

AMF/SDI
MIDLAND, TEXAS

JOB NUMBER: 132-MF-484-041

DATE: 4/30/84

INRLN SURVEY

BY

THE MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC D M	BEARING D M	COORDINATES LATITUDE	DEPARTURE	D-LEG PER 100
500.0	499.99	-1.79	2.76	00-38	S 29-37 W	2.40 S	1.37 W	0.13
1000.0	999.98	-3.34	3.93	00-16	S 81-45 W	4.97 S	3.88 W	0.10
1500.0	1499.83	7.06	11.34	02-20	N 22-55 W	4.24 N	9.00 W	0.46
2000.0	1999.48	25.69	18.76	01-58	N 29-33 W	21.08 N	17.19 W	0.09
2500.0	2499.17	42.99	17.67	02-05	N 33-16 W	36.14 N	26.41 W	0.04
3000.0	2998.94	57.49	14.83	01-19	N 30-21 W	48.70 N	34.30 W	0.15
3500.0	3498.78	69.89	12.58	01-34	N 29-13 W	59.62 N	40.54 W	0.05
4000.0	3998.61	82.90	13.31	01-29	N 05-43 W	72.02 N	44.52 W	0.13
4500.0	4498.46	95.12	12.43	01-22	N 24-16 W	83.90 N	47.61 W	0.09
5000.0	4998.38	103.53	9.02	00-40	N 17-19 E	92.24 N	49.26 W	0.20
5500.0	5498.28	110.35	9.74	01-34	N 28-42 E	101.02 N	45.11 W	0.18
6000.0	5998.02	125.04	17.01	02-20	N 20-45 W	116.53 N	45.43 W	0.35
6195.0	6192.68	136.36	11.34	04-17	N 15-42 W	127.33 N	48.84 W	0.98

APF/SOI
MIDLAND, TEXAS

JOB NUMBER: 132-N-584-

DATE: 4/28/84

INRIJN SURVEY

BY

THE MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEG.	INC D M	BEARING D M	COORDINATES LATITUDE	DEPARTURE	D-LEG PER 1
6200.0	6197.51	138.92	0.14	08-45	N 29-59 E	129.60 N	50.11 W	2.44
6204.0	6201.41	139.40	0.87	16-15	N 39-00 E	130.30 N	49.60 W	1.93
6205.0	6202.36	139.57	0.31	19-30	N 38-00 E	130.54 N	49.41 W	3.26
6206.0	6203.30	139.72	0.35	22-00	N 48-00 E	130.80 N	49.17 W	4.33
6207.0	6204.22	139.91	0.40	25-00	N 37-00 E	131.09 N	48.91 W	5.30
6208.0	6205.11	140.16	0.45	28-00	N 35-00 E	131.45 N	48.64 W	3.13
6209.0	6205.98	140.44	0.49	30-30	N 34-00 E	131.85 N	48.37 W	2.55
6210.0	6206.83	140.76	0.53	33-00	N 33-00 E	132.29 N	48.08 W	2.55
6211.0	6207.66	141.09	0.56	35-30	N 33-00 E	132.77 N	47.77 W	2.50
6212.0	6208.46	141.46	0.60	38-45	N 32-00 E	133.27 N	47.45 W	3.31
6213.0	6209.23	141.85	0.64	40-45	N 34-00 E	133.81 N	47.10 W	2.37
6214.0	6209.97	142.23	0.67	43-00	N 35-00 E	134.36 N	46.72 W	2.35
6215.0	6210.69	142.63	0.70	45-30	N 35-00 E	*134.93 N	46.32 W	2.50
6216.0	6211.37	143.04	0.73	47-45	N 37-00 E	135.52 N	45.89 W	2.68
6217.0	6212.04	143.57	0.76	49-30	N 11-00 E	136.20 N	45.59 W	19.51
6218.0	6212.69	144.10	0.78	51-30	N 40-00 E	136.88 N	45.27 W	22.37
6219.0	6213.30	144.49	0.79	53-15	N 42-00 E	137.47 N	44.75 W	2.36
6220.0	6213.88	144.85	0.81	55-00	N 45-00 E	138.06 N	44.19 W	3.00
6221.0	6214.44	145.18	0.83	57-00	N 47-00 E	138.64 N	43.59 W	2.60
6222.0	6214.97	145.47	0.85	59-00	N 54-00 E	139.18 N	42.94 W	6.26
6223.0	6215.46	145.72	0.86	60-30	N 52-00 E	139.70 N	42.25 W	2.29
6224.0	6215.96	145.95	0.88	62-15	N 58-00 E	140.20 N	41.53 W	5.55

