

MIKE ENGELBRECHT

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GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

OPERATOR RITCHIE EXPLORATION, INC.

LEASE OTTLEY BROTHERS #1

FIELD WILDCAT

LOCATION APPROX. C NW/4 = 1430' ENL & 1400' ENL

SEC. 20 TWP. 13 RGE. 30W

COUNTY GOVE STATE KS.

CONTRACTOR MUREIN DRUG RIG #14

CONNO. 08-07-12 COMP. 08-13-12

RTD 4760' LOG TD 4704'

SAMPLES SAVED FROM 3600' TO RTD

DRILLING TIME KEPT FROM 3550' TO RTD

SAMPLES EXAMINED FROM 3600' TO RTD

GEOLOGICAL SUPERVISION FROM 3750' TO RTD

MUD UP DISPL @ 3394' TYPE MUD CHEMICAL

API # 15-063-22,031-0000

FORMATION	TOP	LOG	DEPTH	DEPTH	SAMPLE	DEPTH	DEPTH	STRUCT.
ANHYDRITE	2338	+542	2337	+543				+21
BASE	2367	+513	2367	+513				+19
STÖTLER	3559	-679	3558	-678				
HEBNER	3918	-1038	3916	-1036				+21
LANSING	3963	-1083	3960	-1080				+20
MUNICIE SH	4120	-1240	4117	-1237				+13
STARK SH	4207	-1327	4204	-1324				+18
BKC	4278	-1398	4277	-1397				+11
ALTAMONT	4343	-1463	4340	-1460				+2
PAJUNEE	4414	-1534	4412	-1532				+3
CHEROKEE SH	4507	-1627	4503	-1623				+2
JOHANSON ZA	4561	-1681	4559	-1679				-6
MISSISSIPPI	4586	-1706	4586	-1706				+5

ELEVATION

KB 2880'

DF 2670'

GL 2670'

Measurements Are All

From KB 2880'

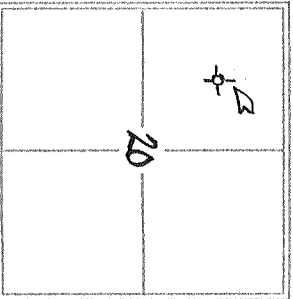
CASING RECORD

SURFACE 8 5/8" @ 224'

w/175 SXS.

PRODUCTION:

WELL LOG SURVEYS
COMP DENIS/NEUTRON
DUAL INDUCTION



REFERENCE WELL FOR STRUCTURAL COMPARISON

MUREIN DRILLING Co. 1 & A
#1 Downward NW NW NW 21-13-30W

FORM 9 7-00 AM

OF 4 SHEETS

DATE	DEPTH	NO	SIZE	WGT	TYPE	DEPTH OUT
8-7-12	MERT					
8-8	DRUG @ 890'					
8-9	DRUG @ 3350'					
8-10	DRUG @ 3923'					
8-11	DRUG @ 4234'					
8-12	DRUG @ 4550'					
8-13	@ I Logging					

FORMATION

DEPTH

DESCRIPTION OF EVENT

3500

10

20

30

40

50

STOTLER

3558

-678

DISPLACED @ 3394'

