

Sii DATADRILL Division of Smith International, Inc.

ARTEC WELL SERVICES
M-MANA GAO INC.

COOK #15
SAN JUAN CO., NEW MEXICO

MEASURED DEPTH- FT	INCL ANGLE (DEG)	COURSE DIRECTION (DEG)	COURSE LENGTH FT	TOTAL VERTICAL DEPTH	TOTAL RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	SLOPE DIRECTION DISTANCE DIRECTION (FT) (DEG)		POSSIBLE SEVERITY DEG/100'
3548.00	4.00	S 80.00 E	61.00	3548.40	34.83 E	34.06 W	7.31	43.70	S 44.31 W	1.64
3610.00	3.00	S 86.00 E	61.00	3609.21	38.79 E	31.39 W	12.08	47.80	S 78.38 W	1.70
3671.00	5.75	S 48.00 E	61.00	3669.95	40.00 S	27.84 W	17.77	50.08	S 72.68 W	1.74
3732.00	6.25	S 51.00 E	61.00	3730.61	47.10 E	23.65 W	23.98	52.23	S 65.68 W	1.69
3793.00	6.50	S 50.00 E	61.00	3791.20	51.31 E	17.35 W	30.74	54.17	S 68.68 W	1.45
3854.00	6.00	S 35.00 E	61.00	3881.57	55.35 E	10.00 W	36.74	56.68	S 62.71 W	1.34
3915.00	5.00	S 54.00 E	61.00	3910.48	55.46 S	6.53 W	40.38	58.82	S 61.07 W	1.42
3976.00	5.00	S 57.00 E	61.00	3973.05	60.67 S	1.41 W	50.41	60.67	S 61.37 W	1.41
4037.00	5.75	S 55.00 E	61.00	4035.32	61.94 S	6.14 E	57.78	62.23	S 61.15 E	1.30
4098.00	6.00	S 40.00 E	61.00	4096.94	72.50 E	13.29 S	65.74	73.51	S 60.41 E	1.28
4159.00	3.75	S 60.00 E	61.00	4154.29	76.61 E	21.02 S	72.55	79.45	S 63.37 E	1.02
4220.00	11.75	S 48.00 E	61.00	4211.87	80.87 S	1.13 E	74.68	81.95	S 64.75 E	0.74
4281.00	14.00	S 58.00 E	61.00	4275.77	82.98 S	35.98 E	97.02	100.85	S 62.75 E	1.41
4342.00	10.00	S 61.00 E	61.00	4337.60	104.85 E	47.29 E	112.20	118.02	S 64.25 E	0.90
4403.00	10.00	S 50.00 E	61.00	4392.40	116.90 S	54.38 E	128.09	128.90	S 64.93 E	1.00
4464.00	14.00	S 51.00 E	61.00	4481.71	128.17 E	61.62 E	140.24	145.11	S 65.01 E	1.68
4525.00	14.75	S 51.00 E	61.00	4516.51	142.15 E	69.42 E	158.00	158.19	S 66.07 E	1.10
4586.00	14.50	S 51.00 E	61.00	4581.80	153.35 S	77.73 E	175.62	175.84	S 66.47 E	1.41
4647.00	14.00	S 50.00 E	61.00	4626.98	166.08 E	85.31 E	188.55	188.49	S 66.91 E	1.10
4708.00	10.00	S 50.00 E	61.00	4688.27	180.09 E	92.96 E	199.77	201.87	S 67.50 E	1.68
4769.00	14.00	S 58.00 E	61.00	4747.58	191.90 S	100.91 E	213.98	218.31	S 67.74 E	1.24
4830.00	13.50	S 58.00 E	61.00	4806.87	204.30 S	110.26 E	229.62	230.13	S 68.36 E	1.80
4891.00	15.75	S 58.00 E	61.00	4868.31	217.16 E	126.49 E	245.94	248.54	S 69.02 E	1.80
4952.00	17.50	S 41.00 E	61.00	4923.76	230.52 E	131.71 E	263.37	265.50	S 69.74 E	1.63
5013.00	18.00	S 41.00 E	61.00	4981.78	244.73 E	144.08 E	282.17	284.61	S 70.48 E	1.64
5074.00	21.50	S 40.00 E	61.00	5039.09	260.37 S	157.90 E	302.97	304.61	S 71.23 E	1.53
5135.00	23.00	S 41.00 E	61.00	5098.58	277.13 E	173.80 E	323.92	317.11	S 72.09 E	1.63
5196.00	22.50	S 45.00 E	61.00	5151.80	293.31 S	190.48 E	348.26	350.13	S 72.96 E	1.62
5257.00	21.00	S 44.00 E	61.00	5208.46	309.93 E	206.32 E	371.66	372.02	S 73.65 E	2.30
5318.00	19.50	S 44.00 E	61.00	5265.68	328.11 S	220.49 E	392.64	393.11	S 74.20 E	2.46
5379.00	16.00	S 43.00 E	61.00	5327.36	339.28 S	234.90 E	412.70	413.68	S 74.79 E	1.72
5440.00	18.00	S 44.00 E	61.00	5381.29	353.90 S	248.29 E	431.67	431.60	S 75.10 E	1.80
5501.00	19.00	S 42.00 E	61.00	5439.14	367.06 S	261.49 E	450.32	450.55	S 75.40 E	1.94

