

MIKE ENGELBRECHT

Licensed Geologist No. 334

2513 Spring Meadow
Wichita, KS 67205

Phone: 316-721-9226
Cell: 316-841-8008

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR RITCHIE EXPLORATION INC.

LEASE REYNOLDS - POTOSI #1

FIELD THUNDER

LOCATION N/2 NW SE = 2580 FSL & 2080 FEL

SEC. 13 TWP. 27 RGE 24W

COUNTY FORD STATE KS.

CONTRACTOR VAL Energy Rig # 1

COMM. 3-11-13 COMP. 3-20-13

RTD 5100 LOG TD 5100

SAMPLES SAVED FROM 3800 TO RTD

DRILLING TIME KEPT FROM 3400 TO RTD

SAMPLES EXAMINED FROM 3800 TO RTD

GEOLOGICAL SUPERVISION FROM 3969 TO RTD

MUD UP DISPL @ 3621 TYPE MUD CHEMICAL

API # 15-057-20,881-00-00

FORMATION	TOP	LOG	PATTERN	TOP	SAMPLE	STRUC.
					DATUM	COMP.
ANKHYDRITE	1450	+992				-6
BASE	1494	+948				-8
STOLLER	3475	-1033				-9
HEEBNER SH	4137	-1695				-3
LANSING	4258	-1816				-4
MUNNIE SH	4440	-1998				-4
STARK SH	4565	-2123				-5
BKC	4642	-2200				-4
MARKMOTN	4704	-2262				-6
PAWNEE	4777	-2335				-9
CHEKOKEE SH	4824	-2382				-5
HUCK	4912	-2470				-9
ATOKA SH	4923	-2481				-9
MORROW						
MISSISSIPPIAN	4958	-2516				-7

ELEVATION

KB 2442

DF 2432

GL 2432

Measurements Are All

From KB 2442

CASING RECORD

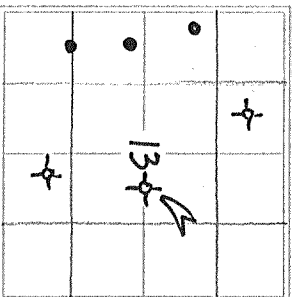
SURFACE 8 5/8" @ 409'

W/250 SKS. ODM.

PRODUCTION NA

WELL LOG SURVEYS

COMP NEUTRON/DENSITY
DUAL INDUCTION



DATE	DEPTH	NO	SIZE	WGT	TYPE	DEPTH INT
3-11-13	MIRT					
3-12	WOC					
3-13	DRUG @ 1830					
3-14	DRUG @ 2960					
3-15	DRUG @ 3622					
3-16	DRUG @ 4915					
3-17	DES @ 4770 DST1					
3-18	DRUG @ 4844 DST2					
3-19	DRUG @ 4939 DST3					
3-20	DRUG @ 5060					
3-21	PLUG					

FORMATION

DESCRIPTION OF SHOW

REFERENCE WELL FOR STRUCTURAL COMPARISON

RITCHIE EXPL. #1 Simon 13CD
SE/4 13-27-24W

FEET
FOOTING

DRILL STEM TESTS

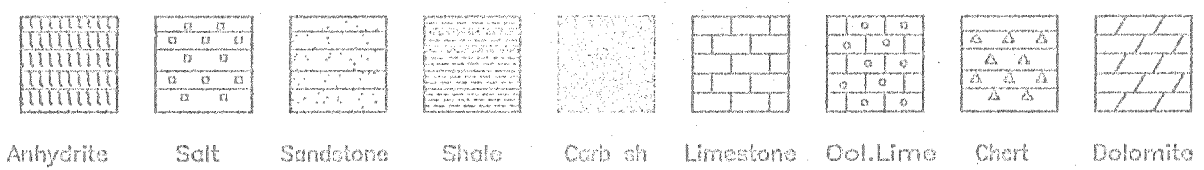
No.	Interval	FP/Tms	ESP/Tms	FP/Tms	ESP/Tms	DO-FWI	REMARKS

REMARKS AND RECOMMENDATIONS: ALL SHOWS WERE DRILL STEM TESTED WITH NEGATIVE RECOVERIES; AFTER E-LOG EVALUATION IT WAS RECOMMENDED TO PLUG & ABANDON THIS TEST WELL.

MIKE ENGELBRECHT
GEOLOGIST LIC # 334

MUD BY MUW.CO.
DST'S BY SUPERIOR TESTING
MBC GAS TRAILER
E-LOG BY NAABORS

LEGEND



LITHOLOGY

DEPTH 3400 10

DRILLING TIME (Logarithmic Scale)

