

OPERATOR

Company: IA OPERATING, INC.
 Address: 9915 W 21ST ST
 STE B
 WICHITA, KS 67205
 Contact Geologist: JULIE BURROWS
 Contact Phone Nbr: (620) 721-0036
 Well Name: ARCHER #21-2
 Location: NW NW SE NE Sec. 21 - 8S - 26W
 API: 15-179-21407
 Pool:
 State: KANSAS
 Field: STUDLEY WEST
 Country: USA

Scale 1:240 Imperial

Well Name: ARCHER #21-2
 Surface Location: NW NW SE NE Sec. 21 - 8S - 26W
 Bottom Location:
 API: 15-179-21407
 License Number: 33335
 Spud Date: 7/18/2015 Time: 12:45 PM
 Region: SHERIDAN COUNTY KANSAS
 Drilling Completed: 7/24/2015 Time: 3:49 AM
 Surface Coordinates: 1518' FNL & 1076' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 2413.00ft
 K.B. Elevation: 2421.00ft
 Logged Interval: 3250.00ft To: 3880.00ft
 Total Depth: 3880.00ft
 Formation: LANSING - KANSAS CITY
 Drilling Fluid Type: FRESH WATER / CHEMICAL GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -100.2218082
 Latitude: 39.3452584
 N/S Co-ord: 1518' FNL
 E/W Co-ord: 1076' FEL

LOGGED BY

Company: BIG CREEK CONSULTING, INC.
 Address: 1909 MAPLE
 ELLIS, KS 67637

Phone Nbr: (785) 259-3737
 Logged By: GEOLOGIST Name: JEFF LAWLER

CONTRACTOR

Contractor: DISCOVERY DRILLING
 Rig #: 4
 Rig Type: MUD ROTARY
 Spud Date: 7/18/2015 Time: 12:45 PM
 TD Date: 7/24/2015 Time: 3:49 AM
 Rig Release: Time:

ELEVATIONS

K.B. Elevation: 2421.00ft
K.B. to Ground: 8.00ft


Ground Elevation: 2413.00ft

NOTES

WELL COMPARISON SHEET

FORMATION	ARCHER 21-2								C-G DRILLING & N APPLEMAN								HESS OIL CO.								D&D DRLG. CO.							
	NW NE SE 21-8-26				NE NE SW 21-8-26				CE/2 NW 21-8-26				NE NE 21-8-26																			
	2421		2413		2491		2423		2432		2415																					
	KB	GL	KB	GL	KB	GL	KB	GL	KB	GL	KB	GL	KB	GL	KB	GL																
	LOG TOPS		SAMPLE TOPS		LOGS		LOG CORR.		SMPL. CORR.		COMP. CARD		LOGS		LOG CORR.		SMPL. CORR.		COMP. CARD		LOGS		LOG CORR.		SMPL. CORR.							
DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM					
ANHYDRITE TOP	2054	367	2054	367	2114	377	- 10	- 10	2048	375	- 8	- 8	2064	368	- 1	- 1	2056	359	+ 8	+ 8												
BASE	2088	333	2088	333	2148	343	- 10	- 10																								
TOPEKA	3353	-932	3358	-937	3420	-929	- 3	- 8					3363	-931	- 1	- 6	3362	-947	+ 15	+ 10												
HEEBNER	3559	-1138	3562	-1141	3623	-1132	- 6	- 9	3566	-1143	+ 5	+ 2	3570	-1138	+ 0	- 3	3574	-1159	+ 21	+ 18												
TORONTO	3581	-1160	3582	-1161	3645	-1154	- 6	- 7					3594	-1162	+ 2	+ 1	3595	-1180	+ 20	+ 19												
LKC	3596	-1175	3597	-1176	3660	-1169	- 6	- 7	3603	-1180	+ 5	+ 4	3609	-1177	+ 2	+ 1	3614	-1199	+ 24	+ 23												
BKC	3807	-1386	3813	-1392	3879	-1388	+ 2	- 4	3823	-1400	+ 14	+ 8	3820	-1388	+ 2	- 4	3826	-1411	+ 25	+ 19												
TOTAL DEPTH	3880	-1459	3880	-1459	3925	-1434	- 25	- 25	3837	-1414	- 45	- 45	3850	-1418	- 41	- 41	3850	-1435	- 24	- 24												

