



DIRECTIONAL TECHNOLOGIES INC.

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WPX Energy Rocky Mountain, LLC

GV 28-06S-096W

GM 323-28 Pad

GM 432-28 - Slot 2A06

14-10-159

Final Surveys - Jan.19,2015

License:

UWI:

Survey Report

19 January, 2015





Company:	WPX Energy Rocky Mountain, LLC	Local Co-ordinate Reference:	Well GM 432-28 - Slot 2A06
Project:	GV 28-06S-096W	TVD Reference:	KELLY BUSHING @ 5500.00usft (H&P 318 (24' RKB) mab)
Site:	GM 323-28 Pad	MD Reference:	KELLY BUSHING @ 5500.00usft (H&P 318 (24' RKB) mab)
Well:	GM 432-28	North Reference:	True
Wellbore:	14-10-159	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys - Jan.19,2015	Database:	EDM_2011

Project	GV 28-06S-096W, 28-06S-096W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	GM 323-28 Pad				
Site Position:		Northing:	1,614,757.30 usft	Latitude:	39° 29' 31.675 N
From:	Map	Easting:	2,262,158.50 usft	Longitude:	108° 6' 53.344 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.65 °

Well	GM 432-28 - Slot 2A06					
Well Position	+N/-S	0.00 usft	Northing:	1,614,760.20 usft	Latitude:	39° 29' 31.707 N
	+E/-W	0.00 usft	Easting:	2,262,170.50 usft	Longitude:	108° 6' 53.192 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,476.00 usft

Wellbore	14-10-159	Well UWI		License	
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/29/2014	9.97	65.62	51,897

Design	Final Surveys - Jan.19,2015				
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	41.37

Survey Program		Date	1/19/2015		
	From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
	101.00	7,317.00	Final Surveys (14-10-159)	MWD+sag	/D v3:standard declination + s

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP										
97.00	0.85	16.00	97.00	5,403.00	0.69	0.20	0.65	0.87	0.87	0.00
101.00	0.88	16.00	101.00	5,399.00	0.75	0.21	0.70	0.87	0.87	0.00
131.00	1.23	23.55	130.99	5,369.01	1.26	0.41	1.22	1.25	1.17	25.17
162.00	1.67	44.38	161.98	5,338.02	1.89	0.85	1.98	2.19	1.42	67.19
192.00	2.29	51.94	191.96	5,308.04	2.57	1.63	3.01	2.24	2.07	25.20
223.00	2.90	49.57	222.93	5,277.07	3.46	2.72	4.39	2.00	1.97	-7.65
253.00	2.99	41.48	252.89	5,247.11	4.54	3.81	5.93	1.42	0.30	-26.97



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Well:	GM 432-28	North Reference:	True
Wellbore:	14-10-159	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys - Jan.19,2015	Database:	EDM_2011

