



Job Number: SVGJ-100817

Company: Petroleum Development Corporation

Lease/Well: Brown 20-2, 22-20

Location: Weld County, CO

Rig Name: MS Wireline

RKB: 0'

G.L. or M.S.L.: GL

State/Country: Colorado/USA

Declination: 9.00°

Grid: East To True

File name: F:\SURVEY\2010SU~1\PDC\BROW2220.SVY

Date/Time: 11-Nov-10 / 10:16

Curve Name: Surface - 6800' M.D. (Rate Gyro)

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	.27	200.27	100.00	-.22	-.08	-.22	.24	200.27	.27
200.00	.26	228.26	200.00	-.59	-.33	-.59	.68	209.28	.13
300.00	.39	179.40	300.00	-1.08	-.50	-1.08	1.19	204.68	.29
400.00	.65	154.88	399.99	-1.94	-.25	-1.94	1.95	187.46	.34
500.00	.66	147.94	499.99	-2.94	.29	-2.94	2.95	174.32	.08
600.00	.50	130.58	599.98	-3.71	.93	-3.71	3.83	165.94	.24
700.00	.72	139.57	699.98	-4.47	1.67	-4.47	4.78	159.55	.24
800.00	.70	154.00	799.97	-5.50	2.34	-5.50	5.98	156.92	.18
900.00	.48	193.00	899.96	-6.46	2.52	-6.46	6.93	158.71	.45

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	.74	151.57	999.96	-7.43	2.73	-7.43	7.92	159.83	.50
1100.00	.40	197.70	1099.95	-8.33	2.93	-8.33	8.84	160.62	.55
1200.00	.62	152.91	1199.95	-9.15	3.07	-9.15	9.65	161.44	.44
1300.00	.58	165.13	1299.94	-10.12	3.45	-10.12	10.69	161.18	.13
1400.00	.59	166.33	1399.94	-11.11	3.70	-11.11	11.71	161.58	.02
1500.00	.22	228.96	1499.94	-11.74	3.68	-11.74	12.30	162.60	.53
1600.00	.62	179.08	1599.93	-12.40	3.54	-12.40	12.90	164.07	.51
1700.00	.46	215.54	1699.93	-13.27	3.32	-13.27	13.68	165.97	.37
1800.00	.46	191.89	1799.93	-13.99	3.00	-13.99	14.31	167.90	.19
1900.00	.44	220.50	1899.92	-14.67	2.67	-14.67	14.92	169.70	.22
2000.00	.41	251.86	1999.92	-15.08	2.08	-15.08	15.22	172.15	.23
2100.00	.73	273.25	2099.92	-15.15	1.10	-15.15	15.19	175.84	.38
2200.00	.66	308.12	2199.91	-14.76	.01	-14.76	14.76	179.95	.42
2300.00	.30	308.69	2299.91	-14.24	-.64	-14.24	14.26	182.59	.36
2400.00	.18	.66	2399.90	-13.92	-.85	-13.92	13.95	183.48	.24
2500.00	.29	350.81	2499.90	-13.51	-.89	-13.51	13.54	183.75	.12
2600.00	.16	8.40	2599.90	-13.13	-.91	-13.13	13.16	183.94	.15
2700.00	.50	323.09	2699.90	-12.64	-1.15	-12.64	12.69	185.18	.40
2800.00	.49	327.69	2799.90	-11.93	-1.64	-11.93	12.04	187.82	.04
2900.00	.38	338.63	2899.89	-11.26	-1.99	-11.26	11.43	190.01	.14
3000.00	.35	334.61	2999.89	-10.67	-2.24	-10.67	10.91	191.84	.04
3100.00	.25	238.51	3099.89	-10.51	-2.56	-10.51	10.82	193.66	.45
3200.00	.40	225.60	3199.89	-10.87	-2.99	-10.87	11.27	195.38	.17
3300.00	.14	284.16	3299.89	-11.09	-3.36	-11.09	11.58	196.86	.35
3400.00	.35	207.83	3399.89	-11.33	-3.62	-11.33	11.89	197.73	.34
3500.00	.30	164.85	3499.89	-11.85	-3.69	-11.85	12.41	197.32	.24
3600.00	.49	153.42	3599.88	-12.48	-3.43	-12.48	12.95	195.38	.20
3700.00	.64	174.10	3699.88	-13.42	-3.19	-13.42	13.79	193.35	.25
3800.00	.67	178.05	3799.87	-14.56	-3.11	-14.56	14.89	192.05	.05

