



Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Operator	WPX Energy Rocky Mountain, LLC.
Well Name & No.	RU 441-8
County & State	Garfield County, CO
SDI Job No.	421215DEFK334839
Rig	H&P 318

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 10,700 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

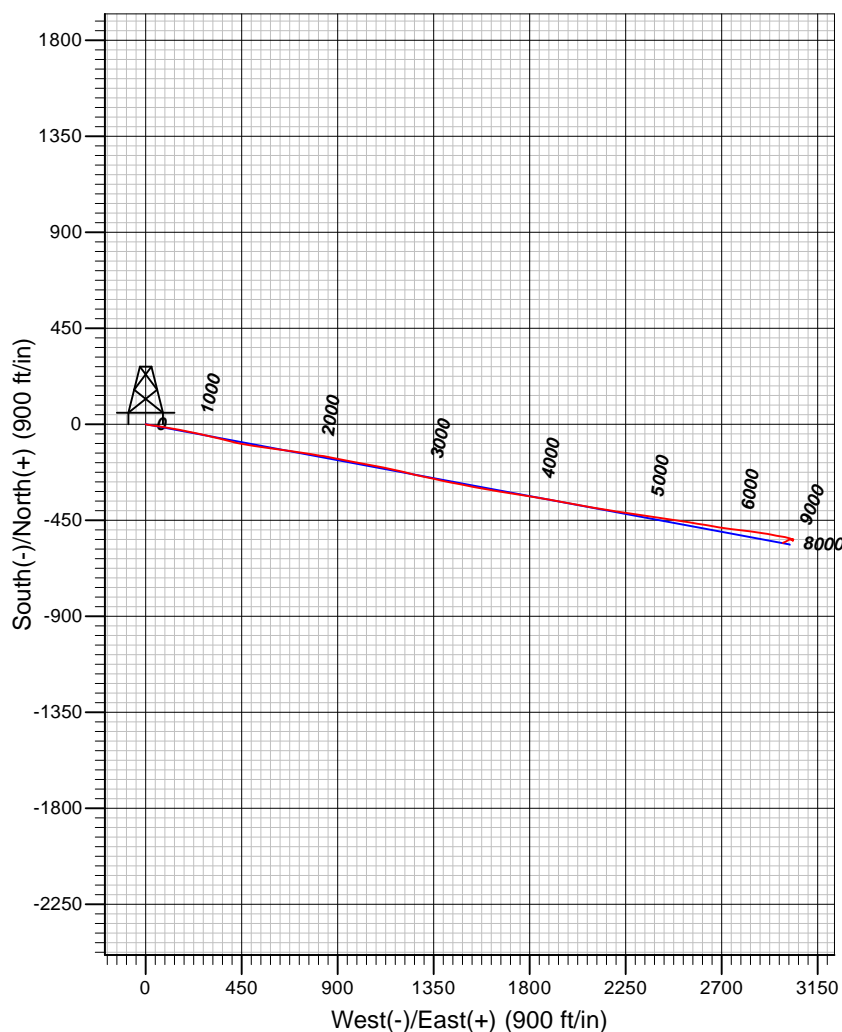
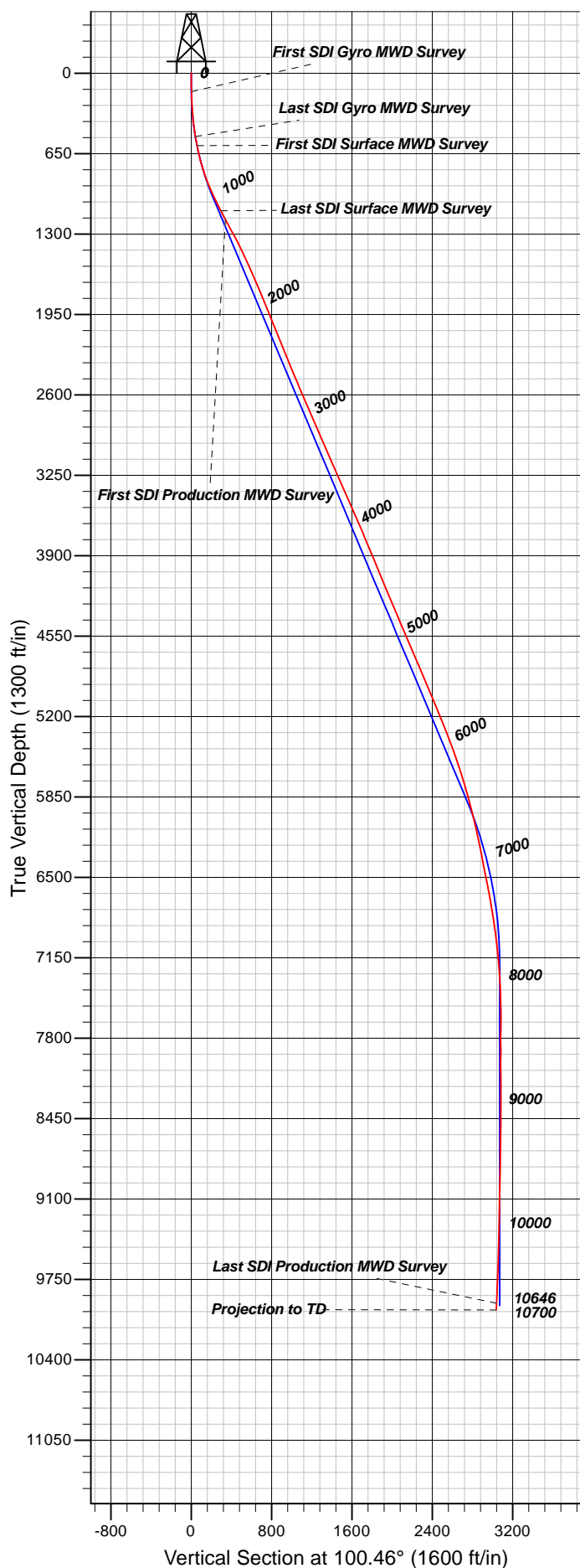
Signature