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	SS (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
283.00	3.78	43.59	282.84	5,217.16	5.84	5.01	7.70	2.67	2.63	7.03
313.00	4.13	50.01	312.77	5,187.23	7.25	6.52	9.75	1.88	1.17	21.40
342.00	4.93	48.25	341.68	5,158.32	8.75	8.25	12.02	2.80	2.76	-6.07
373.00	5.45	45.35	372.55	5,127.45	10.68	10.29	14.82	1.88	1.68	-9.35
403.00	6.16	44.65	402.40	5,097.60	12.82	12.44	17.84	2.38	2.37	-2.33
433.00	6.95	47.72	432.20	5,067.80	15.19	14.91	21.25	2.88	2.63	10.23
464.00	8.09	44.21	462.93	5,037.07	18.01	17.82	25.30	3.96	3.68	-11.32
494.00	8.80	43.24	492.61	5,007.39	21.20	20.87	29.70	2.41	2.37	-3.23
523.00	9.77	44.03	521.23	4,978.77	24.58	24.10	34.37	3.37	3.34	2.72
554.00	10.56	39.81	551.74	4,948.26	28.66	27.74	39.84	3.50	2.55	-13.61
584.00	11.35	39.29	581.19	4,918.81	33.05	31.37	45.54	2.65	2.63	-1.73
614.00	11.96	39.29	610.57	4,889.43	37.74	35.21	51.60	2.03	2.03	0.00
686.00	13.85	40.54	680.75	4,819.25	50.07	45.54	67.67	2.65	2.63	1.74
776.00	16.09	40.62	767.69	4,732.31	67.72	60.66	90.91	2.49	2.49	0.09
868.00	18.02	41.24	855.64	4,644.36	88.10	78.34	117.89	2.11	2.10	0.67
958.00	20.35	39.92	940.64	4,559.36	110.58	97.56	147.46	2.63	2.59	-1.47
1,053.00	23.30	39.92	1,028.82	4,471.18	137.66	120.22	182.77	3.11	3.11	0.00
1,147.00	26.02	40.36	1,114.24	4,385.76	167.63	145.51	221.97	2.90	2.89	0.47
1,240.00	28.35	42.12	1,196.96	4,303.04	199.56	173.54	264.45	2.65	2.51	1.89
1,335.00	30.68	43.17	1,279.63	4,220.37	233.97	205.25	311.24	2.51	2.45	1.11
1,429.00	33.01	43.08	1,359.47	4,140.53	270.17	239.15	360.81	2.48	2.48	-0.10
1,523.00	35.69	42.73	1,437.07	4,062.93	309.02	275.25	413.82	2.86	2.85	-0.37
1,617.00	37.54	42.38	1,512.52	3,987.48	350.32	313.16	469.88	1.98	1.97	-0.37
1,710.00	38.64	42.29	1,585.71	3,914.29	392.73	351.80	527.24	1.18	1.18	-0.10
Interpolated Casing Point - Surface Casing										
1,765.00	38.90	41.15	1,628.60	3,871.40	418.44	374.72	561.68	1.39	0.48	-2.08
1,816.00	39.16	40.10	1,668.21	3,831.79	442.82	395.63	593.79	1.39	0.50	-2.05
1,910.00	39.82	39.31	1,740.76	3,759.24	488.81	433.81	653.54	0.88	0.70	-0.84
2,005.00	38.73	40.71	1,814.30	3,685.70	534.87	472.47	713.66	1.48	-1.15	1.47
2,099.00	38.77	42.03	1,887.61	3,612.39	579.02	511.35	772.50	0.88	0.04	1.40
2,193.00	39.43	42.38	1,960.56	3,539.44	622.94	551.18	831.77	0.74	0.70	0.37
2,287.00	40.04	41.94	2,032.84	3,467.16	667.48	591.51	891.85	0.71	0.65	-0.47
2,382.00	38.90	41.68	2,106.18	3,393.82	712.49	631.77	952.24	1.21	-1.20	-0.27
2,476.00	37.14	41.24	2,180.23	3,319.77	755.87	670.11	1,010.14	1.89	-1.87	-0.47
2,570.00	35.56	40.01	2,255.93	3,244.07	798.15	706.39	1,065.84	1.85	-1.68	-1.31
2,664.00	35.30	39.92	2,332.53	3,167.47	839.91	741.39	1,120.32	0.28	-0.28	-0.10
2,758.00	32.48	39.48	2,410.55	3,089.45	880.23	774.87	1,172.71	3.01	-3.00	-0.47
2,852.00	31.39	39.75	2,490.32	3,009.68	918.54	806.57	1,222.40	1.17	-1.16	0.29
2,947.00	30.86	39.83	2,571.65	2,928.35	956.27	838.00	1,271.49	0.56	-0.56	0.08
3,041.00	30.29	40.10	2,652.58	2,847.42	992.92	868.71	1,319.29	0.62	-0.61	0.29
3,135.00	28.97	40.18	2,734.28	2,765.72	1,028.44	898.67	1,365.75	1.40	-1.40	0.09



