



Scientific Drilling Houston Final Survey Report

el paso Production

Company: EL PASO PRODUCTION Date: 4/12/2005 Time: 10:19:51 Page: 1
Field: VERMEJO FIELD, NEW MEXICO Co-ordinate(NE) Reference: Well: WELL D-190, Grid North
Site: RATON (D190) Vertical (TVD) Reference: SITE 0.0
Well: WELL D-190 Section (VS) Reference: Well (0.00N,0.00E,270.00Azi)
Wellpath: UPPER Survey Calculation Method: Minimum Curvature Db: Sybase

Field: VERMEJO FIELD, NEW MEXICO

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone
Coordinate System: Well Centre
Geomagnetic Model: igrf2005

Site: RATON (D190)

Site Position: Northing: 2154230.3580 ft Latitude: 36 55 4.130 N
From: Map Easting: 276281.0895 ft Longitude: 105 5 55.070 W
Position Uncertainty: 0.0 ft North Reference: Grid
Ground Level: 8116.0 ft Grid Convergence: -0.46 deg

Well: WELL D-190

Slot Name:

Well Position: +N/-S 0.0 ft Northing: 2154230.3580 ft Latitude: 36 55 4.130 N
+E/-W 0.0 ft Easting: 276281.0895 ft Longitude: 105 5 55.070 W
Position Uncertainty: 0.0 ft

Wellpath: UPPER

Drilled From: Surface
Tie-on Depth: 0.0 ft
Above System Datum: Mean Sea Level
Declination: 9.48 deg
Mag Dip Angle: 64.28 deg
Direction deg

Current Datum: SITE Height 0.0 ft
Magnetic Data: 3/2/2005
Field Strength: 51883 nT
Vertical Section: Depth From (TVD) +N/-S
ft ft

0.0 0.0 0.0 270.00

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	ClsD ft	ClsA deg	Tool
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00	TIE LINE
100.0	0.19	185.55	100.0	-0.2	0.0	0.0	0.19	0.2	185.55	SDI Keeper
200.0	0.86	352.66	200.0	0.4	-0.1	0.1	1.05	0.4	342.84	SDI Keeper
300.0	1.42	325.63	300.0	2.2	-0.9	0.9	0.76	2.4	337.06	SDI Keeper
400.0	1.21	321.33	400.0	4.0	-2.3	2.3	0.23	4.6	330.46	SDI Keeper
500.0	0.86	318.36	499.9	5.4	-3.4	3.4	0.35	6.4	327.56	SDI Keeper
600.0	0.78	322.56	599.9	6.5	-4.4	4.4	0.10	7.8	326.25	SDI Keeper
616.0	5.06	270.00	615.9	6.6	-5.1	5.1	28.92	8.4	322.17	SDI E-FIELD MWD
647.0	17.71	271.68	646.2	6.7	-11.2	11.2	40.82	13.1	300.97	SDI E-FIELD MWD
679.0	28.27	260.66	675.7	5.6	-23.6	23.6	35.50	24.3	283.45	SDI E-FIELD MWD
711.0	39.02	259.07	702.3	2.5	-41.0	41.0	33.70	41.1	273.49	SDI E-FIELD MWD
742.0	49.33	258.61	724.5	-1.7	-62.2	62.2	33.27	62.2	268.45	SDI E-FIELD MWD
774.0	60.27	259.85	742.9	-6.5	-87.8	87.8	34.33	88.1	265.74	SDI E-FIELD MWD
805.0	73.90	258.77	754.9	-11.8	-115.8	115.8	44.08	116.4	264.16	SDI E-FIELD MWD
817.0	79.40	258.77	757.7	-14.1	-127.3	127.3	45.83	128.1	263.67	SDI E-FIELD MWD
834.0	85.60	253.32	759.9	-18.2	-143.6	143.6	48.37	144.8	262.79	SDI E-FIELD MWD
884.0	93.93	259.65	760.1	-29.8	-192.2	192.2	20.92	194.5	261.17	SDI E-FIELD MWD
915.0	91.41	262.94	758.7	-34.5	-222.8	222.8	13.36	225.4	261.19	SDI E-FIELD MWD
946.0	88.62	264.22	758.7	-38.0	-253.6	253.6	9.90	256.4	261.48	SDI E-FIELD MWD
978.0	88.39	270.51	759.5	-39.5	-285.5	285.5	19.66	288.2	262.13	SDI E-FIELD MWD
1009.0	91.28	272.94	759.6	-38.5	-316.5	316.5	12.18	318.8	263.06	SDI E-FIELD MWD
1040.0	95.32	275.84	757.8	-36.2	-347.3	347.3	16.03	349.2	264.06	SDI E-FIELD MWD
1070.0	94.17	279.01	755.3	-32.3	-377.0	377.0	11.21	378.4	265.10	SDI E-FIELD MWD
1101.0	91.44	280.81	753.8	-27.0	-407.5	407.5	10.54	408.4	266.21	SDI E-FIELD MWD
1132.0	90.07	284.13	753.4	-20.3	-437.7	437.7	11.58	438.2	267.35	SDI E-FIELD MWD
1146.0	89.66	283.46	753.4	-16.9	-451.3	451.3	5.61	451.7	267.85	SDI E-FIELD MWD
1178.0	87.71	280.49	754.2	-10.3	-482.6	482.6	11.10	482.7	268.78	SDI E-FIELD MWD
1208.0	87.21	277.58	755.5	-5.6	-512.2	512.2	9.83	512.3	269.37	SDI E-FIELD MWD



