

Survey Report

Company:	XTO Energy	Local Co-ordinate Reference:	Well Remuda North 30 State 111H - Slot REMUDA NORTH 30 STATE_111H_SHL
Project:	Eddy County, NM (NAD27) NMEZ US	TVD Reference:	3090+24 @ 3114.00usft (Orion Hercules)
Site:	Remuda North_South 31 State Pad	MD Reference:	3090+24 @ 3114.00usft (Orion Hercules)
Well:	Remuda North 30 State 111H	North Reference:	Grid
Wellbore:	North 30 111H	Survey Calculation Method:	Minimum Curvature
Design:	North 30 111H (AsDrilled)	Database:	TP_EDM

Project	Eddy County, NM (NAD27) NMEZ US		
Map 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_South 31 State Pad, centered on 123H				
Site Position:		Northing:	458,327.40 usft	Latitude:	32.2593878
From:	Map	Easting:	627,293.40 usft	Longitude:	-103.9215405
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.22 °

Well	Remuda North 30 State 111H - Slot REMUDA NORTH 30 STATE_111H_SHL					
Well Position	+N/-S	0.00 usft	Northing:	463,892.60 usft	Latitude:	32.2747045
	+E/-W	0.00 usft	Easting:	625,522.90 usft	Longitude:	-103.9271998
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,090.00 usft

Wellbore	North 30 111H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2018/06/21	7.01	60.04	47,829

Design	North 30 111H (AsDrilled)				
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	0.00	

Survey Program	Date	2018/11/01			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
109.00	18,272.00	Survey #1 (North 30 111H)	MWD	MWD v3:standard declination	
18,325.00	18,325.00	Survey #2 (North 30 111H)	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	
REMUDA NORTH 30 STATE_111H_SHL										
109.00	1.70	81.20	108.98	0.25	1.60	0.25	1.56	1.56	0.00	
207.00	2.00	101.00	206.93	0.14	4.71	0.14	0.72	0.31	20.20	
297.00	2.00	111.30	296.88	-0.73	7.72	-0.73	0.40	0.00	11.44	
361.00	1.10	113.60	360.86	-1.38	9.32	-1.38	1.41	-1.41	3.59	
493.00	1.20	140.60	492.83	-2.95	11.36	-2.95	0.41	0.08	20.45	
587.00	1.80	205.20	586.80	-5.05	11.36	-5.05	1.79	0.64	68.72	
681.00	2.60	224.70	680.73	-7.90	9.23	-7.90	1.15	0.85	20.74	

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 Site: Remuda North_South 31 State Pad MD Reference: 3090+24 @ 3114.00usft (Orion Hercules)
 Well: Remuda North 30 State 111H North Reference: Grid
 Wellbore: North 30 111H Survey Calculation Method: Minimum Curvature
 Design: North 30 111H (AsDrilled) Database: TP_EDM