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Well:	GM 432-28	North Reference:	True
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Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	SS (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,229.00	28.00	39.13	2,816.90	2,683.10	1,062.95	927.28	1,410.56	1.16	-1.03	-1.12
3,324.00	26.07	38.78	2,901.52	2,598.48	1,096.53	954.43	1,453.70	2.04	-2.03	-0.37
3,418.00	24.75	39.83	2,986.42	2,513.58	1,127.74	979.98	1,494.01	1.48	-1.40	1.12
3,512.00	24.00	41.24	3,072.04	2,427.96	1,157.23	1,005.18	1,532.80	1.01	-0.80	1.50
3,607.00	22.95	41.06	3,159.18	2,340.82	1,185.72	1,030.08	1,570.64	1.11	-1.11	-0.19
3,701.00	21.98	42.12	3,246.05	2,253.95	1,212.59	1,053.92	1,606.56	1.12	-1.03	1.13
3,795.00	20.84	43.44	3,333.56	2,166.44	1,237.78	1,077.22	1,640.86	1.32	-1.21	1.40
3,890.00	19.96	42.29	3,422.60	2,077.40	1,262.05	1,099.75	1,673.96	1.02	-0.93	-1.21
3,984.00	18.64	41.77	3,511.32	1,988.68	1,285.12	1,120.55	1,705.02	1.42	-1.40	-0.55
4,078.00	17.27	40.45	3,600.74	1,899.26	1,306.94	1,139.61	1,734.00	1.52	-1.46	-1.40
4,172.00	16.00	40.10	3,690.80	1,809.20	1,327.47	1,157.01	1,760.90	1.36	-1.35	-0.37
4,267.00	14.59	40.18	3,782.43	1,717.57	1,346.63	1,173.16	1,785.95	1.48	-1.48	0.08
4,361.00	13.63	40.62	3,873.60	1,626.40	1,364.08	1,188.01	1,808.87	1.03	-1.02	0.47
4,455.00	11.91	42.91	3,965.27	1,534.73	1,379.59	1,201.83	1,829.64	1.91	-1.83	2.44
4,549.00	10.33	42.03	4,057.50	1,442.50	1,392.96	1,214.08	1,847.76	1.69	-1.68	-0.94
4,643.00	10.07	41.41	4,150.01	1,349.99	1,405.38	1,225.15	1,864.41	0.30	-0.28	-0.66
4,738.00	8.88	46.42	4,243.72	1,256.28	1,416.67	1,235.96	1,880.02	1.52	-1.25	5.27
4,832.00	8.75	48.09	4,336.61	1,163.39	1,426.45	1,246.54	1,894.35	0.31	-0.14	1.78
4,926.00	7.87	45.98	4,429.62	1,070.38	1,435.69	1,256.49	1,907.86	0.99	-0.94	-2.24
5,020.00	7.43	48.27	4,522.78	977.22	1,444.21	1,265.65	1,920.31	0.57	-0.47	2.44
5,115.00	6.46	48.36	4,617.09	882.91	1,451.85	1,274.23	1,931.71	1.02	-1.02	0.09
5,209.00	6.24	52.05	4,710.51	789.49	1,458.51	1,282.21	1,941.98	0.49	-0.23	3.93
5,303.00	6.15	56.44	4,803.96	696.04	1,464.43	1,290.43	1,951.86	0.51	-0.10	4.67
5,397.00	5.58	51.35	4,897.47	602.53	1,470.07	1,298.20	1,961.23	0.82	-0.61	-5.41
5,490.00	5.85	52.84	4,990.01	509.99	1,475.76	1,305.51	1,970.32	0.33	0.29	1.60
5,584.00	5.05	52.40	5,083.58	416.42	1,481.17	1,312.60	1,979.08	0.85	-0.85	-0.47
5,678.00	3.69	45.55	5,177.31	322.69	1,485.82	1,318.04	1,986.16	1.55	-1.45	-7.29
5,772.00	3.65	48.09	5,271.11	228.89	1,489.93	1,322.43	1,992.15	0.18	-0.04	2.70
5,867.00	3.91	53.19	5,365.91	134.09	1,493.89	1,327.27	1,998.32	0.45	0.27	5.37
5,961.00	3.69	56.88	5,459.70	40.30	1,497.47	1,332.37	2,004.37	0.35	-0.23	3.93
6,055.00	2.46	49.68	5,553.56	-53.56	1,500.43	1,336.44	2,009.28	1.37	-1.31	-7.66
6,149.00	0.48	348.28	5,647.53	-147.53	1,502.12	1,337.90	2,011.52	2.41	-2.11	-65.32
6,243.00	0.66	299.81	5,741.53	-241.53	1,502.77	1,337.35	2,011.64	0.53	0.19	-51.56
6,337.00	0.97	279.60	5,835.52	-335.52	1,503.17	1,336.09	2,011.12	0.44	0.33	-21.50
6,432.00	1.54	264.83	5,930.49	-430.49	1,503.19	1,334.03	2,009.77	0.69	0.60	-15.55
6,526.00	1.89	257.31	6,024.45	-524.45	1,502.74	1,331.26	2,007.59	0.44	0.37	-8.00
6,620.00	2.20	247.61	6,118.39	-618.39	1,501.71	1,328.08	2,004.72	0.49	0.33	-10.32
6,715.00	2.50	244.97	6,213.31	-713.31	1,500.14	1,324.52	2,001.19	0.34	0.32	-2.78
6,809.00	2.90	250.42	6,307.21	-807.21	1,498.47	1,320.42	1,997.23	0.51	0.43	5.80
6,903.00	3.21	260.97	6,401.08	-901.07	1,497.26	1,315.58	1,993.12	0.68	0.33	11.22
6,997.00	3.56	265.71	6,494.91	-994.91	1,496.63	1,310.07	1,989.01	0.48	0.37	5.04



