ROGER L. MARTIN

INDEPENDENT PETROLEUM GEOLOGIST 316-250-6970

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY HESS OIL COMPANY

LEASE CRAIG #1

FIELD LIEB EAST

LOCATION 355' FNL & 2271' FWL (SW-NE-NE-NW/4)

SECTION 16 **TOWNSHIP** 11S **RANGE** 16W

COUNTY ELLIS **STATE** KANSAS

ELEVATIONS

KB 1805' **GL** 1800'

Measurements Are All From KB: 1805'

API 15-051-26797-00-00

CONTRACTOR MALLARD, J.V., INC.

SPUD 8/14/2015 **COMP** 8/21/2015

RTD 3420' (-1615) **LTD** NA

ELECTRICAL SURVEYS

NO OPEN HOLE E-LOGS

3 DST'S by TRILOBITE TESTING, Inc.

CASING

SURFACE 8&5/8" x 20#/ft set @ 218'

Cmt'd w/150sx Com; 80/40 poz; 2%gel.

PRODUCTION NONE; P&A

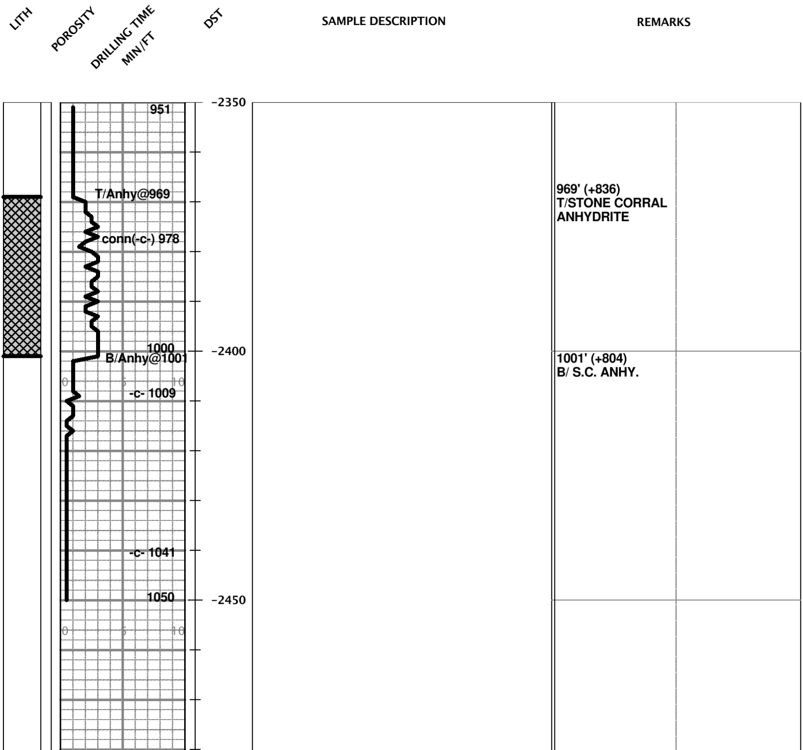
FORMATION TOPS	LOG	SAMPLES	CHRONOLOGY
			8/14/15; MIRU; Spud @ 4:30pm; Drld to 218'; Ran 5 jts
Top/ Stone Corral Anhydrite		969' (+836)	of 8&5/8" x 20# surf.csg; set @ 218'; cmt'd w/ 150sx
B/S.C. Anhydrite		1001' (+804)	Common, 80/20 poz mix, 2% gel; Plug Dwn @ 11:30PM.
TOPEKA		2717' (-912)	8/15/15; WOC @ 6:30 AM;
Topeka 30' Poro.zone		2747' (-942)	Drld plug @ 7:30AM w/ 10' cmt.
Heebner SH		2954' (-1149)	8/16/15; Drlg @ 1612' @ 6:30AM.
Toronto		2977' (-1172)	8/17/15; Drlg @ 2395' @ 6:30AM.
LANSING		3003' (-1198)	Short Trip 15 stands @ 2766' for DST#1
			8/18/15; On bottom w/ DST#1 @ 2766' @ 6:30AM.
Stark SH		3196' (-1391)	
			8/19/15; Drlg @ 3108' @~6:30AM; Short Trip 20 stnds
BASE/KANSAS CITY		3243' (-1338)	@ 3111' for DST#2 @ 3111'
Pleasanton Sandstone		3250' (-1445)	8/20/15; Drlg @ 3237' @~6:30AM.
			Short trip 12 stands @ 3292' for DST#3 @ 3292'
ARBUCKLE		3394' (-1589)	
			8/21/15; CFS @ 3400' @~6:30AM
TOTAL DEPTH (RTD)		3420' (-1615)	
			8/22/15 @ 2:30AM; PLUGGED & ABANDONDED
			Plug Arbuckle @ 3374' w/ 50 sx; 1000' w/ 50 sx;
			500' w/ 80 sx; 250' w/ 50 sx; 40' w/ 10 sx; RH w/ 30 sx
			Cmt'd w/ 270 sx 60/40 poz mix, 4% gel, 1/4# Floseal.
			Job by Quality Oilwell, Russell; Ticket # 1024

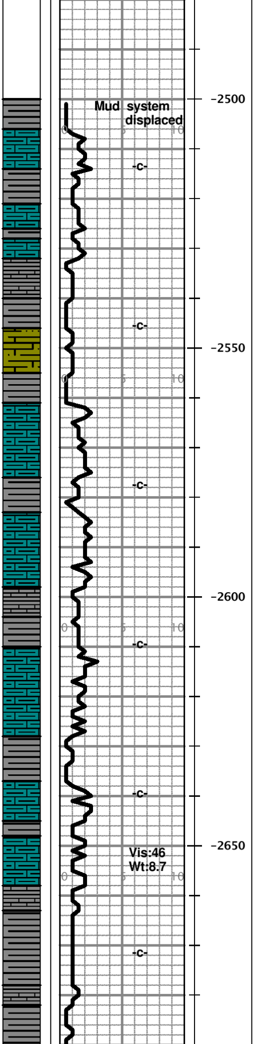
REMARKS:

Through rotary drilling sample analysis, and open hole drill stem testing, it was determined that there were no zones of commercial value in this test well. Therefore, the Craig #1 was plugged & abandoned.

