

**Key Energy Services, Inc.**

Four Corners Division
5651 US Highway 64
P.O. Box 900
Farmington, NM 87499

Phone: 505-327-4935
Fax: 505-327-4962

May 27, 2002

Rig No. 47

Phillips Petroleum Company
5525 Hwy 64 NBU 3004
Farmington, NM 87401

Attn: Patsy Clugston

This letter is to certify that Key Energy Services, Inc., did run deviation surveys at the listed depths on the San Juan 32-8 23M well in S14-T31N-R08W, in San Juan, county, New Mexico.

Depth	Deviation	Depth	Deviation	Depth	Deviation
157'	½°	4880'	8°	5826'	6°
343'	½°	4973'	8½°	5919'	5¾°
845'	¾°	5036'	7¾°	6107'	6¼°
1343'	½°	5099'	7¾°	6230'	6°
1843'	½°	5164'	8°	6354'	6°
2338'	¾°	5227'	7¾°	6478'	6°
2839'	¼°	5290'	6¼°	6665'	6°
3326'	¾°	5385'	6°	6978'	4°
3893'	¾°	5511'	6°	7480'	3°
4379'	1¼°	5639'	6°	7854'	3¾°

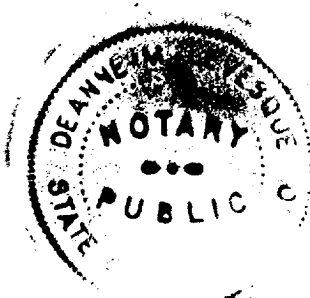
To the best of my knowledge, I swear this information to be true.

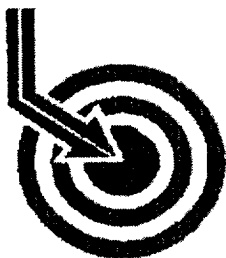
Sincerely,

J.D. Griffith
Drilling contract manager

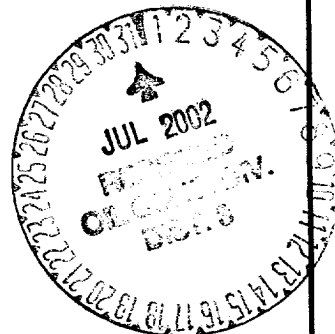
Notary Public
6/26/02

My commission expires:





**Scientific
Drilling**



DIRECTIONAL SURVEY REPORT

Prepared For

**PHILLIPS PETROLEUM
San Juan 32-8 #23M
Rio Arriba County, NM**

D-14- 31N-8W

***Prepared By:
Judi Moore - Well Planner
Scientific Drilling International
Rocky Mountain District***

Scientific Drilling International
7237 W. Barton Rd., Casper, WY 82604
P.O. Box 1600, Mills, WY 82644
(307) 472-6621
judimoore_sdi@msn.com



Scientific Drilling SURVEY REPORT

Company: PHILLIPS PETROLEUM COMPANY
Field: San Juan 32-S #23M
Site: Rio Arriba County
Well: San Juan 32-S #23M
Wellpath: Original Hole

Date: 6/3/2002 Time: 17:58:19 Page: 1
Co-ordinate(NE) Reference: Site: Rio Arriba County, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,45.80Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Survey #1

Start Date: 5/13/2002

Company: ATA
Tool:

