



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

AMOCO PRODUCTION COMPANY
COMPANY

SOUTH HOBBS UNIT NO. 210 - D 34-18-38
WELL NAME

LEA COUNTY, NEW MEXICO
LOCATION

<u>JOB NUMBER</u>	<u>TYPE OF SURVEY</u>	<u>DATE</u>
430-0076	MAGNETIC MULTI SHOT SURVEY	4-23-86
430-0076	MAGNETIC MULTI SHOT SURVEY	4-28-86
132M586010	MAGNETIC MULTI SHOT SURVEY	5-02-86

SURVEY BY
STEVE COVINGTON
GEORGE MOODY

OFFICE
WEST TEXAS
AMF SCIENTIFIC DRILLING INTERNATIONAL

EASTMAN WHIPSTOCK, INC.

RECORD OF SURVEY

FOR

* OPERATOR : ANGELO R. COLEMAN, INC. *
* WELL NAME : SOUTH HURON UNIT NO. 1 *
* LOCATION : LEA COUNTY, NEW MEXICO *
* JOB NUMBER : *
* RIG : *
* DECLINATION : 9.00 E *
* * *
* PLANE OF VERTICAL SECTION *
* * *
* DIRECTION : S 8 46 E *
* * *

EW DISTRICT : WEST TEXAS DISTRICT

AMOCO PRODUCTION COMPANY
SOUTH HOBBS UNIT NO. 210
LEA COUNTY, NEW MEXICO

DATE PRINTED : 05-MAY-86
OUR REF. NO. : S01100.4AM
JOB NUMBER :

PAGE NO. 2

PBHL : S 8 46 E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
0.00	0 0	N 0	0.00	0.00	0.00	0.00 N 0.00 E	0.00
50.00	0 15	S 58	50.00	50.00	0.04	0.06 S 0.09 W	0.50
110.00	0 15	S 53	60.00	110.00	0.26	0.28 S 0.10 W	0.69
169.00	0 45	N 70	59.00	169.00	0.41	0.35 S 0.39 E	1.10
229.00	1 0	N 56	60.00	228.99	0.12	0.06 N 1.20 E	0.55
289.00	1 15	N 31	60.00	288.98	-0.59	0.91 N 2.01 E	0.91
349.00	1 30	N 1	60.00	348.96	-1.89	2.28 N 2.37 E	1.33
409.00	1 30	N 5	60.00	408.94	-3.44	3.85 N 2.43 E	0.26
469.00	1 30	N 17	60.00	468.92	-4.91	5.39 N 2.73 E	0.52
529.00	1 30	N 15	60.00	528.90	-6.34	6.90 N 3.16 E	0.09
589.00	1 45	N 8	60.00	588.93	-7.88	8.57 N 3.50 E	0.53
649.00	1 30	N 21	60.00	648.83	-9.49	0.21 N 3.92 E	0.74
709.00	1 45	N 19	60.00	708.83	-10.89	1.81 N 4.51 E	0.43
769.00	2 15	N 19	60.00	768.73	-12.29	13.79 N 5.19 E	0.83
829.00	1 45	N 1	60.00	828.75	-14.81	15.84 N 5.55 E	1.33
889.00	1 45	N 22	60.00	888.73	-16.52	17.63 N 5.91 E	1.06
949.00	2 0	N 18	60.00	948.69	-18.24	19.47 N 6.59 E	0.47
1009.00	2 0	N 28	60.00	1008.66	-20.02	21.40 N 7.40 E	0.58
1069.00	1 30	N 36	60.00	1068.63	-21.41	22.95 N 8.27 E	0.92
1128.00	1 45	N 48	59.00	1127.60	-22.46	24.19 N 9.49 E	0.71
1188.00	1 45	N 58	60.00	1187.58	-23.33	25.30 N 10.95 E	0.51
1248.00	1 30	N 71	60.00	1247.55	-23.82	26.03 N 12.48 E	0.74
1308.00	1 30	N 71	60.00	1307.53	-24.10	26.54 N 13.97 E	0.00
1368.00	1 45	N 78	60.00	1367.51	-24.30	26.99 N 15.41 E	0.53
1428.00	1 15	N 81	60.00	1427.49	-24.35	27.28 N 17.15 E	0.84
1488.00	1 15	N 75	60.00	1487.47	-24.42	27.55 N 18.43 E	0.22
1548.00	1 30	S 84	60.00	1547.46	-24.31	27.66 N 19.86 E	0.93
1608.00	1 45	N 86	60.00	1607.43	-24.02	27.63 N 21.56 E	0.63
1640.00	1 15	N 87	32.00	1639.42	-23.95	27.68 N 22.39 E	1.56
1681.00	1 15	N 69	41.00	1680.41	-24.00	27.87 N 23.26 E	0.95

CONTINUED ON NEXT PAGE ...

