

# MIKE ENGELBRECHT

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## GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

OPERATOR RITCHIE EXPLORATION INC.

LEASE #1 SELENSKY 30 CD

FIELD WILDCAT

LOCATION NE NW SE = 2293' FSL & 1650' FEL

SEC. 30 TWP. 13 RGE. 28W

COUNTY GOVE STATE KS.

CONTRACTOR Discovery Drilg RIG #1

COMPA. 8-31-13 COMP. 9-10-13

RTD 4580' LOG TD 4582'

SAMPLES SAVED FROM 3500' TO RTD

DRILLING TIME KEPT FROM 3500' TO RTD

SAMPLES EXAMINED FROM 3500' TO RTD

GEOLOGICAL SUPERVISION FROM 3720' TO RTD

MUD UP DISPL 2 3348' TYPE MUD CHEMICAL

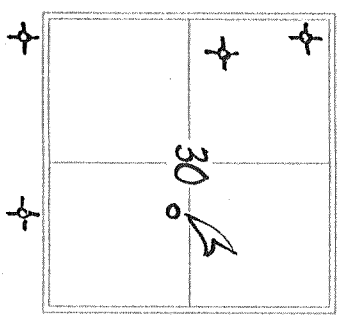
API # 15-063-22,132-00-00

FORMATION	TOP	LOG	DATE/TIME	TOP	SAMPLE	DATE/TIME	STRUCT.
							COMP.
ANKVD RITE	2154	+ 548		2154	+ 548		+14
BASE	2192	+ 510		2194	+ 508		+11
STOTLER	3430	- 128		3431	- 129		+12
KEEBNER	3798	- 1096		3798	- 1096		+16
LANISING	3834	- 1132		3834	- 1132		+16
MUNCIE SH	3984	- 1282		3983	- 1281		+10
STARK SH	4073	- 1371		4072	- 1370		+16
BKC	4130	- 1428		4130	- 1428		+16
ALAMONT	4175	- 1473		4174	- 1472		+21
PAWNEE	4240	- 1538		4242	- 1540		+17
FT SCOTT	4334	- 1632		4334	- 1632		+12
CHEROKEE SH	4360	- 1658		4360	- 1658		+16
MISSISSIPPIAN	4439	- 1737		4436	- 1734		+16

ELEVATION  
KB 2702'  
DF 2694'  
Measurements Are All From KB 2702

CASING RECORD  
SURFACE 8 5/8" @ 228'  
w/160 sxs.  
PRODUCTION NA

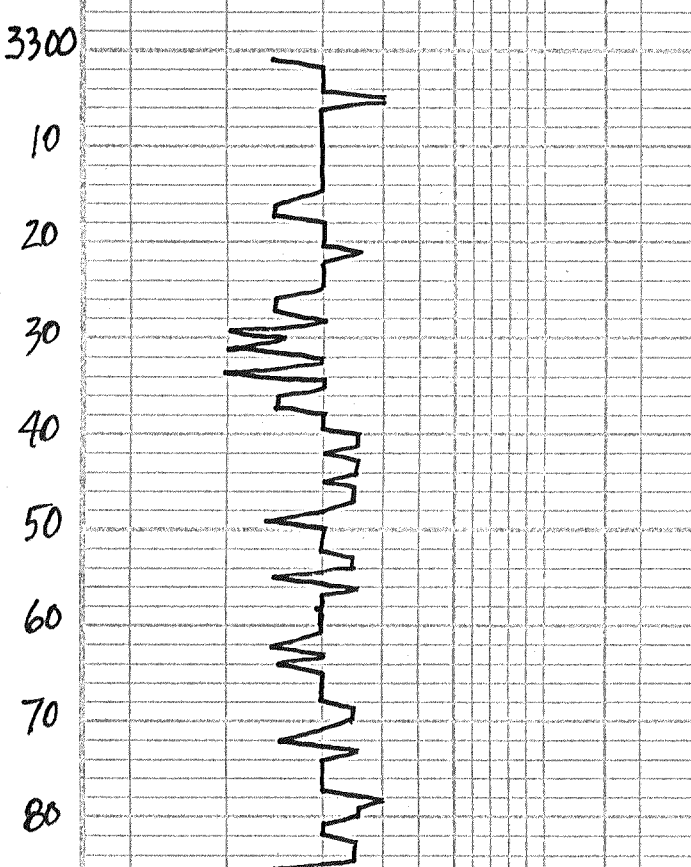
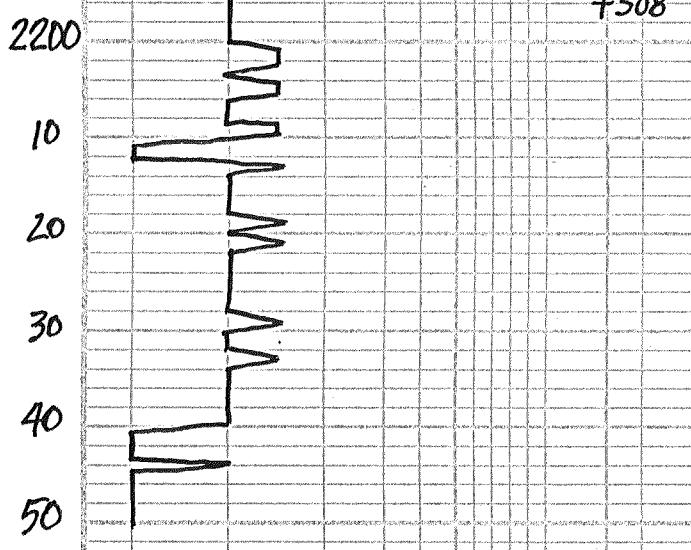
WELL LOG SURVEYS  
COMP DENIS POROSITY  
DUAL INDUCTION



