

Provide Signature Page for Directional Survey

vey Report

30.015-44308

Company:	X1	Co-ordinate Reference:	Well Remuda North 25 State 123H - Slot N 123H
Project:	Eddy County, NM (NAD27) NMEZ	TVD Reference:	3070+30 @ 3100.00usft (Akita90Act)
Site:	Remuda North 25 State Pad	MD Reference:	3070+30 @ 3100.00usft (Akita90Act)
Well:	Remuda North 25 State 123H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	TRUEPERF_EDM

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

Site	Remuda North 25 State Pad, Centered on 904H				
Site Position:	Map	Northing:	463,887.20 ft	Latitude:	32° 16' 29.021 N
From:		Easting:	621,538.10 ft	Longitude:	103° 56' 24.348 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.21 °

Well	Remuda North 25 State 123H - Slot N 123H					
Well Position	+N/-S	0.00 usft	Northing:	463,887.20 ft	Latitude:	32° 16' 29.018 N
	+E/-W	0.00 usft	Easting:	621,598.10 ft	Longitude:	103° 56' 23.649 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,070.00 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	02/11/18	7.06	60.04	47,864

Design	Lateral				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	357.47	

Survey Program	Date	05/09/18			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
169.00	18,558.00	Survey #1 (Lateral)	MWD	MWD v3:standard declination	
18,610.00	18,610.00	Survey #2 (Lateral)	Projection	Projection	

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
Remuda North 103H SL - Remuda North 904H SL - Remuda North 123H SL									
169.00	1.10	64.00	168.99	0.71	1.46	0.65	0.65	0.65	0.00
257.00	1.40	70.00	256.97	1.45	3.23	1.31	0.37	0.34	6.82
342.00	2.10	71.00	341.93	2.31	5.68	2.06	0.82	0.82	1.18
423.00	1.60	70.00	422.89	3.18	8.14	2.82	0.62	-0.62	-1.23
544.00	1.90	17.60	543.84	5.67	10.34	5.21	1.30	0.25	-43.31
639.00	1.00	20.90	638.81	7.95	11.11	7.45	0.95	-0.95	3.47
733.00	0.80	18.30	732.79	9.34	11.61	8.81	0.22	-0.21	-2.77
827.00	0.80	44.10	826.78	10.43	12.27	9.88	0.38	0.00	27.45

Survey Report

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Project: Eddy County, NM (NAD27) NMEZ
Site: Remuda North 25 State Pad
Well: Remuda North 25 State 123H
Wellbore: Lateral
Design: Lateral