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)
764.00	2.50	222.50	763.65	-10.57	6.68	-10.57	0.17	-0.12	-2.65
859.00	2.80	223.10	858.55	-13.80	3.70	-13.80	0.32	0.32	0.63
953.00	1.20	236.50	952.49	-16.02	1.31	-16.02	1.76	-1.70	14.26
1,047.00	1.30	228.20	1,046.47	-17.27	-0.31	-17.27	0.22	0.11	-8.83
1,141.00	1.30	235.10	1,140.44	-18.59	-1.98	-18.59	0.17	0.00	7.34
1,235.00	1.70	223.40	1,234.41	-20.21	-3.81	-20.21	0.53	0.43	-12.45
1,329.00	1.80	226.20	1,328.37	-22.25	-5.84	-22.25	0.14	0.11	2.98
1,423.00	2.20	224.30	1,422.31	-24.56	-8.16	-24.56	0.43	0.43	-2.02
1,517.00	1.30	228.40	1,516.27	-26.56	-10.22	-26.56	0.97	-0.96	4.36
1,611.00	1.40	237.70	1,610.24	-27.88	-11.99	-27.88	0.26	0.11	9.89
1,705.00	1.70	225.90	1,704.21	-29.47	-13.96	-29.47	0.46	0.32	-12.55
1,800.00	1.80	229.80	1,799.16	-31.41	-16.11	-31.41	0.16	0.11	4.11
1,894.00	2.10	227.70	1,893.11	-33.52	-18.51	-33.52	0.33	0.32	-2.23
1,989.00	1.30	245.70	1,988.06	-35.14	-20.78	-35.14	1.00	-0.84	18.95
2,082.00	1.10	264.00	2,081.04	-35.66	-22.63	-35.66	0.46	-0.22	19.68
2,178.00	1.50	255.40	2,177.02	-36.08	-24.76	-36.08	0.46	0.42	-8.96
2,273.00	1.60	256.10	2,271.98	-36.71	-27.25	-36.71	0.11	0.11	0.74
2,367.00	1.80	250.10	2,365.94	-37.53	-29.92	-37.53	0.28	0.21	-6.38
2,461.00	0.90	248.80	2,459.92	-38.30	-31.99	-38.30	0.96	-0.96	-1.38
2,555.00	1.10	76.40	2,553.91	-38.35	-31.80	-38.35	2.12	0.21	-183.40
2,649.00	1.70	104.00	2,647.88	-38.48	-29.57	-38.48	0.94	0.64	29.36
2,743.00	2.50	114.90	2,741.82	-39.68	-26.36	-39.68	0.95	0.85	11.60
2,838.00	1.70	118.30	2,836.76	-41.22	-23.24	-41.22	0.85	-0.84	3.58
2,932.00	2.30	137.10	2,930.70	-43.26	-20.73	-43.26	0.94	0.64	20.00
3,027.00	2.10	138.50	3,025.63	-45.96	-18.28	-45.96	0.22	-0.21	1.47
3,121.00	2.50	136.10	3,119.55	-48.73	-15.72	-48.73	0.44	0.43	-2.55
3,215.00	1.10	124.20	3,213.50	-50.71	-13.55	-50.71	1.53	-1.49	-12.66
3,310.00	0.90	103.30	3,308.49	-51.40	-12.07	-51.40	0.43	-0.21	-22.00
3,405.00	0.70	103.30	3,403.48	-51.70	-10.78	-51.70	0.21	-0.21	0.00
3,500.00	0.90	84.60	3,498.47	-51.76	-9.47	-51.76	0.34	0.21	-19.68
3,594.00	0.90	93.90	3,592.46	-51.75	-8.00	-51.75	0.16	0.00	9.89
3,689.00	0.90	90.50	3,687.45	-51.80	-6.51	-51.80	0.06	0.00	-3.58
3,783.00	0.80	106.20	3,781.44	-51.99	-5.14	-51.99	0.27	-0.11	16.70
3,877.00	0.60	111.00	3,875.43	-52.35	-4.05	-52.35	0.22	-0.21	5.11
3,970.00	0.40	107.10	3,968.43	-52.62	-3.28	-52.62	0.22	-0.22	-4.19
4,065.00	0.50	97.80	4,063.43	-52.78	-2.56	-52.78	0.13	0.11	-9.79
4,159.00	0.60	98.40	4,157.42	-52.90	-1.66	-52.90	0.11	0.11	0.64
4,254.00	0.60	79.70	4,252.42	-52.89	-0.68	-52.89	0.21	0.00	-19.68
4,349.00	0.40	105.20	4,347.41	-52.88	0.13	-52.88	0.31	-0.21	26.84
4,443.00	0.60	91.20	4,441.41	-52.98	0.94	-52.98	0.25	0.21	-14.89
4,538.00	0.50	125.00	4,536.40	-53.23	1.77	-53.23	0.35	-0.11	35.58
4,634.00	0.50	120.90	4,632.40	-53.68	2.48	-53.68	0.04	0.00	-4.27