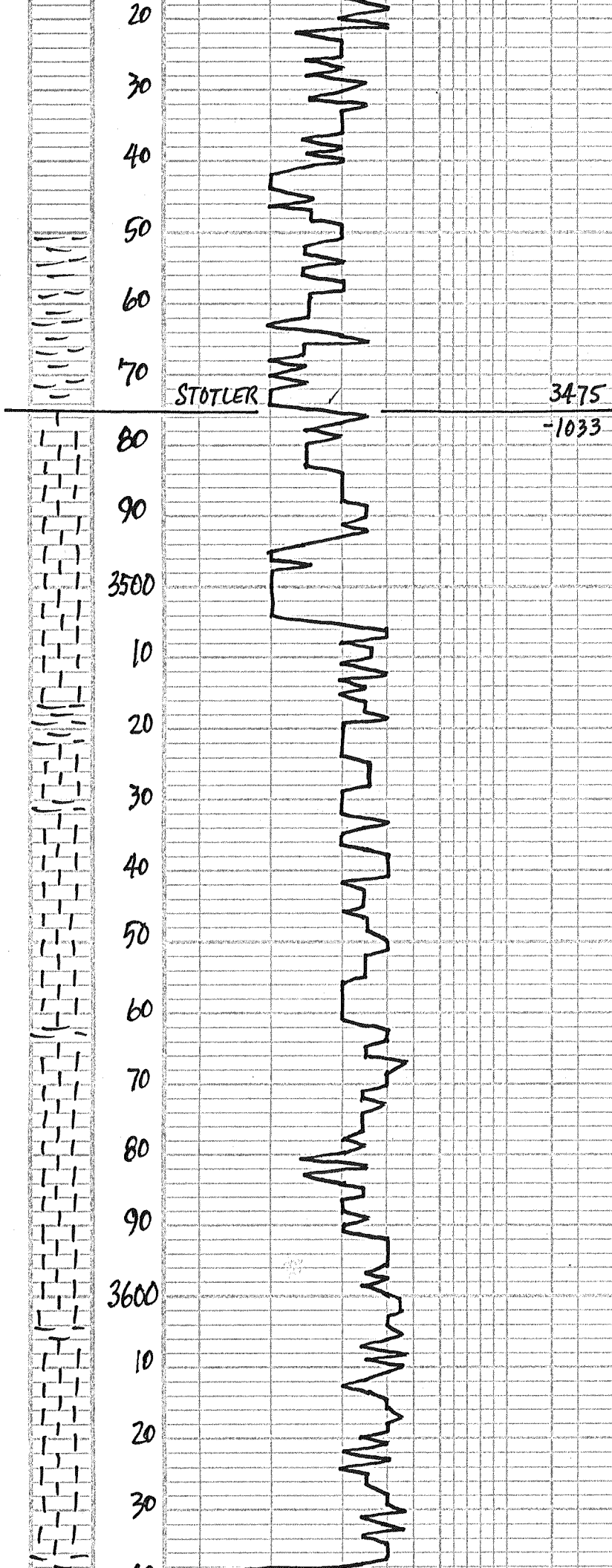
.5 1 5 10 15 20 30

SAMPLE DESCRIPTIONS

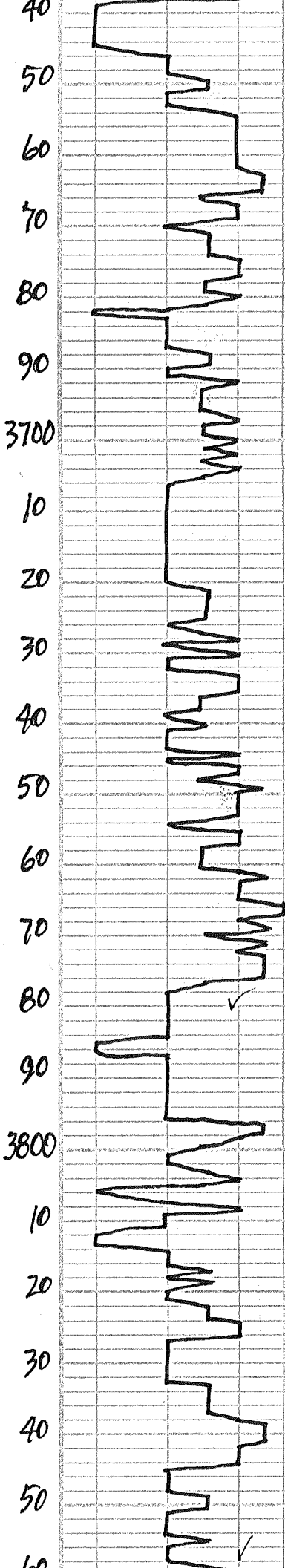
REMARKS

M

ENGEL-11



MUD CO ✓
 ← VISC: 57
 WT: 8.7
 FILT: 10.4
 CHL: 6,200
 LCM: 0 #



PRED SHS RUST-GCY

WH-CRM-LT TAN SLI-FOSS P-Fφ
 NS NO ODOR

2nd CRM-LT TAN SEMI-FOSS Δty LS
 P-Fφ - NS NO ODOR

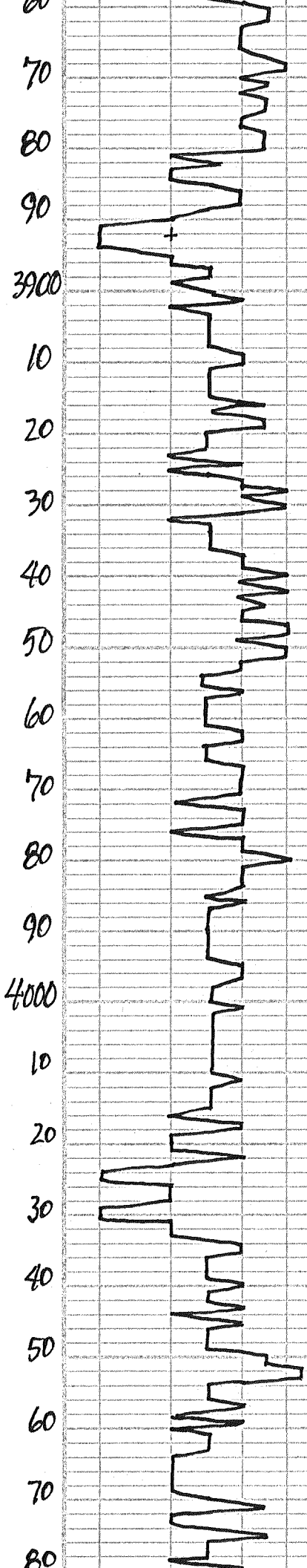
WH-CRM SLI-FOSS Δty - GY LS
 POOR φ - NS NO ODOR

4th WH-CRM LT TAN SLI-FOSS LS
 NS PTZY GY

CRM-BUFF FN-XLN LS DNSE-
 GY POOR φ - NS NO ODOR

6th CRM-BUFF SEMI-FOSS Δty LS
 P-Fφ - NS NO ODOR

LT TAN - BUFF N. FOSS LS FAIR φ
 NS NO ODOR



80 LS AA-NS & GRAY LS-NS

WH-CRM-TAN FOSS-LS
P-F ϕ - NS NO ODOR

00 FEW DK GRAY SHS

CRM-BUFF FUSSLD LS P-F ϕ
NS NO ODOR

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

FLOOD LT CRM GRAN LS POOR ϕ