Engineer: Scott Watson
Tied-to: From Surface

Survey

Meas Depth ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	CLen ft	CLSD ft	CLsA deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.00	0.33	193.39	150.00	-0.36	-0.42	-0.10	0.22	150.00	0.43	193.39
200.00	0.25	217.86	200.00	-0.59	-0.65	-0.20	0.29	50.00	0.68	197.22
250.00	0.34	201.93	250.00	-0.84	-0.87	-0.32	0.24	50.00	0.93	200.35
300.00	0.16	244.78	300.00	-1.04	-1.04	-0.44	0.50	50.00	1.13	203.04
350.00	0.16	213.86	350.00	-1.17	-1.13	-0.54	0.17	50.00	1.25	205.77
400.00	0.12	344.65	400.00	-1.22	-1.13	-0.60	0.51	50.00	1.28	207.75
450.00	0.19	303.78	450.00	-1.21	-1.04	-0.68	0.25	50.00	1.24	213.23
500.00	0.30	328.94	500.00	-1.20	-0.88	-0.82	0.30	50.00	1.20	222.88
550.00	0.40	330.49	550.00	-1.12	-0.61	-0.97	0.20	50.00	1.15	237.64
600.00	0.34	334.84	599.99	-1.03	-0.33	-1.12	0.13	50.00	1.16	253.66
650.00	0.60	327.65	649.99	-0.93	0.03	-1.32	0.53	50.00	1.32	271.20
700.00	0.59	345.79	699.99	-0.75	0.50	-1.52	0.38	50.00	1.60	288.11
750.00	0.65	339.79	749.99	-0.50	1.01	-1.69	0.18	50.00	1.97	301.04
800.00	0.71	356.48	799.98	-0.18	1.59	-1.80	0.41	50.00	2.40	311.41
850.00	0.72	10.31	849.98	0.27	2.21	-1.77	0.34	50.00	2.83	321.36
900.00	0.61	10.87	899.98	0.75	2.78	-1.86	0.22	50.00	3.24	329.16
950.00	0.64	8.77	949.97	1.18	3.32	-1.58	0.11	50.00	3.67	334.59
1000.00	0.78	7.33	999.97	1.67	3.93	-1.50	0.28	50.00	4.21	339.13
1050.00	0.71	17.50	1049.97	2.21	4.56	-1.36	0.30	50.00	4.76	343.38
1100.00	0.64	14.19	1099.96	2.72	5.13	-1.20	0.16	50.00	5.27	346.82
1150.00	0.79	8.45	1149.96	3.23	5.74	-1.08	0.33	50.00	5.84	349.33
1200.00	0.67	3.10	1199.95	3.72	6.38	-1.02	0.28	50.00	6.46	350.95
1250.00	0.74	17.34	1249.95	4.21	6.98	-0.90	0.38	50.00	7.03	352.62
1300.00	0.63	12.42	1299.95	4.73	7.55	-0.75	0.25	50.00	7.59	354.34
1350.00	0.71	4.71	1349.94	5.19	8.13	-0.66	0.24	50.00	8.16	355.33
1400.00	0.52	356.07	1399.94	5.57	8.66	-0.66	0.43	50.00	8.69	355.66
1450.00	0.59	1.05	1449.94	5.89	9.15	-0.67	0.18	50.00	9.17	355.80
1500.00	0.51	15.89	1499.94	6.27	9.62	-0.61	0.33	50.00	9.64	356.39
1550.00	0.38	3.31	1549.93	6.59	10.00	-0.54	0.32	50.00	10.01	356.83
1600.00	0.35	8.60	1599.93	6.83	10.32	-0.50	0.09	50.00	10.33	357.20
1650.00	0.47	1.42	1649.93	7.10	10.67	-0.48	0.26	50.00	10.68	357.45
1700.00	0.38	356.35	1699.93	7.35	11.04	-0.48	0.19	50.00	11.05	357.50
1750.00	0.28	357.05	1749.93	7.54	11.33	-0.50	0.20	50.00	11.34	357.48
1800.00	0.00	203.69	1799.93	7.62	11.45	-0.50	0.56	50.00	11.46	357.48
1850.00	0.06	204.97	1849.93	7.60	11.43	-0.52	0.12	50.00	11.44	357.42
1900.00	0.31	210.68	1899.93	7.44	11.29	-0.60	0.50	50.00	11.30	356.98
1950.00	0.14	180.79	1949.93	7.27	11.11	-0.67	0.40	50.00	11.13	356.57
2000.00	0.15	220.05	1999.93	7.16	11.00	-0.71	0.20	50.00	11.02	356.31
2050.00	0.19	201.93	2049.93	7.02	10.87	-0.78	0.13	50.00	10.90	355.89
2100.00	0.28	163.20	2099.93	6.89	10.68	-0.78	0.35	50.00	10.71	355.84
2150.00	0.36	218.99	2149.93	6.67	10.44	-0.84	0.62	50.00	10.47	355.40
2200.00	0.40	206.59	2199.93	6.35	10.16	-1.02	0.18	50.00	10.21	354.28
2250.00	0.22	243.30	2249.93	6.10	9.96	-1.18	0.52	50.00	10.03	353.24
2300.00	0.32	226.98	2299.93	5.87	9.82	-1.37	0.25	50.00	9.92	352.06
2350.00	0.21	246.44	2349.92	5.64	9.60	-1.56	0.28	50.00	9.82	350.88
2400.00	0.24	264.33	2399.92	5.47	9.64	-1.74	0.15	50.00	9.80	349.75
2450.00	0.29	271.95	2449.92	5.30	9.64	-1.97	0.12	50.00	9.84	348.42
2500.00	0.24	264.13	2499.92	5.13	9.63	-2.21	0.12	50.00	9.88	347.11