DATE	ACTIVITY @ 7:00 AM	DEPTH	ID	SIZE	WIRE	TYPE	DEPTH OUT
8-31-13	MISC	85/8 @ 228					
9-01	DRLG.	@ 750'					
9-02	DRLG.	@ 2788'					
9-03	DRLG	@ 3520'					
9-04	DST#1	3830'					
9-05	DRLG.	@ 4009'					
9-06	DRLG.	@ 4106'					
9-07	DST#5	@ 4230'					
9-08	DST#6	@ 4362'					
9-09	DST#8	@ 4460'					
9-10	PREP TO PLUG						

REFERENCE WELL FOR STRUCTURAL COMPARISON Don Sawson #1 EVANS Z. NW NW NW  
30-13-28W

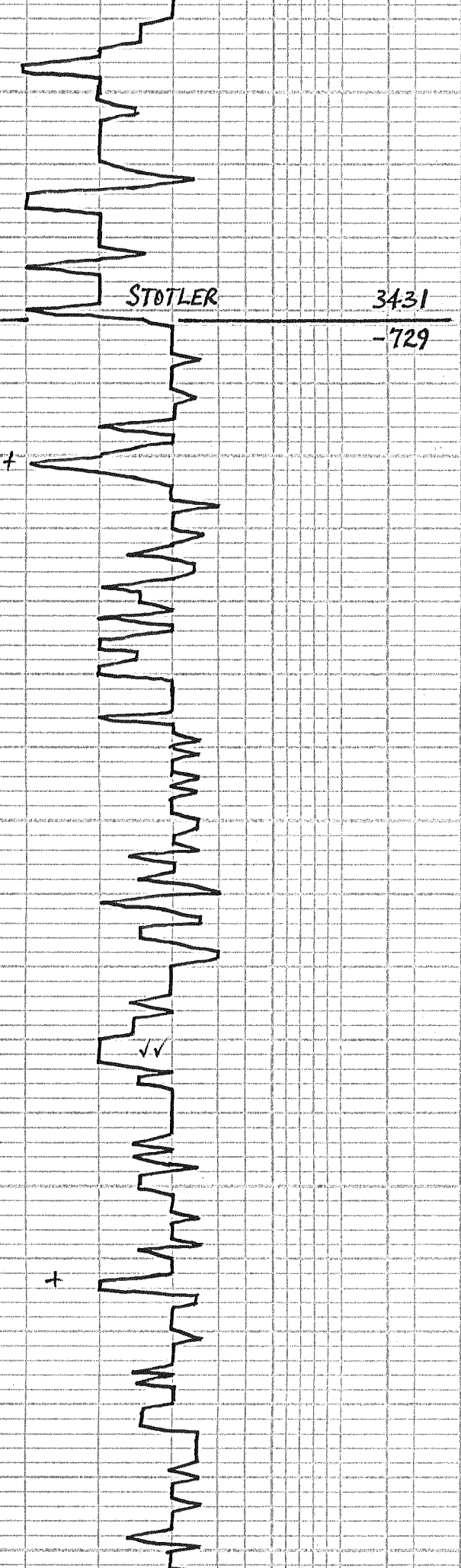




LOOSING FLUID

DISPLACED 3348'

90  
3400  
10  
20  
30  
40  
50  
60  
70  
80  
90  
3500  
10  
20  
30  
40  
50  
60  
70  
80  
90  
3600



