

**BOB SCHREIBER**

268 N.W. 220 ROAD  
HOISINGTON, KS 65744  
Home Phone: 620-653-7691  
Mobile: 620-786-0991

# GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY GRAND MESA OPERATING CO.

LEASE HESS #2-33

FIELD \_\_\_\_\_

LOCATION 485' FNL + 1540' FWL

SEC 33 TWP 13S RGE 31W

COUNTY GOVE STATE KS

CONTRACTOR Marlin Rig 24

SPUD 5-27-11 COMP 6-9-11

RTD 4650 LTD 4647

MUD UP 3300 TYPE MUD Chemical

ELEVATIONS

KB 2877

DF \_\_\_\_\_

GL 2872

Measurements Are All From 2877

CASING

SURFACE 2 3/8" @ 223' w/165 sxs  
PRODUCTION 1 5/8" @ 4643' w/400 sxs

ELECTRICAL SURVEYS

Density-Neutron, micro Induction

## FORMATION TOPS & STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION		
				A	B	C
Anhydrite	2367	2364	+513	+6		
Tspeeka	3663	3657	-780			
Heebner	3881	3874	-997	+15		
Lansing	3924	3918	-1041	+10		
Maurice Creek	4025	4067	-1190	+13		
Stark	4160	4156	-1229	+11		
BKC	4225	4223	-1346			
Normaton	4266	4260	-1383	+14		
Little Osage	4385	4380	-1503	+13		
Johnson	4482	4477	-1600			
Morrison	4508	4496	-1619	+22		
Mississippian	4533	4528	-1651	+11		
TD	4650	4647	-1720			

REFERENCE WELL FOR STRUCTURE

A 6MOC, Klaus-Hess 1-33, 33-13S-31W, 332' FNL + 2551' FWL

REMARKS The Hess 2-33 was structurally high to Klaus-Hess 1-33. It was +6' Ah and was 10-14' through the pay zones. Two primary and 3 secondary zones were identified in the DST's. This should be a good well.

*Bob Schreiber*

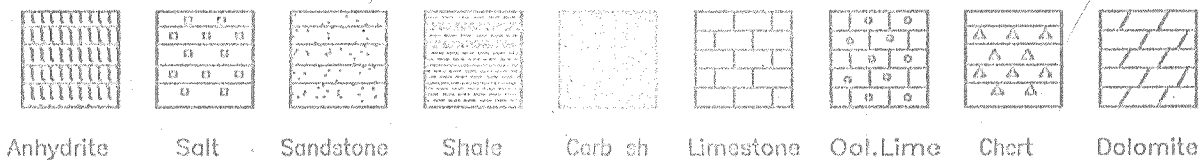
Pipe: 1 1/4" int & 5 1/2" O.D., 15.5#, tally 4648' set @ 4643', PBTD @ 4622', DU tool @ 2383', P.P. 11:30 PM 1st stage  
 cmnt: 200 sxs EA-2 w/add, 12 bbl MF, 20 bbl KCL Flash,  
 stage 2 DU: 225 sxs SMD, pmp to surface w/40 bbl pit, PD 2:30 AM

## RECOMMENDATIONS AND REMARKS

FORMATION	PERFORATE INTERVAL	LOG ANALYSIS		TREATMENT AND REMARKS
		% POR	% SV	



### LEGEND



SCALE      " = 100'

LOG 7703

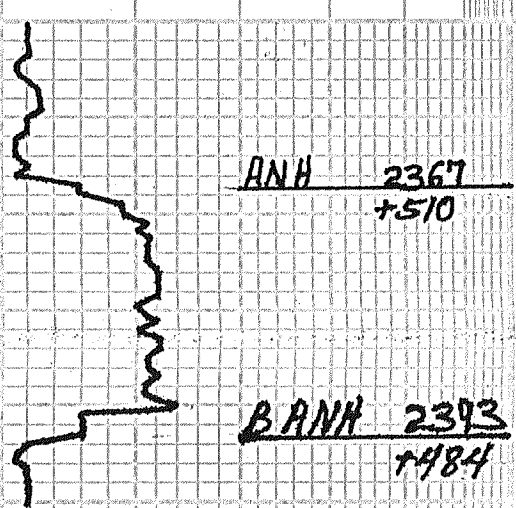
DRILLING TIME IN MINUTES  
PER FOOT  
Rate of Penetration Increases