Scientific Drilling SURVEY REPORT

Company: PHILLIPS PETROLEUM COMPANY
Field: San Juan 32-8 #23M
Site: Rio Arriba County
Well: San Juan 32-8 #23M
Wellpath: Original Hole

Date: 6/3/2002 Time: 17:58:19 Page: 2
Co-ordinate(NE) Reference: Site: Rio Arriba County, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,45.80Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

Meas Depth ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	CLen ft	ChD ft	ChA deg
2550.00	0.09	264.91	2549.92	5.02	9.62	-2.35	0.30	50.00	9.90	346.28
2600.00	0.08	348.14	2699.92	5.01	9.65	-2.39	0.23	50.00	9.94	346.06
2650.00	0.25	325.59	2649.92	5.05	9.77	-2.46	0.36	50.00	10.08	345.85
2700.00	0.26	324.63	2699.92	5.08	9.95	-2.59	0.02	50.00	10.29	345.41
2750.00	0.17	352.24	2749.92	5.14	10.12	-2.67	0.27	50.00	10.47	345.24
2800.00	0.11	357.71	2799.92	5.22	10.24	-2.68	0.12	50.00	10.58	345.35
2850.00	0.06	9.52	2849.92	5.27	10.32	-2.68	0.11	50.00	10.66	345.46
2900.00	0.05	38.55	2899.92	5.32	10.36	-2.66	0.06	50.00	10.69	345.61
2950.00	0.06	88.51	2949.92	5.36	10.38	-2.61	0.12	50.00	10.70	345.68
3000.00	0.17	70.00	2999.92	5.46	10.40	-2.50	0.20	50.00	10.70	346.46
3050.00	0.14	50.22	3049.92	5.58	10.47	-2.39	0.12	50.00	10.74	347.15
3100.00	0.12	39.20	3099.92	5.70	10.55	-2.31	0.06	50.00	10.80	347.66
3150.00	0.10	54.71	3149.92	5.79	10.61	-2.24	0.07	50.00	10.85	348.08
3200.00	0.15	82.14	3199.92	5.89	10.65	-2.14	0.15	50.00	10.88	348.64
3250.00	0.30	124.71	3249.92	5.97	10.58	-1.97	0.43	50.00	10.76	349.47
3300.00	0.28	125.65	3299.92	6.01	10.44	-1.76	0.04	50.00	10.58	350.43
3350.00	0.40	125.85	3349.92	6.07	10.26	-1.52	0.24	50.00	10.37	351.58
3400.00	0.76	159.73	3399.92	5.96	9.85	-1.26	0.97	50.00	9.93	352.69
3450.00	1.02	161.40	3449.91	5.63	9.12	-1.01	0.52	50.00	9.17	353.70
3500.00	1.12	171.03	3499.90	5.16	8.21	-0.79	0.41	50.00	8.25	354.52
3550.00	1.17	171.65	3549.89	4.58	7.22	-0.64	0.10	50.00	7.25	354.96
3600.00	1.19	161.80	3599.88	4.05	6.23	-0.40	0.41	50.00	6.24	356.31
3650.00	0.98	173.15	3649.87	3.57	5.31	-0.19	0.60	50.00	5.31	357.97
3700.00	1.10	171.97	3699.86	3.02	4.41	-0.07	0.24	50.00	4.41	359.09
3750.00	0.84	173.85	3749.86	2.51	3.57	0.04	0.52	50.00	3.57	0.58
3800.00	0.68	190.38	3799.85	2.05	2.91	0.02	0.54	50.00	2.91	0.44
3850.00	0.54	201.75	3849.85	1.59	2.40	-0.12	0.37	50.00	2.40	357.17
3900.00	0.46	191.01	3899.85	1.21	1.99	-0.24	0.25	50.00	2.00	352.99
3950.00	0.30	200.85	3949.85	0.93	1.67	-0.33	0.34	50.00	1.70	348.83
4000.00	0.17	180.74	3999.85	0.75	1.47	-0.38	0.30	50.00	1.52	345.63
4050.00	0.16	67.36	4049.85	0.77	1.42	-0.31	0.65	50.00	1.46	347.59
4100.00	0.58	21.48	4099.85	1.06	1.69	-0.16	0.96	50.00	1.69	354.71
4150.00	1.23	18.20	4149.84	1.77	2.43	0.10	1.30	50.00	2.43	2.46
4200.00	2.07	20.81	4199.82	3.06	3.78	0.59	1.69	50.00	3.83	8.90
4250.00	2.93	17.49	4249.77	5.01	5.85	1.30	1.74	50.00	5.99	12.51
4300.00	4.06	18.11	4299.68	7.70	8.75	2.23	2.26	50.00	9.03	14.31
4350.00	5.11	18.86	4349.51	11.25	12.54	3.50	2.10	50.00	13.02	15.60
4400.00	5.78	18.93	4399.29	15.48	17.03	5.04	1.34	50.00	17.76	16.48
4450.00	6.62	19.59	4449.00	20.31	22.12	6.82	1.69	50.00	23.15	17.14
4500.00	7.22	22.22	4498.63	25.78	27.75	8.98	1.36	50.00	29.16	17.93
4550.00	7.22	24.60	4548.24	31.59	33.51	11.47	0.60	50.00	35.42	18.90
4600.00	7.14	26.95	4597.84	37.46	39.14	14.19	0.61	50.00	41.63	19.93
4650.00	7.87	28.64	4647.41	43.67	44.91	17.24	1.63	50.00	48.11	21.00
4700.00	8.27	30.88	4696.92	50.41	51.01	20.72	1.02	50.00	55.05	22.11
4750.00	8.28	32.52	4746.40	57.39	57.13	24.61	0.47	50.00	62.16	23.22
4800.00	8.05	35.34	4795.89	64.34	63.02	28.47	0.92	50.00	69.15	24.31
4850.00	8.31	37.16	4845.38	71.35	68.75	32.67	0.73	50.00	76.12	25.42
4900.00	8.17	39.00	4894.87	78.45	74.39	37.09	0.60	50.00	83.13	26.50
4950.00	7.85	39.65	4944.38	85.38	79.78	41.51	0.67	50.00	89.94	27.48
5000.00	7.67	40.27	4993.92	92.09	84.96	45.84	0.40	50.00	96.54	28.35
5050.00	7.43	40.86	5043.49	98.64	89.95	50.11	0.50	50.00	102.97	29.12
5100.00	7.20	41.69	5093.08	104.98	94.74	54.31	0.51	50.00	109.20	29.83