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	.78	183.82	3899.87	-15.82	-3.13	-15.82	16.13	191.20	.13
4000.00	.87	186.30	3999.85	-17.26	-3.26	-17.26	17.56	190.70	.10
4100.00	1.02	195.43	4099.84	-18.87	-3.58	-18.87	19.21	190.75	.21
4200.00	.91	190.40	4199.83	-20.51	-3.96	-20.51	20.89	190.94	.14
4300.00	.69	217.46	4299.82	-21.77	-4.47	-21.77	22.22	191.61	.43
4400.00	.71	211.11	4399.81	-22.78	-5.16	-22.78	23.35	192.76	.08
4500.00	.88	173.31	4499.80	-24.07	-5.39	-24.07	24.67	192.62	.54
4600.00	.71	157.68	4599.79	-25.41	-5.06	-25.41	25.91	191.27	.27
4700.00	.50	164.79	4699.79	-26.40	-4.71	-26.40	26.82	190.13	.22
4800.00	.53	160.65	4799.78	-27.26	-4.45	-27.26	27.62	189.27	.05
4900.00	.52	187.45	4899.78	-28.14	-4.35	-28.14	28.48	188.79	.24
5000.00	.76	159.17	4999.77	-29.21	-4.18	-29.21	29.51	188.13	.39
5100.00	.78	180.55	5099.76	-30.51	-3.95	-30.51	30.77	187.37	.29
5200.00	.76	213.81	5199.75	-31.75	-4.32	-31.75	32.04	187.75	.44
5300.00	1.00	190.46	5299.74	-33.16	-4.85	-33.16	33.51	188.32	.43
5400.00	.49	189.86	5399.73	-34.44	-5.08	-34.44	34.81	188.39	.51
5500.00	.83	179.13	5499.73	-35.58	-5.14	-35.58	35.95	188.23	.36
5600.00	.89	231.73	5599.72	-36.79	-5.74	-36.79	37.23	188.87	.76
5700.00	.44	262.82	5699.71	-37.31	-6.73	-37.31	37.92	190.23	.56
5800.00	1.13	219.25	5799.70	-38.13	-7.74	-38.13	38.90	191.47	.87
5900.00	1.94	223.11	5899.66	-40.13	-9.52	-40.13	41.24	193.34	.82
6000.00	.27	258.00	5999.64	-41.41	-10.91	-41.41	42.82	194.75	1.73
6100.00	.65	256.55	6099.64	-41.59	-11.69	-41.59	43.20	195.70	.38
6200.00	1.23	265.95	6199.63	-41.80	-13.31	-41.80	43.87	197.66	.60
6300.00	.87	280.72	6299.61	-41.73	-15.13	-41.73	44.39	199.92	.45
6400.00	.24	306.94	6399.60	-41.47	-16.04	-41.47	44.46	201.15	.66
6500.00	.49	320.40	6499.60	-41.01	-16.48	-41.01	44.20	201.89	.26
6600.00	.11	66.51	6599.60	-40.64	-16.66	-40.64	43.93	202.29	.53
6700.00	.38	318.67	6699.60	-40.36	-16.80	-40.36	43.71	202.60	.43

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	
Last Survey Depth Recorded									
6800.00	.44	216.80	6799.60	-40.41	-17.24	-40.41	43.94	203.11	.64