

Scientific Drilling

30-039-26409

P-22-29N-06W

SRG 16/S 585/E

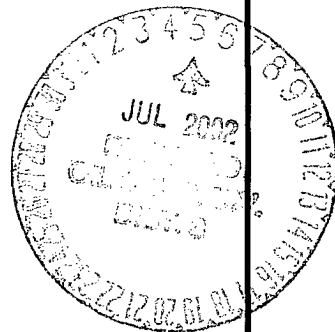
BHL 4/S 611/E

GYRO SURVEY REPORT

Prepared For

PHILLIPS PETROLEUM
San Juan 29-6 #77M
Rio Arriba County, NM

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
Field: Rio Arriba County, NM
Site: San Juan #29-6 #77M
Well: #77M
Wellpath: OH

Date: 4/24/2002 Time: 14:12:34 Page: 1
Co-ordinate(N/E) Reference: Site: San Juan #29-6 #77M, True North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,0.00Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Survey #1
SHL SEC.22,T29N,R6W 10'FSL & 585' FEL
Company: Scientific Drilling
Tool: Gyro,

Start Date: 4/13/2002
Engineer: Dave Doney
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
100.00	0.47	128.04	100.00	-0.25	-0.25	0.32	0.47	100.00	0.41	128.04
200.00	0.48	114.77	200.00	-0.68	-0.68	1.03	0.11	100.00	1.23	123.56
300.00	0.51	121.15	299.99	-1.09	-1.09	1.79	0.06	100.00	2.09	121.30
400.00	0.42	117.00	399.99	-1.48	-1.48	2.50	0.10	100.00	2.90	120.73
500.00	0.41	139.58	499.99	-1.92	-1.92	3.05	0.16	100.00	3.61	122.19
600.00	0.34	127.54	599.98	-2.38	-2.38	3.52	0.11	100.00	4.25	124.00
700.00	0.26	175.05	699.98	-2.78	-2.78	3.78	0.25	100.00	4.69	126.38
800.00	0.29	185.06	799.98	-3.26	-3.26	3.77	0.06	100.00	4.99	130.83
900.00	0.38	177.45	899.98	-3.84	-3.84	3.77	0.10	100.00	5.38	135.59
1000.00	0.64	210.37	999.98	-4.66	-4.66	3.50	0.38	100.00	5.82	143.09
1100.00	0.85	220.28	1099.97	-5.70	-5.70	2.74	0.25	100.00	6.33	154.38
1200.00	0.95	230.31	1199.96	-6.80	-6.80	1.62	0.19	100.00	6.99	166.61
1300.00	1.14	231.80	1299.94	-7.94	-7.94	0.20	0.19	100.00	7.95	178.57
1400.00	1.28	229.01	1399.92	-9.29	-9.29	-1.43	0.15	100.00	9.40	188.73
1500.00	1.33	226.17	1499.89	-10.83	-10.83	-3.11	0.08	100.00	11.27	196.01
1600.00	1.70	228.33	1599.86	-12.62	-12.62	-5.05	0.37	100.00	13.59	201.82
1700.00	1.56	233.07	1699.81	-14.42	-14.42	-7.25	0.19	100.00	16.14	206.68
1800.00	1.41	243.17	1799.78	-15.80	-15.80	-9.43	0.30	100.00	18.40	210.85
1900.00	1.42	239.11	1899.75	-16.99	-16.99	-11.59	0.10	100.00	20.57	214.32
2000.00	1.32	246.52	1999.72	-18.08	-18.08	-13.71	0.20	100.00	22.69	217.18
2100.00	1.26	239.16	2099.70	-19.10	-19.10	-15.72	0.18	100.00	24.74	219.44
2200.00	1.14	234.66	2199.67	-20.24	-20.24	-17.47	0.15	100.00	26.74	220.79
