

APT # 15-065-24064-00-00

**GEOLOGICAL REPORT**  
 DRILLING TIME AND SAMPLE LOG

COMPANY Baird Oil Company, LLC.  
 LEASE Esther Worcester #5-13  
 FIELD Worcester East  
 LOCATION 2270' FSL + 620' FEL  
 SEC 13 TWSP 75 RGE 22W  
 COUNTY Graham STATE Kansas

ELEVATION  
 KB 2159'  
 DF 2157'  
 GL 2151'  
 Depths Measured From  
 Log KB Drilling KB

CONTRACTOR W.W. Drilling Rig #12  
 SPUD 9-19-14 COMP 9-25-14  
 SAMPLES SAVED FROM 3100' TO R.T.D.

CASING  
 Surface 852' @ 214'  
 Production 5 1/2

ELECTRIC LOGS  
Nabors

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE	E. LOG	DATE #/log	A	B	C	D
Anhydrite	1789	1786 +	373	+ 373	+ 381		
Base Anhydrite	1821	1817 +	342	+ 342	+ 350		
Topeka	3146	3143 -	984	- 985	- 983		
Heebner	3356	3352 -	1193	- 1193	- 1193		
Taranto	3378	3374 -	1215	- 1219	- 1214		
Lansing	3394	3390 -	1231	- 1230	- 1230		
Base Kansas City	3583	3577 -	1418	- 1420	- 1420		
Arbuckle	3660	3654 -	1495	- 1507	- 1506		
Total Depth	3764	3758 -	1599	- 1539	- 1574		

REFERENCE WELLS

A Baird Oil Co. LLC. Esther Worcester #1-13, 2150' FSL + 880' FEL Sec 18-75-22W  
 B  
 C  
 D Post Collar @ 1818'

REMARKS

The favorable structural position along with encouraging results on DST's warranted the cementing of production casing to further test this well. The intervals from 3668'-3676' and 3654'-3665' should be tested.

Richard B. Hall  
9-26-14

7502

LEGEND

- Anhydrite
- Salt
- Sandstone
- Shale
- Carb sh
- Limestone
- Ool. Lime
- Chert
- Dolomite

DRILLING TIME IN MINUTES  
PER FOOT

Rate of Penetration Decreases

5" 10" 15" 20" 25"