Local Co-ordinate Reference: Well Remuda North 25 State 123H - Slot N 123H
TVD Reference: 3070+30 @ 3100.00usft (Akita90Act)
MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: TRUEPERF_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)
920.00	0.30	23.40	919.78	11.12	12.82	10.54	0.57	-0.54	-22.26
1,014.00	0.40	345.90	1,013.78	11.66	12.84	11.09	0.26	0.11	-39.89
1,108.00	0.10	214.80	1,107.78	11.92	12.71	11.34	0.50	-0.32	-139.47
1,202.00	0.30	223.10	1,201.78	11.67	12.49	11.11	0.21	0.21	8.83
1,296.00	0.70	224.80	1,295.77	11.08	11.92	10.54	0.43	0.43	1.81
1,390.00	0.30	197.80	1,389.77	10.44	11.44	9.92	0.48	-0.43	-28.72
1,483.00	0.70	212.30	1,482.77	9.73	11.06	9.23	0.45	0.43	15.59
1,577.00	0.50	211.50	1,576.76	8.89	10.54	8.42	0.21	-0.21	-0.85
1,669.00	0.60	52.70	1,668.76	8.84	10.72	8.36	1.18	0.11	-172.61
1,762.00	1.20	67.30	1,761.75	9.51	12.00	8.97	0.69	0.65	15.70
1,856.00	1.90	67.50	1,855.71	10.49	14.35	9.85	0.74	0.74	0.21
1,949.00	0.80	23.00	1,948.69	11.68	16.03	10.96	1.55	-1.18	-47.85
2,042.00	0.90	29.20	2,041.68	12.91	16.64	12.16	0.15	0.11	6.67
2,135.00	1.00	29.90	2,134.66	14.25	17.40	13.47	0.11	0.11	0.75
2,229.00	0.30	51.80	2,228.66	15.12	18.00	14.31	0.78	-0.74	23.30
2,324.00	1.10	73.50	2,323.65	15.53	19.07	14.67	0.87	0.84	22.84
2,419.00	2.00	78.20	2,418.61	16.13	21.57	15.16	0.96	0.95	4.95
2,514.00	1.10	96.80	2,513.58	16.36	24.10	15.28	1.07	-0.95	19.58
2,608.00	0.60	228.70	2,607.57	15.93	24.62	14.82	1.67	-0.53	140.32
2,702.00	0.50	174.00	2,701.57	15.19	24.29	14.11	0.55	-0.11	-58.19
2,795.00	1.10	131.50	2,794.56	14.20	25.01	13.08	0.87	0.65	-45.70
2,889.00	1.60	130.10	2,888.54	12.76	26.69	11.56	0.53	0.53	-1.49
2,982.00	1.50	177.50	2,981.50	10.70	27.73	9.47	1.34	-0.11	50.97
3,076.00	1.70	199.00	3,075.47	8.16	27.33	6.94	0.67	0.21	22.87
3,171.00	1.70	200.70	3,170.43	5.50	26.37	4.34	0.05	0.00	1.79
3,266.00	1.90	198.10	3,265.38	2.69	25.39	1.57	0.23	0.21	-2.74
3,359.00	1.10	233.30	3,358.35	0.69	24.19	-0.38	1.27	-0.86	37.85
3,455.00	1.40	250.80	3,454.33	-0.25	22.35	-1.23	0.50	0.31	18.23
3,548.00	1.30	256.10	3,547.30	-0.87	20.25	-1.77	0.17	-0.11	5.70
3,642.00	1.20	253.30	3,641.28	-1.41	18.27	-2.22	0.12	-0.11	-2.98
3,735.00	1.00	241.20	3,734.26	-2.08	16.63	-2.81	0.33	-0.22	-13.01
3,829.00	1.20	254.40	3,828.24	-2.74	14.96	-3.40	0.34	0.21	14.04
3,923.00	1.20	255.10	3,922.22	-3.26	13.06	-3.83	0.02	0.00	0.74
4,018.00	0.80	248.40	4,017.21	-3.76	11.48	-4.26	0.44	-0.42	-7.05
4,112.00	1.10	262.30	4,111.20	-4.12	9.98	-4.56	0.40	0.32	14.79
4,205.00	1.00	252.40	4,204.18	-4.49	8.32	-4.85	0.22	-0.11	-10.65
4,299.00	1.00	256.60	4,298.17	-4.93	6.74	-5.22	0.08	0.00	4.47
4,392.00	0.90	255.90	4,391.15	-5.29	5.24	-5.52	0.11	-0.11	-0.75
4,486.00	1.10	257.70	4,485.14	-5.66	3.65	-5.82	0.22	0.21	1.91
4,581.00	0.30	180.70	4,580.13	-6.11	2.75	-6.22	1.13	-0.84	-81.05
4,674.00	0.40	104.10	4,673.13	-6.43	3.06	-6.56	0.47	0.11	-82.37
4,769.00	0.80	119.20	4,768.13	-6.83	3.96	-7.00	0.45	0.42	15.89
4,862.00	0.70	131.30	4,861.12	-7.53	4.96	-7.74	0.20	-0.11	13.01

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 Wellbore: Lateral
 Design: Lateral