← BIT TRIP @ 3520'
S.H.T. = 1°
PIPE STRAP 5B SHORT

60

70

80

90

3600

10

20

30

CRN BUFF GRAY FUSSED LS POOR φ NS
LOTS GRAY - LT GN. SHS

LT GRAY - GRN GUMBO SHS

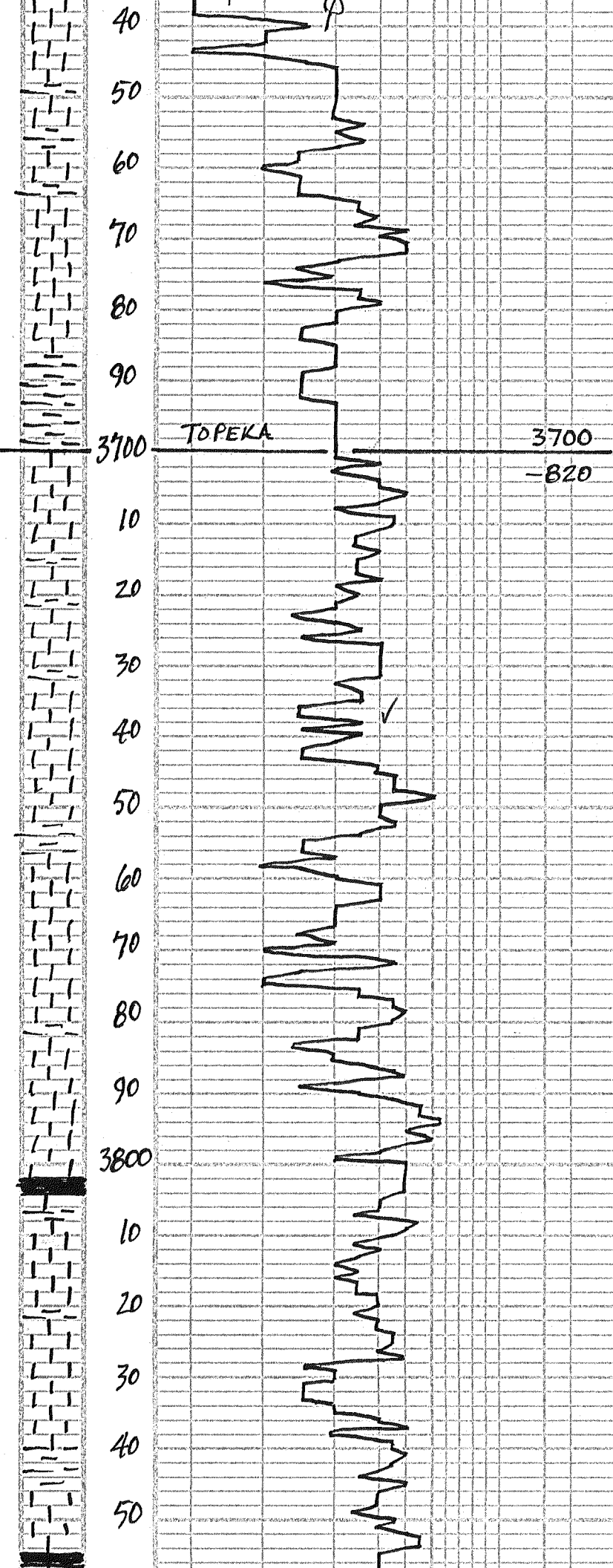
20 LT GRAY BUFF CRN SLI FOSS LS NS

30 LT-MD GRAY - MOLT - MEXLY LS POOR
φ - NS NO ODOR

40 LT CRN - BUFF SLI FOSS LS - NS

50 LT GRAY - BUFF SLI FOSS LS POOR φ
NS NO ODOR

60 FLOOD LT CRN - WH FN - XCN LS



P-F ϕ - NS NO ODOR 'LOTS WH CK

70 GRAY-BUFF FN-XCN LS POOR ϕ - NS

80 LT-MD GRAY MEALY LS POOR ϕ NS
NO ODOR

90 GRAY LS DNSE-POOR ϕ - NS

100 MD GRAY FN-XCN DNSE LS POOR ϕ
FEW SOFT, NS NO ODOR

110 GRAY-BUFF V. FOSS LS P-F FOSS ϕ
NS NO ODOR

20 BRN-RUSF GUMBO SHS

30 WH-CRM-BUFF SLI-FOSS LS POOR ϕ
NS NO ODOR

40 LT CRM V. FOSS LS FAIR ϕ - NS
NO ODOR

← VISC: 61
WT: 8.9
LCM: 3*

50 WH-LT CRM SLI-FOSS LS
POOR ϕ - NS INC CRM

60 FLOOD GRAY FN-XCN LS POOR ϕ
NS NO ODOR

← GEOL. ON LOC. 11:00 PM
THURS. 8-9-12

70 FLOOD LT CRM LT TAN V. FOSS
LS P-F FOSS ϕ - NS NO ODOR

80 LOTS WH-LT CRM FOSS LS FAIR ϕ
NS NO ODOR INC WH CK

90 CRM-BUFF SEMI-FOSS LS P-F ϕ
NS NO ODOR

← VISC: 52
WT: 8.9

