

WPX Energy

Eddy County, New Mexico (NAD 83)

Cass Draw/Johnson 10-23-27 Fee

Cass Draw 10-23-27 Fee 401H

Wellbore #1

Design: Actual

WPX Final Survey Report

13 November, 2018

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DISTRICT II-ARTESIA O.C.D.

Scientific Drilling, Intl
WPX Final Survey Report

Company:	WPX Energy	Local Co-ordinate Reference:	Well Cass Draw 10-23-27 Fee 401H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	GL 3116 + RKB 26 = @ 3142.00usft (HP 265)
Site:	Cass Draw/Johnson 10-23-27 Fee	MD Reference:	GL 3116 + RKB 26 = @ 3142.00usft (HP 265)
Well:	Cass Draw 10-23-27 Fee 401H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Project	Eddy County, New Mexico (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Cass Draw/Johnson 10-23-27 Fee				
Site Position:		Northing:	480,099.70 usft	Latitude:	32.319783
From:	Map	Easting:	586,321.90 usft	Longitude:	-104.187709
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.08 °

Well	Cass Draw 10-23-27 Fee 401H					
Well Position	+N/-S	0.00 usft	Northing:	480,099.70 usft	Latitude:	32.319783
	+E/-W	0.00 usft	Easting:	586,321.90 usft	Longitude:	-104.187709
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level:	3,116.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/11/2018	7.33	60.07	48,002

Design	Actual				
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 (bearing)	
	0.00	0.00	0.00	89.96	

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Well:	Cass Draw 10-23-27 Fee 401H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Survey Program		Date	11/13/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
172.00	264.00	SDI MWD - Surface (Wellbore #1)	MWD+HRGM	OWSG MWD + HRGM	
418.00	8,352.00	SDI MWD - Intermediate (Wellbore #1)	MWD+HRGM	OWSG MWD + HRGM	
8,459.00	9,396.00	SDI MWD - Curve (Wellbore #1)	MWD+HRGM	OWSG MWD + HRGM	
9,499.00	14,018.00	SDI MWD - Lateral (Wellbore #1)	MWD+HRGM	OWSG MWD + HRGM	

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	480,099.70	586,321.90	
172.00	0.50	150.31	172.00	-0.65	0.37	0.37	0.75	150.31	480,099.05	586,322.27	
264.00	1.21	198.43	263.99	-1.92	0.26	0.26	1.94	172.20	480,097.78	586,322.16	
418.00	1.89	185.93	417.93	-5.99	-0.51	-0.52	6.01	184.89	480,093.71	586,321.39	
510.00	1.74	179.70	509.89	-8.90	-0.66	-0.67	8.92	184.26	480,090.80	586,321.24	
603.00	2.29	179.98	602.83	-12.17	-0.65	-0.66	12.18	183.08	480,087.53	586,321.25	
695.00	1.12	162.49	694.79	-14.86	-0.38	-0.39	14.87	181.48	480,084.84	586,321.52	
788.00	0.57	68.52	787.78	-15.56	0.32	0.31	15.56	178.82	480,084.14	586,322.22	
880.00	0.62	83.47	879.77	-15.34	1.24	1.23	15.39	175.37	480,084.36	586,323.14	
973.00	0.63	101.84	972.77	-15.38	2.24	2.23	15.55	171.71	480,084.32	586,324.14	
1,065.00	0.94	120.53	1,064.76	-15.87	3.39	3.38	16.23	167.95	480,083.83	586,325.29	
1,158.00	0.71	99.95	1,157.75	-16.36	4.61	4.60	16.99	164.26	480,083.34	586,326.51	
1,250.00	1.67	121.44	1,249.73	-17.16	6.32	6.30	18.28	159.79	480,082.54	586,328.22	
1,345.00	2.30	115.57	1,344.67	-18.70	9.22	9.20	20.85	153.76	480,081.00	586,331.12	
1,439.00	0.69	138.96	1,438.64	-19.94	11.29	11.28	22.92	150.48	480,079.76	586,333.19	
1,533.00	0.64	147.56	1,532.63	-20.81	11.94	11.93	23.99	150.15	480,078.89	586,333.84	
1,628.00	0.71	150.25	1,627.62	-21.77	12.52	12.50	25.11	150.10	480,077.93	586,334.42	
1,722.00	1.87	118.95	1,721.60	-23.02	14.15	14.14	27.02	148.42	480,076.68	586,336.05	
1,817.00	0.93	116.98	1,816.57	-24.12	16.19	16.18	29.05	146.12	480,075.58	586,338.09	
1,911.00	0.69	118.40	1,910.56	-24.73	17.37	17.36	30.22	144.92	480,074.97	586,339.27	