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 TVD Reference: 3070+30 @ 3100.00usft (Akita90Act)
 MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: TRUEPERF_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)
4,955.00	0.50	135.50	4,954.11	-8.19	5.67	-8.43	0.22	-0.22	4.52
5,049.00	0.40	111.40	5,048.11	-8.60	6.26	-8.87	0.23	-0.11	-25.64
5,145.00	0.60	138.90	5,144.11	-9.10	6.90	-9.40	0.32	0.21	28.65
5,239.00	0.80	125.80	5,238.10	-9.86	7.76	-10.19	0.27	0.21	-13.94
5,333.00	0.70	140.10	5,332.09	-10.68	8.66	-11.05	0.22	-0.11	15.21
5,426.00	0.30	148.50	5,425.09	-11.33	9.15	-11.72	0.44	-0.43	9.03
5,520.00	0.20	212.50	5,519.09	-11.67	9.19	-12.07	0.30	-0.11	68.08
5,613.00	0.60	219.70	5,612.08	-12.19	8.79	-12.56	0.43	0.43	7.74
5,706.00	0.60	236.80	5,705.08	-12.83	8.08	-13.17	0.19	0.00	18.39
5,801.00	0.50	228.00	5,800.08	-13.38	7.35	-13.69	0.14	-0.11	-9.26
5,894.00	0.50	229.60	5,893.07	-13.91	6.74	-14.19	0.02	0.00	1.72
5,990.00	0.60	256.80	5,989.07	-14.30	5.93	-14.55	0.29	0.10	28.33
6,085.00	0.50	254.70	6,084.06	-14.52	5.05	-14.73	0.11	-0.11	-2.21
6,179.00	0.70	267.00	6,178.06	-14.66	4.08	-14.82	0.25	0.21	13.09
6,275.00	0.70	304.10	6,274.05	-14.36	3.01	-14.48	0.46	0.00	38.65
6,369.00	0.60	320.60	6,368.05	-13.66	2.22	-13.74	0.22	-0.11	17.55
6,463.00	0.60	274.40	6,462.04	-13.24	1.42	-13.29	0.50	0.00	-49.15
6,557.00	0.40	265.80	6,556.04	-13.23	0.60	-13.24	0.23	-0.21	-9.15
6,651.00	0.40	285.10	6,650.03	-13.16	-0.04	-13.15	0.14	0.00	20.53
6,745.00	0.70	258.90	6,744.03	-13.19	-0.93	-13.14	0.41	0.32	-27.87
6,839.00	0.40	241.90	6,838.03	-13.46	-1.78	-13.36	0.36	-0.32	-18.09
6,933.00	0.80	257.50	6,932.02	-13.75	-2.71	-13.62	0.46	0.43	16.60
7,027.00	0.70	262.40	7,026.01	-13.97	-3.92	-13.78	0.13	-0.11	5.21
7,121.00	0.80	273.20	7,120.00	-14.01	-5.14	-13.77	0.18	0.11	11.49
7,216.00	0.70	277.40	7,215.00	-13.90	-6.38	-13.60	0.12	-0.11	4.42
7,311.00	0.80	305.50	7,309.99	-13.44	-7.50	-13.09	0.40	0.11	29.58
7,404.00	1.00	293.90	7,402.98	-12.73	-8.77	-12.33	0.29	0.22	-12.47
7,498.00	1.20	289.00	7,496.96	-12.08	-10.45	-11.61	0.23	0.21	-5.21
7,593.00	1.30	275.40	7,591.94	-11.65	-12.46	-11.09	0.33	0.11	-14.32
7,688.00	1.70	284.90	7,686.90	-11.19	-14.89	-10.52	0.49	0.42	10.00
7,782.00	2.40	306.40	7,780.85	-9.66	-17.83	-8.87	1.09	0.74	22.87
7,876.00	3.10	316.90	7,874.74	-6.64	-21.15	-5.70	0.91	0.74	11.17
7,970.00	2.40	313.90	7,968.63	-3.42	-24.30	-2.34	0.76	-0.74	-3.19
8,064.00	1.30	294.80	8,062.58	-1.61	-26.69	-0.43	1.33	-1.17	-20.32
8,158.00	0.90	287.90	8,156.56	-0.93	-28.36	0.32	0.45	-0.43	-7.34
8,252.00	0.30	257.20	8,250.56	-0.76	-29.30	0.53	0.70	-0.64	-32.66
8,347.00	0.20	63.10	8,345.56	-0.74	-29.40	0.56	0.52	-0.11	174.63
8,442.00	0.30	242.90	8,440.56	-0.78	-29.47	0.52	0.53	0.11	189.26
8,537.00	1.70	270.40	8,535.54	-0.88	-31.10	0.49	1.52	1.47	28.95
8,630.00	1.80	267.00	8,628.50	-0.95	-33.94	0.55	0.15	0.11	-3.66
8,724.00	1.40	244.70	8,722.46	-1.52	-36.45	0.09	0.78	-0.43	-23.72
8,781.11	1.01	231.81	8,779.55	-2.13	-37.48	-0.47	0.83	-0.68	-22.56
Remuda North 704H FTP									
8,820.00	0.80	216.40	8,818.44	-2.56	-37.91	-0.88	0.83	-0.54	-39.63

