

**GRAND  
MESA****OPERATING COMPANY**

(316) 265-3000  
FAX: (316) 265-3455

1700 N. WATERFRONT PARKWAY  
BLDG. 600  
WICHITA, KANSAS 67208-5514

Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: Hess #6-32  
Location: 2283' FNL, 2126' FWL, 32-13s-31w, Gove County, Kansas  
License Number: API: 15-109-21012      Region: Gove County  
Spud Date: 08/26/2011      Drilling Completed: 09/04/2011  
Surface Coordinates: Lat: 38.8818173  
Long: -100.7902181  
Bottom Hole Coordinates: Vertical hole  
Ground Elevation (ft): 2938'      K.B. Elevation (ft): 2943'  
Logged Interval (ft): 3800'      To: RTD      Total Depth (ft): 4666'  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

**GEOLOGIST**

Name: Kent R. Matson  
Company: Matson Geological Services, LLC  
Address: 33300 W. 15th Street S.  
Garden Plain, Kansas 67050  
316-644-1975

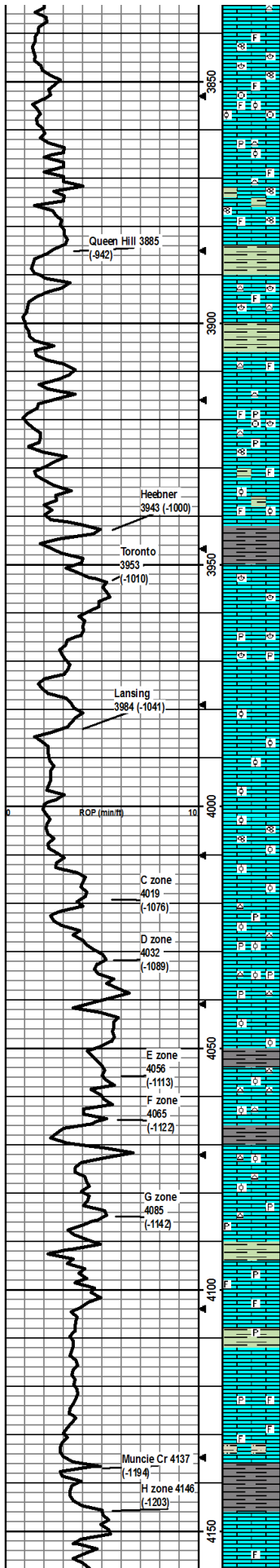
**COMMENTS**

Contractor: Murfin Drilling Company Rig #24  
Pusher: Tony Martin  
Surface Casing: 8 5/8" set at 219' w/165sx  
Production Casing: Production casing (5 1/2") was installed to RTD.  
Mud by: MudCo  
DST's by: Superior Testing  
Logs by: Weatherford (DIL, CN-CD, ML)  
RTD=4666'  
LTD=4658'

**FORMATION TOPS**

| FORMATION     | SAMPLE TOPS |       | LOG TOPS |       |
|---------------|-------------|-------|----------|-------|
|               | Depth       | Datum | Depth    | Datum |
| Queen Hill    | 3885'       | -942  | 3872'    | -929  |
| Heebner Shale | 3943'       | -1000 | 3935'    | -992  |





some wnt cnaky pcs, some gry silty pcs, ross w/fusil and frags, min ppt and frac por, ns.

LS: crm-med brn w/min lt-med gry, micro-fn xtal, some soft wht chalky pce, some gry silty pcs, foss w/fusil brnc and frags, min ppt and frac por, ns.

LS: lt brn-med gry, micro-fn xtal, foss w/fusil crin and frags and friable ool pcs, some ppt and frac por, ns.

LS: wht-lt brn, micro-fn xtal, min wht chert, foss frags, min pyrite, min ool/silty friable pcs, min ppt frac and in-xtal por, ns.

LS: crm-lt brn, micro-fn xtal, min wht chert, foss fusil and frags, some med-dk gry SH pce, min ppt por, ns.

LS: wht-lt gry brn w/min dk gry pcs, micro-fn xtal, foss fusil and frags, min ppt frac and sm vug por, ns.

SH: med green and gry, fissile.

LS: wht-crm w/min med brn gry, micro-fn xtal, min wht chert, fn grnd ool/sand friable, foss bracs and frags, min ppt and frac por, ns.

SH: med-green med-dk gry and red brn, fissile, soft-brittle.

LS: crm-lt gry brn w/min brn, micro-fn xtal, min amt wht chert, foss frags, ppt-sm in-xtal por, ns.

