.27	0.24
800.00	799.99	-2.52	0.06	267.21	1.62	-2.52	0.26
900.00	899.99	-2.86	0.34	265.15	1.59	-2.86	0.28
1000.00	999.99	-3.40	0.32	299.11	1.70	-3.40	0.19
1100.00	1099.99	-3.93	0.41	308.24	2.06	-3.93	0.11
1200.00	1199.98	-4.40	0.38	324.52	2.55	-4.40	0.12
1300.00	1299.98	-4.95	0.47	299.61	3.02	-4.95	0.20
1400.00	1399.98	-5.68	0.49	300.37	3.44	-5.68	0.02
1500.00	1499.97	-6.42	0.47	292.79	3.82	-6.42	0.07
1600.00	1599.97	-7.18	0.46	288.47	4.11	-7.18	0.04
1700.00	1699.97	-7.81	0.47	323.54	4.56	-7.81	0.28
1800.00	1799.96	-8.32	0.33	287.98	4.98	-8.32	0.28
1900.00	1899.96	-8.82	0.28	293.42	5.17	-8.82	0.06
2000.00	1999.96	-9.28	0.27	281.22	5.31	-9.28	0.06
2100.00	2099.96	-9.82	0.58	322.00	5.75	-9.82	0.41
2200.00	2199.96	-10.32	0.24	293.46	6.24	-10.32	0.39
2300.00	2299.95	-10.59	0.11	309.93	6.38	-10.59	0.14
2400.00	2399.95	-10.83	0.27	315.22	6.61	-10.83	0.16
2500.00	2499.95	-10.74	0.29	96.99	6.75	-10.74	0.53
2600.00	2599.95	-10.18	0.37	106.22	6.63	-10.18	0.10
2700.00	2699.95	-9.57	0.51	137.66	6.21	-9.57	0.27
2800.00	2799.95	-8.92	0.44	113.95	5.72	-8.92	0.21
2900.00	2899.94	-8.12	0.58	118.09	5.33	-8.12	0.14
3000.00	2999.94	-7.27	0.58	127.10	4.78	-7.27	0.09
3100.00	3099.93	-6.45	0.59	124.19	4.19	-6.45	0.03
3200.00	3199.93	-5.59	0.60	125.08	3.60	-5.59	0.01
3300.00	3299.92	-4.70	0.63	122.16	3.00	-4.70	0.04
3400.00	3399.91	-3.82	0.54	120.01	2.48	-3.82	0.09
3500.00	3499.91	-2.98	0.58	120.34	1.99	-2.98	0.04
3600.00	3599.90	-2.06	0.64	121.32	1.44	-2.06	0.06
3700.00	3699.90	-1.17	0.58	124.60	0.86	-1.17	0.07
3800.00	3799.89	-0.30	0.67	129.11	0.21	-0.30	0.10
3900.00	3899.89	0.58	0.59	124.13	-0.45	0.58	0.10
4000.00	3999.88	1.48	0.63	119.56	-1.01	1.48	0.06
4100.00	4099.88	2.35	0.52	120.22	-1.51	2.35	0.11
4200.00	4199.87	3.13	0.55	127.75	-2.03	3.13	0.08
4300.00	4299.87	3.96	0.62	123.25	-2.62	3.96	0.08
4400.00	4399.86	4.87	0.64	124.16	-3.23	4.87	0.02
4500.00	4499.85	5.79	0.68	130.35	-3.93	5.79	0.08
4600.00	4599.85	6.60	0.53	128.33	-4.60	6.60	0.15
4700.00	4699.84	7.42	0.65	126.29	-5.23	7.42	0.12
4800.00	4799.84	8.24	0.55	131.34	-5.88	8.24	0.11
4900.00	4899.83	9.04	0.62	126.23	-6.52	9.04	0.09
5000.00	4999.83	9.88	0.60	128.41	-7.16	9.88	0.03
5100.00	5099.82	10.71	0.67	134.43	-7.89	10.71	0.10
5200.00	5199.81	11.47	0.60	139.10	-8.70	11.47	0.09
5300.00	5299.81	12.17	0.68	143.61	-9.57	12.17	0.09
5400.00	5399.80	12.94	0.83	144.69	-10.64	12.94	0.15
5500.00	5499.79	13.69	0.71	147.36	-11.76	13.69	0.13
5600.00	5599.78	14.37	0.66	143.52	-12.74	14.37	0.07
5700.00	5699.77	15.05	0.71	146.14	-13.72	15.05	0.06
5800.00	5799.77	15.71	0.72	150.52	-14.78	15.71	0.06
5900.00	5899.76	16.37	0.78	149.06	-15.91	16.37	0.06
6000.00	5999.75	17.13	0.91	149.00	-17.17	17.13	0.13
6100.00	6099.74	17.93	0.78	145.06	-18.41	17.93	0.14
6200.00	6199.72	18.74	1.05	152.56	-19.78	18.74	0.29
6300.00	6299.71	19.58	0.90	147.36	-21.26	19.58	0.17
6400.00	6399.70	20.43	0.99	150.56	-22.67	20.43	0.10
6500.00	6499.68	21.25	0.93	150.60	-24.13	21.25	0.06
6600.00	6599.67	22.12	1.06	149.57	-25.64	22.12	0.13
6700.00	6699.65	23.12	1.08	145.99	-27.21	23.12	0.07
6800.00	6799.63	24.07	1.07	152.86	-28.83	24.07	0.13

GOODNIGHT 27 FED#1.txt

6900.00	6899.61	24.93	1.02	150.60	-30.43	24.93	0.06
7000.00	6999.60	25.91	0.81	130.65	-31.67	25.91	0.38
7100.00	7099.60	26.68	0.45	143.46	-32.45	26.68	0.38
7200.00	7199.59	27.25	0.42	70.65	-32.64	27.25	0.52
7300.00	7299.59	27.87	0.87	20.81	-31.81	27.87	0.68
7400.00	7399.57	28.45	0.95	22.18	-30.33	28.45	0.08
7500.00	7499.56	29.05	0.97	19.53	-28.77	29.05	0.05
7600.00	7599.54	29.21	1.19	353.51	-26.94	29.21	0.53
7614.00	7613.54	29.17	1.22	350.66	-26.64	29.17	0.48

The Horizontal Displacement (in Feet) at
 Measured Depth 7614.00 is 39.51 in a Direction of 132.41 Degrees
 ~~~~~

É»  
° SCIENTIFIC DRILLING CONTROLS °  
É¼

# KEEPER GYRO SURVEY

## Directional Survey Report

for  
UAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA  
3 3  
3 3  
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAU

Well Number : GOODNIGHT 27 FED#1  
Well Location : EDDY COUNTY, NEW MEXICO  
Job Number : 32K0607479  
Location Latitude : 32.270  
Survey Date : 10-JUN-2007  
S.D.C. Personnel : ROBERT GONZALES  
Length Units : Feet  
North Reference : TRUE North  
Grid Correction : 0.00 Degrees  
Survey Depth Zero : RKB  
Proposal Direction : 90.00  
Calculation Method : Minimum Curvature

Remarks : The INRUN Survey will be called definitive

É»  
° SCIENTIFIC DRILLING CONTROLS °  
É¼

32-270  
10-JUN-2007  
32K0607479  
RKB  
90.00  
Minimum Curvature

| Job No : 32K0607479 |                   |                 |            | TRUE            | Proposal             | 90 00                 |               |
|---------------------|-------------------|-----------------|------------|-----------------|----------------------|-----------------------|---------------|
| Depth<br>( Feet )   | T V.D<br>( Feet ) | V.S<br>( Feet ) | Inc<br>Deg | Azimuth<br>Deg. | Latitude<br>( Feet ) | Departure<br>( Feet ) | D-leg<br>/100 |
| 0                   | 0                 | 0               | 0          | 0               | 0                    | 0                     | 0             |