LITHOLOGY

SAMPLE DESCRIPTIONS

REMARKS



- 5-27-11: MIRA, Spud 3:45 p.m., 8 5/8" @ 214', cont w/165.5XS, 1/4"
- 5-28-11: Dr/g @ 340'
- 5-29-11: Dr/g @ 2385', 3/4" @ 2393'
- 5-30-11: B.T. 3610' PDC out, 3/8" @ 3610'
- 5-31-11: Dr/g @ 3915', DST 1 @ 3963'
- 6-1-11: DST 2, 3978'
- 6-2-11: DST 3 @ 3992' 'D'; DST 4 'E'
- 6-3-11: DST 4
- 6-4-11: DST 5 @ 4160' 'H-J'
- 6-5-11: DST 6 @ 4186' 'K'
- DST 7 @ 4227' 'L'
- 6-6-11: Dr/g @ 4220'
- 6-7-11: DST 8 @ 4439' up ES-Verd.
- 6-8-11: DST 9 @ 4493' Johnson
- 6-9-11: RTD @ 4650', Sur 1 1/2", log ran 5 1/2" @ 4643' w/200.5XS
- 6-10-11: DST 10 @ 4725'

Mud @ 3610': WT 8.7  
VIS 54  
WL 7.2  
PH 11.0  
Chl 15<sup>00</sup>

3600

50

TOPEKA

TOPEKA 3663(-786)

3700

50

LS - crm, mdhd - sli, stfr, fn - ulfn  
xln, sli, grny, sli, tass, fn ool, ip NS

SH - rsty / mcn, mod ind, sli, wxy, ip  
w/ tr ss - lt gy, mod ind, fn gen, g/alc  
NS

LS - crm - lt gy, mdhd - hd, ulfn xln  
fn ool ip, sli, grny NS

LS - crm - off whip, fn xln,  
mdhd - sli stfr, grny xst

LS - off whp - crm, mdhd - stfr ip, ulfn  
- fn xln, chky ip, tr ool, tr pr vug  
oc stp, ? diff odr, no fib NS

LS - lt br - crm, mdhd - hd ip, ulfn -  
fn ip xln, fn tass, tr ool, sli, grny  
w/ kdrt - crm, tr tass NS

SH - blk - dk gy ip, sli ind, sli carb  
tr sli, tr ss

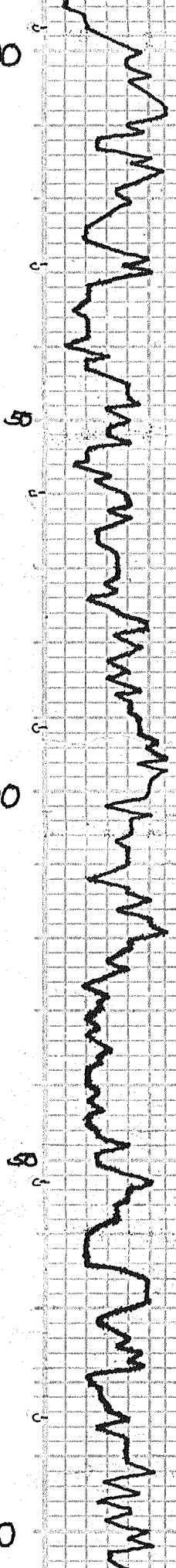
LS - lt br - crm, mdhd - hd, ulfn - fn xln  
foss, grny ip, tr sec xln NS

SH - gy - dk gy, mod - sli ind, tr - sli carb  
sh - rsty - br, sty sh

3800

3900

4000



HEEBNER

TORONTO

LANSING

LS - crm - off wh, md hd - hd, v/fn xln, sft fr mod chky NS

LS - crm - int br, md hd - hd, v/fn xln fr sec xln, fass NS

SH - dk gys, mod ind, blk y, qtd sft fr. ht. gy

LS - crm, md hd - tr hd - tr sft fr, v/fn fr xln, fass, tr vug - sli fass, dist or tr, spity str - prt sat, v/wk - no flo ? wk odr, v/s - sft fr dk br, low grv

LS - crm - off wh, md hd - tr sft fr, sli - mod chky NS

LS - lt br, hd, micro xln, NS

LS - crm, md hd - tr sft fr, v/fn - fr xln - sli chky ip, sli fass, tr ool NS

SH - gy - int grn ip, mod ind, sli blk y

LS - br, hd, micro xln, tr fass NS w/ chrt - crm - off wh, v/sli with rd sli fass NS

LS - crm - off wh, md hd, v/fn - fr ip xln tr sec xln, tr ool, sli fass, tr pr fass, cft - vug or, ? tr lt str, tr gs bbl no flo NSFO