2300.00	1.04	241.02	2299.66	-21.26	-21.26	-19.08	0.16	100.00	28.56	221.90
2400.00	0.96	243.00	2399.64	-22.08	-22.08	-20.62	0.09	100.00	30.21	223.04
2500.00	1.06	238.87	2499.63	-22.94	-22.94	-22.15	0.12	100.00	31.89	224.01
2600.00	0.87	239.49	2599.61	-23.80	-23.80	-23.60	0.19	100.00	33.52	224.76
2700.00	0.85	265.70	2699.60	-24.24	-24.24	-24.99	0.39	100.00	34.82	225.88
2800.00	0.72	255.48	2799.59	-24.46	-24.46	-26.34	0.19	100.00	35.94	227.13
2900.00	0.53	252.01	2899.59	-24.76	-24.76	-27.39	0.19	100.00	36.92	227.89
3000.00	0.42	281.88	2999.58	-24.82	-24.82	-28.19	0.27	100.00	37.56	228.63
3100.00	0.47	305.63	3099.58	-24.51	-24.51	-28.88	0.19	100.00	37.88	229.68
3200.00	0.55	337.53	3199.58	-23.83	-23.83	-29.40	0.29	100.00	37.84	230.98
3300.00	0.81	328.25	3299.57	-22.78	-22.78	-29.95	0.28	100.00	37.63	232.74
3400.00	0.89	331.10	3399.56	-21.50	-21.50	-30.70	0.09	100.00	37.48	235.00
3500.00	0.77	326.97	3499.55	-20.26	-20.26	-31.44	0.13	100.00	37.40	237.21
3600.00	0.57	334.31	3599.54	-19.25	-19.25	-32.02	0.22	100.00	37.36	238.99
3700.00	0.44	330.79	3699.54	-18.46	-18.46	-32.43	0.13	100.00	37.31	240.34
3800.00	0.37	328.53	3799.53	-17.85	-17.85	-32.78	0.07	100.00	37.33	241.43
3900.00	0.53	356.29	3899.53	-17.11	-17.11	-32.98	0.27	100.00	37.16	242.57
4000.00	0.67	21.52	3999.53	-16.11	-16.11	-32.80	0.30	100.00	36.54	243.84
4100.00	0.77	20.17	4099.52	-14.93	-14.93	-32.35	0.10	100.00	35.63	245.22
4200.00	0.85	23.54	4199.51	-13.62	-13.62	-31.82	0.09	100.00	34.62	246.82
4300.00	0.87	27.43	4299.50	-12.27	-12.27	-31.18	0.06	100.00	33.50	248.52
4400.00	0.78	36.27	4399.49	-11.05	-11.05	-30.42	0.16	100.00	32.37	250.04
4500.00	0.94	30.74	4499.47	-9.79	-9.79	-29.60	0.18	100.00	31.18	251.69
4600.00	0.87	36.44	4599.46	-8.48	-8.48	-28.73	0.11	100.00	29.96	253.56
4700.00	0.84	43.43	4699.45	-7.33	-7.33	-27.78	0.11	100.00	28.73	255.21
4800.00	0.82	53.50	4799.44	-6.38	-6.38	-26.70	0.15	100.00	27.45	256.57



Scientific
Drilling

Scientific Drilling SURVEY REPORT

Company: Phillips Petroleum
Field: Rio Arriba County, NM
Site: San Juan #29-6 #77M
Well: #77M
Wellpath: OH

Date: 4/24/2002 Time: 14:12:34 Page: 2
Co-ordinate(NE) Reference: Site: San Juan #29-6 #77M, True North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,0.00Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

