[redacted]

P-W

ARKLA EXPLORATION CO. NMA #46 9-10
SW/NE Sec 12-T16N-R22E, Navajo Co.

County NAVAJO

Area

Lease No.

Well Name ARKLA EXP CO. #46 V NMA

Location SW NE Sec 12 Twp 16N Range 22E Footage 1841 FNL - 1884 FEL

Elev 5425 Gr 5432 KB Spud Date 7-31-65 Completed Abandon 8-9-65 Total Depth 1247

Contractor Sojourner

Drilled by Rotary
Cable Tool

Casing Size	Depth	Cement

Production Horizon

Initial Production

REMARKS

Elec Logs GRN-7 Survey Report

Applic. to Plug ___ Plugging Record ___ Completion Report ___

Sample Log
Sample Descript.
Sample Set ✓
Core Analysis
DSTs

Water well accepted by

Bond Co. & No.

Bond Am't $ Cancelled Date Organization Report

Filing Receipt Dated Well Book ___ Plat Book ___

API No. 02-017-00255 Loc. Plat ___ Dedication

Permit Number None Date Issued

File 9-10

DETAILED CORE DESCRIPTION

WELL NAME: AEC - #46 NMA

LOCATION:

ELEVATION:

CORE WS #1

995-960.6 (5.6) 23" SALT 5% SH-1" ANHY PTNG 957-4.2" SALT 10% SH AND ANHY.

0.6-5.1 (5.7) 11" SALT 5% SH-11" SALT 10% SH-8" SALT VLT ORNG-22" SALT 10% SH AND ANHY-15" SALT CLEAR V LGE XLS.

5.1-971.8 (5.8) 6" SALT CLEAR-10" SALT 10% SH AND ANHY 21" SALT SLT ORNG TRS SH AND ANHY? ORNG BLEBS-31" SALT WHT-TRS ANHY?-ORNG BLEBS.

1.8-7.3 (5.3) 5" SALT WTH TRS ANHY AND SH-5" SALT 30% ANHY AND SH PTNGS. 26" SALT CLEAR-VLG XLS 3" SALT 10% SH-29" SH 10% SALT.

7.3-981.1 (4') 43" SH 10% SALT 5" SALT 20% SH.

CORR-
981.1=983-988.9 (5.10) 11" SALT 20% SH 4" SALT 40% SH 13" SH SALT INCLS 18" SALT 40% SH-19" SALT 20% SH 5" SALT CLEAR 5% SH.

8.9-994.2 (5.6) 16" SALT CLEAR 3" SALT 20% SH 12" SH 10% SALT 6" SALT CLEAR-10% SH 24" SH 20% SALT 5" SALT 30%.

4.2-9.10 (5.8) 9" SALT 30% SH-TRS GRN SH AND ANHY?-57" SALT CLEAR-V LGE XLS-2" SALT 20% RED AND TRS SH.

9.10-1005.5 (5.6) 5" SALT 30% RED AND GRN SH 9" SALT 10% SH 20" SALT 5% SH AND ANHY-10" SALT CLEAR 14" SALT 20% SH 5" SALT CLEAR CSE XLN 3" RED SH.

05.5-09.6 (4') 7" SALT 10% SH AND ANHY ? 19" SALT 5% SH AND ANHY (ZONE ANHY? BANDS-A1006-A-B6"-B-C 8"-C-D 6"-D-E 3") 2" SALT 10% ANHY 4" ANHY-5" SH-4" ANHY-5" SH-4" SALT 20% SH-2" SALT 10% SH 5" SH 10% SALT ANHY? @ 1011.10 MAY REPRESENT BISCUIT.

6" CORR.
09-14.8 (5.7) 32" SALT 50% SH RED TRS GRN 35" SH 10% SALT GRN SH AND SALT PTNG @ 1041.2.

14.8-20.1 (5.6) 18" SH 10% SALT-TRN SH INCL.-2" ANHY 5" SH 10% SALT 27" SALT 40% SH-8" SH 20% SALT-6" SALT 40% SH.