LITHOLOGY



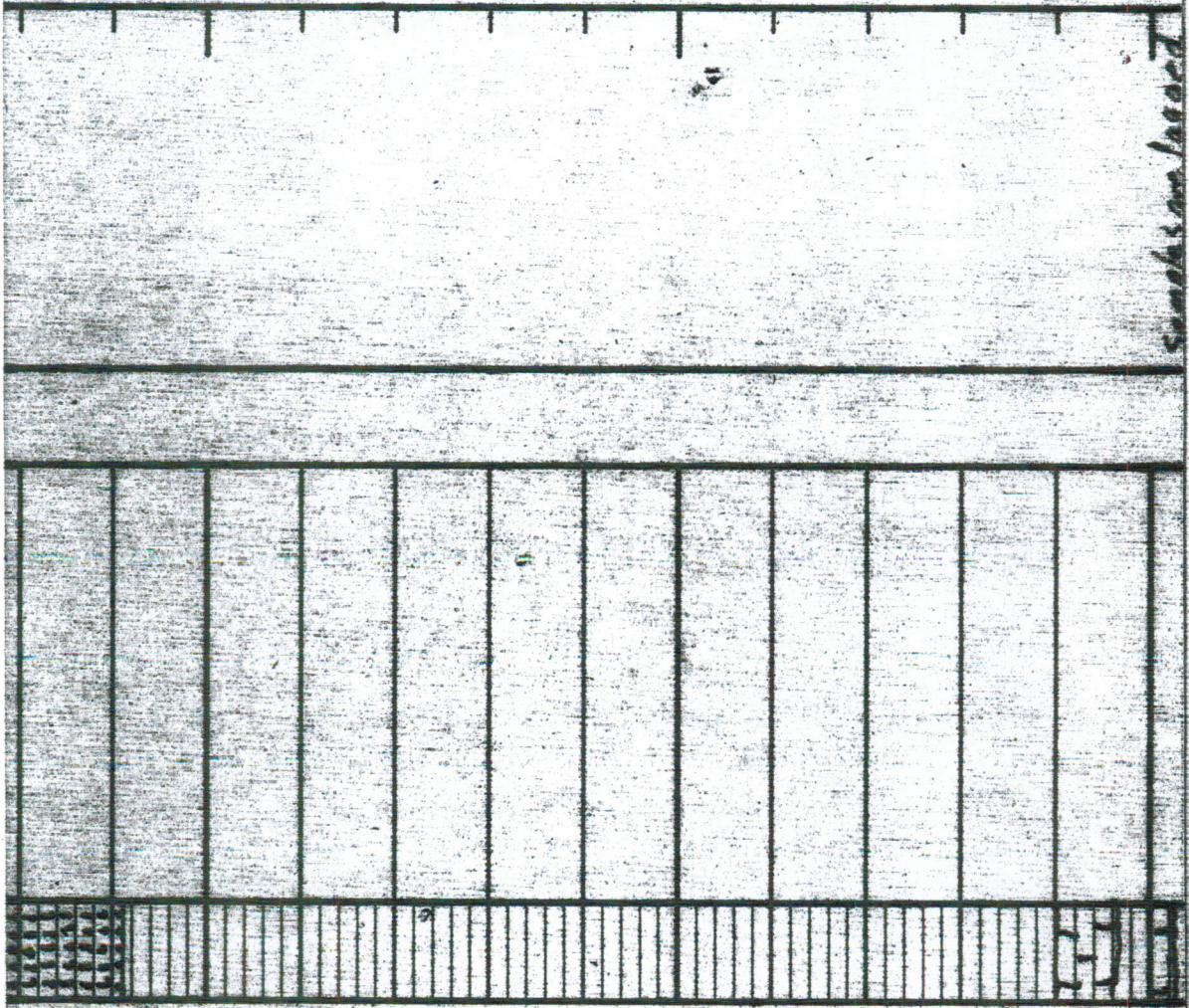
SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

