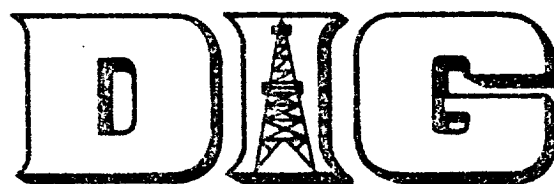
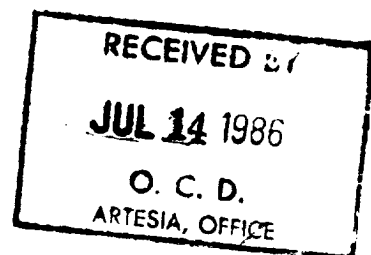


c/s P



5-25-88

SUB-SURFACE
DIRECTIONAL
SURVEY
REPORT



HNG OIL COMPANY
COMPANY
GULF FEDERAL NO. 5-1
WELL NAME
EDDY COUNTY, NEW MEXICO
STATE AND COUNTY

CERTIFIED REPORT

HNG OIL COMPANY

WELL #
GULF FEDERAL NO. 5-1

LOCATION
EDDY COUNTY, NEW MEXICO

DATE
5-12-88, 5-12-88

JOB TYPE
GYROSCOPIC MULTISHOT, MAGNETIC MULTISHOT

JOB #
GS-1752, MS-1751

SURVEYOR
ALAN HARBERT, ALAN HARBERT

DEPTHS
0'-10480', 10480'-12827'

DECL.
10 DEGREES EAST

ELEV.
0'