STOTLER

3431

-729

PRED GRAY FN-XLN LS. POOR  $\phi$  NS

START 10' SPLS

20 LT GRAY - GRN GUMBO SHS  $\frac{1}{2}$  LT GRAY LS  
SLI - FOSS - NS NO ODOR

LT CRM - LT GRAY SLI - FOSS LS - NS

40 LT CRM - LT BUFF SEMI-FOSS LS  
P-F FOSS  $\phi$  NS NO ODOR

CRM - LT BUFF LS FAIR  $\phi$  - NS  
NO ODOR

60 GRAY - BUFF FOSS LS - NS NO ODOR

CRM - BUFF FOSS LS - NS NO ODOR

80 GRAY - BUFF FOSS LS P-F  $\phi$  NS  
INC GRAY SHS

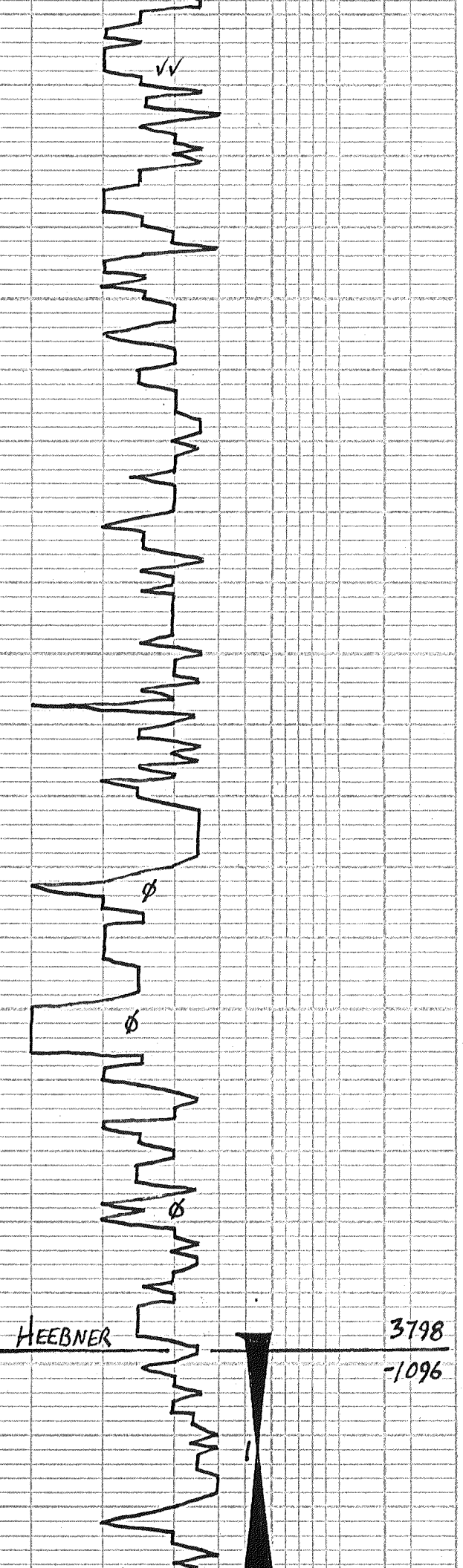
GRAY - BUFF SLI - FOSS LS - NS  
LOTS GRAY SHS

00 FLOOD LT CRM SLI - FOSS LS  
P-F  $\phi$  - NS NO ODOR

CRM - BUFF FUSSED LS P-F  $\phi$  NS

20 CRM - BUFF GRAY LS P-F  $\phi$  NS  
NO ODOR

10  
20  
30  
40  
50  
60  
70  
80  
90  
3700  
10  
20  
30  
40  
50  
60  
70  
80  
90  
3800  
10  
20  
30



GRY-BUFF SLI-FOSS LS P-F $\phi$   
2 P.S. DK DEAD STN, NO ODOR

40 LT TAN BUFF V. FOSS LS FAIR  $\phi$   
NS NO ODOR

GRY SLI FOSS LS FUSSLS - NS

60 LOTS LT CRM DOLD LS W/ FOSS  
LS - NS NO ODOR (SLI CRK)

CRM-LT BUFF V. FOSS LS P-F $\phi$   
NS NO ODOR

70 CRM-BUFF SLI-FOSS LS PTZY  
CRK - NS

BUFF V. FOSS LS FAIR  $\phi$  - NS  
NO ODOR

80 LT CRM-LT BUFF V. FOSS LS  
FAIR  $\phi$  - NS NO ODOR

10 LS AA - NS FEW DK GRY-BLK  
SHS

CRM-BUFF-GRY SLI-FOSS LS  
20 POOR  $\phi$  - NS NO ODOR  
LT GRY - GRN SILTST - DIRTY

30 LT CRM-SLI-FOSS LS P-F $\phi$  NS  
NO ODOR (SLI CRK)

40 LT CRM-BUFF BLKY LS POOR  $\phi$   
NS NO ODOR

50 CRM-BUFF FUSSLS - NS

60 LT CRM-LT BUFF SEMI-FOSS LS  
P-F $\phi$  - NS NO ODOR

70 FLOOD LT CRM BLK LS POOR  $\phi$   
NS

80 FLOOD LT CRM SEMI-FOSS LS  
P-F $\phi$  - NS NO ODOR SLI CRK

90 CRM-BUFF FOSS LS P-F $\phi$   
NS NO ODOR

100 LT TAN - BUFF SEMI-FOSS LS  
P-F $\phi$  - NS NO ODOR

10 LT CRM FOSS LS W/ SCAT STN  
IN FAIR FOSS  $\phi$  - NO FO, NO  
ODOR, SLI CRK

20 FLOOD BLK SHS!  
LT CRM SEMI-FOSS LS W/P-F  
FOSS  $\phi$  SCAT MID STN, NO FO, NO  
ODOR SLI CRK

30 LT CRM Ltry LS POOR  $\phi$  - NS  
LT GRY - GRN Gumbo SHS

30 MIN: 8 P.S. LT CRM FOSS LS  
W/P-F FOSS  $\phi$  W/ DK STN & LT BRN  
OIL DROPS NO ODOR SLI CRK  
60 MIN: 6 P.S. DK STN IN CRM