20.1-25.9 (5.9) 6" SALT 50% SH 23" SALT 30% SH 16" SALT 15% SH 24" SALT 10% SH.

25.9-31.4 (5.9) 4" SALT 10% SH 5" SALT 20% SH 60" SALT CLEAR 10% SH.

1" CORR.
931.1-1037 (5.2) 8" SALT 10% SH 27" SALT CLEAR V CSE XLN-SH INCL 10" SALT 20% SH PTNG AND INCL .2" ANHY 15" SH W/SALT INLS.

DO NOT REMOVE FROM FILE

9-10

AEC - #46 NMA CONTINUED

37-42.1	(5.6) 2" SH W/SALT INCLS-16" SALT 20% SH-3" SH-13" SALT 20% SH-15" SALT 40% SH 9" SALT CLEAR TRS SH 8" SALT 10% SH PTNG AND INCLS.
42.1-47.8	(5.9) 6" SALT 10% SH 22" SALT CLEAR CSE XLN ANHY? BANDS.8" ANHY (PUERCO CHIQUITA) 21" SALT CLEAR TO VLT ORNG W/ANHY? BANDS AND INCLS. 4" SALT 20% SH 4" SALT 30% SH 4" SH.
47.8-53.4	(5.9) 6" SH 30% SALT 1" SALT 10% GRN SH 20" SALT VLT ORNG TRS SH. -35" SALT 20% SH-7" SALT 10% SH.
53.4-59.1	(5.8) 31" SALT TRS SH-ANHY? BANDS 6" ANHY PTYPE 7" SALT 20% SH 16" SALT CLEAR VLT ORNG 5½ SALT 30% SH 2½" SALT CLEAR.

DO NOT REMOVE FROM FILE

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WELL NAME: AEC - #46 NMA

LOCATION:

ELEVATION:

0-10'	100% PURP SH & SLT.
10-20'	100% AA AA.
20-30'	30% AA, 70% WHT MF CGL.
30-40'	100% WHT MF CGL W/CHERT ORNG.
40-50'	20% RED SH, 80%AA AA AA.
50-60'	100% WHT MF CGL.
60-70'	90% RED SH, 10% SLT.
70-80'	90% AA, AA.
80-90'	100% AA, CHERT.
90-00'	70% AA, 30% VF RED & GRN SD.
100-10'	100% VF RED & GRN SD.
10-20'	80% RED SH CHERT, 20% VF RED & GRN SD.
20-30'	100% AA.
30-40'	30% AA, 70% RED & GRN SD.
40-50'	20% AA, 80% AA AA TR CGL.
50-60'	20% AA, 60% AA AA, 20% AA.
60-70'	80% AA, 20% AA AA.
70-80'	100% AA.
80-90'	100% AA.
90-00'	70% RED SH, 20% GRN SH, 10% RED & GRN SD.
200-10'	70% AA, 10% RED & GRN SD, 20% GYP.
10-20'	80% AA, 10% AA AA, 10% AA.
20-30'	60% AA, 40% AA AA.
30-40'	85% AA, 10% AA AA, 5% GYP.
40-50'	85% AA, 10% AA AA, 5% AA.
50-60'	80% AA, 20% GYP.