NS NO ODOR

40 LT CRM-LT TAN SEMI-FOSS LS
POOR ϕ - NS NO ODOR

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

60 LT CRM-LT TAN SLI-FOSS LS
POOR ϕ - NS NO ODOR

INC MD-DK GRAY-GRN SHS

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

INC DK GRAY SHS

00 LT CRM-TAN DNSE-LS POOR ϕ
NS NO ODOR

WH-CRM-LT TAN MEALY CLY
LS POOR ϕ - NS

20 WH-CRM CLY LS-NS

WH-CRM CLY LS POOR ϕ NS

40 WH-CRM LT TAN SLI-FOSS LS
POOR ϕ - NS NO ODOR

WH-CRM SLI-FOSS LS P-F ϕ
NS NO ODOR PTLY CLY

60 LT CRM-LT GRAY FN-MD-XLN
LS POOR ϕ NS

WH-CRM FN-XLN LS DNSE-
CLY POOR ϕ - NS NO ODOR

80 CRM-WH FN-XLN CLY LS
POOR ϕ - NS NO ODOR

FLOOD PURE WH CLY LS-NS

00 FLOOD WH CLY LS-NS

Visc: 50
WT: 8.9
LCM: 2#

← BEDL. ON LOC. SAT
FRI 3-15-13

GAS DETECTOR
OFF SCALE
CONTACTED MBC.V

825#PP

← TIGHT COMM.

