

SUB-SURFACE
DIRECTIONAL
SURVEY
REPORT

SANTE FE ENERGY
COMPANY
OSUDO STATE WELL NO. 1
WELL NAME
LEA COUNTY, NEW MEXICO
STATE AND COUNTY

CERTIFIED REPORT

SANTE FE ENERGY

WELL #
OSUDO STATE WELL NO. 1

LOCATION
LEA COUNTY, NEW MEXICO

DATE
12-14-89

JOB TYPE
GYRO MULTISHOT

JOB #
GS-2280

SURVEYOR
RALPH RICE

DEPTHS
0'-10940'

DECL.
9 DEGREES EAST

ELEV.
6'

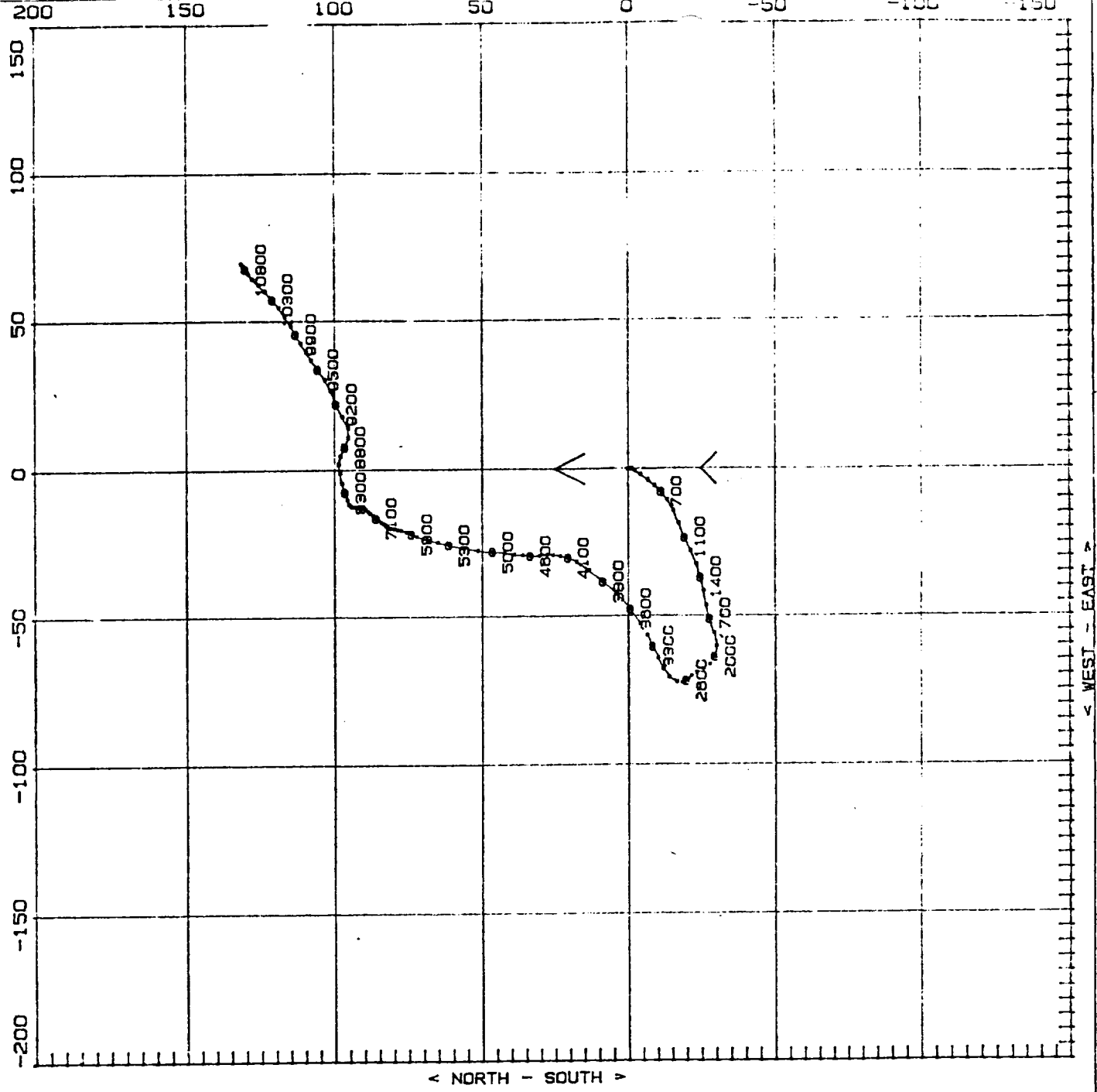
WT-0085

FINAL STATION DATA

MD. 10940.00
TVD. 10934.01
N/S 131.54
E/W 69.45

CLOSURE DISTANCE
148.75 FEET
CLOSURE DIRECTION
N 27.83 E

1 IN. = 50 FT.



RECEIVED

JUN 04 1990

**COMM
HOMELAND SECURITY**

CUSTOMER : SANTE FE-ENERGY

WELL # : OSUDO STATE WELL NO.1