DST #1 LKC C-D 3613' - 3650'

	DRILL STEM TEST REPORT	
	<table style="width: 100%;"> <tr> <td style="width: 50%;"> IA Operating Inc 9915 W 21st St Ste B Wichita KS 67205 ATTN: Jeff Lawler </td> <td style="width: 50%; text-align: right;"> 21 8s 26w Sheridan Archer # 21-2 Job Ticket: 62393 DST#: 1 Test Start: 2015.07.22 @ 11:11:00 </td> </tr> </table>	IA Operating Inc 9915 W 21st St Ste B Wichita KS 67205 ATTN: Jeff Lawler
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GENERAL INFORMATION:

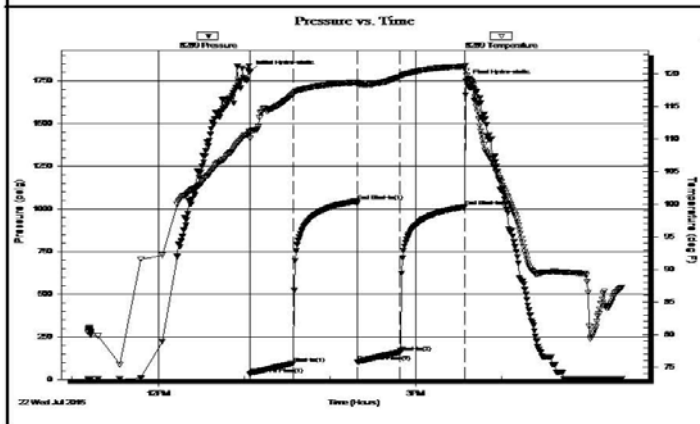
Formation: **LKC "C & D"**
 Deviated: No Whipstock ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 13:04:15 Tester: Jim Svaty
 Time Test Ended: 17:24:00 Unit No: 76

Interval: **3613.00 ft (KB) To 3650.00 ft (KB) (TVD)**
 Reference Elevations: 2421.00 ft (KB)
 Total Depth: 3650.00 ft (KB) (TVD) 2413.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 8289 Outside

Press@RunDepth: 159.29 psig @ 3618.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2015.07.22 End Date: 2015.07.22	Last Calib.: 2015.07.22
Start Time: 11:11:02 End Time: 17:24:15	Time On Btm: 2015.07.22 @ 13:04:00
	Time Off Btm: 2015.07.22 @ 15:35:15

TEST COMMENT: 30-IF- BOB in 17min.
 45-ISI- No Blow
 30-FF- BOB in 22min.
 45-FSI- No Blow



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1800.48	111.20	Initial Hydro-static
1	30.05	110.05	Open To Flow (1)
31	95.38	116.88	Shut-in(1)
75	1044.32	118.66	End Shut-in(1)
76	103.77	118.34	Open To Flow (2)
105	159.29	119.54	Shut-in(2)
151	1011.35	121.13	End Shut-in(2)
152	1749.26	120.45	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
62.00	Oil Specked MCW 45% m 55% w	0.59
248.00	MCW %5m 95% w	3.48