Repectfully submitted,
Roger L Martin, Geologist (well-site)

(print length: 73")





SH: gray(gy).

& LS: gray-tan (gy-tn), dense to microXln(dn-mx) & Mudstone - Wackestone (Mdst-Wkst), some(sm) argil; Vpr Porosity(Poro) to No Visable Porosity (NVP); No Show (NS).

SH: As Above (AA).

LS: tn-cm, mx; sm Wackestone-Packstone(Wkst-Pkst), sm chlky; pr-NVP; NS.

SH: gy & green(gn), sm calc & Lmy; & LS:AA.

SH:AA & SILTS: gn-gy; & LS:AA & argil, Vpr-NVP; NS.

LS: tn-gy-cream(cm) pred dn-mx; & Mdst, sm argil; Vpr-NVP; NS.

Predominantly (Pred) SH: V.gated, gn-gy, red(rd), black(bk).

Some(sm) LS: cm-buff(bf), & gy, pred dn-mx w/ Vpr-NVP; NS.

SH: V.gated AA; sl incrs bk & gy; (Trc oomldc LS w/ Poro w/ NS.

LS: cm-gy & bf; dn-mx; & white (wh) chlky, & Mdst, Vpr-NVP; NS.

SH:AA.

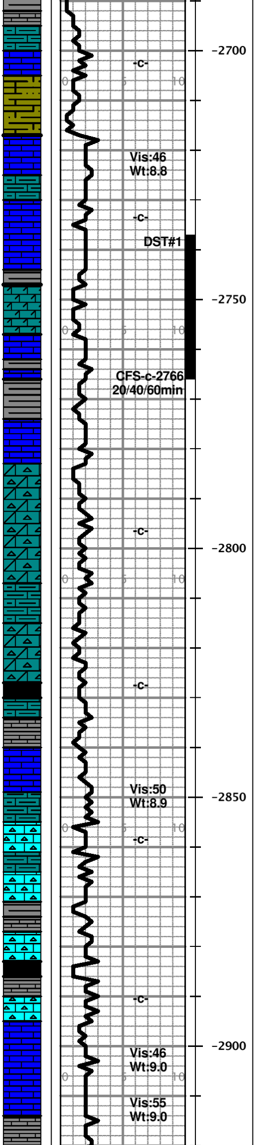
LS: lt-dk-gy, sm argil- Mdst, & sl foss Wkst-Pkst, Vpr-NVP; NS.

LS:AA; NS.

SH: gy-bk, sm carb.

SH: pred gy-bk, sm calc & Lmy; & sm argil-shly LS-Mdst.

Mud-Co report
8/17/15@11:15am
Drlg @ 2507'
Wt:8.8 Vis:60
PV:18 YP:33
Gel Strength:15/21
pH: 11.5
WL: 8.0
CT:1/32" Ca:Trc
Cl: 9,600 ppm
Solids: 3.1%
LCM: 3#/bbl
ECD: 9.74 lb/gal



LS: cm-gy-tn, pred dn, sm sl fos Wkst-Pkst w/ Vpr-NVP; NS.

SH-SILTS: gy-bk, sm calc & Lmy.

{TOPEKA} LS: gy-tn & cm, pred dn Mdst & mx-dn, sm argil; Vpr-NVP; NS.

LS: dk-lt-gy, Mdst, & mx-dn, sm argil, Vpr-NVP; NS.

LS: cm-gy-tn, dn & subchlky, & Mdst, w/ Vpr-NVP; NS. Sm argil-shly LS.

{TOP.30'zn} LS: bf-gy, microXln(mx) to V.rare prtly fnXln (Vrr fnX), sm dolomc, sm cm-wh subchlky to chlky; Rare(Rr) Fair to Good (Fr-Gd) Poro: InterXln Poro(IXP) & InterGranular Poro IGr.P, & pin point(pp) Poro w/ subsaturated (subsat) to saturated (sat) Oil Stain(O.STN); Slight to Fair Show Free Oil (Sl-FrSFO), dull Fluoresence (FLR) to No FLR(NF) Fr-Gd Cut, Very Slight Odor (Vsl Odr); Abndt dn to chlky barren LS; & sm SH: gy, sm calc & Lmy; LS: gy, dn & argil Mdst.

SH: AA; V.gated.

LS: gy-tn, dn Mdst, & mx w/ pred Vpr-NVP; Trc Edge O.STN on aprnt Frac.Edges; Trc Cut; NFO.

LS: cm-bf-tn-gy, mx-fnX, sm sl dolomc; sm fos- Pkst w/ pr Poro: micro-(m-) IXP, & m-l.fos.Poro w/ NS; sm wh-chlky; Sl Cherty: blu-gy.

LS: gy, dn & argil; Vpr-NVP; NS.

LS: wh-gy-bf, prt chlky, prt mx-fnXln, w/ Trc MdX's- 2nd ReX, sm sl dolomc w/ pr-Fr Poro w/ NS; sm argil; Sl Cherty.

SH: AA; & bk carb;
& LS: gy, argil w/ Vpr-NVP; NS.
& SH: gn-gy, sm calc & Lmy.