100 PRED BUFF V. LT GRAY FOSS LS
P-F FOSS ϕ - NS NO ODOR

1000 # PP

10 LS AA - NS NO ODOR, FEW
BLK SHS

20 LT GRAY-LT TAN SLI-FOSS LS
POOR ϕ - NS NO ODOR

30 FLOOD LT GRAY V. FN-GR SST-
SILTSTONE LMY MATRIX
NS NO ODOR

40 FLOOD WH-LT CRM V. FOSS LS
FAIR FOSS ϕ - NS NO ODOR

50 WH-LT CRM V. FOSS CRM LS
F-POOR ϕ NS NO ODOR INC CK

60 WH-LT CRM-LT TAN SEMI-FOSS
LS P-F ϕ - NS NO ODOR

70 LT CRM-LT TAN FN-XCN LS

← MUD-CO ✓
VISC: 59 FILT: B.0

WT: 8.9 CHL: 2,000

DNSE - CKY POOR ϕ - NS
80 WH - LT CRM FN - XLN CKY LS - NS
FEW BLK SHS

90 WH - LT CRM FN - XLN CKY LS
P-F ϕ - NS NO ODOR

100 FLOOD LT CRM - LT TAN V. FOSS LS
FAIR FOSS ϕ - NS NO ODOR

110 FLOOD WH - LT CRM SEMI-FOSS
CKY LS P-F ϕ - NS NO ODOR

120 LT CRM - LT TAN FN - XLN CKY LS
POOR ϕ - NS SOFT MEALY

← VISC: 49
WT: 8.9

130 FLOOD BLK SHS!

ADDING PREMIX

140 FLOOD LT GRV SILTSTONE &
LT GRV GUMBO SHS

150 DRED RUST-BRN SHS FEW LT GRV
TAN FN - XLN LS POOR ϕ NS NO ODOR

30 MIN: FLOOD WH - LT CRM SLI-FOSS
LS W/ P-F V. G ϕ - NS NO ODOR
PTLY CKY - 1/4"

160 LT CRM - WH FN - XLN CKY LS - NS

170 LT CRM - LT GRV V. OOL LS POOR ϕ
NS NO ODOR LOTS RED RUST SHS