LS - crm, md hd, fr xln, sli grny, sli chky, fr ool ip, sli fass, tr mbw gs bbl, p vlt fr odr NSFO

SH - blk, sli ind, fass, sli - mod carb

LS - crm - lt br, hd, v/fn xln, sli fass NS

SS - lt gy, mod - w/ ind, v/fn grn - sly sli arg - sli calc ip NS

SH - lt gy - gy - rsty ip, sli - mod ind sly blk y

LS - crm - off wh ip, md hd - tr hd - sft fr ip v/fn xln, sec xln, ip, fass ip, tr sli frct - tr mbw gs bbl NSFO grd, off wh, sft fr, mod chky NS

SH - gy - lt gy - rsty ip, sli - mod ind

LS - crm - tr br, md hd - hd ip, v/fn xln, mod ool, sli chky ip

LS - off wh, md hd - sft fr, v/fn xln mod chky NS

LS - crm, md hd - tr hd - tr sft fr, v/fn xln, tr fr sec xln ip, fass, tr ool NS

SH - blk - dk gy, sli - mod ind, sli carb

LS - crm - off wh, md hd - tr hd, v/fn xln, fass grd LS - crm, sft fr, v/fn - fr ip xln sli chky ip, fass ip, tr ool, tr frct fwi pas pr - tr sli vug - sli fass, cft - ool str - spity str - prt sat, tr edg str, tr fr odr, tr fr - sli, qd flo, sft fr, lt br o ss sli dd o md br

LS - crm - int br, md hd - hd, micro - v/fn xln tr ool, tr fass, sme prt - tr sat, lt br, sft fr - md br o, v/sme LS - crm - off wh, v/fn xln md hd - tr sft fr, tr fr sec xln, tr fr pr occst or tr prt sat, sft fr lt md br o, int odr

LS - crm - off wh, md hd - tr hd - sft fr ip, v/fn - fr xln, tr sec xln, sli - tr mod chky ip, sli fass tr sly, tr edg str - prt sat, v/sft fr md br o

LS - crm - int br ip, md hd - hd ip, micro xln, sme fr - md ip sec xln, fass ip, tr frct - fass xln w/ edg str, lb br, fr - qd cat, 1 prt frct - sft fr, ? no odr, 2 prt wk sft fr

LS - v/fn br - crm ip, md hd - hd ip, v/fn - micro xln sli fass, spity, edg str + vug or, tr frct fwi pas odr bug, md - gld br, sft fr, v/sft fr - md flo - fr - qd cat, fr - sli, fr odr grd crm - off wh, md hd, v/fn xln sli chky, ool ip, tr str, v/sft fr - str - prt sat, decr odr sli dd o ip tr chrt - ool - crm - lt br, frch NS

Mud v @ 3922' : WT 9.1  
VLS 56  
WL 8.0  
PH 9.5  
CH 2000

Mud v @ 3978' : WT 9.0  
VLS 54  
WL 7.2  
PH 10.0  
CH 3000

HEEBNER 3881 (-1004)

TORONTO 3903 (-1026)