LS: tn-gy-wh, pred dn-mx, prt chlky, Sl Cherty; pred Vpr-NVP; Trc Edge O.STN & Cut w/ NFO; Rare(Rr) granlr Pkst & mx-fnXln LS w/ pr-Fr Poro w/ NS.

LS: cm-tn-gy, sm Pkst, & mx-fnXln, pr Poro w/ NS; Cherty: dk-blu-gy, sharp; & SH: gy-bk.

LS: AA; pred dn Mdst; Cherty: blu-gy, sharp.

SH: bk carb- V.carb.

LS: tn-gy- bf; pred dn-mx w/ Vpr-NVP w/ NS; Cherty: dk-blu-gy, mot; sharp.

LS: gy-tn-wh, sm mot, mx-VfnX, & Wkst-Pkst, sm fos; prt chlky; sm pr-Fr Poro: pp & l.fos.Poro w/ spt'd- subsat O.STN, & Trc SFO & Cut, & VSl Odor;

Abndt dn, sm argil w/ Vpr-NVP.

**2717' (-912)
TOPEKA**

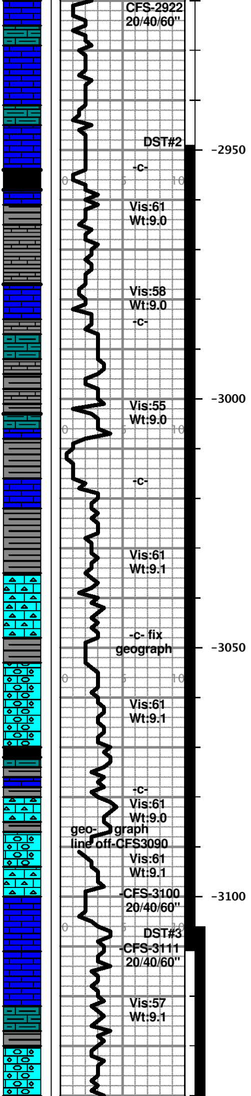
**2747' (-942)
Topeka 30'Poro.zn.
{Slght to Fair Show Free Oil on break; (Sl-Fr SFO).**

**Mud-Co report
8/18/15@10:05am
TIH after DST#1
@ 2766'
Wt:9.0 Vis:44
PV:15 YP:19
Gel Str: 9/22
pH:10.5 WL:11.6
CT:1/32" Ca:Trc.
Cl: 13,000 ppm
Solids: 4.3%
LCM: 2#/bbl
ECD: 9.63#/gal.**

{Trc SFO (Trace Show Free Oil)

**Short trip:15 stnds
@2766' for DST#1**

**DST#1; Topeka
30' Porosity zone
Interval:2737'-2766'
Times:15-45-60-60"
(minutes)
IF: Strong blow;
Bottom Of Bucket
(BOB) in 30sec.
(Tool opened on
~6' slide to Btm)
Bled off blow;BOB
again in ~5min.
ISI:No Blow Back
(NoBB)
FF: BOB in 6min.
FSI: NoBB
Rec:128'O.Spk'd M
(<1%Oil, ~99%Mud
254' O.Spk'd WCM
(<1%O,~50%Water,
~50%Mud)
248' O.spk'd MCW
(<1%O,~80%Water,
~20%Mud)
630' Total Fluid
Cl of DST Wtr:
44,000ppm
Rw:0.170@72deg.F
IHP: 1323
IFP: 204--223
ISIP: 1122
FFP: 263--301
FSIP: 979
FHP: 1219
Max.Temp:96deg.F**



LS: AA; sl incrs chlky

LS: cm-tn-gy, mc- Vrr fnX- 2nd ReX; & sm wh chlky, pred dn w/ Vpr- NVP & pred barren; sm Wkst- Pkst w/ pr-Fr Poro: pp- vug, & IGr & IXP; <5% w/ spt'd-subsat O.STN & VSl Cut, Trc SFO.

LS: AA; pred dn w/ Vpr-NVP & barren.

{HEEBNER} SH: bk carb to V.carb.
LS: tn-gy-wh; pred dn-mx, & subchlky; sm argil- shly, w/ pred Vpr-NVP w/ NS.

SH: lt-dk-gn-gy, sm V.soft.

{TORONTO} LS: tn-gy-wh, pred dn-mx, w/ Trc Vfn-fnXln-2nd ReX; sm chlky; Trc pr visbl Poro w/ O.STN & Cut, NFO; pred dn to Vpr Poro; >99% barren.

SH: gn-gy, & mrn-rd.

{LANSING; Azn} LS: tn-gy-wh, mx- Vrr fnXln, Vrr pr-Fr Poro: vug & IXP w/ spt'd- subsat O.STN & Cut, Trc SFO; dull FLR to No FLR (NF); Pred dn; sm chlky.
SH: lt-dk-gy, & gn-gy, & bk carb, & maroon-rd.

{Bzn} LS: tn-gy-wh, mx-VfnX; prt chlky; sm Wkst-Pkst w/ Vpr-pr Poro: IGr & IXP, & pp Poro; <5% w/ spt'd O.STN & Cut, Trc SFO; Pred dn & Vpr Poro & barren.

SH: AA

{Czn} LS: tn-gy-wh, sm mot; mx- Rr fnX; sm Wkst-Pkst; prt chlky; sl Cherty; pred Vpr-pr Poro; Trc Fr Poro; pp & m-IXP w/ spt'd- subsat O.STN & Cut, Trc SFO.

SH: AA.

{Dzn} LS: cm-tn, mx-fnXln- sm 2nd ReX; sm ool & fos Pkst; ~10% w/ Fr Poro, & Vrr Gd Poro: pp-vug, IGr & IXP w/ spt'd- sat O.STN & dull FLR, & Sl-Fr Cut; Slight to Fair Show Free Oil & Gas Bubbles(Sl-FrSFO&GB) on break; Sl Odor; & LS: gy argil & dn.