ANT/SOL
MIDLAND, TEXAS

JOB NUMBER: 132-M-584-

DATE: 4/28/84

INRUN SURVEY

BY

THE MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC D M	BEARING D M	COORDINATES LATITUDE	DEPARTURE	D-LEG PER 1
6225.0	6216.41	146.12	0.89	64-00	N 60-00 E	140.66 N	40.76 W	2.50
6226.0	6216.83	146.30	0.90	65-30	N 57-00 E	141.13 N	39.99 W	3.10
6227.0	6217.23	146.38	0.92	68-15	N 72-00 E	141.52 N	39.17 W	14.06
6228.0	6217.59	146.46	0.94	69-30	N 59-00 E	141.91 N	38.32 W	12.19
6229.0	6217.93	146.59	0.94	70-45	N 65-00 E	142.35 N	37.49 W	5.78
6230.0	6218.24	146.66	0.95	73-15	N 66-00 E	142.75 N	36.62 W	2.67
6231.0	6218.51	146.70	0.96	75-00	N 69-00 E	143.11 N	35.74 W	3.37
6232.0	6218.76	146.69	0.97	77-00	N 72-00 E	143.44 N	34.82 W	3.55
6233.0	6218.96	146.66	0.98	79-30	N 72-00 E	143.74 N	33.89 W	2.50
6234.0	6219.12	146.61	0.99	81-30	N 74-00 E	144.03 N	32.95 W	2.81
6235.0	6219.26	146.53	0.99	82-30	N 75-00 E	144.29 N	31.99 W	1.41

THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF

6235.0 FEET EQUALS 147.80 FEET AT N 12-30 W

SCIENTIFIC DRI NG CONTROLS SURVEY FIELD REPORT

PAGE 01

JOB NO. 132-MS-584-047

for

DATE: May 2, 1984

WELL NO. Empire ABO "J-27"

Arco Oil & Gas

SURVEYOR: Troy Duncan

LOCATION: Eddy, County, NM

method of calculation

SURVEY TYPE: Magnetic Multishot

LEASE:

Minimum Curvature

PROPOSAL: N20W

MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEV.	INC.		BEARING		COORDINATES				DOG-LEG PER 100'	
				D	M	D	M	LATITUDE	N/S	DEPARTURE	E/W		
6235 . 00	6219 . 26	146 . 53	. 99	82	- 30	N	75 - 0	E	144.29	N	31.99	W	1.41
6236 . 00	6219 . 37	146 . 44		85	- 00	N	75 - 0	E	144.55	N	31.03	W	2.50
6237 . 00	6219 . 45	146 . 35		86	- 00	N	76 - 0	E	144.80	N	30.06	W	1.41
6238 . 00	6219 . 51	146.23		86	- 15	N	78 - 0	E	145.02	N	29.09	W	2.01
6239 . 00	6219 . 57	146 . 09		87	- 00	N	78 - 0	E	145.23	N	28.12	W	0.75
6240 . 00	6219 . 63	145 . 94		87	- 00	N	79 - 0	E	145.43	N	27.14	W	0.99
6241 . 00	6219.68	145 . 79		86	- 45	N	78 - 0	E	145.63	N	26.16	W	1.02
6242 .	6219 . 73	145 . 83		87	- 30	N	78 - 0	E	145.83	N	25.18	W	.75
6243 .	6219 . 77	145 . 51		87	- 30	N	78 - 0	E	146.04	N	24.21	W	0.00
6244 .	6219 . 82	145 . 37		87	- 15	N	78 - 0	E	146.25	N	23.23	W	.25
6245 .	6219 . 87	145 . 24		87	- 30	N	78 -	E	146.46	N	22.25	W	.25
6246 .	6219 . 91	145 . 09		88	- 00	N	79 -	E	146.66	N	21.27	W	1.11
6247 .	6219 . 94	144 . 93		88	- 15	N	79 -	E	146.85	N	20.29	W	.25
6248 .	6219 . 97	144 . 78		88	- 30	N	79 -	E	147.04	N	19.31	W	.25
6249 .	6220 . 00	144 . 63		88	- 00	N	78 -	E	147.24	N	18.33	W	1.11
6250 .	6220 . 03	144 . 49		87	- 45	N	78 -	E	147.45	N	17.35	W	.25
6251 .	6220 . 07	144 . 35		88	- 30	N	78 -	E	147.65	N	16.37	W	.75
6252 .	6220 . 10	144 . 21		88	- 15	N	78 -	E	147.86	N	15.40	W	.25
6253 .	6220 . 13	144 . 06		88	- 15	N	79 -	E	148.06	N	14.42	W	.99
6254 .	6220 . 15	143.91		88	- 30	N	78 -	E	148.26	N	13.44	W	1.03

