[redacted]

M-d

ARKLA EXPLORATION NMA CORE TEST NO. 3
NE/NW Sec 18-T14N-R25E, Apache 1-4

1-4

County Apache

Area

Lease No.

Well Name ARKLA NMA Core Test #3

Location NE/NW Sec 18 Twp 14N Range 25E Footage 642' FNL - 2971' FEL

Elev 5472 Gr 5480 KB Spud Date 12/8/64 Completed Abandon 12/20/64 Total Depth 2610 (+2862)

Contractor

Drilled by Rotary
Cable Tool

Casing Size	Depth	Cement

Production Horizon

Initial Production

REMARKS

Elec Logs GRN-1, Sonic Log-Gamma Ray, Induction-Electrical Log

Sample Log
Sample Descript.
Sample Set
Core Analysis
DSTs

Applic. to Plug Plugging Record Completion Report

Water well accepted by

Bond Co. & No.

Bond Am't $ Cancelled Date Organization Report

Filing Receipt Dated Well Book Plat Book

API No. 02-001-00066 Loc. Plat Dedication

Permit Number NONE Date Issued

1-4

2 1-4

LITHOLOGIC DESCRIPTION

WELL NAME: ARKLA EXPLORATION COMPANY No. 3 NMA CORE TEST

LOCATION: SECTION 13, 14N, 25E, ~~1000' FNL, 700' FWL~~ 645' FNL - 2977' FEL

ELEVATION: 5473.26 DF, 5480 KB

00-15'	SPUD DEC. 9th @ 8:00 PM SET 64' 13¾" SURFACE W/50 SX; POOR SAMPLE, TRC SHALE.
15-30'	POOR SAMPLE, TRC SHALE.
30-45'	PETRIFIED WOOD, VER COLORED SH.
45-60'	AA, AA.
60-72'	AA, AA.
72-80'	CLYST, REDDISH BRN PURP.
80-90'	SH CLYST RED GRN CHERTS COLORED.
90-00'	AA, WHITE LAVENDER, HAIRLINE FRACS, YELLOW CLAY.
100-10'	AA, AA, SLTY SH REDDISH BRN, TRC CONG SH.
10-20'	SH RED SLTY 90%, TRC CONG SAND.
20-30'	SH 30% CONG 70%.
30-40'	AA, AA.
40-50'	AA 20% AA, SD 10% WH MED GRAIN.
50-60'	AA, 60% SD 40% AA CHERT RED.
60-70'	AA, 60% 40% GRAVELS.
70-80'	20% AA, 80% F-MG & COARSE GRN.
80-90'	10% (YELLOW & RED) 90% AA.
90-00'	10% AA, 90% AA.
200-10'	40% BENTONITIC, 60% F-GRAIN & CEMENTED.
10-20'	AA, AA.
20-30'	AA, CONG 20% (SD) 80%.
30-40'	AA 20%, 80%.
40-50'	70% SHALE RED GREEN CLAYEY, 30%.
50-60'	90% AA GREEN, 10% WH MED GRAIN.

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60-70'	30% RED AND GRY, 40% CONG SD, 30%.
70-30'	30% AA, 40% AA, 30%.
80-90'	30% AA, 40% AA, 30% AA.
90-00'	60% SLTY SH, 40% MED GRAIN.
300-10'	20% AA, 80% SD.
10-20'	SHALE 40%, SD 50%, 10% ANHY, SD WH CONG.
20-30'	AA.
30-40'	30% AA, 30% AA, 10% ANHY, CONG 30%.
40-50'	SH SLTY RED, SLT SHY, SH GREEN SDY (70%), ANHY (20%), SD GRN CONG (10).
50-60'	AA, PCS ORG CH.
60-70'	SH AA, 70%, ANHY 20% (10% SD GREEN SLTY) TRC GREEN SH.
70-80'	AA.
80-90'	AA.
90-00'	TRACE LM, PCS RED SLTY SD, SLTST RED AA.
400-10'	LM 10%, TRC SD RED SLTY AA.
10-20'	AA.
20-30'	SD WH PK RED CLEAN CLUSTERS INTERSTL CLAY PYRITIC IMPT, TRC SDY DOLO, TRC ORG CH.
30-40'	100% AA, RD, SUB RD, MIN AMT, (BETWEEN 445-460, 5-8', 12-15 UNITS).
40-50'	AA, AA, TRC PYRITE F-M GRAIN INTER GRAIN POR.
50-60'	(8¾" HOLE) AA, AA, AA.

DST # 1 SATURDAY MORNING DEC. 12, 1964, 432-60 SHUT IN 1 HR FOR INITIAL 1 HR FOR FINAL BHP. TOOL OPEN 1 HR. STRONG 0 BLOW REC 360' FLUID (100' MUDDY WTR, 260 CLEAR FRESH WATER.

TOP RECORDER	IF 66#	ISIP 76#	IH 198#
	IF 132#	FSIP 76#	FH 198#

DST WTR TESTS 1.8 @ 75° F.

BOTTOM RECORDER	IF 65#	ISIP 130#	IH 209#
	FF 170#	FSIP 130#	FH 209#

460-740'	SAND 100% AA CARRYING SMALL AMT ANHY, LOOSING SOME MUD AROUND 600'.
40-50'	SAND DEC RED, SH 10%, PURP RED GREEN.
50-60'	AA, 80%, AA 20%, AA, TRC CH COLORED.
60-70'	AA.

70-80' SD AA, AA.

80-90' SAND RED 80%, SH RED GRN 20%.

90-00' SAND RED WH M-G V TIGHT, HARD 70%, SH RED 30% TRC CH, TRC ANHY.

800-10' 70 SD, 30% SLTST RED.

10-20' SD 90% VERY LOOSE MC GRAIN RED WHITE SH 10% RED.

20-30' SD 100% F MG WELL CEMENTED, DEEP RED, ARG.

30-40' AA, AA, AA, ORG AA, SLTY 10% SH RED.

40-50' AA, TRC GRY BLU SH TRC PK ANHY.

50-60' AA, TRC LIGHT GRY DOLO.

60-70' AA, SLTST REDDISH BRN 20%, TRC DOLO SAND GRY, PCS GRN, LAV, GRY, SH.

70-80' AA, 30% AA, 50% AA, 20% COLORED SH, FCS ANHY.

80-90' 70% AA, 20% AA, 10% MOR SHALE, 5% KAOLIN.

90-95' 60% SLTST REDDISH BRN, 40% ANHY.

95-00' ANHY WH 90%, SH RED SLTY 10%.

900-05' AA.

05-10' SH & ANHY.

TEST 445-47½ WIRE LINE SUNDAY DEC. 13, 1964 (MISRUN). MONDAY, SET 7" @ 905 W/25 SACKS OF CEMENT 2% CACL 6:00 A.M.

CORE # 1
910-960'

910-926 RED & GRN SILT, 1 FT ANHY WH 917-918, MICAEOUS, MOSTLY RED, GYP INCL; 926-927½ GRN SILT, 927½-938 WH XYLN ANHY, 938-940 GRN GRY SILTSTONE, 940-941 RED SILTY SH W/GYP INCL; 941-42 RED SILT W/FLEC'S GRN SILT; 42-43½ RED SILTY SHALE; 43½-45 WH XYLN ANHY; 945-46 GRY & PINK XYLN ANHY; 946-60 RED SILTY SHALE W/GYP INCL.

CORE # 2
960-1010'

960-66½ RED SILTY SHALE W/ANHY INCL; 966½-69½ WH XYLN ANHY; 69½-972 RED CLAYSTONE; 72-73½ PINK ANHY; 73½-76 RED CLAYSTONE; 76-80 PINK & WH ANHY W/RED SH IMPURITIES; 80-986 LT GRY WH XYLN ANHY; 986-988½ GRY & PINK ANHY W/GYP INCL; 988½-992 RED CLAYSTONE; 992-96 GRY XYLN ANHY; 996-1002½ WH & LT GRY MOTTLED XYLN ANHY; 1002½-1006 TAN, GRY XYLN ANHY, SILTY, SLI DOLOMITIC; 1006-1010 WH & TAN MOTTLED ANHY.

CORE # 3
1010-1060'

1010-12 ANHY GRY DNSE; 12-13 80% SH RED, 20% ORG ANHY INCL; 13-17 90% RED CLY W/20% ANHY INCL; 17-21½ ANHY 100% HARD ORG XYLN; 21½-25 MUDST RED, STREAKS GREEN; 25-29 ANHY GRY DNSE; 29-41 ANHY GRY DNSE ELONGATED PITS ON EXTERNAL SIDES--POSSIBLE SALT INCL; 41-42½ ANHYDRITIC GREY DNSE; 42½-44½ CLY ST RED 90%, 10% PK ANHY & SALT; 44½-47 SALT 95, 5% RED SH IMPURITIES; 1047-52 SALT PINK, PITTED; 52-55 SALT PINK 20% IMPURITIES, PITTED; 55-57 AA TRC IMPURITIES; 57-59 SALT PK; 59-60 SH 90% RED, 10% SALT IMPURITIES.

Core # 4
1060-1110

1060-62 SH 90% RED, SALT WH 10%; 62-64 80% SALT, 20% SH; 64-66, 80% SH, 20% SALT; 66-72 60% SALT, 40% SH; 72-75 90% SH, 10% SALT; 75-81, 90% SALT, 10% SH RED; 81-84½ 100% SALT PK; 84½-88 50% SALT, 50% SH; 88-91 SALT PK; 91-95 90% SH, 10% SALT; 95-96 SALT TRC IMPURITIES, SLT SHARP TAST; 96-1102 SALT WH, 10% IMPURITIES; 1102-1110 SALT PK.

Core # 5
1110-1160

11 0-12½ SALT WH, PITTED; 12 -15 80% SH RED CLYEY, 20% SALT INCL; 15-25 90% SALT, 10% SH; 25-32 SALT 100% WH PURE, INTERMITTENT PITS; 32-33½ ANHY GRY PITTED; 33½-36 CLY RED, FEW SALT INCL; 36-39 90% RED SH 10% SALT; 39-46 90% SALT WH W/10% RED SH IMPURITIES, PITTED; 46-48 AA, 5% RED SH AA; 48-52½ SALT PK W/VANDED RED ANHY; 52½-53 ANHY W/SALT INCL; 53-59 SALT PK SCATTERED BANDS OF ANHY; 59-60 SH CRUMBLY, 5% SALT INCL.

