

MAGNETIC DIRECTIONAL SURVEY
FOR

```
*****
**AMOCO PRODUCTION CO.**
*****
```

WELL NAME: SOUTH POBBS UNIT #220 4 17 18

SURVEY DATE: 05/26/87

METHOD OF CALCULATION: THE RADIUS OF CURVATURE

COMMENTS: 3787'-4479' SURVEYED BY EASTMAN

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

 COMPANY REPRESENTATIVE
 *

SCIENTIFIC DRILLING INT'L.
MIDLAND, TEXAS

JOB NUMBER: 132M058731

DATE: 05/26/87

INRUN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC. D M	BEARING D M	COORDINATES LATITUDE DEPARTURE	D-LEG PER 100
74.00	74.00	.13	.16	0-15 N 31- 0 E	.14 N	.08 E	.34
102.00	102.00	.18	.06	0- 0 N / A	.19 N	.11 E	.89
163.00	163.00	.27	.13	0-15 N 45- 0 E	.29 N	.21 E	.41
224.00	224.00	.48	.27	0-15 N 18- 0 E	.51 N	.35 E	.19
285.00	285.00	.60	.13	0- 0 N / A	.64 N	.39 E	.41
346.00	346.00	.76	.27	0-30 N 49- 0 E	.81 N	.59 E	.82
407.00	407.00	.83	.40	0-15 S 82- 0 E	.92 N	.96 E	.63
468.00	468.00	.62	.27	0-15 S 42- 0 W	.72 N	1.03 E	.72
529.00	529.99	.26	.40	0-30 S 19- 0 E	.35 N	.96 E	.72
590.00	589.99	.00	.27	0- 0 N / A	.09 N	1.04 E	.82
651.00	650.99	.20	.27	0-30 S 46- 0 E	.09 S	1.24 E	.82
712.00	711.99	.40	.40	0-15 S 85- 0 E	.25 S	1.59 E	.86
773.00	772.99	.44	.40	0-30 N 86- 0 E	.26 S	1.99 E	.42
834.00	833.99	.32	.53	0-30 N 57- 0 E	.09 S	2.49 E	.41
895.00	894.99	.02	.53	0-30 N 34- 0 E	.28 N	2.87 E	.33

DATE: 05/26/87

67

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC D M	BEARING		COORDINATES		0-LEG PER 100
					D	M	LATITUDE	DEPARTURE	
956.00	955.99	.51	.53	0-30 N	2- 0 W		.78 N	3.01 E	.51
1017.00	1016.98	1.15	.67	0-45 N	34- 0 W		1.41 N	2.81 E	.69
1078.00	1077.97	1.92	.80	0-45 N	13- 0 E		2.17 N	2.67 E	.98
1139.00	1138.97	2.69	.80	0-45 N	7- 0 E		2.96 N	2.80 E	.13
1200.00	1199.97	3.34	.67	0-30 N	12- 0 E		3.62 N	2.91 E	.42
1261.00	1260.96	3.84	.53	0-30 N	19- 0 E		4.13 N	3.06 E	.10
1322.00	1321.96	4.24	.53	0-30 N	49- 0 E		4.57 N	3.35 E	.42
1383.00	1382.96	4.68	.53	0-30 N	9- 0 E		5.02 N	3.60 E	.56
1413.00	1412.96	4.95	.26	0-30 N	11- 0 E		5.28 N	3.65 E	.06
1449.00	1448.96	5.23	.31	0-30 N	11- 0 E		5.59 N	3.71 E	.00
1517.00	1516.95	6.10	.89	1- 0 N	00-00 E		6.47 N	3.79 E	.76
1578.00	1577.94	6.98	.93	0-45 N	26- 0 E		7.37 N	4.00 E	.76
1639.00	1638.94	7.69	.80	0-45 N	19- 0 E		8.11 N	4.31 E	.15
1700.00	1699.93	8.03	1.20	1-30 N	40- 0 W		9.24 N	4.10 E	2.11
1761.00	1760.90	10.56	1.86	2- 0 N	10- 0 W		10.91 N	3.32 E	1.68