AMOCO PRODUCTION COMPANY
SOUTH HOBBS UNIT NO. 210
LEA COUNTY, NEW MEXICO

DATE PRINTED : 05-MAY-86
OUR REF. NO. : S01100.4AM
JOB NUMBER :

PAGE NO. 3

PBHL : S 8 46 E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
1742.00	0 45	N 58	61.00	1741.40	24.32	28.34 N 24.22 E	0.87
1804.00	1 15	S 22	62.00	1803.39	-23.89	28.05 N 25.12 E	2.52
1866.00	3 30	S 9	62.00	1865.33	-21.35	25.58 N 25.80 E	3.71
1927.00	6 15	S 2	61.00	1926.11	-16.18	20.42 N 26.30 E	4.60
1989.00	8 15	S 7	62.00	1987.61	-8.38	12.63 N 26.91 E	3.38
2051.00	10 45	S 7	62.00	2048.75	1.85	2.47 N 28.16 E	4.03
2112.00	12 30	S 6	61.00	2108.50	14.13	9.74 S 29.55 E	2.89
2174.00	14 0	S 8	62.00	2168.85	28.34	23.85 S 31.28 E	2.53
2236.00	15 45	S 8	62.00	2228.77	44.25	39.61 S 33.50 E	2.82
2297.00	16 15	S 10	61.00	2287.40	61.06	56.21 S 36.13 E	1.22
2359.00	17 0	S 9	62.00	2348.38	77.05	73.71 S 39.06 E	1.29
2421.00	17 15	S 8	62.00	2406.06	97.05	1.76 S 41.76 E	0.62
2482.00	17 15	S 9	61.00	2441.82	113.19	9.65 S 44.43 E	0.49
2544.00	16 45	S 9	62.00	2503.60	123.14	27.56 S 47.27 E	0.81
2606.00	16 45	S 9	62.00	2562.98	151.14	145.20 S 50.06 E	0.00
2668.00	16 45	S 9	62.00	2642.35	169.01	162.85 S 52.86 E	0.00
2729.00	16 45	S 7	61.00	2700.76	186.58	180.26 S 55.30 E	0.94
2791.00	16 15	S 7	62.00	2760.21	204.18	197.74 S 57.45 E	0.81
2853.00	16 15	S 9	62.00	2819.73	221.53	214.92 S 59.86 E	0.90
2914.00	16 15	S 7	61.00	2878.29	238.60	231.82 S 62.24 E	0.92
2976.00	16 15	S 7	62.00	2937.82	255.94	249.04 S 64.35 E	0.00
3038.00	16 30	S 7	62.00	2997.30	273.41	266.39 S 66.48 E	0.40
3099.00	15 30	S 8	61.00	3055.94	290.22	283.06 S 68.68 E	1.70
3161.00	15 45	S 6	62.00	3115.65	306.91	299.63 S 70.71 E	0.96
3169.00	15 30	S 7	8.00	3123.35	309.06	301.77 S 70.96 E	4.59
3201.00	15 45	S 7	32.00	3154.17	317.68	310.33 S 72.01 E	0.78
3264.00	15 15	S 0	63.00	3214.88	334.43	327.12 S 73.03 E	3.07
3328.00	15 45	S 5	64.00	3276.55	351.43	344.20 S 73.78 E	2.23
3391.00	15 15	S 3	63.00	3337.26	368.20	361.00 S 74.95 E	1.16
3455.00	15 15	S 8	64.00	3399.00	385.00	377.75 S 76.57 E	2.05

CONTINUED ON NEXT PAGE ...