Core #6
1160-1210

1160-61 RED SOFT SHALE W/SALT INC; 61-65 PINK SALT 80% RED SHALE, SET 20%; 65-67 PINK SALT 70% RED SFT SH 30% & W/FLEC OF GREEN SILTSTONE; 67-71½ RED SOFT SH 80% W/INCL PINK SALT 20%; 71½-72 WH SALT 90% W/RED SH INCL 10%; 72-76 WH SALT W/RED SH IMPURITIES & WH ANHY 10%; 76-77 RED AND GRN SILTST W/WH SALT INCL 20%; 77-81 RED SOFT SHALE 80% W/WHSALT INCL 20%; 81-91 WH SALT 80% W/RED SOFT SH INCL 20%; 91-93 WH SALT 80% W/RED SH IMPURITIES 20% & FLECS OF WH GRY ANHY; 93-95 WH SALT 80% W/RED SH IMPURITIES & GRY ANHY BANDS 20%; 95-98 WH SALT 80% W/RED SHALE IMPURITIES 20%; 98-1210 WH SALT 70% W/RED SH IMP 30%.

Core # 7
1210-1260

1210-14 SALT 60% SH IMPURITIES 40%; 14-20 SALT PK 90% ANHY BANDS 1218, 10% SHALE RED, SCAT PITTING; 20-22 SALT PURE WH W/ANHY INCL PITTED; 22-24 SH RED 90%, 10% ANHY & SALT INCL; 24-26 SH 100% RED SLTY SOFT, TRC SALT 26-29 90% SH, 10% SALT; 29-36 SALT 95% (5% IMPURITIES SH); 36-40 SH GRN RED S;TC SPFT W/FEW SALT INCL; 40-42 SALT 70% SALT; 42-44 SALT WH FRAC ANHY FILLED FRACS TRC RED SH; 44-50; 50-70 SOFT SH 50-30; 50-59½ ANHY GRY DNSE HARD SALT INCL, COMBINATION DOLO & ANHY BEC MORE DOLO AND SLTY @ BOTTOM; 59½-60 CRUMBLY SH.

Core # 8
1260-1310

1260-40 CLY SOFT RED, BAND PK ANHY @ 62; 64-65 SALT 80% SH 20%; 65-80 SALT, 5% IMPURITIES, SCATTERED BANDS ANHY HARD GRY; 80-83 SHALE 90% SOFT RED W/10% SALT INCL; 83-86 SHALE 20%, SALT 80%; 86-93½ SALT WH SCATTERED BANDS ANHY, 5-10% SCATT IMPURITIES; 93-99 SALT 90%, SH 10%; 99-1302 ANHY GRY HARD; 02-10 SALT WH PK.

Core # 9
1310-1360

1310-11½ WH SALT W/GRY ANHY BANDS 10%; 11½-14 GRY XYLN ANHY; 14-15 RED & GRN SILTSTONE; 15-17 RED DOLOMITIC SILTSTONE W/FEECS GRN SILTSTONE; 17-18 RED SILTY SH 80% W/INCL RED SILTSTONE 20%; 18-21½ RED SILTY SHALE; 21½-24 WH SALT 80% W/RED SH IMPURITIES 20%; 24-30 WH SALT W/RED SILTY SH IMPURITIES 5%; 30-32½ WH SALT W/FLECS GRY SYLN ANHY; 32½-34 GREEN SILTSTONE; 34-35 RED SILTSTONE W-WH SALT INCL 20%; 35-46 RED SILTY SH 80% W/WH SALT INC 20%; 46-48 GRY DENSE DOLO SLI FOSS XYLN; 48-52 GRY BRN DENSE XYLN DOLOMITE; 52-57½ GRY GRN DENSE XYLN DOLOMITE SLI OIL STAIN & FEW HORIZ BLK SH LAMINATIONS, ALSO INCL BLUE DOLOMITE; 57½-60 DRK BRN XYLN HD TIGHT DOLOMITE, OIL STAIN & W/HORIZ BLK CARB, SHALE LAMINATIONS

Core # 10
1360-1410'

1360-63½ SLTST GREEN OIL STAIN; 63½-64½ ANHY GREY; 64½-73½ SLTST GREEN SCATT OIL STN; 73½-74 SALT 60% SLT ST RED 40% (K20?); 74-79 SALT PK FLECKS GRY ANHY TRC RED SH; 79-81 ANHY GREY DNSE, BAND PK SALT; 81-88½ SLTST ORGISH RED, 10% SALT; 88½-91½ SH 70% RED SLTY (30% SALT); 91½-99 SH 30%, 70% PK SALT PITTED (92 POSS K20) 1 STREAK; 99-1401½ SALT PK SALT, FLECKS GREY ANHY; 1401½-10 80% SH, 20% SALT.

Core # 11
1410-1460'

1410-11½ WH SALT 70%, RED SH 30%; 11½-13 RED SILTY SH; 13-17 RED SILTSTONE W/SALT INCL 5%; 17-22½ RED SILTSTONE W/FLEC'S GFN SILT; 22½-27 RED SILT 90% W/WH SALT INCL 10%; 27-37 WH SALT 80% & RED SH 20%; 37-38½ RED BRN & GRN SILT W/SALT INCL 20%; 38½-39½ WH SALT 90% & ANHY GRY BANDS 10%; 39½-40 RED BRN & GRN SILTSTONE; 40-49 RED BRN SILTSTONE W/FEW SALT INCL; 49-53 GRY ANHY W/INCL RED ANHY; 53-60 WH SALT W/GRY ANHY FLEC'S. STARTED DRILLING @ 1460. MADE 3' CORRECTION DOWN HOLE 1460-63.

60-70' 30% ANHY GRY, SALT 70%, TRC SLTST RED.

70-80' 80% SLTST REDDISH BRN, 10% SALT, 10% ANHY, PCS SLTY SD VFG.

80-90' 100 AA.

90-00' 40% SALT, 60% SLTST AA, TRC [illegible].

1500-10' 60% AA, 40% AA.

10-20' 90% AA, 5% ANHY, 5% SLTST RED.

20-30' 60% AA, 40% AA.

30-40' 100% RED GRY, TRC SALT.

40-50' SALT 70%, 30% SLTST RED.

50-60' 60% ANHY, 40% SALT.

60-65' 80% AA, 20% SLT.

Core # 12
1565-1615'

1565-71½ WH SALT W/FLEC'S GRY ANHY; 71½-72½ GRY ANHY 80% W/SALT INCL 20%; 72½-75½ WH SALT W/FEW GRY ANHY INCL; 75½-76½ GRY XYLN HD ANHY; 76½-78½ PINK SALT W/GRY ANHY INCL; 1578½-1590 RED SILTSTONE W/FEW FLEC'S GRN SILT, SALT FRAC AT 1583½; 1590-1598 RED SITL 80% W/WH SALT INCL 20%: 1598-1605 WH SALT 70%, RED SILT 30%; 1605-06½ WH SALT 40%, GRN & RED SILT 60%; 1606½-15 WH SALT 80%, RED SILT 20% (K20?? 1612 AREA) & W/GREY ANHY FLEC'S.

Core # 13
1615-1665'

1615-21 WH SALT 80% W/RED SH IMPURITIES 20%; 1621-31 GRY XYLN ANHY; 1631-32½ RED & GRN SILTSTONE; 1632½-37 RED SILTSTONE 60% WH PINK SALT 40%; 1637-38½ RED SILTSTONE; 1538½-48 RED SILTSTONE 80% W/PINK SALT INCL 20%; 1648-51½ RED SILTSTONE 70% W/PINK SALT INCL 30%; 1651½-57½ RED SILT 20% WHITE SALT 80%; 1657½-59 GRY & PINK ANHY; 1659-64½ WH SALT 80%, RED SILT 20%; 1664½-65 RED SILTSTONE W/WH SALT INCL 5%.

65-70' SLT STONE RED.

70-80'	SLT STONE RED.
80-90'	AA.
90-00'	80% SLT, GRY 20% LM, DRK GRY BRN DNSE VF XYLN, NO POROSITY.
1700-05'	20% SLT GRY 80% AA, AA.
	SHUT DOWN @ 1705 TO CONDITION HOLE, SLIGHT STN THROUGHOUT, APPROXIMATELY 20 UNITS OF GAS--NOT COMMERCIAL.
05-10'	90% LM, 10% ANHY WH.
10-20'	100% LM.
20-30'	100% SLTST GREEN & GREY.
30-40'	AA, AA RED & GRANITE GRY.
40-50'	AA, AA RED.
50-60'	AA.
60-70'	AA, AA.
70-80'	90 SLT , 10% SALT.
80-90'	30% AA, 70% AA.
90-00'	10% AA, 90% AA.
1800-10'	10% AA, 90% AA.
10-20'	70% AA, 20% AA, 10% ANHY.
20-25'	80% AA, 20% AA.
CORE # 14 1825-1890'	1825-26 90% SH RED 10% SALT; 26-30 40% RED SLT, 60% SALT; 30-32 20% AA, 80% AA; 32-34 90% RED SLT 10% SALT; 34-44 90% SALT, 10% SLTST; 44-52 PK SALT 100% FEW IMPURITIES, TRC GREEN SH LAMINATIONS @ 52; 52-61 SLT ST AA, HARD RED SCATTERED SALT INCL; 61-63 40% SALT; 63-66 50% AA; 66-68 SHST RED & GREEN, 10% SALT; 68-70½ SALT GRY WH 100%; 70½-73 ANHY GRY DNSE SLT DOLOMITIC; 73-75 DOLOMITE DKR GREEN DNSE SLTY V SLT STN, BLUE MINERAL NODULES; 75-80 SAME; 80-90 70% DOL, 30% GREEN SLT DOLOMITIC.
90-00'	50% BLUE GRY SLT ST, 50% DOL TAN DNSE, AA SLTSTN.
1900-10'	90% RED SLT ST 10% SALT.
10-20'	70% AA, 30% AA.
20-30'	30% AA 70% AA.
30-40'	60% AA, 40% AA.
40-50'	10% AA, 90% AA.