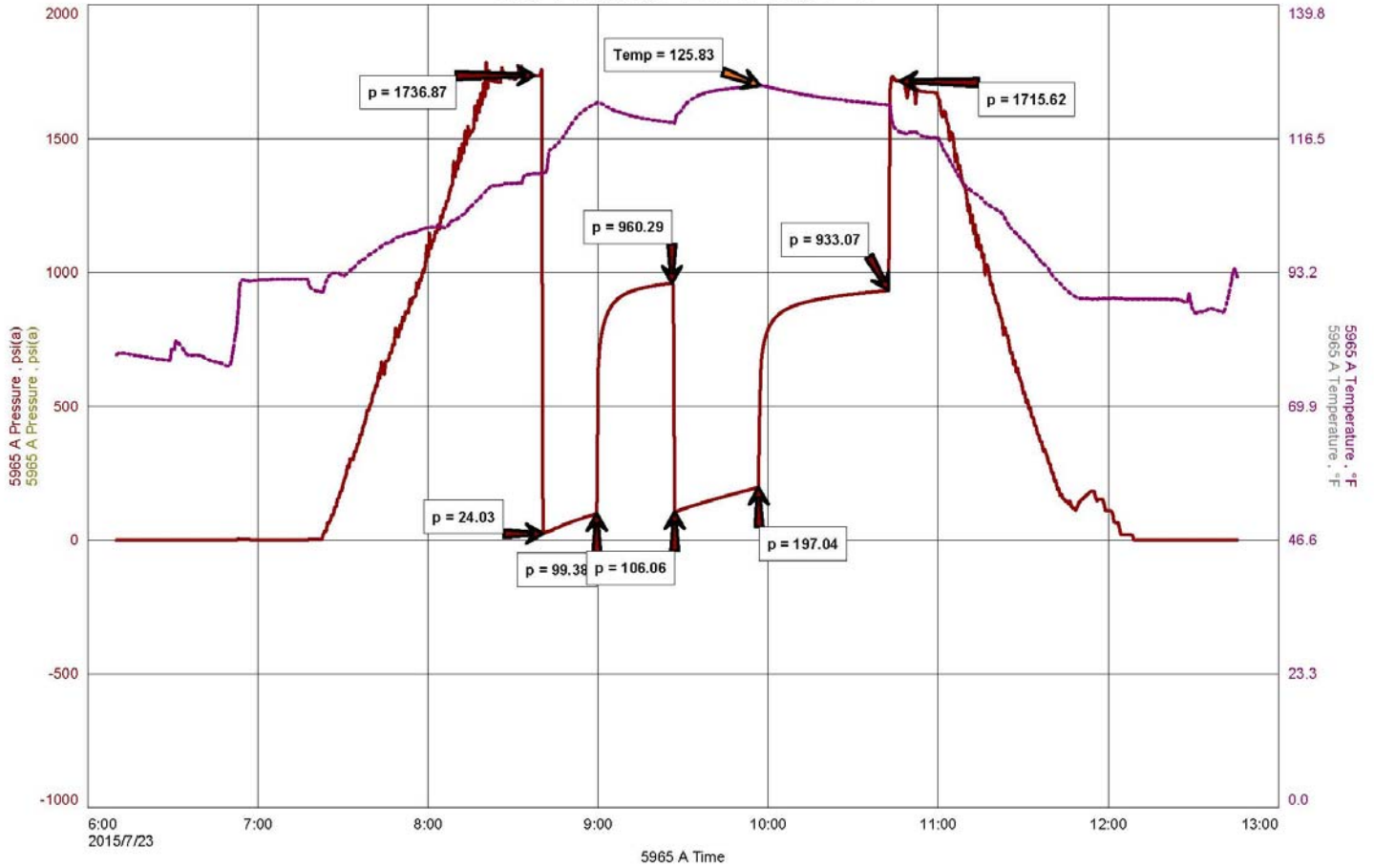
Gas Rates		
Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DST #2 LKC E-F 3653' - 3682'

IA Operating
 DST 1 LKC E0F 3653-3682
 Start Test Date: 2015/07/23
 Final Test Date: 2015/07/23

