



Job Number: SVGJ-141250
 Company: PDC
 Lease/Well: Peschel 23-20B
 Location: Weld County, CO
 Rig Name: MS Energy Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.37°
 Grid: East To True North
 File name: S:\2014SU-1\PDC\GJ\PESCHEL\2320B.SVY
 Date/Time: 14-Oct-14 / 16:27
 Curve Name: Surface - 7200' 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	71.26	100.00	.06	.17	.06	.17	71.26	.20
200.00	.17	294.57	200.00	.17	.20	.17	.26	48.38	.34
300.00	.22	253.67	300.00	.18	-.12	.18	.22	325.77	.14
400.00	.34	236.77	400.00	-.04	-.56	-.04	.56	266.39	.14
500.00	.71	218.66	499.99	-.68	-1.19	-.68	1.37	240.23	.40
600.00	.74	222.30	599.99	-1.64	-2.01	-1.64	2.60	230.78	.05
700.00	.76	219.40	699.98	-2.63	-2.87	-2.63	3.89	227.45	.04
800.00	.78	217.96	799.97	-3.68	-3.71	-3.68	5.23	225.20	.03
900.00	.73	211.13	899.96	-4.76	-4.46	-4.76	6.52	223.09	.10

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	.62	201.16	999.95	-5.81	-4.98	-5.81	7.66	220.59	.16
1100.00	.51	198.70	1099.95	-6.74	-5.32	-6.74	8.59	218.28	.11
1200.00	.52	200.53	1199.94	-7.59	-5.62	-7.59	9.44	216.53	.02
1300.00	.47	191.08	1299.94	-8.41	-5.86	-8.41	10.25	214.85	.10
1400.00	.36	190.73	1399.94	-9.13	-6.00	-9.13	10.92	213.31	.11
1500.00	.41	179.53	1499.93	-9.79	-6.05	-9.79	11.51	211.72	.09
1600.00	.44	189.04	1599.93	-10.53	-6.11	-10.53	12.17	210.12	.08
1700.00	.57	201.18	1699.93	-11.37	-6.35	-11.37	13.02	209.17	.17
1800.00	.69	205.43	1799.92	-12.38	-6.79	-12.38	14.12	208.73	.13
1900.00	.95	204.41	1899.91	-13.68	-7.39	-13.68	15.55	208.38	.26
2000.00	1.41	207.30	1999.89	-15.53	-8.30	-15.53	17.60	208.11	.46
2100.00	1.68	205.04	2099.85	-17.95	-9.48	-17.95	20.30	207.84	.28
2200.00	1.87	195.99	2199.81	-20.84	-10.55	-20.84	23.36	206.85	.34
2300.00	1.87	192.46	2299.75	-24.01	-11.35	-24.01	26.55	205.31	.12
2400.00	1.09	198.36	2399.72	-26.50	-12.00	-26.50	29.09	204.37	.79
2500.00	.59	221.19	2499.71	-27.79	-12.64	-27.79	30.53	204.46	.59
2600.00	.57	222.96	2599.70	-28.54	-13.32	-28.54	31.50	205.02	.03
2700.00	.50	219.21	2699.70	-29.25	-13.93	-29.25	32.40	205.48	.08
2800.00	.58	221.49	2799.69	-29.96	-14.55	-29.96	33.31	205.89	.08
2900.00	.76	231.84	2899.69	-30.75	-15.40	-30.75	34.39	206.60	.22
3000.00	1.19	239.81	2999.67	-31.68	-16.82	-31.68	35.87	207.96	.45
3100.00	1.28	249.08	3099.65	-32.60	-18.76	-32.60	37.62	209.92	.22
3200.00	1.12	255.76	3199.63	-33.24	-20.75	-33.24	39.19	211.97	.21
3300.00	.18	283.23	3299.62	-33.45	-21.85	-33.45	39.95	213.16	.96
3400.00	.69	93.17	3399.62	-33.45	-21.40	-33.45	39.71	212.62	.87
3500.00	.84	101.10	3499.61	-33.62	-20.08	-33.62	39.16	210.85	.18
3600.00	.83	106.29	3599.60	-33.96	-18.67	-33.96	38.76	208.80	.08
3700.00	.81	105.19	3699.59	-34.35	-17.29	-34.35	38.46	206.72	.03
3800.00	.82	107.60	3799.58	-34.75	-15.93	-34.75	38.23	204.62	.04