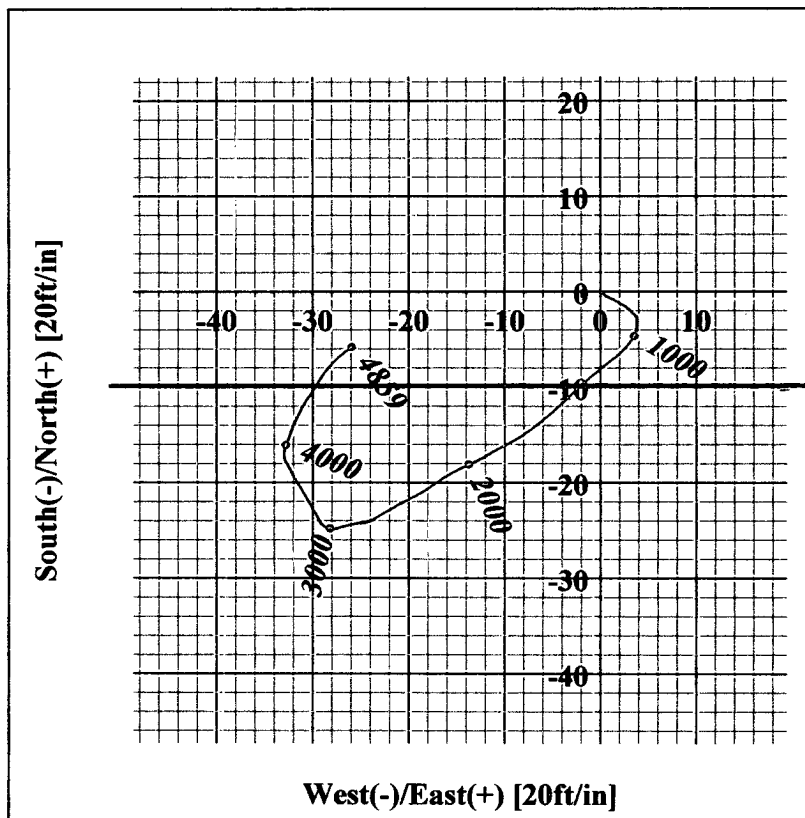
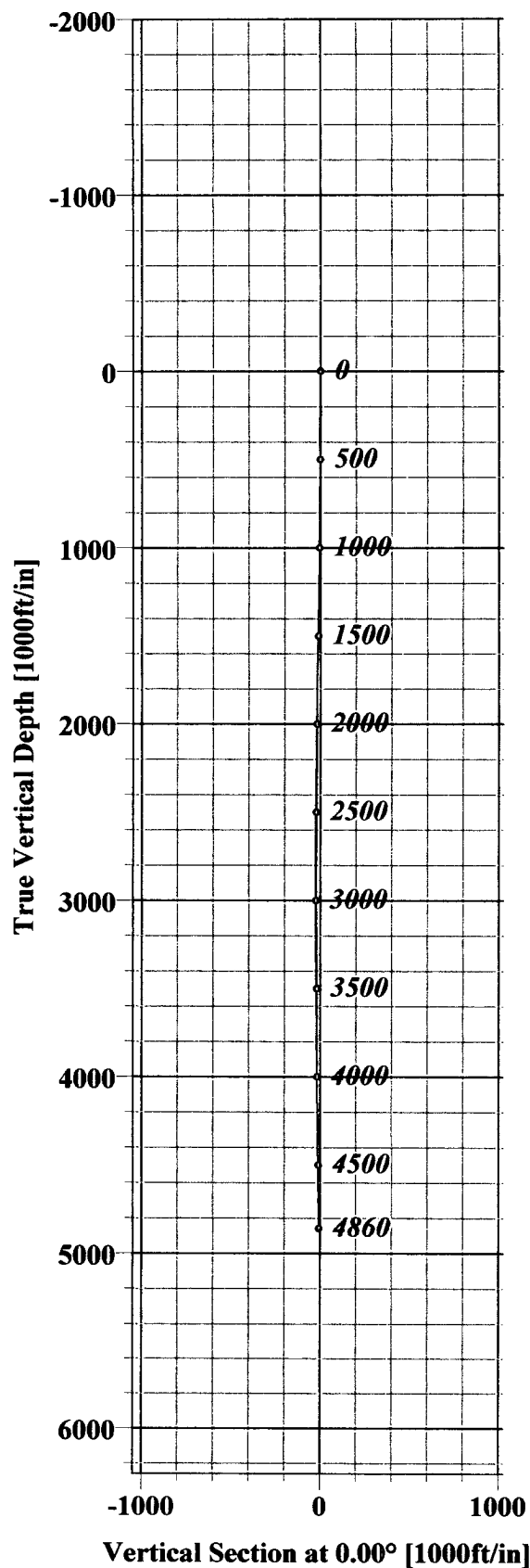
Meas Depth ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	CLen ft	ClsD ft	ClsA deg
4860.00	0.98	55.25	4859.43	-5.83	-5.83	-25.93	0.27	60.00	26.58	257.33