RECEIVED

SCIENTIFIC DRILLING INT'L.
MIDLAND, TEXAS

JOB NUMBER: 132M058731

DATE: 05/26/87

JNRUN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC D M	BEARING D M	COORDINATES LATITUDE DEPARTURE	D-LEG +R 100
1822.00	1821.79	14.00	3.46	4-30 N	12- 0 W	14.30 N	2.55 E
1883.00	1882.48	20.08	6.11	7- 0 N	11- 0 W	20.29 N	1.44 E
1944.00	1942.98	27.88	7.83	7-45 N	9- 0 W	28.00 N	.08 E
2005.00	2003.24	37.26	9.41	10- 0 N	11- 0 W	37.27 N	1.55 W
2066.00	2062.98	49.51	12.29	13-15 N	8- 0 W	49.39 N	3.58 W
2127.00	2122.20	64.12	14.63	14-30 N	8- 0 W	63.87 N	5.62 W
2188.00	2181.05	80.15	16.04	16- 0 N	7- 0 W	79.78 N	7.71 W
2249.00	2239.46	97.72	17.58	17-30 N	7- 0 W	97.23 N	9.85 W
2310.00	2297.48	116.57	18.85	18-30 N	5- 0 W	115.97 N	11.82 W
2371.00	2354.88	137.18	20.61	21- 0 N	6- 0 W	136.49 N	13.80 W
2432.00	2411.59	159.66	22.48	22-15 N	5- 0 W	158.87 N	15.95 W
2493.00	2468.10	182.64	22.97	22- 0 N	5- 0 W	181.75 N	17.96 W
2554.00	2524.56	205.49	22.85	22- 0 N	6- 0 W	204.50 N	20.15 W
2615.00	2581.41	227.94	22.36	21- 0 N	6- 0 W	226.73 N	22.48 W
2676.00	2638.46	249.45	21.61	20-30 N	5- 0 W	248.24 N	24.55 W

SCIENTIFIC DRILLING INT'L.
MIDLAND, TEXAS

JOB NUMBER: 132M058731

DATE: 05/26/87

INRUN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	COURSE DEV.	INC D M	BEARING D M	COORDINATES LATITUDE DEPARTURE	D-LEG PER 100
2737.00	2695.59	270.82	21.36	20-30	N 6- 0 W	267.51 N 26.00 W	.57
2798.00	2752.82	291.93	21.11	20- 0	N 6- 0 W	290.51 N 28.81 W	.82
2859.00	2810.23	312.54	20.61	19-30	N 3- 0 W	311.05 N 30.43 W	1.85
2920.00	2867.69	333.00	20.49	19-45	N 2- 0 W	331.52 N 31.32 W	.69
2981.00	2925.06	353.72	20.74	20- 0	N 3- 0 W	352.24 N 32.22 W	.69
3042.00	2982.19	375.05	21.36	21- 0	N 2- 0 W	373.58 N 33.16 W	1.74
3103.00	3039.05	397.13	22.11	21-30	N 2- 0 W	395.68 N 33.93 W	.82
3164.00	3095.75	419.58	22.48	21-45	N 3- 0 W	418.14 N 34.91 W	.73
3225.00	3152.36	442.29	22.73	22- 0	N 3- 0 W	440.83 N 36.10 W	.41
3286.00	3208.82	465.37	23.10	22-30	N 3- 0 W	463.90 N 37.31 W	.82
3347.00	3265.17	488.69	23.34	22-30	N 2- 0 W	487.22 N 38.32 W	.63
3408.00	3321.53	512.00	23.34	22-30	N 2- 0 W	510.55 N 39.14 W	.00
3469.00	3377.89	535.32	23.34	22-30	N 3- 0 W	533.87 N 40.16 W	.63
3530.00	3434.14	558.89	23.59	23- 0	N 3- 0 W	557.43 N 41.39 W	.82
3591.00	3490.29	582.70	23.83	23- 0	N 3- 0 W	581.23 N 42.64 W	.00

