

GARY F. GENSCH
PETROLEUM GEOLOGIST

GEOLOGIC REPORT LOG

COMPANY: GATEWAY RESOURCES, LLC
LEASE: #1-8 'A' WORCESTER
FIELD: WILDCAT API: 15-065-23,992-0000
LOCATION: SECTION 8-7S-22W
900' FSL & 375' FEL
COUNTY: GRAHAM COUNTY, KANSAS

DRLG. CONTRACTOR: W.W. DRILLING, LLC: RIG NO. 6
SPUD: 11/15/2013 COMP: 11/23/2013
RTD: 3,910' LTD: 3,910'
MUD UP AT: 3,000' MUD TYPE: CHEM GEL (Morgan Mud)

DRILLING TIME KEPT FROM: 1,880' - 1,970' / 3,100' TO RTD
SAMPLES EXAMINED FROM: 3,240' TO RTD
SAMPLES SAVED FROM: 3,240' TO RTD
GEOLOGICAL SUPERVISION FROM: 3,337' TO RTD

FORMATION TOPS	SAMPLE	E-LOG	L. DATUM	REF. WELL	DIFF.
TOP ANHYDRITE	1,914	1,914	405	395	10
BASE ANHYDRITE	1,946	1,946	373	362	11
TOPEKA	3,314	3,314	-995	-993	-2
HIEBNER	3,511	3,512	-1,193	-1,196	3
TORONTO	3,535	3,536	-1,217	-1,219	2
LANSING	3,552	3,553	-1,234	-1,236	2
MUNCIE CREEK	3,659	3,659	-1,340	-1,343	3
STARK	3,719	3,719	-1,400	-1,401	1
BKC	3,743	3,743	-1,424	-1,428	4
MARMATON	3,789	3,789	-1,470	NDE	ND
ARBuckle	3,900	3,900	-1,581	NDE	ND
RTD/LTD	3,910	3,910	-1,591	-1,446	-145

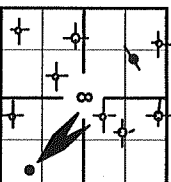
ELEVATIONS
All Measurements Are
From: K.B.

K.B. 2,319
D.F. 2,317
G.L. 2,314
R.T.D. 3,910

CASING
SURFACE:
8-5/8" @ 219'
PRODUCTION:
5-1/2" @ 3,908'

LOGS RUN
DIL, CDN, RAG,
MICRO LOGS

Nabors Comp. & Prod.



8-7S-22W
REF WELL
DRILL STEM
TESTS

6
Tribble Testing

REF. WELL: MURFIN DRILLING, #3 WORCESTER, 'A' Sec. 16-7S-22W; C NW NW, KB: 2,343.

GATEWAY RESOURCES, LLC

224 S. CRESTWAY

WICHITA, KS 67218

316-584-0199

REF. WELL: SE <-1/4 mile from well

DEVIATION SURVEY			DAILY PENETRATION		DAILY F	
DEPTH	DEGREE	DATE	DEPTH	COMMENTS	DATE	DEPTH
219'	3/4	11/15	620'	Set Surf at 219'	2013	7:00 AM
3,544'	3/4	11/16	2,352	DRLG AHEAD		
3,910'	1/2	11/17	3,296	DRLG AHEAD		
		11/18	3,544'	DRLG AHEAD		
		11/19	3,582	DST #1: TORONTO		
		11/20	3,687	DST #5 LANSING 'C'		
		11/21	3,743'	DRLG AHEAD		
		11/22	3,910'	DST #6 LKC 'K' & 'L'		
		11/23		PLUG SET AT 9:35 PM		

GENERAL INFORMATION

BIT RECORD					CASING	
NUMBER	SIZE	TYPE	SERIAL #	DEPTH S RAN	HOURS	SURF CASING
1 - RR	12 1/4	SMITH	4999	SURFACE - 220'	1 1/2	of new 8-5/8" and welded w/ cemented w/ CC, 2% gel.
2 - NEW	7 7/8	SM F2713	RA2609	220' - 3910'	7 1 1/2	
Plug down at 8:00 PM 11/15/13. Cement circulated to surface. WOC 8 hours. Drilled under surface at 4:00 AM 11/16.						
RTD 3910', LTD 3910' by Nabors, started logging @ 4:30 AM-9:30 AM. PRODUCTION CASING SET AT 3905'. Ran casing (3,902.04' Talled) + 2.70' P.C. set 5' off bottom. Pipe did land. Cemented with 175 sacks EA-2 cement. PLUG Completion Rig MRU 11/26/2013. JIPPER STAGE. Ran in clean and tested used 2-3/8" tbg with P.C. tool to P.C. at 11/23/2013. Released and held. Rig released at 11:30 PM 11/23/2013. 1 hr mix mud for suction pit to be used to set held. Pumped at 5 BPM 160 BBs mud: good circulation to surface. Started mixing the SMD Cement with Floeole. Took bbl vol. 400# csg press. Ran 175 sacks of mixed cement and circulated to surface. Circulated 20 sacks to pit. End core of 5 bbl of water, closed port collar at 800 psi. Tripped out 5 jls of tubing and reversed and circulated hole rigged down and moved off location.						

REMARKS & RECOMMENDATIONS

Based on the favorable structural position and positive fluid recoveries and pressures of determined to set 5-1/2" production casing 5 ft off bottom at 3705'. The following zones are further testing:

FORMATION	PERFORATION INTERVAL	RATING	COMMENTS
LKC 'E' - 'F'	3620' - 3626' (4 SPF)	1	Good reservoir. Will likely make so
LKC 'I'	3701' - 3703' (4 SPF)	1	Tight moderate reservoir. Acid may
LKC 'J'	3706' - 3709' (4 SPF)	1	Good reservoir. May produce some
Perforate and Test Prior to Abandonment			
LANSING 'C'	3587' - 3593' (4 SPF)	1	Low gravity oil. Produce w/ lighter c
LANSING 'D'	3604' - 3607' (4 SPF)	1	Low gravity oil. Produce with lighter

