

19-105-3100

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GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

OPERATOR RITCHE EXPLORATION INC.

LEASE #1 HUSEMAN 19 D

FIELD MICHIGAN NORTH

LOCATION 1635' FSL & 540' FEL = 5/2 NE SE

SEC. 19 TWP. 16 RGE. 31W

COUNTY SCOTT STATE KS.

CONTRACTOR WJ DRILLING RIG #2

COMP. 2-24-14 COMP. 3-5-14

RTD 4750' Log TD 4753'

SAMPLES SAVED FROM 3650' TO RTD

DRILLING TIME KEPT FROM 3450' TO RTD

SAMPLES EXAMINED FROM 3650' TO RTD

GEOLOGICAL SUPERVISION FROM 3900' TO RTD

FLUID UP TYPE MUD CHEMICAL

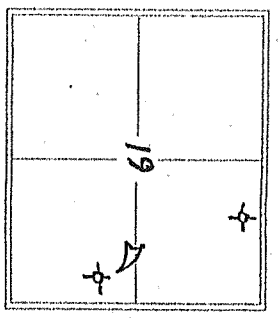
API # 15-171-21,029-00-00

FORMATION	TOP	LOG	DATUM	TOP	SAMPLE	STRUC.
						COMP.
ANHYDRITE	2350	+602	2351	+601		-2
BASE	2370	+582	2370	+582		-2
STOTLER	3562	-610	3561	-609		-6
HEBNER SH	3943	-991	3943	-991		-9
LAUSING	3980	-1028	3980	-1028		-8
MUNCIE SH	4157	-1205	4156	-1204		-3
STARK SH	4253	-1301	4250	-1298		-2
BKE	4335	-1383	4334	-1382		-2
ATAMOUT	4382	-1430	4380	-1428		+1
PAUNEE	4458	-1506	4458	-1506		+6
FT SCOTT	4507	-1555	4506	-1554		+3
CHEROKEE SH	4530	-1578	4529	-1577		+4
PRENSEN	4574	-1622	4574	-1622		0
MISS	4629	-1677	4627	-1675		+3

ELEVATION
KB 2952'
DF 2947'
Measurements Are All From KB 2952'

CASING RECORD
SURFACE 8 5/8" @ 221'
W/165 S.S. COB.
PRODUCTION NA

WELL LOG SURVEYS
MABORS
COMP. DENIS NELTZON
DUAL INDUCTION
JASON CARPELLI



REFERENCE WELL FOR STRUCTURAL COMPARISON

RET. #1 HUSEMAN 202 OIL WELL
@ N/2 NW SW 20-16-31W

DATE	DEPTH	LOG	TIME	TYPE	DEPTH
2-24-14	MISC/SPUD				
2-25	DRIG @ 590'				
2-26	DRIG @ 2700'				
2-27	DRIG @ 3595'				
2-28	DST #1 @ 4024'				
3-1	DRIG @ 4115'				
3-2	DRIG @ 4250'				
3-3	DRIG @ 4385'				
3-4	DST #5 @ 4552'				
3-5	DRIG @ 4633'				
3-6	PLUGGING				