50-60'	20% AA, 80% AA.
60-70'	10% AA, 90% AA.
70-80'	TRC SLT, 100% SALT.
80-90'	10% AA, 40% SALT, 50% ANHY GRY WH.
90-00'	10% SLT, 80% SALT, 10% ANHY.
2000-10'	AA, 10% DRK SH, AA, AA.
10-20'	50% DRK SH & ANHY.
20-30'	30% AA, 70% AA.
30-40'	10% DOLO GRY DNSE F XYLN, 70% AA, 20% ANHY.
40-42'	60% DOLO SAME, (45 CIRC SAME).
CORE #15 2042-2095	2042-48½ NO BLEED SLT STN, DOLO DRK GRY BRN, SUCROSE, SPECKED W/ TARY SUBSTANCE; 48½-52 BANDED BLEEDING AA, WELL SAT, ANHY INCLUSIONS; 52-61 NO BLEED, DOLO LT BRN, SUCROSE, SCATTERED ANHY BLEBS; 61-75 DOLO BRN, DNSE ARG, ANHY INCL FAIR TO GOOD STN & SAT 75% STAINED (73-75 VERT FRAC); 75-77 SLT STN VERT FRAC DOLO AA; 77-81 MED STN LARGE VERT FRAC, APPEARS WTR STN AA; 81-87½ FAIR, GOOD SAT, VERT FRACTURE W/SALT INCL; DOL, BR, DNSE F XYLN, SLTY FEW ANHY BLEBS; 87½-95 SLIGHT STN, LARGE VERT FRACS, HAIR LINE FRACS W/ANHY INCL; SD DOLO GRY GREEN, ARG 9' SLTY, MICA FLECKED, DNSE.
CORE #16 2095-2145	2095-99 SD VFG DOLOMITIC SLTY, GREEN; 99-02 AA, SLTY ARG; 02-07 DRK CARBONACEOUS SH LAMINATIONS (2107 LARGE VERT FRAC W/SALT); 07-11 AA, SLT ANHYDRITIC, BEC MORE SLTY; 11-14 SLTST W BLK SH LAMINATIONS, ANHY DROTOC AA; 14-18 SLTST RED GREEN COLOMITIC; 18-27 AA, AA, SDY, ARG; 27-31 CLY ST SLTY RED; 31-36 AA, TRC ANHY; 36-41 AA, 41-45 AA W/ANHY & SALT INCL.
2145-50'	10% RED CLAY ST 90% RED STST.
50-60'	60% RED SLTST, 40% WH SOFT ANHY.
60-70'	10% RED CLY ST, 10% SLT, 80% ANHY.
70-80'	30% GR, RED SH, 70% WH ANHY.
80-90'	100% RED SLT ST.
90-00'	AA.
2200-10'	100% RED SLT.
10-20'	20% RED SILT, 80% SOFT WHITE.
20-30'	10% AA, 90% AA.

30-40'	40% AA, 60% AA.
40-50'	100% RED SLT, TRC SALT.
50-60'	10% SLT RED, SALT 20%, ANHY GRY DNSE 70%.
60-70'	30% AA, 70% AA.
70-80'	40% AA, 60% AA.
80-90'	30% SLT RED, 70% SALT.
90-00'	90% AA, 10% AA.
2300-10'	100% SLTST.
10-20'	100%AA.
20-30'	90%AA, 10% SALT.
30-40'	100% SLTST.
40-50'	80% SLTST, 20% SALT.
50-60'	10% SLT, DOL TAN F XYLN 80%, ANHY 10%.
60-70'	60% SLTST, 40% DOL TRC ANHY.
70-80'	90% SLTST, SALT WH 10%.
80-90'	10% AA, 90% AA.
90-00'	10%AA, 90% AA.
2400-10'	20% AA, 80%AA.
10-20'	80% AA, 20% AA.
20-30'	100% AA.
30-40'	AA.
40-50'	AA.
50-60'	AA.
60-70'	100% ORG RED SILT, SALT ANHY DOL.
70-80'	90% AA, 10% WH.
80-90'	90% AA, 10% WH.
90-00'	30% AA, 70% AA.
2500-10'	20% AA, 80% WH SALT.
10-20'	60% AA, 40% SALT.

20-30'	30% AA, 70% AA.
30-40'	20% AA, 80% AA.
40-50'	30% AA, 70% AA.
50-60'	50% AA, 50% AA.
60-70'	70% AA, 30% AA.
70-80'	80% AA, 20% AA.
80-90'	90% RED ORG SILT, 10% SALT.
90-00'	100% AA, TRC SALT.
2600-10'	BEC SHY.

#1-4

CORE TEST NO. # 3	CYCLE #1 TOTAL THICK-NESS	%	CYCLE #2 TOTAL THICK-NESS	%	CYCLE #3 TOTAL THICK-NESS	%	CYCLE #4 TOTAL THICK-NESS	%	CYCLE #5 TOTAL THICK-NESS	%	SALT-1ST DOLO TOTAL THICK-NESS	%	NOTES
INTERVAL	2034-2541		1873-2034		1690-1873		1358-1690		885-1358		1050-1358		Cycle #5 Salt/clastics: 1.62 Evap/clastics: 2.56 Salt/anhy: 1.74
SANDSTONE	26	5.1											
SILTSTONE-SH	284	56	47	29.1	101	55.2	171	51.5	133	28.1	48	15.6	
DOLO & LIME	50	9.9	11	6.8	23	12.6	8	2.4	0	0	0	0	
ANHY	27	5.3	15	9.3	13	7.1	29	8.7	124	26.2	44	14.3	
SALT	120	23.6	88	54.7	46	25.1	124	37.3	216	45.6	216	70.1	
TOTAL=	507	99.9	161	99.9	183	100	332	99.9	473	99.9	308	100	

DO NOT REMOVE FROM FILE

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LITHOLOGIC DESCRIPTION

WELL NAME: ARKLA EXPLORATION COMPANY No. 3 NMA CORE TEST

LOCATION: SECTION 13, 14N, 25E, ~~1000' FNL, 700' FWL~~ 695' FNL - 2977' FEL

ELEVATION: 5473.26 DF, 5480 KB

00-15' SPUD DEC. 9th @ 8:00 PM SET 64' 13¾" SURFACE W/50 SX; POOR SAMPLE, TRC SHALE.

15-30' POOR SAMPLE, TRC SHALE.

30-45' PETRIFIED WOOD, VER COLORED SH.

45-60' AA, AA.

60-72' AA, AA.

72-80' CLYST, REDDISH BRN PURP.

80-90' SH CLYST RED GRN CHERTS COLORED.

90-00' AA, WHITE LAVENDER, HAIRLINE FRACS, YELLOW CLAY.

100-10' AA, AA, SLTY SH REDDISH BRN, TRC CONG SH.

10-20' SH RED SLTY 90%, TRC CONG SAND.

20-30' SH 30% CONG 70%.

30-40' AA, AA.

40-50' AA 20% AA, SD 10% WH MED GRAIN.

50-60' AA, 60% SD 40% AA CHERT RED.

60-70' AA, 60% 40% GRAVELS.

70-80' 20% AA, 80% F-MG & COARSE GRN.

80-90' 10% (YELLOW & RED) 90% AA.

90-00' 10% AA, 90% AA.

200-10' 40% BENTONITIC, 60% F-GRAIN & CEMENTED.

10-20' AA, AA.

20-30' AA, CONG 20% (SD) 80%.

30-40' AA 20%, 80%.

40-50' 70% SHALE RED GREEN CLAYEY, 30%.

50-60' 90% AA GREEN, 10% WH MED GRAIN.

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60-70'	30% RED AND GRY, 40% CONG SD, 30%.
70-80'	30% AA, 40% AA, 30%.
80-90'	30% AA, 40% AA, 30% AA.
90-00'	60% SLTY SH, 40% MED GRAIN.
300-10'	20% AA, 80% SD.
10-20'	SHALE 40%, SD 50%, 10% ANHY, SD WH CONG.
20-30'	AA.
30-40'	30% AA, 30% AA, 10% ANHY, CONG 30%.
40-50'	SH SLTY RED, SLT SHY, SH GREEN SDY (70%), ANHY (20%), SD GRN CONG (10).
50-60'	AA, PCS ORG CH.
60-70'	SH AA, 70%, ANHY 20% (10% SD GREEN SLTY) TRC GREEN SH.
70-80'	AA.
80-90'	AA.
90-00'	TRACE LM, PCS RED SLTY SD, SLTST RED AA.
400-10'	LM 10%, TRC SD RED SLTY AA.
10-20'	AA.
20-30'	SD WH PK RED CLEAN CLUSTERS INTERSTL CLAY PYRITIC IMPT, TRC SDY DOLO, TRC ORG CH.
30-40'	100% AA, RD, SUB RD, MIH AMT, (BETWEEN 445-460, 5-8', 12-15 UNITS).
40-50'	AA, AA, TRC PYRITE F-M GRAIN INTER GRAIN POR.
50-60'	(8¾" HOLE) AA, AA, AA.

DST # 1 SATURDAY MORNING DEC. 12, 1964, 432-60 SHUT IN 1 HR FOR INITIAL 1 HR FOR FINAL BHP. TOOL OPEN 1 HR. STRONG O BLOW REC 360' FLUID (100' MUDDY WTR, 260 CLEAR FRESH WATER.

TOP RECORDER	IF 66#	ISIP 76#	IH 198#
	IF 132#	FSIP 76#	FH 198#

DST WTR TESTS 1.8 @ 75° F.

BOTTOM RECORDER	IF 65#	ISIP 130#	IH 209#
	FF 170#	FSIP 130#	FH 209#

460-740'	SAND 100% AA CARRYING SMALL AMT ANHY, LOOSING SOME MUD AROUND 600'.
40-50'	SAND BEC RED, SH 10%, PURP RED GREEN.
50-60'	AA, 80%, AA 20%, AA, TRC CH COLORED.
60-70'	AA.

70-80'	SD AA, AA.
80-90'	SAND RED 80%, SH RED GRN 20%.
90-00'	SAND RED WH M-G V TIGHT, HARD 70%, SH RED 30% TRC CH, TRC ANHY.
800-10'	70 SD, 30% SLTST RED.
10-20'	SD 90% VERY LOOSE MC GRAIN RED WHITE SH 10% RED.
20-30'	SD 100% F MG WELL CEMENTED, DEEP RED, ARG.
30-40'	AA, AA, AA, ORG AA, SLTY 10% SH RED.
40-50'	AA, TRC GRY BLU SH TRC PK ANHY.
50-60'	AA, TRC LIGHT GRY DOLO.
60-70'	AA, SLTST REDDISH BRN 20%, TRC DOLO SAND GRY, PCS GRN, LAV, GRY, SH.
70-80'	AA, 30% AA, 50% AA, 20% COLORED SH, FCS ANHY.
80-90'	70% AA, 20% AA, 10% MOR SHALE, 5% KAOLIN.
90-95'	60% SLTST REDDISH BRN, 40% ANHY.
95-00'	ANHY WH 90%, SH RED SLTY 10%.
900-05'	AA.
05-10'	SH & ANHY.