← Visc: 55
WT: 9.0
LCM: 2#

90
4100
10
20
30
40
50
60
70
80
90
4200
10
20
30
40
50
60
70
80
90
4300

HEEBNER

4138
-1696

TOR

LANSING

4260
-1818

CFS →

10 FLOOD LT CRM SEMI-FOSS LS
P-F φ - NS NO ODOR

20 LOTS DK GRAY SHS LS AA NS

30 FLOOD WH CRM CRU LS
POOR φ - NS NO ODOR

VISC: 53
WT: 9.1
LCM: 2.4

40 LT CRM-LT TAN MEALY LS
POOR φ - NS INC GRAY SHS

50 LOTS DK GRAY-BLK SHS

60 LT GRAY SLI-FOSS LS DNSE-
POOR φ - NS NO ODOR

VISC: 51
WT: 9.1
LCM: 2.4

70 DIRTY GRAY SHS

80 GRAY MEALY SLI-FOSS LS - NS
NO ODOR

90 GRAY-TAN SLI-FOSS LS - MEALY
POOR φ - NS, NO ODOR

00 WH-LT CRM FN-XLN CRU LS
P-F φ - NS NO ODOR

10 LT CRM LS AA-NS & GRAY-GRN
SHS

20 IN GRAY-GRN GUMBO SHS

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

ADD. PRE-MIX

40 FLOOD CRM-BUFF SLI-FOSS LS
P-F φ - NS NO ODOR

50 LT GRAY-GRN SHS FEW SILTY

60 FLOOD LT CRM CRU-MEALY LS
POOR φ - NS NO ODOR

70 LT CRM-BUFF SLI-FOSS LS
POOR φ - NS NO ODOR

71) LT CRM-TAN SEMI-FOSS LS
POOR φ - NS NO ODOR

30 MIN: LT TAN-CRM SLI-FOSS LS
P-F φ - NS NO ODOR

60 MIN: LOTS PURE WH CRU LS
POOR φ - NS NO ODOR

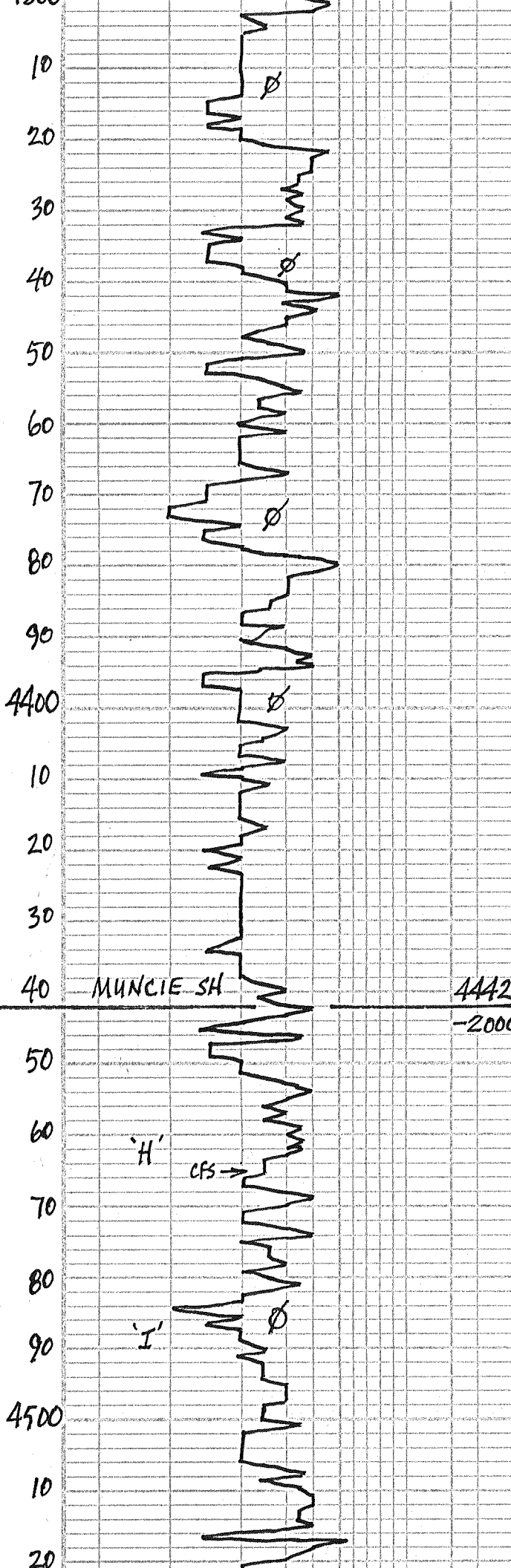
NO KICK

90 WH-LT CRM FUSSLD LS P-F φ - NS

MHD-COV
VISC: 50 FILT: B.B
WT: 9.1 CHL: 6,900

00 PRED LT CRM SLI-FOSS LS POOR φ
NS NO ODOR

10 CRM-LT TAN SLI-FOSS LS DNSE
POOR φ - NS



20 LT GRAY-TAN FN-XLN DNSE LS
NS, INC GRAY SHS

30 LT TAN-BUFF FOSS LS W/FAIR ⌀
NS NO ODOR

40 GRAY-TAN FN-XLN LS POOR ⌀
NS NO ODOR, PTLY CKY

50 LT GRAY-CRM-TAN SEMI-FOSS LS
P-F ⌀-NS SLI-CKY NO ODOR

60 LTCRM-TAN SEMI-FOSS LS