20
30
40

50 ANH 2350
+602

60
70 BASE 2370
+582

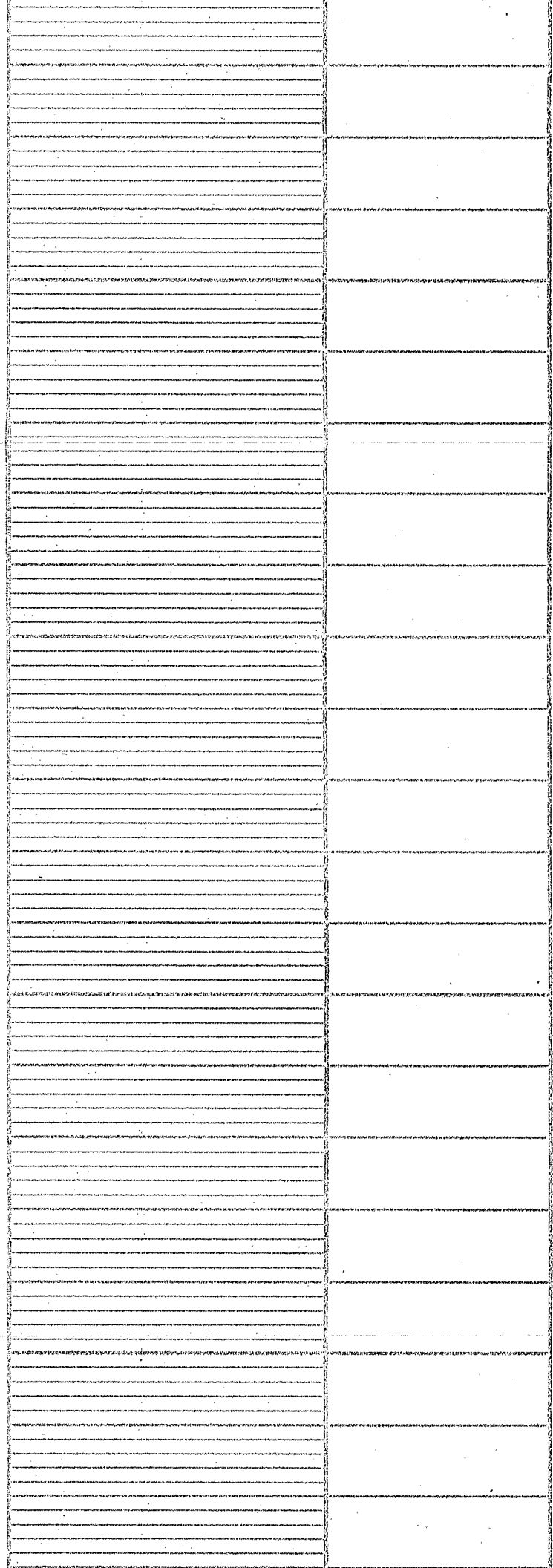
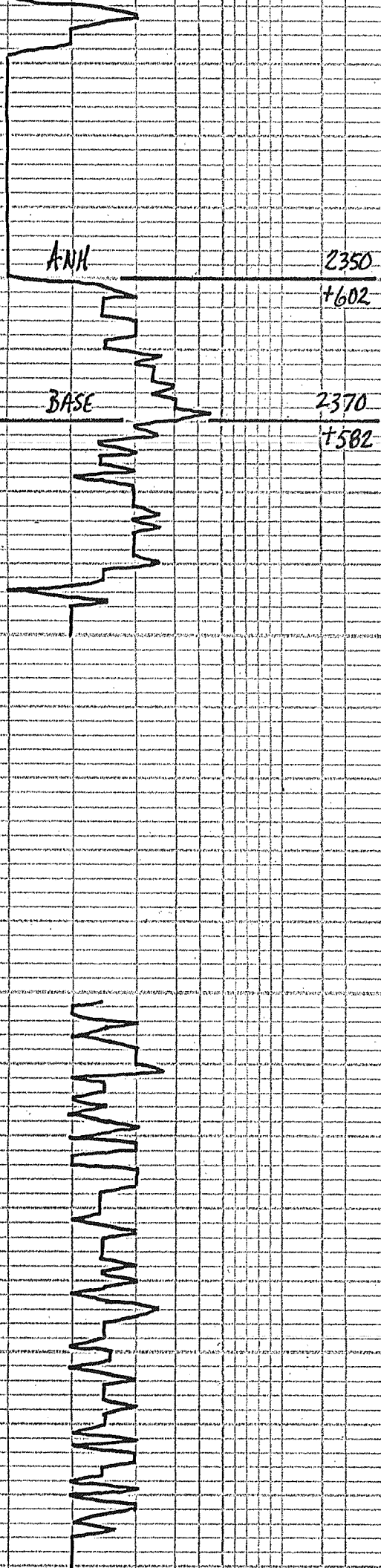
80
90
2400

