



March 12, 2019

New Mexico Energy, Minerals and Natural Resources Department  
Attn: Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Attn: Joe Stanley

Re: XTO Energy Inc,  
Muy Wayno 18 Federal #121H  
Purple Sage; Wolfcamp  
Eddy County, New Mexico  
API# 30-015-44840

Enclosed please find the original and one (1) copy of the survey performed on the reference well by STRYKER ENERGY DIRECTIONAL SERVICES, L.L.C. Other information required by your office is as follows:

<u>Name &amp; Title</u>	<u>Drainhole No.</u>	<u>Survey Depths</u>	<u>Dates Performed</u>	<u>Type Survey</u>
Wilmar Reyes	Original Hole	187ft. to 18,604ft.	11-30-18 to 12-27-18	MWD Survey

A certified plat on which the bottom-hole location is oriented to both surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

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

Eric Estes

Enclosures

CC:

XTO Energy Inc.  
Attn: Joe Stanley  
6401 Holiday Hill Rd. #5  
Midland, Texas 79707

NMEMaNRD\XTO Energy Inc\Muy Wayno 18 Federal #121H\181160

**STRYKER ENERGY DIRECTIONAL SERVICES, L.L.C.**  
P.O. Box 1250  
Montgomery, TX 77356  
Office (936) 582-7296 \* Fax (936)-588-4163



March 12, 2019

Survey Certification Report

STATE OF            TEXAS

COUNTY OF        Montgomery

I, Eric Estes, certify that I am employed by STRYKER ENERGY DIRECTIONAL SERVICES, L.L.C., and that I did on the day(s) of November 30, 2018, through December 27, 2018 conduct or supervise the taking of a SEDS Original Hole MWD Survey from a depth of 187feet to a depth of 18,604feet; that I am authorized and qualified to make this report; that this survey was conducted at the request of XTO Energy Inc., for the Muy Wayno 18 Federal #121H, well API # **30-015-44840** in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principles as set forth by STRYKER ENERGY DIRECTIONAL SERVICES, L.L.C.

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

Eric Estes

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## OCD Permitting

[Home](#) > [Wells](#) > [Well Details](#)

### 30-015-44840 MUY WAYNO 18 FEDERAL #121H [321151]

#### General Well Information

Operator:	[5380] XTO ENERGY, INC	Direction:	Horizontal
Status:	New	Multi-Lateral:	No
Well Type:	Gas	Mineral Owner:	Federal
Work Type:	New	Surface Owner:	Federal
Surface Location:	L-18-25S-30E Lot: 3 2310 FSL 410 FWL		
Lat/Long:	32.129172,-103.928078 NAD83		
GL Elevation:	3160		
KB Elevation:		Sing/Mult Compl:	Single
DF Elevation:		Potash Waiver:	False

#### Proposed Formation and/or Notes

#### Depths

Proposed:	18643	Total Vertical Depth:	0
Measured Vertical Depth:	0	Plugback Measured:	0

#### Formation Tops

Formation	Top	Producing	Method Obtained
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#### Event Dates

Initial APD Approval:	03/01/2018	Current APD Expiration:	03/01/2020
Most Recent APD Approval:	03/30/2018		
APD Cancellation:			
APD Extension Approval:			
Spud:		Gas Capture Plan Received:	03/28/2018
Approved Temporary Abandonment:		TA Expiration:	
Shut In:			
Plug and Abandoned Intent Received:		PNR Expiration:	
Well Plugged:		Last MIT/BHT:	
Site Release:			
Last Inspection:			

#### Quick Links

- [General Well Information](#)
- [History](#)
- [Comments](#)
- [Operator](#)
- [Pits](#)
- [Casing](#)
- [Well Completions](#)
- [Financial Assurance](#)
- [Compliance](#)
- [Complaints, Incidents and Spill](#)
- [Orders](#)
- [Production](#)
- [Transporters](#)
- [Points of Disposition](#)

#### Associated Images

- [Well Files](#)
- [Well Logs](#)
- [Administrative Orders](#)

#### New Searches

- [New Well Search](#)

#### History

**Comments****Operator****General Contact Information**

Company:	[5380] XTO ENERGY, INC	Main Phone:	432-620-6724
Address:	6401 Holiday Hill Road Building #5	Main Fax:	
	Midland, TX 79707		
Country:	U.S.A.		

**Central Contact**

Name:	DeeAnn Kemp	Phone Number:	432-620-6724
Title:	Regulatory Manager	Cell Number:	
E-Mail Address:	DeeAnn_Kemp@XTOEnergy.com	Fax Number:	

**Hobbs Contact**

Name:	Scott Kaufman	Phone Number:	432-592-9401
Title:		Cell Number:	432-592-9401
E-Mail Address:	Scott_Kaufman@xtoenergy.com	Fax Number:	

**Artesia Contact**

Name:	Wes McSpadden	Phone Number:	575-689-3352
Title:		Cell Number:	432-967-0827
E-Mail Address:	wes_mcspadden@xtoenergy.com	Fax Number:	

**Pits**

No Pits Found

**Casing**

No Casing Found

**Well Completions****[98220] PURPLE SAGE; WOLFCAMP (GAS)**

Status:	New, Not Drilled	Last Produced:	
Bottomhole Location:	D-07-25S-30E	Lot: 1	200 FNL 330 FWL
Lat/Long:			