LS: crm to min amt of med brn, micro-fn xtal, med brn has fn-xtals of pyrite, m in wht chert, foss w/brac fusil crin and frags, ppt and in-xtal por, ns.

LS: crm-lt brn, micro-fn xtal, min amt dk gry SH, silty/fn grn ool, foss frags, ppt and in-xtal por, ns.

SH: med-dk gry/bk w/some red brn, min amt of med green, fissile, some soft and some brittle.

LS: wht-lt brn w/some lt gry, micro-fn xtal, silty pce, foss w/brac and frags, min ppt and in-xtal por, ns.

LS: crm-med brn, fn xtal, silty pcs, foss frags, min ppt and in-xtal por, ns.

LS: lt-med brn, micro-fn xtal, pyrite, silty, foss frags and brac, m in ppt por, ns.

LS: crm-lt brn gry, fn xtal, silty, foss frags, min ppt por, ns.

LS: crm-lt brn, fn xtal, some soft wht chalky pce, ool w/min foss frags, ppt and ool modic por, no cup or crushed smp odor, m in dk brn poss dead oil staining, nsfo.

Same as above w/increase in soft wht chalky pce, no vis por, no cup or crush smp odor, no dk brn staining, nsfo.

LS: crm-lt brn w/min lt-med gry, micro-fn xtal, foss ool fusil and frags, ppt and fn in-xtal por, no cup or crush smp odor, one pce w/fo in ppt and fn in-xtal por, ssfo.

LS: crm-lt brn, micro-fn xtal, foss ool and frags, ppt and fn-vug in-xtal por, no cup or crush smp odor, one pce w/dk brn dead oil staining, one pce w/fo in in ppt and fn in-xtal por, ssfo.

LS: wht-crm, micro-fn xtal, min wht chert, min pyrite, m in foss frags w/some fn ool, ppt-fn in-xtal por, no cup odor, slt crushed smp odor, in 30" smp one pce w/dk brn dead oil staining and one pce w/fo, in 60" several pce of dk brn dead oil staining, ssfo.

LS: wht-lt brn, micro-fn xtal, wht chert, pyrite, foss w/ool and frags, mostly hard and dense w/no vis por, few ool pcs w/ppt and in-xtal por, no cup or crush odor, ns.

LS: wht-crm w/min lt brn, micro-fn xtal, mostly hard and dense w/soft wht chalky pcs, m in ool and frag foss, no vis por, no cup or crush odor, ns.

SH: med-dk gry, fissile, soft-brittle.

LS: wht-crm, micro xtal w/min fn, abdn wht-crm chert, some ool pcs, min foss frags, no vis por, ns.

SH: med-dk gry w/min med green, fissile, soft.

LS: crm-lt brn gry, micro-fn xtal, min wht chert, some ool pcs and m in foss frags, ool pcs have ppt and moldic por, ns.

LS: crm-med brn, micro-fn xtal, min wht chert, min pyrite, some med brn pcs w/abund foss frac, no vis por, ns.

SH: med green and gry w/min red brn, fissile, soft.

LS: crm-lt brn, micro-fn xtal, min pyrite, sl foss frags, mostly dense w/min ppt por, ns.

LS: wht-crm, micro xtal w/min fn, sl foss frags, mostly dense w/min ppt por, ns.

SH: med-dk gry w/min med green gry, pyrite, fissile, brittle.

LS: wht-crm, micro xtal, dense, no vis por, ns.

LS: crm-lt brn w/min dk gry-brn inclusions, micro-fn xtal, min pyrite, foss frags, no vis por, ns.

LS: crm-lt brn, micro-fn xtal, abund foss frags, some silty/sandy pcs, min ppt-fn por, ns.

SH: dk gry/blk, fissile, soft.

LS: wht-crm micro-xtal, hard/dense, no vis por, ns.