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Well:	GM 432-28	North Reference:	True
Wellbore:	14-10-159	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys - Jan.19,2015	Database:	EDM_2011

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,092.00	4.09	265.54	6,589.70	-1,089.70	1,496.15	1,303.75	1,984.47	0.56	0.56	-0.18
7,186.00	4.53	268.26	6,683.43	-1,183.43	1,495.78	1,296.70	1,979.53	0.52	0.47	2.89
Last Survey										
7,262.00	5.05	269.40	6,759.17	-1,259.17	1,495.65	1,290.35	1,975.24	0.70	0.68	1.50
Extrapolation to TD										
7,317.00	5.05	269.40	6,813.95	-1,313.95	1,495.60	1,285.51	1,972.00	0.00	0.00	0.00

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,765.00	1,628.60	Surface Casing		

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
97.00	97.00	0.69	0.20	KOP
1,765.00	1,628.60	418.44	374.72	Interpolated Casing Point
7,262.00	6,759.17	1,495.65	1,290.35	Last Survey
7,317.00	6,813.95	1,495.60	1,285.51	Extrapolation to TD



DIRECTIONAL TECHNOLOGIES INC.

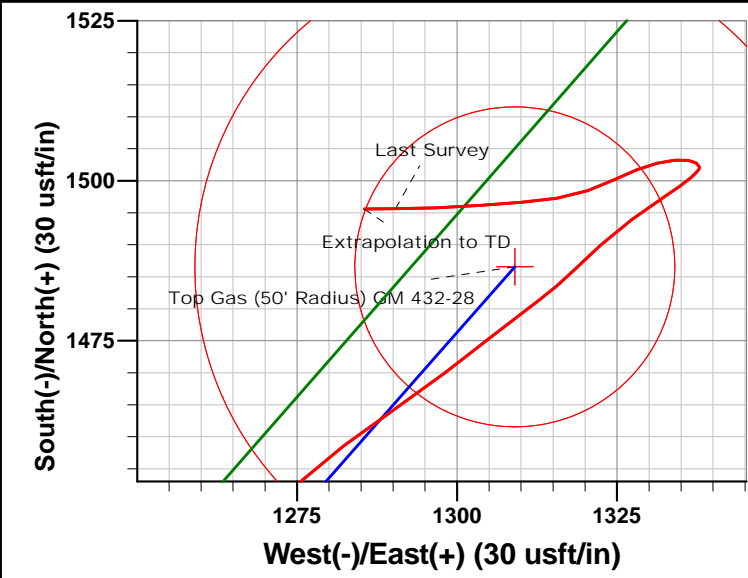
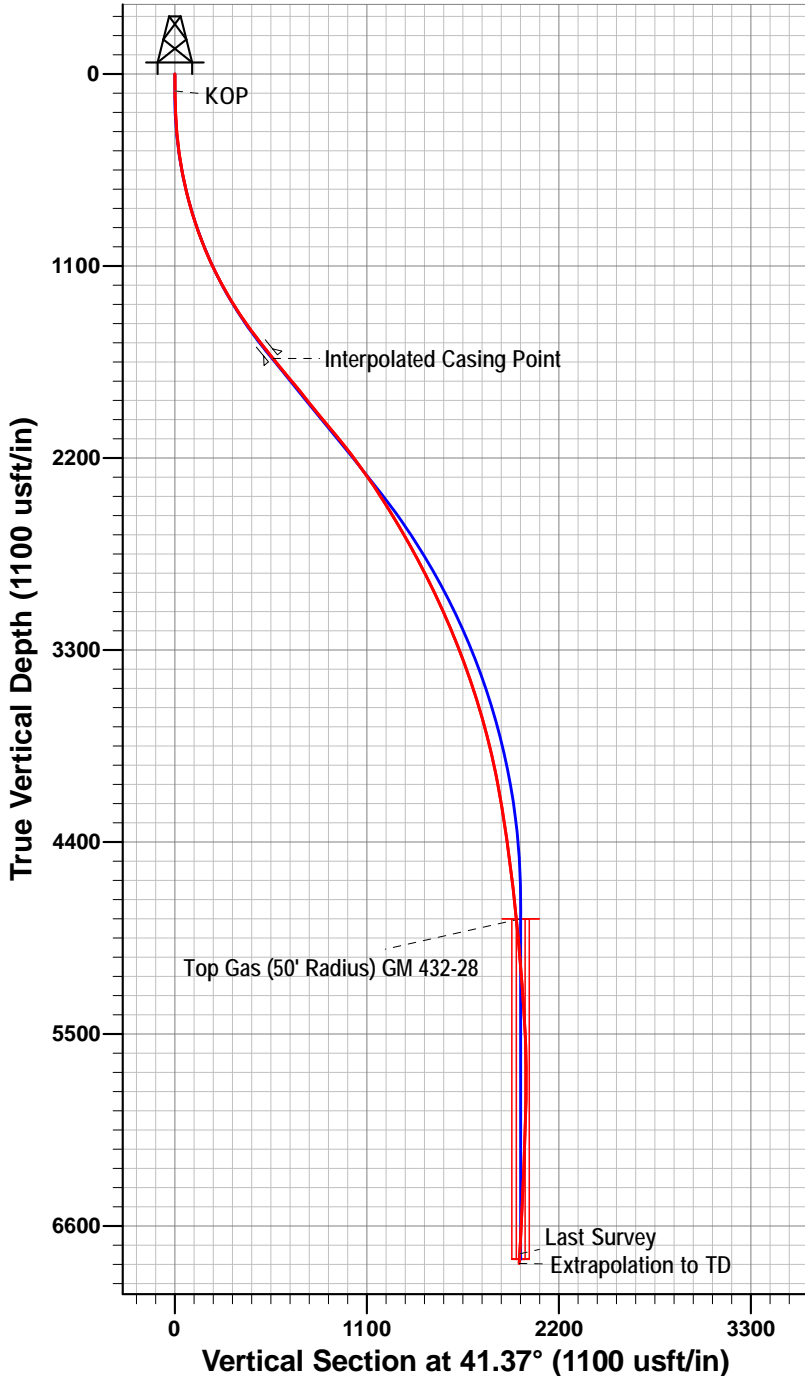
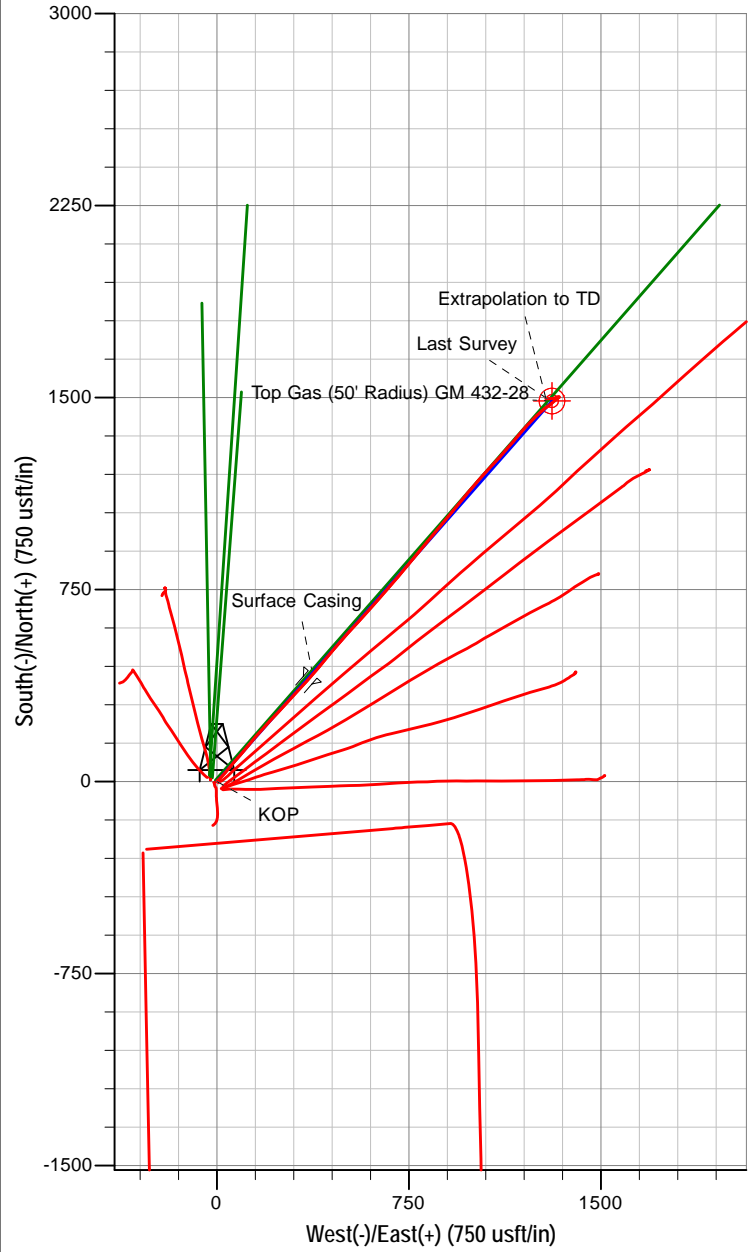
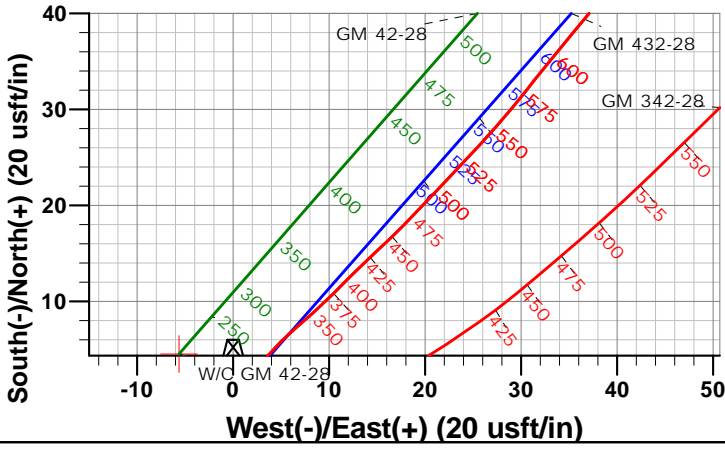
WPX Energy Rocky Mountain, LLC
 GV 28-06S-096W
 GM 323-28 Pad
 GM 432-28
 14-10-159
 Final Surveys - Jan.19,2015