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Wellbore:	North 30 111H	Survey Calculation Method:	Minimum Curvature
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Survey									
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4,726.00	0.50	104.40	4,724.40	-53.99	3.21	-53.99	0.16	0.00	-17.93
4,820.00	0.50	80.90	4,818.39	-54.03	4.01	-54.03	0.22	0.00	-25.00
4,915.00	0.70	84.60	4,913.39	-53.91	5.00	-53.91	0.21	0.21	3.89
5,010.00	0.90	100.60	5,008.38	-53.99	6.31	-53.99	0.31	0.21	16.84
5,104.00	0.70	96.40	5,102.37	-54.19	7.61	-54.19	0.22	-0.21	-4.47
5,199.00	0.70	103.10	5,197.36	-54.39	8.75	-54.39	0.09	0.00	7.05
5,294.00	0.80	92.10	5,292.36	-54.54	9.98	-54.54	0.18	0.11	-11.58
5,389.00	0.60	119.60	5,387.35	-54.81	11.07	-54.81	0.41	-0.21	28.95
5,484.00	0.50	146.50	5,482.34	-55.40	11.73	-55.40	0.29	-0.11	28.32
5,578.00	0.90	143.90	5,576.34	-56.34	12.39	-56.34	0.43	0.43	-2.77
5,672.00	1.10	130.70	5,670.32	-57.53	13.51	-57.53	0.32	0.21	-14.04
5,766.00	1.10	137.60	5,764.31	-58.78	14.80	-58.78	0.14	0.00	7.34
5,860.00	0.90	136.50	5,858.29	-59.98	15.92	-59.98	0.21	-0.21	-1.17
5,954.00	1.00	140.10	5,952.28	-61.15	16.96	-61.15	0.12	0.11	3.83
6,048.00	0.70	141.40	6,046.27	-62.23	17.84	-62.23	0.32	-0.32	1.38
6,142.00	1.00	134.60	6,140.26	-63.25	18.78	-63.25	0.34	0.32	-7.23
6,236.00	1.10	145.90	6,234.24	-64.57	19.87	-64.57	0.24	0.11	12.02
6,331.00	1.20	139.50	6,329.22	-66.09	21.03	-66.09	0.17	0.11	-6.74
6,425.00	1.10	143.50	6,423.20	-67.56	22.21	-67.56	0.14	-0.11	4.26
6,520.00	0.80	175.70	6,518.19	-68.95	22.80	-68.95	0.63	-0.32	33.89
6,615.00	0.60	185.00	6,613.18	-70.11	22.80	-70.11	0.24	-0.21	9.79
6,709.00	0.90	190.80	6,707.18	-71.33	22.62	-71.33	0.33	0.32	6.17
6,804.00	1.00	200.30	6,802.16	-72.84	22.20	-72.84	0.20	0.11	10.00
6,898.00	1.00	193.40	6,896.15	-74.40	21.72	-74.40	0.13	0.00	-7.34
6,992.00	0.80	194.80	6,990.14	-75.84	21.36	-75.84	0.21	-0.21	1.49
7,085.00	0.80	214.20	7,083.13	-77.00	20.83	-77.00	0.29	0.00	20.86
7,180.00	0.90	218.40	7,178.12	-78.13	20.00	-78.13	0.12	0.11	4.42
7,275.00	1.00	211.60	7,273.10	-79.42	19.10	-79.42	0.16	0.11	-7.16
7,370.00	0.90	230.70	7,368.09	-80.60	18.09	-80.60	0.35	-0.11	20.11
7,464.00	1.40	234.00	7,462.07	-81.75	16.59	-81.75	0.54	0.53	3.51
7,559.00	1.10	238.10	7,557.05	-82.91	14.87	-82.91	0.33	-0.32	4.32
7,653.00	0.10	331.60	7,651.04	-83.31	14.07	-83.31	1.18	-1.06	99.47
7,748.00	0.40	293.60	7,746.04	-83.11	13.72	-83.11	0.34	0.32	-40.00
7,842.00	1.20	285.40	7,840.03	-82.72	12.48	-82.72	0.86	0.85	-8.72
7,936.00	1.10	260.00	7,934.01	-82.61	10.64	-82.61	0.55	-0.11	-27.02
8,031.00	1.50	257.50	8,028.99	-83.04	8.53	-83.04	0.43	0.42	-2.63
8,125.00	2.20	267.90	8,122.94	-83.37	5.52	-83.37	0.82	0.74	11.06
8,219.00	1.40	259.70	8,216.89	-83.64	2.59	-83.64	0.89	-0.85	-8.72
8,313.00	1.40	251.80	8,310.87	-84.21	0.37	-84.21	0.21	0.00	-8.40
8,408.00	1.10	256.20	8,405.84	-84.79	-1.62	-84.79	0.33	-0.32	4.63
8,501.00	0.50	270.80	8,498.83	-84.99	-2.89	-84.99	0.68	-0.65	15.70
8,596.00	0.30	178.50	8,593.83	-85.24	-3.30	-85.24	0.62	-0.21	-97.16
8,691.00	0.60	153.10	8,688.83	-85.93	-3.07	-85.93	0.37	0.32	-26.74

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Wellbore:	North 30 111H	Survey Calculation Method:	Minimum Curvature
Design:	North 30 111H (AsDrilled)	Database:	TP_EDM