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Final Survey Report



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Field: VERMEJO FIELD, NEW MEXICO
Site: RATON (D190)
Well: WELL D-190
Wellpath: UPPER

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Co-ordinate(NE) Reference: Well: WELL D-190, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,270.00Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	ClsD ft	ClsA deg	Tool
1239.0	88.76	274.21	756.6	-2.4	-543.0	543.0	11.96	543.0	269.74	SDI E-FIELD MWD
1270.0	89.53	270.51	757.0	-1.1	-574.0	574.0	12.19	574.0	269.89	SDI E-FIELD MWD
1302.0	88.05	262.73	757.7	-3.0	-605.9	605.9	24.74	605.9	269.71	SDI E-FIELD MWD
1334.0	90.07	259.40	758.3	-8.0	-637.5	637.5	12.17	637.6	269.28	SDI E-FIELD MWD
1365.0	93.50	261.42	757.3	-13.2	-668.1	668.1	12.84	668.2	268.87	SDI E-FIELD MWD
1397.0	93.80	265.55	755.2	-16.8	-699.8	699.8	12.91	700.0	268.63	SDI E-FIELD MWD
1427.0	93.66	269.94	753.3	-18.0	-729.7	729.7	14.61	729.9	268.59	SDI E-FIELD MWD
1458.0	90.71	272.62	752.1	-17.3	-760.7	760.7	12.85	760.9	268.70	SDI E-FIELD MWD
1507.0	90.57	279.96	751.6	-11.9	-809.3	809.3	14.98	809.4	269.16	SDI E-FIELD MWD
1538.0	88.66	283.38	751.8	-5.6	-839.7	839.7	12.64	839.7	269.62	SDI E-FIELD MWD
1569.0	87.95	279.79	752.7	0.6	-870.0	870.0	11.80	870.0	270.04	SDI E-FIELD MWD
1601.0	90.67	280.86	753.1	6.3	-901.5	901.5	9.13	901.5	270.40	SDI E-FIELD MWD
1632.0	90.17	276.60	752.8	11.0	-932.1	932.1	13.84	932.2	270.68	SDI E-FIELD MWD
1663.0	88.92	272.67	753.1	13.5	-963.0	963.0	13.30	963.1	270.80	SDI E-FIELD MWD
1695.0	86.94	269.44	754.3	14.1	-995.0	995.0	11.83	995.1	270.81	SDI E-FIELD MWD
1726.0	88.72	266.19	755.4	12.9	-1025.9	1025.9	11.95	1026.0	270.72	SDI E-FIELD MWD
1757.0	91.28	268.71	755.4	11.6	-1056.9	1056.9	11.59	1057.0	270.63	SDI E-FIELD MWD
1788.0	90.84	272.20	754.9	11.8	-1087.9	1087.9	11.35	1088.0	270.62	SDI E-FIELD MWD
1820.0	89.33	275.31	754.8	13.9	-1119.8	1119.8	10.80	1119.9	270.71	SDI E-FIELD MWD
1851.0	91.31	277.19	754.6	17.3	-1150.6	1150.6	8.81	1150.8	270.86	SDI E-FIELD MWD
1882.0	89.56	272.77	754.4	20.0	-1181.5	1181.5	15.33	1181.7	270.97	SDI E-FIELD MWD
1913.0	89.87	269.69	754.5	20.6	-1212.5	1212.5	9.99	1212.7	270.97	SDI E-FIELD MWD
1945.0	94.07	269.67	753.4	20.5	-1244.5	1244.5	13.13	1244.6	270.94	SDI E-FIELD MWD
1976.0	94.00	268.16	751.3	19.9	-1275.4	1275.4	4.86	1275.5	270.89	SDI E-FIELD MWD
2008.0	94.47	267.27	748.9	18.6	-1307.3	1307.3	3.14	1307.4	270.81	SDI E-FIELD MWD
2040.0	94.61	268.16	746.4	17.3	-1339.1	1339.1	2.81	1339.3	270.74	SDI E-FIELD MWD
2072.0	91.35	267.11	744.7	16.0	-1371.1	1371.1	10.70	1371.2	270.67	SDI E-FIELD MWD
2103.0	91.45	267.78	744.0	14.6	-1402.0	1402.0	2.18	1402.1	270.60	SDI E-FIELD MWD
2135.0	89.70	267.64	743.6	13.3	-1434.0	1434.0	5.49	1434.1	270.53	SDI E-FIELD MWD
2166.0	89.70	269.11	743.8	12.5	-1465.0	1465.0	4.74	1465.0	270.49	SDI E-FIELD MWD
2198.0	90.13	269.33	743.8	12.0	-1497.0	1497.0	1.51	1497.0	270.46	SDI E-FIELD MWD
2229.0	91.21	269.33	743.5	11.7	-1528.0	1528.0	3.48	1528.0	270.44	SDI E-FIELD MWD
2260.0	92.03	269.89	742.6	11.5	-1559.0	1559.0	3.20	1559.0	270.42	SDI E-FIELD MWD
2292.0	92.22	269.24	741.4	11.2	-1590.9	1590.9	2.11	1591.0	270.40	SDI E-FIELD MWD
2324.0	93.23	269.33	739.9	10.8	-1622.9	1622.9	3.17	1622.9	270.38	SDI E-FIELD MWD
2355.0	94.61	269.40	737.8	10.5	-1653.8	1653.8	4.46	1653.9	270.36	SDI E-FIELD MWD
2386.0	95.59	270.12	735.0	10.3	-1684.7	1684.7	3.92	1684.7	270.35	SDI E-FIELD MWD
2417.0	95.59	270.12	732.0	10.4	-1715.6	1715.6	0.00	1715.6	270.35	PROJECTED DEPTH