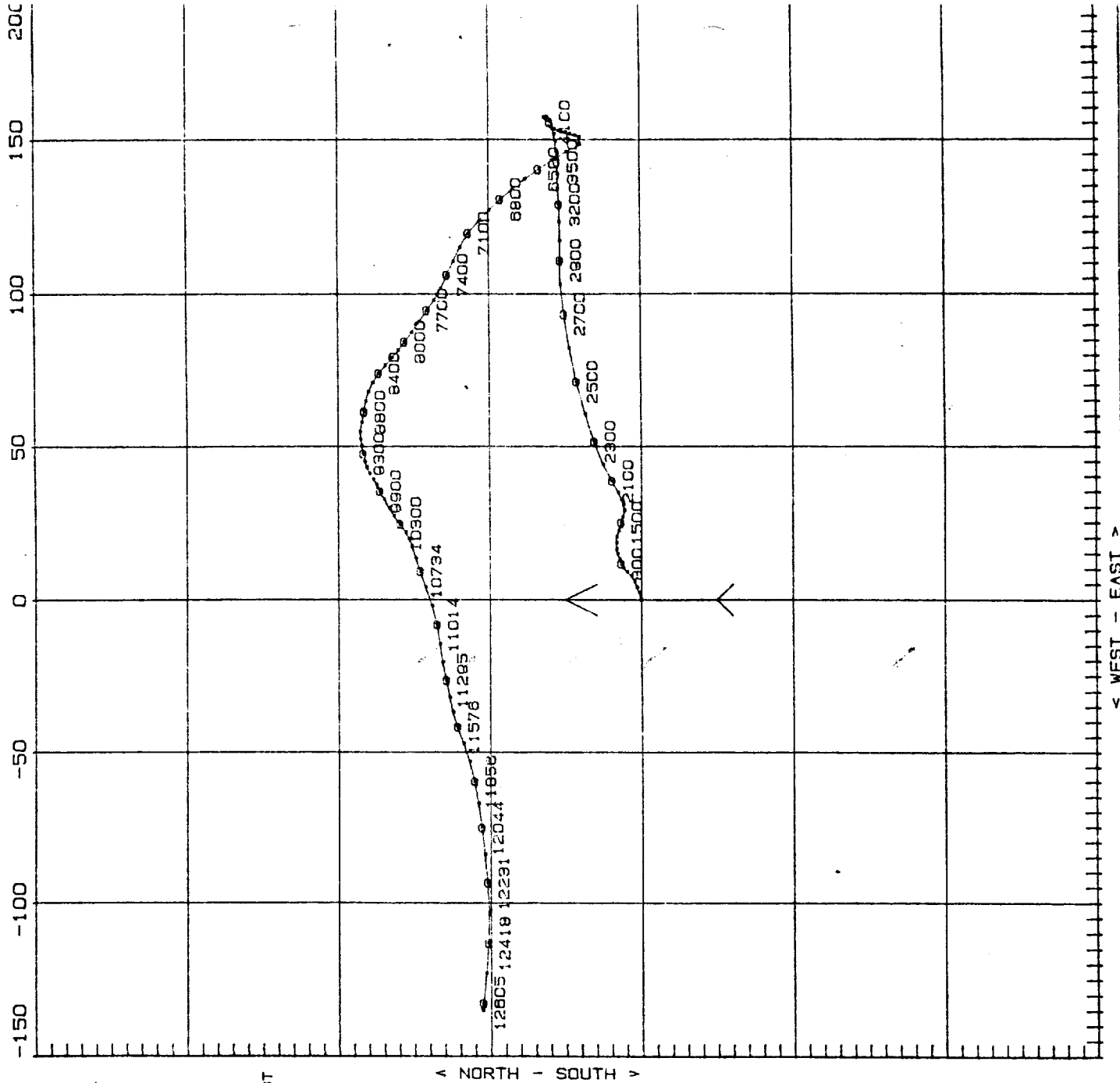
FILE #
WT-213S

FINAL STATION DATA:

MD. 12627.00
TVD. 12612.07
N/S 52.67
E/W -135.02

CLOSURE DISTANCE
144.93 FEET
CLOSURE DIRECTION
N 68.69 W

1 IN. = 50 FT.



CUSTOMER :HNG OIL COMPANY

WELL # :GULF FEDERAL NO.5-1

LOCATION :EDDY COUNTY, NEW MEXICO

DATE :5-12-86, 5-12-86

JOB TYPE :GYROSCOPIC MULTISHOT, MAGNETIC MULTISHOT

JOB # :GS-1752, MS-1751

SURVEYOR :ALAN HARBERT, ALAN HARBERT

DEPTHS :0'-10480', 10480'-12627'

DECL. :10 DEGREES EAST

ELEV. :0'

FILE # :WT-Z139

METHOD :RADIUS OF CURVATURE

SECTION :0

THIS SURVEY IS CORRECT TO THE
BEST OF MY KNOWLEDGE AND IS
SUPPORTED BY ACTUAL FIELD DATA.

DIG REPRESENTATIVE

FINAL STATION DATA!

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

12627.00	5.80	N 84.00 W	22.00	12612.07	52.67 N	135.02 W	144.93' N 68.69 W	.91
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ING OIL COMPANY
GULF FEDERAL NO.5-1
WT-213

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06/05/13

MEASURED INCL. HOLE COURSE VERTICAL R E D I A N G U L A R C L O S U R E DOG-LEG
DEPTH ANGLE DIRECTION LENGTH DEPTH DEPTH C O U R S E D I S T A N C E D I R E C T I O N S E V E R I T Y
FEET DEGS. FEET FEET FEET N/S FEET E/W DEGS. FEET DOG/100FT