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SOUTH HOBBS UNIT NO. 210
LEA COUNTY, NEW MEXICO

DATE PRINTED : 05-MAY-86
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PBWL : S 8 46 E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
3518.00	15 30	S 4 0 E	63.00	3459.75	401.69	394.36 S 78.31 E	1.73
3582.00	15 0	S 4 0 E	64.00	3521.50	418.46	411.15 S 79.49 E	0.78
3645.00	15 0	S 7 0 E	63.00	3582.35	434.74	427.38 S 81.05 E	1.23
3709.00	15 0	S 7 0 E	64.00	3644.17	451.30	443.82 S 83.07 E	0.00
3772.00	15 0	S 10 0 E	63.00	3705.02	467.60	459.94 S 85.48 E	1.23
3836.00	15 15	S 0 0 W	64.00	3766.81	484.24	476.56 S 86.93 E	4.09
3899.00	14 0	S 6 0 E	63.00	3827.76	500.06	492.44 S 87.76 E	3.12
3963.00	12 30	S 5 0 E	64.00	3890.06	514.70	507.04 S 89.17 E	2.37
4026.00	11 30	S 3 0 E	63.00	3951.68	527.76	520.10 S 90.08 E	1.72
4090.00	10 0	S 9 0 E	64.00	4014.55	539.67	531.97 S 91.33 E	2.92
4153.00	9 15	S 1 0 W	63.00	4077.38	550.17	542.46 S 92.06 E	2.90
4217.00	9 0	S 0 0 W	64.00	4139.86	560.18	552.61 S 91.98 E	0.46
4280.00	8 0	S 5 0 W	63.00	4202.47	569.71	561.91 S 91.57 E	1.97
4344.00	8 15	S 3 0 W	64.00	4265.93	579.33	570.94 S 90.94 E	0.59
4367.00	8 15	S 5 0 W	23.00	4288.29	581.35	574.23 S 90.71 E	1.25
4380.00	8 15	S 5 0 W	13.00	4301.15	583.16	576.09 S 90.55 E	0.00

CLOSURE - DISTANCE : 583.16

REPORT UNITS : Feet

DIRECTION : S 8 56 E

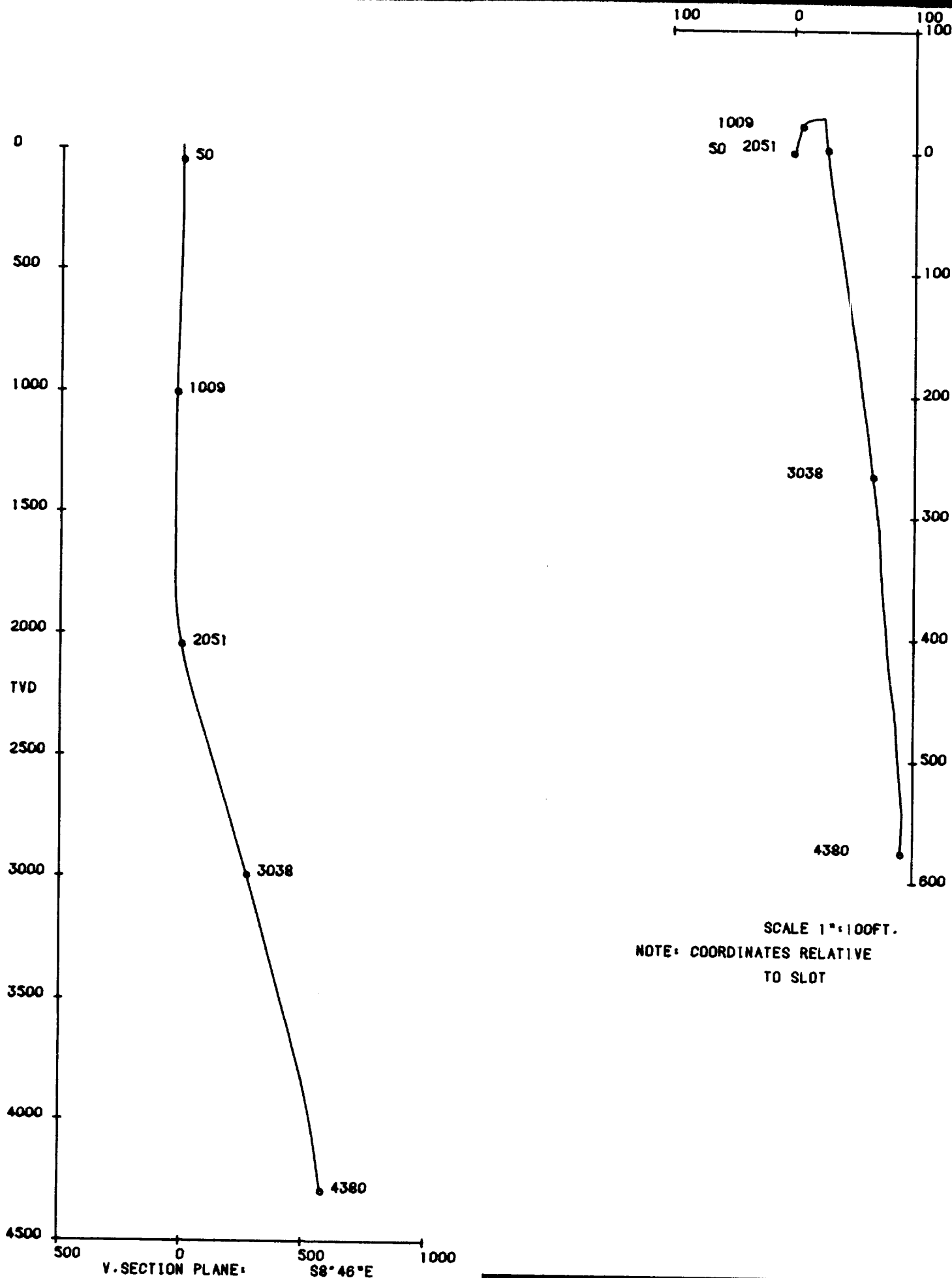
SURVEY CALCULATION METHOD : Radius of curvature