Survey									
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8,786.00	0.90	152.40	8,783.82	-87.03	-2.50	-87.03	0.32	0.32	-0.74
8,881.00	1.20	130.50	8,878.81	-88.34	-1.40	-88.34	0.52	0.32	-23.05
8,976.00	1.40	120.00	8,973.78	-89.57	0.37	-89.57	0.33	0.21	-11.05
9,071.00	1.50	116.90	9,068.75	-90.71	2.48	-90.71	0.13	0.11	-3.26
9,166.00	1.30	110.50	9,163.72	-91.65	4.60	-91.65	0.27	-0.21	-6.74
9,260.00	1.30	116.80	9,257.70	-92.50	6.55	-92.50	0.15	0.00	6.70
9,281.00	1.10	121.40	9,278.69	-92.72	6.93	-92.72	1.06	-0.95	21.90
9,382.00	1.30	193.70	9,379.68	-94.34	7.49	-94.34	1.41	0.20	71.58
9,467.00	2.30	114.60	9,464.64	-95.98	8.81	-95.98	2.85	1.18	-93.06
9,479.00	2.50	114.00	9,476.63	-96.19	9.27	-96.19	1.68	1.67	-5.00
9,548.00	4.50	96.10	9,545.50	-97.09	13.34	-97.09	3.27	2.90	-25.94
9,572.00	5.20	95.30	9,569.42	-97.29	15.36	-97.29	2.93	2.92	-3.33
9,634.00	8.40	78.50	9,630.98	-96.65	22.59	-96.65	6.02	5.16	-27.10
9,665.00	11.30	72.20	9,661.52	-95.27	27.70	-95.27	9.97	9.35	-20.32
9,696.00	14.30	67.40	9,691.75	-92.87	34.13	-92.87	10.26	9.68	-15.48
9,728.00	16.50	58.60	9,722.60	-88.98	41.66	-88.98	10.01	6.87	-27.50
9,759.00	18.20	49.20	9,752.19	-83.52	49.09	-83.52	10.56	5.48	-30.32
9,790.00	19.30	39.00	9,781.56	-76.37	55.98	-76.37	11.14	3.55	-32.90
9,822.00	20.00	28.10	9,811.70	-67.43	61.88	-67.43	11.64	2.19	-34.06
9,854.00	20.60	16.00	9,841.73	-57.19	66.02	-57.19	13.23	1.87	-37.81
9,885.00	22.00	6.70	9,870.62	-46.18	68.20	-46.18	11.78	4.52	-30.00
9,918.00	23.50	1.40	9,901.05	-33.46	69.08	-33.46	7.69	4.55	-16.06
9,949.00	25.70	356.70	9,929.24	-20.57	68.84	-20.57	9.49	7.10	-15.16
9,981.00	27.40	350.80	9,957.87	-6.37	67.27	-6.37	9.80	5.31	-18.44
10,012.00	29.50	345.90	9,985.13	8.08	64.27	8.08	10.12	6.77	-15.81
10,044.00	32.20	343.30	10,012.60	23.89	59.90	23.89	9.41	8.44	-8.12
10,075.00	34.70	341.80	10,038.46	40.19	54.76	40.19	8.49	8.06	-4.84
10,107.00	37.50	340.30	10,064.32	58.02	48.64	58.02	9.17	8.75	-4.69
10,139.00	40.50	339.60	10,089.18	76.93	41.73	76.93	9.48	9.37	-2.19
10,170.00	44.00	339.00	10,112.13	96.42	34.36	96.42	11.36	11.29	-1.94
10,202.00	47.70	338.50	10,134.41	117.82	26.04	117.82	11.62	11.56	-1.56
10,233.00	51.20	338.00	10,154.56	139.69	17.31	139.69	11.36	11.29	-1.61
10,265.00	53.80	339.10	10,174.04	163.32	8.03	163.32	8.57	8.12	3.44
10,296.00	55.00	339.50	10,192.09	186.90	-0.88	186.90	4.01	3.87	1.29
10,327.00	56.00	340.60	10,209.65	210.91	-9.60	210.91	4.35	3.23	3.55
10,374.00	57.90	342.80	10,235.28	248.31	-21.96	248.31	5.63	4.04	4.68
10,421.00	59.50	343.90	10,259.70	286.79	-33.46	286.79	3.95	3.40	2.34
10,468.00	60.40	344.50	10,283.23	325.93	-44.54	325.93	2.21	1.91	1.28
10,515.00	61.70	345.10	10,305.98	365.62	-55.32	365.62	2.98	2.77	1.28
10,517.00	61.77	345.22	10,306.93	367.32	-55.77	367.32	6.29	3.35	6.04
Wellpath Crosses Unit Line @ Heel									
10,562.00	63.30	347.90	10,327.69	406.15	-65.04	406.15	6.29	3.41	5.95
10,609.00	64.50	349.10	10,348.36	447.51	-73.45	447.51	3.43	2.55	2.55