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Well:	Cass Draw 10-23-27 Fee 401H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)	
2,006.00	0.64	105.44	2,005.55	-25.15	18.39	18.37	31.15	143.83	480,074.55	586,340.29	
2,100.00	0.66	111.53	2,099.55	-25.48	19.40	19.38	32.03	142.73	480,074.22	586,341.30	
2,172.00	0.69	112.85	2,171.54	-25.81	20.18	20.16	32.76	141.97	480,073.89	586,342.08	
2,295.00	0.74	122.99	2,294.53	-26.53	21.53	21.51	34.16	140.93	480,073.17	586,343.43	
2,390.00	0.66	116.04	2,389.53	-27.10	22.54	22.52	35.25	140.25	480,072.60	586,344.44	
2,484.00	0.83	133.61	2,483.52	-27.81	23.52	23.50	36.42	139.78	480,071.89	586,345.42	
2,579.00	1.95	162.11	2,578.49	-29.82	24.51	24.49	38.60	140.58	480,069.88	586,346.41	
2,673.00	2.53	167.76	2,672.42	-33.37	25.44	25.42	41.96	142.68	480,066.33	586,347.34	
2,768.00	3.80	171.55	2,767.27	-38.53	26.35	26.32	46.68	145.64	480,061.17	586,348.25	
2,863.00	3.70	171.37	2,862.07	-44.68	27.27	27.24	52.34	148.60	480,055.02	586,349.17	
2,958.00	3.70	173.77	2,956.87	-50.75	28.06	28.03	58.00	151.06	480,048.95	586,349.96	
3,052.00	3.64	174.52	3,050.68	-56.74	28.68	28.64	63.58	153.19	480,042.96	586,350.58	
3,147.00	3.66	172.61	3,145.48	-62.75	29.36	29.31	69.28	154.93	480,036.95	586,351.26	
3,242.00	3.73	172.49	3,240.29	-68.82	30.15	30.10	75.13	156.34	480,030.88	586,352.05	
3,337.00	3.67	175.61	3,335.09	-74.91	30.79	30.73	80.99	157.66	480,024.79	586,352.69	
3,432.00	3.71	179.12	3,429.89	-81.02	31.07	31.01	86.77	159.02	480,018.68	586,352.97	
3,526.00	3.81	173.87	3,523.69	-87.17	31.45	31.39	92.66	160.16	480,012.53	586,353.35	
3,621.00	3.74	174.29	3,618.48	-93.39	32.09	32.03	98.75	161.03	480,006.31	586,353.99	
3,716.00	3.61	177.23	3,713.29	-99.46	32.55	32.48	104.65	161.88	480,000.24	586,354.45	
3,811.00	3.65	175.78	3,808.10	-105.46	32.91	32.84	110.48	162.67	479,994.24	586,354.81	
3,905.00	3.58	177.51	3,901.91	-111.38	33.26	33.18	116.24	163.37	479,988.32	586,355.16	
4,000.00	3.27	175.03	3,996.74	-117.04	33.62	33.54	121.77	163.97	479,982.66	586,355.52	
4,095.00	3.06	178.14	4,091.60	-122.27	33.94	33.86	126.90	164.49	479,977.43	586,355.84	
4,189.00	3.40	168.69	4,185.45	-127.51	34.57	34.48	132.12	164.83	479,972.19	586,356.47	
4,284.00	4.69	164.30	4,280.21	-134.01	36.17	36.08	138.81	164.90	479,965.69	586,358.07	
4,379.00	4.25	162.53	4,374.92	-141.11	38.28	38.18	146.21	164.82	479,958.59	586,360.18	
4,474.00	4.10	160.86	4,469.67	-147.68	40.45	40.35	153.12	164.68	479,952.02	586,362.35	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)
4,568.00	3.96	159.42	4,563.44	-153.89	42.69	42.59	159.70	164.49	479,945.81	586,364.59
4,663.00	3.91	161.69	4,658.21	-160.04	44.86	44.75	166.21	164.34	479,939.66	586,366.76
4,758.00	5.20	160.89	4,752.91	-167.18	47.29	47.17	173.74	164.21	479,932.52	586,369.19
4,853.00	4.63	162.06	4,847.56	-174.90	49.88	49.76	181.87	164.08	479,924.80	586,371.78
4,948.00	4.33	164.16	4,942.27	-181.99	52.04	51.91	189.29	164.04	479,917.71	586,373.94
5,042.00	4.73	155.83	5,035.98	-188.94	54.60	54.46	196.67	163.88	479,910.76	586,376.50
5,137.00	4.60	158.78	5,130.66	-196.07	57.58	57.44	204.35	163.63	479,903.63	586,379.48
5,232.00	4.19	158.19	5,225.38	-202.84	60.25	60.11	211.60	163.46	479,896.86	586,382.15
5,327.00	4.16	160.11	5,320.13	-209.30	62.71	62.56	218.50	163.32	479,890.40	586,384.61
5,422.00	4.08	163.64	5,414.89	-215.79	64.83	64.68	225.32	163.28	479,883.91	586,386.73
5,516.00	3.71	167.97	5,508.67	-221.97	66.41	66.25	231.69	163.34	479,877.73	586,388.31
5,611.00	4.35	176.32	5,603.43	-228.57	67.28	67.12	238.27	163.60	479,871.13	586,389.18
5,706.00	5.82	173.69	5,698.06	-236.95	68.04	67.88	246.53	163.98	479,862.75	586,389.94
5,801.00	4.23	176.13	5,792.69	-245.24	68.81	68.64	254.71	164.33	479,854.46	586,390.71
5,896.00	3.96	165.15	5,887.45	-251.91	69.88	69.71	261.42	164.49	479,847.79	586,391.78
5,990.00	4.48	163.92	5,981.19	-258.57	71.73	71.55	268.34	164.49	479,841.13	586,393.63
6,085.00	4.21	169.67	6,075.92	-265.57	73.39	73.20	275.52	164.55	479,834.13	586,395.29
6,180.00	5.21	163.00	6,170.60	-273.12	75.27	75.08	283.30	164.59	479,826.58	586,397.17
6,274.00	5.11	171.02	6,264.22	-281.34	77.17	76.98	291.73	164.66	479,818.36	586,399.07
6,369.00	4.37	174.07	6,358.89	-289.12	78.21	78.01	299.51	164.86	479,810.58	586,400.11
6,464.00	4.64	172.91	6,453.60	-296.53	79.06	78.85	306.89	165.07	479,803.17	586,400.96
6,559.00	5.26	164.49	6,548.25	-304.54	80.70	80.48	315.05	165.16	479,795.16	586,402.60
6,654.00	3.93	164.50	6,642.94	-311.87	82.73	82.51	322.66	165.14	479,787.83	586,404.63
6,749.00	3.80	161.47	6,737.72	-317.99	84.60	84.38	329.06	165.10	479,781.71	586,406.50
6,843.00	5.17	149.60	6,831.44	-324.60	87.73	87.51	336.25	164.88	479,775.10	586,409.63
6,938.00	4.69	152.11	6,926.08	-331.73	91.72	91.48	344.17	164.54	479,767.97	586,413.62
7,033.00	5.00	140.83	7,020.75	-338.37	96.15	95.91	351.76	164.14	479,761.33	586,418.05

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Design:	Actual	Database:	Midland District