LOG 7710

Smithsonian Institution

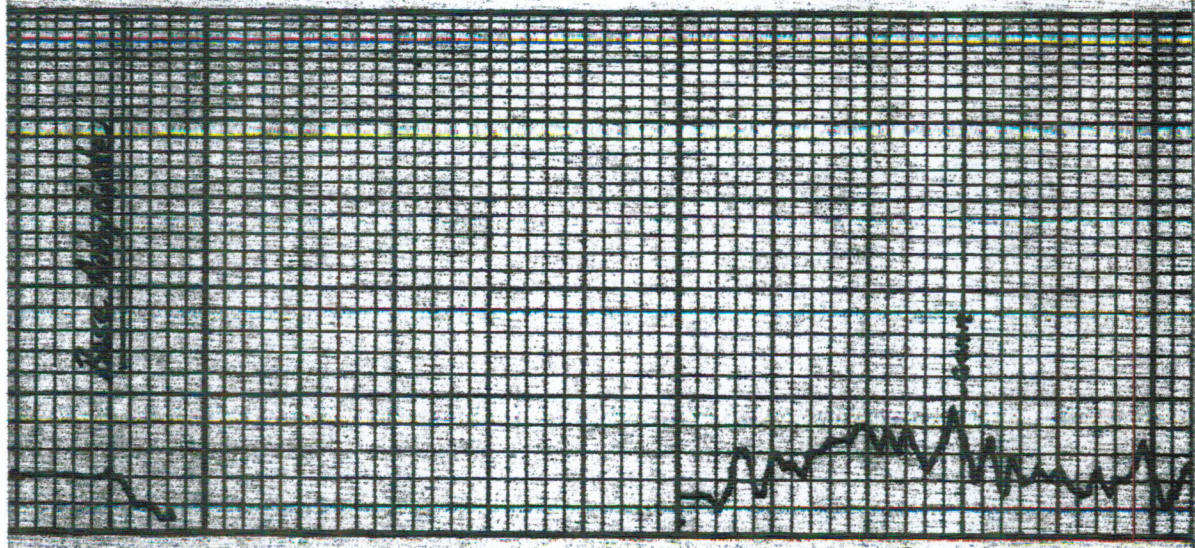


1820

3000

20

40



good samples

60

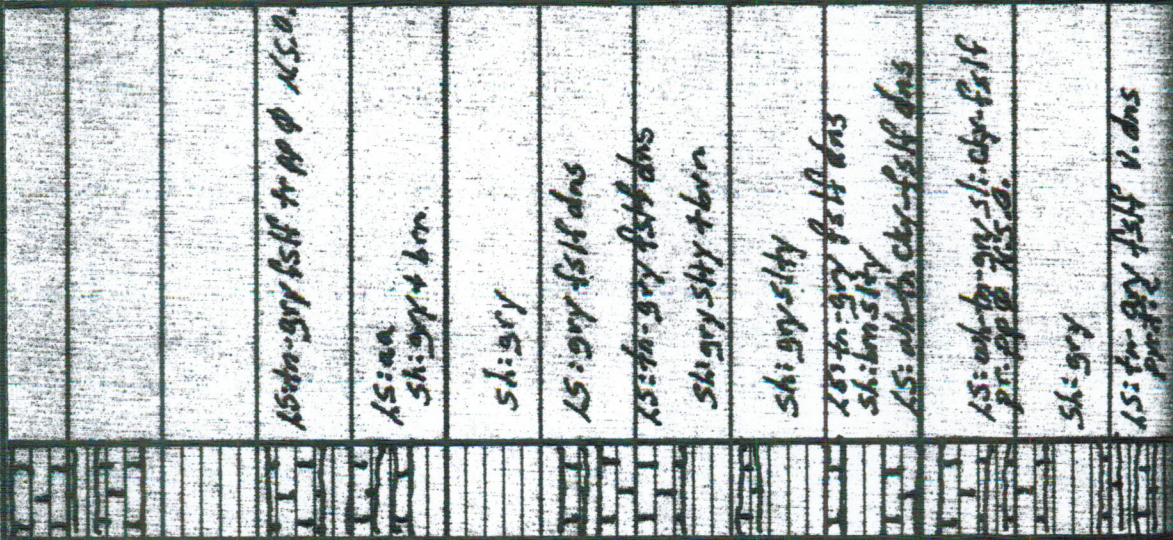
80

3100

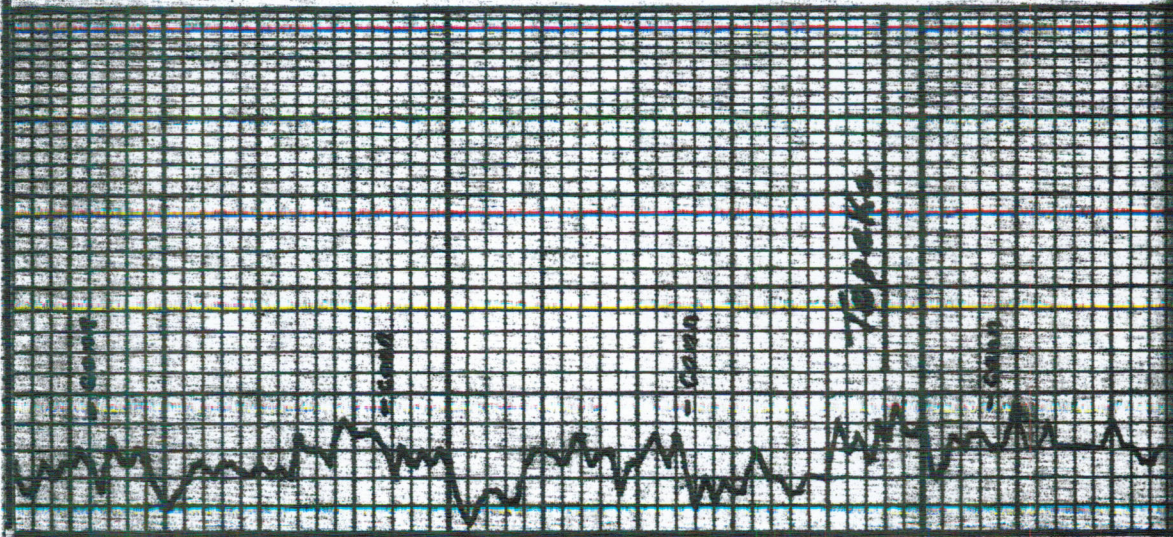
20

40

60



15th-20th fslf to pp 0 N.S.D.
15: m sh: gry + brn
sh: gry
15: gry fslf dms
15: th- gry fslf dms
sh: gry sh: th + brn
sh: gry-slt
15: th- gry fslf dms sh: brn slt
15: sh- th- ch- fslf dms
15: sh- th- gry sh: ch- fslf p. pp 0 N.S.D.
sh: gry
15: th- gry fslf v. dms