KS Archer 21-2
 Formation: LKC E-F
 Job Number: W198

KS Archer 21-2 DST 1

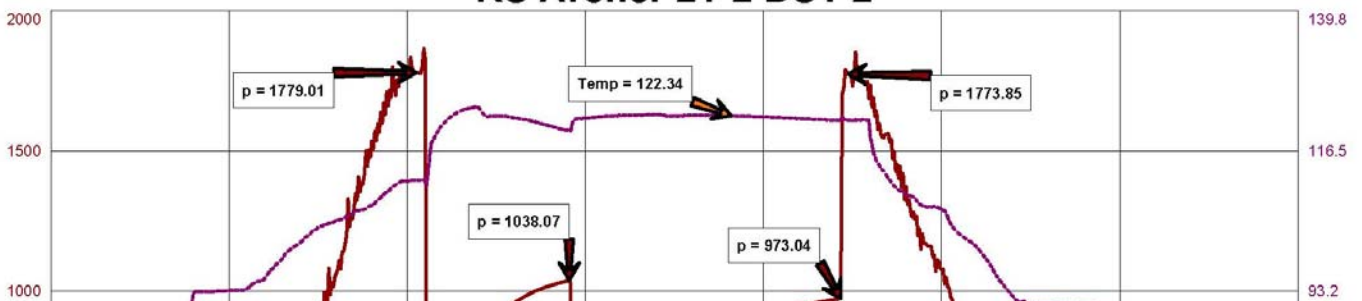


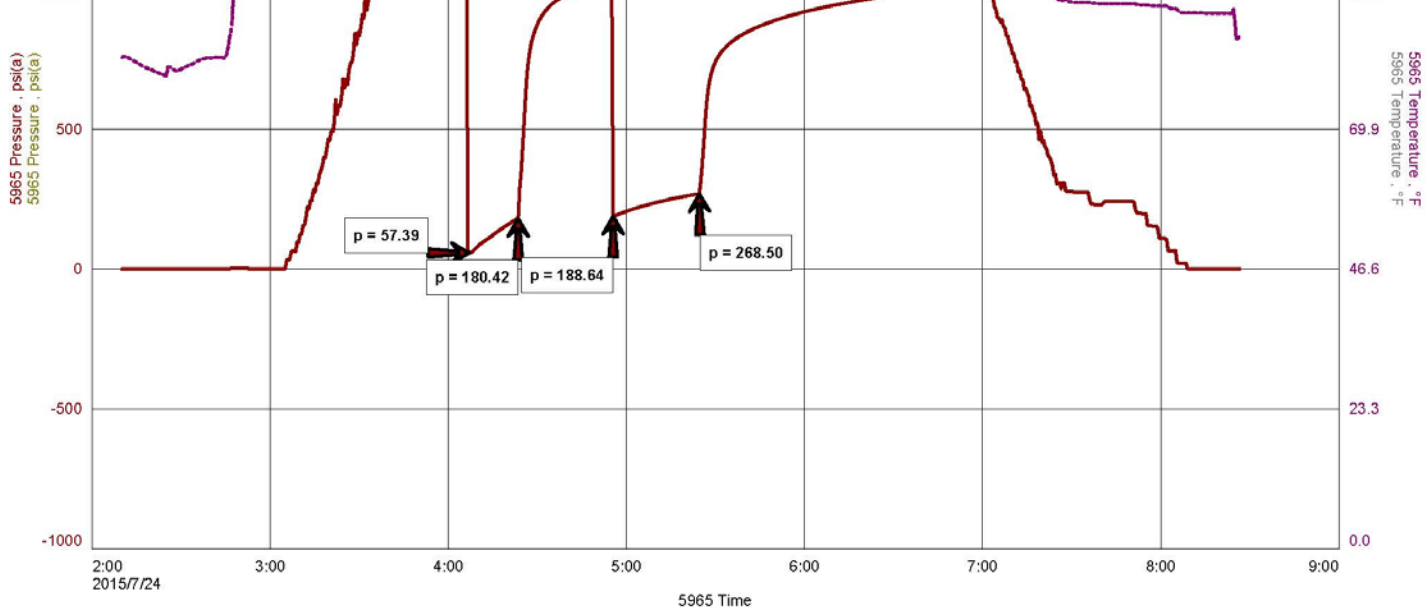
DST #3 LKC H-K 3707' - 3800'

IA Operating
 DST 2 LKC H-K 3707-3800
 Start Test Date: 2015/07/24
 Final Test Date: 2015/07/24

KS Archer 21-2
 Formation: LKC H-K
 Job Number: W199

KS Archer 21-2 DST 2





C:\Users\Diamond\Desktop\K5 Archer 21-2 DST 2 FKT 24-Jul-15 Ver

Fast

DST #4 LKC H (STRADDLE) 3707' - 3733'