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)	
7,128.00	6.40	146.06	7,115.28	-345.97	101.72	101.48	360.61	163.62	479,753.73	586,423.62	
7,222.00	5.87	143.70	7,208.74	-354.19	107.49	107.24	370.14	163.12	479,745.51	586,429.39	
7,317.00	5.35	138.43	7,303.28	-361.42	113.31	113.05	378.76	162.59	479,738.28	586,435.21	
7,412.00	4.39	138.87	7,397.94	-367.47	118.64	118.38	386.15	162.11	479,732.23	586,440.54	
7,507.00	3.64	139.85	7,492.70	-372.52	122.97	122.71	392.29	161.73	479,727.18	586,444.87	
7,601.00	3.08	152.38	7,586.54	-377.03	126.07	125.80	397.55	161.51	479,722.67	586,447.97	
7,696.00	2.92	154.58	7,681.41	-381.48	128.29	128.02	402.47	161.41	479,718.22	586,450.19	
7,791.00	4.26	153.39	7,776.22	-386.82	130.91	130.64	408.37	161.30	479,712.88	586,452.81	
7,886.00	4.26	159.93	7,870.96	-393.29	133.70	133.42	415.39	161.22	479,706.41	586,455.60	
7,980.00	5.00	162.96	7,964.66	-400.49	136.10	135.82	422.98	161.23	479,699.21	586,458.00	
8,075.00	5.00	170.95	8,059.30	-408.53	137.96	137.68	431.20	161.34	479,691.17	586,459.86	
8,170.00	5.25	176.18	8,153.92	-416.96	138.90	138.61	439.49	161.58	479,682.74	586,460.80	
8,265.00	4.59	177.19	8,248.57	-425.09	139.38	139.08	447.36	161.85	479,674.61	586,461.28	
8,352.00	3.28	177.12	8,335.36	-431.05	139.67	139.37	453.12	162.05	479,668.65	586,461.57	
8,459.00	2.79	160.53	8,442.21	-436.57	140.70	140.39	458.68	162.14	479,663.13	586,462.60	
8,554.00	15.75	97.51	8,535.88	-440.45	154.32	154.02	466.71	160.69	479,659.25	586,476.22	
8,648.00	25.05	90.35	8,623.91	-442.25	186.95	186.64	480.14	157.08	479,657.45	586,508.85	
8,743.00	32.85	91.82	8,706.97	-443.19	232.88	232.58	500.65	152.28	479,656.51	586,554.78	
8,838.00	40.21	91.34	8,783.26	-444.73	289.37	289.06	530.58	146.95	479,654.97	586,611.27	
8,932.00	44.67	92.89	8,852.61	-447.10	352.74	352.43	569.50	141.73	479,652.60	586,674.64	
9,027.00	50.80	86.13	8,916.51	-446.30	422.93	422.62	614.86	136.54	479,653.40	586,744.83	
9,122.00	61.38	83.87	8,969.44	-439.34	501.34	501.04	666.61	131.23	479,660.36	586,823.24	
9,217.00	68.99	85.06	9,009.29	-431.06	587.11	586.81	728.36	126.29	479,668.64	586,909.01	
9,312.00	75.70	87.81	9,038.09	-425.48	677.40	677.10	799.94	122.13	479,674.22	586,999.30	
9,315.15	76.00	87.96	9,038.86	-425.36	680.45	680.15	802.46	122.01	479,674.34	587,002.35	
FTP Actual 9315.15' MD - CD10-23-27-401H FTP											
9,396.00	83.83	91.61	9,053.00	-425.09	759.98	759.68	870.78	119.22	479,674.61	587,081.88	

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Well:	Cass Draw 10-23-27 Fee 401H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)
9,499.00	90.20	93.18	9,058.37	-429.39	862.69	862.39	963.64	116.46	479,670.31	587,184.59
9,594.00	89.97	92.18	9,058.22	-433.84	957.58	957.28	1,051.28	114.37	479,665.86	587,279.48
9,689.00	89.87	90.82	9,058.36	-436.32	1,052.55	1,052.24	1,139.40	112.52	479,663.38	587,374.45
9,784.00	83.91	88.70	9,063.51	-435.93	1,147.36	1,147.06	1,227.38	110.80	479,663.77	587,469.26
9,878.00	86.37	88.58	9,071.47	-433.71	1,240.99	1,240.69	1,314.59	109.26	479,665.99	587,562.89
9,973.00	88.19	88.97	9,075.98	-431.68	1,335.86	1,335.55	1,403.87	107.91	479,668.02	587,657.76
10,068.00	89.46	89.09	9,077.93	-430.07	1,430.82	1,430.52	1,494.06	106.73	479,669.63	587,752.72
10,163.00	90.97	89.67	9,077.57	-429.04	1,525.81	1,525.51	1,584.98	105.71	479,670.66	587,847.71
10,257.00	90.50	89.81	9,076.37	-428.62	1,619.80	1,619.50	1,675.55	104.82	479,671.08	587,941.70
10,352.00	90.70	90.04	9,075.37	-428.49	1,714.80	1,714.50	1,767.52	104.03	479,671.21	588,036.70
10,447.00	88.36	90.00	9,076.15	-428.53	1,809.79	1,809.49	1,859.83	103.32	479,671.17	588,131.69
10,542.00	87.98	89.58	9,079.18	-428.18	1,904.74	1,904.44	1,952.27	102.67	479,671.52	588,226.64
10,637.00	87.82	89.40	9,082.67	-427.33	1,999.67	1,999.37	2,044.82	102.06	479,672.37	588,321.57
10,731.00	87.55	89.14	9,086.46	-426.14	2,093.58	2,093.29	2,136.51	101.51	479,673.56	588,415.48
10,826.00	87.88	89.28	9,090.25	-424.83	2,188.50	2,188.20	2,229.35	100.99	479,674.87	588,510.40
10,921.00	87.75	89.29	9,093.87	-423.64	2,283.42	2,283.13	2,322.39	100.51	479,676.06	588,605.32
11,016.00	89.90	89.97	9,095.82	-423.03	2,378.40	2,378.10	2,415.72	100.09	479,676.67	588,700.30
11,110.00	89.36	89.68	9,096.43	-422.74	2,472.39	2,472.10	2,508.27	99.70	479,676.96	588,794.29
11,205.00	91.08	89.85	9,096.06	-422.35	2,567.39	2,567.09	2,601.90	99.34	479,677.35	588,889.29
11,300.00	90.37	90.08	9,094.86	-422.29	2,662.38	2,662.08	2,695.66	99.01	479,677.41	588,984.28
11,395.00	87.95	89.93	9,096.25	-422.30	2,757.36	2,757.07	2,789.51	98.71	479,677.40	589,079.26
11,490.00	90.03	90.08	9,097.93	-422.31	2,852.34	2,852.05	2,883.44	98.42	479,677.39	589,174.24
11,584.00	91.21	90.16	9,096.91	-422.51	2,946.33	2,946.04	2,976.47	98.16	479,677.19	589,268.23
11,679.00	90.20	90.33	9,095.74	-422.91	3,041.33	3,041.03	3,070.59	97.92	479,676.79	589,363.23
11,774.00	89.56	90.18	9,095.94	-423.34	3,136.32	3,136.03	3,164.77	97.69	479,676.36	589,458.22
11,869.00	87.82	90.16	9,098.11	-423.62	3,231.29	3,231.00	3,258.94	97.47	479,676.08	589,553.19
11,964.00	87.65	89.66	9,101.87	-423.47	3,326.22	3,325.92	3,353.07	97.26	479,676.23	589,648.12