Scientific Drilling SURVEY REPORT

Company: PHILLIPS PETROLEUM COMPANY
Field: San Juan 32-8 #23M
Site: Rio Arriba County
Well: San Juan 32-8 #23M
Wellpath: Original Hole

Date: 6/3/2002
Co-ordinate(NE) Reference:
Vertical (TYD) Reference:
Section (VS) Reference:
Survey Calculation Method:

Time: 17:58:19
Site: Rio Arriba County, Grid North
SITE 0.0
Well (0.00N,0.00E,45.80Azi)
Minimum Curvature
Dlt: Sybase

Survey

Meas Depth ft	Incl deg	Azimuth deg	TVD ft	VS ft	NS ft	E/W ft	DLS deg/100ft	CLen ft	CLSD ft	CLSA deg
5150.00	7.08	41.25	5142.69	111.18	99.39	58.43	0.26	50.00	115.29	30.45
5200.00	6.79	41.98	5192.33	117.20	103.91	62.44	0.61	50.00	121.22	31.00
5250.00	6.58	41.73	5241.99	123.00	108.23	66.32	0.46	50.00	126.93	31.50
5300.00	6.38	42.70	5291.67	128.62	112.41	70.10	0.42	50.00	132.47	31.95
5350.00	6.28	44.15	5341.37	134.13	116.41	73.69	0.38	50.00	137.88	32.40
5400.00	6.12	43.42	5391.07	139.52	120.31	77.63	0.36	50.00	143.18	32.83
5450.00	5.93	44.50	5440.80	144.77	124.09	81.27	0.44	50.00	148.33	33.22
5500.00	5.98	44.57	5490.53	149.96	127.79	84.91	0.10	50.00	153.42	33.60
5550.00	5.94	46.35	5540.26	155.15	131.43	88.61	0.38	50.00	158.51	33.99
5600.00	5.86	46.16	5589.99	160.29	134.98	92.32	0.16	50.00	163.53	34.37
5650.00	5.85	46.44	5639.73	165.39	138.50	96.01	0.06	50.00	168.53	34.73
5700.00	6.01	46.66	5689.46	170.55	142.08	99.76	0.32	50.00	173.58	35.09
5750.00	5.91	46.61	5739.19	175.74	145.62	103.53	0.20	50.00	178.67	35.41
5800.00	5.99	46.76	5788.92	180.92	149.18	107.30	0.16	50.00	183.76	35.73
5850.00	5.95	46.85	5838.65	186.12	152.74	111.09	0.08	50.00	188.87	36.03
5900.00	5.72	46.51	5888.39	191.21	156.22	114.79	0.47	50.00	193.86	36.31
5950.00	5.49	47.29	5938.15	196.09	159.56	118.36	0.48	60.00	198.67	36.57
6000.00	5.52	48.48	5987.92	200.88	162.78	121.91	0.24	50.00	203.37	36.83
6050.00	5.53	49.49	6037.69	205.69	165.94	125.55	0.20	50.00	208.08	37.11
6100.00	5.71	50.23	6087.45	210.57	169.09	129.29	0.39	50.00	212.86	37.40
6150.00	5.58	50.67	6137.21	215.48	172.22	133.08	0.27	50.00	217.65	37.69
6200.00	5.49	51.49	6186.98	220.28	175.25	136.83	0.24	50.00	222.35	37.98
6250.00	5.44	51.50	6236.75	225.02	178.22	140.56	0.10	50.00	226.98	38.26