ANDY'S MUD CRV  
VISC: 60 FILT: 8.8  
WT: 8.7 CHL: 1000  
LCM: 2 1/2" PH: 10.5

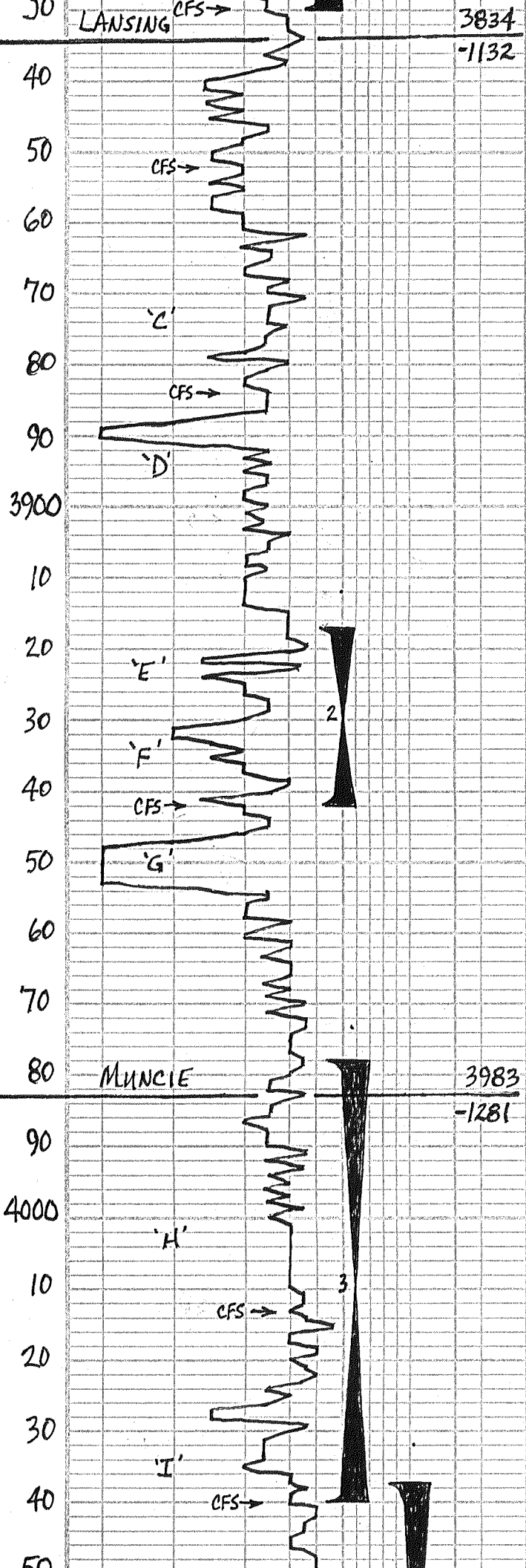
GOOD SPLS

GEO. ON LOC. V  
1:15PM TUES 9-3-13  
800#-PP

GOOD SPLS!  
VISC: 60  
WT: 9.0

PIPE STRAP .44 SHORT  
SHORT TRIP 30 STDS  
S.H.T. = 1"

DST #1 3796'-3830'  
30-45-45-60  
IF: WK BUILT TO 2"  
FF: WK BUILT TO 1/2"  
REC: 75' WM = 6' W, 94' M + 50  
SIP: 1136-1106  
SIP: 10 20 FEB: 20-51