Scientific Drilling, Intl
WPX Final Survey Report

Company:	WPX Energy	Local Co-ordinate Reference:	Well Cass Draw 10-23-27 Fee 401H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	GL 3116 + RKB 26 = @ 3142.00usft (HP 265)
Site:	Cass Draw/Johnson 10-23-27 Fee	MD Reference:	GL 3116 + RKB 26 = @ 3142.00usft (HP 265)
Well:	Cass Draw 10-23-27 Fee 401H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)
12,058.00	88.96	89.77	9,104.65	-423.00	3,420.18	3,419.88	3,446.23	97.05	479,676.70	589,742.08
12,153.00	86.27	90.45	9,108.60	-423.18	3,515.08	3,514.79	3,540.47	96.86	479,676.52	589,836.98
12,248.00	86.07	90.28	9,114.95	-423.79	3,609.87	3,609.57	3,634.66	96.70	479,675.91	589,931.77
12,342.00	85.87	89.41	9,121.55	-423.53	3,703.64	3,703.34	3,727.77	96.52	479,676.17	590,025.54
12,437.00	89.23	89.47	9,125.61	-422.61	3,798.53	3,798.24	3,821.97	96.35	479,677.09	590,120.43
12,532.00	90.23	89.35	9,126.06	-421.63	3,893.52	3,893.23	3,916.29	96.18	479,678.07	590,215.42
12,627.00	91.78	89.73	9,124.39	-420.87	3,988.50	3,988.21	4,010.65	96.02	479,678.83	590,310.40
12,722.00	92.25	89.88	9,121.05	-420.54	4,083.44	4,083.15	4,105.04	95.88	479,679.16	590,405.34
12,816.00	91.65	89.43	9,117.86	-419.98	4,177.39	4,177.09	4,198.44	95.74	479,679.72	590,499.29
12,911.00	91.75	89.25	9,115.04	-418.88	4,272.34	4,272.05	4,292.82	95.60	479,680.82	590,594.24
13,006.00	91.04	89.38	9,112.72	-417.75	4,367.30	4,367.01	4,387.24	95.46	479,681.95	590,689.20
13,101.00	90.87	89.40	9,111.14	-416.74	4,462.28	4,461.99	4,481.70	95.34	479,682.96	590,784.18
13,196.00	89.50	89.66	9,110.83	-415.96	4,557.28	4,556.99	4,576.22	95.22	479,683.74	590,879.18
13,290.00	88.72	89.61	9,112.29	-415.36	4,651.26	4,650.97	4,669.77	95.10	479,684.34	590,973.16
13,385.00	88.39	89.15	9,114.69	-414.33	4,746.23	4,745.94	4,764.28	94.99	479,685.37	591,068.13
13,480.00	88.79	88.64	9,117.03	-412.50	4,841.18	4,840.89	4,858.72	94.87	479,687.20	591,163.08
13,575.00	88.79	88.62	9,119.03	-410.23	4,936.13	4,935.85	4,953.15	94.75	479,689.47	591,258.03
13,669.00	88.72	88.38	9,121.08	-407.77	5,030.08	5,029.79	5,046.58	94.63	479,691.93	591,351.98
13,764.00	88.35	87.93	9,123.50	-404.71	5,125.00	5,124.71	5,140.95	94.52	479,694.99	591,446.90
13,859.00	87.38	87.11	9,127.04	-400.60	5,219.84	5,219.56	5,235.19	94.39	479,699.10	591,541.74
13,914.88	87.10	86.72	9,129.73	-397.60	5,275.58	5,275.30	5,290.54	94.31	479,702.10	591,597.48
LTP Actual 13914.88' MD - CD10-23-27-401H LTP										
13,941.00	86.97	86.54	9,131.09	-396.07	5,301.62	5,301.34	5,316.39	94.27	479,703.63	591,623.52
SDI MWD										
14,014.17	86.97	86.54	9,134.95	-391.66	5,374.55	5,374.27	5,388.80	94.17	479,708.04	591,696.45
CD10-23-27-401H BHL										

Scientific Drilling, Intl

WPX Final Survey Report

Company:	WPX Energy	Local Co-ordinate Reference:	Well Cass Draw 10-23-27 Fee 401H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	GL 3116 + RKB 26 = @ 3142.00usft (HP 265)
Site:	Cass Draw/Johnson 10-23-27 Fee	MD Reference:	GL 3116 + RKB 26 = @ 3142.00usft (HP 265)
Well:	Cass Draw 10-23-27 Fee 401H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	Midland District

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)
14,018.00	86.97	86.54	9,135.16	-391.43	5,378.37	5,378.09	5,392.59	94.16	479,708.27	591,700.27
Bit Projection										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
9,315.15	9,038.86	-425.36	680.45	FTP Actual 9315.15' MD	
13,914.88	9,129.73	-397.60	5,275.58	LTP Actual 13914.88' MD	
13,941.00	9,131.09	-396.07	5,301.62	SDI MWD	
14,018.00	9,135.16	-391.43	5,378.37	Bit Projection	

Checked By: _____	Approved By: _____	Date: _____
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11/13/2018

WPX Energy

Cass Draw 10-23-27 Fee 401H - Actual

Eddy County, New Mexico (NAD 83)

Cass Draw/Johnson 10-23-27 Fee

Your Ref:

11/13/2018

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Grid X	Grid Y	SSTVD
0	0	0	0	0	0	0	0	586321.9	480099.7	-3142
172	0.5	150.31	172	-0.65	0.37	0.37	0.29	586322.3	480099.1	-2970
264	1.21	198.43	263.99	-1.92	0.26	0.26	1.03	586322.2	480097.8	-2878.01
418	1.89	185.93	417.93	-5.99	-0.51	-0.52	0.49	586321.4	480093.7	-2724.07
510	1.74	179.7	509.89	-8.9	-0.66	-0.67	0.27	586321.2	480090.8	-2632.11
603	2.29	179.98	602.83	-12.17	-0.65	-0.66	0.59	586321.3	480087.5	-2539.17
695	1.12	162.49	694.79	-14.86	-0.38	-0.39	1.38	586321.5	480084.8	-2447.21
788	0.57	68.52	787.78	-15.56	0.32	0.31	1.39	586322.2	480084.1	-2354.22
880	0.62	83.47	879.77	-15.34	1.24	1.23	0.18	586323.1	480084.4	-2262.23
973	0.63	101.84	972.77	-15.38	2.24	2.23	0.21	586324.1	480084.3	-2169.23
1065	0.94	120.53	1064.76	-15.87	3.39	3.38	0.43	586325.3	480083.8	-2077.24
1158	0.71	99.95	1157.75	-16.36	4.61	4.6	0.4	586326.5	480083.3	-1984.25
1250	1.67	121.44	1249.73	-17.16	6.32	6.3	1.13	586328.2	480082.5	-1892.27
1345	2.3	115.57	1344.67	-18.7	9.22	9.2	0.7	586331.1	480081	-1797.33
1439	0.69	138.96	1438.64	-19.94	11.29	11.28	1.8	586333.2	480079.8	-1703.36
1533	0.64	147.56	1532.63	-20.81	11.94	11.93	0.12	586333.8	480078.9	-1609.37
1628	0.71	150.25	1627.62	-21.77	12.52	12.5	0.08	586334.4	480077.9	-1514.38
1722	1.87	118.95	1721.6	-23.02	14.15	14.14	1.4	586336.1	480076.7	-1420.4
1817	0.93	116.98	1816.57	-24.12	16.19	16.18	0.99	586338.1	480075.6	-1325.43
1911	0.69	118.4	1910.56	-24.73	17.37	17.36	0.26	586339.3	480075	-1231.44
2006	0.64	105.44	2005.55	-25.15	18.39	18.37	0.17	586340.3	480074.6	-1136.45
2100	0.66	111.53	2099.55	-25.48	19.4	19.38	0.08	586341.3	480074.2	-1042.45
2172	0.69	112.85	2171.54	-25.81	20.18	20.16	0.05	586342.1	480073.9	-970.46
2295	0.74	122.99	2294.53	-26.53	21.53	21.51	0.11	586343.4	480073.2	-847.47
2390	0.66	116.04	2389.53	-27.1	22.54	22.52	0.12	586344.4	480072.6	-752.47
2484	0.83	133.61	2483.52	-27.81	23.52	23.5	0.3	586345.4	480071.9	-658.48
2579	1.95	162.11	2578.49	-29.82	24.51	24.49	1.35	586346.4	480069.9	-563.51
2673	2.53	167.76	2672.42	-33.37	25.44	25.42	0.66	586347.3	480066.3	-469.58
2768	3.8	171.55	2767.27	-38.53	26.35	26.32	1.35	586348.3	480061.2	-374.73
2863	3.7	171.37	2862.07	-44.68	27.27	27.24	0.11	586349.2	480055	-279.93
2958	3.7	173.77	2956.87	-50.75	28.06	28.03	0.16	586350	480049	-185.13
3052	3.64	174.52	3050.68	-56.74	28.68	28.64	0.08	586350.6	480043	-91.32
3147	3.66	172.61	3145.48	-62.75	29.36	29.31	0.13	586351.3	480037	3.48
3242	3.73	172.49	3240.29	-68.82	30.15	30.1	0.07	586352.1	480030.9	98.29
3337	3.67	175.61	3335.09	-74.91	30.79	30.73	0.22	586352.7	480024.8	193.09
3432	3.71	179.12	3429.89	-81.02	31.07	31.01	0.24	586353	480018.7	287.89
3526	3.81	173.87	3523.69	-87.17	31.45	31.39	0.38	586353.4	480012.5	381.69

3621	3.74	174.29	3618.48	-93.39	32.09	32.03	0.08	586354	480006.3	476.48
3716	3.61	177.23	3713.29	-99.46	32.55	32.48	0.24	586354.5	480000.2	571.29
3811	3.65	175.78	3808.1	-105.46	32.91	32.84	0.11	586354.8	479994.2	666.1
3905	3.58	177.51	3901.91	-111.38	33.26	33.18	0.14	586355.2	479988.3	759.91
4000	3.27	175.03	3996.74	-117.04	33.62	33.54	0.36	586355.5	479982.7	854.74
4095	3.06	178.14	4091.6	-122.27	33.94	33.86	0.29	586355.8	479977.4	949.6
4189	3.4	168.69	4185.45	-127.51	34.57	34.48	0.67	586356.5	479972.2	1043.45
4284	4.69	164.3	4280.21	-134.01	36.17	36.08	1.4	586358.1	479965.7	1138.21
4379	4.25	162.53	4374.92	-141.11	38.28	38.18	0.49	586360.2	479958.6	1232.92
4474	4.1	160.86	4469.67	-147.68	40.45	40.35	0.2	586362.4	479952	1327.67
4568	3.96	159.42	4563.44	-153.89	42.69	42.59	0.18	586364.6	479945.8	1421.44
4663	3.91	161.69	4658.21	-160.04	44.86	44.75	0.17	586366.8	479939.7	1516.21
4758	5.2	160.89	4752.91	-167.18	47.29	47.17	1.36	586369.2	479932.5	1610.91
4853	4.63	162.06	4847.56	-174.9	49.88	49.76	0.61	586371.8	479924.8	1705.56
4948	4.33	164.16	4942.27	-181.99	52.04	51.91	0.36	586373.9	479917.7	1800.27
5042	4.73	155.83	5035.98	-188.94	54.6	54.46	0.82	586376.5	479910.8	1893.98
5137	4.6	158.78	5130.66	-196.07	57.58	57.44	0.29	586379.5	479903.6	1988.66
5232	4.19	158.19	5225.38	-202.84	60.25	60.11	0.43	586382.2	479896.9	2083.38
5327	4.16	160.11	5320.13	-209.3	62.71	62.56	0.15	586384.6	479890.4	2178.13
5422	4.08	163.64	5414.89	-215.79	64.83	64.68	0.28	586386.7	479883.9	2272.89
5516	3.71	167.97	5508.67	-221.97	66.41	66.25	0.5	586388.3	479877.7	2366.67
5611	4.35	176.32	5603.43	-228.57	67.28	67.12	0.91	586389.2	479871.1	2461.43
5706	5.82	173.69	5698.06	-236.95	68.04	67.88	1.57	586389.9	479862.8	2556.06
5801	4.23	176.13	5792.69	-245.24	68.81	68.64	1.69	586390.7	479854.5	2650.69
5896	3.96	165.15	5887.45	-251.91	69.88	69.71	0.87	586391.8	479847.8	2745.45
5990	4.48	163.92	5981.19	-258.57	71.73	71.55	0.56	586393.6	479841.1	2839.19
6085	4.21	169.67	6075.92	-265.57	73.39	73.2	0.54	586395.3	479834.1	2933.92
6180	5.21	163	6170.6	-273.12	75.27	75.08	1.2	586397.2	479826.6	3028.6
6274	5.11	171.02	6264.22	-281.34	77.17	76.98	0.77	586399.1	479818.4	3122.22
6369	4.37	174.07	6358.89	-289.12	78.21	78.01	0.82	586400.1	479810.6	3216.89
6464	4.64	172.91	6453.6	-296.53	79.06	78.85	0.3	586401	479803.2	3311.6
6559	5.26	164.49	6548.25	-304.54	80.7	80.48	1	586402.6	479795.2	3406.25
6654	3.93	164.5	6642.94	-311.87	82.73	82.51	1.4	586404.6	479787.8	3500.94
6749	3.8	161.47	6737.72	-317.99	84.6	84.38	0.25	586406.5	479781.7	3595.72
6843	5.17	149.6	6831.44	-324.6	87.73	87.51	1.75	586409.6	479775.1	3689.44
6938	4.69	152.11	6926.08	-331.73	91.72	91.48	0.55	586413.6	479768	3784.08
7033	5	140.83	7020.75	-338.37	96.15	95.91	1.05	586418.1	479761.3	3878.75
7128	6.4	146.06	7115.28	-345.97	101.72	101.48	1.57	586423.6	479753.7	3973.28
7222	5.87	143.7	7208.74	-354.19	107.49	107.24	0.62	586429.4	479745.5	4066.74
7317	5.35	138.43	7303.28	-361.42	113.31	113.05	0.77	586435.2	479738.3	4161.28
7412	4.39	138.87	7397.94	-367.47	118.64	118.38	1.01	586440.5	479732.2	4255.94
7507	3.64	139.85	7492.7	-372.52	122.97	122.71	0.79	586444.9	479727.2	4350.7
7601	3.08	152.38	7586.54	-377.03	126.07	125.8	0.98	586448	479722.7	4444.54
7696	2.92	154.58	7681.41	-381.48	128.29	128.02	0.21	586450.2	479718.2	4539.41
7791	4.26	153.39	7776.22	-386.82	130.91	130.64	1.41	586452.8	479712.9	4634.22
7886	4.26	159.93	7870.96	-393.29	133.7	133.42	0.51	586455.6	479706.4	4728.96
7980	5	162.96	7964.66	-400.49	136.1	135.82	0.83	586458	479699.2	4822.66
8075	5	170.95	8059.3	-408.53	137.96	137.68	0.73	586459.9	479691.2	4917.3
8170	5.25	176.18	8153.92	-416.96	138.9	138.61	0.56	586460.8	479682.7	5011.92
8265	4.59	177.19	8248.57	-425.09	139.38	139.08	0.7	586461.3	479674.6	5106.57
8352	3.28	177.12	8335.36	-431.05	139.67	139.37	1.51	586461.6	479668.7	5193.36
8459	2.79	160.53	8442.21	-436.57	140.7	140.39	0.94	586462.6	479663.1	5300.21
8554	15.75	97.51	8535.88	-440.45	154.32	154.02	15.46	586476.2	479659.3	5393.88
8648	25.05	90.35	8623.91	-442.25	186.95	186.64	10.23	586508.9	479657.5	5481.91