30 MIN: WH - LT CRM SUB OOL LS PTLY
CKY P-F ϕ NS NO ODOR

← VISC: 58
WT: 9.1
LCM: 3#

180 WH - LT CRM SEMI-OOL CKY LS - NS

190 FLOOD WH FN - XLN CKY LS - NS,
NO ODOR, INC CKY

200 WH - LT CRM - LT TAN SLI-FOSS LS
P-F ϕ - NS NO ODOR

210 LOTS BRN RUST SHS & CLM - BUFF
SLI-FOSS LS POOR ϕ - NS NO ODOR

30 MIN: FLOOD WH - LT CRM SEMI-OOL
LS POOR ϕ SLI CKY - NS NO ODOR

220 WH - LT CRM SLI-FOSS CKY LS
POOR ϕ - NS NO ODOR

← VISC: 56
WT: 9.0
LCM: 3#

230 LOTS V. LT GRV GRN LS FN - XLN
POOR ϕ - NS NO ODOR

30 MIN: FLOOD WH - LT CRM - LT
TAN SLI-FOSS LS POOR ϕ - NS
PTLY CKY

240 PRED LT CRM FN - XLN LS POOR ϕ
DNSE - CKY NS NO ODOR

250 PRED LT CRM - LT TAN SLI-FOSS LS
POOR ϕ - NS NO ODOR PTLY CKY

260 WH - LT CRM SLI-FOSS LS FN - XLN
DNSE - SEMI CKY POOR ϕ - NS

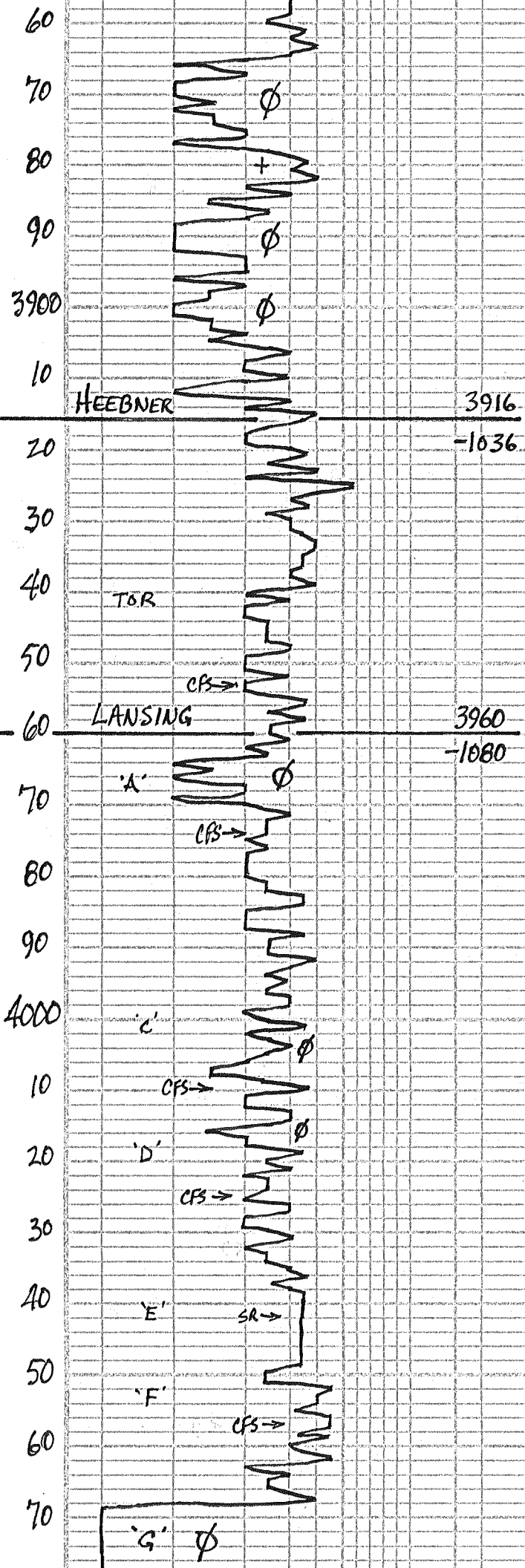
270 LT CRM - LT TAN SEMI-OOL LS
DNSE - CKY POOR ϕ - NS NO ODOR

← VISC: 60
WT: 9.1
LCM: 2#

30 MIN: LT CRM - LT TAN SEMI-FOSS
LS POOR ϕ - NS NO ODOR SLI CKY

280 WH - LT CRM FN - XLN LS - NS

290 LT CRM - LT TAN SEMI-OOL LS
POOR ϕ - NS NO ODOR



HEEBNER

3916

-1036

TOR

LANSING

3960

-1080

'A'

'C'

'D'

'E'

'F'

'G'