15: in fela. sh. sl. silty w/ feld. incl. pp & N.S.O.	sh: in silty & gryshy	15: in ch. fela. feld. fely silty pp & N.S.O.	15: in ch. sh. ch. fela. feld. fely w/ feld. incl. pp & N.S.O. silty in sh: gryshy & brn	15: in ch. fela. sh. sl. silty ch. das	sh: blk carb 15: in ch. gry fela das	sh: brn, gry & grn 15: in ch. gry w/ feld. concol in grn & N.S.O. sh: brn silty	15: in ch. fela das & ch	15: in ch. fela das
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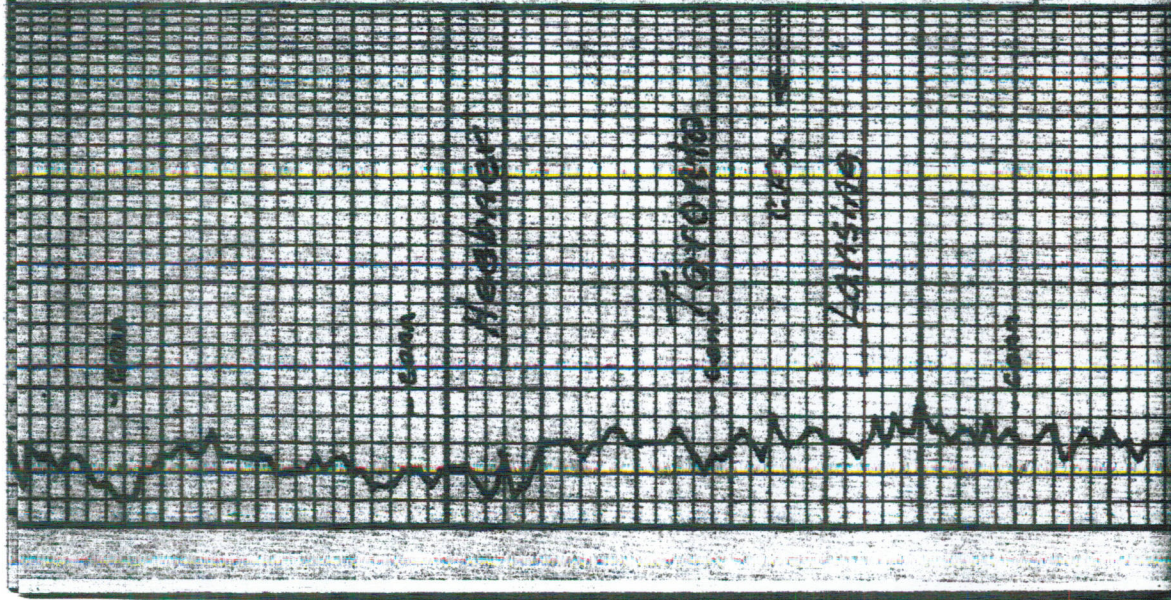
3200  
20  
40  
60  
80  
3300