DO NOT REMOVE FROM FILE

DO NOT REMOVE FROM FILE

#9-10

6

60-70'	90% RED SH, 10% GYP.
70-80'	80% AA, 20% AA.
80-90'	75% AA, 25% AA.
90-00'	70% AA, 30% AA.
300-10'	100% VF RED BR.
10-20'	80% RED SH, 20% AA.
20-30'	90% AA, 10% AA.
30-40'	90% AA, 10% AA.
40-50'	50% AA & SLT, 50% AA.
50-60'	50% AA AA, 50% LS.
60-70'	100% WHT MF SD.
70-80'	80% AA AA, 20% GYP.
80-90'	75% AA AA, 25% GYP.
90-00'	100% AA AA.
400-10'	100% WHT MF SD.
10-20'	AA TO 830'.
830-40'	90% LT RED BR MF, 10% RED SH.
40-50'	70% AA, 30% AA & SLT.
50-60'	60% AA, 30% AA AA, 10% LS.
60-70'	50% AA, 50% SLT.
70-80'	30% AA, 60% AA, 10% LS.
80-90'	50% ANHY, 50% SLT.
90-00'	20% AA, 80% RED SH & SLT.
900-10'	80% AA, 20% AA AA.
10-20'	90% AA, 10% SLT.
20-30'	70% AA, 30% RED SH.
30-40'	20% AA, 80% AA AND SLT.
40-50'	100% AA.
50-55'	CORED 955-1061.
1060-70'	100% SALT.

DO NOT REMOVE FROM FILE

70-80'	80% SALT, 20% RED SH.
80-90'	80% AA, 20% AA.
90-00'	70% AA, 30% AA.
1100-10'	85% AA, 15% AA.
10-20'	90% AA, 10% AA.
20-30'	60% AA, 40% AA, SLT.
30-40'	70% AA, 30% SLT.
40-50'	80% AA, 20% ANHY.
50-60'	70% AA, 30% AA.
60-70'	90% AA, 10% SLT.
70-80'	100% AA.
80-90'	70% AA, 30% RED SH & SLT.
90-00'	100% AA.
1200-10'	100% AA.
10-20'	100% VF LT RED BR SD.
20-30'	80% AA AA, 20% SLT.
30-40'	20% SALT, 80% SLT RED.
40-47'	50% GRN SLT, 50% ANHY.

T.D.

CORE WS #1 955-981-REC. 26'.

955-60 SALT 20% SH-ANHY BAND 957; 60-65 SALT 10% SH; 65-67 SALT-CLEAR; 67-72 SALT VLT ORNG TO WHT; 72-72.6 SALT 20% SH & ANHY PTNGS; 72.6-75 SALT CLEAR; 75-81 SH 20% SALT INCLS.

CORE WS #1 CORR 981=983 983-1009.6 REC 26.6

983-987 SALT 30% SH; 87-90' SALT CLEAR TRS SH; 90-95 SALT 40% SH; 95-1000 SALT CLEAR; 1000-03.6 SALT VLT ORNG-ORNG BLEBS & ANHY? 03.6-05 SALT 20% SH (BISCUIT-1005.1); 05.1-05.5 BISCUIT & SH; 05.5-08 SALT VLT ORNG-ORNG BLEBS & ANHY PTNGS; 08-09.6 SALT 20% SH;

CORE WS #1

1009-21 SHALE W/SALT & GRN SH INCLS; 21-24 SALT 20% SH; 24-32 SALT VLT ORNG 10% SH; 32-34.6 SALT CLEAR; 34.6-35 SALT 20% SH PTNG; 35-37 SH W/SALT & ANHY INCLS; 37-41 SALT 20% SH; 41-44 10% SH-ORNG BLEBS; 44-45 ANHY-PUBRCO TYPE; 45-48 SALT-30% SH; 48-50 SALT ORNG BLEBS; 50-53 SALT 20% SH; 53-57 SALT VLT ORNG-ANHY PTNGS; 57-59 SALT VLT ORNG-ORNG BLEBS; 59-61 SALT 10% SH & ORNG BLEBS.

CORE WS #2 983-1009-REC 26.3

983-86 SALT 10% SH; 86-89.6 SH 30% SALT PTNGS & INCLS; 89.6-93 SALT TRS SH-RED & GRN KCL; 93-99 SALT CLEAR VCSE XLS; 99-1000.3 SALT 10% SH-TRS ANHY KCL; 00.3-02 SALT CLEAR; 02-04 SALT 15% SH TRS ANHY; 04-08 SALT CLEAR TR SH & ANHY BANDS; 08-08.6 SALT 30% SH; 08.6-09.3 SH.