LOCATION : LEA COUNTY, NEW MEXICO

DATE : 12-14-89

JOB TYPE : GYRO MULTISHOT

JOB # : GS-2296

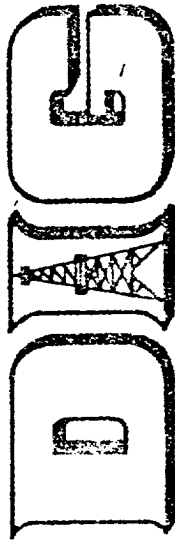
SURVEYOR : RALPH RICE

DEPTHS : 0'-10940'

DECL. : 9 DEGREES EAST

ELEV. : 10'

FILE # : WT-QQ6S



METHOD : RADIUS-OF-CURVATURE

SECTION : 0

THIS SURVEY IS CORRECT TO THE
BEST OF MY KNOWLEDGE AND IS
SUPPORTED BY ACTUAL FIELD DATA.
Ralph R. Rice
DIG-REPRESENTATIVE

FINAL STATION DATA!

MEASURED	INCL.	HOLE	COURSE	VERTICAL	RECTANGULAR	CLOSURE	DUG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	COR-D-IN-A-T-E-S	DISTANCE	DIRECTION
FEET	DEGS.	DEGS.	FEET	FEET	N/S	FEET	DEGS.
10940.00	1.00	N 55.00 E	40.00	10934.01	131.54 N	69.45 E	148.75' N 27.83 E