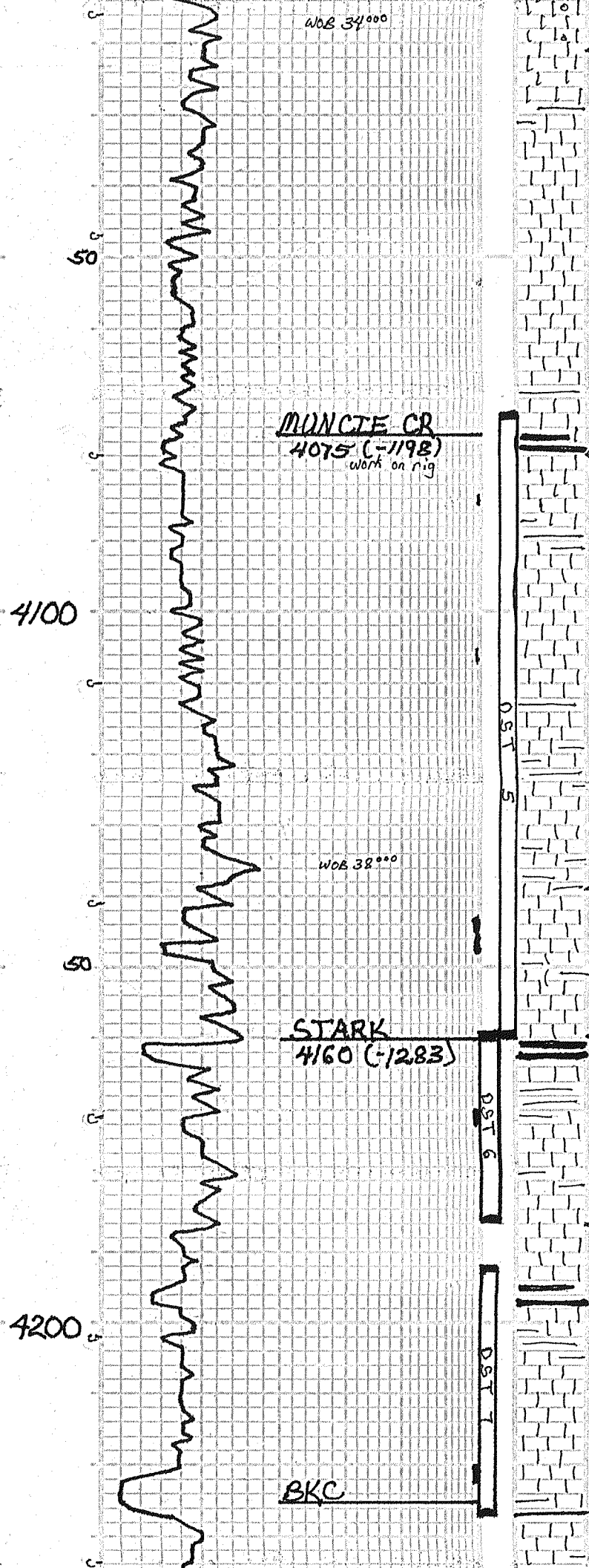
LANSING 3924 (-1047)

DST 1) 3946-3963 : 30-30  
1st) wk s.B. dd 5"  
Rec: 60' m w/CO (580, 95% m)  
IFP 36-64#  
SIP 60-807# , HP 1977-1909#

DST 2) 3968-3978 : 30-45-45-60  
1st) wk bld 2 1/2" decr wk s.B., no B.B.  
2nd) w/lt bld 1/2" decr wk s.B., no B.B.  
Rec: 240' TF  
120' O/WCM 20% 65% 15%  
120' M/WCO 65% 20% 15%  
IFP 72-102# , FFP 117-128#  
SIP 814-779# , HP 1963-1905#  
ch 39000 119°F

DST 3) 3967-3992 : 30-45-60-90  
1st) wk bld 2" decr 1" , No B.B.  
2nd) wk bld 1 1/2" decr 1/2" , No B.B.  
Rec: 5' CO (1080 , 85% m, 58% w)  
119°F

SR



**MUNCIE CR**  
4075 (-1198)  
work on rig

**STARK**  
4160 (-1283)

**BKC**  
4225 (-1348)

WOB 34000  
LS - crm, md hd - hd ip, ultra-xln  
sli chky, sli ool, sli foss, tr psect  
uag - oocst, tr ool, 1 pc 50(F)  
w/sh - ltgy - gy - gr, sli - mod ind, sli  
wxy ip, tr chrt

LS - crm - off wh, md hd, fr - ultra xln  
tr sli chky, tr psect, NLSFO  
grd u/lt br, hd - md hd, ultra xln  
tr mod ool, tr fr oocst or NLS

LS - off wh - crm, md hd - tr hd, fr - ultra  
xln, sli - tr mod chky ip, foss ip  
tr ool, tr pyr

LS - crm - trnt gy ip, hd, micro xln  
sli frct ip, tr foss NLS

LS - crm, md hd - hd, micro xln  
tr ool NLS

sh - blk, sli ind, sli foss, carb

LS - lt br - br ip, hd, micro xln, sli foss  
tr frct, tr fr flo - edg ip, tr fr cut  
tr ool, tr softy sta, tr pr uag ussfo  
some LS - crm - mod ip, md hd, ultra xln, sli  
chky ip, sli gray, tr sm, tr fr cut  
ussfo md - hbr o no ool

LS - crm - off wh, md hd - hd - tr sft  
ultra xln, chky ip, tr sm, frct ip  
tr foss, ? ultra ool, tr sli dd - dd o