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Well: Remuda North 25 State 123H
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Local Co-ordinate Reference: Well Remuda North 25 State 123H - Slot N 123H
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MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
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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)
8,914.00	0.40	242.80	8,912.44	-3.24	-38.59	-1.53	0.51	-0.43	28.09
9,009.00	0.80	89.10	9,007.43	-3.38	-38.22	-1.69	1.23	0.42	-161.79
9,103.00	0.90	95.40	9,101.42	-3.44	-36.83	-1.81	0.15	0.11	6.70
9,197.00	1.00	155.60	9,195.41	-4.25	-35.76	-2.67	1.02	0.11	64.04
9,226.00	1.10	161.70	9,224.41	-4.75	-35.56	-3.17	0.52	0.34	21.03
9,338.00	1.80	155.70	9,336.37	-7.37	-34.50	-5.84	0.64	0.62	-5.36
9,432.00	1.70	95.30	9,430.34	-8.85	-32.51	-7.40	1.87	-0.11	-64.26
9,526.00	3.30	87.00	9,524.24	-8.83	-28.42	-7.57	1.74	1.70	-8.83
9,621.00	2.80	102.30	9,619.11	-9.18	-23.42	-8.14	1.00	-0.53	16.11
9,717.00	2.30	132.00	9,715.02	-10.97	-19.70	-10.09	1.45	-0.52	30.94
9,811.00	2.00	113.60	9,808.95	-12.89	-16.79	-12.14	0.80	-0.32	-19.57
9,922.00	1.30	115.10	9,919.91	-14.20	-13.88	-13.57	0.63	-0.63	1.35
9,954.00	0.50	48.20	9,951.90	-14.26	-13.44	-13.65	3.74	-2.50	-209.06
9,985.00	1.80	334.50	9,982.90	-13.73	-13.55	-13.12	5.57	4.19	-237.74
10,016.00	3.30	325.00	10,013.87	-12.56	-14.27	-11.92	5.01	4.84	-30.65
10,047.00	5.20	319.70	10,044.78	-10.76	-15.69	-10.06	6.25	6.13	-17.10
10,079.00	7.00	319.20	10,076.60	-8.18	-17.91	-7.38	5.63	5.62	-1.56
10,109.00	8.90	320.10	10,106.31	-5.01	-20.59	-4.10	6.35	6.33	3.00
10,140.00	11.30	321.10	10,136.82	-0.81	-24.04	0.25	7.76	7.74	3.23
10,171.00	13.50	321.30	10,167.10	4.38	-28.21	5.62	7.10	7.10	0.65
10,203.00	15.40	323.80	10,198.09	10.72	-33.05	12.17	6.25	5.94	7.81
10,235.00	17.50	323.40	10,228.77	18.02	-38.43	19.69	6.57	6.56	-1.25
10,266.00	19.90	322.90	10,258.14	25.97	-44.39	27.90	7.76	7.74	-1.61
10,297.00	21.50	322.40	10,287.13	34.68	-51.04	36.90	5.19	5.16	-1.61
10,328.00	23.10	323.40	10,315.81	44.06	-58.13	46.58	5.30	5.16	3.23
10,332.47	23.30	323.57	10,319.92	45.47	-59.18	48.04	4.74	4.51	3.72
Remuda North 904H LP									
10,359.00	24.50	324.50	10,344.18	54.18	-65.49	57.01	4.74	4.52	3.52
10,390.00	26.50	325.00	10,372.16	65.07	-73.19	68.24	6.49	6.45	1.61
10,422.00	29.50	325.20	10,400.41	77.40	-81.79	80.93	9.38	9.37	0.62
10,453.00	33.40	325.00	10,426.85	90.66	-91.04	94.59	12.59	12.58	-0.65
10,484.00	37.50	324.30	10,452.10	105.32	-101.44	109.69	13.29	13.23	-2.26
10,516.00	42.40	325.00	10,476.62	122.07	-113.32	126.96	15.38	15.31	2.19
10,547.00	46.70	327.00	10,498.71	140.11	-125.47	145.51	14.59	13.87	6.45
10,578.00	50.40	329.60	10,519.23	159.88	-137.66	165.80	13.49	11.94	8.39
10,609.00	54.10	334.00	10,538.21	181.48	-149.22	187.89	16.38	11.94	14.19
10,640.00	57.40	336.30	10,555.65	204.73	-159.97	211.59	12.28	10.65	7.42
10,671.00	59.80	338.00	10,571.81	229.11	-170.24	236.40	9.05	7.74	5.48
10,703.00	62.40	338.90	10,587.27	255.16	-180.53	262.88	8.49	8.12	2.81
10,733.00	66.50	338.00	10,600.21	280.33	-190.47	288.46	13.93	13.67	-3.00
10,764.00	71.10	337.90	10,611.41	307.11	-201.32	315.70	14.84	14.84	-0.32
10,795.00	77.60	338.50	10,619.77	334.81	-212.40	343.86	21.05	20.97	1.94
10,827.00	83.90	341.80	10,624.91	364.50	-223.11	374.00	22.16	19.69	10.31

Survey Report

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 Site: Remuda North 25 State Pad
 Well: Remuda North 25 State 123H
 Wellbore: Lateral
 Design: Lateral