10940.00 1.00 N 55.00 E 40.00 10934.01 131.54 N 69.45 E 148.75' N 27.83 E .09

SANTO FE ENERGY

PAGE 1

OSUDO STATE WELL NO: 1

00:37:14

WT-QQ65

00:00/00

MEASURED	INCL.	HOLE	COURSE	VERTICAL	TRUE	N/S	FEET	E/W	FEET	DGS.	DISTANCE	DIRECTION	SEVERITY
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH									
FEET	DGS.	DGS.	FEET	FEET									DG/100FT
0.00	0.00	S 00.00 W	0.00	0.00	0.00 N	0.00 E	0.00	0.00	0.00	N 00.00 E	0.00		0.00
100.00	.50	S 08.00 E	100.00	100.00	.43 S	.06 E		.44'	S 08.00 E		.50		.50
200.00	.40	S 20.00 W	100.00	200.00	1.21 S	.02 W		1.21'	S 00.98 W		.24		.24
300.00	1.00	S 37.00 W	100.00	299.99	2.28 S	.60 W		2.35'	S 14.81 W		.63		.63
400.00	1.80	S 30.00 W	100.00	399.96	4.31 S	1.95 W		4.73'	S 24.33 W		.82		.82
500.00	1.80	S 44.00 W	100.00	499.91	6.81 S	3.83 W		7.82'	S 29.37 W		.44		.44
600.00	1.60	S 37.00 W	100.00	599.86	9.07 S	5.76 W		10.74'	S 32.42 W		.29		.29
700.00	1.90	S 47.00 W	100.00	699.82	11.33 S	7.80 W		13.76'	S 34.54 W		.43		.43
800.00	2.10	S 59.00 W	100.00	799.78	13.43 S	10.50 W		17.10'	S 38.24 W		.46		.46
900.00	2.50	S 61.00 W	100.00	899.68	15.44 S	14.06 W		20.88'	S 42.32 W		.41		.41
1000.00	3.00	S 71.00 W	100.00	999.56	17.39 S	18.44 W		25.34'	S 46.68 W		.69		.69
1100.00	3.00	S 65.00 W	100.00	1099.42	19.35 S	23.29 W		30.27'	S 50.20 W		.31		.31
1200.00	2.80	S 66.00 W	100.00	1199.29	21.44 S	27.89 W		35.18'	S 52.44 W		.21		.21
1300.00	2.80	S 68.00 W	100.00	1299.18	23.35 S	32.39 W		39.93'	S 54.21 W		.10		.10
1400.00	2.60	S 77.00 W	100.00	1399.06	24.77 S	36.87 W		44.42'	S 56.11 W		.47		.47
1500.00	2.70	S 78.00 W	100.00	1498.96	25.77 S	41.39 W		48.75'	S 58.09 W		.11		.11
1600.00	2.90	S 81.00 W	100.00	1598.84	26.66 S	46.19 W		53.33'	S 60.01 W		.25		.25
1700.00	2.80	S 71.00 W	100.00	1698.71	27.86 S	51.01 W		58.12'	S 61.36 W		.51		.51
1800.00	2.80	S 73.00 W	100.00	1798.59	29.37 S	55.65 W		62.93'	S 62.18 W		.10		.10
1900.00	2.50	S 80.00 W	100.00	1898.49	30.13 S	60.20 W		67.32'	S 63.41 W		.75		.75
2000.00	1.80	N 71.00 W	100.00	1998.42	29.58 S	63.89 W		70.41'	S 65.16 W		1.04		1.04
2100.00	1.70	N 41.00 W	100.00	2098.37	27.89 S	66.39 W		72.01'	S 67.21 W		.91		.91
2200.00	1.50	N 26.00 W	100.00	2198.33	25.57 S	67.93 W		72.58'	S 69.37 W		.46		.46
2300.00	1.40	N 30.00 W	100.00	2298.30	23.34 S	69.12 W		72.95'	S 71.34 W		.14		.14
2400.00	1.00	N 32.00 W	100.00	2398.28	21.54 S	70.20 W		73.43'	S 72.94 W		.40		.40

RECEIVED

JUN 04 1990

DCO
HOBBS OFFICE

SANTO FE ENERGY

OSUDO STATE WELL NO. 1

WT-QQ65

PAGE 2

00:38:10

00/00/00

SANTO FE ENERGY
OSUDO STATE WELL NO. 1
WT-QQ65
PAGE 2
00:38:10
00/00/00

MEASURED INCL.	HOLE	COURSE	VERTICAL	RECTANGULAR	C L O S U R E	DUG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	DISTANCE	SEVERITY
FEET	DEGS.	DEGS.	FEET	FEET	FEET	DEGS.

2500.00	1.70	N 59.00 W	100.00	2498.27	20.51 S	71.25 W	74.14 S	73.94 W	.49
2600.00	.50	N 27.00 W	100.00	2598.26	19.75 S	71.95 W	74.61 S	74.65 W	.38
2700.00	.40	N 19.00 W	100.00	2698.26	19.03 S	72.26 W	74.72 S	75.24 W	.12
2800.00	.40	N 14.00 W	100.00	2798.25	18.36 S	72.46 W	74.75 S	75.78 W	.03
2900.00	1.70	N 24.00 E	100.00	2898.24	16.57 S	72.30 W	74.17 S	77.09 W	1.41

3000.00	1.90	N 44.00 E	100.00	2998.19	13.98 S	70.55 W	71.92 S	78.79 W	.66
3100.00	2.10	N 62.00 E	100.00	3098.13	11.89 S	67.78 W	68.81 S	80.05 W	.66
3200.00	2.40	N 68.00 E	100.00	3198.05	10.23 S	64.22 W	65.03 S	80.95 W	.38
3300.00	2.50	N 64.00 E	100.00	3297.96	8.49 S	60.31 W	60.91 S	81.99 W	.20
3400.00	2.50	N 62.00 E	100.00	3397.86	6.51 S	56.43 W	56.80 S	83.42 W	.09