SURVEY RUN INFORMATION

=====

MAGNETIC MULTI-SHOT SURVEY	430-0076
SURVEYOR: STEVE COVINGTON	(0'-1640')
MAGNETIC MULTI SHOT SURVEY	430-0076
SURVEYOR: STEVE COVINGTON	(1640'-3169')
MAGNETIC MULTI-SHOT SURVEY	132M586010
SURVEYOR: G. MOODY	(3169'-4380')

T.D. SURVEY BY AMF SCIENTIFIC DRILLING INTERNATIONAL.



AMOCO PRODUCTION COMPANY
SOUTH HOBBS UNIT NO. 210
LEA COUNTY, NEW MEXICO

WELL: SHU NO. 210

SLOT: 1



(915) 563-0511

P.O. Box 6341/Terminal Station/Midland, TX 79711-0341

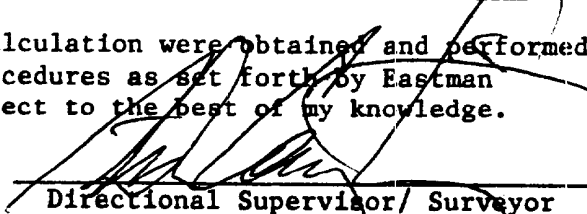
SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, STEVE COVINGTON, in the employ of Eastman Whipstock, Inc., did on the days of APRIL 23, 19 86 thru APRIL 23, 19 86 conduct or supervise the taking of a MAGNETIC MULTI SHOT survey by the method of magnetic orientation from a depth of 0' feet to 1640' feet, with recordings of inclination and direction being obtained at approximate intervals of 60' feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SOUTH HORBS UNIT #210, IEA 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 Whipstock, Inc. and is true and correct to the best of my knowledge.



Directional Supervisor/ Surveyor

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

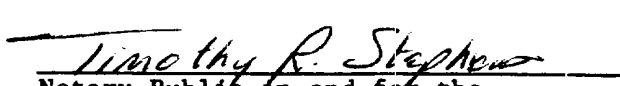


Before me, the undersigned authority, on this day personally appeared STEVE COVINGTON, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement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

Subscribed and sworn to before me on this 28 day of April, 19 86



Timothy R. Stephens
Notary Public, State of Texas
My Commission Expires 4-1-89



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



(915) 563-0511

P.O. Box 6341/Terminal Station/Midland, TX 79711-0341

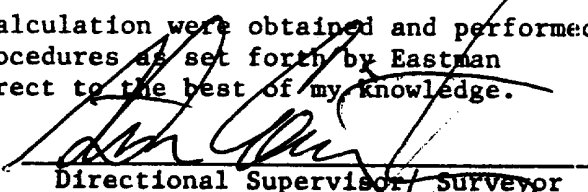
SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, STEVE COVINGTON, in the employ of Eastman Whipstock, Inc., did on the days of APRIL 28, 19 86 thru APRIL 28, 19 86 conduct or supervise the taking of a MAGNETIC MULTI-SHOT survey by the method of magnetic orientation from a depth of 1640' feet to 3169' feet, with recordings of inclination and direction being obtained at approximate intervals of 60' feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SOUTH HOBBS UNIT #210, 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 Whipstock, Inc. and is true and correct to the best of my knowledge.