Local Co-ordinate Reference: Well Remuda North 25 State 123H - Slot N 123H
 TVD Reference: 3070+30 @ 3100.00usft (Akita90Act)
 MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: TRUEPERF_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)
10,837.00	85.35	342.97	10,625.85	373.99	-226.12	383.61	18.57	14.50	11.66
Wellpath Crosses South Lease Line									
10,858.00	88.40	345.40	10,627.00	394.16	-231.83	404.01	18.57	14.52	11.59
10,889.00	90.20	347.50	10,627.37	424.30	-239.09	434.44	8.92	5.81	6.77
10,921.00	88.90	348.20	10,627.63	455.58	-245.83	465.98	4.61	-4.06	2.19
10,952.00	87.40	348.20	10,628.63	485.91	-252.17	496.56	4.84	-4.84	0.00
10,984.00	86.80	348.00	10,630.25	517.18	-258.76	528.10	1.98	-1.87	-0.62
11,003.09	85.38	347.48	10,631.55	535.79	-262.80	546.87	7.91	-7.42	-2.73
Remuda North 904H FTP									
11,026.55	83.64	346.84	10,633.79	558.55	-267.99	569.84	7.91	-7.42	-2.74
Remuda North 123H LP p2 - Remuda North 124H FTP									
11,046.00	82.20	346.30	10,636.19	577.33	-272.47	588.79	7.91	-7.42	-2.76
11,059.66	82.20	345.37	10,638.04	590.45	-275.78	602.05	6.71	-0.01	-6.77
Remuda North 123H LP									
11,077.00	82.20	344.20	10,640.39	607.03	-280.29	618.81	6.71	0.01	-6.77
11,108.00	84.90	344.00	10,643.88	636.65	-288.73	648.78	8.73	8.71	-0.65
11,139.00	88.40	345.00	10,645.69	666.47	-297.00	678.93	11.74	11.29	3.23
11,170.00	90.80	348.20	10,645.90	696.62	-304.18	709.36	12.90	7.74	10.32
11,177.00	90.94	348.99	10,645.80	703.48	-305.57	716.28	11.45	1.94	11.29
Wellpath Crosses FTP									
11,178.25	90.96	349.13	10,645.78	704.71	-305.80	717.52	11.45	1.94	11.29
Remuda North 123H FTP									
11,201.00	91.40	351.70	10,645.31	727.13	-309.59	740.09	11.45	1.93	11.29
11,232.00	92.40	354.70	10,644.28	757.89	-313.26	770.98	10.20	3.23	9.68
11,263.00	92.90	357.70	10,642.85	788.79	-315.31	801.94	9.80	1.61	9.68
11,326.00	92.60	1.00	10,639.82	851.70	-316.02	864.82	5.25	-0.48	5.24
11,421.00	92.90	1.60	10,635.27	946.57	-313.87	959.50	0.71	0.32	0.63
11,514.00	92.30	3.30	10,631.05	1,039.38	-309.90	1,052.05	1.94	-0.65	1.83
11,607.00	92.50	3.00	10,627.15	1,132.16	-304.79	1,144.51	0.39	0.22	-0.32
11,700.00	89.10	0.00	10,625.85	1,225.09	-302.36	1,237.25	4.88	-3.66	-3.23
11,795.00	91.00	1.00	10,625.77	1,320.09	-301.53	1,332.11	2.26	2.00	1.05
11,888.00	91.40	1.00	10,623.82	1,413.05	-299.91	1,424.91	0.43	0.43	0.00
11,982.00	91.40	0.90	10,621.53	1,507.01	-298.35	1,518.71	0.11	0.00	-0.11
12,076.00	91.70	1.60	10,618.98	1,600.95	-296.30	1,612.47	0.81	0.32	0.74
12,170.00	92.20	1.40	10,615.79	1,694.87	-293.84	1,706.18	0.57	0.53	-0.21
12,263.00	90.80	359.80	10,613.35	1,787.82	-292.87	1,799.01	2.29	-1.51	-1.72
12,357.00	89.40	358.10	10,613.19	1,881.80	-294.59	1,892.97	2.34	-1.49	-1.81
12,450.00	91.10	358.80	10,612.78	1,974.76	-297.11	1,985.95	1.98	1.83	0.75
12,545.00	90.70	357.40	10,611.29	2,069.70	-300.26	2,080.93	1.53	-0.42	-1.47
12,640.00	88.50	357.70	10,611.95	2,164.60	-304.32	2,175.92	2.34	-2.32	0.32
12,736.00	90.90	0.20	10,612.45	2,260.57	-306.08	2,271.88	3.61	2.50	2.60
12,831.00	92.50	0.20	10,609.64	2,355.52	-305.74	2,366.72	1.68	1.68	0.00
12,925.00	94.30	2.60	10,604.06	2,449.32	-303.45	2,460.33	3.19	1.91	2.55
13,019.00	92.40	1.00	10,598.57	2,543.10	-300.51	2,553.89	2.64	-2.02	-1.70

Survey Report

Company: XTO Energy
 Project: Eddy County, NM (NAD27) NMEZ
 Site: Remuda North 25 State Pad
 Well: Remuda North 25 State 123H
 Wellbore: Lateral
 Design: Lateral