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

<b>Project</b>	Eddy County, NM (NAD27) NMEZ Grid		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site</b>	Muy Wayno 18 Federal		
<b>Site Position:</b>		<b>Northing:</b>	410,906.20 usft
<b>From:</b>	Map	<b>Easting:</b>	625,601.10 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	32° 7' 44.571 N
		<b>Longitude:</b>	103° 55' 39.337 W
		<b>Grid Convergence:</b>	0.22 °

<b>Well</b>	Muy Wayno 18 Federal 121H		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 410,906.10 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 625,571.10 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	32° 7' 44.571 N
		<b>Longitude:</b>	103° 55' 39.686 W
		<b>Ground Level:</b>	3,159.00 usft

<b>Wellbore</b>	121H L1		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF2015	2018/11/09	6.96
			<b>Dip Angle (°)</b>
			59.90
			<b>Field Strength (nT)</b>
			47,702.48285492

<b>Design</b>	121H L1 (AsDrilled)		
<b>Audit Notes:</b>			
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL
		<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>
	0.00	0.00	0.00
			<b>Direction (°)</b>
			359.71

<b>Survey Program</b>	<b>Date</b>	2018/12/27			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
187.00	18,604.00	Survey #1 (121H L1)	MWD	OWSG MWD - Standard	
18,649.00	18,649.00	Survey #2 (121H L1)	Projection	Projection	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MUY WAYNO 18 FED 121H_SHL										
187.00	0.50	166.20	187.00	-0.79	0.19	-0.79	0.27	0.27	0.00	
278.00	1.10	205.50	277.99	-1.97	-0.09	-1.97	0.86	0.66	43.19	
371.00	1.40	179.50	370.97	-3.91	-0.46	-3.91	0.68	0.32	-27.96	
436.00	1.30	176.20	435.95	-5.44	-0.41	-5.44	0.19	-0.15	-5.08	
525.00	1.30	173.00	524.93	-7.45	-0.22	-7.45	0.08	0.00	-3.60	
588.00	1.00	192.40	587.91	-8.69	-0.25	-8.69	0.77	-0.48	30.79	
682.00	1.40	168.60	681.89	-10.62	-0.20	-10.62	0.67	0.43	-25.32	
776.00	0.80	169.70	775.88	-12.39	0.15	-12.39	0.64	-0.64	1.17	

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
851.00	0.70	147.90	850.87	-13.29	0.49	-13.30	0.40	-0.13	-29.07
951.00	0.70	142.70	950.86	-14.30	1.18	-14.30	0.06	0.00	-5.20
1,044.00	0.50	115.90	1,043.86	-14.93	1.89	-14.94	0.36	-0.22	-28.82
1,139.00	0.50	98.20	1,138.85	-15.17	2.67	-15.18	0.16	0.00	-18.63
1,232.00	0.70	16.00	1,231.85	-14.68	3.23	-14.70	0.86	0.22	-88.39
1,326.00	1.10	358.10	1,325.84	-13.23	3.36	-13.24	0.52	0.43	-19.04
1,420.00	1.00	345.00	1,419.82	-11.53	3.12	-11.55	0.28	-0.11	-13.94
1,516.00	0.70	339.40	1,515.81	-10.17	2.69	-10.19	0.32	-0.31	-5.83
1,610.00	0.70	355.60	1,609.81	-9.06	2.45	-9.08	0.21	0.00	17.23
1,705.00	0.70	348.50	1,704.80	-7.92	2.29	-7.93	0.09	0.00	-7.47
1,800.00	0.60	314.50	1,799.79	-7.00	1.82	-7.01	0.41	-0.11	-35.79
1,894.00	0.70	314.90	1,893.79	-6.25	1.06	-6.25	0.11	0.11	0.43
1,990.00	0.50	344.60	1,989.78	-5.43	0.53	-5.43	0.38	-0.21	30.94
2,085.00	0.40	350.90	2,084.78	-4.70	0.37	-4.71	0.12	-0.11	6.63
2,179.00	0.30	295.30	2,178.78	-4.27	0.10	-4.28	0.36	-0.11	-59.15
2,274.00	0.20	278.80	2,273.78	-4.14	-0.29	-4.14	0.13	-0.11	-17.37
2,368.00	0.20	72.70	2,367.78	-4.07	-0.30	-4.07	0.41	0.00	163.72
2,462.00	0.10	337.80	2,461.78	-3.94	-0.17	-3.94	0.25	-0.11	-100.96
2,556.00	0.30	312.70	2,555.77	-3.70	-0.38	-3.70	0.23	0.21	-26.70
2,651.00	0.30	316.20	2,650.77	-3.35	-0.74	-3.35	0.02	0.00	3.68
2,745.00	0.00	25.60	2,744.77	-3.18	-0.91	-3.17	0.32	-0.32	0.00
2,839.00	0.70	132.40	2,838.77	-3.56	-0.49	-3.56	0.74	0.74	0.00
2,932.00	1.40	129.70	2,931.75	-4.67	0.81	-4.68	0.75	0.75	-2.90
3,026.00	2.00	133.80	3,025.71	-6.54	2.88	-6.55	0.65	0.64	4.36
3,121.00	2.40	132.30	3,120.64	-9.03	5.54	-9.05	0.43	0.42	-1.58
3,215.00	1.90	135.70	3,214.58	-11.47	8.09	-11.51	0.55	-0.53	3.62
3,318.00	1.50	131.80	3,317.53	-13.59	10.28	-13.64	0.40	-0.39	-3.79
3,429.00	0.90	131.50	3,428.51	-15.13	12.02	-15.19	0.54	-0.54	-0.27
3,524.00	0.70	277.90	3,523.50	-15.55	12.00	-15.61	1.61	-0.21	154.10
3,618.00	1.00	284.10	3,617.49	-15.27	10.64	-15.32	0.33	0.32	6.60
3,712.00	1.20	289.00	3,711.47	-14.75	8.91	-14.79	0.23	0.21	5.21
3,807.00	1.20	284.00	3,806.45	-14.18	7.01	-14.22	0.11	0.00	-5.26
3,901.00	1.20	289.20	3,900.43	-13.62	5.12	-13.65	0.12	0.00	5.53
3,996.00	1.20	287.90	3,995.41	-12.99	3.24	-13.01	0.03	0.00	-1.37
4,090.00	1.40	283.10	4,089.39	-12.43	1.18	-12.43	0.24	0.21	-5.11
4,184.00	1.40	283.60	4,183.36	-11.90	-1.05	-11.89	0.01	0.00	0.53
4,278.00	1.40	288.90	4,277.33	-11.25	-3.25	-11.24	0.14	0.00	5.64
4,373.00	1.50	288.70	4,372.30	-10.48	-5.53	-10.45	0.11	0.11	-0.21
4,467.00	1.50	284.30	4,466.27	-9.78	-7.89	-9.74	0.12	0.00	-4.68
4,561.00	2.10	299.10	4,560.22	-8.64	-10.58	-8.59	0.80	0.64	15.74
4,656.00	3.50	330.40	4,655.11	-5.27	-13.54	-5.20	2.13	1.47	32.95
4,750.00	5.00	353.80	4,748.86	1.30	-15.40	1.37	2.41	1.60	24.89
4,844.00	5.50	359.00	4,842.46	9.87	-15.92	9.95	0.73	0.53	5.53