Respectfully submitted,

Gary F. Gensch

Gary F. Gensch, Petroleum Geologist
12/5/2013

SUMMARY OF SAMPLE SHOWS				
FORMATION	E-LOG INTERVAL	DESCRIPTION OF SHOWS	LOG ANALYSIS	
			Porosity, %	Sw%
OREAD	3468-3476	Packstn, sb-gran-gran, crm, (dk brn-sin'd), p-fr-gd int'-xln por, scat-iso p-fr vug por, Sin: evn dk-brn-blk sin, full sat to mostly unevn sin, sat, FSFO (Much flky-md brn to hvy, no fluor), lt oily odr, w/ls, crm, fr-md xln, v. grainy-sb gran, sb-foss, it's p-fr int'-gran por, scat unevn dk sin, p sat.	14.5 20 18.5 7	82.5 85 90 100
TORONTO (Tested in DST #1)	3536-3544 3536-3538 3538-3540 3540-3442	Packstn, crm-wh't, sb-gran w/sil leach'd md-xln matr betwn grms, gen tt, Sev pc's vp druse lining edges, scat p-int'-gran por, spgy-unev'n evn md-brn sin, tr'sm pyr, no fluor, trfneig oily odr, FSFO (lt-lively, lt-md brn) sm-live oil free floating in tray.	8 9.125 9	Tight 84 Tight
LANSING A (Tested in DST #2)	3553-3561 3553-3554 3554-3556 3556-3558	Top: Sev Grainsin clstrs, crm-tn, sb rdd-rnd, w/lt-srd to md srt'd. Depth: scat fr-gd int'-gran por bwn grms, druse-lined por/gms, full lt sat-md-brn oil sin, VSSFO (live-md-brn), fr oily odr (v-sil-sour-not salty), grades to Packstn clstrs, crm-tn, gran, iso fr-gd int'-gran por/iso vug por in fr-xln, arg matr, Sev: It evn sin on grms/por, druse-lined, p wh't-gldn patchy fluor, Tr fus, W/ depth: Ls, sb-gran, iso p pvt/vug por, barren except in por. Mst Ls, crm, fr-xln-chlky, no vis por, tight, no sin, tr's Chrt, crm-tn, shrp, NS.	8.25 8.25 5.25	Tight 45 75
LANSING 'C' (Tested in DST #3)	3586-3592 3586-3588 3588-3590 3590-3592	Fid Grainsin Clustrs, crm-tn, (md-srt'd, rdd-oblong), fr-gd int'-gran por, cov in druse xl lining in por/over grms, evn md-brn sin, patchy p gldn fluor, stng oily-pungent odr, FSFO, SSG, Packstn, gran, sb gran in fr-xln matr, leach'd w/grainy-granulr text', scat iso p-fr int'-gran /vug por, inc unevn lt sin, less sat, int'ryd Chrt, v-c: clt-crm-tn-gy(vang), gy-spikd, blk, tmstl-opq, shrp-conchodl. Perhaps the 22 deg oil-too heavy to move.	14.625 13.4 7.5	32.5 46 75
LANSING 'D' (Covered in DST #4)	3604-3608 3604-3606 3606-3608	Packstn, crm-wh't, chlky, sb-gran-gran, chlky, fr-xln matr, arg, Mly: unevn brn sin, to sply sin in rough-leach'd sil-dolo surf text', p int'-xln por, scat -rare iso p pvt/shallow vug, p, dull patchy fluor, rare VSSFO (lt micro-bds) wbn brkn, w/Chrt, tn, blu-gy, conchodl, shrp, tmstl-opq, Base/Mst Ls, wh't-crm, fr-xln, chlky, leach'd edg surf, iso p prt edge por, sply dk brn dd oil sin, rare rel of oil (flky-odr), no fluor, sil-sour oily odr.	7.5 6	30 60
LKC 'E' (Covered in DST #4)	3615-3618 3615-3617 3617-3618	UPPER LKC 'E': Tr's Pckstn, gran, crm, md-cse gm, p-iso fr int'-gran por, sin betwn grms, sm-druse lined, faint lt oily odr, md-brt fluor, rel rare flky dd-ol wbn brkn, unevn dk brn-blk sin, NSFO, no odr w/Chrt, smoky gy, tn, trnsi, shrp, spid.	8 Shaley	Tight
LKC 'E' - 'F' (Tested in DST #4)	3619-3628 3619-3622 3622-3625 3626 3626-3628	Tr Gmsin, md-gm, rdd-oblong, mod-srt, p-fr-iso gd int'-gm por-druse lined, lt evn sin, GSFO (lively lt brn) brt patchy fluor, lt oily odr to Packstn, sb rdd-rdd, md-cse gm, fr-xln, heavily leach'd w/sat-iso p-fr-gd vugs/slots betwn sb-grms/foss casts, lt unevn sin, patchy gldn fluor, lt swt oily odr, FSFO, FSG.	12.5 7.6 9 8	27 46 35 51
LKC 'H'	3680-3684 3680-3682 3682-3684 3684-3688 3684-3686 3686-3688	1 pc: Granulr Packstn, crm, rdd-sb-rdd embed in fr-xln matr, leach'd p-int'-gran por, partial lt sin betwn grms, p fluor, no odr, NS Few pcs: Packstn, crm-wh't, sb-gran-gran in fr-xln matr, tight, p to iso fair int'-gran por w/druse lined por/gms, lt unevn sin, lt fleeing oily odr, md brt gldn fluor, NSFO.	10.5 7 9 5	Shaley 100 82.5 85

SUMMARY OF SAMPLING		
FORMATION	E-LOG INTERVAL	DESCRIPTION OF SAMPLING
LKC 'I' & 'J' (Tested in DST #5)	3699-3714 3700-3702 3702-3703 3706-3708 3708-3710	Nurr: Packshn, gran, crm int-gran por-druse lined li-md stn, full sat in p-sig SSG from por, patchy dr Grades into Ls, crm-th, f surfs: scat p ppt to rare FSFO/SSG, Gen: tt, Tr's Note: The LKC 'I' was stn and only separated from
LKC 'K' (Tested in DST #6)	3728-3732 3728-3730 3730-3732 3732-3733	Packshn, crm-th, gran, chl Met: unevn stn, iso p-fr pl grainsh in wht, packsh fr por/p iso ppt por, spid-ur patchy glin fluor, Fair-ric w/ Depth: Packshn, crm- NS.
LKC 'L' (Tested in DST #6)	3736-3743 3736-3738 3738-3740 3740-3742	Micro-grainsh in wht, pac xin, chky, p-int-xln/ gran p sat, v lit odr, NSFO, S ppt / vug por, spid unev
ARBUCKLE	3900-3910	Few: Dol, crm-th mott'd por in unevn dk gy stnd droplets rel, no fluor, no por, no stn, no fluor, NSI v in suc, p int-xln por, ha

LOG ANALYSIS	
Por. %	Sw%

Sev. p to iso rare fr ppt / vug por, even
leached surfs, GSFQ (bt bn-lie),
sil-bt fluor, Sil-swrt oily odr.Mst.
rand-xin, gran-grainly, wdeg leachd
fr iso vug por, fr to even-unew stn/sat,
embod Chrt, rd-org, transi, shp.
stratigraphically lower than anticipated
the LKC J zone by a 2 ft shale.

xxy,mod strd,p-raire fr intr-gran por,
 ptyvug por, dull fluor. Mst: Micro-
 n-xin matr, Few: p-iso fr intr-gran
 eleven dk bm sin beawn grms,Sev: bft
 sh swt oily ocl, FSD & G, at the top
 wth,sh-gran,p por,sply dk sh,p fluor,