LS - crm - trnt br, md hd - hd, ultra xln  
sli frct, grd sli chky ip, tr inhd  
chrt, tr foss, sli gray ip, tr pr uag or  
tr fly o, tr ool ? ussfo

sh - gy - trnt gr, sli mod, mod ind, tr  
fr grn sly

LS - crm - off wh trnt br ip, md hd - hd  
ultra xln, tr frct ip, ool ip NLS

LS - crm - off wh, md hd, ultra xln tr foss  
ool ip, sli chky ip, tr oocst or  
tr sta, 2 pc sfo tr br o

sh - gy - trnt gr, md hd, blk, mostly dull

LS - crm, md hd, ultra - some fr - tr md  
xln, mod ool ip, tr sec xln, tr oocst  
tr some lrg ip uag lagan - intr ool  
or, tr some prt sat - sat, tr brn or  
mod - gd ool, ussfo, tr - md br o  
tr some fr - gd flo + cut

LS - ultra br - crm ip, md hd - hd ip, ultra xln  
tr sli chky, ool, frct ip, tr some edg - prt  
sat, fr - gd flo, tr some tr sli q cut  
tr pr vis or, ussfo tr - md br o, gd ool

sh - blk, sli - mod ind, carb, sli blk - foss  
LS - br, ad das, micro xln, tr foss NLS

LS - crm - off wh - tr mod lt gy, md hd -  
hd ip - tr sft, ultra - tr ip xln, tr fr - md  
sec xln, sli chky ip, ool ip, tr foss  
Fu pas pr - sli - fr - intr ool - uag - tr oocst or  
Fu pas prt - sat - sat, sli chky ip, Fu pas  
gd flo, fr - sli q cut, gd ool,  
ussfo tr - md br o, tr sli dd o

LS - crm - off wh - mod lt gy ip, md hd - hd  
ultra xln, ool ip, frct ip, ultra chky ip  
tr sta - set ? ussfo, tr wh fr

sh - blk, sli - mod ip ind, carb, sli foss

LS - br, hd, micro xln, tr foss, grd crm  
sli chky, sli ultra ip NLS

LS - crm - trnt gy - hbr ip, ad - md hd ip  
ultra xln, ultra chky ip, sli foss ip  
sec xln ip NLS

LS - crm - trnt br, md hd - hd ip, ultra xln  
sec xln ip, sli chky ip, ool, tr pr fr pr  
intr ool or, tr sat - pr sat, uss fly o  
? trnt ool

Dol - crm, md hd, ultra - tr xln, sli  
tr mod calc ip, sli with o gap ip  
? vis or, tr some fr - md br sat  
Fu pas fr - gd flo, fr - sli q cut  
blt o ip, us - ussfo (some sli dd md  
br o), Fu drpl tr br o

25 WOB  
120' OMAC (10% & 60% m, 30% w)  
IFF 73-103#, FFP 107-127#  
SIP 811-798#, HP 2001-1904#

DST 4) 3992 - 4012:30-45-60-90  
1st) wk bld 234", no B.B.  
2nd) wk bld 6", no B.B.  
Rec: 25 CGO (10% & 90% O)  
100' OCM ( , 30% O, 70% m)  
IFF 40-80#, FFP 88-107#  
SIP 989# 977#, HP 1979-1922#  
35° GRV oil 114°F

Mud v @ 3992: WT 9.1  
VIS 53  
WL 7.6  
PH 10.0  
chl 6400

Mud v @ 4030: WT 9.1  
VIS 61  
WL 6.8  
PH 10.0  
chl 4800

DST 5) 4072 - 4160:30-45-60-90  
1st) G.B. - B.O.B. 7", 12" B.B. in - 25 dec 8"  
2nd) G.B. - B.O.B. 7", 12" B.B. 15 - dd 47 min  
Rec: G O M  
1800' G 100%  
1160' GGO 25% 65%  
120' MCO 60% 40%  
IFF 109-285#, FFP 291-554#  
SIP 1293-1270#, HP 2061-1979#  
GRV 38° 119°F