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
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<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,939.00	5.30	356.50	4,937.04	18.80	-16.27	18.89	0.32	-0.21	-2.63
5,033.00	5.10	355.20	5,030.66	27.30	-16.88	27.38	0.25	-0.21	-1.38
5,127.00	4.60	352.80	5,124.32	35.20	-17.70	35.29	0.57	-0.53	-2.55
5,221.00	5.00	352.70	5,217.99	43.01	-18.70	43.10	0.43	0.43	-0.11
5,316.00	5.00	351.30	5,312.63	51.21	-19.85	51.30	0.13	0.00	-1.47
5,411.00	4.70	351.10	5,407.29	59.14	-21.08	59.25	0.32	-0.32	-0.21
5,505.00	4.40	349.30	5,500.99	66.49	-22.34	66.60	0.35	-0.32	-1.91
5,599.00	4.00	351.60	5,594.74	73.28	-23.49	73.39	0.46	-0.43	2.45
5,693.00	3.80	349.30	5,688.52	79.58	-24.55	79.70	0.27	-0.21	-2.45
5,787.00	3.30	346.50	5,782.34	85.27	-25.76	85.40	0.56	-0.53	-2.98
5,881.00	3.20	347.90	5,876.19	90.47	-26.94	90.60	0.14	-0.11	1.49
5,974.00	3.00	348.00	5,969.05	95.39	-27.99	95.53	0.22	-0.22	0.11
6,069.00	2.80	351.50	6,063.93	100.11	-28.85	100.26	0.28	-0.21	3.68
6,163.00	2.80	358.30	6,157.82	104.68	-29.26	104.82	0.35	0.00	7.23
6,257.00	2.80	359.90	6,251.71	109.27	-29.33	109.42	0.08	0.00	1.70
6,352.00	2.20	7.50	6,346.62	113.40	-29.09	113.54	0.72	-0.63	8.00
6,446.00	2.20	13.60	6,440.55	116.94	-28.43	117.08	0.25	0.00	6.49
6,540.00	1.20	30.10	6,534.51	119.55	-27.52	119.68	1.17	-1.06	17.55
6,634.00	0.90	39.40	6,628.49	120.97	-26.55	121.10	0.37	-0.32	9.89
6,728.00	0.80	46.10	6,722.48	121.99	-25.61	122.12	0.15	-0.11	7.13
6,821.00	0.50	46.10	6,815.47	122.73	-24.85	122.85	0.32	-0.32	0.00
6,915.00	0.50	57.20	6,909.47	123.23	-24.21	123.35	0.10	0.00	11.81
7,009.00	0.90	119.30	7,003.46	123.09	-23.22	123.21	0.85	0.43	66.06
7,103.00	0.90	155.20	7,097.45	122.06	-22.27	122.17	0.59	0.00	38.19
7,197.00	0.70	219.30	7,191.44	120.95	-22.32	121.06	0.92	-0.21	68.19
7,292.00	0.90	283.60	7,286.44	120.67	-23.42	120.79	0.91	0.21	67.68
7,386.00	0.80	284.00	7,380.43	121.01	-24.77	121.13	0.11	-0.11	0.43
7,480.00	0.40	221.80	7,474.42	120.92	-25.63	121.05	0.75	-0.43	-66.17
7,573.00	0.20	259.10	7,567.42	120.65	-26.00	120.78	0.29	-0.22	40.11
7,665.00	0.60	216.90	7,659.42	120.23	-26.45	120.36	0.51	0.43	-45.87
7,759.00	0.90	260.10	7,753.41	119.71	-27.47	119.85	0.66	0.32	45.96
7,853.00	2.10	280.90	7,847.38	119.91	-29.89	120.06	1.38	1.28	22.13
7,946.00	1.90	281.80	7,940.32	120.55	-33.07	120.71	0.22	-0.22	0.97
8,040.00	0.50	291.80	8,034.30	121.02	-34.98	121.19	1.50	-1.49	10.64
8,134.00	0.60	175.90	8,128.30	120.68	-35.33	120.85	0.99	0.11	-123.30
8,228.00	1.30	143.40	8,222.28	119.33	-34.65	119.50	0.91	0.74	-34.57
8,322.00	1.10	159.90	8,316.26	117.63	-33.71	117.80	0.42	-0.21	17.55
8,416.00	1.30	162.80	8,410.24	115.76	-33.08	115.93	0.22	0.21	3.09
8,510.00	0.40	111.90	8,504.23	114.62	-32.46	114.78	1.16	-0.96	-54.15
8,603.00	0.60	0.60	8,597.23	114.99	-32.16	115.15	0.90	0.22	-119.68
8,697.00	0.90	71.40	8,691.22	115.72	-31.45	115.87	0.96	0.32	75.32
8,791.00	1.70	24.40	8,785.20	117.22	-30.18	117.37	1.35	0.85	-50.00
8,885.00	2.00	50.30	8,879.15	119.54	-28.34	119.68	0.94	0.32	27.55

