

PHOENIX DRILLING SERVICES
 HORIZONTAL SURVEY PROGRAM
 MINIMUM CURVATURE CALCULATIONS(SPE-3362)

OPERATOR: TEXACO E & P, INC. WELL: NORTH VACUUM ABO UNIT # 31 LOCATION: LEA COUNTY, NEW MEXICO JOB NO: 173166	START: <u>8/20/97</u> FILE: CURVE1.V FINISH: <u>9/2/97</u> INFORMATION PROVIDED BY: TEXACO E HORIZONTAL COORDINATOR: RUBESH, I
DIP1 = 7.35 deg = 97.35 deg TARGET1 = 8,768 ft TVD VS1 = 1,317 ft	DATE: 9/2/97 MAG DECLINATION 9.11 EAST TIME: 5:51 AM
DIP2 = -9.85 deg = 80.15 deg TARGET2 = 8,771 ft TVD VS2 = 1,431 ft	DIRECTION 224.80

SVY #	MEASURED DEPTH	INCL (DRIFT)	TRUE AZIMUTH (DIR)	VERTICAL DEPTH	VERTICAL SECTION	DLS/100	CENTER			
							ABOVE(+) BELOW(-)	RIGHT(+) LEFT(-)	NORTH(+) SOUTH(-)	EAST(+) WEST(-)
36	9623	99.5	226.8	8824.6	866.2	2.5	1.8	-1.1	-615.4	-609.6
37	9654	99.4	228.1	8819.5	896.8	4.1	2.9	0.3	-636.1	-632.1
38	9686	96.7	227.3	8815.0	928.4	8.8	3.3	2.0	-657.4	-655.6
39	9718	96.5	227.4	8811.4	960.2	0.7	2.9	3.4	-678.9	-679.0
40	9749	96.6	226.3	8807.8	990.9	3.5	2.5	4.5	-700.0	-701.4
41	9781	96.3	226.1	8804.2	1022.7	1.1	2.0	5.2	-722.0	-724.4
42	9813	95.7	226.0	8800.9	1054.6	1.9	1.2	5.9	-744.1	-747.3
43	9845	95.4	225.0	8797.8	1086.4	3.2	0.2	6.3	-766.4	-770.0
44	9876	97.4	225.9	8794.3	1117.2	7.1	-0.3	6.7	-788.0	-792.0
45	9907	97.1	225.1	8790.4	1148.0	2.7	-0.4	7.1	-809.6	-813.9
46	9939	97.2	226.3	8786.4	1179.7	3.7	-0.5	7.6	-831.8	-836.6
47	9970	96.9	225.9	8782.6	1210.5	1.6	-0.7	8.2	-853.1	-858.8
48	10002	96.9	227.2	8778.8	1242.2	4.0	-0.9	9.2	-874.9	-881.8
49	10033	97.5	224.9	8774.9	1273.0	7.6	-1.0	9.9	-896.3	-904.0
50	10065	97.5	226.3	8770.7	1304.7	4.3	-0.9	10.3	-918.5	-926.7
51	10097	93.5	227.6	8767.7	1336.5	13.1	-1.9	11.5	-940.2	-949.9
52	10129	88.3	227.7	8767.2	1368.4	16.3	-5.6	13.1	-961.8	-973.6
53	10160	86.1	228.1	8768.7	1399.4	7.2	-11.1	14.8	-982.5	-996.5
54	10191	84.0	228.1	8771.4	1430.2	6.8	-17.7	16.6	-1003.1	-1019.5
55	10222	82.8	227.0	8774.9	1461.0	5.2	1.5	18.0	-1023.9	-1042.2
56	10254	81.8	225.3	8779.2	1492.7	6.1	2.7	18.8	-1045.9	-1065.1
57	10286	81.5	224.7	8783.9	1524.3	2.1	3.4	18.9	-1068.3	-1087.5
58	10318	81.2	224.5	8788.7	1556.0	1.1	4.0	18.8	-1090.8	-1109.7
59	10350	80.1	225.2	8793.9	1587.5	4.1	4.2	18.8	-1113.2	-1132.0
60	10381	79.2	224.0	8799.4	1618.0	4.8	3.8	18.7	-1134.9	-1153.4
61	10413	78.5	224.7	8805.6	1649.4	3.1	2.9	18.5	-1157.4	-1175.3
62	10445	77.7	225.0	8812.2	1680.7	2.7	1.7	18.5	-1179.6	-1197.4
63	10476	78.4	223.8	8818.6	1711.1	4.4	0.4	18.3	-1201.2	-1218.6
64	10508	79.5	223.4	8824.8	1742.5	3.6	-0.4	17.6	-1224.0	-1240.3
65	10539	79.6	222.3	8830.4	1772.9	3.5	-0.8	16.6	-1246.3	-1261.0