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	.74	107.90	3899.57	-35.17	-14.63	-35.17	38.09	202.59	.08
4000.00	.71	107.57	3999.56	-35.55	-13.43	-35.55	38.01	200.69	.03
4100.00	.71	137.24	4099.55	-36.20	-12.42	-36.20	38.27	198.93	.36
4200.00	.90	156.52	4199.54	-37.37	-11.68	-37.37	39.15	197.36	.33
4300.00	.89	161.26	4299.53	-38.83	-11.12	-38.83	40.39	195.98	.07
4400.00	.71	188.02	4399.52	-40.18	-10.96	-40.18	41.64	195.25	.41
4500.00	.61	181.07	4499.52	-41.32	-11.05	-41.32	42.77	194.97	.13
4600.00	.48	144.77	4599.51	-42.20	-10.82	-42.20	43.56	194.38	.36
4700.00	.84	101.85	4699.51	-42.69	-9.86	-42.69	43.81	193.01	.59
4800.00	1.55	84.89	4799.48	-42.72	-7.80	-42.72	43.42	190.34	.79
4900.00	1.82	81.68	4899.44	-42.37	-4.88	-42.37	42.65	186.57	.29
5000.00	1.91	86.19	4999.39	-42.03	-1.64	-42.03	42.06	182.24	.17
5100.00	1.79	87.03	5099.33	-41.84	1.58	-41.84	41.87	177.84	.12
5200.00	1.47	86.46	5199.29	-41.68	4.42	-41.68	41.91	173.95	.32
5300.00	1.13	90.57	5299.27	-41.61	6.68	-41.61	42.14	170.87	.35
5400.00	.74	102.00	5399.25	-41.75	8.30	-41.75	42.57	168.75	.43
5500.00	.51	119.04	5499.25	-42.10	9.32	-42.10	43.12	167.51	.29
5600.00	.54	164.10	5599.25	-42.77	9.84	-42.77	43.89	167.04	.40
5700.00	.83	192.72	5699.24	-43.93	9.81	-43.93	45.01	167.41	.44
5800.00	1.13	208.74	5799.22	-45.50	9.18	-45.50	46.42	168.60	.40
5900.00	1.82	221.27	5899.19	-47.56	7.66	-47.56	48.17	170.86	.76
6000.00	1.38	227.27	5999.15	-49.57	5.72	-49.57	49.90	173.41	.47
6100.00	.59	257.49	6099.14	-50.50	4.34	-50.50	50.68	175.09	.92
6200.00	.59	317.19	6199.13	-50.23	3.48	-50.23	50.35	176.03	.59
6300.00	1.06	331.09	6299.12	-49.05	2.69	-49.05	49.12	176.86	.51
6400.00	1.58	342.07	6399.09	-46.92	1.81	-46.92	46.96	177.79	.58
6500.00	.84	348.91	6499.07	-44.89	1.25	-44.89	44.91	178.41	.75
6600.00	.44	351.66	6599.06	-43.79	1.05	-43.79	43.81	178.62	.40
6700.00	.26	325.89	6699.06	-43.23	.87	-43.23	43.23	178.85	.23

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	
6800.00	.15	273.29	6799.06	-43.03	.61	-43.03	43.04	179.19	.21
6900.00	.17	302.27	6899.06	-42.94	.36	-42.94	42.95	179.53	.08
7000.00	.17	149.01	6999.06	-42.99	.31	-42.99	42.99	179.59	.33
7100.00	.21	37.57	7099.06	-42.97	.49	-42.97	42.98	179.34	.31
Last Survey Depth Recorded									
7200.00	.12	101.33	7199.06	-42.85	.71	-42.85	42.86	179.05	.19