0.00	0.00	S N 76.00 E	0.00	0.00	0.00	0.00	0.00	N 00.00 E	0.00
100.00	1.00	S N 76.00 E	100.00	99.99	0.00	0.00	0.00	N 76.00 E	1.00
200.00	1.00	S N 69.00 E	100.00	199.98	0.00	0.00	0.00	N 73.67 E	1.12
300.00	1.10	S N 69.00 E	100.00	299.96	0.00	0.00	0.00	N 71.74 E	1.10
400.00	1.30	S N 69.00 E	100.00	399.94	0.00	0.00	0.00	N 70.87 E	1.20
500.00	1.10	S N 47.00 E	100.00	499.92	0.00	0.00	0.00	N 67.77 E	1.50
600.00	1.10	S N 39.00 E	100.00	599.90	0.00	0.00	0.00	N 63.32 E	1.15
700.00	1.90	S N 50.00 E	100.00	699.89	0.00	0.00	0.00	N 60.64 E	1.28
800.00	1.90	S N 75.00 E	100.00	799.87	0.00	0.00	0.00	N 60.85 E	1.39
900.00	1.10	S N 70.00 E	100.00	899.86	0.00	0.00	0.00	N 62.17 E	1.22
1000.00	1.90	S N 60.00 E	100.00	999.84	0.00	0.00	0.00	N 62.45 E	1.26
1100.00	1.00	S S 85.00 E	100.00	1099.83	0.00	0.00	0.00	N 63.75 E	1.58
1200.00	1.20	S N 84.00 E	100.00	1199.81	0.00	0.00	0.00	N 66.11 E	1.29
1300.00	1.00	S S 74.00 E	100.00	1299.79	0.00	0.00	0.00	N 68.51 E	1.46
1400.00	1.60	S S 69.00 E	100.00	1399.77	0.00	0.00	0.00	N 72.01 E	1.61
1500.00	1.30	S S 78.00 E	100.00	1499.73	0.00	0.00	0.00	N 75.18 E	1.38
1600.00	1.10	S S 65.00 E	100.00	1599.71	0.00	0.00	0.00	N 77.55 E	1.34
1700.00	1.30	S S 88.00 E	100.00	1699.69	0.00	0.00	0.00	N 79.31 E	1.52
1800.00	1.00	S N 70.00 E	100.00	1799.67	0.00	0.00	0.00	N 79.42 E	1.53
1900.00	1.00	S N 67.00 E	100.00	1899.65	0.00	0.00	0.00	N 78.85 E	1.05
2000.00	1.90	S N 63.00 E	100.00	1999.62	0.00	0.00	0.00	N 77.88 E	1.91
2100.00	3.00	S N 59.00 E	100.00	2099.53	0.00	0.00	0.00	N 76.10 E	1.11
2200.00	4.20	S N 65.00 E	100.00	2199.33	0.00	0.00	0.00	N 74.19 E	1.26
2300.00	5.60	S N 73.00 E	100.00	2299.01	0.00	0.00	0.00	N 73.42 E	1.02
2400.00	6.10	S N 72.00 E	100.00	2398.54	0.00	0.00	0.00	N 73.28 E	1.10

ANG OIL COMPANY
GULF FEDERAL NO. 5-1
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MEASURED INCL. ANGLE DEPTH FEET	HOLE DIRECTION DEGS.	COURSE LENGTH FEET	VERTICAL BLPH. FEET	TRUE N/S	CURDINATES	U L O S U R E	DISTANCE FEET	DIRECTION DEGS.	DOG-LEG SEVERITY
2500.00	6.39	N 77.00 E	100.00	2997.95	21.19 N	71.36 E	74.44' N 72.46 E		.59
2500.00	6.80	N 81.00 E	100.00	2997.30	23.37 N	82.56 E	85.89' N 74.19 E		.60
2700.00	6.20	N 81.00 E	100.00	2696.65	25.14 N	93.74 E	97.05' N 74.99 E		.60
2800.00	5.00	N 86.00 E	100.00	2796.16	26.25 N	103.43 E	106.71' N 75.76 E		1.29
2900.00	3.90	S 87.00 E	100.00	2095.87	25.31 N	111.10 E	114.25' N 76.67 E		1.22
3000.00	3.50	N 86.00 E	100.00	2995.66	26.37 N	117.63 E	120.55' N 77.37 E		.60
3100.00	3.40	S 88.00 E	100.00	3095.48	26.47 N	123.65 E	126.45' N 77.91 E		.62
3200.00	3.20	N 86.00 E	100.00	3195.32	26.57 N	129.40 E	132.10' N 78.39 E		.40
3300.00	2.90	N 86.00 E	100.00	3295.17	26.95 N	134.71 E	137.58' N 78.69 E		.39
3400.00	2.40	S 87.00 E	100.00	3395.07	26.99 N	139.63 E	141.92' N 79.04 E		.59
3500.00	2.00	N 82.00 E	100.00	3494.99	27.15 N	143.15 E	145.71' N 79.26 E		.58
3600.00	1.90	S 82.00 E	100.00	3594.94	27.30 N	146.55 E	149.08' N 79.42 E		.62
3700.00	1.60	N 75.00 E	100.00	3694.89	27.75 N	149.57 E	152.12' N 79.50 E		.57
3800.00	1.10	N 82.00 E	100.00	3794.86	28.08 N	151.90 E	154.47' N 79.53 E		.58
3900.00	1.00	N 81.00 E	100.00	3894.84	28.55 N	153.60 E	156.26' N 79.47 E		.50
4000.00	.50	N 80.00 E	100.00	3994.83	29.15 N	154.92 E	157.54' N 79.34 E		.50
4100.00	.70	N 45.00 E	100.00	4094.83	29.73 N	155.68 E	158.49' N 79.17 E		.29
4200.00	.20	N 73.00 E	100.00	4194.55	30.13 N	156.35 E	159.23' N 79.09 E		.53
4300.00	.50	N 49.00 E	100.00	4294.82	30.43 N	156.88 E	159.80' N 79.03 E		.33
4400.10	0.00	X X X X X	100.00	4394.82	30.71 N	157.21 E	160.18' N 78.95 E		.50
4500.00	.20	N 61.00 E	100.00	4494.82	30.79 N	157.36 E	160.35' N 78.93 E		.20
4600.00	.20	N 87.00 W	100.00	4594.82	31.04 N	157.30 E	160.33' N 78.84 E		.39
4700.00	.10	N 41.60 E	100.00	4694.82	31.23 N	157.22 E	160.29' N 78.76 E		.28
4800.00	.20	N 87.00 W	100.00	4794.82	31.43 N	157.13 E	160.25' N 78.69 E		.27
4900.10	.10	S 10.00 E	100.00	4894.82	31.26 N	156.98 E	160.06' N 78.74 E		.24