SH: gy, & bk carb.

{E-Fzn} LS: wh-tn-gy, mx-fnXln- 2nd ReX; sm fos & ool & prt chlky Pkst; sl Cherty; Vrr (<5%) w/ Fr-Gd vug Poro w/ spt'd O.STN & Cut, & Sl-Fr SFO w/dull FLR-NF; Vsl Odor.
{Gzn} LS: wh-tn-gy; prt oomldc Pkst-Grst w/ Fr Poro; & Vrr Gd Poro: oomldc Poro w/ spt'd to subsat O.STN w/ Sl-Fr Cut, Sl SFO w/ dull FLR- NF; Trc sat O.STN & Fr SFO & Fr-Gd Cut, VSl Odor; Cherty: cm- blu-gy, sharp, vit.

LS: gy-tn-wh, mot; mx-VfnX; pred dn; Very rare(Vrr) pr-Fr Poro: pp & IXP; Vrr (<5%) w/ spt'd tn-bn O.STN & VSlSFO & Cut, sm chlky; pred barren.

LS: gy-tn-wh, pred dn to chlky, sm Pkst w/ pr Poro ~99% w/ NS; (Trc spt'd O.STN- AA).

SH: gy-bk, & gn-gy, sm Lmy.

{KC: Hzn} LS: tn-gy-wh; Trc ool- Pkst w/ pr-Fr Poro: I.ool & I.fos- I.Gr.Poro w/ subsat O.STN & Trc SFO & Cut; pred dn- mx- fnXln, sm chlky; Pred Vpr-NVP & barren; sl Cherty: tn-gy, opq, sharp Chert; sm argil LS & gy SH.

{Trc SFO

2954' (-1149)
HEEBNER SH

2977' (-1172)
TORONTO

3003' (-1198)
LANSING
{Trc SFO

{Trc SFO

{Trc SFO

{10% w/Sl-Fr SFO

{<5% w/ Sl-Fr SFO

{~5% w/Sl-Fr SFO

{<5% w/ Sl SFO

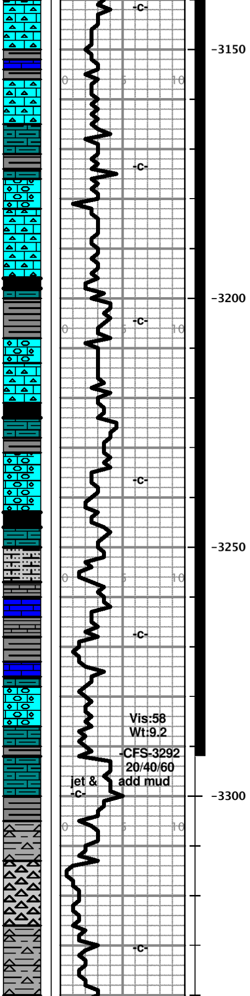
Pipe strap:1.39'STB
(Short To Board)
@ 3111'
(No correction)

{Trc SFO

Short trip:20 stnds
@3111' for DST#2

DST#2; Toronto-
Thru LKC: G zone
2949'---3111'
15-45-60-60 min.
IF: BOB in14 min.
ISI: No Blow Back
FF: surface blow,
building to 9&1/2"
FSI: No BB
Rec: 77' Oil Spk'd
Mud (<1%Oil,
99% Mud)
248'Oil Spk'd Mud
Cut Water (<1%Oil,
~60%W; ~40%M)
325' Total Fluid
IHP: 1503
IFP: 40--139
ISIP: 192
FFP: 145--175
FSIP: 191
FHP: 1502
Temp: 99 deg.F

Mud-Co report
8/19/15@10:45am
3110'(CFS@3111')
Wt:9.2 Vis:64
PV:18 YP:32
Gel Strength:11/20
pH: 10.5
WL: 7.6
CT:1/32" Ca:Trc
Cl: 7,700 ppm
Solids: 6.0%
LCM: 2#/bbl
ECD: 10.05 lb/gal



SH: AA.

{KC: I zn} LS: cm-tn, mx-fnXln, w/ Vrr MdX's; sl fos; Very rare (Vrr) Fr-Gd Poro: pp & vug & IXP w/ spt'd- sat tn-bn O.STN & Sl SFO & Cut, & VSl Odor; Cherty: tn-gy, cm, & blu-gy, vit, spic, sharp Chert.

{KC: J zn} LS: tn-gy-wh, pred dn, prt chlky, sm mx-fnXln, & ool Pkst; sm Vpr-pr visbl Poro: I.ool & pp & IXP; Trc spt'd - subsat O.STN, Trc SFO & Cut; >95% barren w/ Vpr-NVP; Cherty: gy-bk & tn, vit sharp.

{STARK} SH: black(bk) carb.
LS: tn-gy, dn-mx; Vpr-NVP;

& SH: gn-gy.

{KC: K zn} LS: wh-tn-gy, mx- Rr fnXln, prt chlky, Vrr fn oomldc; Rr pr-Fr Poro: pp, I.ool, IXP, & oomldc Poro; Trc Gd visbl Poro; ~5% w/ spt'd- subsat O.STN, w/ Sl-Fr Cut, & SlSFO, & VSl Odor; Sl Cherty: cm-gy-tn, sharp, pyrtc. Abndt dn LS; sm chlky.

SH: bk carb, & gy.

{KC: L zn} LS: cm-tn, mx-Rr fnXln, Trc Md 2nd ReX; sm ool- Pkst- Trc Gd visbl Poro; Rr pr-Fr Poro: I.ool, I.Gr, IXP; >5%<10% w/ spt'd-subsat O.STN w/ Sl-Fr Cut, & VSlSFO; Sl Odor; sm chlky; sm argil.