D-22-29N-11W/

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OIL CON. DIV.
DIST. 3

PAGE No. 1

Si DATADRIL
Division of Smith International, Inc.ACTED WELL SERVICES
KARANA GAS INC.
COGN #1E
444 JAWN CO., NEW MEXICO
DATE OF REPORT: 04-24-87MAG. MULTISHOT
DECLINATION; 15 EAST TO TRUE
PROPOSED DIRECTION; S 37 E

JOB NUMBER: 08704177

SURVEYOR: LOHN BENNETT

File Name: 104857

*** RECORD OF SURVEY ***
Calculated by Si DATADRIL's C.A.D.C.B. System

Radius of Curvature Method

All Angles are Declined
Vertical Section Plane: S 37.00 E

MEASURED DEPTH (FT)	INCL ANGLE (DEG)	ON 3 FT DIRECTION (DEG)	COURSE LENGTH (FT)	VERTICAL ELEVATION	RECTANGULAR COORDINATES T D L	VERTICAL SECTION	PLANO SURVEY DISTANCE DIRECTION	DOGLED SEVERITY (DEG/100)
0.00	0.00	N 11.00 E	0.00	1.00	0.00 N 0.00 E	0.00	0.00 S 0.00 E	0.00
287.00	1.30	E 40.00 W	387.00	387.00	1.23 S 1.15 W	1.29	1.49 S 40.00 W	1.10
437.00	1.70	E 30.00 W	62.00	448.94	1.77 S 1.56 W	1.47	2.38 S 41.40 W	1.40
511.00	1.75	E 37.00 W	62.00	511.99	1.29 S 2.17 W	1.50	3.18 S 40.40 W	1.10
570.00	1.90	E 38.00 W	62.00	572.78	2.57 S 3.00 W	1.21	4.01 S 39.64 W	1.42
675.00	1.90	E 38.10 W	62.00	674.97	2.72 S 4.14 W	-1.72	4.15 S 38.57 W	1.01
697.00	1.35	E 31.00 W	62.00	696.96	2.97 S 5.00 W	-1.88	5.10 S 30.71 W	1.02
759.00	1.20	E 30.00 W	62.00	738.94	3.30 S 5.85 W	-1.17	5.45 S 31.73 W	1.39
811.00	1.30	E 31.00 W	62.00	800.92	4.13 S 7.82 W	-1.47	6.93 S 32.43 W	1.61
887.00	1.50	E 30.00 W	62.00	882.90	4.62 S 8.47 W	-0.91	10.50 S 23.89 W	1.19
945.00	1.50	E 36.00 W	62.00	944.38	5.19 S 10.68 W	-0.47	12.18 S 34.73 W	1.00
1007.00	1.25	E 37.00 W	62.00	1006.86	5.78 S 12.03 W	-2.61	13.40 S 31.90 W	1.41
1069.00	1.25	E 31.00 W	62.00	1068.85	6.15 S 10.65 W	-3.20	14.97 S 35.70 W	1.49
1131.00	1.60	E 32.00 W	62.00	1130.84	6.54 S 14.77 W	-0.69	16.17 S 35.17 W	1.70
1193.00	1.20	E 47.00 W	62.00	1192.83	7.13 S 13.87 W	-3.71	17.28 S 33.44 W	1.42
1255.00	1.60	E 33.00 W	62.00	1254.81	7.89 S 16.48 W	-0.30	18.37 S 34.40 W	1.06
1317.00	1.01	E 34.00 W	62.00	1316.84	8.56 S 17.32 W	-1.59	19.12 S 30.70 W	1.14
1379.00	1.00	E 48.00 W	62.00	1378.80	9.25 S 18.15 W	-0.50	20.26 S 32.19 W	1.07
1441.00	1.21	E 37.00 W	62.00	1440.78	9.85 S 19.05 W	0.10	21.44 S 31.86 W	1.09
1503.00	1.10	E 33.00 W	62.00	1502.78	10.26 S 20.04 W	-0.88	22.32 S 32.87 W	1.13
1565.00	1.10	E 30.00 W	62.00	1564.77	10.75 S 21.02 W	-4.07	23.50 S 32.92 W	1.08