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[illegible]

MEASURED	INCL.	HOLE	COURSE	VERTICAL	TRUE	RECTANGULAR	CLOSURE	DUG-LEG	
									DEPTH
5000.00	1.40	S 37.00 W	100.00	4994.82	30.04 N	156.80	159.87' N 78.83 E	.31	
5100.00	1.20	S 46.00 W	100.00	5094.82	30.45 N	156.54	159.47' N 78.99 E	.28	
5200.00	.90	S 72.00 W	100.00	5194.81	30.01 N	155.80	158.65' N 79.10 E	.63	
5300.00	.40	S 60.00 W	100.00	5294.81	29.58 N	154.84	157.64' N 79.18 E	.42	
5400.00	.50	S 38.00 W	100.00	5394.81	29.07 N	154.25	156.97' N 79.33 E	.26	
5500.00	1.00	S 36.00 W	100.00	5494.80	28.02 N	153.46	156.00' N 79.65 E	.50	
5600.00	.40	S 16.00 W	100.00	5594.79	26.93 N	152.93	155.28' N 80.01 E	.64	
5700.00	1.60	S 11.00 W	100.00	5694.78	25.74 N	152.65	154.88' N 80.43 E	.60	
5800.00	.70	S 08.00 W	100.00	5794.77	24.28 N	152.40	154.32' N 80.95 E	.30	
5900.00	1.10	S 21.00 W	100.00	5894.76	22.76 N	152.01	153.78' N 81.48 E	.45	
6000.00	.90	S 11.00 W	100.00	5994.74	21.09 N	151.53	152.99' N 82.08 E	.25	
6100.00	.80	S 24.00 W	100.00	6094.73	19.67 N	151.08	152.66' N 82.50 E	.22	
6200.00	2.70	N 26.00 W	100.00	6194.68	19.63 N	148.64	149.93' N 82.48 E	3.27	
6300.00	3.10	N 29.00 W	100.00	6294.55	24.12 N	146.31	148.28' N 80.64 E	.43	
6400.00	3.10	N 31.00 W	100.00	6394.40	28.80 N	143.60	146.46' N 78.66 E	.11	
6500.00	3.10	N 33.00 W	100.00	6494.26	33.39 N	140.74	144.64' N 76.65 E	.11	
6600.00	3.10	N 35.00 W	100.00	6594.11	37.87 N	137.71	142.83' N 74.62 E	.11	
6700.00	3.00	N 39.00 W	100.00	6693.97	42.12 N	134.51	140.95' N 72.51 E	.24	
6800.00	3.00	N 43.00 W	100.00	6793.83	46.07 N	131.08	138.94' N 70.64 E	.21	
6900.00	2.90	N 45.00 W	100.00	6893.70	49.77 N	127.51	136.67' N 68.68 E	.14	
7000.00	2.90	N 47.00 W	100.00	6993.57	53.29 N	123.97	134.84' N 66.72 E	.10	
7100.00	3.10	N 51.00 W	100.00	7093.44	56.72 N	119.92	132.65' N 64.67 E	.29	
7200.00	2.90	N 66.00 W	100.00	7193.30	59.44 N	115.47	129.87' N 62.76 E	.81	
7300.00	2.80	N 62.00 W	100.00	7293.18	61.62 N	111.00	126.96' N 60.96 E	.22	
7400.00	3.00	N 69.00 W	100.00	7393.05	63.72 N	106.40	124.02' N 59.08 E	.41	