CORE V 992-1018

992-1001.6 SALT CLEAR TRS KCL & ANHY: 01.6-01.8 SH; 01.8-05.4 SALT LT ORNG TO CLEAR TRS KCL & ANHY: BISCUIT - 1005.6 - 1005.6-18 SH W/SALT INCLS & GRN SH INCL ANHY.

PTNG 1003.9

CORE WS #2 1009-1035

1009-15 SH RED W/SALT & GRN SH INCLS; 15-17 SALT 50% SH; 17-19 SH W/SALT INCLS; 19-24 SALT 30% SH; 24-26 SALT 20% SH; 26-34 SALT VLT ORNG-10% SH; 34-35 SH.

DO NOT REMOVE FROM FILE

DETAILED CORE DESCRIPTION

WELL NAME: AEC - #46 N.A

LOCATION:

ELEVATION:

CORE V

992-997.6 (5.8) 8" SALT 5% SH AND ANHY? ORNG BLEBS-60" SALT-CLEAR V CSE XLN-TRS SH-997.2-INCLS.

997.6-1003.1 (5.9) 49" SALT CLEAR VCXE XLN-2" SH-4" SALT 10% SH-TRS ANHY-1" SH-13" SALT 5% SH AND ANHY-ORNG BLEBS.

1003.1-1008.8 (5.7) 10" SALT 5% SH AND ANHY-ORNG BLEBS V SL TRS KCL 6 SALT-CLEAR ANHY INCL.-6" SALT 5% SH-ORNG BLEBS-5" SALT CLEAR-V CSE XLN-38" SH 20% SALT. BISCUIT POINT 1005.6? NOT DEVELOPMENT.

1008.8-1014.4 (5.9) 59" SH-TRS SALT-GRN SH AND ANHY INCLS-3" ONLY ANHY-7" SH 20% SALT.

CORE WS #2

983-988.8 (5.7) 17" SALT 5% SH-14" SALT 10% SH-10" SALT CLEAR CSE XLN-SHPTNG. 4" SALT 20% SH-13" SH 30% SALT-3" SALT CLEAR CSE XLN-6" SALT-30% SH.

988.8-994 (5.5) 11" SALT 30% SH-6" SALT 10% GRN AND RED SH AND ANHY? -2" SALT 5% SH AND ANHY?-6" SALT CLEAR-15" SALT 5% SH AND ANHY?-2" SALT CLEAR-3" SALT LT ORNG-TRS SH-10" SALT CLEAR VC XE XLN.

994-999.4 (5.4) 62" SALT CLEAR V CSE XLN- 2" SALT 5% SH.

999.4-1004.8 (5.6) 11" SALT 5% SH-TR ANHY?-25" SALT CLEAR V CSEX LN-16" SALT 10% RED AND GRN SH AND ANHY? 14" SALT 5% SH AND ANHY? TR KCL 1004.2.

1004.8-1010.2 (5.6) 34" SALT-ANHY BANDS-TRS SH-TR KCL 1007.5 11" SALT 20% SH-3" SALT CLEAR-1" ANHY? PTNG-1008.8 BISCUIT POINTS?-17" SALT 40% SH.

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#9-10

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ARKLA EXPLORATION COMPANY

Drilling Record

WELL NAME: NMA Core Test #46

WELL LOCATION: 1841 FNL-1884 FEL Sec. 12-16N-22E

WELL ELEVATION: 5432 ' KB

CONTRACTOR: Sojourner Drilling Company

SPUD DATE: 7-31-65 4:00 PM

SIZE HOLE DRILLED: 13¾ " to 80 '

TYPE DRILLING FLUID: Flo Sol

SURFACE CASING:
Size 9 5/8 ", Wt. 32.75 #, No. Sacks Cement 60
Cementing Depth: 80 '

SIZE HOLE DRILLED: 8¾ "

TYPE DRILLING FLUID: Flo Sol (A)