THE HORIZONTAL DISPLACEMENT AT THE DEPTH

OF EQUALS AT

WHITE - CUSTOMER FILE
YELLOW - DISTRICT FILE
PINK - DIVISION

SCIENTIFIC DRILLING CONTROLS SURVEY FIELD REPORT

JOB NO. _____

for

DATE: _____

PAGE _____ OF _____

WELL NO.: _____

SURVEYOR: _____

LOCATION: _____

method of calculation

SURVEY TYPE: _____

LEASE: _____

PROPOSAL: _____

MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEV.	INC.		BEARING		COORDINATES				DOG-LEG PER 100'
				D	M	D	M	LATITUDE	N/S	DEPARTURE	E/W	
6255	6220.18	143.78		89	-	N	78	148.47	N	12.46	W	.50
6256	6220.19	143.63		89	-	N	79	148.67	N	11.48	W	.99
6258	6220.22	143.33		89	-	N	78	149.07	N	9.52	W	.55
6259	6220.23	143.19		89	-	N	78	149.27	N	8.54	W	.50
6260	6220.24	143.05		89	-	N	78	149.48	N	7.56	W	.75
6261	6220.25	142.91		89	-	N	78	149.69	N	6.59	W	.25
6262	6220.26	142.78		89	-	N	78	149.90	N	5.61	W	.25
6263	6220.26	142.64		90	-	N	78	150.11	N	4.63	W	.50
6264	6220.25	142.50		90	-	N	78	150.31	N	3.65	W	.50
6265	6220.24	142.36		90	-	N	78	150.52	N	2.67	W	.50
6266	6220.23	142.22		91	-	N	78	150.73	N	1.70	W	.75
6267	6220.21	142.08		91	-	N	78	150.94	N	.72	W	.25
6268	6220.19	141.94		91	-	N	78	151.14	N	.26	E	.00
6269	6220.16	141.80		91	-	N	78	151.35	N	1.24	E	.25
6270	6220.14	141.66		91	-	N	78	151.56	N	2.22	E	.50
6271	6220.12	141.52		91	-	N	78	151.77	N	3.19	E	.50
6272	6220.10	141.38		91	-	N	78	151.98	N	4.17	E	.25
6273	6220.07	141.24		91	-	N	78	152.18	N	5.15	E	.00
6274	6220.05	141.11		91	-	N	78	152.39	N	6.13	E	.50
6275	6220.02	140.96		91	-	N	79	152.59	N	7.11	E	1.03