SiI DATADRILL Division of Smith International, Inc.

NOTED WELL SERVICES
NAXANA G&S INC.

COOK #12
SAN JUAN CO., NEW MEXICO

MEASURED DEPTH (FT)	INCL ANGLE DEG	S I I P T DIRECTION (DEG)	COURSE LENGTH (FT)	TOTAL VERTICAL DEPTH	T O T A L RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	S I I S U R F DISTANCE DIRECTION (FT) (DEG)		DEGREES SEVERITY (DEG/100')
1607.00	.75	S 79.00 W	62.00	1606.76	11.05 S	21.91 W	-4.56	24.84	S 67.10 W	.56
1694.00	.75	S 79.00 W	62.00	1693.76	11.27 S	22.39 W	-4.66	25.04	S 67.55 W	.59
1781.00	1.00	S 81.00 W	62.00	1780.75	11.65 S	23.55 W	-4.66	26.28	S 67.91 W	.66
1868.00	1.00	S 83.00 W	62.00	1867.74	12.14 S	24.62 W	-5.06	27.76	S 67.65 W	.74
1955.00	1.00	S 82.00 W	62.00	1954.77	12.62 S	25.49 W	-5.26	28.45	S 67.61 W	.77
2042.00	1.00	S 81.00 W	62.00	2041.72	13.22 S	26.39 W	-5.77	29.52	S 67.43 W	.81
2129.00	1.00	S 80.00 W	62.00	2128.71	13.92 S	27.22 W	-5.26	30.57	S 67.92 W	.78
2216.00	.75	S 84.00 W	62.00	2215.71	14.50 S	27.86 W	-5.08	31.45	S 67.11 W	.80
2303.00	.75	S 85.00 W	62.00	2302.70	15.24 S	28.38 W	-4.91	32.21	S 67.37 W	.77
2390.00	1.00	S 85.00 W	62.00	2389.69	15.78 S	29.17 W	-4.74	33.14	S 67.57 W	.80
2477.00	.75	S 89.00 W	62.00	2476.69	16.79 S	29.94 W	-5.01	34.26	S 67.48 W	.83
2564.00	.50	S 88.10 W	62.00	2563.68	17.74 S	30.44 W	-5.00	35.43	S 67.20 W	.80
2651.00	.50	S 82.00 W	62.00	2650.68	17.09 S	30.68 W	-4.60	36.17	S 67.00 W	.81
2738.00	.75	S 87.00 W	62.00	2737.68	17.64 S	31.24 W	-4.77	36.97	S 66.88 W	.77
2825.00	.75	S 81.00 W	62.00	2824.67	18.40 S	31.30 W	-4.26	38.48	S 66.71 W	.78
2912.00	.50	S 87.00 W	62.00	2911.67	18.09 S	31.94 W	-4.17	37.11	S 66.40 W	.81
3000.00	.50	S 87.00 W	62.00	2999.67	19.12 S	32.43 W	-4.25	37.65	S 66.43 W	.77
3087.00	.75	S 81.00 W	62.00	3086.66	19.50 S	32.99 W	-4.26	38.02	S 66.43 W	.75
3174.00	.75	S 87.00 W	62.00	3173.66	20.15 S	33.47 W	-4.03	39.17	S 66.94 W	.78
3261.00	.5	S 81.00 W	62.00	3260.65	20.87 S	33.84 W	-3.77	39.76	S 66.31 W	.80
3348.00	.75	S 80.00 E	62.00	3347.65	21.66 S	33.47 W	-3.14	40.20	S 67.47 W	.75
3435.00	.50	S 87.00 W	62.00	3434.64	22.32 S	34.04 W	-2.66	40.71	S 66.73 W	.80
3522.00	.75	S 81.00 W	62.00	3521.64	22.92 S	34.35 W	-2.76	41.07	S 66.38 W	.83
3609.00	.75	S 84.00 W	62.00	3608.63	23.64 S	34.33 W	-2.01	42.01	S 66.75 W	.85
3696.00	.75	S 80.00 W	62.00	3695.63	24.42 S	34.94 W	-1.61	42.63	S 66.00 W	.80
3783.00	.75	S 82.00 W	62.00	3782.62	25.16 S	35.24 W	-1.06	43.27	S 66.41 W	.82
3870.00	.75	S 84.00 W	62.00	3869.62	25.82 S	35.71 W	-1.87	44.06	S 64.10 W	.83
3957.00	1.00	S 81.00 W	62.00	3956.61	26.52 S	36.34 W	-1.69	44.97	S 65.88 W	.84
4044.00	1.00	S 81.00 W	62.00	4043.60	27.48 S	36.81 W	-1.21	45.94	S 67.26 W	.83