05-Jan-16

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District



Well Details: RU 441-8

+N/-S	+E/-W	TVD Reference: KB @ 7760.02ft (H&P 318)	Ground Level: 7736.02	Slot
0.00	0.00	Northing: 1602645.56 Easting: 2350480.47 Latitude: 39.4654514 Longitude: -107.8008720		

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well RU 441-8, True North
 Vertical (TVD) Reference: KB @ 7760.02ft (H&P 318)
 Section (VS) Reference: Slot - (0.00N, 0.00E)
 Measured Depth Reference: KB @ 7760.02ft (H&P 318)
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

Plan: Wellbore #1

12:06, January 05 2016
 Created By: Mel Mireles

Company:	WPX Energy Rocky Mountain, LLC	Local Co-ordinate Reference:	Well RU 441-8
Project:	Garfield County, CO NAD83	TVD Reference:	KB @ 7760.02ft (H&P 318)
Site:	RU 21-8 Pad	MD Reference:	KB @ 7760.02ft (H&P 318)
Well:	RU 441-8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	RU 21-8 Pad				
Site Position:		Northing:	1,602,707.70 usft	Latitude:	39.4656273
From:	Map	Easting:	2,350,555.60 usft	Longitude:	-107.8006116
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.45 °

Well	RU 441-8					
Well Position	+N/-S	0.00 ft	Northing:	1,602,645.55 usft	Latitude:	39.4654515
	+E/-W	0.00 ft	Easting:	2,350,480.47 usft	Longitude:	-107.8008720
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	7,736.02 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/8/2014	9.84	65.66	51,918

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	100.46	

Survey Program	Date	12/29/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
148.00	513.00	Survey #1 - Gyro MWD (Wellbore #1)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
590.00	1,170.00	Survey #2 - Surface MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1	
1,253.00	10,700.00	Survey #3 - Production MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	
148.00	2.20	109.51	147.96	-0.95	2.68	2.81	1.49	1.49	0.00	
First SDI Gyro MWD Survey										
240.00	3.43	91.41	239.85	-1.61	7.09	7.27	1.63	1.34	-19.67	
331.00	5.10	94.13	330.60	-1.96	13.85	13.98	1.85	1.84	2.99	
422.00	8.45	99.76	420.95	-3.39	24.48	24.69	3.75	3.68	6.19	
513.00	12.05	99.76	510.48	-6.13	40.43	40.87	3.96	3.96	0.00	
Last SDI Gyro MWD Survey										