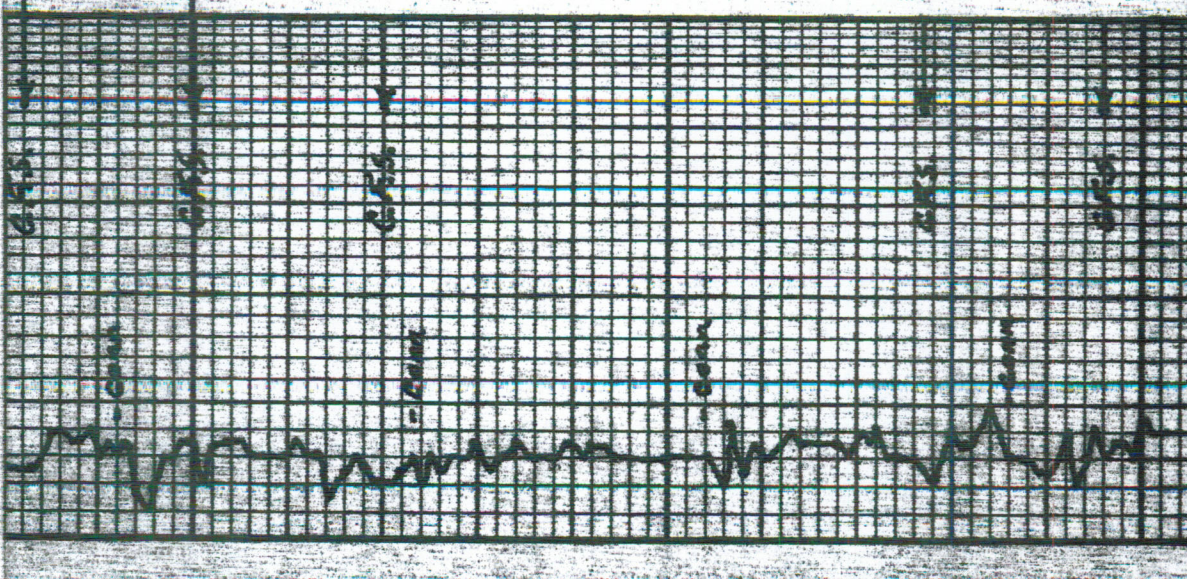
Board 3442.08  
 Stop 3441.57  
 Diff. .51  
 Inclined 3432' 34"  
 Trilobite Testing  
 25701 3418' 3482'  
 46-45 -45-45  
 20' with blue incl. to 1 1/4"  
 FF: not blue incl. to 2 1/4"

15: wh. to ch. ch. fish ppd -  
 sh. grey 616. 2 sps  
 N.E.O. no other  
 15: wh. to sh. grey ch. fish  
 dns. n.s.o.  
 15: wh. to sh. grey fish  
 sh. libk carb  
 15: to fish dns  
 sh. grey to ben  
 15: wh. to sh. ch. fish  
 dns A. n. brn N.S.A.  
 sh. libk  
 15: wh. to sh. ch. fish  
 sh. libk. - sh. grey fish  
 ppd n.s.o. to 2 wh  
 15: wh. to sh. ch. fish dns  
 sh. libk  
 15: grey mtl 15: fish dns  
 sh. brn & grey  
 15: wh. to ch. fish fish