FUSSLED & MASHED DOC POOR ⌀
NS NO ODOR

70 GRAY FN-XLN LS POOR ⌀-NS
NO ODOR

80 CRM-LT TAN SEMI-FOSS LS
P-F ⌀-NS NO ODOR

90 LT TAN-BUFF SEMI-FOSS LS
P-F FOSS ⌀-NS

00 LTCRM-BUFF SEMI-FOSS LS
P-F ⌀-NS NO ODOR

10 WH-TAN-BUFF SLI FOSS LS
P-F ⌀-NS, NO ODOR

20 WH-CRM FN-XLN CKY LS-NS

30 FLOOD WH-LTCRM SLI-FOSS LS
& LT GRAY SMOKEY Δ-NS

40 PRED WH-LTCRM CKY LS POOR ⌀
NS NO ODOR

50 CRM-LT TAN BUFF SLI-FOSS LS
POOR ⌀-NS

60 DK GRAY-BLUE SHS & CRM-BUFF LS
POOR ⌀-NS NO ODOR

65 CRM-BUFF SLI-FOSS LS POOR ⌀
NS NO ODOR

30 MIN: PRED LT CRM-LT TAN SLI-
FOSS LS W/ POOR ⌀-NS NO ODOR

60 MIN: CRM-BUFF SLI-FOSS LS
POOR ⌀-NS NO ODOR

80 FLOOD WH-LTCRM SLI-FOSS LS
POOR ⌀-NS NO ODOR

90 LTCRM-BUFF SLI-FOSS LS-NS

00 LS AA-NS INC GRAY SHS

10 CRM DOC LS W/ P-F DOC ⌀-NS
& LT GRAY CKY LS-NS

20 LTCRM-BUFF SLI-FOSS LS
POOR ⌀-NS NO ODOR

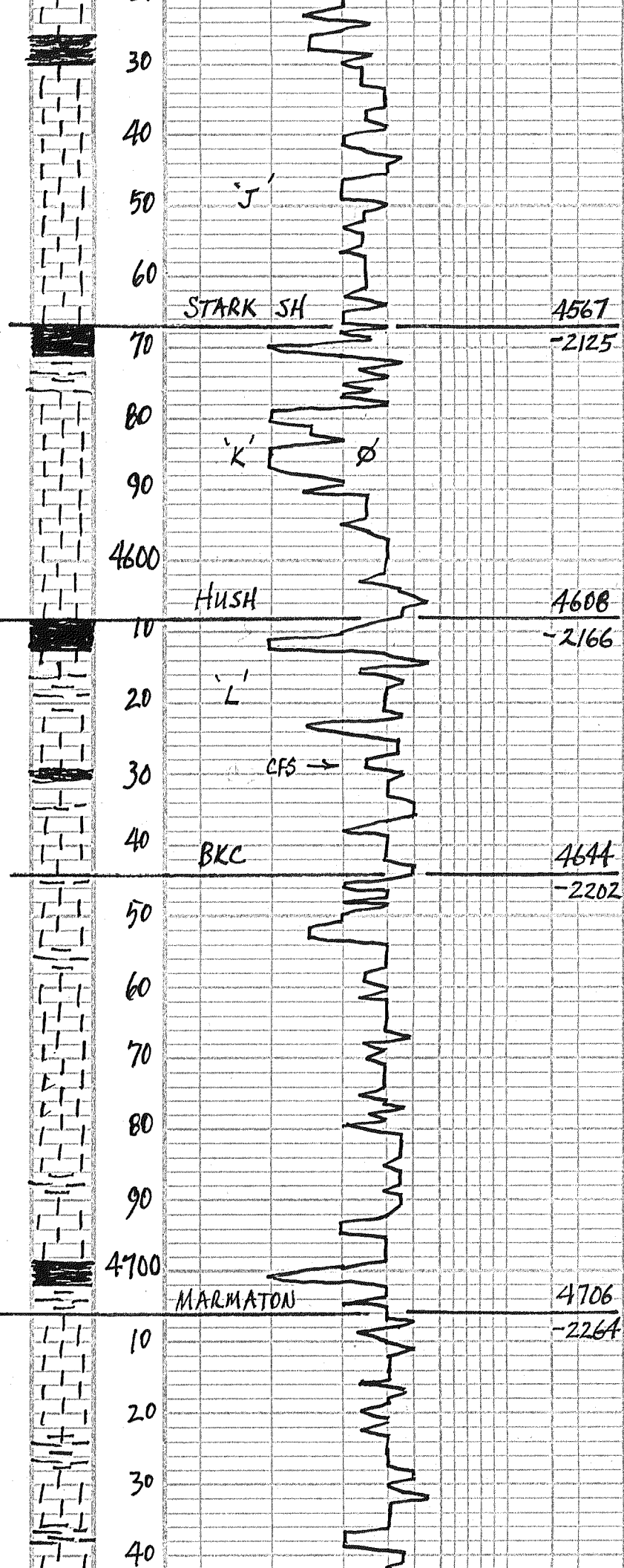
30 CRM-BUFF LS-AA-NS NO ODOR

NO KICKS

← Visc: 50
WT: 9.2
LCM: 1*

NO KICKS

← Visc: 54
WT: 9.3



40 LT TAN ROOT BEER SLI-FOSS LS
POOR ϕ - NS NO ODOR

50 LT CRM SUB DOC LS P-FOOC ϕ
NS NO ODOR

60 LT TAN BUFF SLI-FOSS LS
POOR ϕ - NS

← VISC: 57
WT: 9.3#
LCM: 2#

70 LT CRM-SLI-FOSS LS PLY CHY
POOR ϕ - NS NO ODOR

80 GRN-BLK SHS $\frac{1}{2}$ FEW GRN Lty LS
POOR ϕ - NS

← VISC: 55
WT: 9.4
LCM: 2#
30 UGK HW

90 LOTS GRN-BLUE-BLK SHS
CRM-BUFF SLI-FOSS LS - NS

00 BUFF-LT TAN SEMI-DOC LS
P-F ϕ - NS NO ODOR

10 V. LT TAN BUFF FN-XLN Dolo LS
P-F INTER GRAN ϕ - NS NO ODOR

20 CRM-BUFF SLI-FOSS LS POOR ϕ
NS NO ODOR

← 30 UGK HW

29) LOTS BLK SHS!