ROCK TYPES

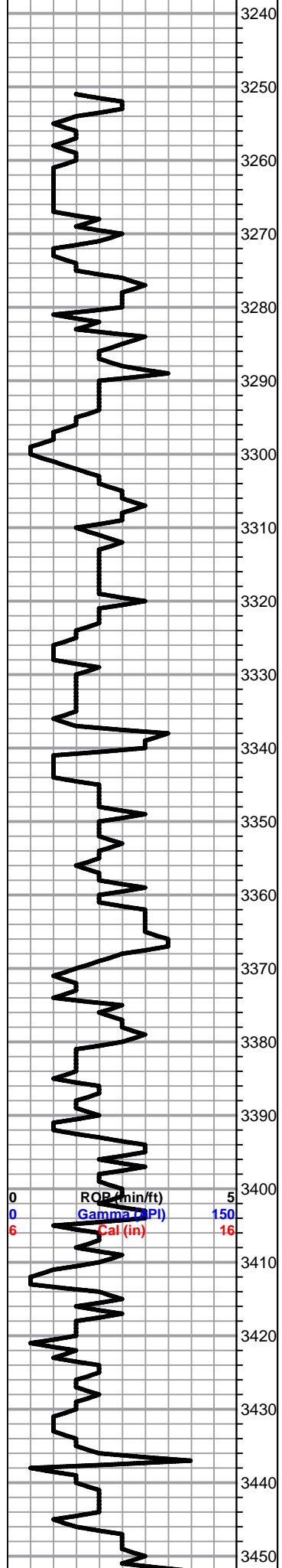
- Lmst fw7>
- shale, gry
- Carbon Sh
- shale, red

OTHER SYMBOLS

- | | |
|--|--|
| <p>MISC</p> <ul style="list-style-type: none"> Daily Report Digital Photo Document Folder Link Vertical Log File Horizontal Log File Core Log File Drill Cuttings Rpt | <p>DST</p> <ul style="list-style-type: none"> DST Int DST alt |
|--|--|

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

Curve Track #1	Depth Intervals	DST	Lithology	Oil Show	Geological Descriptions	Curve Track #3
ROP (min/ft) Gamma (API) Cal (in)	Cored Interval DST Interval					
1:240 Imperial 0 ROP (min/ft) 5 0 Gamma (API) 150 6 Cal (in) 16	3210 3220 3230				<p>1' DRILL TIME THROUGH ANHYDRITE FROM 2040' - 2120' 1' DRILL TIME FROM 3250' - RTD 10' WET/DRY SAMPLES FROM 3300' - RTD</p> <p>GEOLOGICAL SUPERVISION BY JEFF LAWLER FROM 3250' - RTD</p> <p>8 5/8" SURFACE PIPE SET @ 240.64' SURVEY 1/2 degree</p> <p>ANHYDRITE TOP 2054' (+367) E-LOG 2054' (+367) ANHYDRITE BASE 2088' (+333) E-LOG 2088' (+333)</p>	1:240 Imperial



Dol/Lm- Cream Off White, mix of VFXLN well cemented dolomite w/ consistent micro XLN porosity, w/ fsl & sl oolitic FXLN Ls, sctrd clear replacement cementation & reXLN, sctrd XLN & fn ppt porosity, all clean & barren, Sh- Brick Red Gray Lm Green, gritty & earthy, silty & calcareous

Lm- Cream Buff, A/A w/ less dolomite, influx of oolitic & fsl Ls, mod. dev. w/ sctrd fn ppt & ppt porosity, barren, few pcs of chalky mud supported matrix Ls w/ oolites

Sh- Gray Brick Red Purple Gray, arenaceous shale, several pcs of frosted Fn Grn, loosely cemented Ss, consolidated & well sorted, spkld w/ glauconite, barren