3834  
-1132

40 55 BRN FU NO ODOR  
PRED SHS FROM TRIP - NS

50) LT GRAY - BRN SHS & LT GRAY - BUFF  
SLI - FOSS LS POOR  $\phi$  - NS NO ODOR

30 MIN: WH - SUB DOC CKY LS P-F  
FOSS - DOC  $\phi$  W/CKY NS, NO ODOR

60 MIN: WH - SLI - FOSS LS INC CKY  
P-F  $\phi$  - NS, NO ODOR

60 LOTS WH - LT CRM V. OOL LS P-F  
70 INTER. OOL  $\phi$  - NS, NO ODOR  
INC CKY

80 WH CKY LS AA - NS  $\frac{1}{2}$  LT GRAY SHS

84) FLOOD LT TAN OOL LS OOLS SMASHED  
POOR INTER - OOL  $\phi$  - NS NO ODOR

20 MIN: LT TAN OOL LS POOR  $\phi$  - NS  
NO ODOR - CLEAN

45 MIN: CKY - LT TAN SLI - FOSS LS  
POOR  $\phi$  - NS, NO ODOR  
FEW RED RUST SHS

90 RUST RED SH & LS - AA - NS  
60 CRM - TAN SUB OOL LS - NS

10 FLOOD LT TAN DOC LS FAIR OOL  
 $\phi$  - NS, NO ODOR, SLI CKY

20 FLOOD LT CRM - LT TAN SLI FOSS  
LS POOR  $\phi$  - NS INC CKY

30 LT TAN FN: XLN LS POOR  $\phi$   
NS NO ODOR

40 LT CRM - TAN LS SLI - FOSS P-F  $\phi$   
SS LT BRN OIL DROPS 10-12 PCS  
TRACE GAS BUB, NO ODOR

20 MIN: FEW PCS AA W/SSFD,  
NO ODOR

45 MIN: FEW PCS WH CRM SLI FOSS  
LS W/FAIR FOSS  $\phi$  - NS, NO ODOR

60 WH - LT CRM FN: XLN - LS PLY  
CKY POOR  $\phi$  - NS LOTS SHS

70 FLOOD LT TAN OOL LS FAIR OOL  $\phi$   
NS NO ODOR SLI CKY

80 FLOOD WH - LT CRM FN: XLN LS  
DNSE - CKY - POOR  $\phi$  NS NO ODOR

90 LT CRM - V. LT TAN FN: XLN LS  
V. POOR  $\phi$  - NS NO ODOR

100 FEW DK GRAY - BLK SHS PRED CRM  
LT TAN SLI - FOSS LS POOR  $\phi$   
NS NO ODOR

16) LT CRM - LT TAN SLI - FOSS LS W/POOR  
 $\phi$  W/LT STN NO FO, NO ODOR

13) LT CRM - TAN SLI - FOSS LS W/P-F FOSS  
 $\phi$  W/SLAT LT STN, 8 PCS VSSLTFO  
FEW GAS BUB ON BK, LT OOL SLI  
20 MIN: LS AA W/SSFTO, FT OOL  
ON BK 1 INC SLI CKY

45 MIN: LT GRAY FN: XLN LS POOR  
 $\phi$  - NS NO ODOR

30 CRM - LT TAN SLI - FOSS LS POOR  $\phi$   
NS NO ODOR FEW GRAY - BLK SH

40) LT CRM - LT TAN  $\Delta$  SLI - FOSS LS  
W/P-F VEIN - VUGY  $\phi$  W/ DK STN  
7-10 PCS SS BRN FO, FT OOL ON BK

20 MIN: LT CRM - LT GRAY  $\Delta$  LS  
W/SCAT FOSS  $\phi$  W/ DK STN & SSFO

45 MIN: DECREASE IN PCS AA LT CRM  
FN: XLN LS DNSE - SLI CKY NS

50 LT CRM SLI - FOSS LS POOR  $\phi$   
NS NO ODOR LOTS SHS

10 FLOOD WH - LT CRM FN: XLN LS

TEMP: 116°

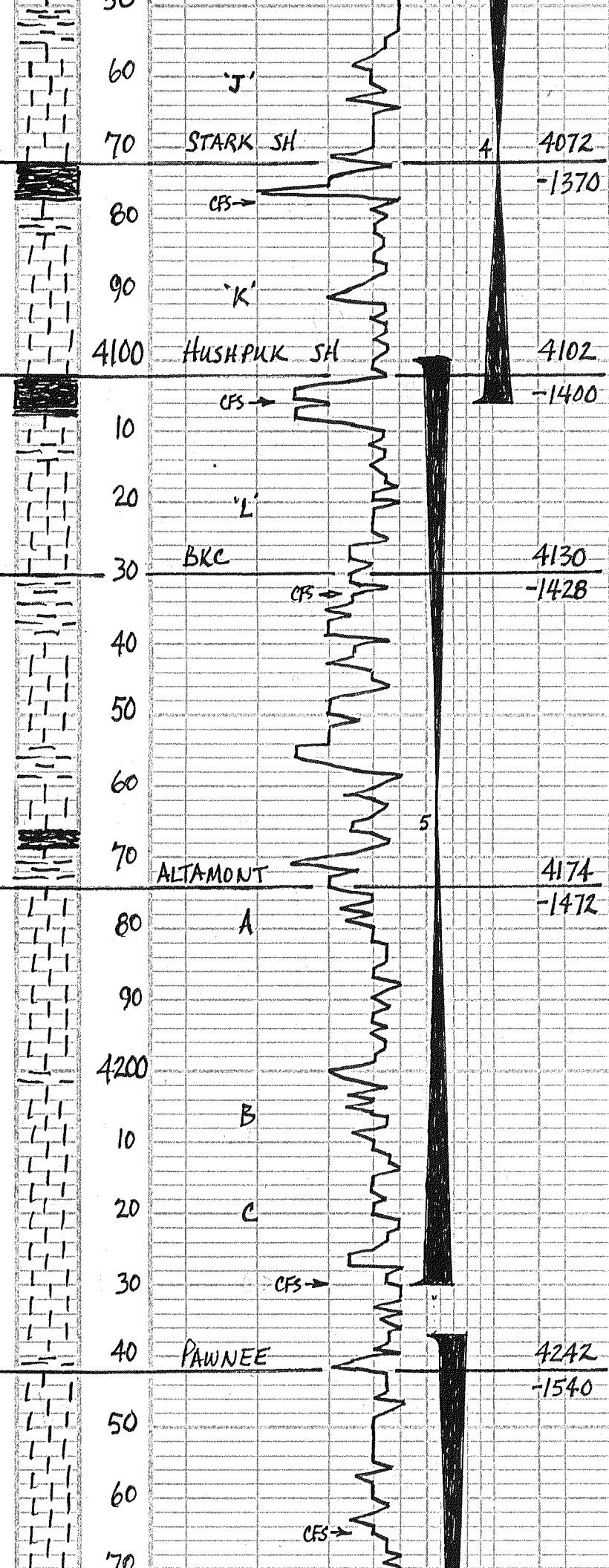
DST #2 3917-3942

30-45-45-60  
IF: FAIR BUILT TO BOB IN 20M  
FF: FAIR BUILT TO BOB 21 MIN.  
REC: 420' MIN = 5% M, 95% W  
CHL: 35,000  
SIP: 1078-1083  
IFP: 28-108, FFP: 111-225  
TEMP: 129°