Local Co-ordinate Reference: Well Remuda North 25 State 123H - Slot N 123H
 TVD Reference: 3070+30 @ 3100.00usft (Akita90Act)
 MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: TRUEPERF_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)
13,113.00	90.70	0.30	10,596.03	2,637.06	-299.44	2,647.71	1.96	-1.81	-0.74
13,207.00	89.30	359.50	10,596.03	2,731.06	-299.61	2,741.62	1.72	-1.49	-0.85
13,302.00	90.00	359.50	10,596.61	2,826.05	-300.43	2,836.56	0.74	0.74	0.00
13,396.00	91.40	359.10	10,595.46	2,920.03	-301.58	2,930.50	1.55	1.49	-0.43
13,490.00	90.00	359.80	10,594.31	3,014.02	-302.49	3,024.43	1.67	-1.49	0.74
13,584.00	90.10	358.80	10,594.23	3,108.01	-303.63	3,118.39	1.07	0.11	-1.06
13,677.00	91.10	358.80	10,593.25	3,200.99	-305.58	3,211.35	1.08	1.08	0.00
13,770.00	89.50	359.30	10,592.77	3,293.97	-307.12	3,304.31	1.80	-1.72	0.54
13,864.00	90.30	358.60	10,592.93	3,387.95	-308.85	3,398.28	1.13	0.85	-0.74
13,957.00	89.90	359.30	10,592.77	3,480.93	-310.55	3,491.25	0.87	-0.43	0.75
14,052.00	90.40	359.10	10,592.52	3,575.92	-311.88	3,586.21	0.57	0.53	-0.21
14,145.00	90.00	0.90	10,592.19	3,668.92	-311.88	3,679.11	1.98	-0.43	1.94
14,239.00	91.00	1.00	10,591.37	3,762.90	-310.32	3,772.93	1.07	1.06	0.11
14,333.00	90.00	0.20	10,590.55	3,856.89	-309.33	3,866.79	1.36	-1.06	-0.85
14,427.00	91.90	0.20	10,589.00	3,950.87	-309.01	3,960.66	2.02	2.02	0.00
14,521.00	89.20	359.50	10,588.09	4,044.86	-309.25	4,054.57	2.97	-2.87	-0.74
14,614.00	90.00	358.80	10,588.74	4,137.85	-310.63	4,147.52	1.14	0.86	-0.75
14,707.00	87.00	0.20	10,591.18	4,230.80	-311.44	4,240.42	3.56	-3.23	1.51
14,801.00	87.00	0.20	10,596.10	4,324.67	-311.12	4,334.19	0.00	0.00	0.00
14,895.00	87.30	359.80	10,600.77	4,418.55	-311.12	4,427.98	0.53	0.32	-0.43
14,988.00	86.30	358.80	10,605.96	4,511.40	-312.25	4,520.78	1.52	-1.08	-1.08
15,082.00	88.60	359.10	10,610.14	4,605.28	-313.97	4,614.65	2.47	2.45	0.32
15,175.00	91.70	0.50	10,609.90	4,698.27	-314.29	4,707.56	3.66	3.33	1.51
15,269.00	87.40	1.20	10,610.64	4,792.23	-312.90	4,801.37	4.63	-4.57	0.74
15,363.00	90.30	0.90	10,612.52	4,886.19	-311.18	4,895.16	3.10	3.09	-0.32
15,457.00	90.80	1.00	10,611.62	4,980.17	-309.62	4,988.98	0.54	0.53	0.11
15,551.00	90.60	0.70	10,610.47	5,074.15	-308.23	5,082.81	0.38	-0.21	-0.32
15,644.00	89.80	359.60	10,610.15	5,167.15	-307.98	5,175.71	1.46	-0.86	-1.18
15,738.00	91.50	359.60	10,609.08	5,261.14	-308.64	5,269.63	1.81	1.81	0.00
15,831.00	91.00	358.20	10,607.05	5,354.09	-310.42	5,362.58	1.60	-0.54	-1.51
15,926.00	90.70	357.00	10,605.64	5,449.00	-314.40	5,457.57	1.30	-0.32	-1.26
16,022.00	91.30	359.10	10,603.97	5,544.92	-317.67	5,553.54	2.27	0.62	2.19
16,116.00	91.20	358.90	10,601.92	5,638.89	-319.31	5,647.48	0.24	-0.11	-0.21
16,210.00	92.80	0.70	10,598.64	5,732.82	-319.64	5,741.34	2.56	1.70	1.91
16,304.00	93.70	0.00	10,593.31	5,826.67	-319.06	5,835.07	1.21	0.96	-0.74
16,410.00	92.10	1.00	10,587.95	5,932.52	-318.14	5,940.78	1.78	-1.51	0.94
16,504.00	90.40	359.60	10,585.90	6,026.49	-317.65	6,034.64	2.34	-1.81	-1.49
16,598.00	91.30	359.80	10,584.50	6,120.48	-318.14	6,128.56	0.98	0.96	0.21
16,692.00	90.60	358.90	10,582.94	6,214.46	-319.21	6,222.49	1.21	-0.74	-0.96
16,786.00	89.00	358.80	10,583.27	6,308.44	-321.09	6,316.46	1.71	-1.70	-0.11
16,879.00	90.80	358.40	10,583.43	6,401.41	-323.36	6,409.44	1.98	1.94	-0.43
16,973.00	89.80	358.90	10,582.94	6,495.38	-325.58	6,503.42	1.19	-1.06	0.53
17,067.00	90.00	0.20	10,583.10	6,589.37	-326.32	6,597.35	1.40	0.21	1.38
17,161.00	88.20	0.90	10,584.58	6,683.35	-325.41	6,691.20	2.05	-1.91	0.74

Survey Report

Company: XTO Energy
Project: Eddy County, NM (NAD27) NMEZ
Site: Remuda North 25 State Pad
Well: Remuda North 25 State 123H
Wellbore: Lateral
Design: Lateral