CFS →

CFS →

CFS →

CFS →

SR →

CFS →

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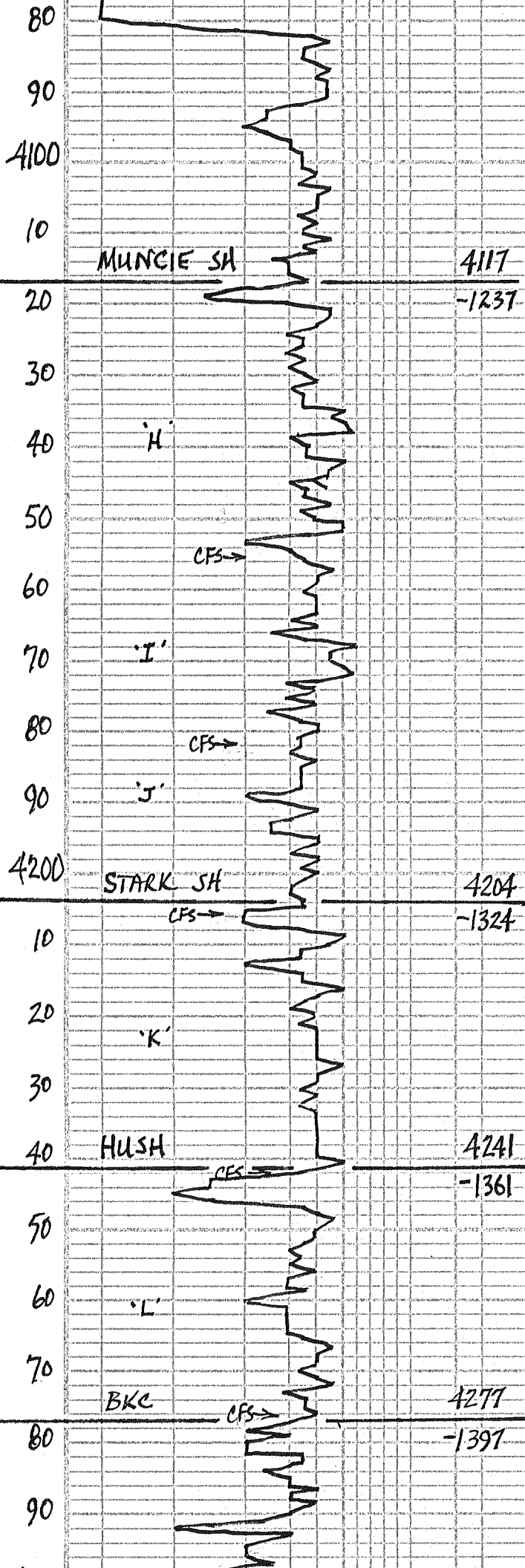
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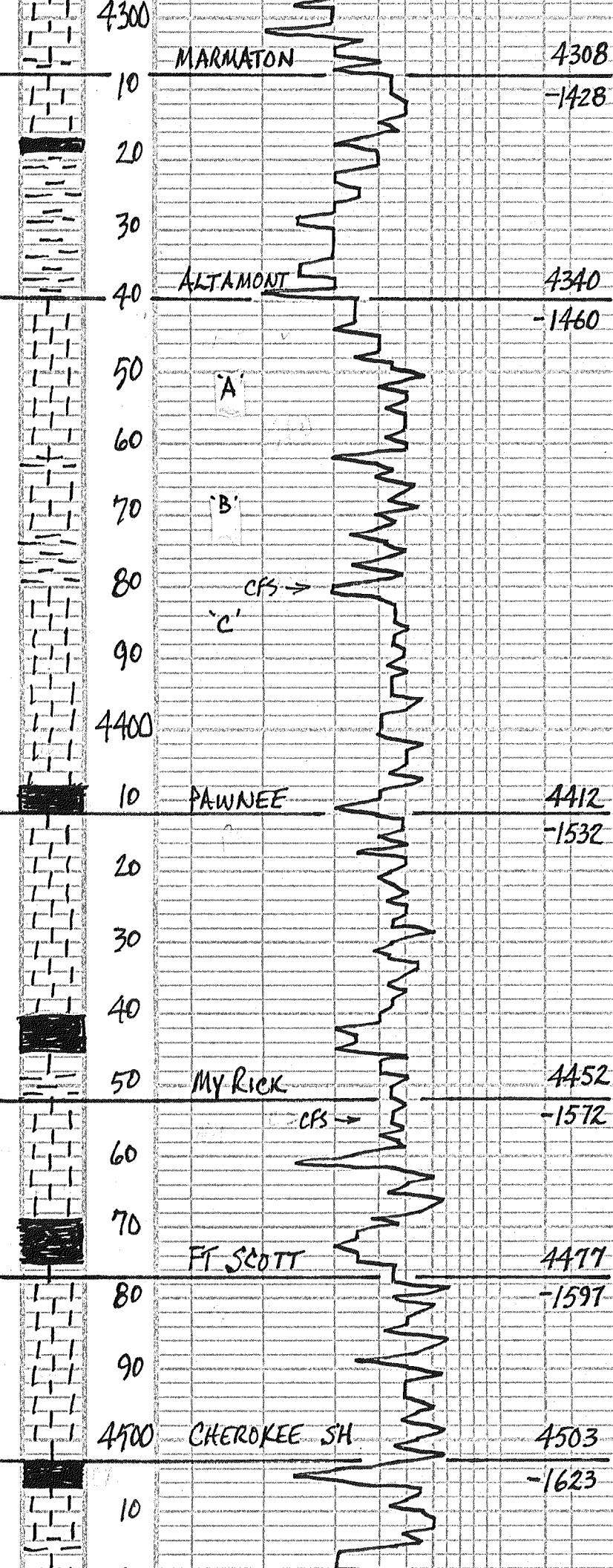