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

60 MIN: LT CRM-LT TAN SLI-FOSS
LS POOR ϕ - NS NO ODOR

40 LT CRM-LT TAN SLI-FOSS LS
POOR ϕ - NS

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

ADD PRE-MIX

60 DIRTY GRN-BUFF LS POOR ϕ
NS

70 INC GRN LS & GRN SHS

80 GRN-BUFF-TAN SLI-FOSS LS
SOME Lty POOR ϕ - NS

90 WH-CRM-TAN FN-XLN CHY LS
POOR ϕ - NS, NO ODOR

← VISC: 55
WT: 9.3+

00 LOTS GRN-TAN Lty LS POOR ϕ
NS NO ODOR

10 LOTS GRN-TAN-BRN FOSS Lty LS
DUSE INC GRN BLK SHS

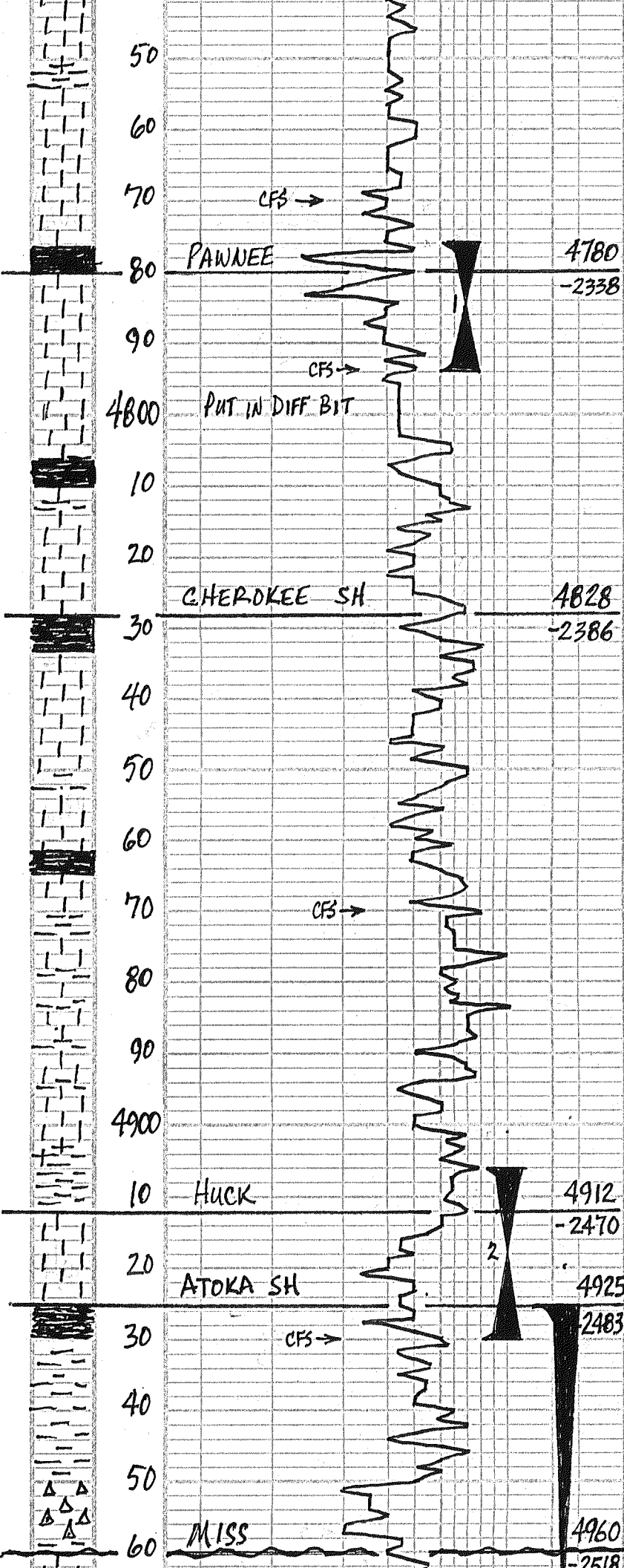
20 LT GRN-BUFF-TAN SLI-FOSS
LS POOR ϕ - NS NO ODOR