Survey Report

Company:	XTO Energy	Local Co-ordinate Reference:	Well Remuda North 30 State 111H - Slot REMUDA NORTH 30 STATE_111H_SHL
Project:	Eddy County, NM (NAD27) NMEZ US	TVD Reference:	3090+24 @ 3114.00usft (Orion Hercules)
Site:	Remuda North_South 31 State Pad	MD Reference:	3090+24 @ 3114.00usft (Orion Hercules)
Well:	Remuda North 30 State 111H	North Reference:	Grid
Wellbore:	North 30 111H	Survey Calculation Method:	Minimum Curvature
Design:	North 30 111H (AsDrilled)	Database:	TP_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)
10,656.00	65.90	351.30	10,368.08	489.55	-80.71	489.55	5.19	2.98	4.68
10,702.00	67.10	353.50	10,386.42	531.36	-86.29	531.36	5.10	2.61	4.78
10,749.00	68.90	355.30	10,404.03	574.73	-90.53	574.73	5.22	3.83	3.83
10,797.00	71.70	356.40	10,420.21	619.79	-93.80	619.79	6.22	5.83	2.29
10,802.63	71.95	356.39	10,421.97	625.13	-94.14	625.13	4.47	4.47	-0.21
REMUDA NORTH 30 STATE_111H_LPp2 (104FNL,109'FWL)									
10,811.26	72.34	356.37	10,424.61	633.33	-94.65	633.33	4.47	4.47	-0.21
REMUDA NORTH 30 STATE_111H_LP (104FNL,109'FWL)									
10,844.00	73.80	356.30	10,434.15	664.58	-96.66	664.58	4.47	4.47	-0.21
10,878.00	74.79	356.30	10,443.35	697.25	-98.77	697.25	2.92	2.92	0.00
Wellpath Crosses HL @ Heel									
10,892.00	75.20	356.30	10,446.97	710.74	-99.64	710.74	2.92	2.92	0.00
10,899.00	75.41	356.29	10,448.75	717.50	-100.08	717.50	2.99	2.98	-0.21
Wellpath Crosses FTP @ 488FWL									
10,918.21	75.98	356.24	10,453.50	736.07	-101.29	736.07	2.99	2.98	-0.21
REMUDA NORTH 30 STATE_111H_FTP (330FSL,440'FWL)									
10,939.00	76.60	356.20	10,458.42	756.23	-102.62	756.23	2.99	2.98	-0.21
10,986.00	78.40	356.40	10,468.60	802.02	-105.58	802.02	3.85	3.83	0.43
11,033.00	79.50	356.70	10,477.60	848.06	-108.36	848.06	2.42	2.34	0.64
11,081.00	79.70	356.50	10,486.27	895.19	-111.16	895.19	0.58	0.42	-0.42
11,128.00	80.80	356.70	10,494.23	941.43	-113.91	941.43	2.38	2.34	0.43
11,175.00	82.90	357.90	10,500.89	987.90	-116.10	987.90	5.13	4.47	2.55
11,222.00	84.50	358.20	10,506.05	1,034.58	-117.69	1,034.58	3.46	3.40	0.64
11,269.00	86.40	358.80	10,509.78	1,081.42	-118.91	1,081.42	4.24	4.04	1.28
11,316.00	89.70	359.40	10,511.38	1,128.38	-119.65	1,128.38	7.14	7.02	1.28
11,363.00	90.10	359.60	10,511.46	1,175.38	-120.06	1,175.38	0.95	0.85	0.43
11,410.00	90.00	359.10	10,511.42	1,222.37	-120.59	1,222.37	1.08	-0.21	-1.06
11,458.00	89.10	358.30	10,511.79	1,270.36	-121.68	1,270.36	2.51	-1.87	-1.67
11,554.00	90.20	357.90	10,512.38	1,366.30	-124.86	1,366.30	1.22	1.15	-0.42
11,648.00	90.80	358.20	10,511.56	1,460.24	-128.06	1,460.24	0.71	0.64	0.32
11,743.00	92.10	358.90	10,509.16	1,555.18	-130.47	1,555.18	1.55	1.37	0.74
11,837.00	89.50	359.30	10,507.84	1,649.15	-131.94	1,649.15	2.80	-2.77	0.43
11,931.00	90.60	359.30	10,507.76	1,743.14	-133.09	1,743.14	1.17	1.17	0.00
12,025.00	90.30	359.00	10,507.02	1,837.13	-134.48	1,837.13	0.45	-0.32	-0.32
12,119.00	91.70	359.50	10,505.38	1,931.10	-135.72	1,931.10	1.58	1.49	0.53
12,212.00	89.80	0.30	10,504.17	2,024.09	-135.88	2,024.09	2.22	-2.04	0.86
12,307.00	90.40	0.70	10,504.00	2,119.09	-135.05	2,119.09	0.76	0.63	0.42
12,402.00	91.30	1.20	10,502.59	2,214.06	-133.47	2,214.06	1.08	0.95	0.53
12,496.00	89.20	0.30	10,502.18	2,308.05	-132.24	2,308.05	2.43	-2.23	-0.96
12,590.00	90.20	0.60	10,502.67	2,402.04	-131.51	2,402.04	1.11	1.06	0.32
12,684.00	91.20	1.10	10,501.52	2,496.02	-130.11	2,496.02	1.19	1.06	0.53
12,779.00	88.40	359.10	10,501.86	2,591.01	-129.94	2,591.01	3.62	-2.95	-2.11
12,873.00	90.20	359.20	10,503.00	2,684.99	-131.34	2,684.99	1.92	1.91	0.11