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Site:	RU 21-8 Pad	MD Reference:	KB @ 7760.02ft (H&P 318)
Well:	RU 441-8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
590.00	14.20	100.10	585.47	-9.15	57.65	58.36	2.79	2.79	0.44
First SDI Surface MWD Survey									
681.00	16.43	98.58	673.23	-13.03	81.37	82.38	2.49	2.45	-1.67
771.00	20.30	97.44	758.63	-16.95	109.45	110.71	4.32	4.30	-1.27
863.00	24.05	102.50	843.82	-23.08	143.59	145.39	4.57	4.08	5.50
953.00	27.54	101.69	924.84	-31.27	181.88	184.53	3.90	3.88	-0.90
1,045.00	30.41	101.60	1,005.31	-40.26	225.53	229.09	3.12	3.12	-0.10
1,139.00	32.10	101.56	1,085.67	-50.05	273.30	277.85	1.80	1.80	-0.04
1,170.00	32.54	102.23	1,111.87	-53.47	289.52	294.42	1.83	1.42	2.16
Last SDI Surface MWD Survey									
1,253.00	33.33	104.33	1,181.53	-63.84	333.43	339.48	1.67	0.95	2.53
First SDI Production MWD Survey									
1,347.00	34.24	104.59	1,259.65	-76.89	384.05	391.63	0.98	0.97	0.28
1,441.00	33.12	101.37	1,337.88	-88.62	434.82	443.69	2.24	-1.19	-3.43
1,536.00	31.43	100.14	1,418.20	-98.10	484.65	494.41	1.91	-1.78	-1.29
1,630.00	29.37	96.39	1,499.28	-104.98	531.70	541.92	2.98	-2.19	-3.99
1,724.00	28.06	98.12	1,581.72	-110.67	576.49	587.00	1.65	-1.39	1.84
1,818.00	28.25	98.37	1,664.60	-117.03	620.39	631.33	0.24	0.20	0.27
1,913.00	27.94	97.58	1,748.40	-123.24	664.69	676.02	0.51	-0.33	-0.83
2,007.00	27.73	99.46	1,831.53	-129.74	708.10	719.88	0.96	-0.22	2.00
2,101.00	27.35	98.83	1,914.88	-136.65	751.01	763.33	0.51	-0.40	-0.67
2,196.00	26.52	98.22	1,999.57	-143.03	793.56	806.34	0.92	-0.87	-0.64
2,290.00	25.53	100.08	2,084.04	-149.57	834.28	847.57	1.36	-1.05	1.98
2,385.00	26.05	101.33	2,169.58	-157.26	874.89	888.90	0.79	0.55	1.32
2,479.00	25.53	101.07	2,254.22	-165.20	915.00	929.79	0.57	-0.55	-0.28
2,573.00	27.04	101.08	2,338.49	-173.20	955.85	971.41	1.61	1.61	0.01
2,667.00	28.16	100.11	2,421.80	-181.20	998.66	1,014.96	1.28	1.19	-1.03
2,762.00	28.02	100.21	2,505.61	-189.09	1,042.69	1,059.69	0.16	-0.15	0.11
2,856.00	26.93	99.57	2,589.00	-196.54	1,085.41	1,103.06	1.20	-1.16	-0.68
2,951.00	27.48	102.01	2,673.50	-204.68	1,128.07	1,146.48	1.31	0.58	2.57
3,045.00	28.75	104.14	2,756.40	-214.71	1,171.20	1,190.72	1.72	1.35	2.27
3,139.00	27.99	104.00	2,839.11	-225.57	1,214.53	1,235.30	0.81	-0.81	-0.15
3,233.00	28.97	102.36	2,921.74	-235.78	1,258.17	1,280.07	1.33	1.04	-1.74
3,328.00	28.82	102.25	3,004.91	-245.56	1,303.02	1,325.95	0.17	-0.16	-0.12
3,422.00	28.00	102.07	3,087.59	-254.99	1,346.74	1,370.65	0.88	-0.87	-0.19
3,516.00	27.44	102.29	3,170.80	-264.21	1,389.48	1,414.36	0.61	-0.60	0.23
3,611.00	29.00	100.90	3,254.51	-273.22	1,433.48	1,459.27	1.78	1.64	-1.46
3,705.00	28.70	101.15	3,336.84	-281.90	1,478.00	1,504.62	0.34	-0.32	0.27
3,799.00	28.00	101.59	3,419.57	-290.70	1,521.76	1,549.25	0.78	-0.74	0.47
3,894.00	29.23	99.84	3,502.96	-299.14	1,566.46	1,594.74	1.57	1.29	-1.84
3,988.00	28.73	99.39	3,585.19	-306.75	1,611.37	1,640.28	0.58	-0.53	-0.48
4,082.00	27.37	99.33	3,668.15	-313.94	1,654.98	1,684.47	1.45	-1.45	-0.06
4,177.00	26.26	99.88	3,752.93	-321.09	1,697.23	1,727.32	1.20	-1.17	0.58
4,271.00	27.81	98.93	3,836.66	-328.06	1,739.39	1,770.04	1.71	1.65	-1.01