{B/KC} SH: gy-bk, sm carb, sm calc & Lmy, & argil LS.

{Pleasanton Sd} SS- Sndy LS: bf w/ rich tn-bn O.STN, Vfn Gr'd, V.calc SS to Sndy LS w/ pr-Fr I.Gr Poro; Vrr Gd visbl Poro; subsat- sat O.STN w/ Fr-Gd Cut, Sl-Fr SFO; Frly Strong Odor; pred dn to chlky LS.

SH: V.gated, gy-bk, & maroon- rd, & gn-gy, sm carb.

LS: wh-tn-gy, sm mot- Pkst- ool; & mx-VfnXln; Trc I.ool Poro w/ O.STN & Cut & Trc SFO; Trc IXP w/ O.STN & Cut & SFO; sm argil & rd tint.

LS: VC- tn-mrn- gy & wh, sm ool & fos Wkst- Pkst, sm argil-shly,pred dn hd w/ NS.

{CONGL} SH: red-maroon (rd-mrn), & gn-gy, & gy-bk, V.gated; & CHERT: Vari-Color'd (VC) amber-tn-cm, gy, orng-rd, pred sharp opq.

Sharp increase CHERT: tn, violet, orng-rd, & cm-gy, pred opq, & sharp;sm sl Wthr'd w/ NS; & SH: V.gated, mrn-rd & gn-gy.

CHERT: AA; incrs violet-rd & VC opq sharp Chert; & sm SH: AA.

SH: AA; incrs mrn-rd, & lt-dk-gn.

{~5% w/ Sl SFO

{Trc SFO

3196' (-1391)
STARK SH

{~5% w/ Sl SFO

{>5%<10%w/VSlSFO

3243' (-1438)
B/ KC

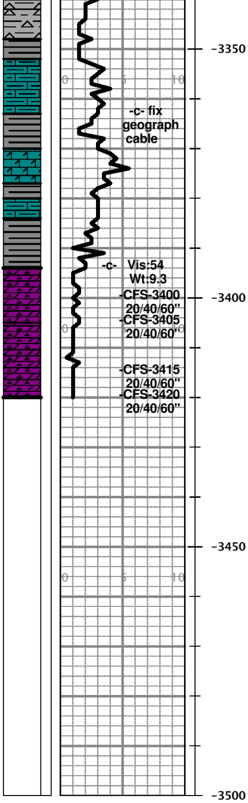
3250' (-1445)
Pleasanton Sd
{Sl-Fr SFO

{Trc SFO

Short trip:12 stnds
@3292' for DST#3

DST#3;LKC:H-Lzns
& Pleasanton Sd.
3111'---3292'
30-45-30-45 min.
IF: Surface blow;
bldg to 1&3/4"
ISI: No Blow Back
FF: Gd surge at
open; No blow
FSI: No BB.
Rec: 90' Mud
IHP: 1671
IFP: 40--57
ISIP: 610
FFP: 62--68
FSIP:468
FHP: 1517
Temp: 98 deg.F

Mud-Co report
8/20/15@10:45am
Short trip@3292'
for DST#3
Wt:9.5 Vis:60+
PV:17 YP:39
Gel Str: 14/29
pH: 10.0
WL: 10.8
CT: 1/32"
Cl: 9,200 ppm
Ca: 40 ppm
Solids: 8.0%
LCM: 2#/bbl
ECD: 10.49#/gal.



LS: amber-yel-cm, sm granlr, mx-VfnX; sm chlky; Vpr-NVP w/ NS; (& Chert:AA & SH:AA)

{SIMPSON} SH: Turq-gn.
Dolomc.LS- LS: amber, microXln(mx) - dense(dn) w/ Vpr-NVP; NS;
& V.rare(Vrr) Dolo: amber, mx-VfnXln w/ Vpr Poro-NVP; NS.
& V.gated SH.

Some LS:AA; & argil; Vpr-NVP; NS.

SH: V.gated, abndt Turq-gn, blu-gn {Simpson SH)

{ARBUCKLE} 3400'&3405'circ.spls} DOLO: gy-tn-cm, mx-fnXln; Vrr MdXln, sm dn; Rare(Rr) ool & Vrr oomldc w/ Rr Fr-Gd Poro; pred Vpr-Fr IXP; Trc (<1pc / spl) w/ Trc SFO & STN & Resid.Cut; >99% w/ NS; Cherty: cm-bf, & wh, opq, sharp, Vrr ool Chert.
3415'circ.spls} DOLO: cm-tn, microXln(mx)-fnXln, Rr prt MdXln, sm Fr-Gd IXP w/ NS & No Cut (NC); Cherty: cm-bf, sm oolc.
3420'circ.spls} DOLO: tn-gy, fnXln, Rr MdXln, Trc prt CrsXln- 2nd ReX; sm V.oomldc w/ Gd-V.Gd Poro w/ NS; NC; V.Cherty: wh-cm, opq, sharp, & sl Wthr'd Chert w/ NS; NC.

3394' (-1589)
ARBUCKLE
<1%w/TrcSFO

NS {No Show)
NC {No Cut)

NS; NC.

RTD: 3420'(-1615)

Mud-Co report
8/21/15@9:40am
CFS @ 3405'
Wt:9.25 Vis:46
PV:13 YP:17
Gel Str: 14/48
pH: 8.5
WL: 13.6
CT: 2/32"
Cl: 10,900 ppm
Ca: 80 ppm
Solids: 6.5%
LCM: 1#/bbl
ECD: 9.80#/gal.