Directional Supervisor/ Surveyor

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

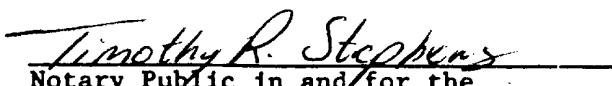


Before me, the undersigned authority, on this day personally appeared STEVE COVINGTON, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement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

Subscribed and sworn to before me on this 28 day of April, 19 86



Timothy R. Stephens
Notary Public, State of Texas
My Commission Expires 4-1-89



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

SDI

FOR

AMOCO PRODUCTION CO.

JOB NUMBER: 132M586010

WELL NAME: S.H.U. #210

LOCATION: LEA COUNTY, N.M.

SURVEY DATE: 05/02/86

SURVEY ENGINEER: G. MOODY

TIE-IN INFORMATION: AT 3169.00 FEET
FROM EASTMAN WHIPSTOCK

METHOD OF CALCULATION: THE RADIUS OF CURVATURE ~~AND~~

VERTICAL SECTION: CALCULATED USING ~~PROVIDED~~ ~~SCIP~~ 8-46 E

COMMENTS: TIE IN SURVEY ~~AND~~ Drilling International
0'-3169' SURVEY BY EASTMAN WHIPSTOCK

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

[Signature]

***** COMPANY REPRESENTATIVE *****

NEW MEXICO OIL CONSERVATION COMMISSION WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-32
Effective 1-1-85

All distances must be from the outer boundaries of the Section

Operator AMOCO PRODUCTION COMPANY			Lease S.H.G.S.A.U.		Well No. 210
Unit Letter D	Section 34	Township 18 SOUTH	Range 38 EAST	County LEA	

Actual Footage Location of Well:

721

feet from the **NORTH**

line and

569

feet from the

WEST

line

Ground Level Elev.
3635.9'

Producing Formation
Grayburg-San Andres

Pool
Hobbs Grayburg San Andres

Dedicated Acreage:

40

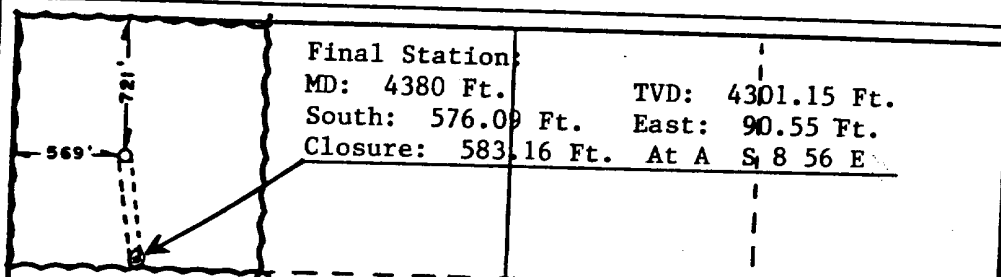
Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



Final Station:

MD: 4380 Ft.

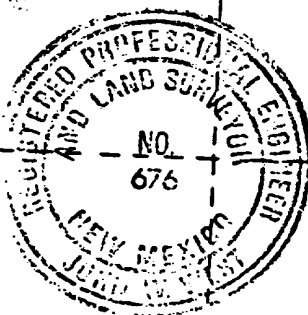
TVD: 4301.15 Ft.

South: 576.09 Ft.

East: 90.55 Ft.

Closure: 583.16 Ft. At A S 8 56 E

NOTE: THIS WELL TO BE DIRECTIONALLY DRILLED.
BOTTOM HOLE LOCATION WILL BE 1310 FEET
F.N.L. & 660 FEET F.W.L.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name

Barbara A. Otwell

Position

Senior Administrative Analyst

Company

Amoco Production Company

Date

March 7, 1986

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

FEBRUARY 13, 1986

Registered Professional Engineer
and/or Land Surveyor

John W. West

Certificate No. JOHN W. WEST, 676

RONALD J. EIDSON, 3239