Scientific Drilling

EL PASO PRODUCTION

RATON WELL D-190
UPPER LATERAL
VERMEJO FIELD, NEW MEXICO

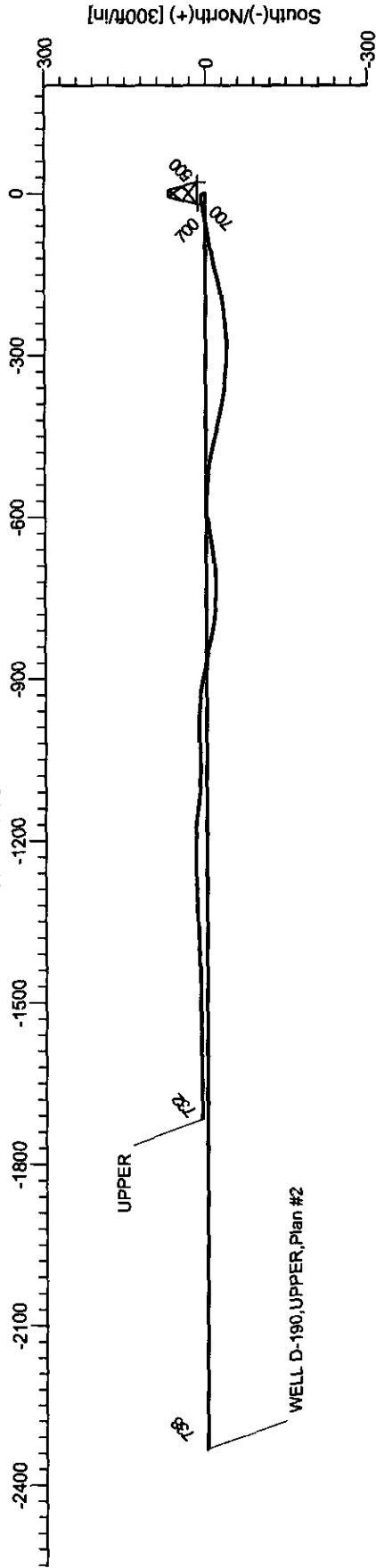


ALL DEPTHS SHOWN ARE
TRUE VERTICAL DEPTHS

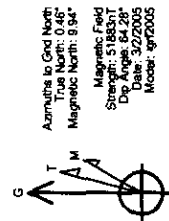
WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
WELL D-190	0.0	0.0	2154230.3580	276281.0895	36°55'04.130N	105°05'53.070W	N/A

West(-)/East(+) [300ft/in]



2417.00' MD 95.59° INCLINATION 270.12° AZIMUTH 732.00' TVD
10.40' NORTH 1715.60' WEST OF SURFACE LOCATION
1715.60' CLOSURE DISTANCE 270.35° CLOSURE AZIMUTH



April 12, 2005
Scientific Drilling
281.443.4600



EL PASO PRODUCTION

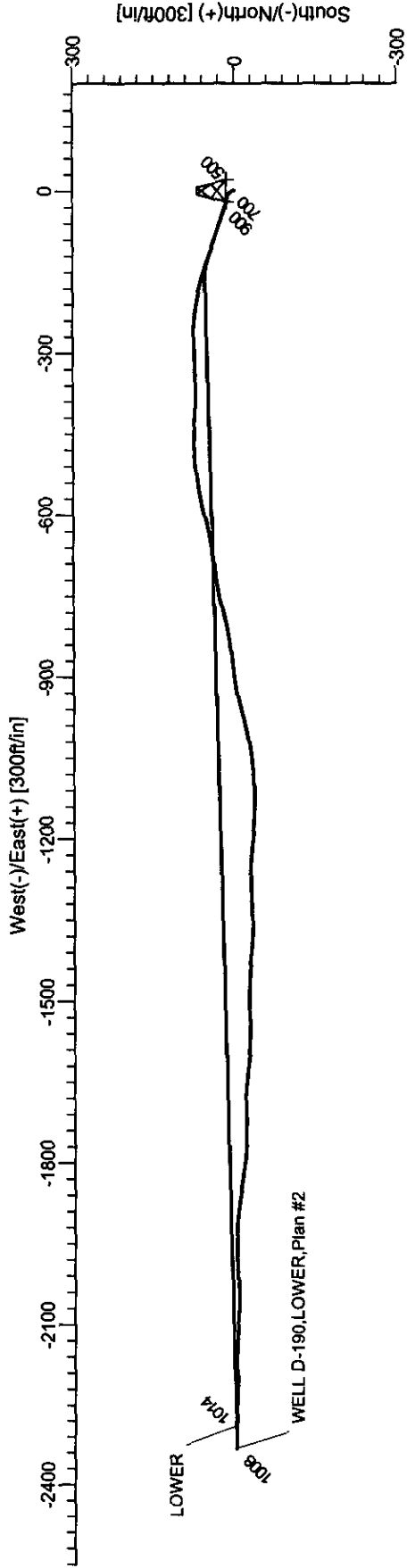
RATON WELL D-190
UPPER LATERAL
VERMEJO FIELD, NEW MEXICO



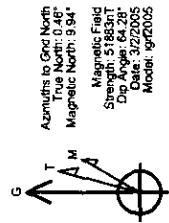
WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
WELL D-190	0.0	0.0	2154230.3580	276281.0895	36°55'04.130N	105°05'55.070W	N/A

ALL DEPTHS SHOWN ARE
TRUE VERTICAL DEPTHS



3275.00' MD 90.60° INCLINATION 271.48° AZIMUTH 1014.10' TVD
0.00' NORTH 2287.90° WEST OF SURFACE LOCATION
2287.90° CLOSURE DISTANCE 270.00° CLOSURE AZIMUTH



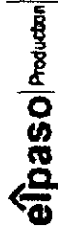
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EL PASO PRODUCTION

RATON WELL D-190
UPPER LATERAL
VERMEJO FIELD, NEW MEXICO



ALL DEPTHS SHOWN ARE
MEASURED DEPTHS