HESS OIL CO.
CRAIG #1
355'FNL & 2271'FWL
(SW-NE-NE-NW/4)
Sec: 16-T11S-R16W
LIEB EAST FIELD
ELLIS CNTY, KS
API#15-051-26797-00-00
KB:1805' GL:1800'
PLUGGED &
ABANDONED

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62398 **DST#: 1**

Test Start: 2015.08.18 @ 01:00:00

GENERAL INFORMATION:

Formation: **Topeka**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:05:00
Time Test Ended: 09:30:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Jim Svaty
Unit No: 76

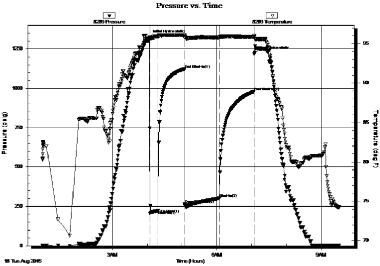
Interval: 2737.00 ft (KB) To 2766.00 ft (KB) (TVD)
Total Depth: 2766.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1805.00 ft (KB)
1800.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8289 **Outside**

Press@RunDepth:	301.69 psig @	2738.00 ft (KB)		Capacity:	8000.00 psig
Start Date:	2015.08.18	End Date:	2015.08.18	Last Calib.:	2015.08.18
Start Time:	01:00:02	End Time:	09:30:30	Time On Btm:	2015.08.18 @ 04:03:45
				Time Off Btm:	2015.08.18 @ 07:04:45

TEST COMMENT: 15-IF-BOB in 30sec. Tool Opened on Slide. Bled off BOB in 5min.
45-ISI- No Blow
60-FF- BOB in 6min.
60-FSI- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1323.04	95.69	Initial Hydro-static
2	204.00	95.54	Open To Flow (1)
16	223.48	95.95	Shut-In(1)
61	1122.73	96.06	End Shut-In(1)
62	263.88	95.81	Open To Flow (2)
121	301.69	95.80	Shut-In(2)
181	979.93	95.87	End Shut-In(2)
181	1219.09	95.98	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
248.00	OSMCW 20%m 80%w	1.22
254.00	OSWCM 50%w 50%m	3.56
128.00	OSM 100%m	1.80

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

FLUID SUMMARY

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62398 **DST#: 1**

Test Start: 2015.08.18 @ 01:00:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	44000 ppm
Viscosity:	60.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.97 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	9600.00 ppm				
Filter Cake:	3.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
248.00	OSMCW 20%m 80%w	1.220
254.00	OSWCM 50%w 50%m	3.563
128.00	OSM 100%m	1.796

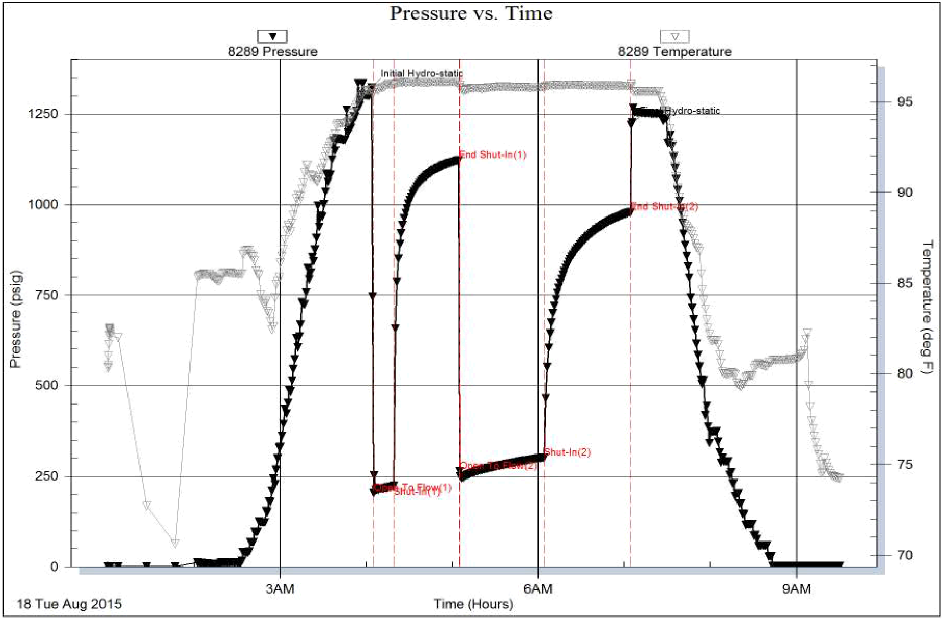
Total Length: 630.00 ft Total Volume: 6.579 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: .170 @ 72

Serial #: 8289 **Outside** Hess Oil Company Craig # 1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 62398 Printed: 2015.08.18 @ 10:21:55

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62399 **DST#: 2**

Test Start: 2015.08.19 @ 13:00:00

GENERAL INFORMATION:

Formation: **LKC " A - G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 15:33:00
Time Test Ended: 20:37:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

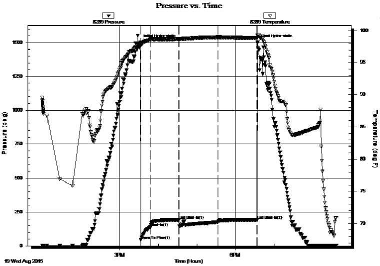
Interval: 2949.00 ft (KB) To 3111.00 ft (KB) (TVD)
Total Depth: 3111.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1805.00 ft (KB)
1800.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8289 **Outside**

Press@RunDepth:	175.42 psig @	2957.00 ft (KB)		Capacity:	8000.00	psig
Start Date:	2015.08.19	End Date:	2015.08.19	Last Calib.:	2015.08.19	
Start Time:	13:00:02	End Time:	20:37:00	Time On Btm:	2015.08.19 @ 15:32:30	
				Time Off Btm:	2015.08.19 @ 18:34:15	