6300.00	5.60	52.19	6286.52	229.80	181.19	144.34	0.35	50.00	231.66	38.54
6350.00	5.72	52.54	6336.27	234.70	184.20	148.25	0.25	50.00	236.45	38.83
6400.00	5.87	52.01	6386.02	239.71	187.29	152.24	0.32	50.00	241.36	39.11
6450.00	5.94	52.29	6435.75	244.83	190.45	156.30	0.15	50.00	246.38	39.38
6500.00	5.98	52.04	6485.48	249.99	193.63	160.40	0.10	50.00	251.44	39.64
6550.00	6.03	52.00	6535.21	255.19	196.85	164.53	0.10	50.00	256.55	39.89
6600.00	5.95	52.13	6584.93	260.37	200.06	168.64	0.16	50.00	261.65	40.13
6650.00	5.85	52.22	6634.67	265.48	203.21	172.70	0.20	50.00	266.68	40.36
6700.00	5.73	51.88	6684.41	270.49	206.31	176.68	0.25	50.00	271.62	40.58
6750.00	5.29	51.72	6734.18	275.27	209.28	180.45	0.88	50.00	276.34	40.77
6800.00	5.08	51.75	6783.98	279.76	212.07	183.99	0.46	50.00	280.76	40.94
6850.00	4.87	51.03	6833.80	283.98	214.72	187.31	0.79	50.00	284.94	41.10
6900.00	4.59	49.50	6883.64	288.00	217.30	190.41	0.29	50.00	288.92	41.23
6950.00	4.48	48.72	6933.48	291.95	219.89	193.40	0.25	50.00	292.84	41.33
7000.00	4.51	49.53	6983.33	295.86	222.45	196.36	0.14	50.00	296.72	41.44
7050.00	4.41	50.29	7033.17	299.74	224.95	199.34	0.23	50.00	300.57	41.54
7100.00	4.08	51.37	7083.04	303.42	227.29	202.21	0.68	50.00	304.22	41.66
7150.00	3.89	53.67	7132.92	306.87	229.41	204.96	0.50	50.00	307.63	41.78
7200.00	3.86	53.20	7182.80	310.22	231.42	207.68	0.09	50.00	310.94	41.90
7250.00	3.73	54.48	7232.69	313.50	233.37	210.35	0.31	50.00	314.18	42.03
7300.00	3.48	55.99	7282.59	316.60	235.17	212.93	0.53	50.00	317.24	42.16
7350.00	3.33	56.05	7332.51	319.52	236.83	215.39	0.30	50.00	320.13	42.29
7400.00	3.11	57.44	7382.43	322.28	238.37	217.74	0.47	50.00	322.85	42.41
7450.00	2.99	58.69	7432.36	324.88	239.78	220.00	0.27	50.00	325.41	42.54
7500.00	2.96	61.83	7482.29	327.39	241.06	222.25	0.33	50.00	327.88	42.67
7550.00	3.06	61.32	7532.22	329.92	242.31	224.56	0.21	50.00	330.37	42.82
7600.00	3.01	63.09	7582.15	332.46	243.55	226.90	0.21	50.00	332.86	42.97
7650.00	3.08	62.03	7632.08	335.00	244.77	229.26	0.18	50.00	335.37	43.13
7700.00	3.39	62.19	7682.00	337.71	246.09	231.75	0.62	50.00	338.04	43.28
7750.00	3.46	61.89	7731.91	340.58	247.49	234.39	0.14	50.00	340.87	43.44