Survey Report

Company: XTO Energy

Local Co-ordinate Reference: Well Remuda North 30 State 111H - Slot
REMUDA NORTH 30 STATE_111H_SHL

Project: Eddy County, NM (NAD27) NMEZ US

TVD Reference: 3090+24 @ 3114.00usft (Orion Hercules)

Site: Remuda North_South 31 State Pad

MD Reference: 3090+24 @ 3114.00usft (Orion Hercules)

Well: Remuda North 30 State 111H

North Reference: Grid

Wellbore: North 30 111H

Survey Calculation Method: Minimum Curvature

Design: North 30 111H (AsDrilled)

Database: TP_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)
12,967.00	90.60	358.70	10,502.35	2,778.97	-133.06	2,778.97	0.68	0.43	-0.53
13,061.00	92.10	359.30	10,500.13	2,872.92	-134.70	2,872.92	1.72	1.60	0.64
13,155.00	91.40	358.50	10,497.26	2,966.86	-136.51	2,966.86	1.13	-0.74	-0.85
13,250.00	91.00	357.40	10,495.27	3,061.78	-139.90	3,061.78	1.23	-0.42	-1.16
13,343.00	89.40	357.80	10,494.95	3,154.69	-143.80	3,154.69	1.77	-1.72	0.43
13,438.00	89.90	357.80	10,495.53	3,249.62	-147.44	3,249.62	0.53	0.53	0.00
13,534.00	90.70	359.10	10,495.03	3,345.58	-150.04	3,345.58	1.59	0.83	1.35
13,628.00	91.30	0.30	10,493.39	3,439.56	-150.53	3,439.56	1.43	0.64	1.28
13,723.00	88.60	359.10	10,493.47	3,534.55	-151.03	3,534.55	3.11	-2.84	-1.26
13,819.00	89.20	359.00	10,495.31	3,630.52	-152.62	3,630.52	0.63	0.62	-0.10
13,913.00	89.60	357.80	10,496.30	3,724.48	-155.25	3,724.48	1.35	0.43	-1.28
14,006.00	90.30	357.80	10,496.38	3,817.41	-158.82	3,817.41	0.75	0.75	0.00
14,101.00	91.80	357.70	10,494.64	3,912.32	-162.55	3,912.32	1.58	1.58	-0.11
14,195.00	92.30	357.50	10,491.27	4,006.17	-166.48	4,006.17	0.57	0.53	-0.21
14,289.00	89.80	358.00	10,489.55	4,100.08	-170.17	4,100.08	2.71	-2.66	0.53
14,383.00	87.00	358.00	10,492.18	4,193.97	-173.45	4,193.97	2.98	-2.98	0.00
14,478.00	87.40	357.10	10,496.82	4,288.77	-177.50	4,288.77	1.04	0.42	-0.95
14,572.00	88.00	356.90	10,500.59	4,382.57	-182.42	4,382.57	0.67	0.64	-0.21
14,668.00	89.00	357.20	10,503.10	4,478.41	-187.36	4,478.41	1.09	1.04	0.31
14,762.00	90.20	357.60	10,503.76	4,572.31	-191.62	4,572.31	1.35	1.28	0.43