20  
 40  
 60  
 80  
 3400' A  
 20



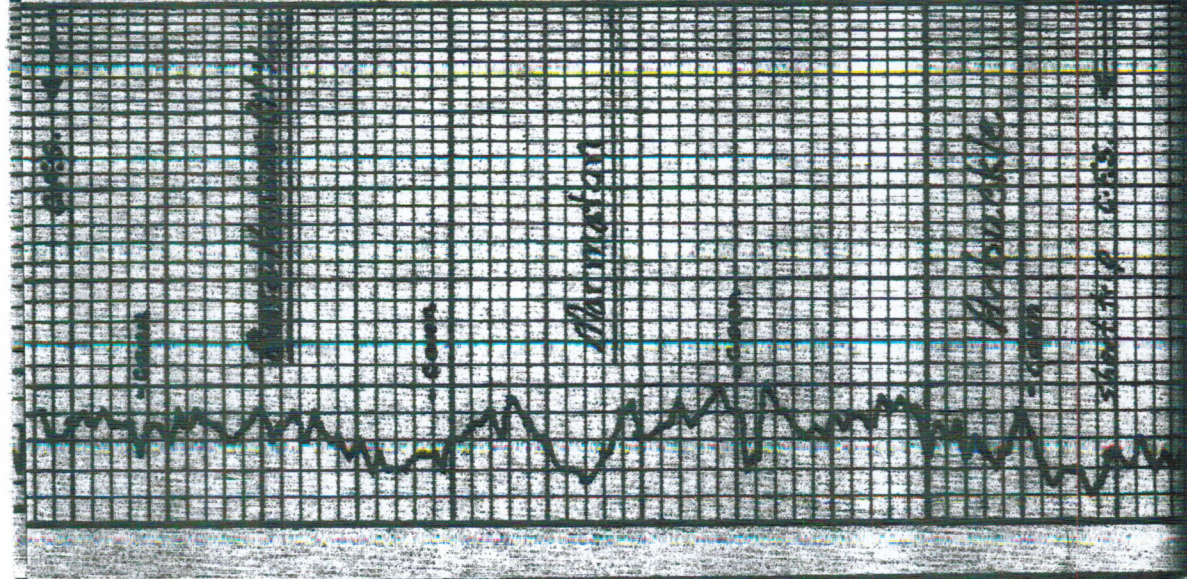
Hessberg  
 Toro  
 Hansberg



40 D  
60 F  
80 G  
3500  
20 H  
40 I  
J

45: wh. ch. fish dns  
w/ no bubbles pink dots  
in mass 1/2" x 1/2" x 1/2" x 1/2"  
Pr. floating fish  
45: wh. sl. ch. fish oil w/  
mass 1/2" x 1/2" x 1/2" x 1/2"  
Pr. floating fish  
45: wh. fish fish oil w/ glass  
mass impact 1/2" x 1/2" x 1/2" x 1/2"  
floating fish fish oil  
45: wh. sl. ch. fish fish  
sub dot. dns n.s.o.  
a.o.  
45: wh. cfm-kt gry fish dns  
sh. blk carb  
45: wh. gry fish dns  
45: wh. ch. fish fish dns  
no cut no odor  
Pr A horn  
45: wh. ch. fish fish dns  
sh. brn fish  
45: wh. ch. fish fish dns  
Pr. 1/2" x 1/2" x 1/2" x 1/2"  
Pr. 1/2" x 1/2" x 1/2" x 1/2"  
Pr. 1/2" x 1/2" x 1/2" x 1/2"  
45: wh. ch. fish fish dns  
Pr. 1/2" x 1/2" x 1/2" x 1/2"  
Pr. 1/2" x 1/2" x 1/2" x 1/2"  
Pr. 1/2" x 1/2" x 1/2" x 1/2"

NH: 1490-1648H  
FP: 14-11/63-85#  
BHP: 798-791#  
BHTemp: 109°F  
Chlorides: 34,000ppm  
DST# 2 3422-3470  
30-30-30-30  
IP: B.O.B. in 23 min.  
IT: No blow  
FF: B.O.B. in 22 min.  
FZ: No blow  
Recovery: 360' MCW  
5.0d 99%w 10% m  
NH: 1703-1615#  
FP: 16-114/117-184#  
BHP: 791-788#  
BHTemp: 110°F  
Chlorides: 6,000ppm  
DST# 3 3449-3470  
30-30-30-30  
IP: B.O.B. in 9 1/2 min.  
IT: No blow  
FF: B.O.B. in 13 min.  
FZ: No blow  
Recovery: 568' Total  
491' MCW 90%w, 5% m  
77' OSNW 2% O  
NH: 1700-1685#  
FP: 2470/126-179#  
BHP: 811-809#  
BHTemp: 117°F  
Chlorides: 46,000ppm