8743	32.85	91.82	8706.97	-443.19	232.88	232.58	8.24	586554.8	479656.5	5564.97
8838	40.21	91.34	8783.26	-444.73	289.37	289.06	7.75	586611.3	479655	5641.26
8932	44.67	92.89	8852.61	-447.1	352.74	352.43	4.87	586674.6	479652.6	5710.61
9027	50.8	86.13	8916.51	-446.3	422.93	422.62	8.32	586744.8	479653.4	5774.51
9122	61.38	83.87	8969.44	-439.34	501.34	501.04	11.31	586823.2	479660.4	5827.44
9217	68.99	85.06	9009.29	-431.06	587.11	586.81	8.09	586909	479668.6	5867.29
9312	75.7	87.81	9038.09	-425.48	677.4	677.1	7.58	586999.3	479674.2	5896.09
9396	83.83	91.61	9053	-425.09	759.98	759.68	10.65	587081.9	479674.6	5911
9499	90.2	93.18	9058.37	-429.39	862.69	862.39	6.37	587184.6	479670.3	5916.37
9594	89.97	92.18	9058.22	-433.84	957.58	957.28	1.08	587279.5	479665.9	5916.22
9689	89.87	90.82	9058.36	-436.32	1052.55	1052.24	1.44	587374.5	479663.4	5916.36
9784	83.91	88.7	9063.51	-435.93	1147.36	1147.06	6.66	587469.3	479663.8	5921.51
9878	86.37	88.58	9071.47	-433.71	1240.99	1240.69	2.62	587562.9	479666	5929.47
9973	88.19	88.97	9075.98	-431.68	1335.86	1335.55	1.96	587657.8	479668	5933.98
10068	89.46	89.09	9077.93	-430.07	1430.82	1430.52	1.34	587752.7	479669.6	5935.93
10163	90.97	89.67	9077.57	-429.04	1525.81	1525.51	1.7	587847.7	479670.7	5935.57
10257	90.5	89.81	9076.37	-428.62	1619.8	1619.5	0.52	587941.7	479671.1	5934.37
10352	90.7	90.04	9075.37	-428.49	1714.8	1714.5	0.32	588036.7	479671.2	5933.37
10447	88.36	90	9076.15	-428.53	1809.79	1809.49	2.46	588131.7	479671.2	5934.15
10542	87.98	89.58	9079.18	-428.18	1904.74	1904.44	0.6	588226.6	479671.5	5937.18
10637	87.82	89.4	9082.67	-427.33	1999.67	1999.37	0.25	588321.6	479672.4	5940.67
10731	87.55	89.14	9086.46	-426.14	2093.58	2093.29	0.4	588415.5	479673.6	5944.46
10826	87.88	89.28	9090.25	-424.83	2188.5	2188.2	0.38	588510.4	479674.9	5948.25
10921	87.75	89.29	9093.87	-423.64	2283.42	2283.13	0.14	588605.3	479676.1	5951.87
11016	89.9	89.97	9095.82	-423.03	2378.4	2378.1	2.37	588700.3	479676.7	5953.82
11110	89.36	89.68	9096.43	-422.74	2472.39	2472.1	0.65	588794.3	479677	5954.43
11205	91.08	89.85	9096.06	-422.35	2567.39	2567.09	1.82	588889.3	479677.4	5954.06
11300	90.37	90.08	9094.86	-422.29	2662.38	2662.08	0.79	588984.3	479677.4	5952.86
11395	87.95	89.93	9096.25	-422.3	2757.36	2757.07	2.55	589079.3	479677.4	5954.25
11490	90.03	90.08	9097.93	-422.31	2852.34	2852.05	2.2	589174.2	479677.4	5955.93
11584	91.21	90.16	9096.91	-422.51	2946.33	2946.04	1.26	589268.2	479677.2	5954.91
11679	90.2	90.33	9095.74	-422.91	3041.33	3041.03	1.08	589363.2	479676.8	5953.74
11774	89.56	90.18	9095.94	-423.34	3136.32	3136.03	0.69	589458.2	479676.4	5953.94
11869	87.82	90.16	9098.11	-423.62	3231.29	3231	1.83	589553.2	479676.1	5956.11
11964	87.65	89.66	9101.87	-423.47	3326.22	3325.92	0.56	589648.1	479676.2	5959.87
12058	88.96	89.77	9104.65	-423	3420.18	3419.88	1.4	589742.1	479676.7	5962.65
12153	86.27	90.45	9108.6	-423.18	3515.08	3514.79	2.92	589837	479676.5	5966.6
12248	86.07	90.28	9114.95	-423.79	3609.87	3609.57	0.28	589931.8	479675.9	5972.95
12342	85.87	89.41	9121.55	-423.53	3703.64	3703.34	0.95	590025.5	479676.2	5979.55
12437	89.23	89.47	9125.61	-422.61	3798.53	3798.24	3.54	590120.4	479677.1	5983.61
12532	90.23	89.35	9126.06	-421.63	3893.52	3893.23	1.06	590215.4	479678.1	5984.06
12627	91.78	89.73	9124.39	-420.87	3988.5	3988.21	1.68	590310.4	479678.8	5982.39
12722	92.25	89.88	9121.05	-420.54	4083.44	4083.15	0.52	590405.3	479679.2	5979.05
12816	91.65	89.43	9117.86	-419.98	4177.39	4177.09	0.8	590499.3	479679.7	5975.86
12911	91.75	89.25	9115.04	-418.88	4272.34	4272.05	0.22	590594.2	479680.8	5973.04
13006	91.04	89.38	9112.72	-417.75	4367.3	4367.01	0.76	590689.2	479682	5970.72
13101	90.87	89.4	9111.14	-416.74	4462.28	4461.99	0.18	590784.2	479683	5969.14
13196	89.5	89.66	9110.83	-415.96	4557.28	4556.99	1.47	590879.2	479683.7	5968.83
13290	88.72	89.61	9112.29	-415.36	4651.26	4650.97	0.83	590973.2	479684.3	5970.29
13385	88.39	89.15	9114.69	-414.33	4746.23	4745.94	0.6	591068.1	479685.4	5972.69
13480	88.79	88.64	9117.03	-412.5	4841.18	4840.89	0.68	591163.1	479687.2	5975.03
13575	88.79	88.62	9119.03	-410.23	4936.13	4935.85	0.02	591258	479689.5	5977.03
13669	88.72	88.38	9121.08	-407.77	5030.08	5029.79	0.27	591352	479691.9	5979.08
13764	88.35	87.93	9123.5	-404.71	5125	5124.71	0.61	591446.9	479695	5981.5