Scientific Drilling SURVEY REPORT

Company: PHILLIPS PETROLEUM COMPANY
Field: San Juan 32-8 #23M
Site: Rio Arriba County
Well: San Juan 32-8 #23M
Wellpath: Original Hole

Date: 6/3/2002 Time: 17:58:19 Page: 4
Co-ordinate(NE) Reference: Site: Rio Arriba County, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,45.80Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

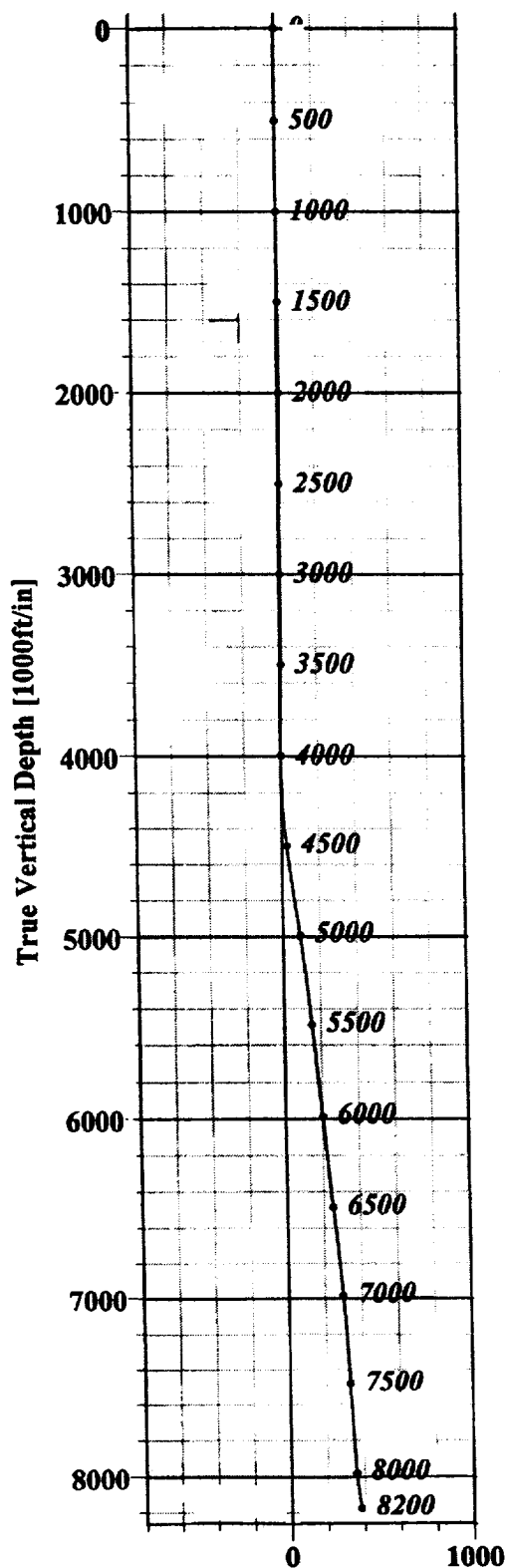
Meas Depth ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	CLen ft	CLD ft	CLaA deg
7800.00	3.41	63.75	7781.82	343.44	248.86	237.05	0.24	50.00	343.69	43.61
7850.00	3.45	66.55	7831.73	346.26	250.12	239.77	0.34	50.00	346.48	43.79
7900.00	3.70	66.92	7881.63	349.17	251.35	242.63	0.50	50.00	349.35	43.99
7950.00	4.50	69.38	7931.50	352.48	252.67	245.95	1.64	50.00	352.61	44.23
8000.00	5.31	67.24	7981.32	356.43	254.26	249.92	1.66	50.00	356.52	44.51
8050.00	6.64	63.11	8031.05	361.34	256.46	254.63	2.79	50.00	361.40	44.80
8100.00	8.09	61.59	8080.63	367.49	259.44	260.30	2.93	50.00	367.52	45.10
8150.00	7.62	64.76	8130.17	374.01	262.53	266.40	1.28	50.00	374.02	45.42
8200.00	7.41	72.26	8179.74	380.03	264.92	272.47	2.00	50.00	380.03	45.80