HMS HIL COMPANY
GULF FEDERAL NO. 5-1
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MEASURED & INCL.	HOLE	COURSE	VERTICAL	TRUE	RECTANGULAR	C L O S U R E	DUG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	COURTAIN	DISTANCE	SEVERITY
FEET	DEGS.	DEGS.	FEET	FEET	N/S	FEET	DEGS.
7500.00	2.50	N 60.00 W	100.00	7492.93	60.82 N	101.99 E	121.29' N 52.16 E
7600.00	2.40	N 57.00 W	100.00	7592.82	68.10 N	98.20 E	117.56' N 55.28 E
7700.00	2.40	N 51.00 W	100.00	7692.74	76.56 N	94.89 E	118.25' N 53.36 E
7800.00	2.50	N 50.00 W	100.00	7792.65	72.98 N	91.37 E	116.94' N 51.30 E
7900.00	2.50	N 51.00 W	100.00	7892.56	75.45 N	87.78 E	115.75' N 47.32 E
8000.00	2.20	N 53.00 W	100.00	7992.47	77.97 N	84.50 E	115.01' N 47.32 E
8100.00	1.70	N 55.00 W	100.00	8092.42	79.97 N	81.79 E	114.39' N 45.65 E
8200.00	1.90	N 47.00 W	100.00	8192.37	81.95 N	79.36 E	114.07' N 44.08 E
8300.00	2.00	N 48.00 W	100.00	8292.31	84.25 N	76.85 E	114.03' N 42.37 E
8400.00	2.10	N 54.00 W	100.00	8392.24	86.50 N	74.07 E	113.88' N 40.57 E
8500.00	2.00	N 63.00 W	100.00	8492.18	88.36 N	71.02 E	113.37' N 38.79 E
8600.00	1.90	N 66.00 W	100.00	8592.12	89.83 N	67.95 E	112.63' N 37.11 E
8700.00	1.90	N 80.00 W	100.00	8692.07	90.79 N	64.79 E	111.54' N 35.61 E
8800.00	2.00	N 84.00 W	100.00	8792.01	91.27 N	61.42 E	110.01' N 33.94 E
8900.00	1.90	N 71.00 W	100.00	8891.95	92.00 N	58.10 E	108.81' N 32.27 E
9000.00	1.60	N 87.00 W	100.00	8991.90	92.58 N	55.12 E	107.75' N 30.77 E
9100.00	1.20	S 83.00 W	100.00	9091.87	92.50 N	52.68 E	106.45' N 29.66 E
9200.00	1.60	S 76.00 W	100.00	9191.84	92.05 N	50.28 E	104.89' N 28.64 E
9300.00	1.50	S 87.00 W	100.00	9291.81	91.65 N	47.61 E	103.28' N 27.45 E
9400.00	1.40	S 70.00 W	100.00	9391.76	91.15 N	45.13 E	101.71' N 26.34 E
9500.00	1.00	S 74.00 W	100.00	9491.75	90.51 N	43.14 E	100.26' N 25.47 E
9600.00	1.50	S 56.00 W	100.00	9591.73	89.59 N	41.17 E	98.60' N 24.68 E
9700.00	1.20	S 56.00 W	100.00	9691.70	88.27 N	39.22 E	96.59' N 23.96 E
9800.00	1.20	S 65.00 W	100.00	9791.68	87.24 N	37.40 E	94.92' N 23.21 E
9900.00	1.60	S 64.00 W	100.00	9891.65	86.19 N	35.20 E	93.10' N 22.21 E