Local Co-ordinate Reference: Well Remuda North 25 State 123H - Slot N 123H
TVD Reference: 3070+30 @ 3100.00usft (Akita90Act)
MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: TRUEPERF_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)
17,255.00	90.00	0.30	10,586.06	6,777.33	-324.43	6,785.04	2.02	1.91	-0.64
17,348.00	88.30	0.70	10,587.44	6,870.31	-323.62	6,877.90	1.88	-1.83	0.43
17,440.00	89.70	0.70	10,589.04	6,962.29	-322.50	6,969.74	1.52	1.52	0.00
17,532.00	91.00	0.90	10,588.48	7,054.28	-321.21	7,061.58	1.43	1.41	0.22
17,625.00	88.40	359.30	10,588.97	7,147.26	-321.05	7,154.47	3.28	-2.80	-1.72
17,716.00	89.50	358.80	10,590.64	7,238.23	-322.56	7,245.42	1.33	1.21	-0.55
17,808.00	90.80	357.90	10,590.39	7,330.19	-325.21	7,337.40	1.72	1.41	-0.98
17,899.00	89.00	358.80	10,590.55	7,421.15	-327.83	7,428.39	2.21	-1.98	0.99
17,991.00	90.40	358.40	10,591.03	7,513.12	-330.07	7,520.37	1.58	1.52	-0.43
18,083.00	90.60	359.30	10,590.23	7,605.10	-331.92	7,612.34	1.00	0.22	0.98
18,189.00	89.10	1.60	10,590.51	7,711.08	-331.09	7,718.18	2.59	-1.42	2.17
18,280.00	89.30	1.60	10,591.78	7,802.04	-328.55	7,808.94	0.22	0.22	0.00
18,373.00	90.30	1.90	10,592.10	7,894.99	-325.71	7,901.68	1.12	1.08	0.32
18,467.00	91.20	2.30	10,590.87	7,988.92	-322.26	7,995.36	1.05	0.96	0.43
18,488.00	91.43	2.14	10,590.39	8,009.90	-321.45	8,016.28	1.34	1.10	-0.77
Wellpath Crosses LTP									
18,491.21	91.47	2.11	10,590.31	8,013.11	-321.33	8,019.48	1.34	1.10	-0.77
Remuda North 123H LTP									
18,558.00	92.20	1.60	10,588.17	8,079.83	-319.17	8,086.04	1.34	1.10	-0.77
18,610.00	92.20	1.60	10,586.18	8,131.77	-317.72	8,137.87	0.00	0.00	0.00
TD @ 211FNL, 371FWL - Remuda North 124H PBHL - Remuda North 704H PBHL - Remuda North 904H PBHL - Remuda North 123H PBHL									

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Remuda North 123H PB	0.00	0.00	10,577.00	8,143.88	-359.20	472,031.10	621,238.90	32° 17' 49.624 N	103° 56' 27.486 W
- actual wellpath misses target center by 44.18usft at 18610.00usft MD (10586.18 TVD, 8131.77 N, -317.72 E)									
- Rectangle (sides W50.00 H7,440.00 D0.00)									
Remuda North 123H BH	0.00	0.00	10,586.18	8,131.77	-317.72	472,018.99	621,280.38	32° 17' 49.502 N	103° 56' 27.003 W
- actual wellpath hits target center									
- Point									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,837.00	10,625.85	373.99	-226.12	Wellpath Crosses South Lease Line
11,177.00	10,645.80	703.48	-305.57	Wellpath Crosses FTP
18,488.00	10,590.39	8,009.90	-321.45	Wellpath Crosses LTP
18,610.00	10,586.18	8,131.77	-317.72	TD @ 211FNL, 371FWL

Survey Report

Company: XTO Energy
Project: Eddy County, NM (NAD27) NMEZ
Site: Remuda North 25 State Pad
Well: Remuda North 25 State 123H
Wellbore: Lateral
Design: Lateral

Local Co-ordinate Reference: Well Remuda North 25 State 123H - Slot N 123H
TVD Reference: 3070+30 @ 3100.00usft (Akita90Act)
MD Reference: 3070+30 @ 3100.00usft (Akita90Act)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: TRUEPERF_EDM

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

Project: Eddy County, NM (NAD27) NMEZ
 Site: Remuda North 25 State Pad
 Well: Remuda North 25 State 123H
 Wellbore: Lateral
 Design: Lateral
 3070+30 @ 3100.00usft (Akita90Act)
 NAD 1927 (NADCON CONUS)