THE HORIZONTAL DISPLACEMENT AT THE DEPTH

OF _____ EQUALS _____ AT _____

WHITE - CUSTOMER FILE
YELLOW - DISTRICT FILE
PINK - DIVISION

SCIENTIFIC DRILLING CONTROLS SURVEY FIELD REPORT

JOB NO. _____

for

DATE: _____

WELL NO. _____

SURVEYOR: _____

LOCATION: _____

method of calculation

SURVEY TYPE: _____

LEASE: _____

PROPOSAL: _____

MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEV.	INC.		BEARING		COORDINATES				DOG-LEG PER 100'
				D	M	D	M	LATITUDE	N/S	DEPARTURE	E/W	
6276	6219.99	140.81		92	-	N	78	152.79	N	8.09	E	1.11
6277	6219.95	140.67		92	-	N	78	153.00	N	9.06	E	.00
6278	6219.92	140.53		91	- 15	N	78	153.21	N	10.04	E	.75
6279	6219.90	140.39		91	- 30	N	78	153.41	N	11.02	E	.25
6280	6219.88	140.25		91	- 15	N	78	153.62	N	12.00	E	.25
6281	6219.86	140.11		91	- 15	N	78	153.83	N	12.98	E	.00
6282	6219.83	139.98		91	- 30	N	78	154.04	N	13.95	E	.25
6283	6219.80	139.84		92	- 15	N	78	154.24	N	14.93	E	.75
6284	6219.76	139.70		91	- 45	N	78	154.45	N	15.91	E	.50
6285	6219.73	139.56		92	-	N	78	154.66	N	16.89	E	.25
6290	6219.51	138.99		93	- 00	N	75	155.83	N	21.75	E	.63
6295	6219.25	138.51		93	- 00	N	76	157.08	N	26.58	E	.19
6300	6218.99	137.99		93	- 00	N	76	158.28	N	31.43	E	.00
6305	6218.73	137.47		93	- 00	N	76	159.49	N	36.27	E	.00
6310	6218.44	136.95		93	- 30	N	76	160.70	N	41.11	E	.10
6315	6218.13	136.42		93	- 45	N	76	161.91	N	45.96	E	.05
6320	6217.82	135.90		93	- 15	N	76	163.11	N	50.80	E	.10
6325	6217.53	135.42		93	- 30	N	75	164.36	N	55.63	E	.20
6330	6217.10	134.95		94	- 00	N	76	165.61	N	60.46	E	.22
6335	6216.88	134.43		93	- 15	N	76	166.82	N	65.30	E	.15

THE HORIZONTAL DISPLACEMENT AT THE DEPTH

WHITE - CUSTOMER FILE
YELLOW - DISTRICT FILE

SCIENTIFIC DRILLING CONTROLS SURVEY FIELD REPORT

PAGE _____ OF _____

for

DATE: _____

JOB NO. _____

SURVEYOR: _____

WELL NO. _____

method of calculation

SURVEY TYPE: _____

LOCATION: _____

PROPOSAL: _____

PLEASE: _____

MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEV.	INC.		BEARING		COORDINATES				DOG-LEG PER 100'	
				D	M	D	M	LATITUDE	N/S	DEPARTURE	E/W		
6340	6216.58	133.95		93	- 45	N	75	E	168.07	N	70.13	E	.22
6345	6216.24	133.47		94	- 00	N	76	E	169.32	N	74.96	E	.20
6350	6215.87	132.99		94	- 30	N	75	E	170.57	N	79.79	E	.22
6355	6215.48	132.51		94	- 30	N	76	E	171.82	N	84.62	E	.19
6360	6215.06	131.99		95	- 00	N	76	E	173.02	N	89.45	E	.10
6365	6214.63	131.47		95	- 00	N	76	E	174.23	N	94.28	E	.00
6370	6214.19	130.96		95	- 00	N	73	E	175.44	N	99.11	E	.00
6375	6213.74	130.35		95	- 30	N	78	E	176.56	N	103.96	E	.41
6380	6213.28	129.70		95	- 00	N	77	E	177.63	N	108.83	E	.22
6385	6212.81	129.09		95	- 45	N	77	E	178.75	N	113.68	E	.15
6390	6212.34	128.53		95	- 00	N	76	E	179.91	N	118.52	E	.24
6395	6211.90	127.97		95	- 15	N	77	E	181.08	N	123.36	E	.20
6400	6211.44	127.36		95	- 15	N	77	E	182.20	N	128.11	E	.00
6405	6210.99	126.75		95	- 00	N	77	E	183.32	N	133.06	E	.05
6410	6216.51	126.15		96	- 00	N	77	E	184.44	N	137.91	E	.20
6415	6210.03	125.54		95	- 00	N	77	E	185.56	N	142.76	E	.20
6420	6209.58	124.89		95	- 30	N	78	E	186.63	N	147.62	E	.22
6425	6209.05	124.20		96	- 30	N	78	E	187.67	N	152.49	E	.20
6430	6208.49	123.51		96	- 30	N	78	E	188.70	N	157.34	E	.00
6433	6208.15	123.09		96	- 30	N	78	E	189.32	N	160.26	E	.00

THE HORIZONTAL DISPLACEMENT AT THE DEPTH

WHITE CUSTOMER FILE