SCIENTIFIC DRILLING INT'L.
MIDLAND, TEXAS

JOB NUMBER: 132M058731

DATE: 05/26/87

INRUN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. GCT	CORRE DEV	INC D M	BEARING D M	COORDINATES LATITUDE DEPARTURE	D-LEG PER 100
3652.00	3546.44	606.52	23.83	23- 0 N	3- 0 W	605.03 N 43.69 W	.00
3713.00	3602.59	630.34	23.83	23- 0 N	3- 0 W	628.83 N 45.13 W	.00
3753.00	3639.41	645.95	15.63	23- 0 N	2- 0 W	644.45 N 45.82 W	.98
3787.00	3670.68	659.27	13.35	23-15 N	1- 0 W	657.80 N 46.17 W	1.27
3849.00	3727.86	683.19	23.98	22-15 N	1- 0 W	681.77 N 46.58 W	1.61
3912.00	3786.22	706.85	23.73	22- 0 N	1- 0 W	705.49 N 47.00 W	.40
3975.00	3844.78	729.99	23.22	21-15 N	00-00 E	728.71 N 47.20 W	1.33
4038.00	3903.55	752.60	22.71	21- 0 N	00-00 E	751.42 N 47.20 W	.40
4101.00	3962.46	774.81	22.32	20-30 N	1- 0 E	773.73 N 47.01 W	.97
4163.00	4020.49	796.52	21.84	20-45 N	1- 0 E	795.57 N 46.63 W	.40
4226.00	4079.50	818.45	22.06	20-15 N	1- 0 E	817.63 N 46.24 W	.79
4289.00	4138.66	840.02	21.68	20- 0 N	00-00 E	839.30 N 46.05 W	.68
4352.00	4197.81	861.58	21.68	20-15 N	1- 0 E	860.98 N 45.86 W	.69
4415.00	4256.96	883.15	21.68	20- 0 N	00-00 E	882.65 N 45.67 W	.68

5/26/87
5/26/87
5/26/87

SCIENTIFIC DRILLING INT'L.
MIDLAND, TEXAS

JOB NUMBER: 132M056731

DATE: 05/26/87

INRIIN SURVEY

BY

THE RADIUS OF CURVATURE

MEAS.	VERT.	VERT.	COURSE	INC	BEARING	COORDINATES	D-LEG
DEPTH	DEPTH	SECT.	DIR.	D M	D	LATITUDE DEPARTURE	PTH 100
4479.00	4317.10	204.25	21.89	20-0	N 00-00 E	904.54 N	43.67 W

THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF

4479.00 FEET EQUALS 905.69 FEET AT N 2-53 W.

SCIENTIFIC DRILLING CONTROLS

SURVEY CERTIFICATION

COMPANY Amoco Production Company WELL NAME & NO. South Hoobs Unit #220
DATE of CERTIFICATION June 10, 1987 LOCATION Lea County, New Mexico
TYPE of SURVEY Magnetic Multishot FROM 00' TO 3787'
JOB NUMBER 132M058731 TICKET NUMBER _____

THE ABOVE SURVEY WAS PERFORMED BY ME ON June 01, 1987
THE RESULTS OBTAINED FROM ACTUAL FIELD DATA CONFORM TO ESTABLISHED
STANDARDS AND ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

Deag Meedy
SURVEYOR

FILM TRANSFER RECEIPT

I HEREBY ACKNOWLEDGE RECEIPT OF ORIGINAL FILM OBTAINED ON THE ABOVE
SURVEY.

DATE RECEIVED 19____

COMPANY REPRESENTATIVE

SURVEY CONFIRMATION

I HAVE EXAMINED THE ABOVE SURVEY AND FOUND THE DATA AND RESULTS
ACCEPTABLE ACCORDING TO CURRENT SCIENTIFIC DRILLING CONTROLS STANDARDS.

Deag Meedy
S.D.C. REPRESENTATIVE

Carolyn Kettle 8-28-87
Natary for Lator Co.
Com. Exp. 10-87



EASTMAN CHRISTENSEN

2103 Market, Midland, Texas 79703, Phone: (915) 694-9517, (915) 563-0511

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, TIM STEPHENS, in the employ of Eastman Christensen, Inc. did on the days of JUNE 4, 19 87 thru JUNE 4, 19 87 conduct or supervise the taking of a MAGNETIC MULTI-SHOT survey by the method of magnetic orientation from a depth of 3753 feet to 4479 feet, with recordings of inclination and direction being obtained at approximate intervals of 63 feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SOUTH HOBBS UNIT 220, LEA County, State of NEW MEXICO, in the _____ field.

This data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Eastman Christensen, Inc. and is true and correct to the best of my knowledge.

Tim Stephens
Directional Supervisor/Surveyor

The data for this survey has been examined by me and conforms to principles and procedures set forth by Eastman Christensen, Inc.

Benny H. Bryant

Before me, the undersigned authority, on this day personally appeared TIM STEPHENS, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement of facts therein recited.

Subscribed and sworn to before me on this _____ day of _____, 19____

Notary Public in and for the
County of Midland, Texas
My commission expires _____