3450

60
70
80
90

3500

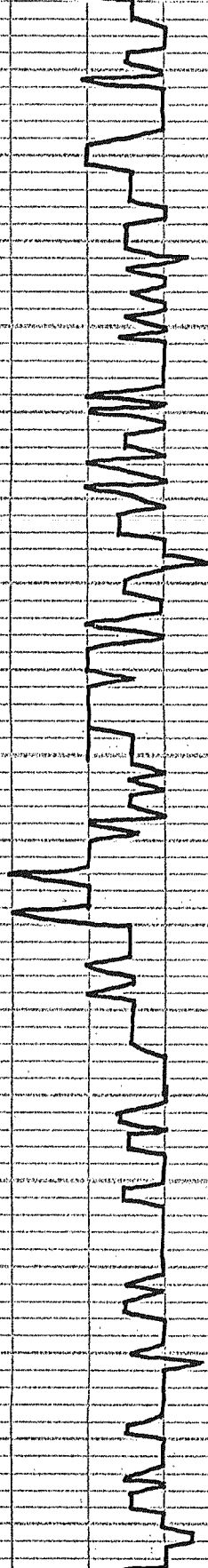
10
20
30



40
50
60
70
80
90
3600
10
20
30
40
50
60
70
80
90
3700
10
20
30
40
50

STOTLER 3561

-609



✓ MWD CO CK

VISC: 66 FILT: 6.4
WT: 8.7 CHL: 2,100

RED TAN FOSS LS FAIR ϕ - NS

60 WH-LT CRM CVY LS POOR ϕ - NS

WH-LT CRM CVY LS - NS

80 WH-CRM-BUFF SEMI-FOSS LS
P-F ϕ - NS NO ODR

GRY SEMI-FOSS LS MERVY-DUSE
P-F ϕ - NS

80 LT-MD GRV LS FN-XL DUSE
POOR ϕ - NS LOTS GRV SHS

GRV FUSSLND LS POOR ϕ - NS

20 GRV MERVY-DUSE LS POOR ϕ
NS NO ODR

CRM-BUFF SEMI-FOSS LS FAIR ϕ
NS NO ODR

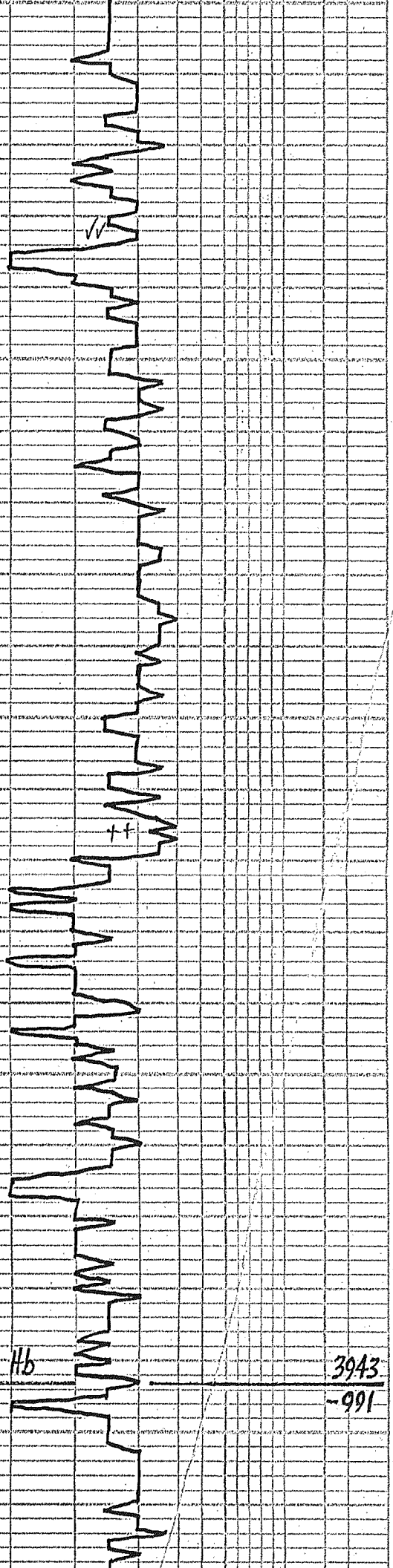
40 CRM-BUFF FOSS LS FAIR ϕ - NS

BUFF TAN SU-FOSS LS POOR ϕ
NS NO ODR

60 CRM-BUFF SEMI-FOSS LS - NS

WH-CRM BUFF FOSS LS - NS

50
60
70
80
90
3800
10
20
30
40
50
60
70
80
90
3900
10
20
30
40
50
60
70



3943
-991

80 CRM-BUFF SLI FOSS LS P-F φ
NS NO ODR

TAN GRN MESH - FOSS LS
P-F φ + NS NO ODR

80 WH - LT CRM LT TAN SEMI FOSS
LS P-F φ - NS CRM

CRM LT TAN FOSS LS FAIR φ
NS NO ODR

20 WH LT CRM FOSS LS PTN CRM
NS NO ODR

CRM-BUFF LS P-F φ - NS

40 CRM-BUFF FOSS LS P-F FOSS φ
SCAT LT STN NO FO NO ODR

LS AA - SCAT LT STN NO FO

60 LT CRM-BUFF SLI GRN LS POOR φ
NS NO ODR

TRACE BLK SHS PREN CRM-BUFF
SEMI-FOSS LS P-F φ - NS

80 CRM-BUFF SLI FOSS LS - NS