| 100                 | 100               | -0.14           | 0.17       | 286.19          | 0.04                 | -0.14                 | 0.17          |
| 200                 | 200               | -0.22           | 0.21       | 21.79           | 0.25                 | -0.22                 | 0.28          |
| 300                 | 300               | -0.46           | 0.36       | 281.58          | 0.49                 | -0.46                 | 0.45          |
| 400                 | 400               | -0.9            | 0.2        | 307.02          | 0.65                 | -0.9                  | 0.2           |
| 500                 | 500               | -1.29           | 0.43       | 319.34          | 1.04                 | -1.29                 | 0.24          |
| 600                 | 599.99            | -1.8            | 0.31       | 264.39          | 1.3                  | -1.8                  | 0.36          |
| 700                 | 699.99            | -2.27           | 0.3        | 311.48          | 1.45                 | -2.27                 | 0.24          |
| 800                 | 799.99            | -2.52           | 0.06       | 267.21          | 1.62                 | -2.52                 | 0.26          |
| 900                 | 899.99            | -2.86           | 0.34       | 265.15          | 1.59                 | -2.86                 | 0.28          |
| 1000                | 999.99            | -3.4            | 0.32       | 299.11          | 1.7                  | -3.4                  | 0.19          |
| 1100                | 1099.99           | -3.93           | 0.41       | 308.24          | 2.06                 | -3.93                 | 0.11          |
| 1200                | 1199.98           | -4.4            | 0.38       | 324.52          | 2.55                 | -4.4                  | 0.12          |
| 1300                | 1299.98           | -4.95           | 0.47       | 299.61          | 3.02                 | -4.95                 | 0.2           |
| 1400                | 1399.98           | -5.68           | 0.49       | 300.37          | 3.44                 | -5.68                 | 0.02          |
| 1500                | 1499.97           | -6.42           | 0.47       | 292.79          | 3.82                 | -6.42                 | 0.07          |
| 1600                | 1599.97           | -7.18           | 0.46       | 288.47          | 4.11                 | -7.18                 | 0.04          |
| 1700                | 1699.97           | -7.81           | 0.47       | 323.54          | 4.56                 | -7.81                 | 0.28          |
| 1800                | 1799.96           | -8.32           | 0.33       | 287.98          | 4.98                 | -8.32                 | 0.28          |
| 1900                | 1899.96           | -8.82           | 0.28       | 293.42          | 5.17                 | -8.82                 | 0.06          |
| 2000                | 1999.96           | -9.28           | 0.27       | 281.22          | 5.31                 | -9.28                 | 0.06          |
| 2100                | 2099.96           | -9.82           | 0.58       | 322             | 5.75                 | -9.82                 | 0.41          |
| 2200                | 2199.96           | -10.32          | 0.24       | 293.46          | 6.24                 | -10.32                | 0.39          |
| 2300                | 2299.95           | -10.59          | 0.11       | 309.93          | 6.38                 | -10.59                | 0.14          |
| 2400                | 2399.95           | -10.83          | 0.27       | 315.22          | 6.61                 | -10.83                | 0.16          |
| 2500                | 2499.95           | -10.74          | 0.29       | 96.99           | 6.75                 | -10.74                | 0.53          |
| 2600                | 2599.95           | -10.18          | 0.37       | 106.22          | 6.63                 | -10.18                | 0.1           |
| 2700                | 2699.95           | -9.57           | 0.51       | 137.66          | 6.21                 | -9.57                 | 0.27          |
| 2800                | 2799.95           | -8.92           | 0.44       | 113.95          | 5.72                 | -8.92                 | 0.21          |
| 2900                | 2899.94           | -8.12           | 0.58       | 118.09          | 5.33                 | -8.12                 | 0.14          |
| 3000                | 2999.94           | -7.27           | 0.58       | 127.1           | 4.78                 | -7.27                 | 0.09          |
| 3100                | 3099.93           | -6.45           | 0.59       | 124.19          | 4.19                 | -6.45                 | 0.03          |
| 3200                | 3199.93           | -5.59           | 0.6        | 125.08          | 3.6                  | -5.59                 | 0.01          |
| 3300                | 3299.92           | -4.7            | 0.63       | 122.16          | 3                    | -4.7                  | 0.04          |