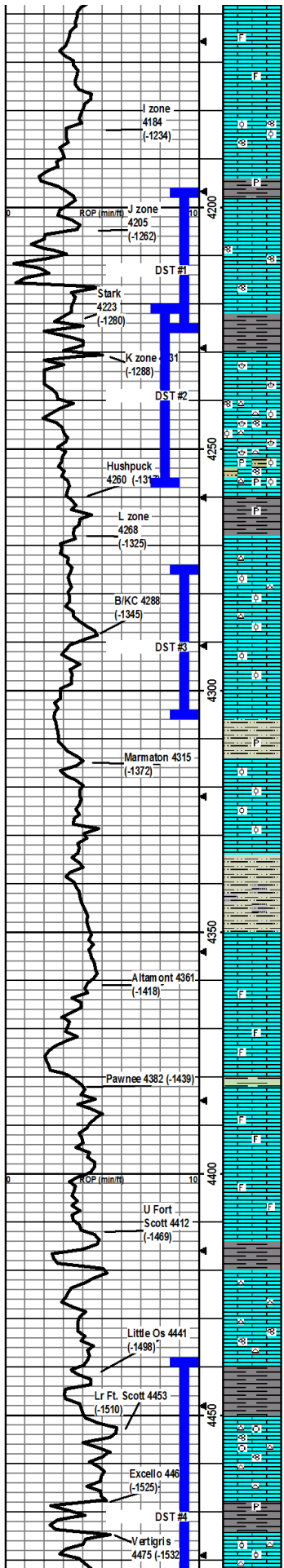
LS: wht-lt brn, micro-fn xtal, foss frags, no vis por, ns.

CFS @ 4030'  
30°/60°

CFS @ 4050'  
30°/60°

CFS @ 4072'  
30°/60°

Mudco Check #5 @ 4166'  
08/30/11 11:30am  
wt vis pH CHI  
9.4 77 9.0 3500  
FIT LCM  
11.2 3



LS: crm to lt-med brn gry, m micro-fn xtal, m in foss frags, no vis por, ns.

LS: wht-lt brn, micro-fn xtal, min foss frags, no vis por, ns.

LS: crm-lt brn, micro-fn xtal, foss frags ool fusil, one soft chalky pcs w/fo in 4200 smpl, min ppt in-xtal por, no cup or crushed smpl odor, slsfo.

LS: crm-lt brn, micro-fn xtal, foss frags, min ppt in-xtal por, in 30" and 60" smpl slit crushed odor but nsfo.

SH: med-dk gry, m in pyrite, fissile.

LS: crm-lt brn, micro-xtal, some lt gry silty pcs, min ppt por, no cup or crushed smpl odor, ns.

LS: crm-lt brn, micro-xtal, min foss frags and fusil, min ppt and in-xtal por, slit cup odor and good crushed odor, checked 3 trays and saw one pce per tray of dk brn staining but nfo. Less odor in cup and crushed smpl in 30" and 60" smpl.

SH: med-dk gry/blk green and red brn, most soft but dk gry/blk is harder, fissile.

LS: crm to lt gry brn, micro-fn xtal, foss brac and frags, good vug in-xtal por, strong cup odor, flor, approx 20 pcs in tray, gsfo.

LS: wht-lt gry brn, micro-fn xtal, lt gry chert, foss brac fusil ool and frags, mostly dense w/in frac and in-xtal por, slit crushed odor pass from above, nsfo.

Same as above w/pyrite and med greenish gry silty SH, no cup or crushed smpl odor, ns.

SH: med-dk gry/blk w/some med greenish green and red brn, min pyrite, some silty, some soft, some brittle and fissile.

LS: wht-lt brn, micro-fn xtal, min lt brn chert, foss w/crin fusil ool and frags, some slit/sand stn, min wht chalky pcs, min ool-castic por, no cup or crushed smpl odor, ns.

Same as above.

LS: crm-lt gryish brn, micro-fn xtal, foss w/fo ool and frags, gd vug por, gd cup and crushed odor, flor, 5-6 pcs in tray w/fo, gsfo. 30" and 60" smpls had crushed odor and one pce per tray.

SS: lt-med gry, v-fn grnd, sub-angular to sub-rnd, well sorted, mostly quartz (quartzarenite), min pyrite, some arg pcs, no odor, ns.

LS: crm-lt brn, micro-fn xtal, foss frags w/in ool, some wht chalky pcs, min ppt and in-xtal por, one pce gd vug por and fo pass from above ??, no odor, ns.

LS: wht-crm w/min lt brn, micro-fn xtal, min foss frags and ool, some wht chalky pcs, mostly dense w/min ppt and in-xtal por, no odor, ns.

Same as above w/some SS pcs.

SS: med gry, v-fn grnd, sub-angl to sub-rnd, well sorted, mostly quartz, arg, no odor, ns.

Same as above w/some med greenish gry SH.

LS: crm-lt gryish brn, micro-fn xtal, min in-xtal por, no odor, ns.

LS: crm-med brn, micro-fn xtal, min foss frags, min in-xtal and frac por, no odor, ns.