INTERMEDIATE CASING:
Size 7 ", Wt. 20 #, No. Sacks Cement 125 (B)
Cementing Depth 895

SIZE HOLE DRILLED OR CORED:
6¼ " from 895 ' to 1247 ' (C)
" from ' to '
" from ' to '
" from ' to '

DRILL STEM TESTS:
None

NO. BITS USED: 2

ELECTRIC LOGS RAN:
Type McCullough Grn from 1247 ' to 0 '
from ' to '

ABANDONMENT PLUGS:
No. Sacks Cement 125 from 1247 ' to 650 '
from ' to '

WAS CASING RECOVERED?
Depth Shot ', ', '
No. Feet Recovered '
No. Feet Not Recovered 895 '

DATE DRILLING RIG RELEASED: 8-9-65 7:00 AM

COMPANY REPRESENTATIVE: James S. Baldry

SPECIAL NOTES: Unusual drilling problems encountered, etc.
(A) Lost circulation @150' & 415' and also lost mud while drilling to T.D.
(B) Temp survey-top cement @490'.
(C) Drilled to 915' set whipstock #1 & cored & drilled to 1061'.
Straightened hole @915-set whipstock #2 and cored & drilled to 1035'.
Straightened hole @935 and set whipstock #3 cored & drilled to 1247'.
Lost considerable deisel while coring & drilling all whipstock holes.

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ARKANSAS LOUISIANA GAS CO.
HOLBROOK, ARIZONA
RECEIVED
AUG 24 1965
GEOLOGICAL DEPT.

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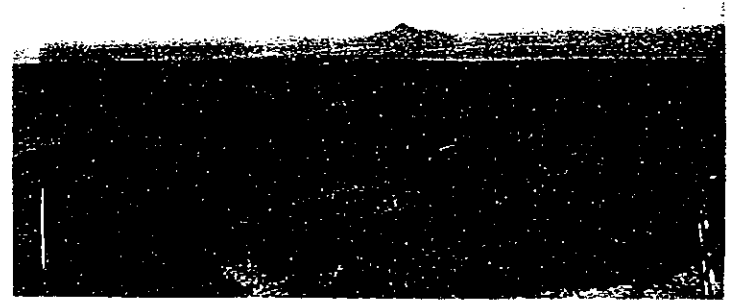
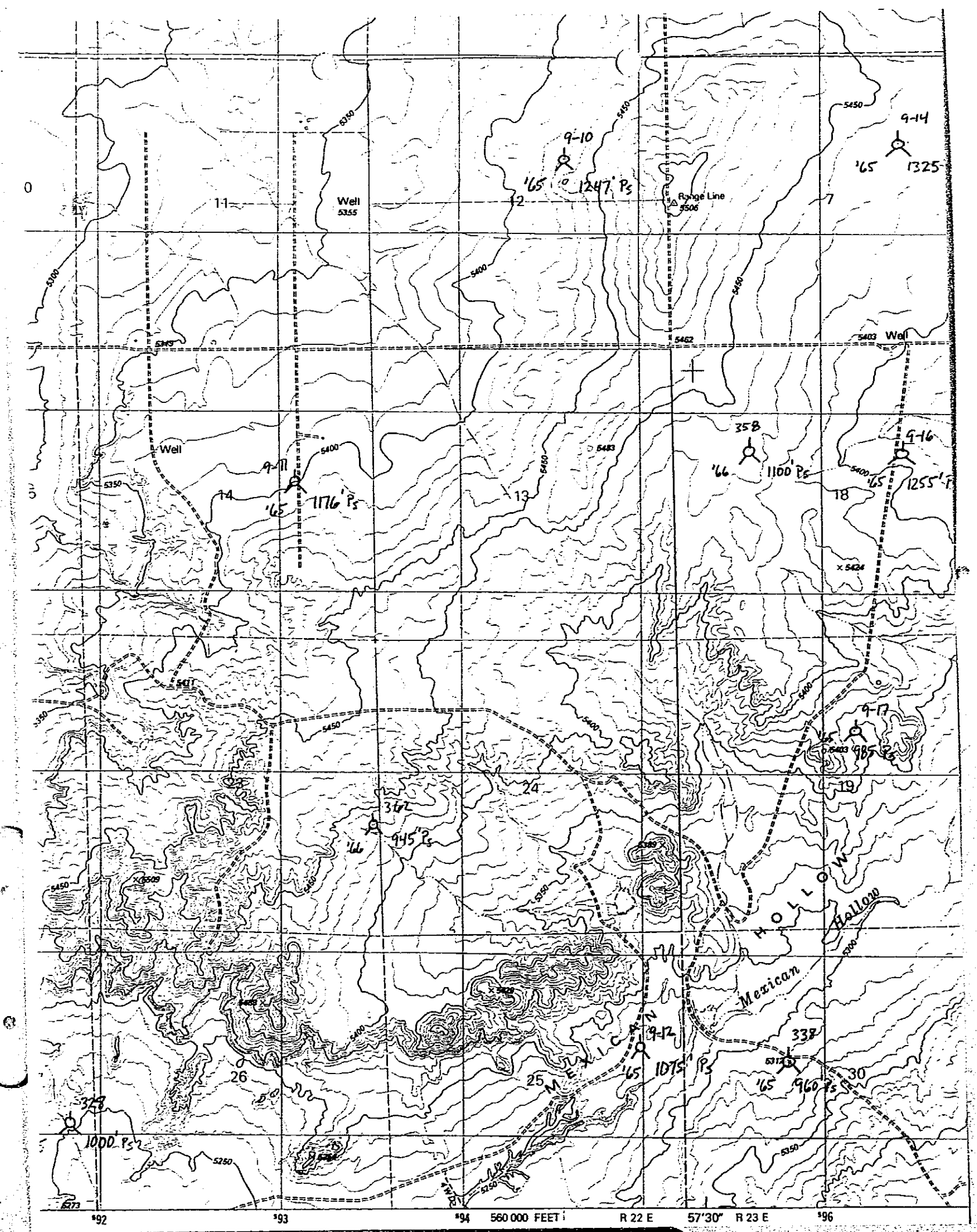
9-10