| 3400                | 3399.91           | -3.82           | 0.54       | 120.01          | 2.48                 | -3.82                 | 0.09          |
| 3500                | 3499.91           | -2.98           | 0.58       | 120.34          | 1.99                 | -2.98                 | 0.04          |
| 3600                | 3599.9            | -2.06           | 0.64       | 121.32          | 1.44                 | -2.06                 | 0.06          |
| 3700                | 3699.9            | -1.17           | 0.58       | 124.6           | 0.86                 | -1.17                 | 0.07          |
| 3800                | 3799.89           | -0.3            | 0.67       | 129.11          | 0.21                 | -0.3                  | 0.1           |
| 3900                | 3899.89           | 0.58            | 0.59       | 124.13          | -0.45                | 0.58                  | 0.1           |
| 4000                | 3999.88           | 1.48            | 0.63       | 119.56          | -1.01                | 1.48                  | 0.06          |
| 4100                | 4099.88           | 2.35            | 0.52       | 120.22          | -1.51                | 2.35                  | 0.11          |
| 4200                | 4199.87           | 3.13            | 0.55       | 127.75          | -2.03                | 3.13                  | 0.08          |
| 4300                | 4299.87           | 3.96            | 0.62       | 123.25          | -2.62                | 3.96                  | 0.08          |
| 4400                | 4399.86           | 4.87            | 0.64       | 124.16          | -3.23                | 4.87                  | 0.02          |
| 4500                | 4499.85           | 5.79            | 0.68       | 130.35          | -3.93                | 5.79                  | 0.08          |
| 4600                | 4599.85           | 6.6             | 0.53       | 128.33          | -4.6                 | 6.6                   | 0.15          |
| 4700                | 4699.84           | 7.42            | 0.65       | 126.29          | -5.23                | 7.42                  | 0.12          |

|      |         |       |      |        |        |       |      |
|------|---------|-------|------|--------|--------|-------|------|
| 4800 | 4799.84 | 8.24  | 0.55 | 131.34 | -5.88  | 8.24  | 0.11 |
| 4900 | 4899.83 | 9.04  | 0.62 | 126.23 | -6.52  | 9.04  | 0.09 |
| 5000 | 4999.83 | 9.88  | 0.6  | 128.41 | -7.16  | 9.88  | 0.03 |
| 5100 | 5099.82 | 10.71 | 0.67 | 134.43 | -7.89  | 10.71 | 0.1  |
| 5200 | 5199.81 | 11.47 | 0.6  | 139.1  | -8.7   | 11.47 | 0.09 |
| 5300 | 5299.81 | 12.17 | 0.68 | 143.61 | -9.57  | 12.17 | 0.09 |
| 5400 | 5399.8  | 12.94 | 0.83 | 144.69 | -10.64 | 12.94 | 0.15 |
| 5500 | 5499.79 | 13.69 | 0.71 | 147.36 | -11.76 | 13.69 | 0.13 |
| 5600 | 5599.78 | 14.37 | 0.66 | 143.52 | -12.74 | 14.37 | 0.07 |
| 5700 | 5699.77 | 15.05 | 0.71 | 146.14 | -13.72 | 15.05 | 0.06 |
| 5800 | 5799.77 | 15.71 | 0.72 | 150.52 | -14.78 | 15.71 | 0.06 |
| 5900 | 5899.76 | 16.37 | 0.78 | 149.06 | -15.91 | 16.37 | 0.06 |
| 6000 | 5999.75 | 17.13 | 0.91 | 149    | -17.17 | 17.13 | 0.13 |
| 6100 | 6099.74 | 17.93 | 0.78 | 145.06 | -18.41 | 17.93 | 0.14 |
| 6200 | 6199.72 | 18.74 | 1.05 | 152.56 | -19.78 | 18.74 | 0.29 |
| 6300 | 6299.71 | 19.58 | 0.9  | 147.36 | -21.26 | 19.58 | 0.17 |
| 6400 | 6399.7  | 20.43 | 0.99 | 150.56 | -22.67 | 20.43 | 0.1  |
| 6500 | 6499.68 | 21.25 | 0.93 | 150.6  | -24.13 | 21.25 | 0.06 |
| 6600 | 6599.67 | 22.12 | 1.06 | 149.57 | -25.64 | 22.12 | 0.13 |
| 6700 | 6699.65 | 23.12 | 1.08 | 145.99 | -27.21 | 23.12 | 0.07 |
| 6800 | 6799.63 | 24.07 | 1.07 | 152.86 | -28.83 | 24.07 | 0.13 |
| 6900 | 6899.61 | 24.93 | 1.02 | 150.6  | -30.43 | 24.93 | 0.06 |
| 7000 | 6999.6  | 25.91 | 0.81 | 130.65 | -31.67 | 25.91 | 0.38 |
| 7100 | 7099.6  | 26.68 | 0.45 | 143.46 | -32.45 | 26.68 | 0.38 |
| 7200 | 7199.59 | 27.25 | 0.42 | 70.65  | -32.64 | 27.25 | 0.52 |
| 7300 | 7299.59 | 27.87 | 0.87 | 20.81  | -31.81 | 27.87 | 0.68 |
| 7400 | 7399.57 | 28.45 | 0.95 | 22.18  | -30.33 | 28.45 | 0.08 |
| 7500 | 7499.56 | 29.05 | 0.97 | 19.53  | -28.77 | 29.05 | 0.05 |
| 7600 | 7599.54 | 29.21 | 1.19 | 353.51 | -26.94 | 29.21 | 0.53 |
| 7614 | 7613.54 | 29.17 | 1.22 | 350.66 | -26.64 | 29.17 | 0.48 |

The Horizontal Displacement ( in Feet ) at  
Measured Depth 7614.00 is 39.51 in a Direction of 132.41 Degrees

|||||

□

# Pathfinder Energy

## Survey Report

|                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                       |                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>Company:</b> Latigo<br><b>Field:</b> Goodnight 27 Federal #1 Re-Entry<br><b>Site:</b> Goodnight 27 Federal #1 Re-Entry<br><b>Well:</b> Goodnight 27 Federal #1 Re-Ent<br><b>Wellpath:</b> OH | <b>Date:</b> 07/31/2007<br><b>Co-ordinate(NE) Reference:</b> Site: Goodnight 27 Federal #1 Re-Entry<br><b>Vertical (TVD) Reference:</b> SITE 0.0<br><b>Section (VS) Reference:</b> Well (0.00N,0.00E,90.00Azi)<br><b>Survey Calculation Method:</b> Minimum Curvature | <b>Time:</b> 15:00:38<br><b>Page:</b> 1<br><b>Db:</b> Sybase |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|

