



DIAMONDBACK
DIRECTIONAL
A. B. W. C. Company

Job Number: P98-228

Company: Netherland, Sewell & Associates, Inc.

Lease/Well: 30-21 Prentice

Location: Cunningham Gas Storage Field

Rig Name: Pratt Well Services

RKB: Unknown

G.L. or M.S.L.: Unknown

State/Country: Kingman/Pratt Counties, Kansas

Declination: 6.56°E (est.)

Grid: Assume True

File name: G:\98PROP-1\98220\SIP98228\P98228.SVY

Date/Time: 25-Nov-98 / 11:00

Curve Name: Diamondback Surveys

Phoenix Drilling Services, Inc.

WINERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 270.04

Vertical Section Referenced to Wellhead

Rectangular Coordinates Referenced to Wellhead

ORIGINAL

RECEIVED
KANSAS CORP CO. INC.
1998 DEC -3 A 11:39

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
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Tie In Point

4108.00	33.25	254.00	3751.36	-624.56	-1387.80	1387.36	1521.86	245.77	.00
4187.00	37.90	253.00	3815.60	-637.63	-1431.85	1431.40	1567.41	246.00	5.93
4218.00	45.80	251.20	3838.67	-644.01	-1451.50	1451.05	1587.96	246.07	25.77
4249.00	52.20	254.40	3859.00	-650.89	-1473.85	1473.39	1611.17	246.17	22.06
4281.00	57.30	261.50	3877.48	-656.29	-1499.38	1498.92	1636.72	246.36	24.12
4312.00	62.70	267.00	3892.98	-658.94	-1526.07	1525.61	1662.25	246.65	23.22
4342.00	66.90	272.50	3905.76	-659.04	-1553.19	1552.73	1687.23	247.01	21.70
4373.00	70.20	279.70	3917.11	-655.95	-1581.85	1581.39	1712.46	247.48	24.09
4404.00	72.80	285.90	3926.95	-649.43	-1610.50	1610.04	1736.51	248.04	20.74
4436.00	71.80	285.80	3936.68	-641.11	-1639.82	1639.37	1760.69	248.65	3.14