3500.00	2.80	N 56.00 E	100.00	3497.75	4.13 S	52.47 W	52.63 S	85.50 W	.41
3600.00	4.00	N 55.00 E	100.00	3597.50	77.2 S	47.58 W	47.59 S	89.07 W	1.20
3700.00	4.00	N 43.00 E	100.00	3697.33	3.80 N	42.32 W	42.49 N	84.87 W	.84
3800.00	3.20	N 39.00 E	100.00	3797.13	8.53 N	38.21 W	39.15 N	77.41 W	.84
3900.00	3.80	N 37.00 E	100.00	3896.95	13.34 N	34.45 W	36.94 N	68.82 W	.61

4000.00	2.10	N 33.00 E	100.00	3996.81	17.56 N	31.50 W	36.06 N	60.86 W	1.71
4100.00	1.70	N 17.00 E	100.00	4096.76	20.55 N	30.10 W	36.45 N	55.67 W	.66
4200.00	1.50	N 07.00 E	100.00	4196.72	23.28 N	29.52 W	37.60 N	51.74 W	.34
4300.00	1.30	N 14.00 E	100.00	4296.69	25.68 N	29.07 W	38.79 N	48.54 W	.26
4400.00	1.20	N 06.00 W	100.00	4396.66	27.85 N	28.92 W	40.15 N	46.09 W	.45

4500.00	1.90	N 13.00 W	100.00	4496.63	30.51 N	29.37 W	42.35 N	43.90 W	.72
4600.00	1.60	N 12.00 E	100.00	4596.58	33.54 N	29.40 W	44.60 N	41.23 W	.81
4700.00	1.50	N 01.00 E	100.00	4696.54	36.23 N	29.09 W	46.46 N	38.76 W	.31
4800.00	1.80	N 10.00 E	100.00	4796.50	39.09 N	28.81 W	48.56 N	36.39 W	.40
4900.00	2.00	N 10.00 E	100.00	4896.45	42.36 N	28.24 W	50.91 N	33.69 W	.20