TEST 445-47½ WIRE LINE SUNDAY DEC. 13, 1964 (MISRUN). MONDAY, SET 7" @ 905 W/25 SACKS OF CEMENT 2% CACL 6:00 A.M.

CORE # 1
910-960'

910-926 RED & GRN SILT, 1 FT ANHY WH 917-918, MICAEOUS, MOSTLY RED, GYP INCL; 926-927½ GRN SILT, 927½-938 WH XYLN ANHY, 938-940 GRN GRY SILTSTONE, 940-941 RED SILTY SH W/GYP INCL; 941-42 RED SILT W/FLEC'S GRN SILT; 42-43½ RED SILTY SHALE; 43½-45 WH XYLN ANHY; 945-46 GRY & PINK XYLN ANHY; 946-60 RED SILTY SHALE W/GYP INCL.

CORE # 2
960-1010'

960-66½ RED SILTY SHALE W/ANHY INCL; 966½-69½ WH XYLN ANHY; 69½-972 RED CLAYSTONE; 72-73½ PINK ANHY; 73½-76 RED CLAYSTONE; 76-80 PINK & WH ANHY W/RED SH IMPURITIES; 80-986 LT GRY WH XYLN ANHY; 986-988½ GRY & PINK ANHY W/GYP INCL; 988½-992 RED CLAYSTONE; 992-96 GRY XYLN ANHY; 996-1002½ WH & LT GRY MOTTLED XYLN ANHY; 1002½-1006 TAN, GRY XYLN ANHY, SILTY, SLI DOLOMITIC; 1006-1010 WH & TAN MOTTLED ANHY.

CORE # 3
1010-1060'

1010-12 ANHY GRY DNSE; 12-13 80% SH RED, 20% ORG ANHY INCL; 13-17 90% RED CLY W/20% ANHY INCL; 17-21½ ANHY 100% HARD ORG XYLN; 21½-25 MUDST RED, STREAKS GREEN; 25-29 ANHY GRY DNSE; 29-41 ANHY GRY DNSE ELONGATED PITS ON EXTERNAL SIDES--POSSIBLE SALT INCL; 41-42½ ANHYDRITIC GREY DNSE; 42½-44½ CLY ST RED 90%, 10% PK ANHY & SALT; 44½-47 SALT 95, 5% RED SH IMPURITIES; 1047-52 SALT PINK, PITTED; 52-55 SALT PINK 20% IMPURITIES, PITTED; 55-57 AA TRC IMPURITIES; 57-59 SALT PK; 59-60 SH 90% RED, 10% SALT IMPURITIES.

CORE # 4
1060-1110

1060-62 SH 90% RED, SALT WH 10%; 62-64 80% SALT, 20% SH; 64-66, 20% SH, 20% SALT; 66-72 60% SALT, 40% SH; 72-75 90% SH, 10% SALT; 75-81, 90% SALT, 10% SH RED; 81-84½ 100% SALT PK; 84½-88 50% SALT, 50% SH; 88-91 SALT PK; 91-95 90% SH, 10% SALT; 95-96 SALT TRC IMPURITIES, SLT SHARP TAST; 96-1102 SALT WH, 10% IMPURITIES; 1102-1110 SALT PK.

CORE # 5
1110-1160

11 0-12½ SALT WH, PITTED; 12 -15 80% SH RED CLYEY, 20% SALT INCL; 15-25 90% SALT, 10% SH; 25-32 SALT 100% WH PURE, INTERMITTENT PITS; 32-33½ ANHY GRY PITTED; 33½-36 CLY RED, FEW SALT INCL; 36-39 90% RED SH 10% SALT; 39-46 90% SALT WH W/10% RED SH IMPURITIES, PITTED; 46-48 AA, 5% RED SH AA; 48-52½ SALT PK W/VANDED RED ANHY; 52½-53 ANHY W/SALT INCL; 53-59 SALT PK SCATTEPED BANDS OF ANHY; 59-60 SH CRUMBLY, 5% SALT INCL.

CORE #6
1160-1210

1160-61 RED SOFT SHALE W/SALT INC; 61-65 PINK SALT 80% RED SHALE, SET 20%; 65-67 PINK SALT 70% RED SFT SH 30% & W/FLEC OF GREEN SILTSTONE; 67-71½ RED SOFT SH 80% W/INCL PINK SALT 20%; 71½-72 WH SALT 90% W/RED SH INCL 10%; 72-76 WH SALT W/RED SH IMPURITIES & WH ANHY 10%; 76-77 RED AND GRN SILTST W/WH SALT INCL 20%; 77-81 RED SOFT SHALE 80% W/WHSALT INCL 20%; 81-91 WH SALT 80% W/RED SOFT SH INCL 20%; 91-93 WH SALT 80% W/RED SH IMPURITIES 20% & FLECS OF WH GRY ANHY; 93-95 WH SALT 80% W/RED SH IMPURITIES & GRY ANHY BANDS 20%; 95-98 WH SALT 80% W/RED SHALE IMPURITIES 20%; 98-1210 WH SALT 70% W/RED SH IMP 30%.

CORE # 7
1210-1260

1210-14 SALT 60% SH IMPURITIES 40%; 14-20 SALT PK 90% ANHY BANDS 1218, 10% SHALE RED, SCAT PITTING; 20-22 SALT PURE WH W/ANHY INCL PITTED; 22-24 SH RED 90%, 10% ANHY & SALT INCL; 24-26 SH 100% RED SLTY SOFT, TRC SALT 26-29 90% SH, 10% SALT; 29-36 SALT 95% (5% IMPURITIES SH); 36-40 SH GRN RED S;TC SPFT W/FEW SALT INCL; 40-42 SALT 70% SALT; 42-44 SALT WH FRAC ANHY FILLED FRACS TRC RED SH; 44-50; 50-70 SOFT SH 50-30; 50-59½ ANHY GRY DNSE HARD SALT INCL, COMBINATION DOLO & ANHY BEC MORE DOLO AND SLTY @ BOTTOM; 59½-60 CRUMBLY SH.

CORE # 8
1260-1310

1260-40 CLY SOFT RED, BAND PK ANHY @ 62; 64-65 SALT 80% SH 20%; 65-80 SALT, 5% IMPURITIES, SCATTERED BANDS ANHY HARD GRY; 80-83 SHALE 90% SOFT RED W/10% SALT INCL; 83-86 SHALE 20%, SALT 80%; 86-93½ SALT WH SCATTERED BANDS ANHY, 5-10% SCATT IMPURITIES; 93-99 SALT 90%, SH 10%; 99-1302 ANHY GRY HARD; 02-10 SALT WH PK.

CORE # 9
1310-1360

1310-11½ WH SALT W/GRY ANHY BANDS 10%; 11½-14 GRY XYLN ANHY; 14-15 RED & GRN SILTSTONE; 15-17 RED DOLOMITIC SILTSTONE W/FEECS GRN SILTSTONE; 17-18 RED SILTY SH 80% W/INCL RED SILTSTONE 20%; 18-21½ RED SILTY SHALE; 21½-24 WH SALT 80% W/RED SH IMPURITIES 20%; 24-30 WH SALT W/RED SILTY SH IMPURITIES 5%; 30-32½ WH SALT W/FLECS GRY SYLN ANHY; 32½-34 GREEN SILTSTONE; 34-35 RED SILTSTONE W-WH SALT INCL 20%; 35-46 RED SILTY SH 80% W/WH SALT INC 20%; 46-48 GRY DENSE DOLO SLI FOSS XYLN; 48-52 GRY BRN DENSE XYLN DOLOMITE; 52-57½ GRY GRN DENSE XYLN DOLOMITE SLI OIL STAIN & FEW HORIZ BLK SH LAMINATIONS, ALSO INCL BLUE DOLOMITE; 57½-60 DRK BRN XYLN HD TIGHT DOLOMITE, OIL STAIN & W/HORIZ BLK CARB, SHALE LAMINATIONS

Core # 10
1360-1410'

1360-63½ SLTST GREEN OIL STAIN; 63½-64½ ANHY GREY; 64½-73½ SLTST GREEN SCATT OIL STN; 73½-74 SALT 60% SLT ST RED 40% (K20?); 74-79 SALT PK FLECKS GRY ANHY TRC RED SH; 79-81 ANHY GREY DNSE, BAND PK SALT; 81-88½ SLTST ORGISH RED, 10% SALT; 88½-91½ SH 70% RED SLTY (30% SALT); 91½-99 SH 30%, 70% PK SALT PITTED (92 POSS K20) 1 STREAK; 99-1401½ SALT PK SALT, FLECKS GREY ANHY; 1401½-10 80% SH, 20% SALT.

Core # 11
1410-1460'

1410-11½ WH SALT 70%, RED SH 30%; 11½-13 RED SILTY SH; 13-17 RED SILTSTONE W/SALT INCL 5%; 17-22½ RED SILTSTONE W/FLEC'S GRN SILT; 22½-27 RED SILT 90% W/WH SALT INCL 10%; 27-37 WH SALT 80% & RED SH 20%; 37-38½ RED BRN & GRN SILT W/SALT INCL 20%; 38½-39½ WH SALT 90% & ANHY GRY BANDS 10%; 39½-40 RED BRN & GRN SILTSTONE; 40-49 RED BRN SILTSTONE W/FEW SALT INCL; 49-53 GRY ANHY W/INCL RED ANHY; 53-60 WH SALT W/GRY ANHY FLEC'S. STARTED DRILLING @ 1460. MADE 3' CORRECTION DOWN HOLE 1460-63.

60-70' 30% ANHY GRY, SALT 70%, TRC SLTST RED.

70-80' 80% SLTST REDDISH BRN, 10% SALT, 10% ANHY, PCS SLTY SD VFG.

80-90' 100 AA.

90-00' 40% SALT, 60% SLTST AA, TRC ANHY.

1500-10' 60% AA, 40% AA.

10-20' 90% AA, 5% ANHY, 5% SLTST RED.

20-30' 60% AA, 40% AA.

30-40' 100% RED GRY, TRC SALT.

40-50' SALT 70%, 30% SLTST RED.

50-60' 60% ANHY, 40% SALT.

60-65' 80% AA, 20% SLT.