14,856.00	92.50	357.90	10,501.54	4,666.20	-195.31	4,666.20	2.47	2.45	0.32
14,951.00	94.00	357.70	10,496.16	4,760.97	-198.95	4,760.97	1.59	1.58	-0.21
15,046.00	93.40	1.00	10,490.03	4,855.76	-200.03	4,855.76	3.52	-0.63	3.47
15,139.00	89.50	358.70	10,487.67	4,948.70	-200.27	4,948.70	4.87	-4.19	-2.47
15,232.00	89.90	357.30	10,488.16	5,041.64	-203.52	5,041.64	1.57	0.43	-1.51
15,326.00	90.80	356.90	10,487.58	5,135.52	-208.27	5,135.52	1.05	0.96	-0.43
15,421.00	90.90	359.00	10,486.18	5,230.44	-211.67	5,230.44	2.21	0.11	2.21
15,514.00	90.80	359.50	10,484.80	5,323.42	-212.89	5,323.42	0.55	-0.11	0.54
15,608.00	90.00	2.20	10,484.14	5,417.40	-211.49	5,417.40	3.00	-0.85	2.87
15,702.00	91.30	2.70	10,483.07	5,511.31	-207.47	5,511.31	1.48	1.38	0.53
15,796.00	90.30	1.40	10,481.76	5,605.23	-204.11	5,605.23	1.74	-1.06	-1.38
15,892.00	91.30	2.00	10,480.42	5,701.18	-201.27	5,701.18	1.21	1.04	0.62
15,986.00	90.50	0.60	10,478.94	5,795.14	-199.13	5,795.14	1.72	-0.85	-1.49
16,080.00	92.70	358.80	10,476.32	5,889.10	-199.62	5,889.10	3.02	2.34	-1.91
16,174.00	90.20	359.40	10,473.94	5,983.05	-201.10	5,983.05	2.74	-2.66	0.64
16,268.00	89.50	358.70	10,474.19	6,077.03	-202.66	6,077.03	1.05	-0.74	-0.74
16,362.00	91.80	1.80	10,473.12	6,171.01	-202.25	6,171.01	4.11	2.45	3.30
16,456.00	90.90	359.90	10,470.91	6,264.96	-200.86	6,264.96	2.24	-0.96	-2.02
16,552.00	92.00	359.90	10,468.48	6,360.93	-201.02	6,360.93	1.15	1.15	0.00
16,646.00	91.90	359.10	10,465.28	6,454.87	-201.84	6,454.87	0.86	-0.11	-0.85
16,741.00	88.70	359.70	10,464.78	6,549.85	-202.84	6,549.85	3.43	-3.37	0.63
16,836.00	89.90	0.40	10,465.94	6,644.84	-202.75	6,644.84	1.46	1.26	0.74

Survey Report

Company: XTO Energy

Local Co-ordinate Reference: Well Remuda North 30 State 111H - Slot
REMUDA NORTH 30 STATE_111H_SHL
TVD Reference: 3090+24 @ 3114.00usft (Orion Hercules)
MD Reference: 3090+24 @ 3114.00usft (Orion Hercules)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: TP_EDM

Project: Eddy County, NM (NAD27) NMEZ US

Site: Remuda North_South 31 State Pad

Well: Remuda North 30 State 111H

Wellbore: North 30 111H

Design: North 30 111H (AsDrilled)