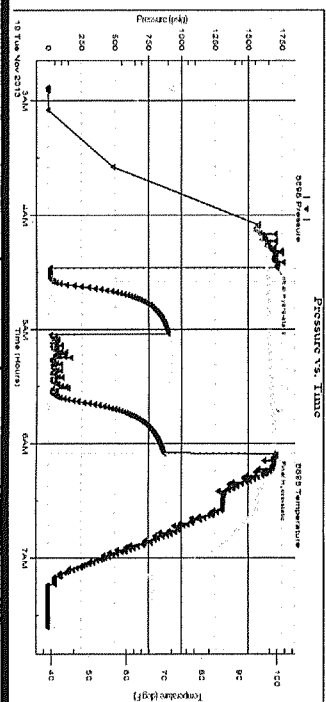
cksstn fn-xln matrx, crm-wht, fn-
por, spstd dk brn-blk stn betwn grms,
n: fn-xln w/leachd edges, v.p.-fr iso
n stn, dull fluor.

gly (strn), v.ftr-fn xln dol, tt, with ltd p
 areas, Few:blk-dk brn, dd flaky oil
 ood:W/Dol, tn, crypto-xln, dse, no vis
 FO (nor dd oil). 30"; Fld Dol, cm-tn,
 scat spkld dd blk oil, no por, NS.

7.375	Shaley
6.5	55
6.5	58.5
ND	Wet

7.5	50
9	80
5	TIGHT

DRILL STEM TESTS					
DST INTERVAL/F.M.	FP TIME	IFP/FFP	SIP TIME	ISIP/FSIP	RECOVERY
DST #1: 3518'-3544'		IFP: 5": FFP: 30":	13 - 32# 84 - 212#	ISIP: 30": FSIP: 30":	900# 863#
TORONTO					5' TOTAL FLUID
ELECTRICAL CHART	TEMP: 100 DEG. F.				5' Mud w/Oil Spots (Tool was plugging off during FFP)



COMMENTS:

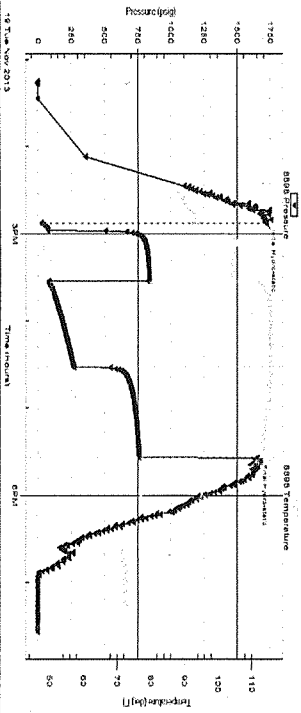
IF: Weak surface blow to 1/4 inch. .
ISIP: No blow back,
FE: Weak surface blow, died in 24 min.
FSIP: No return blow
HP: 1713-1708#

VIS 59, WT 98.9 WL 6.4, LCM 2#, CHL 800 PPM

DST INTERVAL/FM	FP TIME	IFP/FFP	SIP TIME	ISIP/FSIP
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DST #2: 3545' - 3561'	IFP: 5": 23 - 75#	ISIP: 30": 826#	
LANSING 1A'	FFP: 60": 81 - 267#	FSIP: 60": 760#	536' TOTAL FLUID (6.40 Bbs)

ELECTRICAL CHART **TEMP: 113 DEG. F.**



(40% M, 60% W)
496' VSII MCW (2% M, 98% W)
 (Wtr Chl: 70,000 PPM)

(Wtr Chl: 70,000 PPM)

COMMENTS: TOT OIL: 2.80 BOPH

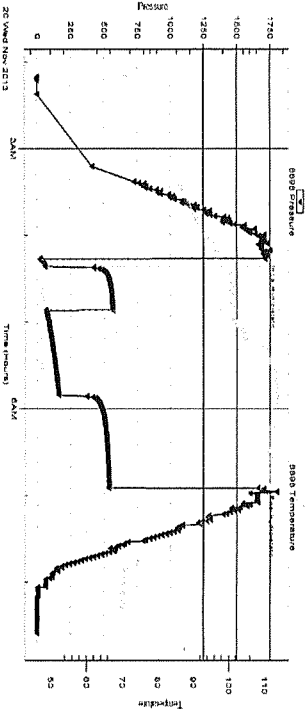
IF: Fair blow bldg to 7 inches
SIP: No blow.
FF: Good blow BOB in 10 min
FSIP: Dead, no blow back.
HP: 1720-1652#

VIS 47, WT 9.1, WL 6.0, LCM 2#, CHL 900 PPM

DST INTERVAL/FM	FP TIME	IFP/FFP	SIP TIME	ISIP/FSIP
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DST #3: 3545' - 3591'	IFP: 5" : 18 - 57#	ISIP: 30" : 563#	351' TOTAL FLUID (3.80 Bbs)
LANSING 'C'	FFP: 60" : 60 - 159#	FSIP: 60" : 532#	

TEMP: 110 DEG. F.



1" Free Oil (22 Deg API)
40" MCW (40% M, 60% W)
310" SMCW (80%W, 20% M)
(WATER CHLORIDES: 72,000 PPM)

COMMENTS: TOT OIL: 0.01 BOPH

SIP: No blow.

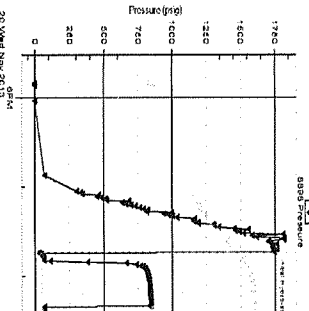
FF: Good blow BOB in 29 min

FSIP: Dead, no blow back,

HP: 1714-1702#

V1S 47, WT 8.9, WL 6.8, LCM 2#, CHL 1800 PPM

DST INTERVAL/FM.	FP 1
DST #4: 3605' - 3629'	IFP
LKC 'E' & 'F'	FFP



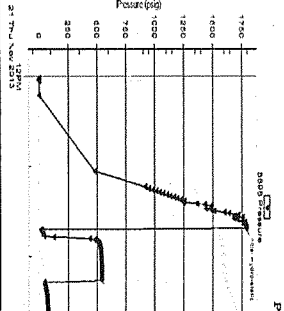
ELECTRICAL CHART

DST #4: 3605' - 3629'	IFP:
LKC 'E' & 'F'	FFP:

DST INTERVAL/FM FP T

DST #5: 3686' - 3716'	IFP
LKC 'I' & 'J'	FFP

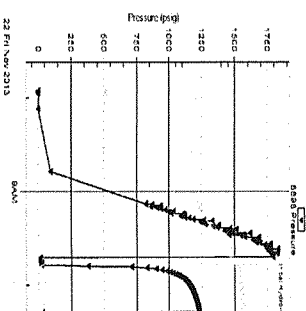
ELECTRICAL CHART



DST INTERVAL/FM		FPT
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DST #6: 3717 - 3743'	I/FP
LKC 'K' & 'L'	F/FP