LT CRM-BUFF SLI FOSS LS P-F φ
NS NO ODR

80 WH - CRM LT TAN SEMI-FOSS LS
P-F φ - NS NO ODR

16 LT CRM DOLD LS SCAT VLG φ
NS NO ODR

20 LT CRM-BUFF DOLD LS POOR φ
NS NO ODR

70 LT CRM-BUFF FOSS LS FAIR φ
NS

GEOLOGICAL ON LOC. 4:00 PM
THURS. 2-27-14

40 LT TAN-BUFF FOSS LS FAIR φ
SCAT STN NO FO NO ODR

50 WH - LT CRM MESH CU FOSS
LS - POOR φ - NS NO ODR

900# PP

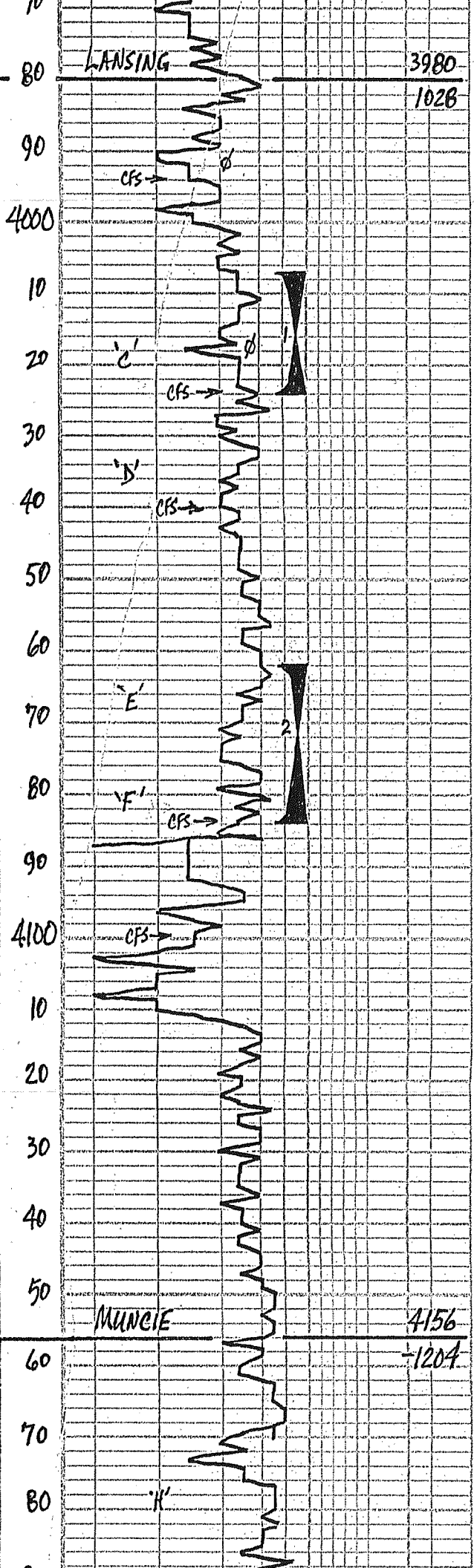
60 FLOOD BLK SHS!

VISC: 56
WT: 9.0
LCM: 2#

70 LT CRM LT TAN FA XLN LS
POOR φ - NS DISE-024

80 FLOOD WH - LT CRM FA XLN LS
POOR φ - NS NO ODR

90 LT CRM-BUFF SLI FOSS LS POOR



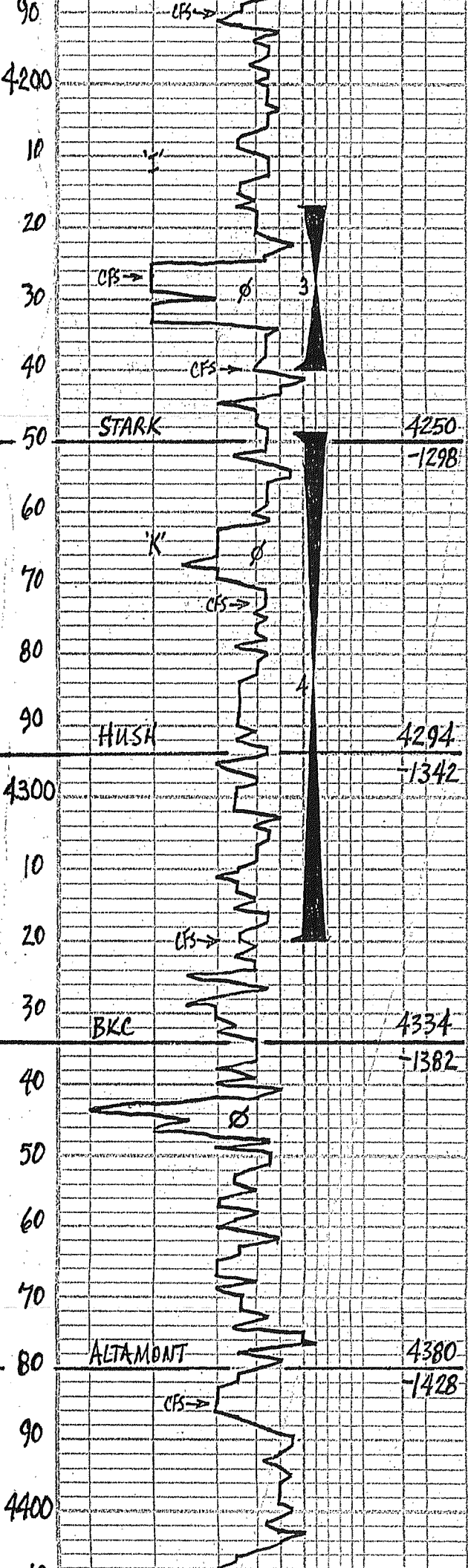
9A) WH - LT CRM SLI - FOSS LS CUM -
 LTY POOR ϕ - NS NO ODR
 20 MIN: WH - LT CRM FOSS OOL LS
 P - F ϕ - CRK NS NO ODR
 45 MIN: WH - CRM - LT BUFF LS
 P - F ϕ - NS NO ODR
 NH - LT CRM SUB OOL LS P-F ϕ
 NS NO ODR PTH OOL
 10 FLOOD WH - LT CRM SLI OOL
 LS PTH CRK - NS NO ODR
 20 LT CRM SLI - FOSS LS POOR ϕ - NS
 2A) LT CRM OOL - TINY OOL LS W/P-F
 20M INTER - OOL ϕ W/S: FSET BRN GRN FO
 FAIR ODR, LOTS RS 30+ SLI CRK
 45 MIN: LT CRM SLI - SEMI - FOSS LS
 W/P-F SCAT V.G. ϕ W/S: FSG FO
 SLI INCKY, LT - FAIR ODR
 40) FLOOD WH - CRM SLI - FOSS LS
 MOSTLY CRK POOR ϕ - NS NO ODR
 20 MIN: PRED WH - LT CRM FN - XLN
 LS POOR ϕ V. CRK - NS NO ODR