- 90 LOTS LT TAN OOL LS W/ FAIR OOL
P-NS LOTS LOOSE CK NO ODOR
- 00 FLOOD WH - LTCRM SUB OOL LS/
P-F OOL P-NS NO ODOR CKY
- 10 FLOOD V. LT GRN FN-XLN LS
POOR P-NS, NO ODOR
- 20 TAN FN-XLN DNSE LS POOR P
NS NO ODOR FEW BLK SHS
- 30 FAIR AMT BLK SHS.
- 40 LOTS LT GRN-GRN GUMBO SHS
LT TAN-GRN FN-XLN LS -NS
- 50 PREN V. LT GRN FN-XLN LS POOR P
NS NO ODOR
- 55) WH - V. LT GRN FN-XLN LS POOR P
NS NO ODOR
30 MIN: V. LT GRN - CRM FN-MD-
XLN LS POOR P-NS NO ODOR
60 MIN: INC BLK SHS LS AA-NS
- 60 LOTS BLK SHS & GRN SHS
- 70 FLOOD LT TAN FN-XLN LS
MOSTLY DNSE POOR P-NS
- 80) FLOOD WH - LTCRM FN-XLN LS
POOR P-NS NO ODOR
30 MIN: V. LT GRN - TAN FN-XLN
LS POOR P-NS NO ODOR
60 MIN: LS AA-NS & BRN &
GRN SHS
BRN - RUST - PEACH GUMBO SHS
- 00 FLOOD WH - LTCRM SLI-FOSS LS
CKY POOR P-NS NO ODOR
- 06) FLOOD WH SUB OOL CKY LS
P-FOOL P-NS NO ODOR
30 MIN: WH - V. LT GRN FN-XLN
CRM LS - NS
60 MIN: WH - LT CRM FN-XLN
CKY LS - NS & BLK SHS
- 10 BLK SHS
- 20 CRM-TAN - ROOT BEER FN-XLN LS
DNSE CKY - NS NO ODOR
- 30 FLOOD WH - LTCRM MEXLY CKY LS
POOR P-NS NO ODOR
- 40 FLOOD WH - V. LT GRN FN-XLN LS
POOR P-NS PTLY CKY
30 MIN: LS AA FEW OOL -NS
& BRN, BLK SHS
60 MIN: LT TAN FN-XLN LS -NS
INC BLK SHS
- 50 CRM-TAN FN-XLN LS -NS
LOTS BLK SHS
- 60 DK GRN-TAN FN-XLN LS DNSE
-MEALY POOR P-NS NO ODOR
- 70 GRN-TAN FN-XLN LS DNSE-MEALY
POOR P-NS NO ODOR
- 76) LT GRN-LT TAN FN-XLN LS POOR
P-NS NO ODOR
30 MIN: PREN LT GRN FN-XLN LS
POOR P-NS NO ODOR
60 MIN: LT GRN SILTY LS & SH
- 00 GRN - LT TAN FN-XLN LS POOR P
NS, NO ODOR
- 10 LT GRN - BUFF SLI-FOSS LS -NS
LOTS GRN GRN BLK SHS