REFERENCE INFORMATION
 Magnetic Declination - 9.97°
 Magnetic Dip Angle - 65.62°
 Field Strength - 51897
 KB Elevation - KELLY BUSHING @ 5500.00usft (H&P 318 (24' RKB) mab)
 Ground Level - 5476.00
 Well Center Northing - 1614760.20
 Well Center Easting - 2262170.50
 Calculation Method - Minimum Curvature
 Geodetic System - US State Plane 1983
 Geodetic Datum - North American Datum 1983
 Map Zone - Colorado Central Zone

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W
W/C GM 322-28	0.00	23.76	-29.40
W/C GM 333-28	0.00	-23.87	29.30
W/C GM 342-28	0.00	-4.93	6.04
W/C GM 422-28	0.00	19.03	-23.56
W/C GM 42-28	0.00	4.54	-5.63
W/C GM 433-28	0.00	-26.92	17.18
W/C GM 522-28	0.00	14.30	-17.72
W/C GM 533-28	0.00	-31.65	23.02
W/C GM 542-28	0.00	-19.13	23.46
W/H GM 323-28	10.00	-3.24	-11.91
W/H GM 423-28	16.00	6.41	-23.99
W/H GM 523-28	16.00	15.98	-35.68
Top Gas (25' Radius) GM 432-28	4840.00	1486.55	1309.02
Top Gas (50' Radius) GM 432-28	4840.00	1486.55	1309.02



CASING DETAILS

TVD	MD	Name
1628.60	1765.00	Surface Casing

Survey: Final Surveys (GM 432-28/14-10-159)

Created By: Abby Nieradka Date: 9:17, January 19 2015