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,979.00	2.30	126.40	8,973.10	119.47	-25.56	119.59	2.83	0.32	80.96
9,074.00	3.00	156.30	9,068.01	116.06	-23.02	116.17	1.61	0.74	31.47
9,167.00	1.90	180.90	9,160.92	112.29	-22.07	112.40	1.61	-1.18	26.45
9,261.00	2.00	188.50	9,254.87	109.11	-22.34	109.22	0.29	0.11	8.09
9,355.00	2.00	196.10	9,348.81	105.91	-23.03	106.02	0.28	0.00	8.09
9,449.00	1.80	188.00	9,442.76	102.87	-23.69	102.99	0.36	-0.21	-8.62
9,461.00	1.80	190.00	9,454.75	102.50	-23.75	102.62	0.52	0.00	16.67
9,548.00	2.10	188.80	9,541.70	99.58	-24.23	99.70	0.35	0.34	-1.38
9,642.00	0.60	306.20	9,635.68	98.17	-24.90	98.29	2.59	-1.60	124.89
9,737.00	0.60	294.90	9,730.68	98.67	-25.75	98.80	0.12	0.00	-11.89
9,831.00	0.80	346.10	9,824.67	99.52	-26.35	99.65	0.67	0.21	54.47
9,925.00	0.70	335.10	9,918.66	100.67	-26.75	100.81	0.19	-0.11	-11.70
10,019.00	0.60	327.50	10,012.66	101.61	-27.26	101.74	0.14	-0.11	-8.09
10,112.00	0.40	324.30	10,105.65	102.28	-27.71	102.42	0.22	-0.22	-3.44
10,206.00	2.30	341.10	10,199.62	104.33	-28.51	104.48	2.04	2.02	17.87
10,238.00	4.40	341.70	10,231.57	106.11	-29.10	106.25	6.56	6.56	1.87
10,269.00	6.80	345.70	10,262.42	109.02	-29.93	109.16	7.84	7.74	12.90
10,300.00	8.30	352.80	10,293.15	113.01	-30.67	113.17	5.69	4.84	22.90
10,332.00	10.70	346.80	10,324.71	118.20	-31.63	118.36	8.10	7.50	-18.75
10,363.00	13.70	343.00	10,355.00	124.51	-33.36	124.68	10.01	9.68	-12.26
10,395.00	16.50	338.20	10,385.90	132.36	-36.16	132.54	9.58	8.75	-15.00
10,426.00	19.10	334.50	10,415.41	141.02	-39.98	141.22	9.14	8.39	-11.94
10,457.00	20.60	334.80	10,444.57	150.54	-44.49	150.76	4.85	4.84	0.97
10,489.00	22.70	335.20	10,474.31	161.24	-49.47	161.48	6.58	6.56	1.25
10,520.00	23.30	335.30	10,502.85	172.24	-54.54	172.51	1.94	1.94	0.32
10,552.00	25.10	335.30	10,532.03	184.15	-60.02	184.45	5.62	5.62	0.00
10,583.00	27.60	337.50	10,559.81	196.76	-65.52	197.09	8.66	8.06	7.10
10,615.00	30.40	344.10	10,587.80	211.41	-70.58	211.76	13.28	8.75	20.62
10,647.00	33.40	350.10	10,614.97	227.88	-74.31	228.25	13.63	9.37	18.75
10,678.00	36.60	352.20	10,640.36	245.44	-77.03	245.83	11.03	10.32	6.77
10,709.00	39.70	352.50	10,664.74	264.42	-79.58	264.82	10.02	10.00	0.97
10,741.00	43.70	353.00	10,688.63	285.53	-82.26	285.94	12.54	12.50	1.56
10,772.00	47.50	354.20	10,710.31	307.54	-84.73	307.96	12.57	12.26	3.87
10,803.00	51.30	355.80	10,730.48	330.98	-86.77	331.41	12.87	12.26	5.16
10,827.00	51.97	354.90	10,745.38	349.74	-88.29	350.18	4.07	2.81	-3.76
Wellpath Crosses Unit Line @ Heel									
10,835.00	52.20	354.60	10,750.30	356.03	-88.87	356.46	4.07	2.83	-3.72
10,866.00	56.60	353.20	10,768.34	381.08	-91.56	381.53	14.66	14.19	-4.52
10,898.00	60.80	350.80	10,784.96	408.15	-95.37	408.62	14.60	13.12	-7.50
10,929.00	62.90	350.10	10,799.58	435.10	-99.91	435.59	7.06	6.77	-2.26
10,961.00	66.00	349.60	10,813.38	463.51	-105.00	464.03	9.79	9.69	-1.56
10,992.00	71.60	348.70	10,824.59	491.89	-110.44	492.43	18.27	18.06	-2.90
11,024.00	76.90	348.40	10,833.27	522.06	-116.55	522.64	16.59	16.56	-0.94
11,055.00	80.80	350.30	10,839.27	551.95	-122.17	552.55	13.94	12.58	6.13