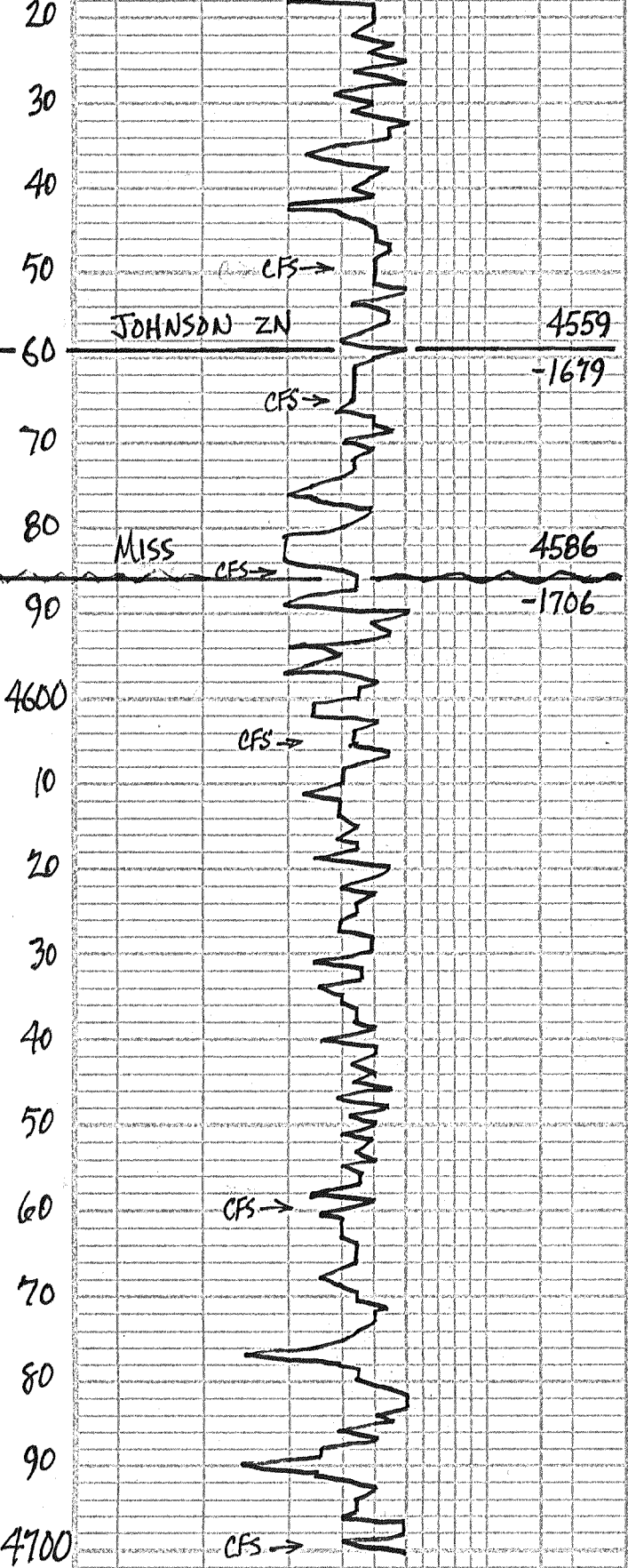
Visc: 59
WT: 9.1
LCM: 2#

MUD CO ✓
Visc: 58 FILT: 7.6
WT: 9.2 CHL: 2.500
LCM: 2# PH: 16.5

1100# PSI



20 MUDDY GRAY MEALY LS POOR φ NS
 LOTS GRAY SHS
 30 FLOOD BRN RUST SILTY SHS
 WH-TAN BUFF FN-XLN DNSE
 LS POOR φ - NS NO ODR
 40 WH-CRM-GRY FN-XLN LS-NS
 LOTS GRAY SHS
 50 WH-LT BUFF SLI-Foss LS POOR
 φ - NS NO ODR
 60 FLOOD BRN-RUST PURPLE SHS
 70 FRED LT CRM-BUFF FN-XLN LS
 POOR φ - NS NO ODR
 80 FLOOD LT CRM-LT TAN FN-XLN
 LS POOR φ - NS NO ODR DNSE
 30 MIN: WH-LT CRM-LT TAN FN-
 XLN LS POOR φ - NS NO ODR
 60 MIN: LT CRM FN-XLN LS-NS
 INC BRN RUST SHS
 90 LT CRM-LT TAN FN-XLN LS
 100 LT GRAY BUFF FN-XLN LS
 POOR φ - NS NO ODR
 LOTS GRAY SHS
 10 FLOOD LT CRM FN-XLN LS POOR φ
 NS NO ODR DNSE-CLY
 20 LT TAN-LT CRM FN-XLN LS POOR φ
 DNSE-CLY NS NO ODR
 30 FLOOD WH-CRM FN-XLN LS
 DNSE-SLI CLY POOR φ - NS
 40 FEW DK GRAY LS & BLK SHS
 FRED LT TAN CRM FN-XLN LS
 POOR φ - NS NO ODR
 50 FLOOD DK GRAY-TAN DNSE LS
 & BLK SHS
 55 FLOOD TAN-DK BRN FN-XLN LS
 POOR φ - NS NO ODR
 30 MIN: LT CRM-LT TAN FN-XLN
 LS POOR φ - NS NO ODR
 SLI CLY & FEW BLK SHS
 60 MIN: LT CRM-GRY-TAN
 FN-XLN LS POOR φ - NS NO ODR
 CRM-LT TAN FN-XLN LS POOR φ
 70 FLOOD WH-LT CRM FN-XLN LS
 POOR φ - NS PLY CLY
 80 FLOOD BRN SHS & CRM-LT TAN
 FN-XLN LS - NS NO ODR
 90 LT TAN BUFF FN-XLN LS POOR φ
 NS NO ODR LOTS DNSE
 100 FLOOD TAN-BUFF FN-XLN LS
 DNSE-MEALY POOR φ - NS NO ODR
 10 WH-CRM-TAN FN-XLN LS POOR φ
 NS - NO ODR CLY-DNSE
 20 TAN-BUFF SEMI-OO LS DNSE-
 MEALY POOR φ - NS NO ODR