 45 MIN: FLOOD WH CRM LS POOR ϕ
 NS NO ODR - V. CRK
 50 WH - CRM SLI - FOSS CRK LS POOR ϕ
 NS NO ODR
 60 PRED WH - LT CRM FN - XLN LS
 LOTS CRK POOR ϕ - NS
 70 LT CRM SLI - FOSS LS POOR V.G. ϕ
 NS NO ODR
 80) LOTS LT CRM FOSS LS W/P - FAIR
 V.G. - FOSS ϕ W/S: FSET CRK, GO ODR
 CLEAN CRAPS
 8A) LT CRM - LT TAN FOSS & SUB OOL LS
 LESS AMT W/S BRG FO, FAIR ODR
 INC IN CRK
 20 MIN: LT CRM - LT TAN V. FOSS LS
 W/ FAIR FOSS ϕ FEW W/SSED FAIR
 ODR DECR IN CRK
 45 MIN: LT CRM - FOSS LS POOR ϕ
 NS NO ODR
 90 WH - LT CRM SLI - FOSS LS P-F ϕ
 NS NO ODR
 20 MIN: FLOOD LT CRM SLI - FOSS
 OOL LS P-F ϕ - NS NO ODR
 45 MIN: FLOOD LT CRM - LT TAN
 OOL LS W/ FAIR OOL ϕ NS,
 NO ODR, INC CRK
 30 LT TAN OOL LS W/ FAIR OOL ϕ
 NS NO ODR LOOSE WH CRK
 30 CRM - LT TAN SEMI - OOL LS P-FAIR ϕ
 NS NO ODR
 40 WH - LT CRM FN - XLN LS POOR ϕ
 NS NO ODR CRK - DUSE
 50 WH - LT CRM - LT TAN FN - XLN LS
 POOR ϕ - NS NO ODR
 60 WH - LT TAN FN - XLN LS MOSTLY
 DUSE - FEW CRK POOR ϕ - NS
 70 LOTS BLK SHS! 2 RS LT TAN SEMI - FOSS
 LS - MEALY P-F ϕ ET STN, TRAK FO
 80 LT CRM SLI - FOSS LS POOR ϕ FEW
 PCS SCAT LT STN, NO FD, NO ODR
 90) PRED LT CRM SLI - FOSS LS POOR ϕ
 NS NO ODR, SLI - CRK
 20 MIN: LT CRM SLI - FOSS LS POOR ϕ
 NS NO ODR PTH CRK
 45 MIN: LT CRM - V. LT GRN FN - XLN