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)
16,929.00	90.90	0.10	10,465.29	6,737.84	-202.35	6,737.84	1.12	1.08	-0.32
17,023.00	87.80	358.80	10,466.36	6,831.82	-203.25	6,831.82	3.58	-3.30	-1.38
17,118.00	89.40	359.40	10,468.68	6,926.77	-204.74	6,926.77	1.80	1.68	0.63
17,213.00	90.40	359.40	10,468.84	7,021.77	-205.74	7,021.77	1.05	1.05	0.00
17,307.00	90.70	359.20	10,467.94	7,115.75	-206.88	7,115.75	0.38	0.32	-0.21
17,402.00	90.50	358.50	10,466.95	7,210.73	-208.79	7,210.73	0.77	-0.21	-0.74
17,498.00	89.80	357.30	10,466.70	7,306.66	-212.31	7,306.66	1.45	-0.73	-1.25
17,592.00	91.00	1.10	10,466.04	7,400.63	-213.62	7,400.63	4.24	1.28	4.04
17,686.00	92.50	1.30	10,463.17	7,494.57	-211.65	7,494.57	1.61	1.60	0.21
17,781.00	93.20	0.80	10,458.45	7,589.43	-209.92	7,589.43	0.91	0.74	-0.53
17,875.00	89.60	0.80	10,456.15	7,683.38	-208.60	7,683.38	3.83	-3.83	0.00
17,969.00	90.00	0.50	10,456.48	7,777.37	-207.54	7,777.37	0.53	0.43	-0.32
18,064.00	90.40	359.90	10,456.15	7,872.37	-207.21	7,872.37	0.76	0.42	-0.63
18,159.00	90.50	359.70	10,455.40	7,967.37	-207.54	7,967.37	0.24	0.11	-0.21
18,195.78	90.89	359.74	10,454.95	8,004.15	-207.72	8,004.15	1.07	1.06	0.11
REMUDA NORTH 30 STATE_111H_LTP (330'FNL,440FWL)									
18,196.00	90.89	359.74	10,454.95	8,004.36	-207.72	8,004.36	1.07	1.06	0.11
Wellpath Crosses LTP @ 427FWL									
18,253.00	91.50	359.80	10,453.76	8,061.35	-207.95	8,061.35	1.07	1.06	0.11
18,272.00	91.70	359.90	10,453.23	8,080.34	-208.00	8,080.34	1.18	1.05	0.53
18,324.90	91.70	359.90	10,451.66	8,133.22	-208.09	8,133.22	0.00	0.00	0.00
REMUDA NORTH 30 STATE_111H_PBHL (200'FNL,440FWL)									
18,325.00	91.70	359.90	10,451.66	8,133.32	-208.09	8,133.32	0.00	0.00	0.00
TD@ 201FNL,428FWL - REMUDA NORTH 30 STATE_111H_PBHLp2 (200'FNL,440FWL) - REMUDA NORTH 30 STATE_111H_BHL(201FNL,42									

Survey Report

Company: XTO Energy

Local Co-ordinate Reference:

Well Remuda North 30 State 111H - Slot
REMUDA NORTH 30 STATE_111H_SHL

Project: Eddy County, NM (NAD27) NMEZ US

TVD Reference:

3090+24 @ 3114.00usft (Orion Hercules)

Site: Remuda North_South 31 State Pad

MD Reference:

3090+24 @ 3114.00usft (Orion Hercules)

Well: Remuda North 30 State 111H

North Reference:

Grid

Wellbore: North 30 111H

Survey Calculation Method:

Minimum Curvature

Design: North 30 111H (AsDrilled)

Database:

TP_EDM

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
REMUDA NORTH 30 S1 - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	463,892.60	625,522.90	32.2747045	-103.9271998
REMUDA NORTH 30 S1 - actual wellpath hits target center - Rectangle (sides W100.00 H7,417.00 D0.00)	0.00	0.00	10,451.6 6	8,133.32	-208.09	472,025.92	625,314.81	32.2970644	-103.9277735
REMUDA NORTH 30 S1 - actual wellpath misses target center by 29.88usft at 18325.00usft MD (10451.66 TVD, 8133.32 N, -208.09 E) - Rectangle (sides W100.00 H7,417.00 D0.00)	0.00	0.00	10,479.0 0	8,134.50	-196.10	472,027.10	625,326.80	32.2970675	-103.9277347
REMUDA NORTH 30 S1 - actual wellpath misses target center by 27.16usft at 18195.78usft MD (10454.95 TVD, 8004.15 N, -207.72 E) - Point	0.00	0.00	10,479.0 0	8,004.50	-195.10	471,897.10	625,327.80	32.2967101	-103.9277331
REMUDA NORTH 30 S1 - actual wellpath misses target center by 78.51usft at 10918.21usft MD (10453.50 TVD, 736.07 N, -101.29 E) - Point	0.00	0.00	10,514.0 0	717.90	-147.90	464,610.50	625,375.00	32.2766795	-103.9276695

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,517.00	10,306.93	367.32	-55.77	Wellpath Crosses Unit Line @ Heel
10,878.00	10,443.35	697.25	-98.77	Wellpath Crosses HL @ Heel
10,899.00	10,448.75	717.50	-100.08	Wellpath Crosses FTP @ 488FWL
18,196.00	10,454.95	8,004.36	-207.72	Wellpath Crosses LTP @ 427FWL
18,325.00	10,451.66	8,133.32	-208.09	TD @ 201FNL, 428FWL

Checked By: _____

Approved By: _____

Date: _____