LS: wht-lt brn, micro-fn xtal, some wht soft chalky pcs, min foss frags, min in-xtal and frac por, no odor, ns.

SH: med greenish gry and gry, soft and brittle fissile.

LS: wht-lt gryish brn and lt brn, micro-fn xtal, min wht soft chalky pcs, min foss frags, some silty pcs, min xtal and frac por, no odor, ns.

LS: crm-lt brn, micro-fn xtal, min wht soft chalky pcs, min foss frags, min frac por, no odor, ns.

SH: dk gry-blk w/min med greenish gry, brittle, fissile.

LS: wht-crm, micro-xtal, lt gry chert, no vis por, no odor, ns.

LS: lt-med brn, micro-fn xtal, lt gry chert, min foss fusil and frags, no vis por, no odor, ns.

SH: dk gry-blk w/some med-dk greenish gry, soft to brittle and fissile.

LS: crm-lt gryish brn some med brn, micro-fn xtal, lt gry and lt brn chert, softer wht chalky pcs, foss crin fusil and frags, no vis por, no odor, ns.

LS: crm-lt gryish brn, micro-fn xtal, lt gry and lt brn chert, gd in-xtal vug por, cup and crushed smp odor, flor, sfo.

SH: dk gry/blk, slit pyritic, brittle, fissile.

LS: lt gryish brn, fn xtal w/micro-xtal matrix, some med brn chert, abund ool, min ool-castic and in-xtal por few pcs w/fo, cut and flor, crushed smp odor, ssfo.

CFS @ 4166'  
30"60"

**DST1) 4197-4225**  
3045/6090  
1st) Strg Blw built to BOB in 10 min  
2nd) Strg Blw built to BOB in 12 min  
IFP 67-214# FFP  
ISIP 841# FFP  
226-418# FSP 785#  
HP 2291-2023#  
Recvd: 840' TF = 720 MWL 2' OCMW 3' CO on top 100' GIP

CFS @ 4200'  
30"60"

Mudco Check #6 @ 4225'  
08/01/11 10:30 am  
wt vis pH chl  
9.3 56 10.0 3200  
FIT LCM  
8.8 3  
CFS @ 4220'  
30"60"

CFS @ 4225' 45", then cir 1-hr to clear hole.

**DST2) 4220-4258**  
3030/3030  
1st) Very wk SB steady throughout open  
2nd) Very wk SB did not build  
IFP 58-53# FFP  
ISIP 361# FFP  
59-57# FSP 108#  
HP 2152-2095#  
Recvd: 5' mud

CFS @ 4258'  
30"60"

**DST3) 4275-4305**  
3045/3030  
1st) Very wk SB built to 1.25"  
2nd) Very wk initial SB surge did not build  
IFP 56-62# FFP  
ISIP 1180# FSP 1162#  
73-76#  
HP 2238-2051#  
Recvd: 65' mud

CFS @ 4285'  
30"

CFS @ 4305'  
30"60"

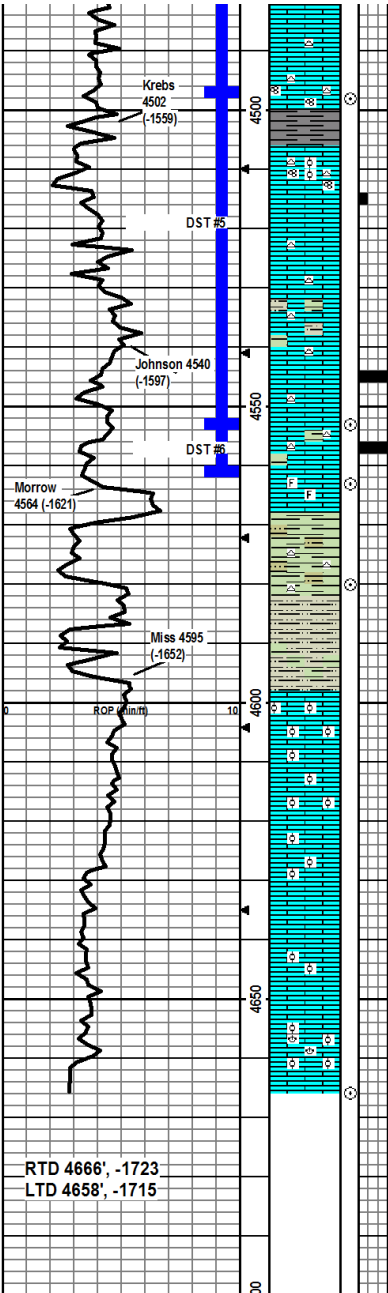
Mudco Check #7 @ 4305'  
09/01/11 0:00 am  
wt vis pH chl  
9.4 55 10.0 3000  
FIT LCM  
9.2 3