PROJECTED SURVEY AT 44.0 F

4131.00	1.00	S 82.00 E	126.00	4130.52	31.57 S	36.64 W	0.91	47.93	S 68.67 W	1.90
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Sii DATADRIL Division of Smith International, Inc.

AZTEC WELL SERVICES
KANARA GAS INC.

COOK #12
SAN JUAN CO., NEW MEXICO

MEASURED DEPTH FT	INCL. ANGLE (DEG)	D F I F T DIRECTION (DEG)	COURSE LENGTH FT	TOTAL VERTICAL DEPTH	TOTAL RECTANGULAR COORDINATES (FT)		VERTICAL SECTION FT	S L O S D F E DISTANCE DIRECTION (FT) (DEG)		LOGGED SEVERITY (DEG 100%)
5582.00	21.00	S 40.00 E	51.00	5478.46	362.30 E	275.13 E	471.33	471.45	S 35.31 E	1.46
5620.00	20.00	S 41.00 E	51.00	5581.01	400.31 E	284.87 E	494.13	494.24	S 35.51 E	1.28
5684.00	20.50	S 42.00 E	51.00	5607.00	418.48 E	305.56 E	518.17	518.28	S 36.14 E	1.50
5748.00	24.00	S 40.00 E	51.00	5684.84	436.59 E	332.36 E	540.61	540.68	S 36.40 E	1.15
5808.00	25.00	S 41.00 E	51.00	5720.40	455.39 E	339.51 E	567.08	567.78	S 36.72 E	1.34
5867.00	24.00	S 40.00 E	51.00	5775.91	470.59 E	356.78 E	592.93	592.93	S 36.99 E	1.24
5928.00	24.00	S 40.00 E	51.00	5831.67	491.74 E	373.69 E	617.61	617.61	S 37.27 E	1.10
5989.00	24.00	S 44.00 E	51.00	5887.16	509.71 E	390.76 E	642.26	642.28	S 37.47 E	1.27
6051.00	27.00	S 45.00 E	51.00	5943.30	527.08 E	407.81 E	666.38	666.43	S 37.57 E	1.76
6111.00	25.00	S 46.00 E	51.00	5998.45	543.79 E	424.61 E	689.75	690.08	S 38.00 E	1.64
6172.00	22.50	S 47.00 E	51.00	6055.70	560.03 E	441.92 E	713.21	713.79	S 38.23 E	1.74
6222.00	21.50	S 47.00 E	51.00	6107.55	560.06 E	455.89 E	740.01	742.11	S 38.50 E	1.96
6284.00	22.00	S 47.00 E	51.00	6160.93	591.00 E	475.14 E	757.94	758.71	S 38.80 E	1.70
6378.00	21.00	S 47.00 E	51.00	6225.69	606.25 E	491.49 E	779.93	780.44	S 39.00 E	1.84
6409.00	20.00	S 46.00 E	51.00	6276.27	619.26 E	505.20 E	792.61	793.20	S 39.21 E	1.95
6531.00	20.00	S 45.00 E	121.00	6390.91	648.51 E	534.97 E	839.37	840.69	S 39.30 E	1.15