TEST COMMENT: 15-IF- BOB in 14min.
45-ISI- No Blow
60-FF- Surface Blow Building to 9 1/2in.
60-FSI- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1503.98	98.05	Initial Hydro-static
1	40.22	97.68	Open To Flow (1)
16	139.01	98.63	Shut-In(1)
60	192.29	98.66	End Shut-In(1)
61	145.72	98.64	Open To Flow (2)
121	175.42	98.94	Shut-In(2)
181	191.77	98.84	End Shut-In(2)
182	1502.39	99.20	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
248.00	Oil Speck Mud 100%	1.22
77.00	Oil Speck MCW 40%m 60%w	1.08

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62399 **DST#: 2**

Test Start: 2015.08.19 @ 13:00:00

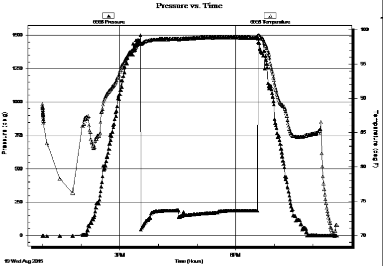
GENERAL INFORMATION:

Formation:	**LKC " A - G "**		
Deviated:	No Whipstock: ft (KB)	Test Type:	Conventional Bottom Hole (Reset)
Time Tool Opened:	15:33:00	Tester:	Jim Svaty
Time Test Ended:	20:37:00	Unit No:	76
Interval:	**2949.00 ft (KB) To 3111.00 ft (KB) (TVD)**	Reference Elevations:	1805.00 ft (KB)
Total Depth:	3111.00 ft (KB) (TVD)		1800.00 ft (CF)
Hole Diameter:	7.88 inches Hole Condition: Fair	KB to GR/CF:	5.00 ft

Serial #: 6668 **Inside**

Press@RunDepth:	psig @	2957.00 ft (KB)		Capacity:	8000.00 psig
Start Date:	2015.08.19	End Date:	2015.08.19	Last Calib.:	2015.08.19
Start Time:	13:00:02	End Time:	20:36:45	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: 15-IF- BOB in 14min.
45-ISI- No Blow
60-FF- Surface Blow Building to 9 1/2in.
60-FSI- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
248.00	Oil Speck Mud 100%	1.22
77.00	Oil Speck MCW 40%m 60%w	1.08

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

FLUID SUMMARY

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62399 **DST#: 2**

Test Start: 2015.08.19 @ 13:00:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	40000 ppm
Viscosity:	64.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.60 in^3	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	7700.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

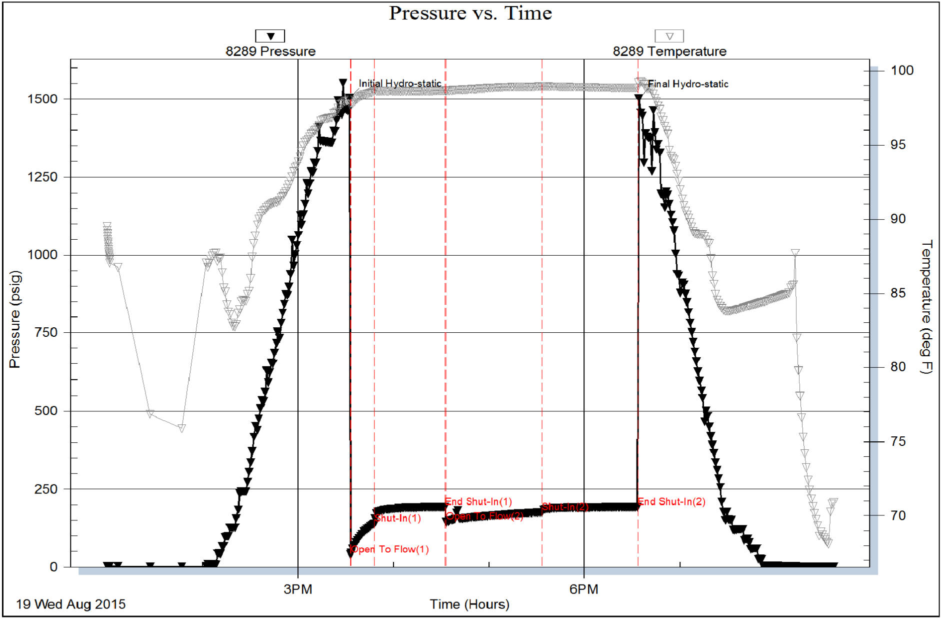
Recovery Table

Length ft	Description	Volume bbl
248.00	Oil Speck Mud 100%	1.220
77.00	Oil Speck MCW 40%m 60%w	1.080

Total Length: 325.00 ft Total Volume: 2.300 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: .190 @ 73