Core # 12
1565-1615'

1565-71½ WH SALT W/FLEC'S GRY ANHY; 71½-72½ GRY ANHY 80% W/SALT INCL 20%; 72½-75½ WH SALT W/FEW GRY ANHY INCL; 75½-76½ GRY XYLN HD ANHY; 76½-78½ PINK SALT W/GRY ANHY INCL; 1578½-1590 RED SILTSTONE W/FEW FLEC'S GRN SILT, SALT FRAC AT 1583½; 1590-1598 RED SITL 80% W/WH SALT INCL 20%: 1598-1605 WH SALT 70%, RED SILT 30%; 1605-06½ WH SALT 40%, GRN & RED SILT 60%; 1606½-15 WH SALT 80%, RED SILT 20% (K20?? 1612 AREA) & W/GREY ANHY FLEC'S.

Core # 13
1615-1665'

1615-21 WH SALT 80% W/RED SH IMPURITIES 20%; 1621-31 GRY XYLN ANHY; 1631-32½ RED & GRN SILTSTONE; 1632½-37 RED SILTSTONE 60% WH PINK SALT 40%; 1637-38½ RED SILTSTONE; 1538½-48 RED SILTSTONE 80% W/PINK SALT INCL 20%; 1648-51½ RED SILTSTONE 70% W/PINK SALT INCL 30%; 1651½-57½ RED SILT 20% WHITE SALT 80%; 1657½-59 GRY & PINK ANHY; 1659-64½ WH SALT 80%, RED SILT 20%; 1664½-65 RED SILTSTONE W/WH SALT INCL 5%.

65-70' SLT STONE RED.

70-80'	SLT STONE RED.
80-90'	AA.
90-00'	80% SLT, GRY 20% LM, DRK GRY BRN DNSE VF XYLN, NO POROSITY.
1700-05'	20% SLT GRY 80% AA, AA.
	SHUT DOWN @ 1705 TO CONDITION HOLE, SLIGHT STN THROUGHOUT, APPROXIMATELY 20 UNITS OF GAS--NOT COMMERCIAL.
05-10'	90% LM, 10% ANHY WH.
10-20'	100% LM.
20-30'	100% SLTST GREEN & GREY.
30-40'	AA, AA RED & GRANITE GRY.
40-50'	AA, AA RED.
50-60'	AA.
60-70'	AA, AA.
70-80'	90 SLT , 10% SALT.
80-90'	30% AA, 70% AA.
90-00'	10% AA, 90% AA.
1800-10'	10% AA, 90% AA.
10-20'	70% AA, 20% AA, 10% ANHY.
20-25'	80% AA, 20% AA.
CORE # 14 1825-1890'	1825-26 90% SH RED 10% SALT; 26-30 40% RED SLT, 60% SALT; 30-32 20% AA, 80% AA; 32-34 90% RED SLT 10% SALT; 34-44 90% SALT, 10% SLTST; 44-52 PK SALT 100% FEW IMPURITIES, TRC GREEN SH LAMINATIONS @ 52; 52-61 SLT ST AA, HARD RED SCATTERED SALT INCL; 61-63 40% SALT; 63-66 50% AA; 66-68 SHST RED & GREEN, 10% SALT; 68-70½ SALT GRY WH 100%; 70½-73 ANHY GRY DNSE SLT DOLOMITIC; 73-75 DOLOMITE DKR GREEN DNSE SLTY V SLT STN, BLUE MINERAL NODULES; 75-80 SAME; 80-90 70% DOL, 30% GREEN SLT DOLOMITIC.
90-00'	50% BLUE GRY SLT ST, 50% DOL TAN DNSE, AA SLTSTN.
1900-10'	90% RED SLT ST 10% SALT.
10-20'	70% AA, 30% AA.
20-30'	30% AA 70% AA.
30-40'	60% AA, 40% AA.
40-50'	10% AA, 90% AA.

50-60'	20% AA, 80% AA.
60-70'	10% AA, 90% AA.
70-80'	TRC SLT, 100% SALT.
80-90'	10% AA, 40% SALT, 50% ANHY GRY WH.
90-00'	10% SLT, 80% SALT, 10% ANHY.
2000-10'	AA, 10% DRK SH, AA, AA.
10-20'	50% DRK SH & ANHY.
20-30'	30% AA, 70% AA.
30-40'	10% DOLO GRY DNSE F XYLN, 70% AA, 20% ANHY.
40-42'	60% DOLO SAME, (45 CIRC SAME).
CORE #15 2042-2095	2042-48½ NO BLEED SLT STN, DOLO DRK GRY BRN, SUCROSE, SPECKED W/ TARY SUBSTANCE; 48½-52 BANDED BLEEDING AA, WELL SAT, ANHY INCLUSIONS; 52-61 NO BLEED, DOLO LT BRN, SUCROSE, SCATTERED ANHY BLEBS; 61-75 DOLO BRN, DNSE ARG, ANHY INCL FAIR TO GOOD STN & SAT 75% STAINED (73-75 VERT FRAC); 75-77 SLT STN VERT FRAC DOLO AA; 77-81 MED STN LARGE VERT FRAC, APPEARS WTR STN AA; 81-87½ FAIR, GOOD SAT, VERT FRACTURE W/SALT INCL; DOL, BR, DNSE F XYLN, SLTY FEW ANHY BLEBS; 87½-95 SLIGHT STN, LARGE VERT FRACS, HAIR LINE FRACS W/ANHY INCL; SD DOLO GRY GREEN, ARG 9' SLTY, MICA FLECKED, DNSE.
CORE #16 2095-2145	2095-99 SD VFG DOLOMITIC SLTY, GREEN; 99-02 AA, SLTY ARG; 02-07 DRK CARBONACEOUS SH LAMINATIONS (2107 LARGE VERT FRAC W/SALT); 07-11 AA, SLT ANHYDRITIC, BEC MORE SLTY; 11-14 SLTST W BLK SH LAMINATIONS, ANHY DROTOC AA; 14-18 SLTST RED GREEN COLOMITIC; 18-27 AA, AA, SDY, ARG; 27-31 CLY ST SLTY RED; 31-36 AA, TRC ANHY; 36-41 AA, 41-45 AA W/ANHY & SALT INCL.
2145-50'	10% RED CLAY ST 90% RED STST.
50-60'	60% RED SLTST, 40% WH SOFT ANHY.
60-70'	10% RED CLY ST, 10% SLT, 80% ANHY.
70-80'	30% GR, RED SH, 70% WH ANHY.
80-90'	100% RED SLT ST.
90-00'	AA.
2200-10'	100% RED SLT.
10-20'	20% RED SILT, 80% SOFT WHITE.
20-30'	10% AA, 90% AA.

30-40'	40% AA, 60% AA.
40-50'	100% RED SLT, TRC SALT.
50-60'	10% SLT RED, SALT 20%, ANHY GRY DNSE 70%.
60-70'	30% AA, 70% AA.
70-80'	40% AA, 60% AA.
80-90'	30% SLT RED, 70% SALT.
90-00'	90% AA, 10% AA.
2300-10'	100% SLTST.
10-20'	100%AA.
20-30'	90%AA, 10% SALT.
30-40'	100% SLTST.
40-50'	80% SLTST, 20% SALT.
50-60'	10% SLT, DOL TAN F XYLN 80%, ANHY 10%.
60-70'	60% SLTST, 40% DOL TRC ANHY.
70-80'	90% SLTST, SALT WH 10%.
80-90'	10% AA, 90% AA.
90-00'	10%AA, 90% AA.
2400-10'	20% AA, 80%AA.
10-20'	80% AA, 20% AA.
20-30'	100% AA.
30-40'	AA.
40-50'	AA.
50-60'	AA.
60-70'	100% ORG RED SILT, SALT ANHY DOL.
70-80'	90% AA, 10% WH.
80-90'	90% AA, 10% WH.
90-00'	30% AA, 70% AA.
2500-10'	20% AA, 80% WH SALT.
10-20'	60% AA, 40% SALT.

20-30'	30% AA, 70% AA.
30-40'	20% AA, 80% AA.
40-50'	30% AA, 70% AA.
50-60'	50% AA, 50% AA.
60-70'	70% AA, 30% AA.
70-80'	80% AA, 20% AA.
80-90'	90% RED ORG SILT, 10% SALT.
90-00'	100% AA, TRC SALT.
2600-10'	BEC SHY.

#1-4

CORE TEST NO. # 3	CYCLE #1 TOTAL THICKNESS	%	CYCLE #2 TOTAL THICKNESS	%	CYCLE #3 TOTAL THICKNESS	%	CYCLE #4 TOTAL THICKNESS	%	CYCLE #5 TOTAL THICKNESS	%	SALT-1st DOLO TOTAL THICKNESS	%	NOTES
INTERVAL	2034-2541		1873-2034		1690-1873		1358-1690		885-1358		1050-1358		Cycle #5
SANDSTONE	26	5.1											Salt/clastics: 1.62
SILTSTONE-SH	284	56	47	29.1	101	55.2	171	51.5	133	28.1	48	15.6	Evap/clastics: 2.56
DOLO & LIME	50	9.9	11	6.8	23	12.6	8	2.4	0	0	0	0	Salt/anhy: 1.74
ANHY	27	5.3	15	9.3	13	7.1	29	8.7	124	26.2	44	14.3	
SALT	120	23.6	88	54.7	46	25.1	124	37.3	216	45.6	216	70.1	
TOTAL=	507	99.9	161	99.9	183	100	332	99.9	473	99.9	308	100	

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CA-20

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Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No.