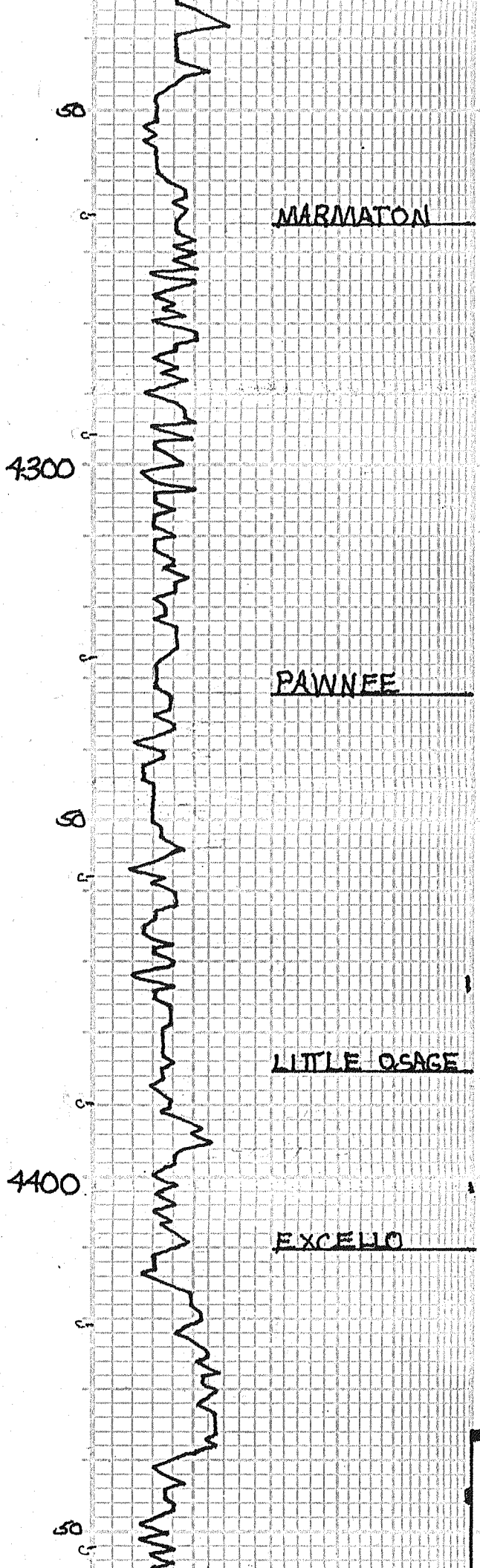
Mud v @ 4160: WT 9.0  
VIS 62  
WL 6.8  
PH 10.5  
chl 4000

DST 6) 4159 - 4186:30-45-45-60  
1st) wk bld 1 1/2" / 9m, No B.B.  
2nd) wk bld 3/4" / 7m, No B.B.  
Rec: 190' MW 358m, 65% W  
chl 33000, 119°F  
IFF 44-99#, FFP 100-124#  
SIP 1074-1042#, HP 2109-1998

Mud v @ 4186: WT 9.1  
VIS 64  
WL 7.2  
PH 10.5  
chl 6100

BKC 4225 (-1348)





LS - crm - lt br ip, hd - md hd ip  
 micro xln, sli foss, tr ool NSTO  
 x 1-2 pc? abv ool, intr ptrl br vssd

DST 7) 4192-4227: 30-30-30-30  
 1st) wk bl to 1/4"  
 2nd) no bl,  
 Rec: 20 m  
 IFP 46-53# FFP 55-61  
 SIP 1070-1062# HP 2126-2027#  
 117° F

SH - r sty / br, sli - mod ind, sandy  
 ip grd fr grn ss - ~~arg~~  
 + few pcs

**MARMATON**

**MARMATON 4366(-1489)**

LS - v / lt br - tr crm - tr rd ip, hd -  
 md hd, fr xln, sli - tr mod trct ip  
 sli foss, tr ool, mod secxln ip  
 grd st fr, sli - mod chky ip  
 off wh - crm LS NS

SH - dk gy - tr gr - tr blk, tr dk br  
 sli mod ind

SH - r sty / orng, st fr / gmy wet  
 r sty / br mod - wt ind

LS - crm - lt br, md hd - tr hd, v / fr  
 fr ip xln, foss, tr ool, secxln ip  
 prly cont ip, grd chky, st fr ip  
 1 pc. gs bbl, ? v / tr odr NSTO

Mod v @ 4327: WT 9.1  
 VLS 56  
 WL 6.8  
 pH 10.5  
 Chl 6300

SH - r sty / br - gy, sli ind, sli Fiss

LS - crm - tr tqy ip, md hd - tr hd  
 v / fr xln tr frct NS

LS - lt br - br, hd dns, micro xln, tr ool  
 NS

SH - r sty - br / orng - tr mn tqy  
 tr gr, sli - mod ind, stly ip  
 tr wky

**PAWNEE**

**PAWNEE 4332(-1455)**

LS - crm - tr tqy, hd, v / fr xln  
 tr stly NS

LS - crm, hd, micro xln, ool ip, sli  
 foss, grd st fr, off wh, sli chky  
 mtr x, gol, LS, NS  
 w / tr chrt