30 LOTS LT CRM SLI-FOSS LS
POOR ϕ - NS

← VISC: 55
WT: 9.3

40 LT GRN SH $\frac{1}{2}$ CRM LS - POOR ϕ
NS NO ODOR

50 CRM-TAN FN-XLN LS - NS



60 DK GRAY LT LS - NS & BLK SHS

70) CRM-LT TAN SLI-FOSS MEAN
LS POOR ϕ - NS NO ODOR

30 MIN: LOTS LT TAN - BUFF SLI-FOSS
LS POOR ϕ - NS NO ODOR

60 MIN: LT CRM SLI-FOSS LS
POOR ϕ - NS NO ODOR

80) LT CRM-LT TAN SLI-FOSS LS
POOR ϕ - NS NO ODOR

90) BLK-DK GRAY SHS

9A) LT GRAY Δ -FOSS LS DNSE & BLK SH

30 MIN: 3 PLS LT CRM SLI-FOSS LS
W/ LT TAN NO FO, FT ODOR ON BRK
PTLY CKY

60 MIN: INC WH CKY NO SHOW, NO ODOR

00 CRM SLI-FOSS LS POOR ϕ - NS
NO ODOR

10) PRED WH-LT CRM FN-XLN CKY
LS POOR ϕ - NS, NO ODOR

20 DK GRAY LT LS & BLK SHS

30 WH-CRM-LT TAN FN-XLN CKY LS
POOR ϕ - NS, NO ODOR

40 WH-CRM CKY LS - NS & BIG BLK SH

50 LT CRM-WH-LT TAN SLI-FOSS
LS POOR ϕ - NS DNSE-CKY
NO ODOR

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

70) FEW DL GRAY-BLK SHS & LT TAN
SLI-FOSS LS POOR ϕ - NS NO ODOR

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

60 MIN: TAN SLI-FOSS LS - NS

80) WH-LT GRAY-BUFF SEMI-DDL LS
POOR ϕ - NS DNSE-CKY

90) LT CRM SEMI-DDL LS HARD DNSE
P-F ϕ - NS NO ODOR

00) WH CRM-BUFF SEMI-FOSS LS
P-F ϕ - NS NO ODOR, INC SHS
GRAY & BLK

10) WH-CRM-BUFF LS DNSE-CKY
POOR ϕ - NS NO ODOR

20) CRM-TAN-LT GRAY SLI-FOSS LS POOR ϕ
NS DNSE FT ODOR

30) CRM-LT TAN LS W/SLI-FOSS POOR
W/ SCAT LT TAN LT-FAIR ODOR NFO

30 MIN: INC LT CRM SLI-FOSS LS
W/ SCAT LT TAN NO FO, LT-FAIR ODOR

60 MIN: FEW PLS LT TAN LS W/ P-F
W/ SCAT LT TAN LT-FAIR ODOR 20 GRK
CARBIDE TEST GOOD, RICK HW \pm 70

40) VARI-COLOR SHS, BRN, GRAY, RUST
GRN EARTY

50) PRED GRN GRN, PURPLE SHS FEW GOLD
FEW LT CRM SEMI-CL Δ -NO ϕ - NS
& CRM FN-XLN LS DNSE-CKY - NS

60) PRED SHS - GRAY-PURPLE GRN GOLD,
SOME BANDED, FEW GEN. 304 QRTZ,
NS NO ODOR

70) LOTS WH-Peach-ORANGE Δ W/ SCAT
V.G. ϕ - NS, 10 PLS W/ DRFO NO ODOR
TRACE GAS BUB, NO SST

MUD COV
VISC: 53 FILT: 8.8
WT: 9.4 CHL: 5,700

PULLED 25 STDS, FIRST
17 PULLED 40K OVER,
COND. HOLE 1 HR.
PIPE STRAP, 6' OFF
SHT = Y2

DST #1 4776-4794
30-30-30-30
IF: WK BLOW BUILT TO 1/4"
FF: V. WK - FLUSH - SURGE
REC: 3' MUD
SIP: 636-396
IFP: 36-37 FFP: 38-39