Sh- A/A Influx of dense & waxy Lm green shale

Sh- A/A w/ influx of dense & calcareous gray shale

Sh- A/A w/ influx of dense & waxy brick red, dense & calcareous purple shale

TOPEKA 3358' (-937) E-LOG 3353' (-932) Lm- Buff Cream, VF-FXLN, grainy & fsl, sl oolitic, poorly dev. w/ mostly consistent vry fn ppt inter fsl porosity, barren, few pcs of VFXLN dense dolomite w/ consistent micro XLN porosity

Lm- A/A, slightly arenaceous, barren

Lm- Cream Off White, FXLN, loosely cemented & sl chalky w/ VF qtz. inclusions, few pcs of fsl sl cherty Ls w/ sctrd clear replacement cementation & sctrd reXLN, XLN porosity, barren

Lm- Cream Buff, VF-FXLN, dense, well cemented, mostly tight w/ min. vis. porosity

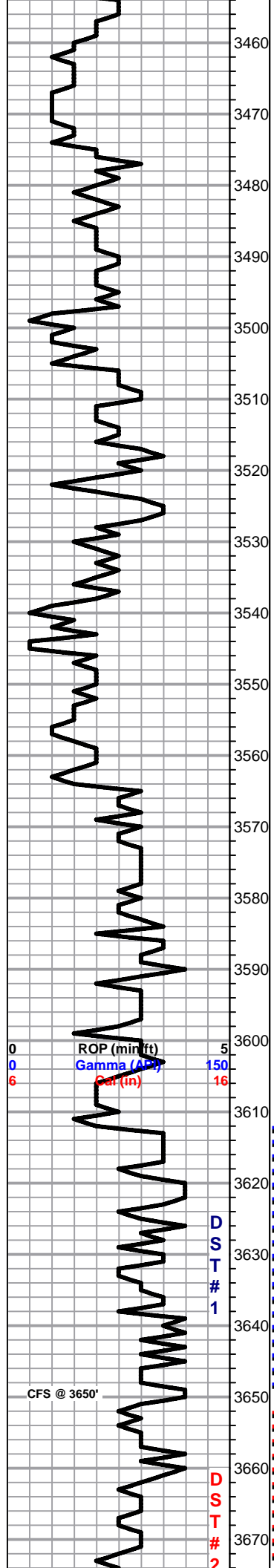
Sh- Gray, silty & sl arenaceous, micaceous

Lm- Cream Off White, VFXLN, dense, well cemented, sl fsl & oolitic, poorly dev. w/ sctrd micro XLN porosity, reXLN & clear replacement cementation, several pcs of VFXLN dolomite, dense & well cemented, consistent micro XLN porosity, all barren

Lm- Tan, VFXLN, densely packed oolitic biomicrite w/ clear replacement cementation, no vis. porosity, slick & porcelain like

Chert- White, massive fresh bedded sl fsl w/ fusulinids, gritty & sl dolomitic, mostly consistent vry fn ppt inter fsl porosity, barren, few vitreous pcs., some soft white chalk

Sh- Black Gray Brick Red Lm Green, fissile & carbonaceous, dense & waxy, silty &



calcareous

Sh/Ss- A/A w/ calcareous shaley Ss/sandy Sh, few frosted Fn Grn clusters spkld w/ glauconite, consolidated & well sorted, mature, barren

Lm- Cream Off White, loosely cemented & crumbly, arenaceous, sl chalky/limey

Sh- Gray Brown Brick Red, silty calcareous & micaceous, gritty & earthy

Lm- White, soft white mud supported matrix, chalky & loosely cemented

Sh- Black Gray Lm Green, fissile & carbonaceous, silty, dense & waxy

Lm- Cream Off White, VF-FXLN, fsl, poorly dev. w/ sctrd XLN porosity, some sctrd reXLN, barren

Lm- Tan Buff, VFXLN, dense, well cemented, mostly tight w/ sctrd XLN porosity

Lm- Cream Tan, VFXLN, dense, well cemented & tight

Lm- Lt Gray, massive, well cemented, fn grn qtz inclusions, no vis. porosity, some clear replacement cementation