ELECTRICAL CHART



DRILL STEM TESTS

TIME	IFP/FFP	SIP TIME	ISIP/FSIP	RECOVERY
5": 27 - 67#	ISIP: 30": 833#			546' Gas in Pipe
60": 68 - 166#	FSIP: 60": 784#			444' TOTAL FLUID (5.10 Bbls)
TEMP: 111 DEG. F.				
Pressure vs. Time				
COMMENTS: TOT OIL: 3.23 BOPH IF: Fair surface blow bidg to 6 inches. ISIP: No blow back FF: Good blow BOB in 7 Min. FSIP: Weak surface blow to 1", then 1/4" HP: 1743-1721# VIS 45, WT 8.9, WL 6.8, LCM 2# CHL 1800 PPM				
5": 15 - 36#	ISIP: 30": 542#			102' Gas in Pipe
60": 41 - 102#	FSIP: 60": 519#			206' TOTAL FLUID (1.77 Bbls)
TEMP: 110 DEG. F.				
Pressure vs. Time				
COMMENTS: TOT OIL: 0.96 BOPH IF: Weak surface blow to 3.5 inches. ISIP: No blow back. FF: Bidg blow to BOB in 45 Min. FSIP: Weak intern surf blow, died in 31 min HP: 1783-1762# VIS 48, WT 8.9, WL 6.8, LCM 2# CHL 1800 PPM				
5": 14 - 23#	ISIP: 30": 1228#			129' TOT. FLUID (0.69 Bbls)
60": 27 - 166#	FSIP: 60": 1087#			67' MCW- Oil Spots (50% W, 50% M) 62' WCM (20% W, 80% M) (WTR CHL: 82,000 PPM)
TEMP: 105 DEG. F.				
Pressure vs. Time				
COMMENTS: 37.17 BOPH IF: Weak blow bidg to 1-1/2 inch. ISIP: No return blow. FF: Fair bidg blow to 4" in bkt. FSIP: No return blow HP: 1792-1761 VIS 47, WT 9.0, WL 6.8, LCM 2# CHL 2200 PPM				

DRILLING TIME IN MIN.'S/FT. Rate of Penetration Decreases →	DEPTH	LITH.	DSTS, OIL SHWS, CFS PTS	SAMPLE DESCRIPTIONS	REMARKS
5" 10" 15" GAMMA RAY 0 50 100				ALL OIL & GAS SHOWS UNDERLINED LAG TIME	
	1900			NOTE: WHERE NECESSARY, ALL ORIGINALLY PICKED DRILLING TIME FM. TOPS HAVE BEEN ADJUSTED TO FIT THE COMP.ENSATED DENSITY- NEUTRON LOG FOR FUTURE REFERENCE.	
CONNECTION PT.	1910				
ANHYDRITE 1,914' (405')	1920				
ELOG: 1,914' (405')	1930				
	1940				
B/ANHYDRITE	1950				
1,946' (373')	1960				
ELOG: 1,946' (373')	1970				
	1980				
	1990				
	3100				
	3110				
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WABUNSEE**3,156' (- 837')**

E-LOG 3,156' (- 837')

VIS 64, WT 8.7, LCM 3#

TARKIO**3,206' (- 887')**

E-LOG 3,206' (- 887')

VIS 64, WT 8.7, LCM 3#

HOWARD**3,246' (- 927')**

E-LOG 3,246' (- 927')

VIS 63, WT 8.7, LCM 3#

VIS 62, WT 8.9, LCM 3#

TOPEKA**3,314' (- 995')**

E-LOG 3,314' (- 995')

SAMPLE QUALITY FAIR TO GOOD WITH DEPTH

Ls, crm mottld dk-md gy-tn, fn-mdxln, chlky, embdd gy foss frags/phos nods, no stn, no fluor, no odr, NS w/Ls, crm to lt gy, v.fn-fn xln, grainy surf texr, chlky in prt, foss, ind foss frags, p intr-xln por, no stn. Clystns, dk-md gy, gm gy, rd-brn w/Clay, gumbo, lt gy.

5 Clystn, lt-dk gy, rd-brn, gm-gy.w/Much Chlk, sft, wht. w/**HOWARD:** Much Ls, tn-lt gy, fn-suc, sli-dolo, chlky, v.p intr-xln por, no stn, no fluor, w/Sm Ls, crm, lt tn mottld gy, v.fn-fn xln, chlky, embdd w/ lg foss frags in arg matr, carb, p intr-xln por, no stn, no fluor, no odr, NS.

6 Ls, lt gy to tn-brn, fn-md xln, carb, arg, iso foss frags, p intr-xln por, no stn, p min fluor, w/Ls, crm-tn, arg, fn-xln to chlky, carb, no vis por, no fluor, no odr, NS w/sig inc in Clystns, md-lt gy,

7 Much Ls lt-tn to md-dk gy, fn-xln, (mudstn) embdd w/iso lg foss frag, carb inclusions, p intr-xln por, arg, no stn, no fluor, no odr, NS.

8 W/Clystns, aa.

Clystns-Sh's, dk-md gy, carb, sft w/Much Ls, lt -md gy, crm-tn, fn-xln, mudstn, carb, sli foss, p to no vis por, no stn, no fluor, NS.

9 Ls, lt gy-crm mottld md gy to dk-gy to tn brn md-fn xln, carb, embdd foss frags/casts, chlky, p intr-xln por, no stn, no fluor, no odr, NS. w/Clystns, dk-md gy, carb in prt.

0 Ls, lt gy-crm, tn-mottld lt-dk gy, foss, foss cast por, p-intr-xln por, no stn

1 w/Ststns, md gy, dirty, carb, v.fn-gm to silty, no fluor, no odr, NS.

2 Clystns, dk gy to lt gy, carb, rd-brn, tr's pyr, w/Ls, lt tn-lt gy mottld, silty-fn xln, arg, carb, foss, p intr-xln por, no stn, no fluor, no odr, NS.

Ls, lt tn-lt gy mottld, silty-fn xln, arg, carb, foss, p intr-xln por, no stn, Few: embdd dk gy phosp nods, w/clystns, lt-dk gy, w/Tr **TOPEKA:** Ls, lt gy-crm to lt tn, fn xln, sli-grainy, embdd foss frags, p intr-xln por, no stn, med brt gldn min fluor, no odr, NS.

3 Ls, crm-lt tn to gy, mottld crm, sptd brn carb mat, sli-grainy, embdd foss frags-p.dev ool, sli-dolo, sli-chlky, p intr-xln por, no stn, no fluor, w/Ls, crm-lt tn, fn-xln, dk gy nods in chlky matrix, no odr, NS.