Serial #: 8289 **Outside** Hess Oil Company Craig # 1 DST Test Number: 2



Pressure vs. Time

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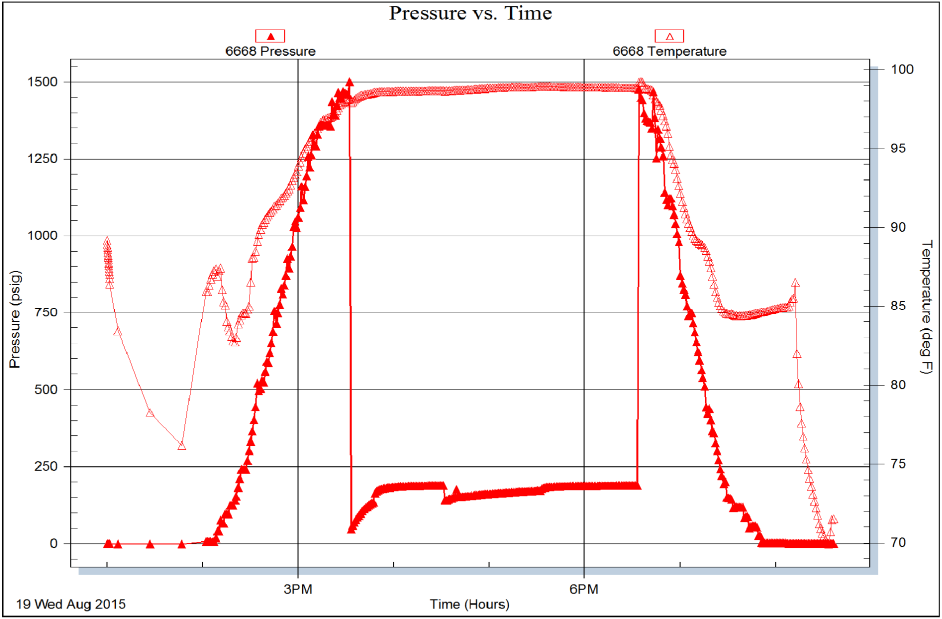
Serial #: 6668 **Inside** Hess Oil Company Craig # 1 DST Test Number: 2



Pressure vs. Time

Trilobite Testing, Inc Ref. No: 62399 Printed: 2015.08.19 @ 21:18:24

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62400 **DST#: 3**

Test Start: 2015.08.20 @ 14:05:00

GENERAL INFORMATION:

Formation: **LKC " H - L " & Plea**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:40:15
Time Test Ended: 21:00:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 3111.00 ft (KB) To 3292.00 ft (KB) (TVD)
Total Depth: 3292.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

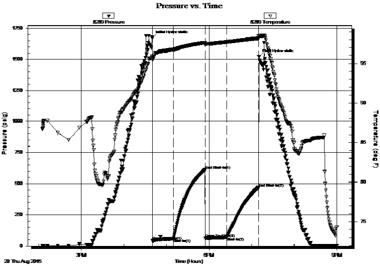
Reference Elevations: 1805.00 ft (KB)
1800.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8289 **Outside**

Press@RunDepth: 68.90 psig @ 3117.00 ft (KB)
Start Date: 2015.08.20 End Date: 2015.08.20
Start Time: 14:05:02 End Time: 21:00:00

Capacity: 8000.00 psig
Last Calib.: 2015.08.20
Time On Btm: 2015.08.20 @ 16:40:00
Time Off Btm: 2015.08.20 @ 19:10:15

TEST COMMENT: 30-IF- Surface Blow Building to 1 3/4in. In 10min.
45-ISI- No Blow
30-FF- Good Surge on Open --- No Blow
45-FSI- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1671.43	95.80	Initial Hydro-static
1	40.90	95.41	Open To Flow (1)
30	57.01	96.77	Shut-In(1)
75	610.97	97.63	End Shut-In(1)
75	62.28	97.35	Open To Flow (2)
105	68.90	97.70	Shut-In(2)
150	468.91	98.16	End Shut-In(2)
151	1517.73	98.44	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	Mud 100%	0.44

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

FLUID SUMMARY

Hess Oil Company

P. O. Box 1009
McPherson KS 67460-1009

ATTN: Roger Martin

16 11s 16w Ellis

Craig # 1

Job Ticket: 62400 **DST#: 3**

Test Start: 2015.08.20 @ 14:05:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	10.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	60.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	10.77 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	9200.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	Mud 100%	0.443

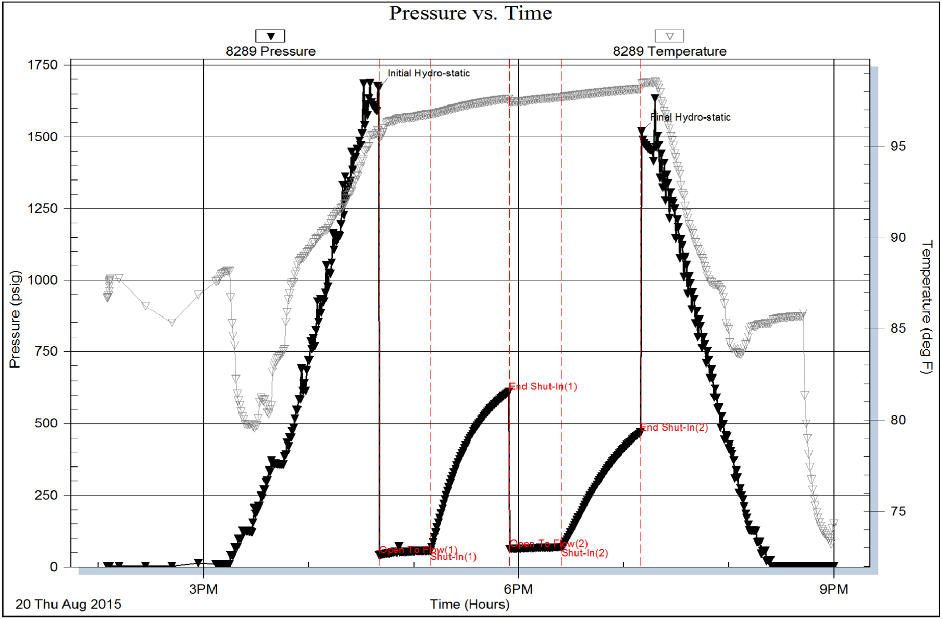
Total Length: 90.00 ft Total Volume: 0.443 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments:

Serial #: 8289 **Outside** Hess Oil Company Craig # 1 DST Test Number: 3



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