HEEBNER 3562' (-1141) E-LOG 3559' (-1138) Sh- Black, fissile & carbonaceous

Sh- Gray Brown, silty & calcareous, dense & waxy

TORONTO 3582' (-1161) E-LOG 3581' (-1160) Lm- Cream Off White, VFXLN, dense, well cemented, mostly tight w/ sctrd micro XLN porosity, barren, grainy

Sh- Gray, silty & calcareous

LKC 3597' (-1176) E-LOG 3596' (-1175) Lm- Cream Off White, FXLN, fsl & oolitic, mod. dev. w/ sctrd XLN porosity, some sctrd reXLN, barren, some soft white chalk

Lm- Cream Off White, FXLN, fsl, poorly dev. w/ dense reXLN, XLN porosity, barren

Sh- Gray Brick Red, silty & arenaceous, gritty & earthy, some frosted consolidated fn grn Ss, mod. cementation, barren

Lm- Cream Off White, FXLN, fsl & oolitic, mod. well dev. w/ mostly consistent fn ppt inter oolite & XLN porosity, few sub-oolite clusters, SCTRDRK STN, OILY SHEEN, TR-FR FO UPON CRUSH, TR GSY BUBBLES UPON CRUSH, FR ODR

Sh- Maroon, gummy wash

Lm- Off White, VF-FXLN, dense, mostly tight & poorly dev. w/ sctrd XLN porosity, some soft white chalk, barre & clean

Lm- Cream Off, VFXLN, dense, well cemented, mostly tight w/ min. vis., barren

Lm- Cream Buff, FXLN, dense, well cemented, sl fsl, poorly dev. w/ sctrd XLN porosity, some sl chalky in part, barren

SHORT TRIP STRAP -0.15' SURVEY 1/2 dgr.

DST #1 LKC C-D 3613' - 3650 30-45-30-45

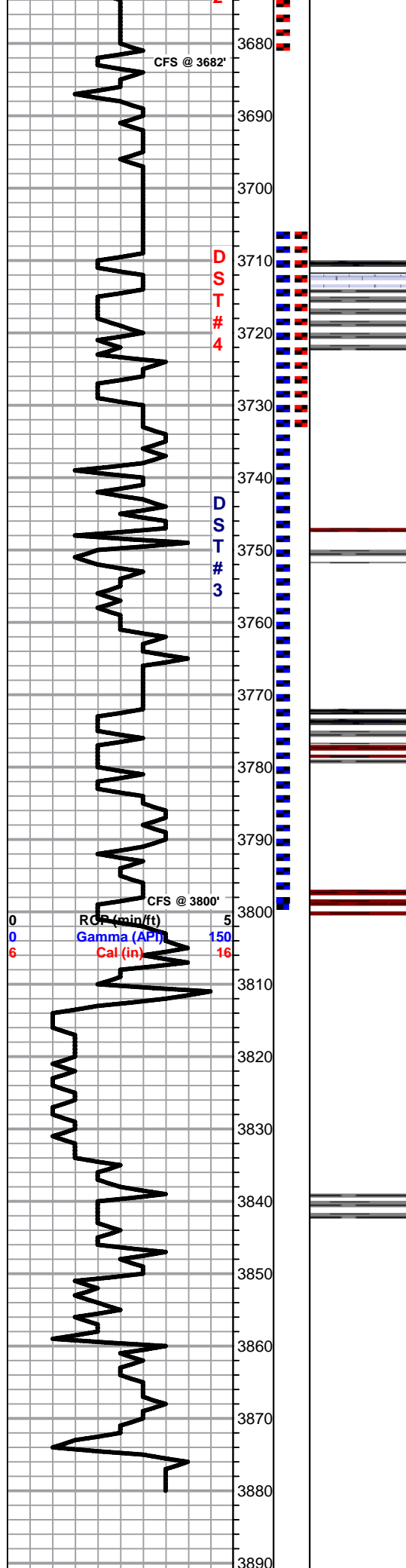
310' TOTAL FLUID 62' OSPMW (55%W, 45%M) 248' MCW (95%W, 5%M)

IFP: 30-9+5# FFP: 103-159# SIP: 1044-1011# BHT: 121 dgr. CHLOR: 90,000

C.jpg

DST #2 LKC E-F 3653' - 3682' 15-30-30-45 400' MCW (25%M, 75%W)