SANTE FE ENERGY
OSUDO STATE WELL NO. 1
WT-QQ6S

PAGE 3
00:39:04
00/00/00

MEASURED	INCL.	HOLE	COURSE	VERTICAL	TRUE	RECTANGULAR	C L O S U R E	DISTANCE	DIRECTION	SEVERITY
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH		COORDINATES				
FEET	DEGS.	DEGS.	FEET	FEET	N/S	FEET	E/W	FEET	DEGS.	DG/100FT
5000.00	2.70	N 01.00 W	100.00	4996.36	46.44 N	27.92 W	54.18' N 31.01 W	53		.83
5100.00	3.10	N 11.00 E	100.00	5096.23	51.47 N	27.48 W	58.34' N 28.10 W	53		.72
5200.00	3.00	N 11.00 E	100.00	5196.09	56.69 N	26.46 W	62.56' N 25.02 W	53		.10
5300.00	2.50	N 13.00 E	100.00	5295.98	61.38 N	25.46 W	66.46' N 22.53 W	53		.51
5400.00	2.00	N 15.00 E	100.00	5395.90	65.19 N	24.52 W	69.65' N 20.61 W	53		.51
5500.00	1.40	N 15.00 E	100.00	5495.85	68.06 N	23.75 W	72.08' N 19.24 W	53		.60
5600.00	1.30	N 16.00 E	100.00	5595.83	70.33 N	23.12 W	74.03' N 18.20 W	53		.10
5700.00	1.10	N 24.00 E	100.00	5695.80	72.29 N	22.40 W	75.69' N 17.22 W	53		.26
5800.00	1.10	N 23.00 E	100.00	5795.77	74.06 N	21.64 W	77.15' N 16.29 W	53		.02
5900.00	1.10	N 23.00 E	100.00	5895.77	75.82 N	20.89 W	78.65' N 15.40 W	53		0.00
6000.00	1.00	N 16.00 E	100.00	5995.85	77.55 N	20.28 W	80.16' N 14.65 W	53		.16
6100.00	.50	N 08.00 E	100.00	6095.74	78.83 N	20.00 W	81.33' N 14.24 W	53		.51
6200.00	.60	N 24.00 E	100.00	6195.74	79.75 N	19.74 W	82.15' N 13.90 W	53		.18
6300.00	.50	N 06.00 W	100.00	6295.73	80.69 N	19.59 W	83.03' N 13.65 W	53		.30
6400.00	.50	N 11.00 E	100.00	6395.73	81.55 N	19.55 W	83.87' N 13.40 W	53		.15
6500.00	.40	N 33.00 E	100.00	6495.73	82.28 N	19.26 W	84.50' N 13.18 W	53		.20
6600.00	.40	N 69.00 E	100.00	6595.72	82.71 N	18.73 W	84.80' N 12.76 W	53		.25
6700.00	.30	N 29.00 E	100.00	6695.72	83.10 N	18.28 W	85.09' N 12.40 W	53		.26
6800.00	.40	N 22.00 E	100.00	6795.72	83.65 N	18.01 W	85.57' N 12.15 W	53		.11
6900.00	.60	N 41.00 E	100.00	6895.72	84.39 N	17.56 W	86.20' N 11.75 W	53		.26
7000.00	.60	N 35.00 E	100.00	6995.71	85.22 N	16.91 W	86.88' N 11.23 W	53		.06
7100.00	.70	N 43.00 E	100.00	7095.70	86.10 N	16.20 W	87.61' N 10.66 W	53		.13
7200.00	.80	N 44.00 E	100.00	7195.70	87.05 N	15.30 W	88.38' N 09.97 W	53		.10
7300.00	.60	N 40.00 E	100.00	7295.69	87.96 N	14.48 W	89.14' N 09.35 W	53		.21
7400.00	.50	N 35.00 E	100.00	7395.68	88.72 N	13.90 W	89.80' N 08.90 W	53		.11

RECEIVED

JUN 04 1990

OCD
HOBBS OFFICE

SANTE FE ENERGY

OSUDO STATE WELL NO. 1

WT-QQ65

PAGE 4

00:39:57

00/00/00

MEASURED INCL. HOLE COURSE RECTANGULAR C L O S U R E DUG-LEG
DEPTH ANGLE DIRECTION LENGTH DEPTH COORDINATES DISTANCE DIRECTION SEVERITY
FEET DEGS. FEET FEET N/S FEET DEGS. FEET DEGS. 06/100FT