LS - crm, md hd - hd, v / fr xln  
 tr ool, NS

SH - dk gy - tr gr, mod - w / ind, blk

LS - crm - tr br, md hd - hd - tr st fr  
 tr secxln (stm ip), tr fr xln puf  
 tr pc vng - intr ool, 2-3 pcs fr - gd  
 fr, fr - sli slw cut, tr sta - prt sat  
 ss, sli ddo, vssFO, tr - sli fr odr

SH - blk, sli ind, sli Fiss, carb

**LITTLE OSAGE 4385(-1508)**

LS - br, hd, dns, v / fr xln, tr foss NS

LS - crm - off wh - tr br ip, md hd - hd  
 - tr st fr, v / fr ip xln, v / sli  
 chky ip, fr ool - tr lpr ool ip  
 tr foss, tr sply oocst - v / fr intr xln  
 tr, tr stn - sat, tr t / o (fr pcs)  
 tr fr cut, 1-2 pcs Flm - FO

**LITTLE OSAGE**

**EXCELLO**

**EXCELLO 4410(-1583)**

SH - blk, sli - mod ind, sli - mod Fiss  
 calt ip

LS - crm - tr br - mod lt gy ip  
 md hd - hd ip, v / fr xln, mod  
 ool ip, tr foss NS

LS - lt br, hd dns, micro xln, frct ip NS  
 grd crm, hd - tr md hd, micro -  
 v / fr xln, frct 1 pc sli ddo  
 tr odr

DST 8) 4354-4439: 30-45-60-90  
 1st) wk bld 2", No B.B.  
 2nd) F61 bld 10", No B.B.  
 Rec: 175' GIP  
 30' CO 10080  
 100' ocm 2080, 808M  
 IFP 77-98# FFP 94-119#  
 SIP 1126-1189# HP 2299-2193#  
 122° F

LS - crm - tr br, md hd - hd dns, v / fr  
 - micro xln, ool ip, tr frct  
 1-2 pcs sfa, dd 6 stn NSTO  
 tr odr dol pc Probabv

4455 LS - crm - tr br, md hd - hd, micro - v / fr  
 xln, sli foss, smp fr - md secxln  
 grd off wh, sli chky, st fr ip

4445 LS - crm - lt br, md hd - hd ip - tr st fr

4500

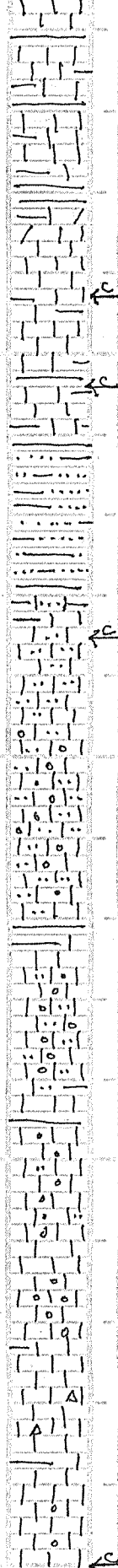
JOHNSON

MORROW

MISS

RTD

DST 9



micro - v. xln, sli. foss, tr. mod  
 fr. ct, sec. xln, fr. ct. w/ sli. ip, no  
 ool, tr. fr. sli. qd cut, no. ffo, ssfo  
 dkr. br. o, F50. sli. dd. dd

LS - crm - ltr, mod. ip, md. hd. ip, vln. xln  
 tr. sec. xln. qd. chky. ip, foss. ip, tr. ool  
 tr. fr. ct, NLS  
 w/ sme. sh. gy - lgy, sli. md, sli. wxy, shy. ip

LS - ltr - br - tr. dkr. br., micro. xln, md. hd. ip  
 fr. ct. ip, sec. xln. ip, sli. foss, tr. vug. fr.  
 tr. str., tr. vug. fr., ssfo. dkr. br. blk

LS - ltr - br, md. hd. ip, tr. str., micro. xln  
 tr. vug. fr. ool. w/ so, mod. fr. ct. ip, foss.  
 tr. ool, tr. vug. fr. qd. tr. sme. pr. tr.  
 foss. ct. - sli. vug. - tr. int. p. l. o. s. me  
 str. - pr. str. - sli. ool. br. br. ip, tr. fr. ct.  
 fr. sli. qd. o, dkr. br. - br. o, lwr. pr. v.  
 sli. dd. ip, tr. sme. wk. flo