30 LOTS WH-LTCRM FU-XLN CKY LS
POOR ϕ - NS NO ODOR

40 FLOOD LTCRM BUFF GRN LS
DNSE-CKY POOR ϕ - NS NO ODOR

50 WH-LT TAN-BUFF FU-XLN LS
POOR ϕ - NS NO ODOR DNSE-CKY
30 MIN: CRM-LT TAN LT BUFF
FU-XLN LS - NS NO ODOR CKY-DNSE
60 MIN: TAN-BUFF FU-XLN LS
POOR ϕ - NS NO ODOR
LS AA NS, NO ODOR FEW GRN SHS

65) CRM-TAN V. FU-XLN LS DNSE TAN
CKY-CRM POOR ϕ - NS NO ODOR
30 MIN: LT-MD TAN FU-XLN LS
POOR ϕ - NS NO ODOR
60 MIN: PRED LT TAN FU-XLN LS
POOR ϕ - NS NO ODOR

80 CRM-TAN-BUFF FU-XLN LS POOR ϕ
NS NO ODOR DNSE-CKY

85) LOTS WH-LTCRM FU-XLN CKY
LS POOR ϕ - NS NO ODOR
30 MIN: DK TAN V. FU-XLN DNSE LS
& CRM-BUFF DOTTED FOSS DOL LS
POOR ϕ - NS
60 MIN: GOLD GRN, BLK SHS &
WH-CRM CKY LS POOR ϕ - NS
LOTS GOLD GRN SHS SOME SLTY
LTCRM-BUFF MICRO DOL LS
SALT & PEPPER POOR ϕ - NS

85) LOTS LT TAN FU-XLN LS POOR
 ϕ - NS NO ODOR SLI-CKY
30 MIN: CRM-LT TAN FU-XLN LS
POOR ϕ - NS NO ODOR
60 MIN: WH-LTCRM SDLS CKY
POOR ϕ - NS NO ODOR
10 CRM-LT TAN FU-MD-XLN LS POOR ϕ
NS NO ODOR
20 PRED WH-LT PURP-LT GRN SDLS -
MICRO DOL LS FAIR ϕ - NS
NO ODOR

30 WH-LT-CRM MICRO-DOL LS LOTS
CKY P-F ϕ - NS NO ODOR

40 LTCRM-LT TAN V. FU-CR LS
DNSE POOR ϕ - NS NO ODOR

50 LT TAN-LT BUFF FU-XLN LS
DNSE-CKY POOR ϕ - NS NO ODOR

60) LTCRM-LT TAN MICRO-DOL LS
FAIR ϕ - NS NO ODOR
30 MIN: WH-LTCRM MICRO-DOL LS
P-F ϕ - NS NO ODOR
60 MIN: WH-LTCRM MICRO-DOL LS
P-F ϕ - NS NO ODOR CKY
70 LTCRM-LT TAN FU-XLN LS POOR ϕ
NS NO ODOR PTLY CKY

80 CRM-LT TAN FU-XLN LS POOR ϕ
NS INC CKY NO ODOR

90 LS AA & PURE WH CKY LS
POOR ϕ - NS SOME WH A

00) LT TAN STD DOLD W/FAIR VUG ϕ
NS NO ODOR
30 MIN MD TAN SICK DOLD W/FAIR
VUG ϕ - NS NO ODOR
SLI CKY

MUD-CO CKV
VISC: 52 FILT: 6.8
WT: 9.2 CHL: 2,000

MUD-CO ✓
VISC: 59 FILT: 7.2
WT: 9.4 CHL: 2,000

REACHED RTD 9:00 PM 8-12-12
PULLED 25 STD STRIP - SEMI TIGHT
COND HOLE 2 HRS.
CAME OUT FOR LOGS.

RTD 4700'
LTD 4704'