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Well:	RU 441-8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,365.00	27.37	99.36	3,919.97	-334.98	1,782.37	1,813.56	0.51	-0.47	0.46	
4,459.00	26.51	99.21	4,003.77	-341.85	1,824.40	1,856.14	0.92	-0.91	-0.16	
4,554.00	27.67	99.55	4,088.35	-348.90	1,867.08	1,899.39	1.23	1.22	0.36	
4,648.00	27.31	100.61	4,171.73	-356.49	1,909.80	1,942.78	0.65	-0.38	1.13	
4,742.00	26.57	100.25	4,255.53	-364.20	1,951.68	1,985.37	0.81	-0.79	-0.38	
4,836.00	28.33	100.11	4,338.94	-371.86	1,994.33	2,028.70	1.87	1.87	-0.15	
4,930.00	28.12	99.82	4,421.77	-379.55	2,038.11	2,073.15	0.27	-0.22	-0.31	
5,024.00	27.14	100.06	4,505.05	-387.08	2,081.05	2,116.74	1.05	-1.04	0.26	
5,119.00	28.05	99.35	4,589.24	-394.49	2,124.43	2,160.74	1.02	0.96	-0.75	
5,213.00	27.80	99.96	4,672.29	-401.87	2,167.83	2,204.76	0.40	-0.27	0.65	
5,307.00	26.86	99.78	4,755.80	-409.27	2,210.34	2,247.91	1.00	-1.00	-0.19	
5,402.00	28.05	97.84	4,840.10	-415.96	2,253.62	2,291.69	1.57	1.25	-2.04	
5,496.00	27.71	98.03	4,923.19	-422.03	2,297.16	2,335.60	0.37	-0.36	0.20	
5,591.00	27.69	98.10	5,007.30	-428.23	2,340.88	2,379.72	0.04	-0.02	0.07	
5,685.00	27.35	98.61	5,090.67	-434.54	2,383.85	2,423.13	0.44	-0.36	0.54	
5,779.00	26.67	98.70	5,174.41	-440.96	2,426.06	2,465.80	0.72	-0.72	0.10	
5,874.00	26.07	98.37	5,259.53	-447.22	2,467.78	2,507.97	0.65	-0.63	-0.35	
5,968.00	25.55	98.41	5,344.15	-453.20	2,508.27	2,548.87	0.55	-0.55	0.04	
6,063.00	25.42	99.29	5,429.91	-459.48	2,548.66	2,589.73	0.42	-0.14	0.93	
6,157.00	22.73	99.40	5,515.72	-465.71	2,586.49	2,628.06	2.86	-2.86	0.12	
6,252.00	22.23	99.40	5,603.50	-471.64	2,622.33	2,664.38	0.53	-0.53	0.00	
6,346.00	20.58	100.09	5,691.02	-477.44	2,656.14	2,698.68	1.78	-1.76	0.73	
6,440.00	20.29	100.58	5,779.10	-483.33	2,688.43	2,731.50	0.36	-0.31	0.52	
6,535.00	18.44	95.93	5,868.73	-487.90	2,719.57	2,762.95	2.53	-1.95	-4.89	
6,629.00	17.71	97.74	5,958.09	-491.37	2,748.52	2,792.05	0.98	-0.78	1.93	
6,724.00	16.19	97.13	6,048.96	-494.96	2,775.99	2,819.71	1.61	-1.60	-0.64	
6,818.00	14.84	97.71	6,139.53	-498.20	2,800.92	2,844.82	1.45	-1.44	0.62	
6,912.00	14.19	96.52	6,230.53	-501.12	2,824.29	2,868.34	0.76	-0.69	-1.27	
7,007.00	13.65	95.93	6,322.74	-503.60	2,847.01	2,891.13	0.59	-0.57	-0.62	
7,101.00	14.03	99.80	6,414.01	-506.69	2,869.27	2,913.58	1.06	0.40	4.12	
7,196.00	13.72	98.81	6,506.24	-510.37	2,891.75	2,936.36	0.41	-0.33	-1.04	
7,290.00	12.86	99.67	6,597.72	-513.84	2,913.08	2,957.96	0.94	-0.91	0.91	
7,384.00	12.08	99.10	6,689.51	-517.15	2,933.11	2,978.25	0.84	-0.83	-0.61	
7,479.00	11.24	101.24	6,782.55	-520.53	2,952.00	2,997.45	0.99	-0.88	2.25	
7,573.00	10.80	102.08	6,874.81	-524.15	2,969.60	3,015.41	0.50	-0.47	0.89	
7,667.00	9.14	99.16	6,967.39	-527.19	2,985.59	3,031.68	1.85	-1.77	-3.11	
7,762.00	7.21	100.62	7,061.42	-529.49	2,998.90	3,045.19	2.04	-2.03	1.54	
7,856.00	6.66	104.31	7,154.73	-531.92	3,009.98	3,056.52	0.75	-0.59	3.93	
7,950.00	4.78	115.20	7,248.26	-534.94	3,018.80	3,065.75	2.30	-2.00	11.59	
8,045.00	4.75	112.13	7,342.94	-538.10	3,026.03	3,073.43	0.27	-0.03	-3.23	
8,139.00	2.78	121.70	7,436.73	-540.77	3,031.57	3,079.37	2.19	-2.10	10.18	
8,234.00	1.24	174.34	7,531.67	-543.00	3,033.63	3,081.80	2.37	-1.62	55.41	
8,328.00	1.08	194.63	7,625.65	-544.87	3,033.51	3,082.02	0.47	-0.17	21.59	