SHORT TRIP 30 STDS.
 PIPE STRAP .22 SHORT
 S.H.T. = $\frac{1}{2}$ "

DST #1 4007-4024'
 30-45-30-45
 IF: WK SURF BLOW
 FF: NO BLOW - FLUSH - NO HELP
 REC: 2' MUD + OS
 SIP: 680-703
 IEP: 13-17 FFP: 18-19
 TEMP: 111°

DST #2 4062-4084
 30-45-30-45
 IF: WK 1/4" BLOW
 FF: NO BLOW, FLUSH, NO HELP
 REC: 5' MUD + OS
 SIP: 578-297
 IEP: 12-14 FFP: 15-16
 TEMP: 108°

MUD CO CK
 VISC: 48 FILT: 6.4
 WT: 9.3 CHL: 2,400

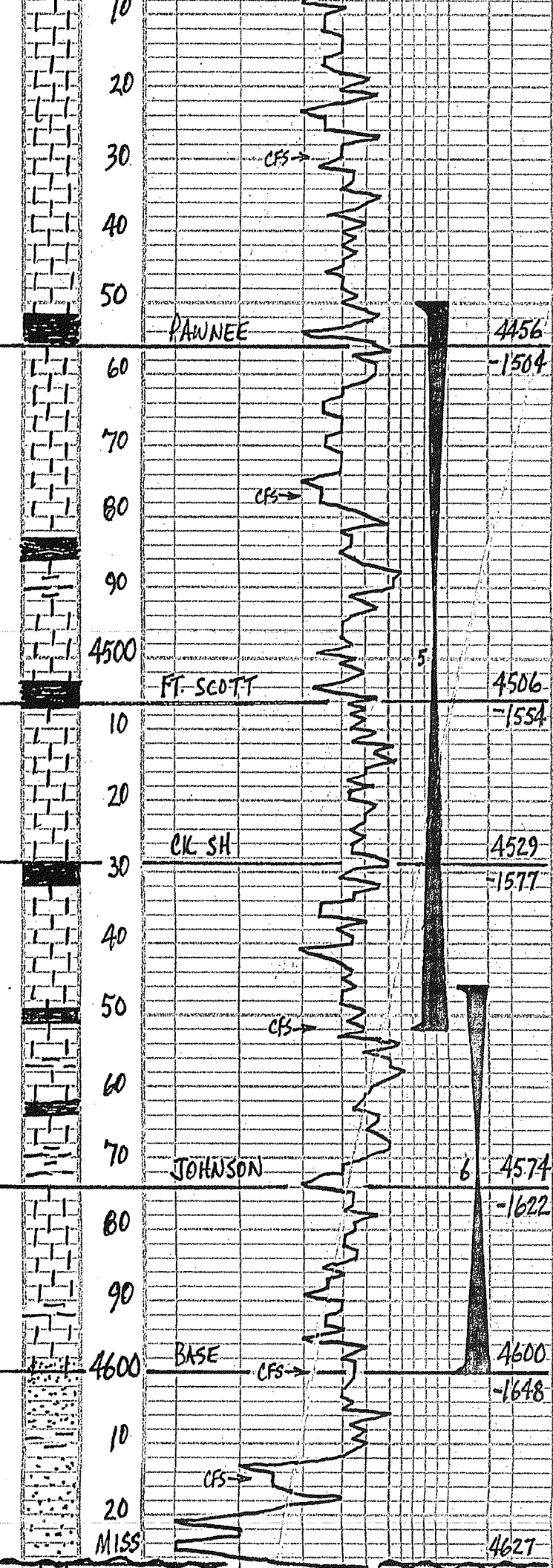


LS. POOR ϕ - NS, NO ODOR
 00 WH - CRM - LT TAN LS POOR ϕ - NS
 10 LT CRM - BUFF FN - XLN LS. POOR ϕ
 NS NO ODOR PTLY CHY
 FEW BK GRAY - BLK SILS
 20 LT CRM SLI - FOSS LS w/ POOR FOSS ϕ
 2 PCS w/ LT STR, NO ODOR PTLY CHY
 27) LT CRM - BUFF SLI - FOSS CHY LS. POOR ϕ
 NS NO ODOR
 20 MIN: LT TAN - LT BUFF SLI - FOSS
 P-F ϕ - NS NO ODOR
 45 MIN: LT CRM OCC LS w/ FAIR ϕ
 SSK F ϕ , SLI CHY, FAIR ODOR
 40) FLOOD LT CRM OCC LS w/ F-GD OCC
 ϕ w/ FSLT & DK BRN GFD, OD ODOR
 30 PCS w/ SFO - 50% BAR
 25 MIN: LOTS PCS OCC LS w/ SFGFO
 FAIR - GD ODOR CLEAN ROCKS
 45 MIN: STILL FEW PS w/ SFO FAIR ODOR
 50 WH - LT CRM FN - XLN CHY LS - NS
 60 BK SHS, GRAY & CRM - BUFF
 SLI - FOSS LS POOR ϕ - NS NO ODOR
 70 TAN - BUFF OOL LS POOR ϕ - NS
 NO ODOR
 73) WH - LT CRM SLI - DEC LS FEW
 3 PCS w/ SSK BR F ϕ , FT ODOR ON BRK
 CHY
 20 MIN: WH - CRM SHS OCC CHY LS
 P-F OCC ϕ 4 PCS w/ SSK BRN F ϕ
 TRACE GAS PUB, LOW ENERGY FT ODOR
 45 MIN: PSED WH - CRM CHY LS
 P-F ϕ - NS NO ODOR
 90 PRED LT CRM SLI - FOSS CHY LS
 POOR ϕ - NS NO ODOR
 00 CRM - BUFF SLI - FOSS LS POOR ϕ
 NS NO ODOR - 1 - PTLY CHY
 10 FEW BK SHS PRED LT CRM SLI -
 FOSS LS POOR ϕ - NS NO ODOR
 PTLY CHY
 20) LT CRM - BUFF SLI - FOSS FEW PCS
 w/ LT SCAT TAN INF F ϕ , NO ODOR
 20 MIN: CRM - LT BUFF SLI - BUFF
 LS w/ P-F ϕ SCAT LT STR, NO FO
 PTLY CHY
 45 MIN: CRM - LT BUFF SLI - FOSS
 P-F ϕ - NS NO ODOR PTLY CHY
 40) LT CRM - LT TAN FN - XLN LS. POOR
 ϕ - DNSE & LT GRAY - NS NO ODOR
 50 LT CRM LT TAN NODULE LS POOR
 ϕ - NS NO ODOR
 60 LT CRM - BUFF MEALY - ATY LS
 SOFT - DNSE POOR ϕ - NS NO ODOR
 70 LT BUFF - LT TAN FLESH V. FOSS LS
 P-F ϕ - NS NO ODOR
 80 WH - LT CRM FN - XLN CHY LS. POOR
 NS NO ODOR LOTS CHY
 85) LT CRM - LT TAN SLI - FOSS LS POOR ϕ
 NS NO ODOR
 30 MIN: BUFF - TAN SLI - FOSS LS - NS
 60 MIN: CRM - TAN - BUFF SLI - FOSS LS
 POOR ϕ - NS NO ODOR
 LT CRM SLI - FOSS CHY LS. POOR ϕ - NS
 00 LT GRAY SILTY - SILTSTONE - MEALY
 DIRTY POOR ϕ - NS NO ODOR
 10 CRM - LT GRAY FN - XLN LS - NS & FEW
 GRAY SILTSTONE - NS
 20 LS SA - NS POOR ϕ NO ODOR &