4 Ls, crm-lt tn, embdd w/foss, grainy textur, fn-md xln, sft-chlky in prt, brn carb spks, p-fr intr-xln por, iso dissol p ppt por, p min fluor, w/Ls,

DEER CREEK**3,363' (-1,044')**

ELOG: 3,363' (-1,044')

LECOMPTON**3,429' (-1,110')**

ELOG: 3,428' (-1,110')

L. LECOMPTON**3,452' (-1,133')**

ELOG: 3,452' (-1,133')

OREAD**3,468' (-1,149')**

ELOG: 3,468' (-1,149')

HEEBNER**3,511' (-1,192')**

ELOG: 3,512' (-1,193')

TORONTO**3,535' (-1,216')**

ELOG: 3,536' (-1,217')

LANSING 'A'

5 It-md gy, fn-xln, p por, no stn, no odr, NS.w/few Clystns, dk-md gy, grn-gy.

Ls, crm-wht, chiky, granlr, fn-md xln, p-fr intr-xln por, dull min fluor, w/Ls, lt-dk gy mottld, embdd w/carb mat/ foss, mealy, chiky, no vis por, no stn, no fluor, no odr, w/Tr Chrt, crm-tn, opq, conch, Tr's Clystns aa. NS. Ls, crm-wht, chiky, granlr, fn-md xln, p-fr intr-xln por, iso p ppt por, dull min fluor, w/Ls, lt-dk gy mottld, embdd w/carb mat/ foss, dk gy phoph nods, chiky, no stn, Chrt, lt tn, opq, blk-conch, tr's Clystn, lt -dk gy, rd limy incl.

Fld Clystns, v-c:rd-brn, silty, dk-lt gy, grn-gy, brn, silty, carb, lt gy-wht gumbo cly, pyr, w/Ls's, aa.

DEER CRK: Fld Ls, crm to lt tn, fn-md suc to fn-xl (sli-dolo) faintly micro foss/ool, chalky, embdd w/iso foss frags, p intr-xln por, granulr textur, no stn, w/Chrt, lt tn-crm, shrp, sli-trnsit-opq, w/Tr's Chlk crm-wht, no fluor, no odr, NS.w/ Clystns, aa.

Fld Ls, crm-wht, fn-suc to fn-xln to chiky in prt, grainy surf textr, faintly foss, p intr-xln por, Sm: p-fr dissol por, chiky, no stn w/Ls, tn-brn, md-xln, arg, chiky in prt, no stn & W/Chrt, crm-wht, opq, shrp-blky, no stn, scat brt min fluor, no odr, NS.

Fld Ls, crm-wht, fn-md xln, granulr textur, chiky, p to scat fr intr-xln por, iso p ppt por, no stn, scat p-fr min fluor, w/Ls, crm-wht, micro-v. fn xln, no vis por, no stn, brt min fluor, no odr, NS, W/Chrt, crm-wht, 1 opq, shrp & Sm Chlk, wht.

Ls, crm-wht to tn-gy, fn-md xln, earthy, foss, carb in prt, chiky, grainy textr, p-fr intr-xln por, iso-scat p-fr ppt por, scat fr min fluor, no stn, no odr, NS, w/Chrt, crm, tn, opq, shrp-blky.

2 Ls, tn mottld brn, md-xln to fn-sndy texture, carb, p intr-xln por, no stn, w/Tr's Chrt, tn, opq-trnsit, scat brt min fluor, no odr, NS. w/Clystns, lt 3 gy-grn gy, gy, rd-brn. Tr's Sh, blk, carb, sli fissle, brittle.

Ls, tn-lt crm-gy, fn-md xln, arg, mealy, carb, no vis por, chiky, no stn, no fluor, no odr, NS. W/Clystns, rd-brn, brn, grn-gy, lt-dk gy, Tr's Mud-stn, gy, slity, carb, Tr's Sltstn, lt gy, slity, Tr's Sh, blk, carb. Tr, Ls, lt gy, md-xln-gran, p-fr intr-gran por, no stn, NS.

4 **LECOMPTON:** Fld Ls, crm to lt gy to tn, sb-gran-foss to faintly sb-ool, fn-md suc, grainy textr, fn xln in prt, p intr-xln por, chiky in prt, spkld pyr, w/Tr's chrt, crm, tn, org, opq-trnsit, p dull min fluor, no odr, NS.

5 Ls, lt gy-crm, fn-md xln to fn suc, grainy textr, chiky, p-fr intr-xln por, scat p ppt por, v. sli foss, no stn, Tr Ls, oom, p ppt por, no stn, Tr's Chrt, crm, foss, opq, shrp, no fluor, no odr, NS. W/Clystn, v-c. Tr Sh, 6 blk, carb.

LWR LECOMPTON: Packstn, crm-wht, irrgr gran-sb-gran in fn-xln matrix, arg-chiky, p-iso fr intr-gran por, p min fluor, Sm: no fluor. No odr, NS.

7 **OREAD:** Packstn, sb-gran-gran, crm, (dk brn-stn'd), p-fr-gd intr-xln por, scat-iso p-fr vug por, Sm: evn dk-brn-blk stn, full sat to mostly unevn stn, sat, FSFO (Much flky-md brn to hvy, no fluor). It oily odr, w/Ls, crm, fn-md xln, v. grainy-sb gran, sb-foss, tr's p-fr intr-gran por, scat unevn dk stn, p sat. Tr's foss cast por, Tr's Chrt, crm-lt tn, opq, blk, w/Depth: Ls, crm-wht, fn-xln, chiky, sb-gran, p por, Mst: no stn, 15" chlk, wht, w/chrt, crm-tn, opq, no stn, no fluor, NS.

30" 45" Ls, crm-lt gy to lt tn, fn-md xln, chiky, sb-gran surf, sli foss, p intr-xln por, iso p ppt/vug por, Few pcs: spity unevn hvy brn oil stn, VSS Flky Oil, no fluor, tr sour odr, NS. w/Tr's Dol, crm-wht, md suc, sparkly, p-fr intr-xln por, W/ Chlk, wht.

0 Ls, crm to lt gy-crm, fn-md xln to chiky, foss in prt, gran surf, p to iso fr intr-xln/ppt/slot por, tr's spitd blk stn, dull min fluor, no odr, w/Chrt, crm-tn, trnsit-opq, Tr Clystns, dk gy, grn-gy, lt gy, rd-brn.

2 Ls, crm-tn mottld gy, lt gy, micro-md xln, carb, chiky in prt, p-fr intr-xln por to no vis por, much: barren, tr sli spity stn, no fluor, NS, w/Tr's Chrt,

Ls, crm, tn; Sm: mottld lt gy, micro-fn xln, scat dk gy carb incl, chiky-mealy in prt, p intr-xln por, no stn, no fluor, w/Chrt, crm, opq, blk, w/Clystns, rd-brn, dk-lt gy, grn, grn-gy, no odr, NS. Much **HEEBNER** Sh, blk-dk brn, carb, bleedg micro-gas bbls.