|                                                |  |
|------------------------------------------------|--|
| <b>Field:</b> Goodnight 27 Federal #1 Re-Entry |  |
|------------------------------------------------|--|

|                                                                                                                                       |                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Map System:</b> US State Plane Coordinate System 1927<br><b>Geo Datum:</b> NAD27 (Clarke 1866)<br><b>Sys Datum:</b> Mean Sea Level | <b>Map Zone:</b> New Mexico, Eastern Zone<br><b>Coordinate System:</b> Site Centre<br><b>Geomagnetic Model:</b> igrf2005 |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|

|                                               |  |
|-----------------------------------------------|--|
| <b>Site:</b> Goodnight 27 Federal #1 Re-Entry |  |
|-----------------------------------------------|--|

|                                                                                                                          |                                                               |                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site Position:</b><br><b>From:</b> Geographic<br><b>Position Uncertainty:</b> 0.00 ft<br><b>Ground Level:</b> 0.00 ft | <b>Northing:</b> 460627.39 ft<br><b>Easting:</b> 301555.57 ft | <b>Latitude:</b> 32 15 53.100 N<br><b>Longitude:</b> 104 58 31.200 W<br><b>North Reference:</b> Grid<br><b>Grid Convergence:</b> -0.34 deg |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|

|                                             |                   |
|---------------------------------------------|-------------------|
| <b>Well:</b> Goodnight 27 Federal #1 Re-Ent | <b>Slot Name:</b> |
|---------------------------------------------|-------------------|

|                                                                                              |                                                               |                                                                      |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Well Position:</b> +N/-S 0.00 ft<br>+E/-W 0.00 ft<br><b>Position Uncertainty:</b> 0.00 ft | <b>Northing:</b> 460627.39 ft<br><b>Easting:</b> 301555.57 ft | <b>Latitude:</b> 32 15 53.100 N<br><b>Longitude:</b> 104 58 31.200 W |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------|

|                                                                                                                                                                          |                                                   |                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wellpath:</b> OH<br><br><b>Current Datum:</b> SITE<br><b>Magnetic Data:</b> 05/30/2007<br><b>Field Strength:</b> 0 nT<br><b>Vertical Section:</b> Depth From (TVD) ft | <b>Height</b> 0.00 ft<br><br>+N/-S ft<br>+E/-W ft | <b>Drilled From:</b> Surface<br><b>Tie-on Depth:</b> 0.00 ft<br><b>Above System Datum:</b> Mean Sea Level<br><b>Declination:</b> 0.00 deg<br><b>Mag Dip Angle:</b> 0.00 deg<br><b>Direction</b> deg |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                        |                                                                                                |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Survey:</b> Pathfinder MWD<br><br><b>Company:</b> Pathfinder Energy<br><b>Tool:</b> | <b>Start Date:</b> 06/15/2007<br><br><b>Engineer:</b><br><b>Tied-to:</b> From: Definitive Path |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|

|                               |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|--|--|--|--|--|--|--|--|--|--|
| <b>Survey:</b> Pathfinder MWD |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|--|--|--|--|--|--|--|--|--|--|

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment              |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|---------------------------|
| 7609.54  | 1.21        | 351.55      | 7609.09   | -26.74      | 29.19       | 29.19    | 0.00             | 0.00               | 0.00              | KOP @ 7610' MD/, Begin Bu |
| 7614.00  | 1.22        | 350.66      | 7613.55   | -26.64      | 29.17       | 29.17    | 0.48             | 0.22               | -20.01            |                           |
| 7678.00  | 18.99       | 85.78       | 7676.38   | -25.19      | 39.55       | 39.55    | 29.90            | 27.77              | 148.63            |                           |
| 7709.00  | 24.62       | 83.94       | 7705.15   | -24.14      | 51.01       | 51.01    | 18.29            | 18.16              | -5.94             |                           |
| 7739.00  | 31.39       | 83.12       | 7731.63   | -22.54      | 64.99       | 64.99    | 22.60            | 22.57              | -2.73             |                           |
| 7770.00  | 37.64       | 81.93       | 7757.16   | -20.24      | 82.40       | 82.40    | 20.28            | 20.16              | -3.84             | EOC @ 8016' MD, 7870' TVD |