DST #3 4217-4240
 30-45-45-60
 IF: WK BUILT TO 5"
 FF: WK BUILT TO 6"
 REC: 15' ϕ WCM=10%, 30% W
 180' DICHTOS=20% M, 80% W
 195' TOTAL CHL=50K
 SIP: 1115-1107
 IFP: 16-69 FFP: 71-101
 TEMP: 121

DST #4 4249-4320
 30-45-45-60
 IF: BUILT TO BOB IN 7 1/2 MINS
 FF: BUILT TO BOB IN 9 MINS
 REC: 800' MCW = 20% M, 80% W
 CHL=65,000
 SIP: 1084-1076
 IFP: 26-214 FFP: 219-407
 TEMP: 126°

MUD: CO. CK
 VISC: 50 FILT: 7.2
 WT: 9.3 CHL: 2,800



INC. GRAY-BLK SHS

30) LT CRM-LT TAN SLI-FOSS LS
DNSE-CKY POOR Ø-NS NO ODOR
30 MIN: LT CRM-LT TAN FN-XCN LS
DNSE-CKY POOR Ø-NS NO ODOR
60 MIN: LT TAN SUB COOL LS POOR
Ø-NS NO ODOR DNSE

40) FLOOD V-LT TAN FN-XCN LS
POOR Ø-NS NO ODOR

50) LT CRM-LT TAN NOD-OC LS
POOR Ø-NS NO ODOR

60) BUFF-LT TAN SLI-FOSS LS POOR Ø
PTLY CKY-NS NO ODOR

70) LOTS BLK SHS! TAN-BUFF-GRY
LS MENTLY DNSE NS NO ODOR

71) LT CRM SLI-FOSS LS W/P-F TAN FOSS
PAT Ø FEW 6 PCS W/SSLTGFO LT
SWEET ODOR ON BRK SLI CKY
30 MIN: FEW CRM LS AH W/LT STN
VSSLTGFO LT ODOR-TAN 21
60 MIN: WHI CRM-V-LT TAN SLI-FOSS
LS 2 PCS W/SSLTGFO FT ODOR

90) LOTS BLK SH & CRM-TAN SH-FOSS
LS W/POOR Ø 3 PCS LT STN

100) LT BRN TAN LS W/POOR INTER-XCN
Ø W/SCAT STN 4 NO ODOR

10) LT TAN SLI-FOSS LS P-F FOSS Ø
6 PCS W/LT STN 2 PCS VSSLTGFO
FT ODOR ON BRK SLI CKY

20) LOTS LT TAN-BUFF COOL LS POOR
NS-LT CRM-TAN A TO NOD LS
W/LT FAIR Ø W/VSSLTGFO FT ODOR
& BLK SHS

30) FLOOD LT TAN-BUFF-LT BRN
FN-XCN DNSE LS POOR Ø-NS

40) FLOOD BLK SHS! TAN-BUFF
SEMI-OC LS MOST POOR Ø
2 PCS W/SSLTG INTER-OC Ø

50) LT CRM-BUFF SLI-FOSS LS W/P-F Ø
4 PCS W/SSLTG FT ODOR ON BRK
SLI CKY
30 MIN: LT CRM-BUFF SLI-FOSS LS
W/P-F FOSS Ø 3 PCS FSGFO 4 PCS
SS BRN FO LT ODOR SLI CKY
60 MIN: FEW 5 PCS LT CRM FOSS
COOL LS W/P-F Ø VSSLTGFO FT ODOR

60) LT GRN-BUFF-TAN FN-XCN LS
POOR Ø-NS NO ODOR

70) WH-LT TAN-BUFF FN-XCN LS
DNSE-CKY POOR Ø-NS NO ODOR
LOTS GRAY BLK SHS

80) LT BUFF-LT TAN SLI-FOSS LS
W/POOR FOSS Ø SCAT DK STN VSSLTGFO
FT ODOR

90) LT TAN FOSS LTY LS P-F VUG Ø
SMALL-LGE VUG MOST W/SSLTGFO
& LGFO 30 PCS TRAY-FAIR-GD ODOR

100) LT CRM-LT TAN FOSS LS SM-LGE VUG
Ø-SS-FSGFO FAIR ODOR FEW SAT,
SLI CKY-20 PCS TRAY
30 MIN: LT CRM-LT TAN SEMI-VUG LS
W/SSLTGFO FEW GASHT FEW SAT
FAIR ODOR SLI CKY
60 MIN: LT CRM-LT TAN FOSS VUG LS
P-F VUG Ø W/SSLTGFO DK BRN GFO
LT FAIR ODOR 30+ PCS SU CKY
FEW CL GREY SST POOR Ø-NS

15) LOTS LT GRN GRN SHS SOME SHTY-
SDY FEW SST POOR Ø-NS NO ODOR
30 MIN: LOTS WH-LT GRN FN-GR SST
NS NO ODOR STILL LOTS VUG
LS W/SSLTGFO FAIR ODOR
60 MIN: PRED LT GRN-GRY SHS &
LT GRN-WH FN-GR SST LNS NO ODOR