DST #3 3978-4040

30-45-45-60  
IF: WK BUILT TO 2 1/2"  
FF: VWK BUILT TO 1/2"  
REC: 2' CO,  
75' SICM = 3% O, 97% M  
SIP: 1127-1099  
IFP: 19-39 FFP: 33-47  
TEMP: 119°

ANDYS MUD CKY  
VISC: 53 FILT: 8.0  
WT: 9.3 CHL: 1500



60 V. LT GRAY FINE GRAN. XLN LS  
 CRK - DNSE

70 FLOOD LT GRAY GUMBO SHS &  
 LT CRM FN XLN LS - NS NO ODOR

78) LT CRM SLI FOSS LS W/ SCAT  
 FOSS VUG & LOTS W/ PK STN  
 15 PCS W/ SFLTFO FAIR ODOR  
 20 MIN LT CRM SLI FOSS LS W/  
 SCAT FOSS & W/ LT STN & S-FSLT  
 GFO SLI CRK FAIR ODOR - LOTS  
 45 MIN: FEW PCS AA & FLOOD  
 BLK SHS - GSY

90 LT GRAY - LT TAN SLI FOSS LS  
 POOR & SCAT STN, LT ODOR

60 LT CRM - LT TAN FOSS DOLD LS  
 W/ SCAT VUG & W/ SFLTFO FAIR ODOR  
 60) LOTS PCS W/ STN - 20 SLI CRK  
 LT CRM - LT TAN SLI FOSS DOLD LS  
 P-F SCAT VUG & FAIR ODOR SLI CRK  
 20 MIN: DECREASE IN PCS W/ SFO  
 BUT LOTS W/ LT STN LT ODOR  
 45 MIN: FLOOD BLK SH: GSY

20 GRAY SLI FOSS LS POOR & - NS &  
 LOTS GRAY-BLK SHS.

30 FLOOD GRAY - TAN SLI FOSS LS  
 DNSE - MEALY - SOFT POOR &  
 NS NO ODOR

33) PRED LT GRAY MEALY - CRK LS  
 POOR & - NS NO ODOR

20 MIN: LT CRM - LT TAN TINY FOSS  
 SCAT LT STN LT ODOR ON BRC CRK  
 45 MIN: LT CRM - LT GRAY FN XLN LS  
 DNSE - CRK POOR & - NS NO ODOR

40 LOTS LT GRAY SHS & FEW BLK  
 50 LOTS SHS AA - NS

60 LT CRM - LT PEACH FN MD XLN LS  
 DNSE - MEALY POOR & - NS NO ODOR  
 SOME WH CK

70 LT PEACH SILTY LS & SHS POOR &  
 NS NO ODOR FEW SILTSTONE - NS

80) LT TAN GRAN DOLD LS W/ P-F  
 INTER XLN & - SFLTFO, LT ODOR

90 LT TAN - CRM NODULAR BLOCKY LS  
 POOR INTER XLN & - NS NO ODOR

60) LT CRM - TAN GRAY FN XLN LS  
 DNSE - CRK POOR & - NS NO ODOR

10  
 WH - V. LT GRAY FN XLN LS POOR &  
 DNSE - CRK - NS, NO ODOR

\* 20 LT BRN - TAN LS P-F VUG & W/ SFLT  
 BRNGFO LT ODOR CLEAN POR  
 10 PCS W/ SFO + 10 STN, LGE FOSS VUGS

30) DECREASE IN PCS AA LOTS PEACH  
 GUMBO SH

\* 20 MIN: LT CRM SMALL FOSS LS W/ P-F  
 FOSS & W/ SFLT GFO LT ODOR  
 45 MIN: LOTS PCS 20 W/ STN OR SFO  
 FEW SAT STN W/ SFLT GFO, LT ODOR

40 SLI CRK FN XLN LS POOR &  
 NS NO ODOR LOTS SHS

50 FLOOD V. LT GRAY FN XLN LS POOR  
 & - NS NO ODOR & GRAY SHS

60 LT CRM SLI FOSS LS TINY FOSS &  
 BRS W/ SCAT STN, TRACE FO & PCS, NO ODOR

65) PRED WH - LT CRM FN XLN LS  
 PTLY CRK POOR & - NS NO ODOR

20 MIN: FLOOD LT CRM - V. LT TAN  
 FN XLN GRAN LS POOR & - NS  
 NO ODOR SLI CRK

45 MIN: LT CRM LT TAN FN XLN LS  
 POOR & - NS, BUT LT ODOR  
 80 FLOOD LT CRM - LT TAN FN XLN LS

DST #4 4037-4106

30-45-45-60

IF: WK BLOW BUILT TO 3"

FF: VNK SURF BLOW

REC: 55' MUD + SO 1% O, 99% M

SIP: 1396-1215

IFP: 27-32 FFP: 32-35

TEMP: 119°

DST #5 4100-4230'