| 7801.00  | 43.79       | 81.43       | 7780.64   | -17.31      | 102.40      | 102.40   | 19.87            | 19.84              | -1.61             |                           |
| 7831.00  | 50.47       | 83.20       | 7801.04   | -14.39      | 124.17      | 124.17   | 22.68            | 22.27              | 5.90              |                           |
| 7862.00  | 57.16       | 86.31       | 7819.34   | -12.14      | 149.07      | 149.07   | 23.05            | 21.58              | 10.03             |                           |
| 7893.00  | 63.49       | 90.16       | 7834.68   | -11.34      | 175.97      | 175.97   | 23.09            | 20.42              | 12.42             |                           |
| 7923.00  | 70.43       | 93.11       | 7846.42   | -12.14      | 203.55      | 203.55   | 24.84            | 23.13              | 9.83              |                           |
| 7954.00  | 77.29       | 94.10       | 7855.03   | -14.02      | 233.25      | 233.25   | 22.34            | 22.13              | 3.19              |                           |
| 7982.00  | 82.92       | 94.75       | 7859.84   | -16.15      | 260.74      | 260.74   | 20.24            | 20.11              | 2.32              |                           |
| 8013.00  | 87.49       | 95.99       | 7862.43   | -19.04      | 291.49      | 291.49   | 15.27            | 14.74              | 4.00              |                           |
| 8016.26  | 87.46       | 96.01       | 7862.57   | -19.38      | 294.72      | 294.72   | 1.02             | -0.87              | 0.53              |                           |
| 8043.00  | 87.23       | 96.15       | 7863.81   | -22.21      | 321.29      | 321.29   | 1.02             | -0.87              | 0.53              |                           |
| 8074.00  | 87.32       | 96.27       | 7865.29   | -25.56      | 352.07      | 352.07   | 0.48             | 0.29               | 0.39              |                           |
| 8105.00  | 86.97       | 95.91       | 7866.83   | -28.84      | 382.86      | 382.86   | 1.62             | -1.13              | -1.16             |                           |
| 8137.00  | 87.58       | 96.03       | 7868.35   | -32.16      | 414.65      | 414.65   | 1.94             | 1.91               | 0.37              |                           |
| 8166.00  | 88.90       | 96.21       | 7869.24   | -35.25      | 443.47      | 443.47   | 4.59             | 4.55               | 0.62              |                           |
| 8197.00  | 89.16       | 96.32       | 7869.77   | -38.64      | 474.28      | 474.28   | 0.91             | 0.84               | 0.35              |                           |
| 8258.00  | 88.90       | 96.11       | 7870.80   | -45.24      | 534.91      | 534.91   | 0.55             | -0.43              | -0.34             |                           |
| 8289.00  | 89.08       | 96.05       | 7871.35   | -48.52      | 565.73      | 565.73   | 0.61             | 0.58               | -0.19             |                           |
| 8320.00  | 88.55       | 96.30       | 7871.99   | -51.86      | 596.54      | 596.54   | 1.89             | -1.71              | 0.81              |                           |

# Pathfinder Energy

## Survey Report

|                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                       |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>Company:</b> Latigo<br><b>Field:</b> Goodnight 27 Federal #1 Re-Entry<br><b>Site:</b> Goodnight 27 Federal #1 Re-Entry<br><b>Well:</b> Goodnight 27 Federal #1 Re-Ent<br><b>Wellpath:</b> OH | <b>Date:</b> 07/31/2007<br><b>Co-ordinate(NE) Reference:</b> Site. Goodnight 27 Federal #1 Re-Entry<br><b>Vertical (TVD) Reference:</b> SITE 0.0<br><b>Section (VS) Reference:</b> Well (0.00N,0.00E,90.00Azi)<br><b>Survey Calculation Method:</b> Minimum Curvature | <b>Page:</b> 2<br><b>Db:</b> Sybase |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|

Survey: Pathfinder MWD

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 8350.00  | 88.46       | 96.17       | 7872.77   | -55.11      | 626.36      | 626.36   | 0.53             | -0.30              | -0.43             |              |
| 8381.00  | 88.64       | 96.14       | 7873.55   | -58.44      | 657.17      | 657.17   | 0.59             | 0.58               | -0.10             |              |
| 8442.00  | 89.34       | 96.24       | 7874.63   | -65.01      | 717.80      | 717.80   | 1.16             | 1.15               | 0.16              |              |
| 8534.00  | 91.45       | 95.76       | 7873.99   | -74.63      | 809.29      | 809.29   | 2.35             | 2.29               | -0.52             |              |
| 8564.00  | 88.29       | 94.60       | 7874.06   | -77.34      | 839.16      | 839.16   | 11.22            | -10.53             | -3.87             |              |
| 8630.00  | 86.61       | 92.29       | 7877.00   | -81.30      | 904.97      | 904.97   | 4.32             | -2.55              | -3.50             |              |
| 8661.00  | 86.44       | 92.34       | 7878.88   | -82.55      | 935.89      | 935.89   | 0.57             | -0.55              | 0.16              |              |
