



Job Number: SVGJ-141339  
 Company: PDC  
 Lease/Well: P&H 22-42  
 Location: Weld County, CO  
 Rig Name: MS Energy Wireline  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.27°  
 Grid: East To True North  
 File name: S:\2014SU-1\PDC\GJ\P&H\2242.SVY  
 Date/Time: 19-Nov-14 / 15:17  
 Curve Name: Surface - 6600' M.D. (Rate Gyro)

### MS SURVEY

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane .00  
 Vertical Section Referenced to Wellhead  
 Rectangular Coordinates Referenced to Wellhead

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>True Vertical Depth</i>	<i>N-S FT</i>	<i>E-W FT</i>	<i>Vertical Section FT</i>	<i>C L O S U R E</i>		<i>Dogleg Severity Deg/100</i>
							<i>Distance FT</i>	<i>Direction Deg</i>	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.20	315.67	100.00	.12	-.12	.12	.17	315.67	.20
200.00	.22	301.02	200.00	.35	-.41	.35	.54	310.48	.06
300.00	.36	336.98	300.00	.74	-.70	.74	1.01	316.64	.22
400.00	.84	297.05	399.99	1.36	-1.47	1.36	2.00	312.73	.61
500.00	.93	300.98	499.98	2.11	-2.82	2.11	3.52	306.81	.11
600.00	.90	289.86	599.97	2.79	-4.25	2.79	5.09	303.30	.18
700.00	1.20	299.62	699.95	3.58	-5.90	3.58	6.90	301.23	.35
800.00	1.33	291.10	799.93	4.51	-7.90	4.51	9.10	299.76	.23
900.00	1.17	289.36	899.90	5.27	-9.94	5.27	11.25	297.93	.16

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1000.00	1.40	306.41	999.88	6.33	-11.89	6.33	13.47	298.05	.44
1100.00	1.54	297.35	1099.85	7.68	-14.07	7.68	16.02	298.63	.27
1200.00	1.33	296.18	1199.81	8.81	-16.30	8.81	18.53	298.38	.21
1300.00	1.35	303.55	1299.79	9.97	-18.32	9.97	20.86	298.55	.17
1400.00	1.57	308.83	1399.75	11.48	-20.37	11.48	23.38	299.40	.26
1500.00	1.79	303.66	1499.71	13.20	-22.74	13.20	26.30	300.14	.27
1600.00	1.78	300.58	1599.66	14.86	-25.38	14.86	29.41	300.35	.10
1700.00	1.88	299.54	1699.61	16.46	-28.14	16.46	32.60	300.32	.11
1800.00	1.84	297.04	1799.56	18.00	-31.00	18.00	35.84	300.14	.09
1900.00	1.76	294.08	1899.51	19.35	-33.83	19.35	38.97	299.77	.12
2000.00	1.60	295.78	1999.47	20.59	-36.49	20.59	41.90	299.43	.17
2100.00	1.48	295.43	2099.43	21.75	-38.91	21.75	44.58	299.20	.12
2200.00	1.02	292.46	2199.41	22.64	-40.90	22.64	46.75	298.97	.46
2300.00	1.05	292.31	2299.39	23.33	-42.57	23.33	48.55	298.72	.03
2400.00	1.13	287.22	2399.37	23.97	-44.36	23.97	50.42	298.39	.13
2500.00	1.17	287.73	2499.35	24.57	-46.28	24.57	52.40	297.97	.04
2600.00	1.17	284.88	2599.33	25.15	-48.23	25.15	54.40	297.54	.06
2700.00	1.12	288.87	2699.31	25.73	-50.15	25.73	56.36	297.16	.09
2800.00	1.41	313.41	2799.29	26.89	-51.96	26.89	58.51	297.36	.61
2900.00	1.62	326.15	2899.25	28.91	-53.65	28.91	60.94	298.32	.40
3000.00	1.64	320.67	2999.21	31.19	-55.34	31.19	63.52	299.40	.16
3100.00	1.46	325.21	3099.18	33.34	-56.97	33.34	66.01	300.34	.22
3200.00	1.22	315.90	3199.15	35.15	-58.44	35.15	68.20	301.03	.32
3300.00	.95	303.63	3299.13	36.37	-59.87	36.37	70.06	301.28	.35
3400.00	.73	282.28	3399.12	36.97	-61.19	36.97	71.49	301.14	.38
3500.00	.52	258.19	3499.11	37.01	-62.25	37.01	72.42	300.73	.33
3600.00	.54	218.79	3599.11	36.55	-62.99	36.55	72.83	300.12	.36
3700.00	.59	220.42	3699.11	35.79	-63.62	35.79	73.00	299.36	.05
3800.00	.58	218.49	3799.10	35.00	-64.27	35.00	73.18	298.57	.02