BOTTOM HOLE DEPTH: 640.59 Feet at S 39.32 Degrees E

Bottom hole location is 903/W
883/N

Ed Hartman

June 9, 1987 in Aztec, NM
My Commission expires 8/18/90

Dorothy M. Jaeger

AZTEC WELL SERVICES
MAMANA GAS INC.
COOK #1E
SAN JUAN CO., NEW MEXICO

12 MAY 1987 @ 1:37

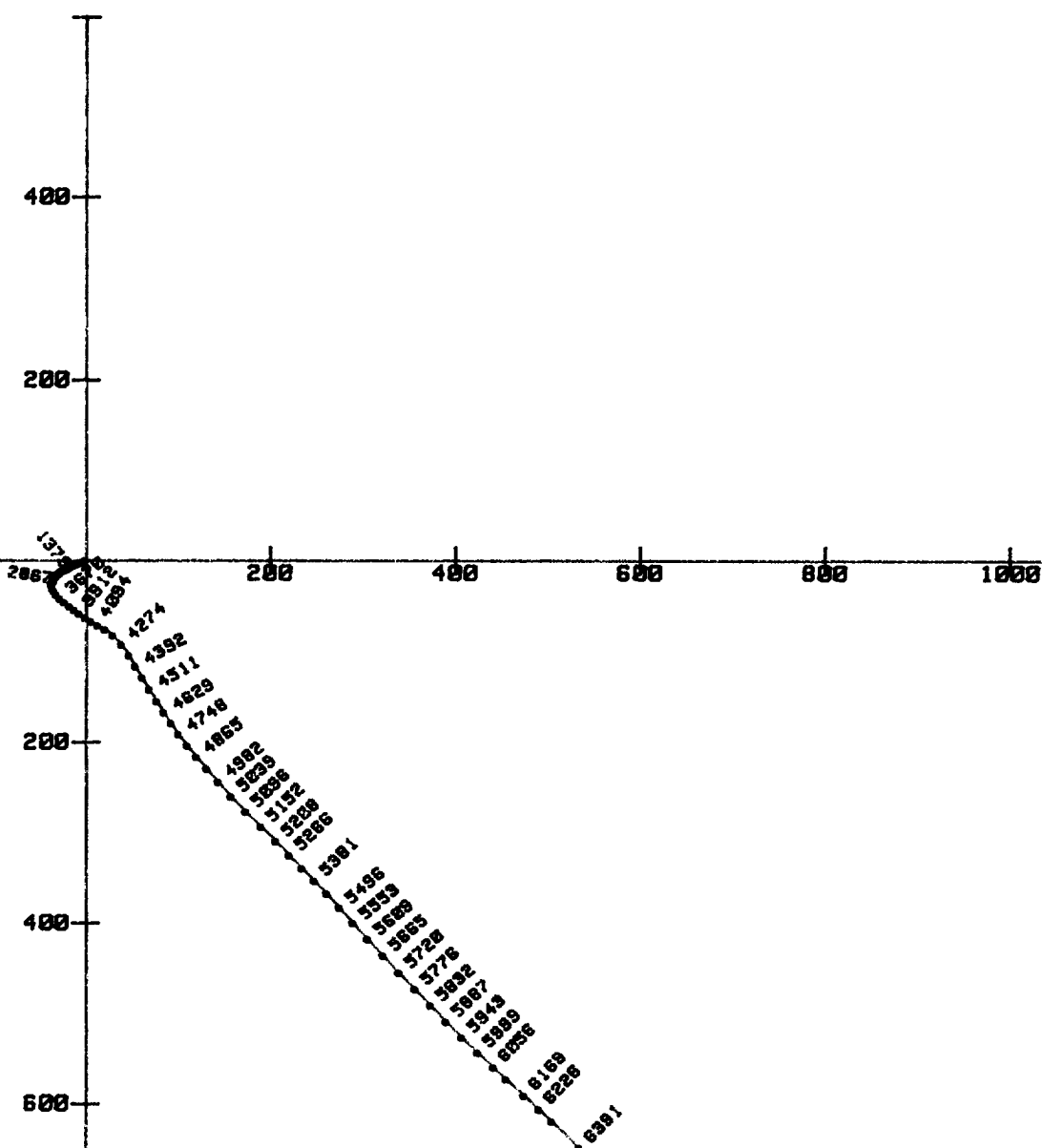
DATA DRILL

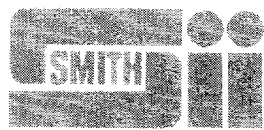
HORIZONTAL PLOT



SCALE: 200 FEET/INCH

BHL: 841 FEET
@ S 39.52 E
TVD: 6391 FEET
MD: 6531 FEET





DATADRIL

Division of Smith International, Inc.