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8,422.00	0.95	356.86	7,719.65	-544.95	3,033.24	3,081.77	2.13	-0.14	172.59	
8,517.00	0.93	11.38	7,814.64	-543.41	3,033.35	3,081.60	0.25	-0.02	15.28	
8,611.00	0.80	12.69	7,908.63	-542.02	3,033.65	3,081.64	0.14	-0.14	1.39	
8,706.00	0.75	1.04	8,003.62	-540.75	3,033.80	3,081.56	0.17	-0.05	-12.26	
8,799.00	0.78	23.38	8,096.61	-539.56	3,034.07	3,081.60	0.32	0.03	24.02	
8,893.00	0.22	85.68	8,190.61	-538.96	3,034.50	3,081.92	0.75	-0.60	66.28	
8,987.00	0.21	143.92	8,284.61	-539.09	3,034.78	3,082.22	0.22	-0.01	61.96	
9,082.00	0.27	192.94	8,379.60	-539.45	3,034.83	3,082.34	0.22	0.06	51.60	
9,176.00	0.49	261.40	8,473.60	-539.72	3,034.39	3,081.95	0.49	0.23	72.83	
9,270.00	0.97	244.26	8,567.60	-540.13	3,033.27	3,080.92	0.56	0.51	-18.23	
9,365.00	1.23	233.92	8,662.58	-541.08	3,031.72	3,079.57	0.34	0.27	-10.88	
9,459.00	1.84	235.02	8,756.54	-542.54	3,029.67	3,077.82	0.65	0.65	1.17	
9,554.00	1.25	302.41	8,851.52	-542.85	3,027.55	3,075.79	1.88	-0.62	70.94	
9,648.00	1.41	296.22	8,945.49	-541.79	3,025.65	3,073.73	0.23	0.17	-6.59	
9,742.00	1.49	287.15	9,039.46	-540.92	3,023.44	3,071.40	0.26	0.09	-9.65	
9,837.00	1.75	280.45	9,134.42	-540.30	3,020.83	3,068.72	0.34	0.27	-7.05	
9,931.00	1.04	256.88	9,228.39	-540.23	3,018.59	3,066.50	0.96	-0.76	-25.07	
10,026.00	1.09	263.40	9,323.38	-540.53	3,016.85	3,064.85	0.14	0.05	6.86	
10,120.00	1.65	247.63	9,417.35	-541.15	3,014.71	3,062.86	0.71	0.60	-16.78	
10,215.00	2.88	236.49	9,512.28	-542.98	3,011.46	3,059.99	1.37	1.29	-11.73	
10,309.00	3.15	238.12	9,606.15	-545.65	3,007.30	3,056.38	0.30	0.29	1.73	
10,403.00	3.39	244.37	9,699.99	-548.22	3,002.60	3,052.23	0.46	0.26	6.65	
10,497.00	3.47	245.68	9,793.82	-550.59	2,997.50	3,047.65	0.12	0.09	1.39	
10,592.00	3.57	244.86	9,888.64	-553.03	2,992.20	3,042.88	0.12	0.11	-0.86	
10,646.00	3.49	245.78	9,942.54	-554.42	2,989.18	3,040.16	0.18	-0.15	1.70	
Last SDI Production MWD Survey										
10,700.00	3.49	245.78	9,996.44	-555.77	2,986.18	3,037.46	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
148.00	147.96	-0.95	2.68	First SDI Gyro MWD Survey	
513.00	510.48	-6.13	40.43	Last SDI Gyro MWD Survey	
590.00	585.47	-9.15	57.65	First SDI Surface MWD Survey	
1,170.00	1,111.87	-53.47	289.52	Last SDI Surface MWD Survey	
1,253.00	1,181.53	-63.84	333.43	First SDI Production MWD Survey	
10,646.00	9,942.54	-554.42	2,989.18	Last SDI Production MWD Survey	
10,700.00	9,996.44	-555.77	2,986.18	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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