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,086.00	85.40	353.50	10,842.99	582.40	-126.50	583.03	18.03	14.84	10.32
11,118.00	89.80	356.40	10,844.33	614.24	-129.31	614.88	16.46	13.75	9.06
11,150.00	93.00	359.40	10,843.55	646.20	-130.49	646.84	13.70	10.00	9.37
11,181.00	95.40	2.40	10,841.28	677.11	-130.00	677.75	12.37	7.74	9.68
11,187.60	94.61	3.04	10,840.70	683.67	-129.69	684.31	15.35	-11.92	9.71
<b>MUY WAYNO 18 FED 121H_LP p3</b>									
11,210.78	91.85	5.28	10,839.40	706.75	-128.01	707.38	15.35	-11.94	9.67
<b>MUY WAYNO 18 FED 121H_FTP</b>									
11,212.00	91.70	5.40	10,839.36	707.97	-127.90	708.60	15.35	-11.95	9.65
<b>Wellpath Crosses FTP</b>									
11,243.00	87.60	7.90	10,839.55	738.75	-124.31	739.36	15.49	-13.23	8.06
11,338.00	90.00	6.50	10,841.54	832.97	-112.40	833.52	2.92	2.53	-1.47
11,432.00	89.40	6.00	10,842.03	926.41	-102.17	926.91	0.83	-0.64	-0.53
11,527.00	90.30	0.70	10,842.28	1,021.21	-96.62	1,021.68	5.66	0.95	-5.58
11,621.00	89.70	359.60	10,842.28	1,115.21	-96.38	1,115.68	1.33	-0.64	-1.17
11,715.00	92.40	1.10	10,840.56	1,209.18	-95.80	1,209.64	3.29	2.87	1.60
11,809.00	91.20	1.80	10,837.60	1,303.10	-93.42	1,303.55	1.48	-1.28	0.74
11,904.00	91.30	0.50	10,835.53	1,398.06	-91.52	1,398.50	1.37	0.11	-1.37
11,998.00	89.80	0.10	10,834.63	1,492.05	-91.03	1,492.48	1.65	-1.60	-0.43
12,093.00	89.70	359.20	10,835.04	1,587.05	-91.61	1,587.48	0.95	-0.11	-0.95
12,186.00	91.30	3.10	10,834.23	1,680.00	-89.74	1,680.43	4.53	1.72	4.19
12,280.00	91.10	2.80	10,832.26	1,773.86	-84.90	1,774.26	0.38	-0.21	-0.32
12,374.00	90.60	2.30	10,830.87	1,867.75	-80.72	1,868.13	0.75	-0.53	-0.53
12,468.00	89.10	1.40	10,831.12	1,961.70	-77.69	1,962.06	1.86	-1.60	-0.96
12,562.00	90.40	0.90	10,831.53	2,055.68	-75.80	2,056.03	1.48	1.38	-0.53
12,657.00	90.50	1.90	10,830.78	2,150.65	-73.48	2,150.99	1.06	0.11	1.05
12,751.00	91.40	3.10	10,829.22	2,244.54	-69.38	2,244.86	1.60	0.96	1.28
12,844.00	88.60	0.20	10,829.22	2,337.48	-66.70	2,337.79	4.33	-3.01	-3.12
12,939.00	88.60	1.00	10,831.54	2,432.45	-65.71	2,432.75	0.84	0.00	0.84
13,033.00	88.50	358.80	10,833.92	2,526.41	-65.87	2,526.71	2.34	-0.11	-2.34
13,127.00	88.80	358.60	10,836.14	2,620.36	-68.01	2,620.67	0.38	0.32	-0.21
13,222.00	89.40	358.00	10,837.63	2,715.31	-70.82	2,715.63	0.89	0.63	-0.63
13,316.00	86.70	356.40	10,840.83	2,809.13	-75.41	2,809.47	3.34	-2.87	-1.70
13,410.00	88.50	356.70	10,844.76	2,902.87	-81.06	2,903.24	1.94	1.91	0.32
13,504.00	90.40	356.20	10,845.66	2,996.68	-86.88	2,997.08	2.09	2.02	-0.53
13,598.00	92.70	357.40	10,843.12	3,090.49	-92.13	3,090.92	2.76	2.45	1.28
13,692.00	92.30	358.00	10,839.02	3,184.33	-95.90	3,184.77	0.77	-0.43	0.64
13,786.00	92.70	359.80	10,834.92	3,278.22	-97.70	3,278.66	1.96	0.43	1.91
13,879.00	91.20	2.10	10,831.76	3,371.14	-96.16	3,371.58	2.95	-1.61	2.47
13,974.00	91.60	1.60	10,829.44	3,466.06	-93.09	3,466.49	0.67	0.42	-0.53
14,068.00	91.50	1.00	10,826.89	3,560.01	-90.96	3,560.41	0.65	-0.11	-0.64
14,162.00	92.00	2.80	10,824.02	3,653.91	-87.85	3,654.30	1.99	0.53	1.91
14,256.00	91.40	1.30	10,821.23	3,747.80	-84.48	3,748.18	1.72	-0.64	-1.60
14,351.00	88.10	1.80	10,821.65	3,842.75	-81.92	3,843.11	3.51	-3.47	0.53