3 Ls, crm-tn, brn, gy, fn-xln, p intr-xln por, chiky, no stn, Tr scat foss frags, no fluor, no odr, NS. Tr's Chrt, tn, crm, shrp. Clystns, rd-brn, lt grn-gy, md gy, VIS 58, WT 9.0, LCM 4#

4 **TORONTO:** Packstn, crm-wht, sb-gran w/sli leachd md-xln matrix betwn grms, gen tt. Sev pc's vp druse lining edgs, scat p-intr-gran por, spity-unevn-evn md-brn stn, tr'sm pyr, no fluor, trfleatg oily odr, FSFO (lt-lively, lt-md brn) sm-live oil free floating in tray, Mst: Ls, wht-crm, faintly sb-gran-ool, grainy, p intr-xln por intrlyrd w/ Chrt, varigr, crm, tn, wht, org, opq-trnsit, shrp, no fluor, W/ Depth, Ls, aa, Inc: Ls, tn, fn-xln, md-gran textur, no stn, scat v. dull min fluor, Sm Chlk, wht, w/Ls, tn, fn-xln, embdd, rdd nods, tt, no vis por no stn, Clystns, lt gy, wxy, sli-silty, rd-br, dk-lt gy, grn, grn-gy.

15" 30" 6 **LANSING 'A':** Top: Sev Granstn clstrs, crm-tn, sb rdd-rrd, wli-srtd to md

DEER CREEK**3,363' (-1,044')**

E-LOG 3,363' (-1,044')

VIS 63, WT 9.0, LCM 3#

At 3430': VIS 59, WT 8.9, WL 6.4, LCM 2#, CHL: 800 PPM

STRAP AT 3,544': STRAP 3,546.64'
BOARDS 3,548.90'
SHORT 2.26'

DST #1: 3,518' - 3,544'**TORONTO****5" - 30" - 30" - 30"**

IF: Weak surface blow to 1/4 inch. .
ISIP: No return blow.
FF: Weak surface blow, died in 24 min.
FSIP: No return blow

RECOVERED**5' TOTAL FLUID****5' Mud w/Oil Spots**

(Tool was plugging off during FFP)

FP: 13 - 32# / 17 - 27#**SIP: 900 - 863#**

Temp: 100 Degrees F.

DST #2: 3,545' - 3,561'**LANSING 'A'****5" - 30" - 60" - 60"**

IF: Fair blow bldg to 7 inches.
ISIP: No blow. FF: Good blow BOB in 10 min
FSIP: Dead, no return blow.

RECOVERED**536' TOTAL FLUID****40' MCW with Free Oil on Top**

(40% M, 60% W)

496' VSII MCW (2% M, 98% W)

(Wlr Chl: 70,000 PPM)

FP: 23 - 75# / 81 - 267#**SIP: 826 - 760#**

Temp: 113 Degrees F.

At 3544': VIS 47, WT 9.1, WL 6.0, LCM 2#, CHL: 900 PPM

DST #3: 3,567' - 3,590'**LANSING 'C'****5" - 30" - 60" - 90"**

3,552' (-1,233')

ELOG:3,553' (-1,234')

LANSING 'C'

3,586' (-1,267')

ELOG:3,586' (-1,267')

LANSING 'D'

3,604' (-1,285')

ELOG:3,604' (-1,285')

LKC 'E'-'F'

3,619' (-1,300')

ELOG:3,619' (-1,300')

LKC 'G'

3,631' (-1,312')

ELOG:3,631' (-1,312')

MUNCIE CREEK

3,659' (-1,340')

ELOG:3,659' (-1,340')

LKC 'H'

3,680' (-1,361')

ELOG:3,680' (-1,361')

LKC 'I'

3,699' (-1,380')

ELOG:3,699' (-1,380')

LKC 'J'

3,706' (-1,387')

ELOG:3,706' (-1,387')

STARK SHALE

3,719' (-1,400')

ELOG:3,719' (-1,400')

LKC 'K'

3,728' (-1,409)

ELOG:3,728' (-1,409)

LKC 'L'

3,736' (-1,417')

ELOG:3,736' (-1,417')

BKC

3,743' (-1,424')

ELOG:3,743' (-1,424')

3560

3570

3580

3590

3600

3610

3620

3630

3640

3650

3660

3670

3680

3690

3700

3710

3720

3730

3740

3750

3760

3770

15'

30'

8

9

15'

30'

08

15'

30'

29

15'

30'

4

5

6

7

8

84

15'

30'

98

15'

30'

16

15'

30'

3

15'

30'

6

7

8

8

It sat-md-brn oil stn. VSSFO (live-md-brn), fr oily odr-(v.sli-sour-not salty), grades to Packstn clusters, crm-tn, gran, iso fr-gd intr-gran por/iso vug por in fn-xln, arg matrix. Sev: It evn stn on grms/por, druse-lined, p wht-gldn patchy fluor. Tr fus, VV/depth: Ls, sb-gran, iso p ppt/vug por, barren except in por. Mst: Ls, crm, fr-xln-chlky, foss, no vis por, tight, no stn, tr's Chrt, crm-tn, shrp, NS.

Fld Ls, crm-lt av. micro-xln, no vis por, no stn, sm chlkw/Tr Chrt, crm, Ls, crm, tn, to mottld lt-md gy, micro-fn xln, sli carb-dirty, ool /chlky in prt, no vis por, no stn, no odr, NS/Chrt, crm, trmslt-shrp, W/Sig inc

Clystns, v-c: rd-brn, sft, gm, gm-gy, lt-md gy.

LANS 'C': Fld Grainstn Clustrs, crm-tn, (md-srtd, rdd-oblong), fr-gd intr-gran por, cov in druse xl lining in por/over grms, evn md-brn stn, patchy p gldn fluor, strg oily-pungent odr, FSFO, SSG. Packstn, gran-sb gran in fn-xln matrix, leached w/grainy-granulr text, scat iso p-fr intr-gran /vug por, inc unevn lt stn, less sat, intrlyrd Chrt, v-c: clr-crm-tn-gy(varig), gy-spklld, blk, trmslt-opq, shrp-conchd.

Clystns, rd-br, dk-lt gy, gm, gm-gy, w/Lrd&wht gumbo clay, Ls, aa.

LANS 'D': Packstn, crm-wht, chlky, sb-gran-gran, chlky, fn-xln matrix, arg, Mny: unevn brn stn, to sppty stn in rough-leached sli-dolo surf text, p intr-xln por, scat - rare iso p ppt/shallow vug, p dull patchy fluor, rare VSSFO (lt micro-bds) whn brkn, w/Chrt, tn, blu-gy, conchd, shrp, trmslt-opq. Base/Mst: Ls, wht-crm, fn xln, chlky, leached edg surf, iso p ppt edge por, sppty dk brn dd oil stn, rare rel of oil (flky-dd), no fluor, sli-sour oily odr.