30-45-45-60

IF: WK BLOW BUILT TO 1"

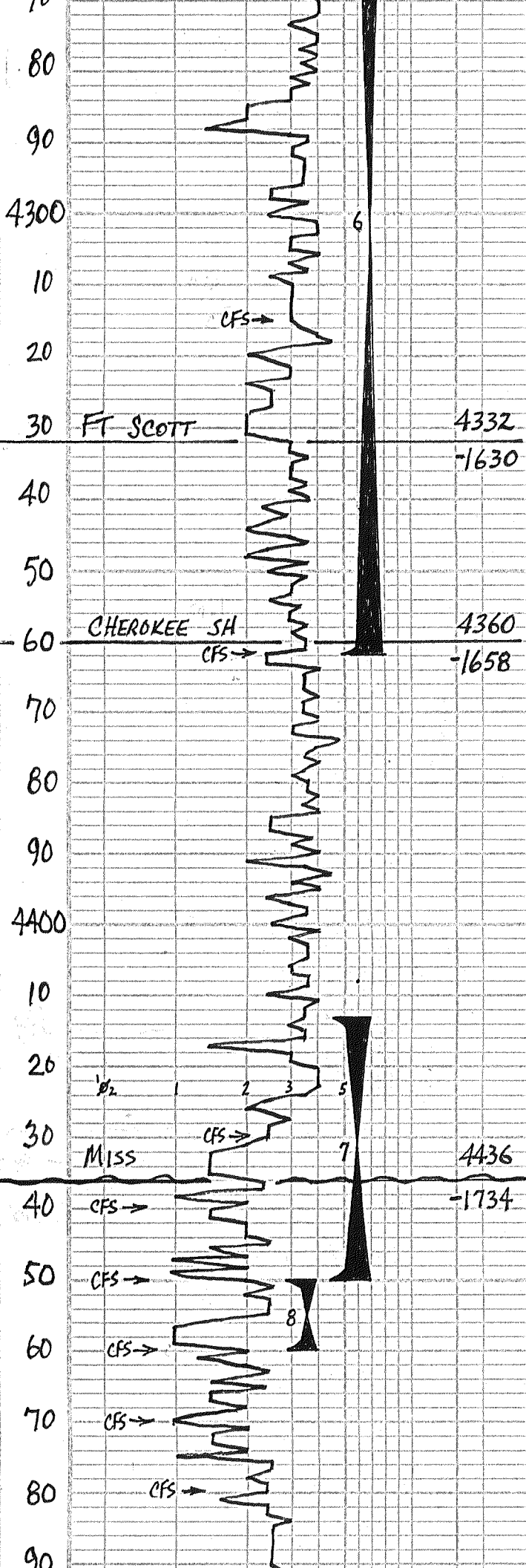
FF: V. WK SURF BLOW

REC: 40' MUD + OS

SIP: 163-116

IFP: 13-24 FFP: 28-31

TEMP: 120°



LS AA-NS POOR  $\phi$  NO ODOR  
 90 PRED LT TAN FN-XLN LS POOR  $\phi$  NS INC SIL CKY  
 00 FLOOD BLK SHS & DK GRY-BRN LS CRYNOIDS DNSE-NS  
 10 V.LT GRY GUMBO SHS & LOOSE CHALK  
 15) WH-V.LT CRM SLI-FOSS LS POOR  $\phi$  NS NO ODOR  
 20 MIN: LT CRM FN-XLN LS POOR  $\phi$  NS NO ODOR PTLY CKY  
 45 MIN: LT TAN-V.LT GRY FN-XLN LS POOR  $\phi$  NS NO ODOR SLI CKY  
 30 LT TAN FN-XLN LS POOR  $\phi$ -NS LOTS BLK-GRY SHS  
 40 FLOOD BLK SHS!  
 50 LT CRM-LT TAN DOL LS W/POOR INTER-DOL  $\phi$  W/SCAT LT STN VSSLTFO LT ODOR  
 60) LT CRM SLI-FOSS-FRACT LS W/POOR FRAC  $\phi$  W/SCAT LTN STN VSSLTFO LT ODOR  
 62) LT BUFF-CRM LS W/P-F FOSS  $\phi$  W/SSLTFO LT ODOR  
 20 MIN: LT CRM SLI-FOSS LS W/P-F FOSS & FRAC  $\phi$  W/SSLTFO LT ODOR CLEAN  
 45 MIN: DECR IN Pcs AA FT ODOR  
 70 FLOOD DK GRY-BLK SHS  
 80 LT TAN SLI-FOSS LS POOR  $\phi$  NS NO ODOR LOTS SHS  
 90 PRED LT CRM FN-XLN LS POOR  $\phi$  NS NO ODOR MOSTLY DNSE  
 00 WH-LT CRM FN-XLN LS-NS & FEW GRY-BLK SHS  
 10 LT GRY-LT CRM FN-XLN DNSE LS POOR  $\phi$ -NS NO ODOR INC SHS  
 20 LT CRM-LT TAN FN-XLN DNSE LS POOR  $\phi$ -NS NO ODOR  
 30) FLOOD WH-LT CRM FN-XLN LS POOR  $\phi$  DNSE-CKY NS NO ODOR  
 20 MIN: WH-LT VELL-DRAN SHARP  $\Delta$  & SHS FEW FN: GR SST SHLY-NS NO ODOR  
 45 MIN: PRED FN-GR SST FN W/BLK STN MOSTLY VARI-COL SH MATRIK FEW SHARP  $\Delta$ -NS NO ODOR  
 40) PRED VARI-COL SST SHLY FEW W/ DK BLK STN NO FD NO ODOR FEW  
 20 MIN: PRED VARI-COL FN-MD GR SST & WH-LT CRM FN-XLN CKY LS-NS  
 45 MIN: PRED VARI-COL FN-MD GR SST W/SCAT DK STN FEW  $\Delta$ -NS 2 Pcs LT TAN ? DOL-GRY FAIR  $\phi$  1 PC W/STN W/FO  
 60 MIN: INC FN-MD GR SST W/ DK STN ALSO FEW WEA D W/ DK STN NO ODOR  
 50) WH WEA  $\Delta$  W/ SCAT STN -NO FD NO ODOR  
 20 MIN: WH WEA  $\Delta$  W/FAIR  $\phi$  SCAT STN TRACE TO 2 Pcs & LT TAN FN-XLN DOL ALL W/STN 2 Pcs W/SSFO NO ODOR  