IFP: 99-24# FFP: 106-197# SIP: 960-933# BHT: 126 dgr. CHLOR: 88,000



Lm- Cream Tan, FXLN, fsl & oolitic, mod. well dev. w/ sctrd consistent fn ppt inter oolite porosity, LT SCTRD STN, NSFO, WK ODR, some sctrd reXLN w/in porosity

Lm- White Off White, VF-FXLN, dense, mostly well cemented & poorly dev. w/ sctrd micro XLN & XLN porosity, vry clean & barren

Lm/Chert- Cream Off White White, A/A w/ fresh bedded sl fsl vitreous chert w/ vis porosity, some chalky mud supported matrix Ls & soft white chalk, all vry clean

Sh- Black Gray, fissile & carbonaceous, silty & calcareous

Lm- Cream Off White, VF-FXLN, fsl & oolitic, mod. dev. w/ sctrd ppt inter oolite & XLN porosity, LT STN, NSFO, DEAD OIL??, NO ODR, some sctrd reXLN w/in porosity

Lm- Cream Off White, VFXLN, dense, well cemented, mostly tight w/ min. vis. porosity

Lm- Tan, VF-FXLN, dense, well cemented, sl fsl, poor vis. porosity

Lm- Cream Off White, FXLN, fsl. & sl oolitic well dev. w/ consistent fn ppt inter oolite porosity throughout, LT BRWN STN, TR FO, WK ODR

Lm- Cream Off White, VF-FXLN, dense, well cemented, poorly dev. w/ sctrd XLN porosity, barren

Sh- Black Gray Maroon, soft & carbonaceous, silty & calcareous, gritty & earthy

Lm- Tan, VF-FXLN, densely packed oolitic biomicrite w/ clear replacement cementation, rare sctrd ppt inter oolite porosity, SCTRD DRK STN, SL OILY SHEEN, 1-2 PCS W/ TR FO, WK ODR, FEW PCS W/ EDGE STN

Lm- Cream Tan, VF-FXLN, dense, well cemented, poorly dev. w/ sctrd XLN porosity, barren

Lm- Off White, VF-FXLN, fsl & sl oolitic, poorly dev. w/ sctrd XLN porosity, some soft white chalk, barren

BKC 3813' (-1392) E-LOG 3807' (-1386) Sh- Maroon Gray, gritty & earthy, few argillaceous clumps, silty & calcareous

Sh- Maroon, A/A/ w/ influx of argillaceous clumps & arenaceous maroon shale

Lm- Tan Cream, VF-FXLN, fsl & oolitic, poorly dev. w/ dense XLN porosity, some sl unconsolidated, all barren

Lm- White Off White, loosely cemented mud supported matrix, pebbly & unconsolidated, chalky w/ poor vis. porosity, several pcs of detrital salmon colored chert

Lm- Buff Cream, VF-FXLN, dense, well cemented, sl fsl & poorly dev., some w/ dense XLN porosity, most w/ sctrd XLN porosity, barren

Lm- A/A loosely cemented, sl arenaceous & chalky

LTD 3880' (-1459) RTD 3880' (-1459) @ 15:49 7/24/2015

E_F.jpg

DST #4 LKC H (STRADDLE) 3707' - 3733'

H.jpg

J.jpg

K.jpg

DST #3 LKC H-K 3707' - 3800' 15-30-30-60

970' TOTAL FLUID
400' GIP
120' FREE OIL (GR: 39 API)
850' OMCW (5%O, 20%M, 75%W)
IFP: 57-180#
FFP: 189-269#
SIP: 1038-973#
CHLOR: 80,000

CFS 20"-40"-60' SURVEY TOH FOR LOG

C.jpg

A001 1280x1024 2015/07/22 05:18:03 Unit: mm Magnification: 96.9 x 1



C.ZONE X 25

E_F.jpg



H.jpg



J.jpg



K.jpg

A005 1280x1024 2015/07/23 22:56:58 Unit: mm Magnification: 116.2 x 1