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,445.00	87.70	0.90	10,825.09	3,936.66	-79.70	3,937.01	1.05	-0.43	-0.96
14,559.00	88.90	1.50	10,828.47	4,050.58	-77.32	4,050.92	1.18	1.05	0.53
14,654.00	86.80	359.80	10,832.04	4,145.50	-76.24	4,145.83	2.84	-2.21	-1.79
14,747.00	88.00	359.80	10,836.26	4,238.40	-76.56	4,238.73	1.29	1.29	0.00
14,841.00	90.00	359.70	10,837.90	4,332.38	-76.97	4,332.71	2.13	2.13	-0.11
14,935.00	90.10	0.30	10,837.82	4,426.38	-76.97	4,426.71	0.65	0.11	0.64
15,029.00	90.50	0.20	10,837.32	4,520.38	-76.56	4,520.71	0.44	0.43	-0.11
15,124.00	90.30	0.40	10,836.66	4,615.38	-76.06	4,615.70	0.30	-0.21	0.21
15,218.00	90.70	0.50	10,835.84	4,709.37	-75.33	4,709.69	0.44	0.43	0.11
15,312.00	91.10	0.30	10,834.36	4,803.36	-74.67	4,803.67	0.48	0.43	-0.21
15,406.00	91.40	359.90	10,832.31	4,897.33	-74.51	4,897.64	0.53	0.32	-0.43
15,500.00	88.50	359.40	10,832.39	4,991.32	-75.08	4,991.63	3.13	-3.09	-0.53
15,594.00	88.00	359.50	10,835.27	5,085.27	-75.98	5,085.59	0.54	-0.53	0.11
15,688.00	90.20	358.60	10,836.74	5,179.24	-77.54	5,179.56	2.53	2.34	-0.96
15,782.00	90.20	357.40	10,836.41	5,273.18	-80.82	5,273.52	1.28	0.00	-1.28
15,875.00	89.90	356.70	10,836.33	5,366.06	-85.61	5,366.42	0.82	-0.32	-0.75
15,970.00	92.80	359.50	10,834.09	5,460.96	-88.76	5,461.33	4.24	3.05	2.95
16,063.00	92.40	359.50	10,829.88	5,553.86	-89.57	5,554.24	0.43	-0.43	0.00
16,157.00	90.50	357.80	10,827.50	5,647.80	-91.78	5,648.18	2.71	-2.02	-1.81
16,251.00	90.10	358.80	10,827.00	5,741.75	-94.57	5,742.15	1.15	-0.43	1.06
16,345.00	90.40	0.30	10,826.59	5,835.75	-95.31	5,836.15	1.63	0.32	1.60
16,440.00	90.90	2.10	10,825.52	5,930.71	-93.32	5,931.11	1.97	0.53	1.89
16,534.00	89.40	1.30	10,825.27	6,024.67	-90.53	6,025.05	1.81	-1.60	-0.85
16,631.00	89.00	1.00	10,826.62	6,121.64	-88.58	6,122.01	0.52	-0.41	-0.31
16,725.00	89.30	1.00	10,828.02	6,215.62	-86.94	6,215.97	0.32	0.32	0.00
16,820.00	88.80	0.80	10,829.59	6,310.59	-85.45	6,310.94	0.57	-0.53	-0.21
16,914.00	88.70	359.70	10,831.64	6,404.57	-85.04	6,404.91	1.17	-0.11	-1.17
17,008.00	88.50	0.20	10,833.94	6,498.54	-85.12	6,498.88	0.57	-0.21	0.53
17,102.00	90.60	359.90	10,834.68	6,592.53	-85.04	6,592.87	2.26	2.23	-0.32
17,196.00	90.40	359.20	10,833.86	6,686.52	-85.78	6,686.87	0.77	-0.21	-0.74
17,291.00	90.60	358.90	10,833.03	6,781.51	-87.36	6,781.86	0.38	0.21	-0.32
17,386.00	90.30	358.00	10,832.28	6,876.47	-89.92	6,876.83	1.00	-0.32	-0.95
17,480.00	90.60	358.10	10,831.55	6,970.41	-93.12	6,970.79	0.34	0.32	0.11
17,574.00	89.90	357.30	10,831.14	7,064.33	-96.90	7,064.73	1.13	-0.74	-0.85
17,669.00	89.60	357.10	10,831.55	7,159.22	-101.54	7,159.63	0.38	-0.32	-0.21
17,763.00	89.30	356.80	10,832.45	7,253.08	-106.54	7,253.52	0.45	-0.32	-0.32
17,858.00	91.00	0.80	10,832.20	7,348.03	-108.53	7,348.48	4.57	1.79	4.21
17,953.00	90.70	0.50	10,830.79	7,443.02	-107.45	7,443.46	0.45	-0.32	-0.32
18,047.00	90.50	0.30	10,829.81	7,537.01	-106.79	7,537.45	0.30	-0.21	-0.21
18,141.00	89.70	0.30	10,829.65	7,631.01	-106.30	7,631.44	0.85	-0.85	0.00
18,237.00	89.00	359.30	10,830.74	7,727.00	-106.64	7,727.44	1.27	-0.73	-1.04
18,331.00	90.20	0.00	10,831.39	7,820.99	-107.21	7,821.43	1.48	1.28	0.74
18,425.00	89.30	358.80	10,831.80	7,914.98	-108.19	7,915.43	1.60	-0.96	-1.28

# Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well MUY Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
18,498.39	89.92	358.18	10,832.30	7,988.35	-110.13	7,988.80	1.19	0.84	-0.84	
<b>MUY WAYNO 18 FED 121H_LTP</b>										
18,520.00	90.10	358.00	10,832.30	8,009.94	-110.85	8,010.40	1.19	0.84	-0.84	
18,604.00	90.40	357.40	10,831.93	8,093.88	-114.22	8,094.34	0.80	0.36	-0.71	
18,627.95	90.40	357.40	10,831.77	8,117.80	-115.30	8,118.28	0.00	0.00	0.00	
<b>MUY WAYNO 18 FED 121H_PBHL</b>										
18,628.00	90.40	357.40	10,831.77	8,117.85	-115.31	8,118.32	0.00	0.00	0.00	
<b>Wellpath Crosses LTP</b>										
18,649.00	90.40	357.40	10,831.62	8,138.83	-116.26	8,139.31	0.00	0.00	0.00	
<b>TD @ 180°FNL,305°FWL</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
MUY WAYNO 18 FED 1:	0.00	0.00	0.00	0.00	0.00	410,906.10	625,571.10	32° 7' 44.571 N	103° 55' 39.686 W	
- actual wellpath hits target center										
- Point										
MUY WAYNO 18 FED 1:	0.00	0.00	10,814.00	7,989.00	-90.10	418,895.10	625,481.00	32° 9' 3.636 N	103° 55' 40.384 W	
- actual wellpath misses target center by 27.14usft at 18498.39usft MD (10832.30 TVD, 7988.35 N, -110.13 E)										
- Point										
MUY WAYNO 18 FED 1:	0.00	0.00	10,814.00	699.90	-54.20	411,606.00	625,516.90	32° 7' 51.499 N	103° 55' 40.286 W	
- actual wellpath misses target center by 78.35usft at 11211.61usft MD (10839.37 TVD, 707.58 N, -127.93 E)										
- Point										
MUY WAYNO 18 FED 1:	0.00	0.00	10,831.62	8,138.83	-116.26	419,044.93	625,454.84	32° 9' 5.119 N	103° 55' 40.682 W	
- actual wellpath hits target center										
- Point										
MUY WAYNO 18 FED 1:	0.00	0.00	10,844.00	8,119.00	-90.80	419,025.10	625,480.30	32° 9' 4.922 N	103° 55' 40.387 W	
- actual wellpath misses target center by 27.42usft at 18627.95usft MD (10831.77 TVD, 8117.80 N, -115.30 E)										
- Rectangle (sides W100.00 H7,412.00 D0.00)										
MUY WAYNO 18 FED 1:	0.00	0.00	10,844.00	680.51	-80.34	411,586.61	625,490.76	32° 7' 51.309 N	103° 55' 40.591 W	
- actual wellpath misses target center by 49.55usft at 11186.50usft MD (10840.79 TVD, 682.58 N, -129.75 E)										
- Point										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
10,827.00	10,745.38	349.74	-88.29	Wellpath Crosses Unit Line @ Heel	
11,212.00	10,839.36	707.97	-127.90	Wellpath Crosses FTP	
18,628.00	10,831.77	8,117.85	-115.31	Wellpath Crosses LTP	
18,649.00	10,831.62	8,138.83	-116.26	TD @ 180°FNL,305°FWL	

## Survey Report

<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well Muy Wayno 18 Federal 121H
<b>Project:</b>	Eddy County, NM (NAD27) NMEZ Grid	<b>TVD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Site:</b>	Muy Wayno 18 Federal	<b>MD Reference:</b>	3159+32 @ 3191.00usft (Patterson793)
<b>Well:</b>	Muy Wayno 18 Federal 121H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	121H L1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	121H L1 (AsDrilled)	<b>Database:</b>	STRYKER_EDM

Checked By: _____	Approved By: _____	Date: _____
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# XTO Energy