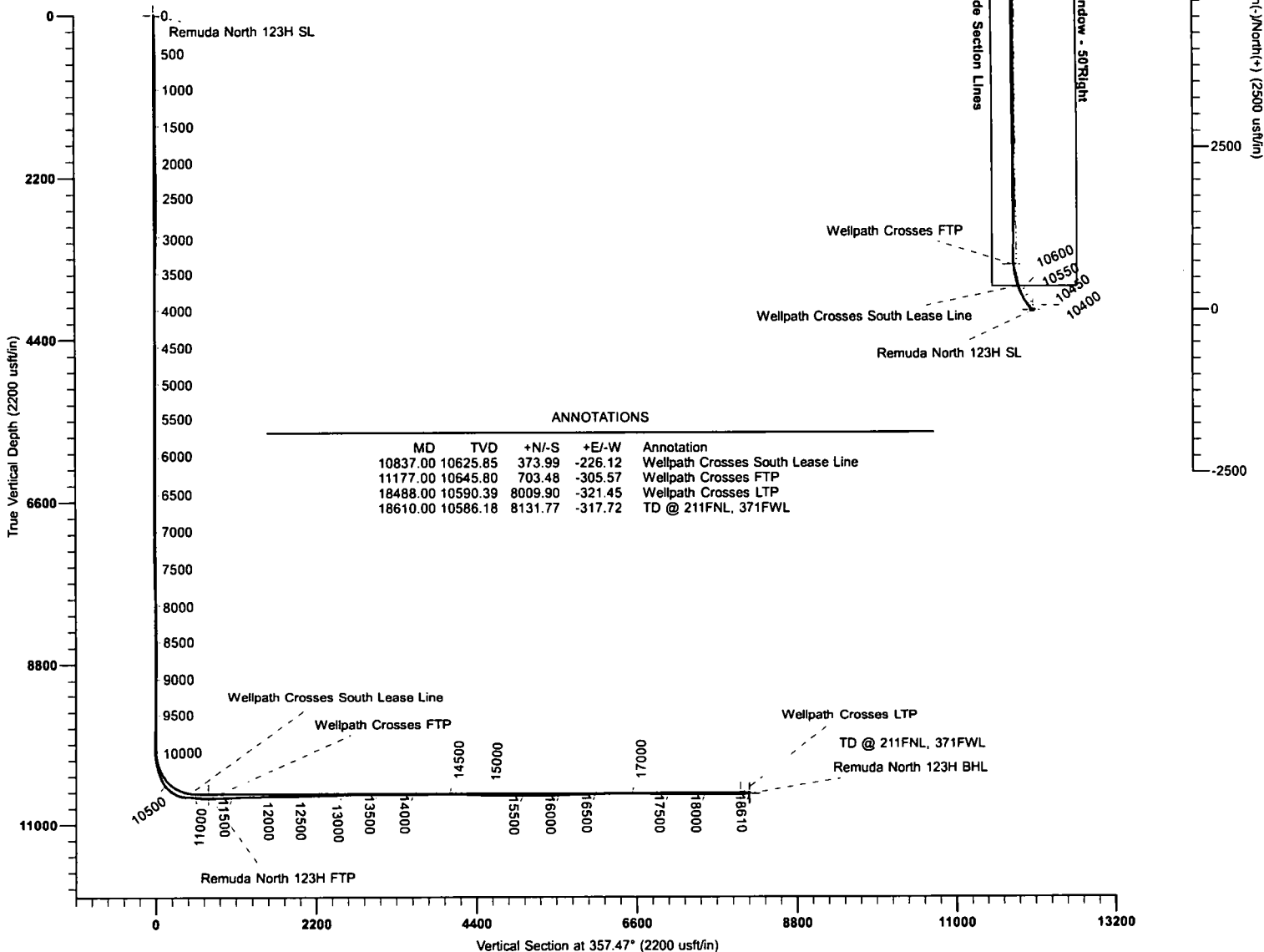


To convert a Magnetic Direction to a Grid Direction, Add 6.85°



Azimuths to Grid North
 True North: -0.21°
 Magnetic North: 6.85°

Magnetic Field
 Strength: 47864.3snT
 Dip Angle: 60.04°
 Date: 02/11/2018
 Model: IGRF2015



ANNOTATIONS

MD	TVD	+N/-S	+E/-W	Annotation
10837.00	10625.85	373.99	-226.12	Wellpath Crosses South Lease Line
11177.00	10645.80	703.48	-305.57	Wellpath Crosses FTP
18488.00	10590.39	8009.90	-321.45	Wellpath Crosses LTP
18610.00	10586.18	8131.77	-317.72	TD @ 211FNL, 371FWL

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Remuda North 123H SL	0.00	0.00	0.00	463887.20	621598.10	Point
Remuda North 123H LTP	10577.00	8013.88	-358.00	471901.10	621240.10	Point
Remuda North 123H PBHL p2	10577.00	8143.88	-359.20	472031.10	621238.90	Point
Remuda North 123H BHL	10586.18	8131.77	-317.72	472018.99	621280.38	Point
Remuda North 123H FTP	10587.00	703.00	-308.70	464590.20	621289.40	Point

Rectangle (Sides: L7440.00 W50.00)