No permit #46?

9-10 3-15-66 JPS



View NW toward Woodruff Butte


9-10
'65 1247' Ps
9-14
'65 1325
Range Line
Well
5355
Well
5403
Well
9-11
'65 1176' Ps
358
'66 1100' Ps
9-16
'65 1255' Ps
9-17
'65 985' Ps
362
'66 945' Ps
9-12
'65 1075' Ps
338
'65 960' Ps
328
1000' Ps
MEXICAN
HOLLOW
Mexican
Hollow
11
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18
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30
560 000 FEET
R 22 E
57'30"
R 23 E

SYMBOL OF SERVICE

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SURVEY REPORT

#46

9-10

ARKANSAS LOUISIANA GAS CO.
KINGMAN, ARIZONA
RECEIVED
AUG 23 1965
GEOLOGICAL
DEPT.

EASTMAN OIL WELL SURVEY COMPANY

DIRECTIONAL DRILLING • TOOLS • INSTRUMENTS • TECHNIQUES

Consult The Yellow Pages For Your Nearest Eastman Office

LONG BEACH • HOUSTON • ODESSA

EASTMAN
DIRECTIONAL DRILLING INSTRUMENTATION

"Symbol of Service"

REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY

ARKLA EXPLORATION COMPANY
COMPANY

N. M. A. CORE TEST WELL NO. 46
WELL NAME

NAVAJO COUNTY, ARIZONA
LOCATION

JOB NUMBER	TYPE OF SURVEY	DATE
WT- 86465 & WT-86465A	Magnetic Multiple Shot Oriented Multiple Shot	August 4, 1965 & August 5, 1965