ING OIL COMPANY
GULF FEDERAL NO. 5-1
WI-213

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MEASURED	INCL.	HOLE	COURSE	VERTICAL	REL TANGULAR	C L O S U R E	DUG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	C O U R S E	D I S T A N C E	S E V E R I T Y
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	DEGS.
10000.00	1.80	S 59.00 W	100.00	9991.51	84.77 N	32.59 E	21.03 E
10100.00	1.90	S 61.00 W	100.00	10091.55	83.10 N	29.79 E	19.71 E
10200.00	1.70	S 56.00 W	100.00	10191.50	81.52 N	27.12 E	18.40 E
10300.00	2.00	S 52.00 W	100.00	10291.45	79.62 N	24.50 E	17.11 E
10400.00	1.70	S 56.00 W	100.00	10391.40	77.72 N	21.67 E	15.73 E
10480.00	1.90	S 68.00 W	80.00	10471.36	76.55 N	19.68 E	14.40 E
GYROSCOPIC MULTISHOT FROM 0'-10480' MD, MAGNETIC MULTISHOT FROM 10480'-12627' MD.							
10546.00	2.20	S 70.00 W	66.00	10537.32	75.70 N	17.47 E	13.00 E
10640.00	2.70	S 72.00 W	94.00	10631.23	74.39 N	13.88 E	10.42 E
10734.00	3.00	S 71.00 W	94.00	10725.12	72.91 N	9.24 E	07.23 E
10827.00	3.50	S 71.00 W	93.00	10817.95	71.11 N	4.03 E	03.24 E
10921.00	4.00	S 71.00 W	94.00	10911.73	69.03 N	2.02 W	01.67 W
11014.00	3.90	S 79.00 W	93.00	11004.51	67.37 N	8.20 W	06.94 W
11108.00	3.20	S 85.00 W	94.00	11098.30	66.50 N	14.45 W	12.26 W
11201.00	3.70	S 78.00 W	93.00	11191.10	65.50 N	23.46 W	17.32 W
11295.00	3.70	S 78.00 W	94.00	11284.90	64.34 N	26.37 W	22.30 W
11389.00	3.10	S 80.00 W	94.00	11378.74	63.27 N	31.86 W	26.73 W
11482.00	3.00	S 76.00 W	93.00	11471.61	62.24 N	36.70 W	30.53 W
11576.00	3.40	S 70.00 W	94.00	11565.46	60.71 N	41.72 W	34.50 W
11669.00	3.70	S 70.00 W	93.00	11658.28	58.74 N	47.13 W	38.74 W
11763.00	4.10	S 74.00 W	94.00	11752.06	56.77 N	53.21 W	43.15 W
11856.00	4.40	S 79.00 W	93.00	11844.81	55.16 N	59.71 W	47.36 W
11950.00	4.70	S 82.00 W	94.00	11938.51	53.93 N	67.26 W	51.20 W
12044.00	5.20	S 82.00 W	94.00	12032.16	52.81 N	75.30 W	54.95 W
12137.00	5.60	S 85.00 W	93.00	12124.75	51.81 N	83.99 W	58.33 W
12231.00	6.00	S 85.00 W	94.00	12218.27	50.93 N	93.45 W	61.37 W
12325.00							
12419.00							
12513.00							
12607.00							
12701.00							
12795.00							
12889.00							
12983.00							
13077.00							
13171.00							
13265.00							
13359.00							
13453.00							
13547.00							
13641.00							
13735.00							
13829.00							
13923.00							
14017.00							
14111.00							
14205.00							
14299.00							
14393.00							
14487.00							
14581.00							
14675.00							
14769.00							
14863.00							
14957.00							
15051.00							
15145.00							
15239.00							
15333.00							
15427.00							
15521.00							
15615.00							
15709.00							
15803.00							
15897.00							
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16179.00							
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16367.00							
16461.00							
16555.00							
16649.00							
16743.00							
16837.00							
16931.00							
17025.00							
17119.00							
17213.00							
17307.00							
17401.00							
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17589.00							
17683.00							
17777.00							
17871.00							
17965.00							
18059.00							
18153.00							
18247.00							
18341.00							
18435.00							
18529.00							
18623.00							
18717.00							
18811.00							
18905.00							
19000.00							

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05:20:57
86/05/13

CLOSURE DISTANCE = 144.93 FEET.
CLOSURE DIRECTION = N 68.69 W