7500.00	.70	N 36.00-E	100.00	7495.68	89.57-N	13.29-W	90.55'-N 08.44-W	.20
7600.00	.50	N 15.00-E	100.00	7595.67	90.51-N	12.84-W	91.42'-N 08.00-W	.29
7700.00	.50	N 03.00-W	100.00	7695.67	91.38-N	12.75-W	92.26'-N 07.94-W	.16
7800.00	.60	N 18.00-E	100.00	7795.66	92.32-N	12.63-W	93.18'-N 07.79-W	.22
7900.00	.70	N 05.00-E	100.00	7895.66	93.43-N	12.40-W	94.25'-N 07.56-W	.18
8000.00	.40	N 18.00-E	100.00	7995.65	94.37-N	12.21-W	95.16'-N 07.37-W	.32
8100.00	.70	N 59.00-E	100.00	8095.65	95.10-N	11.62-W	95.81'-N 06.97-W	.48
8200.00	1.50	N 79.00-E	100.00	8195.67	95.79-N	9.84-W	96.29'-N 05.87-W	.88
8300.00	1.40	N 67.00-E	100.00	8295.60	96.53-N	7.43-W	96.81'-N 04.40-W	.32
8400.00	2.30	N 76.00-E	100.00	8395.54	97.55-N	5.37-W	97.65'-N 02.56-W	.94
8500.00	1.90	N 82.00-E	100.00	8495.48	98.25-N	3.77-W	98.25'-N 00.45-W	.46
8600.00	1.50	N 82.00-E	100.00	8595.43	98.66-N	2.17-E	98.69'-N 01.26-E	.40
8700.00	1.80	S 56.00-E	100.00	8695.39	98.03-N	4.91-E	98.15'-N 02.87-E	1.22
8800.00	2.00	S 72.00-E	100.00	8795.34	96.58-N	7.88-E	96.90'-N 04.66-E	.56
8900.00	1.70	S 66.00-E	100.00	8895.28	95.42-N	10.89-E	96.04'-N 06.51-E	.36
9000.00	2.30	N 66.00-E	100.00	8995.22	95.42-N	14.28-E	96.49'-N 08.51-E	1.72
9100.00	2.50	N 58.00-E	100.00	9095.13	97.39-N	17.97-E	99.03'-N 10.46-E	.39
9200.00	2.90	N 70.00-E	100.00	9195.02	99.45-N	22.20-E	101.90'-N 12.50-E	.69
9300.00	2.40	N 65.00-E	100.00	9294.92	101.22-N	26.47-E	104.62'-N 14.66-E	.55
9400.00	2.50	N 60.00-E	100.00	9394.82	103.19-N	30.26-E	107.54'-N 16.34-E	.24
9500.00	2.40	N 51.00-E	100.00	9494.73	105.61-N	33.78-E	110.88'-N 17.74-E	.40
9600.00	2.00	N 56.00-E	100.00	9594.66	107.89-N	36.87-E	114.02'-N 18.86-E	.44
9700.00	1.80	N 59.00-E	100.00	9694.60	109.67-N	39.66-E	116.63'-N 19.80-E	.22
9800.00	2.20	N 59.00-E	100.00	9794.54	111.47-N	42.65-E	119.35'-N 20.94-E	.40
9900.00	1.80	N 63.00-E	100.00	9894.48	113.16-N	45.70-E	122.04'-N 21.99-E	.42

SANTE FE ENERGY

OSUDO STATE WELL NO: 1

WT-QQ6S

PAGE 5

00:40:49

00/00/00

MEASURED INCL. HOLE COURSE VERTICAL RECTANGULAR CLOSURE DUG-LEG
DEPTH ANGLE DIRECTION LENGTH DEPTH COORDINATES DISTANCE DIRECTION SEVERITY
FEET DEGS. FEET FEET N/S FEET E/W FEET DEGS. DG/100FT

10000.00	1.90	N 54.00 E	100.00	9994.43	114.85 N	48.45 E	124.65	N 22.87 E	.31
10100.00	2.30	N 59.00 E	100.00	10074.36	116.87 N	51.51 E	127.72	N 23.78 E	.44
10200.00	2.00	N 55.00 E	100.00	10194.29	118.91 N	54.65 E	130.87	N 24.68 E	.34
10300.00	2.00	N 46.00 E	100.00	10294.23	121.13 N	57.34 E	134.02	N 25.33 E	.31
10400.00	2.00	N 48.00 E	100.00	10394.17	123.51 N	59.90 E	137.27	N 25.87 E	.07
10500.00	1.80	N 44.00 E	100.00	10494.11	125.81 N	62.28 E	140.39	N 26.34 E	.24
10600.00	1.40	N 42.00 E	100.00	10594.08	127.86 N	64.19 E	143.06	N 26.66 E	.40
10700.00	1.10	N 66.00 E	100.00	10694.05	129.13 N	65.94 E	144.99	N 27.05 E	.60
10800.00	1.00	N 52.00 E	100.00	10794.03	130.07 N	67.50 E	146.54	N 27.43 E	.27
10900.00	1.00	N 53.00 E	100.00	10894.02	131.13 N	68.89 E	148.13	N 27.71 E	.02
10940.00	1.00	N 55.00 E	40.00	10934.70	131.54 N	69.45 E	148.75	N 27.83 E	.09



CLOSURE DISTANCE = 148.75 FEET.
CLOSURE DIRECTION = N 27.83 E

RECEIVED

JUN 04 1990

OCD
HOEBS OFFICE