Project: Eddy County, NM (NAD27) NMEZ Grid

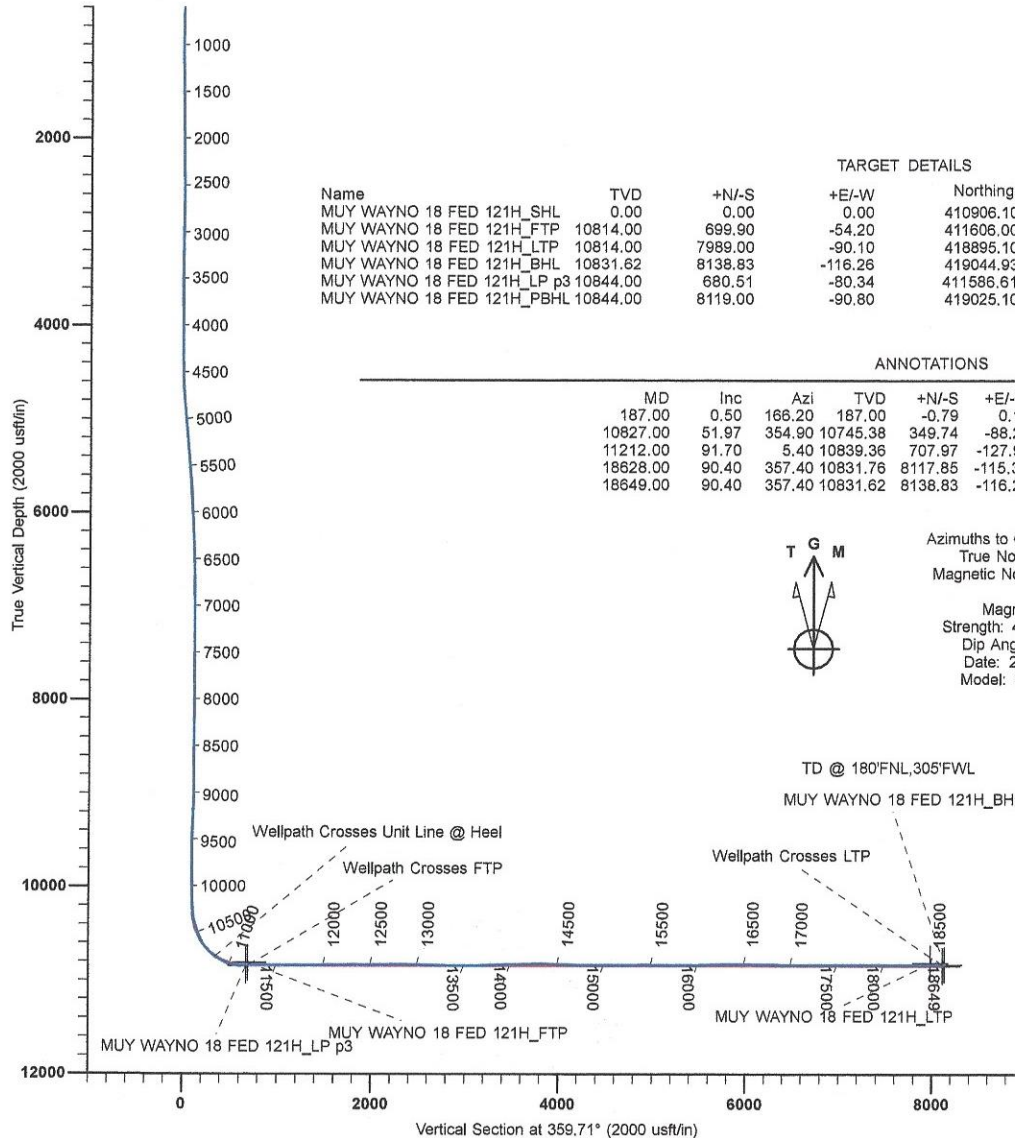
Site: Muy Wayno 18 Federal

Well: Muy Wayno 18 Federal 121H

Wellbore: 121H L1

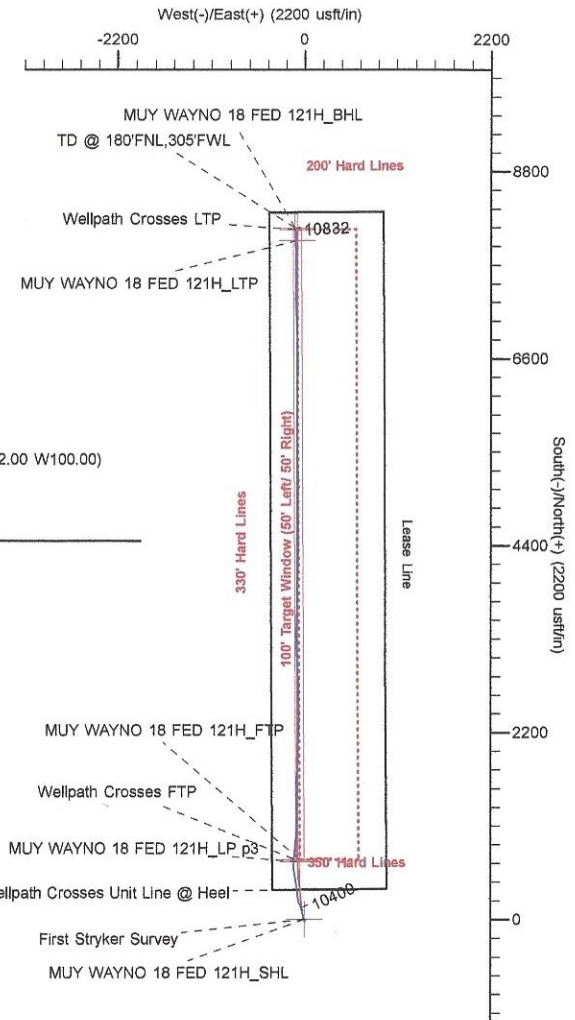
Design: 121H L1 (AsDrilled)

3159+32 @ 3191.00usft (Patterson793)  
NAD 1927 (NADCON CONUS)



Azimuths to Grid North  
True North: -0.22°  
Magnetic North: 6.75°

Magnetic Field  
Strength: 47702.5nT  
Dip Angle: 59.90°  
Date: 2018/11/09  
Model: IGRF2015



To convert a Magnetic Direction to a True Direction, Add 6.96° East  
To convert a Magnetic Direction to a Grid Direction, Add 6.75°  
Magnetic North is 6.96° East of True North (Magnetic Declination)  
Magnetic North is 6.75° East of Grid North (Magnetic Convergence)

Design: 121H L1 (AsDrilled) (Muy Wayno 18 Federal 121H/121H L1)  
Created By: Mekka Williams  
eSomina Well Design  
mekka@esominawelldesign.com  
8/18, December 27 2018

**STRYKER DIRECTIONAL**  
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Midland, Texas 79706 - 432-687-1121