LS - br - ltr, hd, micro. xln, tr. fr.  
 vug. - foss. ct. o, ssfo. sli. dd

LS - p. red. abv. pr. ool, sli. foss - tr. ool  
 1-2 pc. ss, qd. off. wh. - crm. ip, md. hd.  
 vln. - fr. xln, sli. - tr. mod. chky. ip, sli. fr. ct.  
 NLS FO

SH - yell, sli. - mod. ind, blk. ip, sli. ip  
 SH - crm - tr. gr. tgy, sli. wet, sli. fr. grn  
 sdy. ip

SS - crm - off. wh. - lgy - tr. br., fr. - tr. md. - vln.  
 grn. ip, sbrnd, tr. sme. cly. lgy. ip  
 30% loose grms

SS - crm - tr. gr. tgy, mod. sli. ind, fr. grn  
 cly. ip, NLS. qd. SS - mod. cly. ip  
 fr. grn, mod. tr. str. ip, sbrnd - tr.  
 sbrng, 2 pc. ssfo, no Ffo

LS - crm - ltr, md. hd. ip, fr. - tr. md.  
 xln, sli. chky. ip, mod. fr. grn. sdy.  
 tr. sli. foss, w/ sme. ls - ltr - br, hd  
 vln. - micro. xln, tr. foss, tr. sme. pyr.  
 NLS

LS - crm - off. wh. ip - tr. ltr, md. hd. ip  
 fr. - tr. md. xln, sli. - mod. ip. chky., mod.  
 fr. grn. sdy. ip, fr. ool. ip, tr. sli. foss  
 w/ sme. ls - ltr, hd. dns, micro. xln  
 fr. ct. ip, NLS

LS - crm - tr, md. hd. ip, vln. - fr. ip, xln  
 ool. ip, fr. vln. ip, grn. sdy. ip, incl.  
 qd. mod. chky., ool, sdy. ls. NLS

LS - ltr - crm. ip, md. hd. ip, fr. - md. ip  
 xln, ool, tr. foss, vln. - sli. sdy. ip  
 qd. sli. chky. - sdy. ip NLS

SH - gy - gr - tr. dkr. gy, sli. - mod. ind, tr. foss

LS - tr, hd - md. hd. ip, micro - fr. ip. xln  
 tr. fr. ct, ool. ip, tr. fr. grn. sdy. NLS

LS - ltr - br. ip, hd. dns, micro. xln  
 sli. foss. ip, fr. ool. ip, fr. ct. ip, NLS  
 1 pc. pp. ool. str.

SH - dkr. gy - dkr. mcn, mod. ind, blk.  
 sli. pty. lstr

LS - br - hd, dns, micro. xln, tr. foss. NLS  
 qd. crm, hd - md. hd. vln. xln, fr.  
 ool, sli. sdy. ip, sli. chky. ip NLS

LS - ltr - br - br. ip, hd. dns, micro. xln  
 tr. sec. xln, tr. fr. xln. pyr. qd.  
 crm - off. wh., sli. fr. chky. ip NLS  
 mod. ool. ip

LS - ltr - br - br, hd, micro. xln, NLS  
 fr. ool. ip  
 w/ sme. chlt - vln. lgy - tr. br, sp. ss  
 vln. xln. pyr, tr. spic, tr. chq. chit

LS - crm - ltr - mod. ip, md. hd. ip, dns  
 vln. xln, mt. x. tr, foss, tr. ool  
 tr. sli. dol NLS

LS - ltr - tr, hd, vln. xln, mod. foss  
 ip, fr. ool, tr. sec. xln. dkr.  
 m. NLS

Mad v 2 4439: WT 9.3  
 VLS 55  
 WL 8.0  
 pH 10.0  
 chl 6000

JOHNSON 4482(-1605)

Mad v 2 4493: WT 9.0  
 WL 6.4  
 VLS 56  
 pH 10.5  
 chl 5400

MORROW 4508(-1631)

MISS 4533(-1656)

DST 9) 4436 - 4493: 30-45-60-90  
 1st) G.B. old B.O.B. 2", BB B.O.B. 22"  
 2nd) G.B. old B.O.B. 2", BB 2" / 200 md 30m  
 Rec: 680' GIP 100%G,  
 2200' 60 15%G, 8580  
 120' 600 70%O, 30% m  
 JFP 185-548#, FFP 571-882#  
 FIP 1107-1026#, HP 2260-2167#  
 29° Gru 126° F

4600

RTD 4650(-1773)

LTD 4647(-1770)