SURVEY BY
R. B. Vickers

OFFICE
Odessa, Texas

FORM D-302 R

RECORD OF SURVEY

JOB NO. WT-86465 DATE August 4, 1965 CHECKED BY

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
					HOLE # 1					
	915 00	2° 00'	914 81			S 15 W		10 16		5 57
1	1000 00	3° 15'	999 67		4 82	S 60 E		12 57		1 40
2	1061 00	3° 15'	1060 57		3 46	S 62 E		14 19	1 65	
						14.29' SOUTH 06° 38' EAST				
					HOLE # 2					
	915 00	2° 00'	914 81			S 15 W		10 16		5 57
1	935 00	2° 00'	934 80		70	S 08 W		10 85		5 67
2	1000 00	3° 00'	999 71		3 40	S 88 W		10 97		9 07
3	1035 00	3° 00'	1034 66		1 83	WEST		10 97		10 90
4	1127 00	2° 30'	1126 57		4 01	S 88 W		11 11		14 91
5	1187 00	3° 00'	1186 49		3 14	N 89 W		11 05		18 05
6	1247 00	2° 30'	1246 43		2 62	N 85 W		10 82		20 66
						23.32' SOUTH 62° 22' WEST				
					HOLE # 3					
	915 00	2° 00'	914 81			S 15 W		10 16		5 57
1	935 00	2° 00'	934 80		70	S 08 W		10 85		5 67
2	953 00	2° 00'	952 79		63	S 08 W		11 47		5 76
3	1000 00	5° 00'	999 61		4 10	S 08 W		15 53		6 33
4	1018 00	5° 00'	1017 54		1 57	S 08 W		17 08		6 55
						18.29' SOUTH 20° 59' WEST				

RECORD OF SURVEY

JOB NO. WT-86465A DATE August 5, 1965 CHECKED BY

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
1	64 00	0° 45'			0 84	N 44 E	0 60		0 58	
2	119 00	0° 15'			0 24	N 46 E	0 77		0 75	
3	175 00	0° 15'			0 24	N 47 E	0 93		0 93	
4	233 00	0° 15'			0 25	N 66 E	1 03		1 16	
5	287 00	0° 15'	286 99		0 24	S 26 E	0 81		1 27	
6	343 00	0° 45'			0 73	N 25 E	1 47		1 58	
7	402 00	0° 30'			0 51	S 01 W	0 96		1 57	
8	461 00	1° 00'			1 03	S 14 W		0 04	1 32	
9	520 00	1° 30'			1 54	SOUTH		1 58	1 32	
10	579 00	1° 45'	578 93		1 80	S 43 W		2 90	0 09	
11	636 00	2° 00'			1 99	S 44 W		4 33		1 29
12	694 00	1° 45'			1 77	S 44 W		5 60		2 52
13	753 00	1° 30'			1 54	S 36 W		6 85		3 43
14	813 00	1° 15'			1 31	S 35 W		7 92		4 18
15	872 00	1° 15'	871 83		1 29	S 30 W		9 04		4 83
16	902 00	1° 45'			0 92	S 42 W		9 72		5 45
17	915 00	2° 00'	914 81		0 45	S 15 W		10 16		5 57

CLOSURE 11.59' SOUTH 28° 44' WEST

RECORD OF SURVEY

JOB NO. WT-86465 DATE August 4, 1965 CHECKED BY

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
					CLOSURES AT 1000'					
HOLE # 1 to HOLE # 2			- 7.84'	NORTH 78°	13'	WEST				
HOLE # 1 to HOLE # 3			- 5.75'	SOUTH 59°	01'	WEST				
HOLE # 2 to HOLE # 3			- 5.32'	SOUTH 31°	00'	EAST				
					CLOSURES AT T.D.					
HOLE # 1 to HOLE # 2			- 22.56'	NORTH 81°	25'	WEST				
HOLE # 1 to HOLE # 3			- 8.69'	SOUTH 70°	35'	WEST				
HOLE # 2 to HOLE # 3			- 15.44'	SOUTH 66°	05'	EAST				