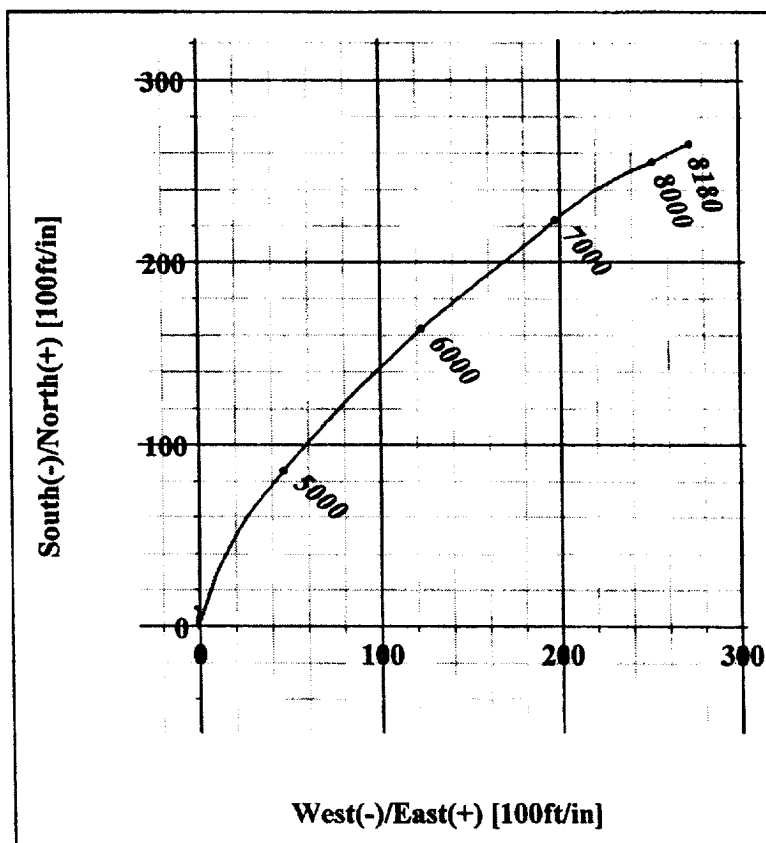
Scientific
Drilling

PHILLIPS PETROLEUM COMPANY

Field: San Juan 32-8 #23M
Site: Rio Arriba County
Well: San Juan 32-8 #23M
Wellpath: Original Hole
Survey: Survey #1



Vertical Section at 45.80° [1000ft/in]



BOTTOM HOLE CLOSURE

380.03 ft. 45.8° Azimuth

FINAL STATION

8200.0' MD 8179.74' TVD
7.41° Angle 72.26° Azimuth
North 264.92 ft. East 272.47 ft.
380.03' Vert. Sec.

Survey: Survey #1 (San Juan 32-8 #23M/Original Hole)
Created By: Judi Moore Date: 6/3/2002