| 8692.00  | 86.53       | 92.27       | 7880.78   | -83.79      | 966.81      | 966.81   | 0.37             | 0.29               | -0.23             |              |
| 8723.00  | 85.56       | 90.66       | 7882.92   | -84.58      | 997.72      | 997.72   | 6.05             | -3.13              | -5.19             |              |
| 8749.00  | 85.30       | 90.21       | 7884.99   | -84.78      | 1023.64     | 1023.64  | 1.99             | -1.00              | -1.73             |              |
| 8779.00  | 89.60       | 90.79       | 7886.32   | -85.04      | 1053.60     | 1053.60  | 14.46            | 14.33              | 1.93              |              |
| 8810.00  | 91.36       | 90.94       | 7886.06   | -85.51      | 1084.59     | 1084.59  | 5.70             | 5.68               | 0.48              |              |
| 8841.00  | 90.84       | 90.87       | 7885.47   | -86.00      | 1115.58     | 1115.58  | 1.69             | -1.68              | -0.23             |              |
| 8871.00  | 89.78       | 89.72       | 7885.31   | -86.16      | 1145.58     | 1145.58  | 5.21             | -3.53              | -3.83             |              |
| 8906.00  | 89.25       | 89.53       | 7885.60   | -85.93      | 1180.58     | 1180.58  | 1.61             | -1.51              | -0.54             |              |
| 8937.00  | 88.02       | 88.78       | 7886.34   | -85.47      | 1211.57     | 1211.57  | 4.65             | -3.97              | -2.42             |              |
| 8968.00  | 87.93       | 88.52       | 7887.44   | -84.74      | 1242.54     | 1242.54  | 0.89             | -0.29              | -0.84             |              |
| 8998.00  | 88.20       | 88.02       | 7888.45   | -83.83      | 1272.51     | 1272.51  | 1.89             | 0.90               | -1.67             |              |
| 9029.00  | 90.48       | 87.68       | 7888.81   | -82.67      | 1303.48     | 1303.48  | 7.44             | 7.35               | -1.10             |              |
| 9056.00  | 91.71       | 87.35       | 7888.29   | -81.50      | 1330.45     | 1330.45  | 4.72             | 4.56               | -1.22             |              |
| 9086.00  | 92.59       | 87.73       | 7887.17   | -80.21      | 1360.40     | 1360.40  | 3.19             | 2.93               | 1.27              |              |
| 9117.00  | 92.77       | 87.29       | 7885.72   | -78.87      | 1391.34     | 1391.34  | 1.53             | 0.58               | -1.42             |              |
| 9148.00  | 93.30       | 86.70       | 7884.07   | -77.25      | 1422.25     | 1422.25  | 2.56             | 1.71               | -1.90             |              |
| 9178.00  | 93.56       | 86.48       | 7882.28   | -75.46      | 1452.15     | 1452.15  | 1.13             | 0.87               | -0.73             |              |
| 9209.00  | 94.00       | 86.80       | 7880.24   | -73.65      | 1483.03     | 1483.03  | 1.75             | 1.42               | 1.03              |              |
| 9240.00  | 94.26       | 86.37       | 7878.00   | -71.81      | 1513.89     | 1513.89  | 1.62             | 0.84               | -1.39             |              |
| 9270.00  | 94.09       | 86.17       | 7875.82   | -69.86      | 1543.75     | 1543.75  | 0.87             | -0.57              | -0.67             |              |
| 9301.00  | 93.91       | 85.06       | 7873.66   | -67.50      | 1574.58     | 1574.58  | 3.62             | -0.58              | -3.58             |              |
| 9332.00  | 94.18       | 85.98       | 7871.47   | -65.08      | 1605.41     | 1605.41  | 3.09             | 0.87               | 2.97              |              |
| 9363.00  | 93.42       | 85.17       | 7869.42   | -62.70      | 1636.25     | 1636.25  | 3.58             | -2.45              | -2.61             |              |
| 9393.00  | 93.39       | 85.16       | 7867.63   | -60.17      | 1666.09     | 1666.09  | 0.11             | -0.10              | -0.03             |              |
| 9424.00  | 91.28       | 85.19       | 7866.37   | -57.57      | 1696.95     | 1696.95  | 6.81             | -6.81              | 0.10              |              |
| 9455.00  | 91.45       | 84.87       | 7865.63   | -54.88      | 1727.83     | 1727.83  | 1.17             | 0.55               | -1.03             |              |
| 9485.00  | 91.71       | 84.41       | 7864.80   | -52.08      | 1757.68     | 1757.68  | 1.76             | 0.87               | -1.53             |              |
| 9516.00  | 91.71       | 84.81       | 7863.88   | -49.17      | 1788.53     | 1788.53  | 1.29             | 0.00               | 1.29              |              |
| 9547.00  | 90.40       | 84.67       | 7863.31   | -46.33      | 1819.40     | 1819.40  | 4.25             | -4.23              | -0.45             |              |
| 9577.00  | 90.40       | 84.79       | 7863.10   | -43.57      | 1849.27     | 1849.27  | 0.40             | 0.00               | 0.40              |              |
| 9608.00  | 90.22       | 84.23       | 7862.93   | -40.61      | 1880.13     | 1880.13  | 1.90             | -0.58              | -1.81             |              |