13859	87.38	87.11	9127.04	-400.6	5219.84	5219.56	1.34	591541.7	479699.1	5985.04
13941	86.97	86.54	9131.09	-396.07	5301.62	5301.34	0.86	591623.5	479703.6	5989.09
14018	86.97	86.54	9135.16	-391.43	5378.37	5378.09	0	591700.3	479708.3	5993.16

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to GL 3116 + RKB 26 =. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.
Vertical Section is from Slot and calculated along an Azimuth of 89.960° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.
Central meridian is -104.333°.
Grid Convergence at Surface is 0.078°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 14018.00ft.,
the Bottom Hole Displacement is 5392.59ft., in the Direction of 89.960° (Grid).

Scientific Drilling, Intl
WPX Final Survey Report

Company: WPX Energy
 Project: Eddy County, New Mexico (NAD 83)
 Site: Frontier 32-23-26 State Pad
 Well: Frontier 32-23-26 State 431H
 Wellbore: Wellbore #1
 Design: Actual

Local Co-ordinate Reference: Well Frontier 32-23-26 State 431H
 TVD Reference: GL 3437 + RKB 26 = @ 3463.00usft (HP 265)
 MD Reference: GL 3437 + RKB 26 = @ 3463.00usft (HP 265)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)
11,970.00	90.37	269.16	8,886.26	91.20	-3,019.96	3,019.29	3,021.33	271.73	456,255.90	546,183.34
12,065.00	89.60	268.77	8,886.28	89.49	-3,114.94	3,114.28	3,116.23	271.65	456,254.19	546,088.36
12,160.00	89.83	267.29	8,886.76	86.22	-3,209.88	3,209.24	3,211.04	271.54	456,250.92	545,993.42
12,254.00	92.72	270.02	8,884.66	84.01	-3,303.81	3,303.18	3,304.88	271.46	456,248.71	545,899.49
12,349.00	92.78	269.38	8,880.11	83.52	-3,398.70	3,398.07	3,399.73	271.41	456,248.22	545,804.60
12,444.00	92.72	269.07	8,875.55	82.23	-3,493.58	3,492.96	3,494.55	271.35	456,246.93	545,709.72
12,539.00	92.68	268.90	8,871.07	80.55	-3,588.46	3,587.85	3,589.37	271.29	456,245.25	545,614.84
12,634.00	92.28	269.50	8,866.96	79.23	-3,683.36	3,682.76	3,684.22	271.23	456,243.93	545,519.94
12,728.00	90.67	268.73	8,864.54	77.78	-3,777.32	3,776.72	3,778.12	271.18	456,242.48	545,425.98
12,823.00	90.23	268.63	8,863.80	75.59	-3,872.29	3,871.70	3,873.03	271.12	456,240.29	545,331.01
12,918.00	89.66	268.32	8,863.89	73.06	-3,967.26	3,966.68	3,967.93	271.06	456,237.76	545,236.04
13,013.00	89.50	268.43	8,864.58	70.37	-4,062.21	4,061.66	4,062.82	270.99	456,235.07	545,141.09
13,108.00	90.24	269.73	8,864.80	68.84	-4,157.20	4,156.65	4,157.77	270.95	456,233.54	545,046.10
13,202.00	90.30	270.69	8,864.36	69.19	-4,251.20	4,250.64	4,251.76	270.93	456,233.89	544,952.10
13,297.00	92.08	272.28	8,862.38	71.65	-4,346.14	4,345.57	4,346.73	270.94	456,236.35	544,857.16
13,392.00	94.10	274.02	8,857.26	76.86	-4,440.85	4,440.24	4,441.51	270.99	456,241.56	544,762.45
13,487.00	93.57	274.04	8,850.91	83.52	-4,535.40	4,534.75	4,536.17	271.05	456,248.22	544,667.90
13,578.27	91.51	272.92	8,846.86	89.05	-4,626.40	4,625.71	4,627.26	271.10	456,253.75	544,576.90
Frontier431H LTP										
13,580.55	91.46	272.90	8,846.80	89.17	-4,628.68	4,627.99	4,629.54	271.10	456,253.87	544,574.62
LTP Actual 13580.55' MD										
13,608.00	90.84	272.56	8,846.25	90.48	-4,656.10	4,655.39	4,656.97	271.11	456,255.18	544,547.20
SDI MWD										
13,680.96	90.84	272.56	8,845.18	93.74	-4,728.98	4,728.25	4,729.91	271.14	456,258.44	544,474.32
Frontier431H BHL										
13,682.00	90.84	272.56	8,845.17	93.78	-4,730.01	4,729.29	4,730.94	271.14	456,258.48	544,473.29
Bit Projection										