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
4467.00	73.50	288.80	3945.93	-632.30	-1668.07	1667.63	1783.89	249.24	10.74
4499.00	79.20	291.90	3953.48	-621.49	-1697.20	1696.77	1807.41	249.89	20.14
4530.00	87.20	295.00	3957.15	-609.24	-1725.41	1724.99	1829.82	250.55	27.65
4561.00	92.80	295.20	3957.15	-596.10	-1753.48	1753.06	1852.03	251.22	18.08
4593.00	91.40	295.80	3955.98	-582.33	-1782.34	1781.93	1875.06	251.91	4.76
4624.00	87.90	295.40	3956.16	-568.94	-1810.29	1809.89	1897.59	252.55	11.36
4655.00	87.60	295.60	3957.38	-555.60	-1838.25	1837.86	1920.38	253.18	1.16
4687.00	87.30	295.40	3958.81	-541.84	-1867.10	1866.72	1944.13	253.82	1.13
4718.00	87.30	295.30	3960.27	-528.58	-1895.09	1894.72	1967.42	254.42	.32
4749.00	86.70	294.20	3961.89	-515.62	-1923.20	1922.84	1991.12	254.99	4.04
4780.00	86.50	294.20	3963.73	-502.94	-1951.43	1951.07	2015.19	255.55	.65
4812.00	85.90	294.40	3965.85	-489.80	-1980.53	1980.18	2040.19	256.11	1.98
4843.00	87.30	294.50	3967.69	-476.99	-2008.70	2008.36	2064.55	256.64	4.53
4875.00	89.60	294.90	3968.55	-463.62	-2037.75	2037.43	2089.83	257.18	7.30
4906.00	88.90	294.40	3968.96	-450.70	-2065.93	2065.61	2114.52	257.69	2.77
4937.00	89.20	293.70	3969.47	-438.06	-2094.23	2093.93	2139.56	258.19	2.46
4969.00	89.10	293.80	3969.95	-425.18	-2123.52	2123.22	2165.67	258.68	.44
5000.00	88.80	293.20	3970.51	-412.82	-2151.94	2151.65	2191.18	259.14	2.16
5032.00	89.70	292.80	3970.93	-400.32	-2181.40	2181.12	2217.82	259.60	3.08
5063.00	89.70	293.60	3971.10	-388.10	-2209.89	2209.62	2243.71	260.04	2.58
5095.00	89.70	293.90	3971.26	-375.22	-2239.18	2238.92	2270.40	260.49	.94
5126.00	89.30	293.50	3971.53	-362.76	-2267.56	2267.31	2296.40	260.91	1.82
5157.00	87.60	295.40	3972.37	-349.93	-2295.77	2295.53	2322.29	261.33	8.22
5189.00	88.20	295.10	3973.54	-336.29	-2324.69	2324.46	2348.89	261.77	2.10
5220.00	87.70	296.10	3974.65	-322.90	-2352.63	2352.41	2374.69	262.18	3.60
5252.00	88.00	297.60	3975.85	-308.46	-2381.16	2380.94	2401.06	262.62	4.78
5283.00	89.40	298.00	3976.56	-294.01	-2408.57	2408.37	2426.45	263.04	4.70
5314.00	89.00	297.20	3976.99	-279.65	-2436.04	2435.85	2452.04	263.45	2.88
5345.00	89.50	296.50	3977.40	-265.65	-2463.70	2463.51	2477.98	263.85	2.77
5376.00	88.20	297.40	3978.02	-251.60	-2491.33	2491.15	2504.00	264.23	5.10
5408.00	86.90	297.90	3979.39	-236.76	-2519.65	2519.48	2530.75	264.63	4.35
5440.00	86.80	297.60	3981.14	-221.89	-2547.92	2547.77	2557.57	265.02	.99

ORIGINAL

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
5471.00	86.10	297.70	3983.06	-207.53	-2575.33	2575.18	2583.68	265.39	2.28
5503.00	86.60	296.60	3985.10	-192.96	-2603.74	2603.61	2610.88	265.76	3.77
5534.00	87.50	295.50	3986.70	-179.36	-2631.56	2631.43	2637.66	266.10	4.58
5566.00	88.20	295.80	3987.90	-165.52	-2660.38	2660.27	2665.53	266.44	2.38
5596.00	88.50	296.10	3988.76	-152.40	-2687.35	2687.24	2691.67	266.75	1.41
5628.00	92.40	295.40	3988.51	-138.50	-2716.16	2716.07	2719.69	267.08	12.38
5659.00	90.50	294.90	3987.73	-125.33	-2744.21	2744.13	2747.08	267.39	6.34
5690.00	90.80	294.90	3987.37	-112.28	-2772.33	2772.25	2774.60	267.68	.97
5721.00	91.10	294.50	3986.86	-99.33	-2800.49	2800.42	2802.25	267.97	1.61
5753.00	91.10	294.20	3986.25	-86.13	-2829.64	2829.58	2830.95	268.26	.94
5784.00	89.60	294.30	3986.06	-73.40	-2857.90	2857.85	2858.84	268.53	4.85
5816.00	90.90	294.20	3985.92	-60.26	-2887.08	2887.04	2887.71	268.80	4.07
5847.00	90.90	293.70	3985.43	-47.68	-2915.41	2915.37	2915.79	269.06	1.61
5878.00	88.90	292.80	3985.48	-35.44	-2943.89	2943.86	2944.10	269.31	7.07
5909.00	90.30	291.80	3985.70	-23.68	-2972.57	2972.55	2972.66	269.54	5.55
5940.00	90.10	290.60	3985.59	-12.47	-3001.47	3001.46	3001.49	269.76	3.92
Projected Survey to TD									
5975.00	89.90	289.20	3985.59	-.56	-3034.38	3034.38	3034.38	269.99	4.04

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