| 9639.00  | 90.40       | 84.33       | 7862.76   | -37.52      | 1910.97     | 1910.97  | 0.66             | 0.58               | 0.32              |              |
| 9670.00  | 90.22       | 84.24       | 7862.60   | -34.43      | 1941.82     | 1941.82  | 0.65             | -0.58              | -0.29             |              |
| 9700.00  | 90.04       | 83.96       | 7862.53   | -31.35      | 1971.66     | 1971.66  | 1.11             | -0.60              | -0.93             |              |
| 9730.00  | 89.69       | 83.77       | 7862.60   | -28.14      | 2001.48     | 2001.48  | 1.33             | -1.17              | -0.63             |              |
| 9761.00  | 88.81       | 83.25       | 7863.00   | -24.64      | 2032.28     | 2032.28  | 3.30             | -2.84              | -1.68             |              |
| 9792.00  | 88.81       | 82.74       | 7863.65   | -20.86      | 2063.04     | 2063.04  | 1.64             | 0.00               | -1.65             |              |
| 9823.00  | 88.46       | 82.89       | 7864.39   | -16.98      | 2093.79     | 2093.79  | 1.23             | -1.13              | 0.48              |              |
| 9853.00  | 88.90       | 82.38       | 7865.08   | -13.14      | 2123.54     | 2123.54  | 2.24             | 1.47               | -1.70             |              |
| 9884.00  | 89.16       | 82.32       | 7865.60   | -9.01       | 2154.26     | 2154.26  | 0.86             | 0.84               | -0.19             |              |
| 9915.00  | 89.96       | 82.01       | 7865.84   | -4.79       | 2184.97     | 2184.97  | 2.77             | 2.58               | -1.00             |              |
| 9945.00  | 90.22       | 82.32       | 7865.79   | -0.70       | 2214.69     | 2214.69  | 1.35             | 0.87               | 1.03              |              |
| 9976.00  | 90.40       | 82.24       | 7865.63   | 3.47        | 2245.40     | 2245.40  | 0.64             | 0.58               | -0.26             |              |
| 10007.00 | 91.36       | 82.00       | 7865.15   | 7.72        | 2276.11     | 2276.11  | 3.19             | 3.10               | -0.77             |              |
| 10038.00 | 91.54       | 81.47       | 7864.37   | 12.17       | 2306.78     | 2306.78  | 1.81             | 0.58               | -1.71             |              |
| 10069.00 | 90.57       | 81.95       | 7863.79   | 16.64       | 2337.45     | 2337.45  | 3.49             | -3.13              | 1.55              |              |

# Pathfinder Energy

## Survey Report

|                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Company:</b> Latigo<br><b>Field:</b> Goodnight 27 Federal #1 Re-Entry<br><b>Site:</b> Goodnight 27 Federal #1 Re-Entry<br><b>Well:</b> Goodnight 27 Federal #1 Re-Ent<br><b>Wellpath:</b> OH | <b>Date:</b> 07/31/2007 <b>Time:</b> 15:00:38 <b>Page:</b> 3<br><b>Co-ordinate(NE) Reference:</b> Site: Goodnight 27 Federal #1 Re-Entry<br><b>Vertical (TVD) Reference:</b> SITE 0.0<br><b>Section (VS) Reference:</b> Well (0.00N,0.00E,90.00Azi)<br><b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Sybase |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Survey:** Pathfinder MWD

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment              |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|---------------------------|
| 10099.00 | 90.22       | 82.24       | 7863.59   | 20.77       | 2367.16     | 2367.16  | 1.52             | -1.17              | 0.97              |                           |
| 10130.00 | 90.22       | 82.14       | 7863.47   | 24.98       | 2397.87     | 2397.87  | 0.32             | 0.00               | -0.32             |                           |
| 10161.00 | 90.40       | 82.08       | 7863.30   | 29.24       | 2428.58     | 2428.58  | 0.61             | 0.58               | -0.19             |                           |
| 10191.00 | 91.01       | 82.44       | 7862.93   | 33.28       | 2458.30     | 2458.30  | 2.36             | 2.03               | 1.20              |                           |
| 10222.00 | 91.19       | 82.22       | 7862.34   | 37.41       | 2489.02     | 2489.02  | 0.92             | 0.58               | -0.71             |                           |
| 10253.00 | 90.22       | 82.15       | 7861.96   | 41.63       | 2519.73     | 2519.73  | 3.14             | -3.13              | -0.23             |                           |
| 10283.00 | 90.31       | 82.17       | 7861.82   | 45.72       | 2549.45     | 2549.45  | 0.31             | 0.30               | 0.07              |                           |
| 10314.00 | 90.48       | 82.46       | 7861.60   | 49.86       | 2580.17     | 2580.17  | 1.08             | 0.55               | 0.94              |                           |
| 10345.00 | 90.40       | 82.67       | 7861.37   | 53.88       | 2610.91     | 2610.91  | 0.72             | -0.26              | 0.68              |                           |
| 10375.00 | 90.51       | 82.57       | 7861.13   | 57.73       | 2640.66     | 2640.66  | 0.50             | 0.37               | -0.33             |                           |