Mudco Check #8 @ 4468'  
09/02/11 07:45 am  
wt vis pH chl  
9.2 57 10.0 2500  
FIT LCM  
9.6 2

CFS @ 4456'  
30"60"

CFS @ 4468'  
30"60"

**DST4) 4438-4498**  
3030/3030  
1st) Very wk SB steady throughout open  
2nd) Very wk SB did not build  
IFP 67-214#



LS: med gryish brn, micro xtal, some med brn chert, min foss frags, no vis por, st crushed odor poss from above?, ns.

LS: crm-med gryish brn, micro xtal, some lt gry chert, min foss frags fusil, no vis por, no odor, ns.  
 SH: med-dk gry and greenish gry, some red brn, soft-brittle and fissile.  
 LS: crm-lt brn, micro-fn xtal, lt gry chert, wht chalky pcs, foss ool fusil and frags, no vis por, no odor, ns.  
 LS: wht-crm, micro-fn xtal, in-xtal por, crushed smpl odor, flor, sfo.

LS: crm-lt brn, micro-xtal w/secondary frac xtals, min lt gry chert, foss frags, no vis por, no crushed odor, ns.

LS: crm-lt brn, micro-fn xtal, lt gry chert, foss frags, some lt greenish gry SH pcs, some SS pcs, no vis por, no odor, ns.

LS: crm-lt brn, micro-fn xtal, lt brn chert, m in foss frags, gd vug por, strg cup odor, flor, approx 40 pcs of vug chips w/abund fo, oil floating in bottom of tray. Less pcs in the 60" sample

Same as above, 10-12 pcs in 30" tray, 5-6 pcs in 60" tray, some med to dk greenish gry and gry SH.

LS: crm, micro-fn xta, min foss frags, mostly dense w/min frac por, no odor, ns.  
 SH: med to dk gry/blk and greenish gry, some red brn, some silty, soft to brittle and fissile.  
 SH: gryish-green gry and mustard yellow, some yellow chert, some very silty, min S S quartz w/clay matrx, SH is firm, fissile

SS: wht gry and green, vf grnd, sr-well rnded, well sorted, predom quartz grns, friable, no odor, ns.

SS & SH mix: silt is as above, SH is greenish-gry brn and mustard yellow, soft to brittle and fissile, no odor, ns.

LS: crm, micro-fn xtal, fn grnd silt/ool, no vis por, no odor, ns.

Same as above w/some wht soft chalky pcs, no odor, ns.

LS: crm-lt brn, micro-fn xtal, some fn-med grnd ool, no vis por, no odor, ns.

LS: lt gryish brn, micro xtal, dense w/no vis por, no odor, ns.

LS: lt brn, micro-fn xtal, foss w/ool and frags, dense w/no vis por, no odor, ns.

LS: crm-lt gryish brn, micro-fn xtal, foss w/fn grnd ool brnc and frags, dense w/no vis por, no odor, ns.

ISIP 90#  
 FFP 67-66# F SIP 78#  
 HP 2227-2176#  
 Recvd: 10' mud

CFS @ 449' 30"/60"

**DST5) 4496-4553**  
 3030/3030  
 1st) Very wk SB built to 0.6" in 30 min  
 2nd) Very wk SB surge did not build  
 IFP 70-71#  
 ISIP 396# FFP  
 77-76# F SIP 152#  
 HP 2323-2156#  
 Recvd: 10' SOCIM

Mudco Check #9 @ 4553'  
 09/03/11 08:30 am  
 WE vis pH chl  
 9.2 59 10.5 2800  
 FIT LCM  
 8.0 2  
 CFS @ 4553' 30"/60"

CFS @ 4563' 30"/60"

CFS @ 4580' 30"

**DST6) 4552-4563**  
 3045/6090  
 1st) Fair blw built to BOB in 18 min  
 2nd) Wk blw built to BOB in 32 min  
 IFP 57-103#  
 ISIP 678# FFP  
 115-166# F SP 659#  
 HP 2336-2130#  
 Recvd: 120' OCWM, 330' CGO

Mudco Check #10 @ 4585'  
 09/04/11 08:00 am  
 WE vis pH chl  
 9.1 61 10.0 3400  
 FIT LCM  
 9.6 2

CFS @ 4666' 60"