



Job Number: 173112
 Company: SANTA FE
 Lease/Well: FEDERAL AE #1
 Location: EDDY COUNTY, NEW MEXICO
 Rig Name:
 RKB:
 G.L. or M.S.L.:

State/Country: NEW MEXICO, USA
 Declination: 9.2
 Grid:
 File name: G:\ACTJOB\173112.SVY
 Date/Time: 20-Jun-97 / 09:18
 Curve Name: MWD - SURVEYS

PHOENIX DRILLING SERVICES, INC.

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 350.00

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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3485.00	37	334.11	3483.21	-62.94	48.96	-70.49	79.74	142.12	.00
3505.00	3.20	353.00	3503.20	-62.33	48.86	-69.87	79.20	141.90	14.26
3511.00	6.60	352.00	3509.18	-61.82	48.80	-69.35	78.76	141.72	56.68
3526.00	16.80	359.80	3523.85	-58.79	48.67	-66.35	76.32	140.38	68.66
3536.00	25.00	351.30	3533.18	-55.25	48.34	-62.80	73.41	138.81	87.22
3556.00	38.80	351.30	3550.12	-44.83	46.75	-52.26	64.77	133.80	69.00
3572.00	47.60	345.60	3561.78	-34.13	44.51	-41.34	56.09	127.47	60.12
3588.00	57.40	344.40	3571.50	-21.88	41.23	-28.71	46.67	117.96	61.54
3598.00	62.80	344.00	3576.49	-13.54	38.86	-20.09	41.16	109.21	54.11
3621.00	74.00	343.20	3584.94	6.94	32.83	1.13	33.56	78.07	48.80
3653.00	77.80	344.40	3592.74	36.73	24.18	31.98	43.98	33.35	12.42