Scientific
Drilling

Phillips Petroleum

Field: Rio Arriba County, NM
Site: San Juan #29-6 #77M
Well: #77M
Wellpath: OH
Survey: Survey #1



BOTTOM HOLE CLOSURE

26.58 ft. 257.33° Azimuth

FINAL STATION

4860.0' MD 4859.43' TVD
0.98° Angle 55.25° Azimuth
South 5.83 ft. West 25.93 ft.
-5.83' Vert. Sec.

Survey: Survey #1 (#77M/OH)

Created By: Judi Moore

Date: 4/24/2002

April 20, 2002
11:30 am

PathTracker 4.0
Survey Calculation Program
SMITH SERVICES

Page 1 of 1

Customer: PHILLIPS PET.
WellName: SAN JUAN 29-6 77M
Location: SAN JUAN COUNTY, NM
SMITH REP. DERRIL GLEIM

NOTE: NORTH SURFACE CORD. IS CORRECT, EAST CORD. IS WILD

Vertical Section Calculated on: 360.0000

Survey Calculation Method: Minimum Curvature

FileName: C:\PATHTRKR\IP-29-6.SR3

#	Depth Feet	Inc Degrees	Azimuth Degrees	TVD Feet	North Feet	East Feet	Section Feet	Dogleg /100f
34	3400.00	0.89	331.10	3399.56	-11.50	-30.70	-11.50	0.09
35	3500.00	0.77	326.97	3499.55	-10.26	-31.44	-10.26	0.13
36	3600.00	0.57	334.31	3599.54	-9.25	-32.02	-9.25	0.22
37	3700.00	0.44	330.79	3699.54	-8.46	-32.43	-8.46	0.13
38	3800.00	0.37	328.53	3799.53	-7.85	-32.78	-7.85	0.07
39	3900.00	0.53	356.29	3899.53	-7.11	-32.98	-7.11	0.27
40	4000.00	0.67	21.52	3999.53	-6.11	-32.80	-6.11	0.30
41	4100.00	0.77	20.17	4099.52	-4.93	-32.35	-4.93	0.10
42	4181.00	0.50	30.00	4180.51	-4.12	-31.99	-4.12	0.36
43	4210.00	1.00	25.00	4209.51	-3.78	-31.82	-3.78	1.74
44	4242.00	1.50	340.00	4241.50	-3.13	-31.84	-3.13	3.32
45	4274.00	2.50	302.00	4273.48	-2.37	-32.58	-2.37	5.03
46	4306.00	3.75	275.00	4305.44	-1.91	-34.21	-1.91	5.93
47	4338.00	4.50	312.00	4337.36	-0.98	-36.19	-0.98	8.47
48	4370.00	6.25	306.00	4369.22	0.89	-38.53	0.89	5.74
49	4715.00	3.75	311.00	4712.88	19.33	-62.24	19.33	0.73
50	5029.00	2.00	343.00	5026.49	31.31	-71.59	31.31	0.74
51	5312.00	3.25	10.00	5309.20	43.93	-71.64	43.93	0.61
52	5592.00	4.75	0.00	5588.51	63.34	-70.27	63.34	0.59
53	5878.00	6.25	20.00	5873.21	89.82	-64.94	89.82	0.84

Closure is 110.8354 Feet on an azimuth of 324.1324