CORE ANALYSIS RESULTS

Company ARKANSAS-LOUISIANA GAS CO. Formation File RP-3-1950
Well CORE HOLE NO. 3 Core Type DIA. CONV. Date Report 12-21-64
Field WILDCAT Drilling Fluid Analysts HUFF
County APACHE State ARIZONA Elev. Location

Lithological Abbreviations

SAND-SD SHALE-SH LIME-LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SDY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-XLN GRAIN-GRN GRANULAR-GRNL	BROWN-BRN GRAY-GY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
1	2066	0.19	10.1	6.9	72.5	Dolo, brn f xln/suc
2	2072.5	0.04	8.7	8.1	37.5	Dolo, brn, f xln/suc

SERVICE NO. 8

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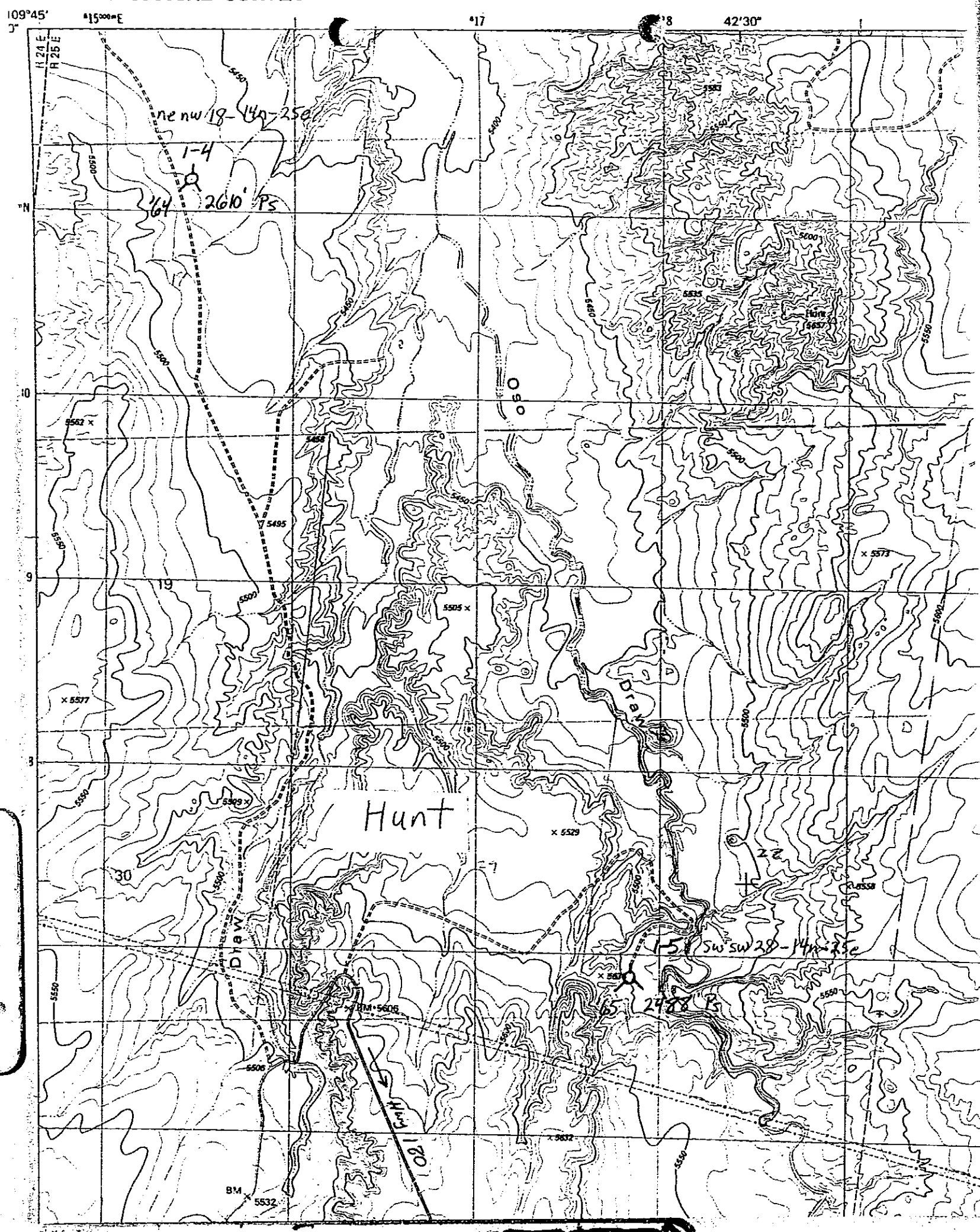
GEOLOGICAL SURVEY



Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

#1-4

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST NO. 3
SEC. 18 T. 14N R. 25E
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 11 DATE 12-8-64

ABBREVIATIONS

LAT - Logged after trip
CO - Circulated Out
NR - No Returns
NB - New Bit
NCB - New Core Bit
UCB - Used Core Bit
DST - Drill Stem Test

LITHOLOGY

Sand
Lime
Shale
SILTSTONE
SALT
ANHYDRITE
DOLOMITE

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

4 — Butanes .025%/Div. — 4
3 — Propane .025%/Div. — 3
2 — Ethane .1%/Div. — 2
Methane .5%/Div.
20 Units/Div. Total Gas

CUTTINGS GAS

HELIUM .1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

DRILLING RATE
Min./Ft. Ft./Hour
1 2 3 4

Per Cent In Samples
75 50 25

Depth & Core Record
50 100 150 200 250 300 350 400 DST-1 450

Oil Gas Value

1% 2% 3% 4% 20 40 60 80 100

REMARKS

SET CASING
NB #1 M4N
GRY FN GRN FRIABLE SAND
RED CONGLOMERITIC SHALE WITH WHITE
QUARTZ INCLUSIONS
TR YELLOW CHERT GRAVEL
WH FN-MED GRN SAND
RED SILTY SHALE
UNCOLIDATED WH MED/CRS GRAIN SAND
red SILTY SHALE
GRY & RED CONGL. SAND
GRN CLAYSTONE
WH MED GRN SAND
WH ANHYDRITE
WH MED GRN SAND
RED SILTY SHALE
RED & GRN SILTSTONE
WH ANHYDRITE
RED & GRN SILTSTONE
RED SILTY SHALE
WH CRS GRN FRIAB. SAND
TAN SUCROSIC LM.
WH FN GRN SAND
COCONINO SS.

PLORATION NMA CORE TEST N
Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST NO. 3
SEC. ____ T. ____ R. ____
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 11 DATE 12-11-64

ABBREVIATIONS

LAT - Logged after trip
CO - Circulated Out
NR - No Returns
NB - New Bit
NCB - New Core Bit
UCB - Used Core Bit
DST - Drill Stem Test

LITHOLOGY

Sand
Lime
Shale

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

4 — Butanes .025%/Div.
3 — Propane .025%/Div.
2 — Ethane .1%/Div.
Methane .5%/Div.
20 Units/Div. Total Gas

CONTINUOUS GAS

.1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

DRILLING RATE
Min./Ft. Ft./Hour
1 2 3 4 5
3 4 6 8 10
SCALE CHANGE
4 6 8 10

Per Cent In Samples 75 50 25

Depth & Core Record

Oil Gas Value

REMARKS

Depth	Remarks
450	NB #2 H7G
	WH FN GRN WELL SORTED SAND
500	
	WH FN GRN SAND
550	
	WH FN GRN SAND
	LOSING MUD
600	
	WH FN GRN WELL SORTED SAND TRACE RED SHALE
650	
	WH FN GRN SAND
700	
	TAN FN GRN SAND TR RED SILTY SHALE TR PURPLE SHALE
750	TR GRY SILTSTONE
	NB #3 H7UG
	RED SILTY SHALE TAN-RED FN GRN SD
800	RED SILTSTONE PURPLE SHALE
	TAN FN GRN SAND
850	

EXPLORATION NMA CORE TEST N
Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NNA CORE TEST NO. 3
SEC. _____ T. _____ R. _____
COUNTY APACHE CO. STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 11 DATE 12-13-64

ABBREVIATIONS

LAT - Logged after trip
CO - Circulated Out
NR - No Returns
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NCB - New Core Bit
UCB - Used Core Bit
DST - Drill Stem Test

LITHOLOGY

Sand
Lime
Shale

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

Butanes .025% / Div.
Propane .025% / Div.
Ethane .1% / Div.
Methane .5% / Div.
20 Units / Div. Total Gas

CUTTINGS GAS

HELIUM .1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

DRILLING RATE
Min./Ft. (X) 2 4 6 8 10
Ft./Hour ( ) 2 4 6 8 10

Per Cent In Samples 75 50 25

Depth & Core Record 850 900 C-1 950 C-2 1000 C-3 1050 C-4 1100 C-5 1150 C-6 1200 C-7 1250

Oil / Gas / Value

1% 2% 3% 4% 20 40 60 80 100

REMARKS

TAN RED FN GRN SD
RED SILTSTONE
RED & GRY SILTY
SHALE WH ANHY
CO ~~SET CASING~~ ELEC. LOG
UCB
WH ANHYDRITE
RED SILTSTONE
RED SILTY SHALE
UCB
WH XYLN ANHYDRITE
RED SILTY SHALE
UCB
RED SOFT SHALE
LT GRY ANHYDRITE
WH SALT
UCB
PINK SALT
RED SILTY SHALE
UCB
WH SALT
GRY ANHYDRITE
UCB
RED SOFT SHALE
WH SALT
UCB
RED SOFT SHALE
WH SALT

EXPLORATION NNA CORE TEST
Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST NO. 3
SEC. ____ T. ____ R. ____
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 7 DATE 12-16-64

ABBREVIATIONS

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UCB - Used Core Bit
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Sand
Lime
Shale

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

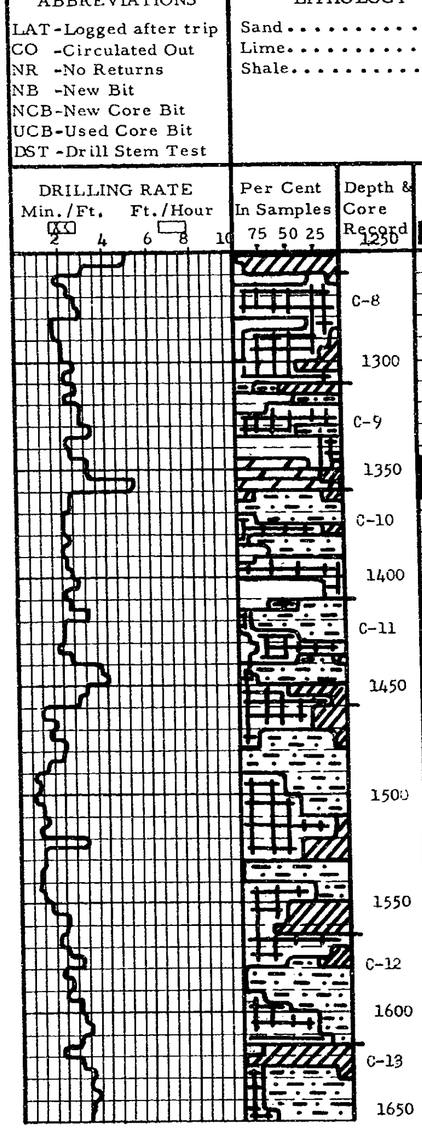
4 — Butanes .025% / Div.
3 — Propane .025% / Div.
2 — Ethane .1% / Div.
Methane .5% / Div.
20 Units / Div. Total Gas