Abdt Cly, lt grm gv, gumbo, Ls, crm-gm, gv, fn-xln, chlky, no stn, NS

LKC 'E'-'F': Tr's Packstn, gran, crm, md-cse grm, p-iso fr intr-gran por, stn betwn grms, sm-druse lined, faint lt oily odr, md-brt fluor, rel rare flky dd-oil whn brkn unevn dk brn-blk stn, no odr, NSFO, w/Chrt, smoky gy, tn, trmslt, shrp, spptd.

LKC 'E'-'F': Tr Grmstn, md-grm, rdd-oblong, mod-srt p-fr-iso gd intr-grm por-druse lined, lt evn stn, GSFO, (lively lt brn) brt patchy fluor, lt oily odr to Packstn, sb rdd-rdd, md-cse grm, fn-xln, heavily leachd w/scat-iso p-fr-gd vugs/slots betwn sb-grms/foss casts, lt unevn stn, patchy gldn fluor, lt swt oily odr, FSFO, SSG. VIS 47, WT 8.9, LCM 4#

LKC 'G': Ls, wht, crm, crypto xln, sli-rough surf text in prt, chlky, p intr-gran por-no vis por, no stn, Tr sli-sb-gran, chlky, sli stn betwn grms, no sat, sppty fluor. Mst: dull min fluor. W/Chrt, wht, lt gy, crm, shrp, fresh, no stn, v. dull min fluor, no odr, NS.

Ls, crm- lt gy-wht, crypto-xln to fn-xln to chlky, tr faintly foss in prt, no vis por, no stn/sat, no odr NS. Tr ebdd foss frags. Sm Clystns, md gy, gm-gy, rd-brn. VIS 46, WT 9.0, LCM 4#

Ls, aa, w/Ls, lt gy-crm, fn-xln to chlky, Sm carb inclusions, p. to no vis por, no stn, no fluor, no odr, NS, Sli inc Clystns, v-c: W/Tr

MUNCIE CREEK: Blk carb Sh

Sh, blk, carb, sli-lam, bleedg gas bbl in prt, w/Ls, tn-brn, dk gy, v. fn-fn xln, dk gy inclns: sm: ool-foss, tight, no vis por, no fluor, no odr, NS

w/Clystns, lt-md gy, gm gy, rd-brn.

Clystns, dk-md gy, oliv gm-gy, dk gy, brk-rd-blk carb Sh w/Ls's, aa.

LKC 'H': 1 pc: Granulr Packstn, crm, rdd-sb-rdd embdd in fn xln matrix, leachd p-intr-gran por, partial lt stn betwn grms, p fluor, no odr, NS w/Much Ls, crm-wht, lt tn w/lt grn cast, crypto-xln to chlky, no vis por, tight, no stn, p min fluor, no odr, NS. Below Base: Ls, tn, in tn-md grm fn-xln matrix, no vis por, no stn, no fluor, no odr, NS. W/ inc Clystns, v-c: sft gumbo clay.

Fld Ls, pale-grm-gy, crypto-xln, no vis por, no stn, arg, hrd, few embdd foss frags, fus, no stn, no fluor, no odr, NS.

Ls, w/Ls aa, w/Much Clystns, v-c, srt, w/gumbo clay, B/LKC 'H': Few pcs: Packstn, crm-wht, sb-gran-gran in fn-xln matrix, tight, p to iso fair intr-gran por w/druse lined por/grms, lt unevn stn, lt fleeting oily odr, md brt gldn fluor, NSFO.

LKC 'I'-'J': Num: Packstn, gran, crm-tn (stn), rdd-oblong grms, scat p-fr intr-gran por-druse lined. Sev: p to iso rare fr ppt / vug por, evn lt-md stn, full sat in p-sig leachd surfs, GSFO (lt brn-live), SSG from por, patchy dull-brt fluor, Sli-swt oily odr. Mst: Grades into Ls, crm-tn, fn-md xln, gran-grainy, wdeg leachd surfs: scat p ppt to rare fr iso vug por, lt tn evn-unev stn/sat, FSFO/SSG. Gen: tt. Tr's embdd Chrt, rd-org, transl, shrp.

STARK SH: Fld Clystns, brick-rd, brn, lt-dk gy, gm-gy, tn, mar, prpl.

LKC 'K': Tr Packstn, crm-tn, gran, chlky, mod srtd, p-rare fr intr-gran por, Mst: unevn stn, iso p-fr ppt/vug por, dull fluor. Mst: Micro-grainstn in wht, packstn fn-xln matrix, Few: p-iso fr intr-gran por/p iso ppt por, spptd-unev dk brn stn betwn grms. Sev: brt patchy gldn fluor, Fair-rich swt oily odr, FSFO & G, at the top W/ Depth: Packstn, crm-wht, sb-gran, p por, sppty dk stn p fluor, NS.

LKC 'L': Micro-grainstn in wht, packstn fn-xln matrix, crm-wht, fn-xln, chlky, p-intr-xln/ gran por, spptd dk brn-blk stn betwn grms, p sat, v. lt odr, NSFO. Sm: fn-xln w/leachd edges, v.p.-fr iso ppt / vug por, spptd unevn stn, dull fluor.

Fld Clystns, rd, rd-brn, gm, gm-gy, gy, tn-brn. W/Gumbo clay, rd, gy, w/embdd ind sd grms, clr, sb-ang, w/Ls, crm, v. fn-xln, v. faintly foss, no vis por, no stn, no odr, no fluor, NS.

Much Clystns, rd, rd-brn, gm, gm-gy, gy, tn-brn. W/Gumbo clay, rd, Tr's Ls, wht-crm, v. fn-xln to chlky in prt, v. faintly foss, v. p intr-xln por, tight, p min fluor, no odr, NS.

Ls, wht-crm, v. fn-xln to chlky in prt, aa, v. faintly foss, v. p intr-xln por, tight, no stn, p fluor, no odr, NS, 1 pc: sli spptd gils blk dd stn. W/Ls, wht, lky spklld chlky, p por, no fluor, NS. W/Clystns, rd-br, gm

IF: Weak blow bldg to 3 inches.

SIP: No blow. FF: Good blow BOB in 29 min

FSIP: Dead, no return blow.

RECOVERED

351' TOTAL FLUID

1' Free Oil (22 Deg API)

40' MCW (40% M, 60% W)

310' SMCW (80%W, 20% M)

(WTR CHL: 72,000 PPM)

FP: 18 - 57# / 60 - 159#

SIP: 563 - 532#

Temp: 110 Degrees F.

BEFORE DST#3: VIS 57, WT 9.0, LCM 4#

At 3592': VIS 45, WT 8.9, WL 6.8, LCM 2#,

CHL: 1800 PPM

DST #4: 3,605' - 3,629'

LKC 'D' - 'F'

5" - 30" - 60" - 60"

IF: Fair surface blow bldg to 6 inches.