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3900.00	.68	183.66	3899.09	34.02	-64.62	34.02	73.03	297.76	.39
4000.00	1.05	145.05	3999.08	32.67	-64.14	32.67	71.98	297.00	.67
4100.00	1.69	114.49	4099.06	31.31	-62.27	31.31	69.70	296.69	.95
4200.00	1.97	111.84	4199.00	30.06	-59.33	30.06	66.51	296.87	.29
4300.00	2.05	112.40	4298.94	28.74	-56.08	28.74	63.02	297.13	.08
4400.00	1.54	125.38	4398.89	27.28	-53.33	27.28	59.90	297.09	.65
4500.00	1.62	127.97	4498.86	25.63	-51.12	25.63	57.19	296.63	.11
4600.00	2.56	136.02	4598.79	23.15	-48.46	23.15	53.71	295.54	.98
4700.00	2.81	139.08	4698.68	19.70	-45.30	19.70	49.40	293.50	.29
4800.00	2.86	139.32	4798.56	15.95	-42.07	15.95	44.99	290.76	.05
4900.00	2.88	140.52	4898.43	12.12	-38.85	12.12	40.69	287.33	.06
5000.00	2.25	135.57	4998.33	8.78	-35.87	8.78	36.93	283.75	.67
5100.00	1.75	127.02	5098.27	6.46	-33.28	6.46	33.90	280.98	.58
5200.00	1.65	116.74	5198.23	4.89	-30.78	4.89	31.16	279.03	.32
5300.00	1.82	118.12	5298.18	3.49	-28.09	3.49	28.31	277.09	.18
5400.00	2.04	119.76	5398.12	1.86	-25.14	1.86	25.21	274.24	.23
5500.00	1.95	116.81	5498.06	.21	-22.08	.21	22.08	270.55	.14
5600.00	1.67	110.06	5598.01	-1.06	-19.19	-1.06	19.22	266.85	.35
5700.00	1.47	104.23	5697.97	-1.87	-16.58	-1.87	16.69	263.56	.26
5800.00	1.43	100.16	5797.94	-2.41	-14.11	-2.41	14.31	260.32	.11
5900.00	1.28	97.69	5897.91	-2.78	-11.77	-2.78	12.10	256.74	.16
6000.00	1.05	94.80	5997.89	-3.00	-9.75	-3.00	10.21	252.90	.24
6100.00	.71	94.57	6097.88	-3.13	-8.22	-3.13	8.80	249.18	.34
6200.00	.62	81.75	6197.88	-3.10	-7.07	-3.10	7.72	246.33	.17
6300.00	.53	104.75	6297.87	-3.14	-6.09	-3.14	6.85	242.72	.25
6400.00	.86	123.33	6397.86	-3.67	-5.01	-3.67	6.21	233.80	.40
6500.00	1.02	146.84	6497.85	-4.83	-3.90	-4.83	6.21	218.94	.41
<b>Last Survey Depth Recorded</b>									
6600.00	1.28	141.44	6597.83	-6.45	-2.72	-6.45	6.99	202.86	.28