 40 MIN: LOTS LT TAN FN-XLN DOL MOST W/STN FEW W/FAIR VUG  $\phi$  4 Pcs VSSFO FT ODOR ON BRK  
 60 MIN: LOTS DOL 60% W/STN INC IN P-F VUG  $\phi$  W/SSFO FT ODOR  
 60) FEW LT TAN DOL W/FAIR VUG  $\phi$  W/SSBRNGFO, LOTS W/STN LT ODOR  
 20 MIN: AA FEW W/SSFO  
 \* 40 MIN: LOTS Pcs W/F-GD VUG  $\phi$  W/SSLTFO LT ODOR FEW BLK STN  
 \* 60 MIN: LOTS Pcs LT TAN DOL W/FAIR-GD VUG  $\phi$  W/SSGFO SLI INC Pcs W/ DK BLK STN, DOL HARD  
 70) FEW Pcs LT TAN DOL W/FAIR  $\phi$  & SSFO LT  $\Delta$  DK FT ODOR MOSTLY SH

DST #6 4237-4362'  
 1 30-30-30-30  
 IF: WK BLOW DIED 10 mins  
 FF: DEAD-FLUSH-NO HELP  
 REC: 3' MUD  
 SIP: 237-197  
 IFP: 12-19 FFP: 15-21  
 TEMP: 122°

DST #7 4413-4450  
 30-30-30-30  
 IF: V.WK SURF BLOW  
 FF: DEAD, FLUSH, NO HELP  
 REC: 3' MUD  
 SIP: 547-318  
 IFP: 11-19 FFP: 16-21  
 TEMP: 124°

DST #8 4450-4460  
 45-45-30-30  
 IF: V.WK BUILT TO Y2"  
 FF: NO BLOW-FLUSH-SURGE  
 REC: 10' VSOCM=2% 0, 98% M  
 SIP: 977-838  
 IFP: 9-13 FFP: 15-18  
 TEMP: 123°



4500

10

20

30

40

50

60

70

80

90

4600

CFS →

RTD = 4580'

LTD = 4582'

20 MIN: FRED VAKI COLOR SHS SDB  
 40 MIN: FEW LT TAN DOLO W/ POOR Ø  
 & PCS SFE, NO ODOR. PREP SHS  
 60 MIN: LT TAN FN-XLN DOLO & LS  
 POOR Ø - MOST NS NO ODOR  
 80) LT CRM - LT TAN FN-XLN DOLO LS  
 POOR Ø - NS NO ODOR LOTS SHS  
 20 MIN: LT CRM - V. LT YELL - LT TAN  
 DOLO W/ P-F Ø - NS NO ODOR  
 40 MIN: WH - LT CRM FN-XLN CKY  
 LS POOR Ø - NS NO ODOR  
 60 MIN: PREP WH FN-MD-XLN LS  
 POOR Ø - NS NO ODOR CKY  
 90 FLOOD LT CRM LS FN-MD XLN  
 POOR Ø - NS NO ODOR SHS CKY  
 00 WH - LT CRM FN-MD XLN LS  
 10 DNSE - CKY P-F Ø - NS NO ODOR  
 20 WH FN-MD-XLN CKY LS - NS  
 30  
 40 WH SHARP FOSS Δ - POOR Ø - NS  
 WH FN-MD-XLN CKY LS POOR Ø  
 50 NS - NO ODOR  
 60 WH FN-XLN DOLO LS P-F Ø NS  
 LOTS CKY & WH SHARP Δ - NS

70 FLOOD V. LT TAN - FRESH FN-XLN  
 DOLO P-F Ø - NS NO ODOR  
 PLY CKY

80 LT CRM - V. LT TAN FN-XLN DOLO  
 NS NO ODOR

30 MIN: WH - LT GRAY SHARP Δ - NS

S.H.T = 1°