| 10406.00 | 90.22       | 82.37       | 7860.93   | 61.79       | 2671.39     | 2671.39  | 1.14             | -0.94              | -0.65             |                           |
| 10437.00 | 89.25       | 82.83       | 7861.07   | 65.78       | 2702.13     | 2702.13  | 3.46             | -3.13              | 1.48              |                           |
| 10468.00 | 88.53       | 83.31       | 7861.67   | 69.52       | 2732.90     | 2732.90  | 2.79             | -2.32              | 1.55              |                           |
| 10498.00 | 88.81       | 83.19       | 7862.37   | 73.05       | 2762.68     | 2762.68  | 1.02             | 0.93               | -0.40             |                           |
| 10529.00 | 88.46       | 83.78       | 7863.11   | 76.56       | 2793.47     | 2793.47  | 2.21             | -1.13              | 1.90              |                           |
| 10560.00 | 88.11       | 84.38       | 7864.04   | 79.76       | 2824.29     | 2824.29  | 2.24             | -1.13              | 1.94              |                           |
| 10590.00 | 87.05       | 84.84       | 7865.30   | 82.58       | 2854.13     | 2854.13  | 3.85             | -3.53              | 1.53              |                           |
| 10621.00 | 86.44       | 84.99       | 7867.06   | 85.32       | 2884.96     | 2884.96  | 2.03             | -1.97              | 0.48              |                           |
| 10651.00 | 86.70       | 85.56       | 7868.86   | 87.79       | 2914.81     | 2914.81  | 2.09             | 0.87               | 1.90              | Final MWD Survey @ 10651' |
| 10705.00 | 86.70       | 85.56       | 7871.97   | 91.96       | 2968.56     | 2968.56  | 0.00             | 0.00               | 0.00              | Proj. to Bit @ 10705' MD  |

### Targets

| Name | Description<br>Dip. Dir. | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | Map<br>Northing<br>ft | Map<br>Easting<br>ft | ← Latitude →<br>Deg Min Sec |    |          | ← Longitude →<br>Deg Min Sec |    |          |
|------|--------------------------|-----------|-------------|-------------|-----------------------|----------------------|-----------------------------|----|----------|------------------------------|----|----------|
| PBHL |                          | 7900.00   | 0.00        | 2970.00     | 460627.39             | 304525.57            | 32                          | 15 | 53.274 N | 104                          | 57 | 56.611 W |

### Annotation

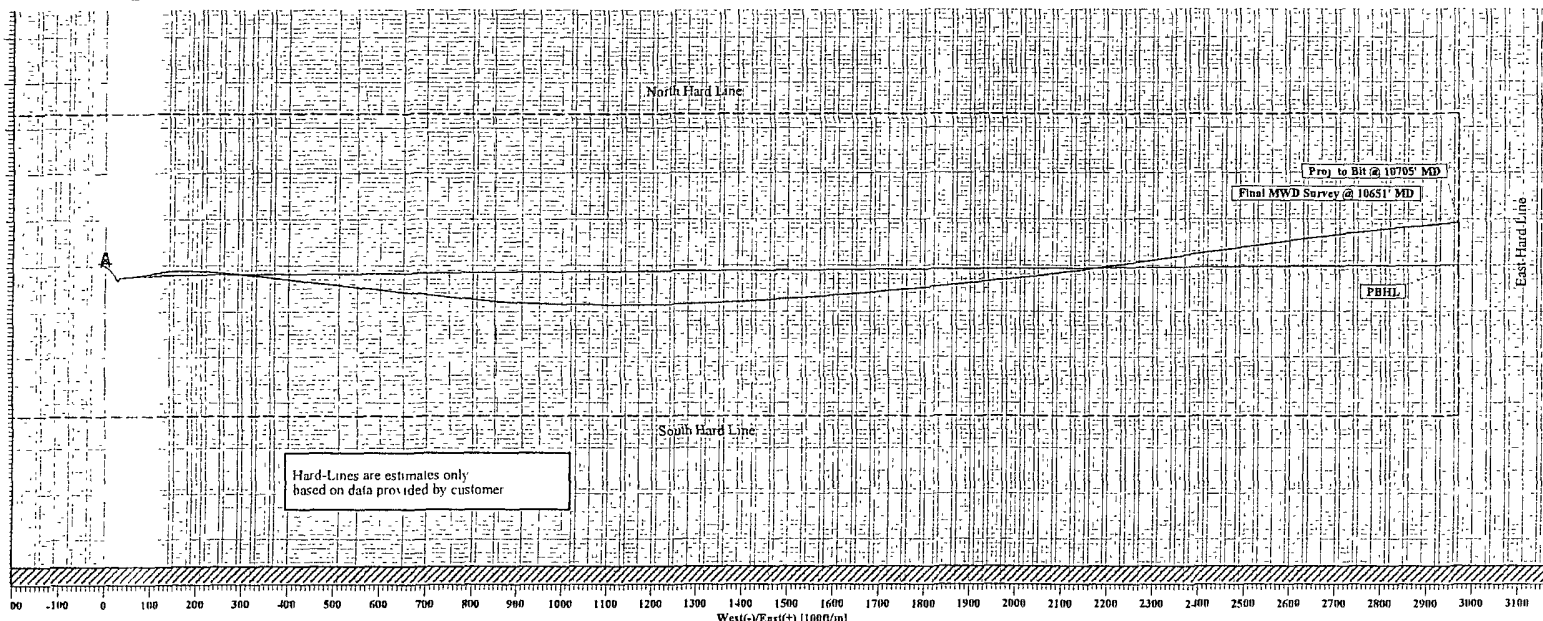
| MD<br>ft | TVD<br>ft |                                         |
|----------|-----------|-----------------------------------------|
| 7609.54  | 7609.09   | KOP @ 7610' MD/, Begin Build @ 22°/100' |
| 8016.26  | 7862.57   | EOC @ 8016' MD, 7870' TVD, 89.36° INC   |
| 10651.00 | 7868.86   | Final MWD Survey @ 10651' MD            |
| 10705.00 | 7871.97   | Proj. to Bit @ 10705' MD                |



Field: Goodnight 27 Federal #1 Re-Entry  
Site: Goodnight 27 Federal #1 Re-Entry  
Well: Goodnight 27 Federal #1 Re-Entry  
Wellpath: OH  
Survey: Pathfinder MWD

# PATHFINDER

## Latigo



Hard-Lines are estimates only  
based on data provided by customer

### WELLPATH DETAILS

OH

|           |          |          |
|-----------|----------|----------|
| Rtg       | SITE     | 0.000    |
| Ref Datum |          |          |
| V Section | Origin   | Origin   |
| Angle     | +N/-S    | +E/-W    |
| 90.00°    | 0.00     | 0.00     |
|           | Starting | From TVD |
|           | 0.00     | 0.00     |

### TARGET DETAILS

|      |         |       |         |       |
|------|---------|-------|---------|-------|
| Name | TVD     | +N/-S | +E/-W   | Shape |
| PBHL | 7900.00 | 0.00  | 2970.00 | Point |

### ANNOTATIONS

| No | TVD     | MD       | Annotation                             |
|----|---------|----------|----------------------------------------|
| 1  | 7609.09 | 7609.54  | KOP @ 7610' MD, Begin Build @ 22°/100' |
| 2  | 7862.57 | 8016.26  | EOC @ 8016' MD, 7870' TVD, 89.36° INC  |
| 3  | 7868.86 | 10651.00 | Final MWD Survey @ 10651' MD           |
| 4  | 7871.97 | 10705.00 | Proj to Bit @ 10705' MD                |

### Survey Pathfinder MWD (Goodnight 27 Federal #1 Re-Entry/OH)

| No | MD       | Inc   | Az    | TVD     | +N/-S | +E/-W   | DLeg | TFace  | VSec    |
|----|----------|-------|-------|---------|-------|---------|------|--------|---------|
| 89 | 10498.00 | 88.81 | 83.19 | 7862.37 | 73.05 | 2762.68 | 1.02 | -23.19 | 2762.68 |
| 90 | 10529.00 | 88.46 | 83.78 | 7863.11 | 76.56 | 2793.47 | 2.21 | 120.69 | 2793.47 |
| 91 | 10560.00 | 88.11 | 84.38 | 7864.04 | 79.76 | 2824.29 | 2.24 | 120.28 | 2824.29 |
| 92 | 10590.00 | 87.05 | 84.84 | 7865.30 | 82.58 | 2854.13 | 3.85 | 156.57 | 2854.13 |
| 93 | 10621.00 | 86.44 | 84.99 | 7867.06 | 85.32 | 2884.96 | 2.03 | 166.21 | 2884.96 |
| 94 | 10651.00 | 86.70 | 85.56 | 7868.86 | 87.79 | 2914.81 | 2.09 | 65.46  | 2914.81 |
| 95 | 10705.00 | 86.70 | 85.56 | 7871.97 | 91.96 | 2968.56 | 0.00 | 0.00   | 2968.56 |

### LEGEND

- Goodnight 27 Federal #1 Re-Entry, OH, Plan #2 G-11-07
- OH
- Pathfinder MWD