GAS

HELIUM .1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good



REMARKS

UCB
WH SALT
RED SOFT SHALE

UCB
RED SILTSTONE
WH-PINK SALT
RED SILTY SHALE

BRN DENSE DOLOMITE
UCB
RED & GRY SILTSTONE
WH SALT
RED SILTY SHALE

UCB
RED SILTY SHALE
RED SILTSTONE
WH SALT

WH ANHYDRITE
CWV--RERUN
RED SILTSTONE
WH SALT

WH ANHYDRITE
RED SILTSTONE

WH SOFT ANHY.
CO UCB
WH ANHYDRITE
RED SILTSTONE

WH SALT
UCB
GRY ANHYDRITE
WH SALT
RED SILTSTONE

EXPLORATION NMA CORE TEST
Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST NO. 3
SEC. ____ T. ____ R. ____
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 7 DATE 12-16-64

ABBREVIATIONS

LAT - Logged after trip
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MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

4 — Butanes .025% / Div.
3 — Propane .025% / Div.
2 — Ethane .1% / Div.
Methane .5% / Div.
20 Units / Div. Total Gas

GAS

HELIUM .1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

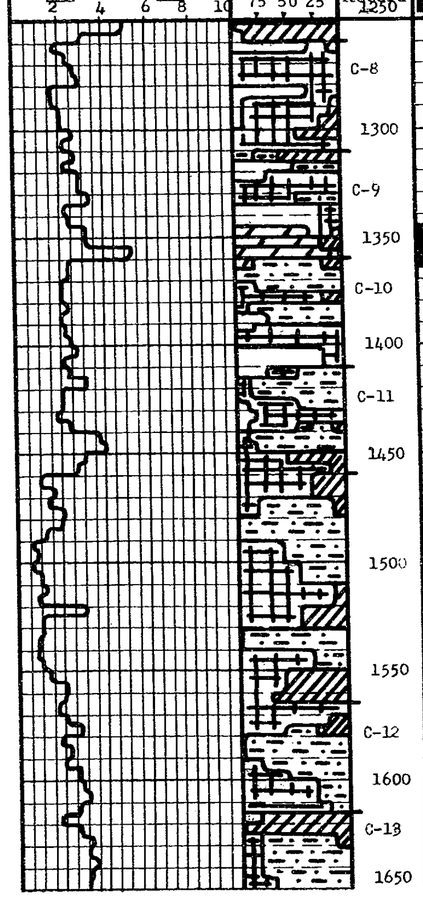
DRILLING RATE
Min./Ft. Ft./Hour
2 4 6 8 10

Per Cent In Samples 75 50 25

Depth & Core Record 1250

Oil Gas Value

REMARKS



Depth	Oil	Gas	Value	Remarks
				UCB WH SALT RED SOFT SHALE
				UCB RED SILTSTONE WH-PINK SALT RED SILTY SHALE
			2	BRN DENSE DOLOMITE UCB
			2	RED & GRN SILTSTONE WH SALT RED SILTY SHALE
			2	UCB RED SILTY SHALE RED SILTSTONE WH SALT
				WH ANHYDRITE CWV---RERUN RED SILTSTONE WH SALT
				WH ANHYDRITE RED SILTSTONE
				WH SOFT ANHY. CO UCB WH ANHYDRITE RED SILTSTONE
				WH SALT UCB GRY ANHYDRITE WH SALT RED SILTSTONE

EXPLORATION NMA CORE TEST NO. 3
Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST NO. 3
SEC. _____ T. _____ R. _____
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 7 DATE 12-18-64

ABBREVIATIONS

LAT - Logged after trip
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Sand
Lime
Shale

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

4 — Butanes .025% / Div. — 4
3 — Propane .025% / Div. — 3
2 — Ethane .1% / Div. — 2
Methane .5% / Div. — 20
Units / Div.
Total Gas

CUTTINGS GAS

HELIUM
Methane
Ethane
Propane
Butane

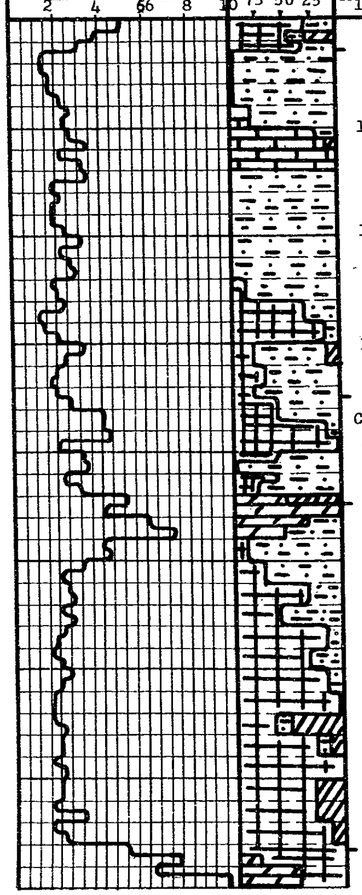
SHOW VALUE

2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

DRILLING RATE
Min./Ft. Ft./Hour
2 4 6 8 10

Per Cent In Samples
75 50 25

Depth & Core Record
1650
1700
1750
1800
C-14
1850
1900
1950
2000
2050



Oil / Gas / Value

2
2
2
2
2
2
2

REMARKS

NB#4 OWV
BRN DENSE LIME
CO MIX MUD
GRN-GRY SILTSTONE
RED & GRY SILTSTONE
RED SILTSTONE
WH SALT
WH ANHYDRITE
RED SILTSTONE
CO UCB
WH SALT
RED SILTSTONE
NB #5 OWV
BRN DENSE DOLOMITE
BLUE-GRY SILTSTONE
RED SILTSTONE
WH SALT
RED SILTSTONE
WH SALT
WH ANHYDRITE
GRY ANHYDRITE
WH SALT
UCB

...PLORATION NMA CORE TEST
... Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST NO. 3
SEC. ____ T. ____ R. ____
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 7 DATE 12-19-64

ABBREVIATIONS

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Sand
Lime
Shale

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

4 — Butanes .025% / Div.
3 — Propane .025% / Div.
2 — Ethane .1% / Div.
Methane .5% / Div.
20 Units / Div. Total Gas

CUTTINGS GAS

HELIUM .1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

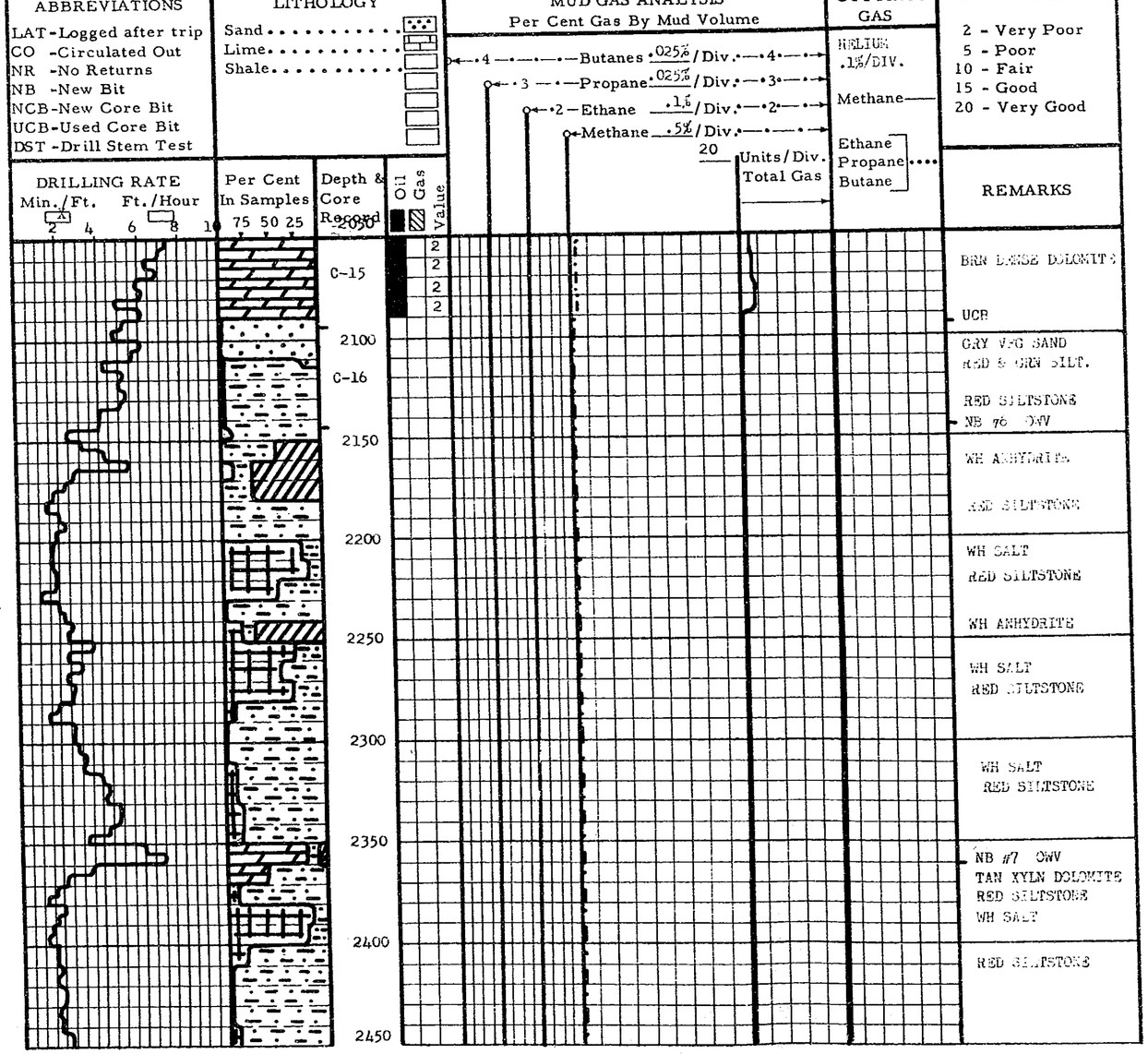
2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

DRILLING RATE
Min./Ft. 2 4 Ft./Hour 6 8 10

Per Cent In Samples 75 50 25

Depth & Core Record

Oil Gas Value



REMARKS

BRN LOOSE DOLOMITE
UCB
GRY VFG SAND
RED & GRN SILT.
RED SILTSTONE
NB #6 OWV
WH ANHYDRITE
RED SILTSTONE
WH SALT
RED SILTSTONE
WH ANHYDRITE
WH SALT
RED SILTSTONE
WH SALT
RED SILTSTONE
NB #7 OWV
TAN XYLN DOLOMITE
RED SILTSTONE
WH SALT
RED SILTSTONE

EXPLORATION NMA CORE TEST
NW/NW Sec 18-T14N-R25E, Apache

Chapman, Inc.