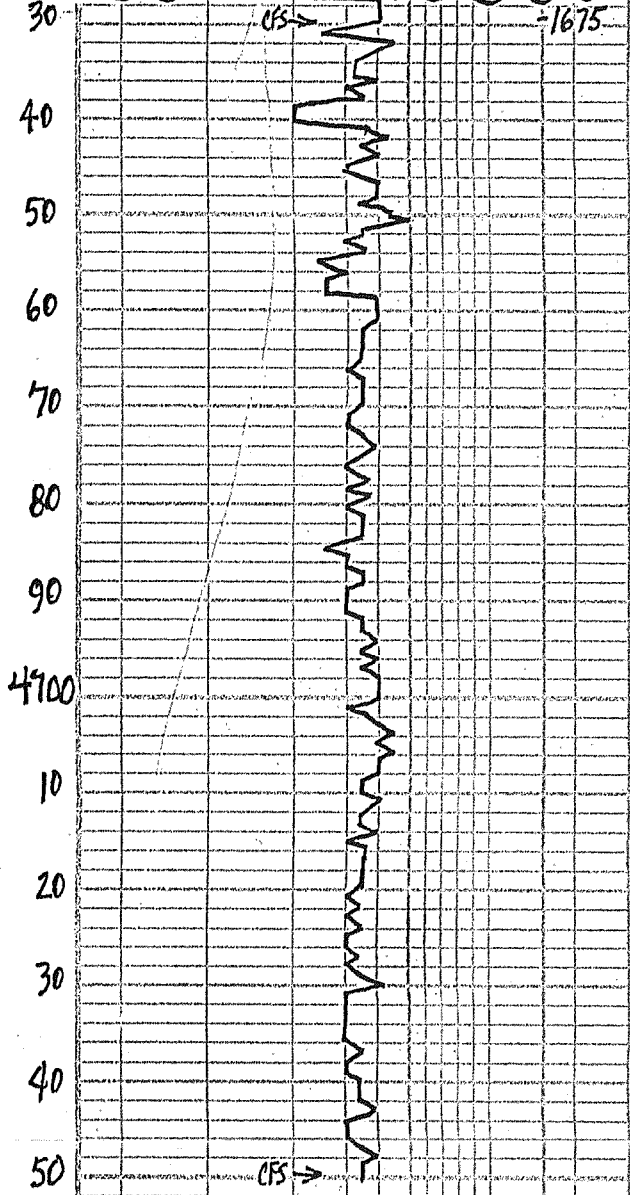
30) PRED LT GRN-GRY SHTY SHS FEW
LT GRN-WH SST-NS NO ODOR
30 MIN: LOTS WH-LT GRN FN-GR SST
POOR Ø CKY MENTLY-NS FEW W/

PULLED TIGHT
PULLED 15 STD SHORT TRIP

DST #5 4450-4552
30-45-30-45
IF: WK BLOW V2"
FF: NO BLOW
REC: 5' MUD + OS
SIP: 428-268
IFP: 18-20 FFP: 20-21
TEMP: 112°

DST #6 4546-4600
30-45-30-45
IF: WK BUILT TO 1"
FF: NO BLOW-FLUSH-NO HELP
REC: 5' MUD + OS
SIP: 1034-925
IFP: 15-20 FFP: 23-26
TEMP: 114°

4627



RTD = 4750'

LTD = 4753'

CRY - LT BUFF LS POOR ϕ - NS
 60 MIN: WH - LT BUFF MICRO-DOL LS
 CRY P-F ϕ - NS NO ODOR
 FLOOD WH - CRY MICRO-DOL LS-NS
 50 WH CRY MICRO-DOL LS P-F ϕ
 NS NO ODOR
 60 LT CRM - LT BUFF FN MD - XLN LS
 P-F ϕ - NS NO ODOR SLY CRY
 70 WH - LT CRM FN MD - XLN LS P-F
 ϕ - NS NO ODOR, CRY PARTS
 80 WH - LT CRM FN MD - XLN LS P-F
 NS NO ODOR, SOME CRY
 90 PRED LT CRM FN - XLN CRY LS - NS
 100 WH - LT CRM - LT TAN FN - XLN CRY
 LS POOR ϕ - NS NO ODOR FEW
 LT GRAY SHARP LS
 10 LS AA - NS, NO ODOR, CRY
 20 LT CRM - LT TAN MICRO-DOL CRY LS
 poor ϕ - NS NO ODOR
 30 LT CRM SMOOTH MICRO - XLN DABE
 LS V. POOR ϕ - NS NO ODOR
 40 CRM - LT TAN FN - XLN LS POOR ϕ
 NS NO ODOR
 50 LT TAN - BUFF FN - XLN LS POOR ϕ
 NS NO ODOR
 30 MIN: LT TAN MD - XLN LS P-F ϕ
 NS NO ODOR SLY CRY

MUD - CO CK
 VISC: 56 FILT: 7.2
 WT: 9.4 CHE: 3,100

VISC: 55
 WT: 9.4 #
 LCM: 1 1/2

RTD @ 2:00 PM, WENS. 3-5-14
 CFS 30 MIN. SHORT TRIP 10 STDS
 COND 1 1/2 HRS. COME OUT FOR LOG
 STARTED LOGGING 7:00 PM.