60 'K  
 90 L  
 3600  
 20  
 40  
 60

Sh: brn + gry	LS: w/ cherty fsh. ds. n.s.o.	Sh: brn s/ky	LS: w/ cherty fsh. ds. n.s.o.	Sh: brn + gry	LS: sh-brn fsh ds n.s.o.	Sh: brn	LS: w/ cherty fsh. ds. n.s.o.	Sh: brn	LS: w/ cherty fsh. ds. n.s.o.
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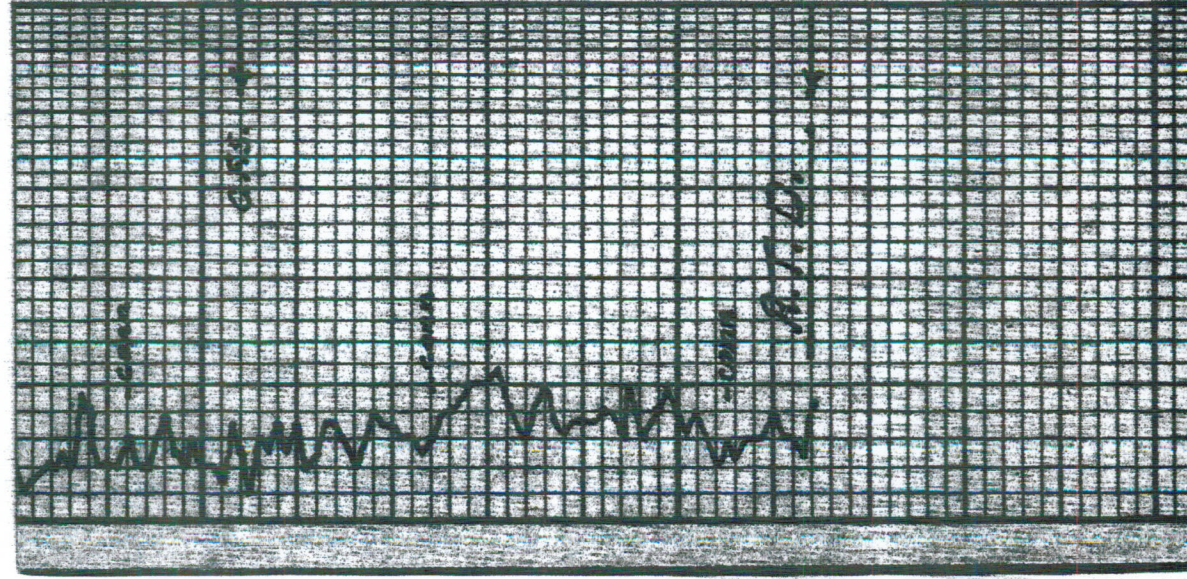
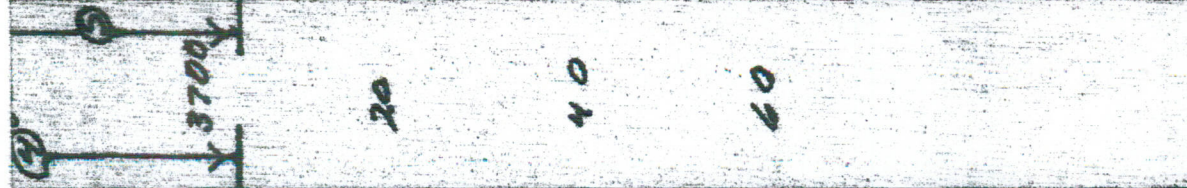
DST #4 3660'-3704'  
 Meter - ran  
 Packer Failed

DST #5 3672'-3704'  
 15-16-45-45  
 2F: 8.0.8 in 2 min.  
 1ST: w/ blow incr. to 4 1/2  
 2F: 8.0.8 in 15 1/2 min.  
 1ST: 15" blow



367. Tab. I fluid  
 243 mo 1570, 362M  
 124, CA  
 MW: 1837-1763#  
 FP: 12-10/126-153#  
 SWP: 243-238#  
 EXT: 1137 F.  
 Gravity: 28° A.P.I.

R. odor Pol: 4 5th ac fr. glauc spks odor ac lot of floating R.O. v310	Pol: in ph-bla-mch fr. v310 fr. oil sub incr barren dol.	ac. decr 5th	Pol: white fish-mch dns	Pol: white fish-mch in glauc spks fr 5th 0.5th odor 5th 5th embedded	Pol: in ph-yel fish-mch dns N.S.G.					
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A.T.D.