ISIP: No return blow

FF: Good blow BOB in 7 Min.

FSIP: Weak surface blow to 1", then 1/4"

RECOVERED

546' GAS IN PIPE

444' TOTAL FLUID

258' GC Oil (39 Deg API) (20%G, 80%O)

62' GOCM (10%G, 30%, 60% M)

62' GWCOM (%: 5-G, 15-O, 10-W, 70-M)

62' GOCMW (%: 10-G, 10-O, 50-W, 30-M)

(WTR CHL: 51,000 PPM)

FP: 27 - 67# / 68 - 166#

SIP: 833 - 784#

Temp: 111 Degrees F.

DST #5: 3,686' - 3,716'

LKC 'I' & 'J'

5" - 30" - 60" - 60"

IF: Blow to 3 Inches. ISIP: No return blow

FF: Bldg blow to BOB in 45 Min.

FSIP: No return blow,

RECOVERED

102' GAS IN PIPE

206' TOTAL FLUID

20' Gsy Oil (37 Deg API) (10%G, 90%O)

62' O&WCM (10%O, 10% W, 80% M)

124' OCMW (10% O, 0% W, 20% M)

(WTR CHL: 60,000 PPM)

FP: 15 - 36# / 41 - 102#

SIP: 542 - 519#

Temp: 110 Degrees F.

AT 3,716': VIS 40, WT 9.2 WL 7.6, LCM 2#,

CHL 2200 PPM

DST #6: 3,717' - 3,743'

LKC 'K' & 'L'

5" - 30" - 60" - 60"

IF: Weak blow bldg to 1-1/2 inch. ISIP: No

return blow. FF: Fair bldg blow to 4" in bkt.

FSIP: No return blow

RECOVERED

129' TOTAL FLUID

67' MCW- Oil Spots (50% W, 50% M)

62' WCM (20% W, 80% M)

(WTR CHL: 82,000 PPM)

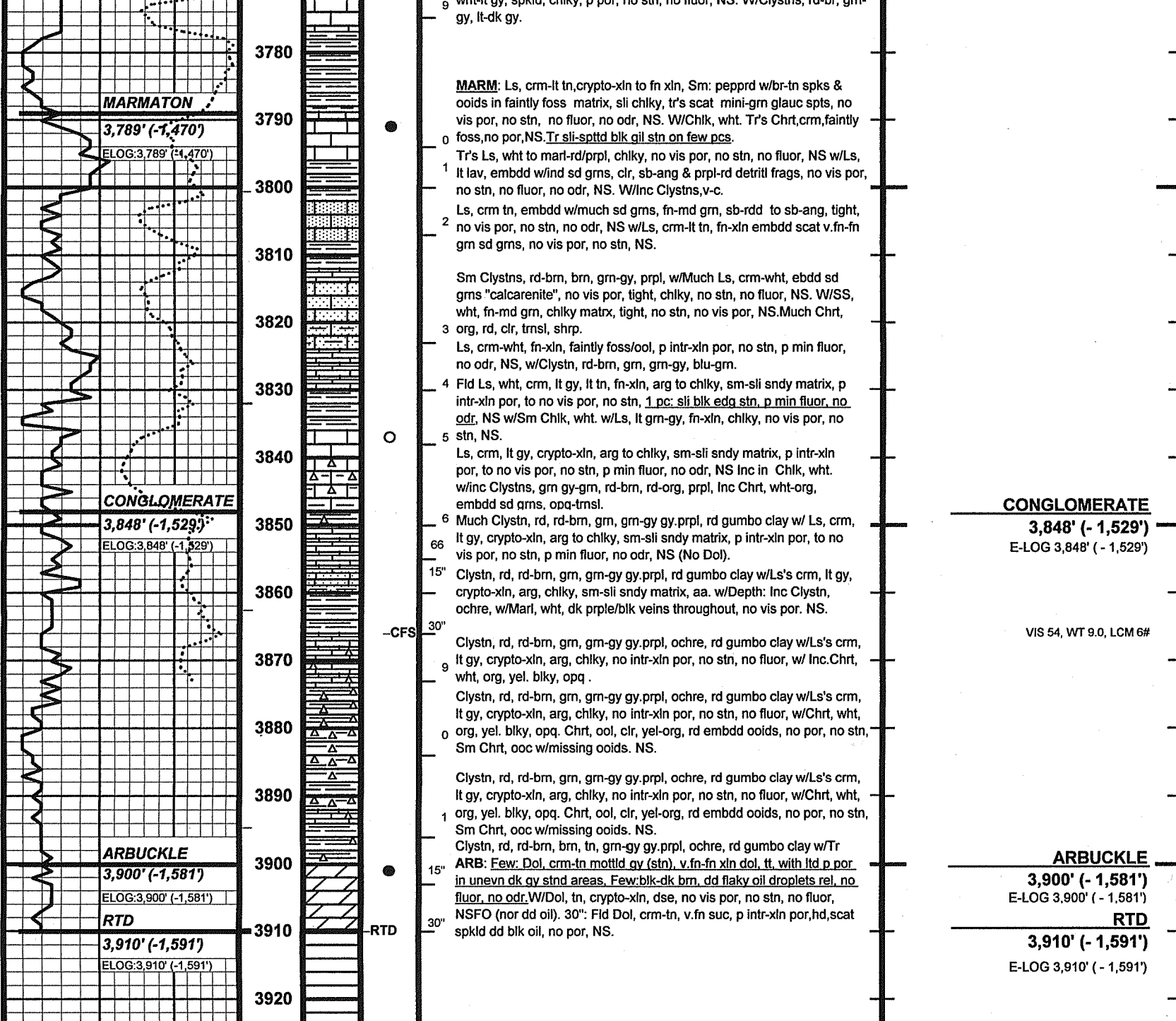
FP: 14 - 23# / 27 - 169#

SIP: 1228 - 1087#

Temp: 105 Degrees F.

AT 3,743': VIS 47, WT 9.0 WL 6.8, LCM 2#,

CHL 1800 PPM



OPERATOR: GATEWAY RESOURCES, LLC

CONTRACTOR: W.W. DRILLING, LLC RIG 6

LEASE: #1-8 'A' WORCESTER

ELEVATION: KB: 2,319'

TOTAL DEPTH: RTD: 3,910' (-1,591') LTD: 3,910' (-1,591')

LOCATION: 900' FSL & 375' FEL

SECTION 8 TOWNSHIP 7S, RANGE 22W

COUNTY: GRAHAM

STATE: KANSAS

GEOLOGIST: GARY F. GENSCH

TESTER: TRILOBITE TESTING

LOGGER: NABORS COMP & PROD

MUD: MORGAN MUD, INC.

API: 15-065-23,992-0000