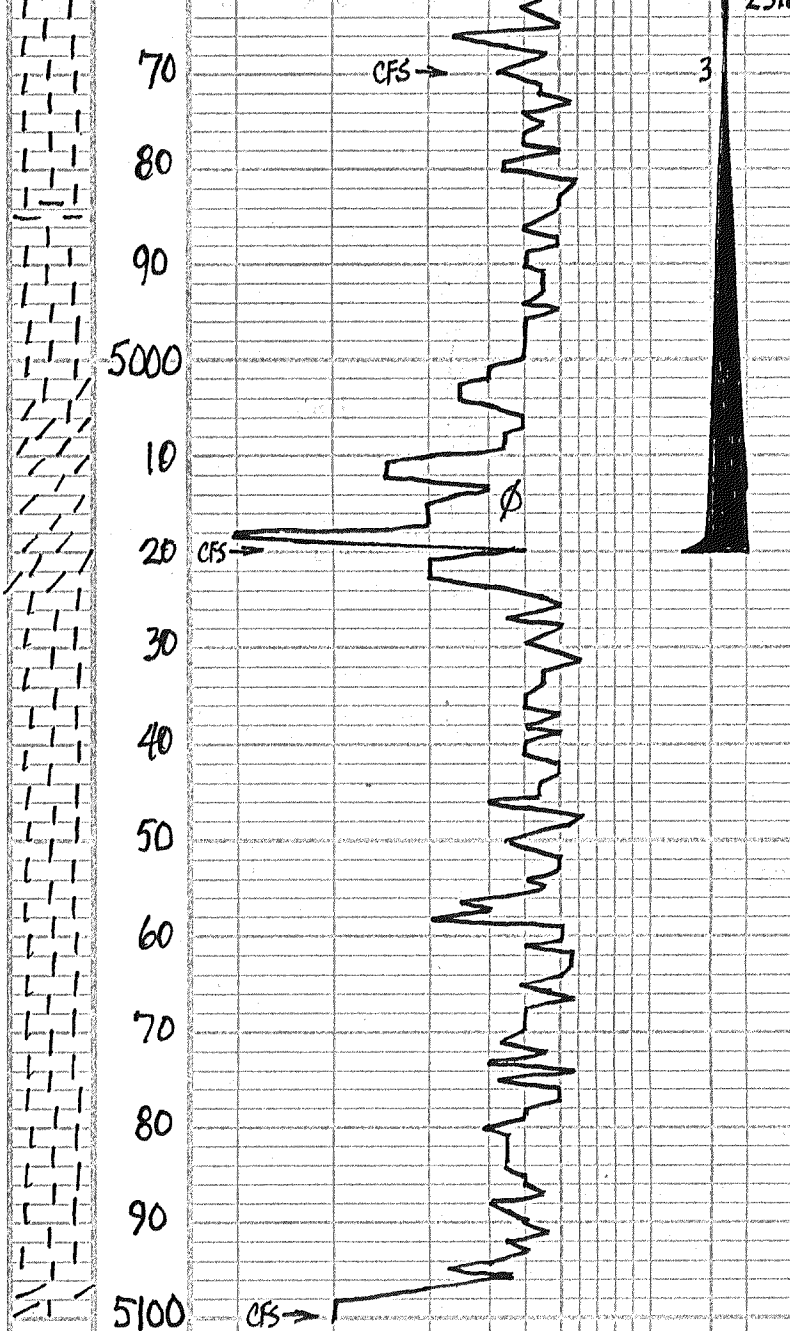
LOTS TRIP GAS

MUD COV
VISC: 53 FILT: 9.6
WT: 9.3 CHL: 5,900

MBC HERE TO FIX V
GAS DETECTOR

DST #2 4906-4930
30-45-45-60
IF: WK BLOW BUILT TO 2 1/4"
FF: V. WK BLOW BUILT TO Y2"
REC: 7' MUD
SIP: 85-138
IFP: 43-44 FFP: 42-44

NO KICKS



RTD = 5100'
LTD = 5100'

30 MIN: WH - LT CRM FN - XLN LS
POOR ϕ - NS NO ODOR

60 MIN: INC WH Δ & WH CRM
CRY LS - NS NO ODOR

80 MOST SHS FEW GRN LS WH CRM
FN - XLN CRY LS - NS NO ODOR

90 PRED WH - LT CRM MICRO DOL LS
PTLY CRY POOR ϕ - NS NO ODOR

00 PRED WH - LT CRM MICRO - DOL LS
PTLY TO CRY POOR - F ϕ NS NO ODOR

10 PRED WH MICRO - DOL CRY LS POOR ϕ
NS NO ODOR

20) LOTS LT TAN: BUFF DOLD LS W/ FEW
LT SCAT STN, NO FO, FT ODOR?

30 MIN: LOTS LT TAN: GRN: BUFF DOLD
& DOLD LS FEW W/ SCAT STN NO FO
FT ODOR: PTLY CRY SALT & PEPPER

60 MIN: LOTS TAN DOLD FN - GR SUGAR
DOLD W/ FAIR INTER - XLN ϕ FEW W/ STN
NO FO FT ODOR ON BK PTLY CRY

70 PRED SHS SUNK FROM TRIP

40 WH - LT CRM FN - XLN CRY LS POOR
 ϕ - NS, NO ODOR

50 PRED WH - LT CRM FN - MD - XLN LS
CRY POOR ϕ - NS, NO ODOR

60 FLOOD WH - LT CRM CRY LS - NS
FEW WH Δ POOR ϕ - NS

70 FLOOD PURE WH FN - XLN LS
PTLY CRY FEW WH Δ - NS
NO ODOR

80 WH - LT CRM FN - XLN LS POOR ϕ
NS NO ODOR

90 WH - LT CRM FN - XLN LS & FEW
DOLD - LS P - F ϕ - NS NO ODOR

00) PURE SNOW WH CRY LS - NS

30 MIN: WH FN - XLN DOLD & LS POOR
 ϕ - NS NO ODOR WH - LOOSE CK

60 MIN: PURE WH CRY LS NS FEW
NO KICK: PTLY VUG DOLD - NS

MUD - COV
VISC: 51 FILT: 8.8
WT: 9.3 CHL: 4,800
LCM: 1#
ADDING LCM TO 3#

DST #3 4925-5020
30-45-45-60
IF: WK BLOW BUILT TO 4"
FF: WK BLOW BUILT TO
REC: 90' MUD
SIP: 1481-1460
IFP: 89-101 FFP: 107-122

MUD - CO CK
VISC: 53 FILT: 10.4
WT: 9.65 CHL: 6,800
ADDING PRE-MIX

E @ 9:40 AM WENS MARCH 20, 13
PULLED 10 STD SHORT TRIP - COND
HOLE 1 1/2 HRS - CAME OUT FOR
E-LOGS.