Scientific Drilling, Intl
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Site: Frontier 32-23-26 State Pad
Well: Frontier 32-23-26 State 431H
Wellbore: Wellbore #1
Design: Actual

Local Co-ordinate Reference: Well Frontier 32-23-26 State 431H
TVD Reference: GL 3437 + RKB 26 = @ 3463.00usft (HP 265)
MD Reference: GL 3437 + RKB 26 = @ 3463.00usft (HP 265)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland District

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (bearing)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (bearing)	Northing (usft)	Easting (usft)	
9,411.00	90.17	270.69	8,901.35	94.42	-462.53	461.89	472.07	281.54	456,259.12	548,740.77	
9,506.00	90.20	270.30	8,901.04	95.24	-557.53	556.88	565.60	279.69	456,259.94	548,645.77	
9,600.00	89.76	269.05	8,901.07	94.71	-651.52	650.88	658.37	278.27	456,259.41	548,551.78	
9,695.00	90.34	269.20	8,900.99	93.26	-746.51	745.88	752.31	277.12	456,257.96	548,456.79	
9,790.00	90.54	270.16	8,900.26	92.73	-841.51	840.87	846.60	276.29	456,257.43	548,361.79	
9,885.00	90.17	269.82	8,899.67	92.71	-936.50	935.87	941.08	275.65	456,257.41	548,266.80	
9,980.00	89.26	269.15	8,900.14	91.86	-1,031.50	1,030.86	1,035.58	275.09	456,256.56	548,171.80	
10,074.00	88.28	267.87	8,902.18	89.41	-1,125.44	1,124.82	1,128.99	274.54	456,254.11	548,077.86	
10,169.00	89.46	268.65	8,904.07	86.53	-1,220.37	1,219.77	1,223.44	274.06	456,251.23	547,982.93	
10,264.00	90.44	268.74	8,904.15	84.37	-1,315.35	1,314.76	1,318.05	273.67	456,249.07	547,887.95	
10,359.00	90.10	267.58	8,903.70	81.32	-1,410.30	1,409.73	1,412.64	273.30	456,246.02	547,793.00	
10,454.00	89.93	268.00	8,903.68	77.65	-1,505.23	1,504.68	1,507.23	272.95	456,242.35	547,698.07	
10,548.00	91.91	269.55	8,902.17	75.64	-1,599.18	1,598.65	1,600.97	272.71	456,240.34	547,604.12	
10,643.00	91.34	268.61	8,899.47	74.12	-1,694.13	1,693.60	1,695.75	272.51	456,238.82	547,509.17	
10,738.00	90.67	268.36	8,897.64	71.61	-1,789.08	1,788.57	1,790.51	272.29	456,236.31	547,414.22	
10,833.00	91.65	269.34	8,895.55	69.70	-1,884.04	1,883.53	1,885.33	272.12	456,234.40	547,319.26	
10,928.00	92.45	269.96	8,892.16	69.12	-1,978.97	1,978.47	1,980.18	272.00	456,233.82	547,224.33	
11,022.00	92.36	270.25	8,888.21	69.29	-2,072.89	2,072.39	2,074.05	271.91	456,233.99	547,130.41	
11,117.00	92.28	270.53	8,884.36	69.94	-2,167.81	2,167.30	2,168.94	271.85	456,234.64	547,035.49	
11,212.00	93.12	274.85	8,879.89	74.22	-2,262.59	2,262.05	2,263.80	271.88	456,236.92	546,940.71	
11,307.00	89.26	272.82	8,877.92	80.41	-2,357.34	2,356.76	2,358.71	271.95	456,245.11	546,845.96	
11,401.00	88.56	272.46	8,879.70	84.74	-2,451.23	2,450.61	2,452.69	271.98	456,249.44	546,752.07	
11,496.00	88.05	272.83	8,882.51	89.12	-2,546.08	2,545.44	2,547.64	272.00	456,253.82	546,657.22	
11,591.00	88.66	271.03	8,885.24	92.32	-2,640.98	2,640.31	2,642.60	272.00	456,257.02	546,562.32	
11,686.00	90.37	270.19	8,886.04	93.33	-2,735.97	2,735.29	2,737.56	271.95	456,258.03	546,467.33	
11,780.00	89.33	269.32	8,886.29	92.93	-2,829.97	2,829.29	2,831.49	271.88	456,257.63	546,373.33	
11,875.00	90.17	269.72	8,886.71	92.13	-2,924.96	2,924.29	2,926.41	271.80	456,256.83	546,278.34	



Scientific Drilling International, Inc.

325 Faudree Road
Odessa, Texas 79765
Tel: 432.689.5600 Fax: 432.563.6255
www.scientificdrilling.com

State of New Mexico
County of Eddy

I, Zhen Li, certify that; I am employed by Scientific Drilling International; that I did on the day(s) of 10/20/2018 through 11/14/2018 conduct or supervise the taking of a MWD survey from a depth of 172 feet to a depth of 13941 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Scientific Drilling International; that I am authorized and qualified to make this report; that this survey was conducted at the request of WPX Energy for the Cass Draw 10-23-27 Fee 401H Well, API# 30-015-45043 in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Scientific Drilling International.

Field Technician