FORMATION ANALYSIS

DAILY LOG

COMPANY ARKANSAS LOUISIANA GAS CO.
WELL NMA CORE TEST No. 3
SEC. ____ T. ____ R. ____
COUNTY APACHE STATE ARIZONA
SUPERVISOR W. A. COLTHARP
UNIT 7 DATE 12-20-64

ABBREVIATIONS

LAT - Logged after trip
CO - Circulated Out
NR - No Returns
NB - New Bit
NCB - New Core Bit
UCB - Used Core Bit
DST - Drill Stem Test

LITHOLOGY

Sand
Lime
Shale

MUD GAS ANALYSIS
Per Cent Gas By Mud Volume

4 — Butanes .025%/Div.
3 — Propane .025%/Div.
2 — Ethane .1%/Div.
Methane .5%/Div.
20 Units/Div. Total Gas

CUTTINGS GAS

HELIUM .1%/DIV.
Methane
Ethane
Propane
Butane

SHOW VALUE

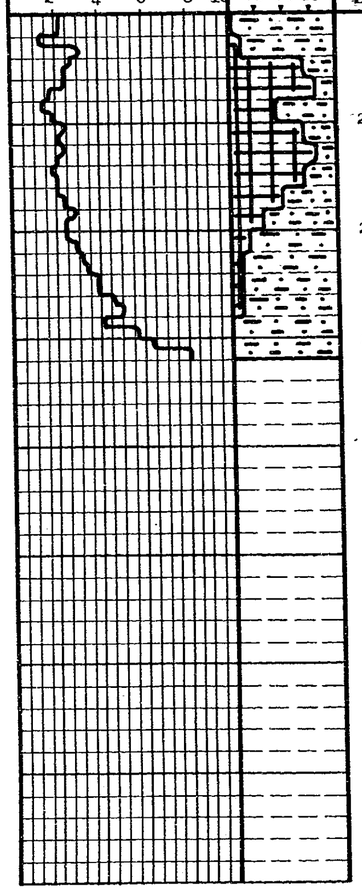
2 - Very Poor
5 - Poor
10 - Fair
15 - Good
20 - Very Good

DRILLING RATE
Min./Ft. 2 4 6 8 10
Ft./Hour

Per Cent In Samples 75 50 25

Depth & Core Record 2450

Oil Gas Value



2500
2550
2600
2650

REMARKS

ORANGE RED SILTSTONE
WH SALT

ORANGE RED SILT.
WH SALT

ORANGE RED SILT.
WH SALT

CO ELECTRIC LOG

EXPLORATION NMA CORE TEST
NW/NW Sec 18-T14N-R25E, Apache

N M A CORE TEST 3 1 ARKANSAS LOUISIANA GAS COMPANY

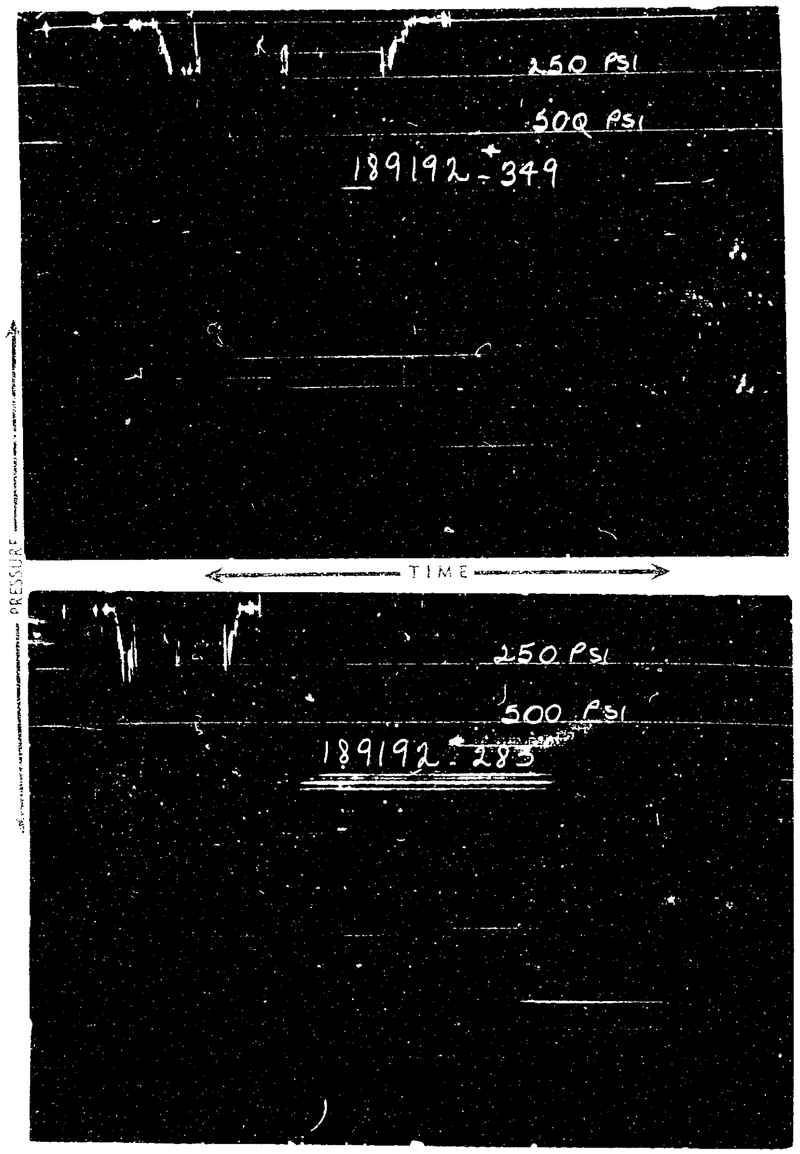
#1-4

DO NOT REMOVE FROM FILE

Halliburton COMPANY

Your.....

Formation Testing Service Report


250 PSI
500 PSI
189192-349
TIME
PRESSURE
250 PSI
500 PSI
189192-283

Flow Time	1st 5 Min.	2nd 60 Min.	Date 12-12-64	Ticket Number 189192	
Closed In Press. Time	1st 60 Min.	2nd 60 Min.	Kind of Job OPEN HOLE	Halliburton District FARMINGTON	
Pressure Readings	Field	Office Corrected	Tester WHITESIDES	Witness -	
Depth Top Gauge	412' Ft.	- Blanked Off	Drilling Contractor SOJOURNER EXPLORATION COMPANY		BM
BT. P.R.D. No.	349	12 Hour Clock	Elevation -	Top Packer 427'	
Initial Hydro Mud Pressure	198	212	Total Depth 460'	Bottom Packer 432'	
Initial Closed in Pres.	76	136	Interval Tested 432' - 460'	Formation Tested TIGHT HOLE	
Initial Flow Pres.	66 / 132	1 50 / 2 86	Casing or Hole Size 8 3/4"	Casing Perfs. Top - Bot. -	
Final Flow Pres.	132 / 132	1 77 / 2 136	Surface Choke 1"	Bottom Choke 3/4"	
Final Closed in Pres.	-	136	Size & Kind Drill Pipe 4½" X H	Drill Collars Above Tester 2½" I.D. - LENGTH 420' 60	
Final Hydro Mud Pressure	198	197	Mud Weight 9.2	Mud Viscosity 44	
Depth Cen. Gauge	Ft.	Blanked Off	Temperature - °F Est. °F Actual	Anchor Size & Length ID 2½" OD 6" X 28'	
BT. P.R.D. No.		Hour Clock	Depths Mea. From ROTARY TABLE	Depth of Tester Valve 407' Ft.	
Initial Hydro Mud Pres.			Cushion TYPE NONE AMOUNT Ft.	Depth Back Pres. Valve NONE Ft.	
Initial Closed in Pres.			Recovered TIGHT Feet of HOLE		
Initial Flow Pres.	1 / 2		Recovered Feet of		
Final Flow Pres.	1 / 2		Recovered Feet of		
Final Closed in Pres.			Recovered Feet of		
Final Hydro Mud Pres.			Oil A.P.I. Gravity	Water Spec. Gravity	
Depth Bot. Gauge	458' Ft.	YES Blanked Off	Gas Gravity	Surface Pressure psi	
BT. P.R.D. No.	283	24 Hour Clock	Tool Opened 2:20 A.M. P.M.	Tool Closed 5:25 AM A.M. P.M.	
Initial Hydro Mud Pres.	209	236	Remarks Tool opened with a very weak blow for a 5		
Initial Closed in Pres.	130	161	minute first flow. Rotated tool for a 60 minute		
Initial Flow Pres.	- / 65	1 UNABLE / 2 114	initial closed in pressure. Tool reopened with a		
Final Flow Pres.	- / 170	1 TO READ / 2 160	good blow. Took a 60 minute final closed in		
Final Closed in Pres.	170	160	pressure. NO SPECIAL READING ADAPTABLE.		
Final Hydro Mud Pres.	209	228			

Legal Location Sec. - Twp. - Rge. -

Lease Name N M A CORE TEST

Well No. 3

Test No. 1

Field Area WILDCAT

Lease Owner/Company Name ARKANSAS LOUISIANA GAS COMPANY

Count APACHE

State ARIZONA

Owner's District -

Mea. From Tester Valve

FORMATION TEST DATA

NOMENCLATURE

b	= Approximate Radius of Investigation	Feet
b_1	= Approximate Radius of Investigation (Net Pay Zone h_1)	Feet
D.R.	= Damage Ratio	—
El	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h_1	= Net Pay Thickness	Feet
K	= Permeability	md
K_1	= Permeability (From Net Pay Zone h_1)	md
m	= Slope Extrapolated Pressure Plot (Psi^2/cycle Gas)	psi/cycle
OF_1	= Maximum Indicated Flow Rate	MCF/D
OF_2	= Minimum Indicated Flow Rate	MCF/D
OF_3	= Theoretical Open Flow Potential with/Damage Removed Max.	MCF/D
OF_4	= Theoretical Open Flow Potential with/Damage Removed Min.	MCF/D
P_s	= Extrapolated Static Pressure	Psig.
P_f	= Final Flow Pressure	Psig.
P_{ot}	= Potentiometric Surface (Fresh Water *)	Feet
Q	= Average Adjusted Production Rate During Test	bbls/day
Q_1	= Theoretical Production w/Damage Removed	bbls/day
Q_g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r_w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t_o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	—
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

* Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.

Form No. 1296-R2

EXPLORATION NMA CORE TEST N
NE/NW Sec 18-T14N-R25E, Apache