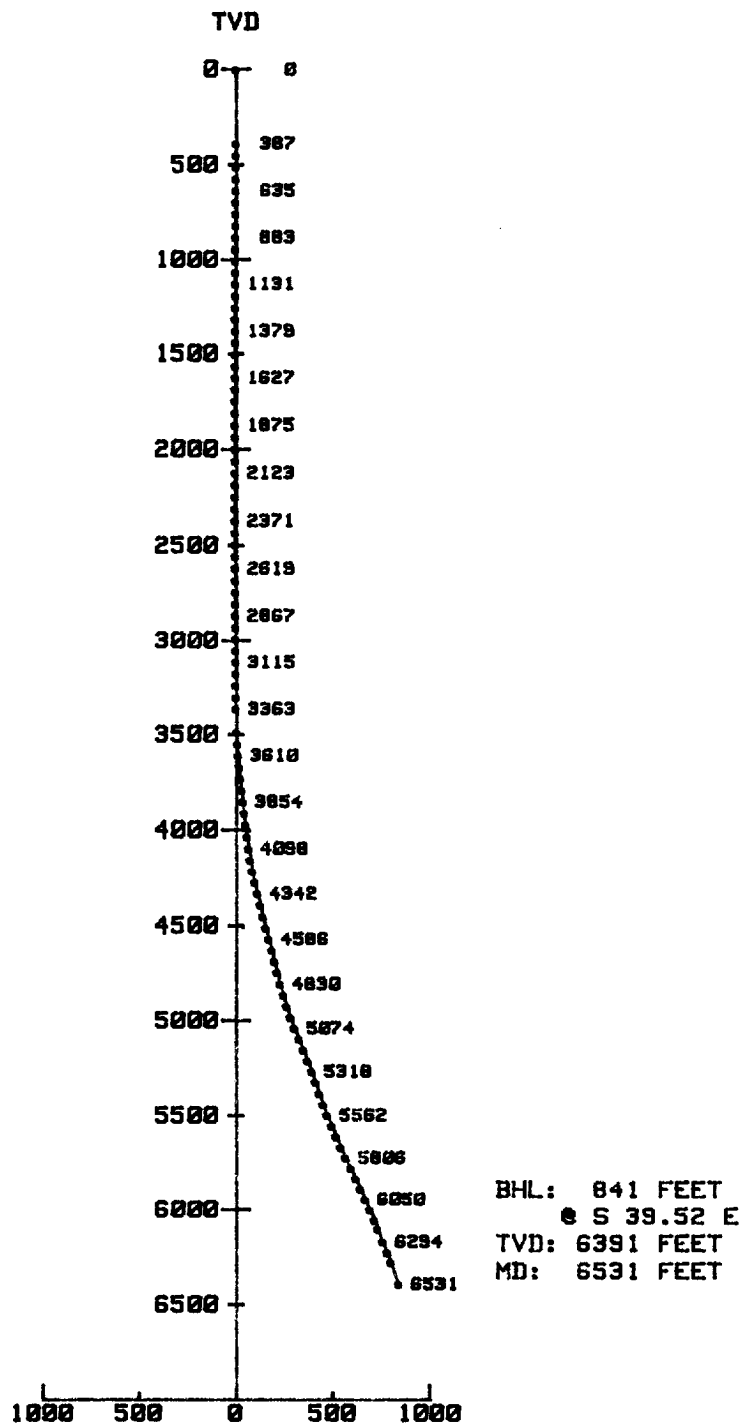
AZTEC WELL SERVICES
MAMANA GAS INC.
COOK #1E
SAN JAUN CO., NEW MEXICO

12 MAY 1987 @ 1:45

DATA DRILL

VERTICAL PLOT

SCALE: 1000 FEET/INCH



VERTICAL SECTION

SECTION PLANE: S 37.00 E



DATADRIL

Division of Smith International, Inc.