KOLAR Document ID: 1312670

Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1
January 2018
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 4767
Name: Ritchie Exploration, Inc.
Address 1: 8100 E 22ND ST N # 700
Address 2: BOX 783188
City: WICHITA State: KS Zip: 67278 + 3188
Contact Person: Peter Fiorini
Phone: (316) 691-9500
CONTRACTOR: License # 33575
Name: WW Drilling, LLC
Wellsite Geologist: John Goldsmith
Purchaser: CHS

Designate Type of Completion:
☑ New Well ☐ Re-Entry ☐ Workover
☑ Oil ☐ WSW ☐ SWD
☐ Gas ☐ DH ☐ EOR
☐ OG ☐ GSW
☐ CM *(Coal Bed Methane)*
☐ Cathodic ☐ Other *(Core, Expl., etc.)*:

If Workover/Re-entry: Old Well Info as follows:
Operator:
Well Name:
Original Comp. Date: Original Total Depth:
☐ Deepening ☐ Re-perf. ☐ Conv. to EOR ☐ Conv. to SWD
☐ Plug Back ☐ Liner ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ EOR Permit #:
☐ GSW Permit #:

04/23/2016	05/04/2016	05/04/2016
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No.: 15-109-21459-00-00
Spot Description: 160'N & 105'W of
_ - _ - W2 - W2 Sec. 14 Twp. 15 S. R. 36 ☐ East ☑ West
2480 Feet from ☑ North / ☐ South Line of Section
555 Feet from ☐ East / ☑ West Line of Section
Footages Calculated from Nearest Outside Section Corner:
☐ NE ☑ NW ☐ SE ☐ SW
GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Logan
Lease Name: Koehn-Mollenkamp Well #: 1
Field Name: Rackmaster
Producing Formation: Altamont
Elevation: Ground: 3314 Kelly Bushing: 3319
Total Vertical Depth: 4927 Plug Back Total Depth: 4892
Amount of Surface Pipe Set and Cemented at: 250 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 2542 Feet
If Alternate II completion, cement circulated from: 0
feet depth to: 2542 w/ 375 sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)
Chloride content: 12200 ppm Fluid volume: 900 bbls
Dewatering method used: Evaporated
Location of fluid disposal if hauled offsite:
Operator Name:
Lease Name: License #:
Quarter Sec. Twp. S. R. ☐ East ☐ West
County: Permit #:

AFFIDAVIT
I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY
☑ **Confidentiality Requested**
Date: 07/25/2016
☑ **Confidential Release Date:** 07/25/2018
☑ **Wireline Log Received** ☐ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** Karen Ritter **Date:** 07/25/2016

Operator Name: Ritchie Exploration, Inc. Lease Name: Koehn-Mollenkamp Well #: 1

Sec. 14 Twp. 15 S. R. 36 ☐ East ☑ West County: Logan

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken *(Attach Additional Sheets)*	☑ Yes	☐ No	
Samples Sent to Geological Survey	☑ Yes	☐ No	
Cores Taken	☐ Yes	☑ No	
Electric Log Run	☑ Yes	☐ No	
Geologist Report / Mud Logs	☐ Yes	☐ No	

List All E. Logs Run:

Dual Induction Log
Dual Comp Porosity Log
Gamma Ray CCL Log

☐ Log Formation (Top), Depth and Datum ☑ Sample

Name	Top	Datum
See Attached		

CASING RECORD ☑ New ☐ Used

Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12.25	8.625	28	250	Common	175	3% cc, 2% gel
Production	7.875	5.5	15.5	4923	OWC	200	10% salt, 2% gel, 1/4% CDI-26 and 5-1/2

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
☐ Perforate ☐ Protect Casing ☐ Plug Back TD ☐ Plug Off Zone	-			
	-			

1. Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☑ No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/ Injection: 06/08/2016	Producing Method: ☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)*				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	40.03		8.40		30

DISPOSITION OF GAS:	METHOD OF COMPLETION:	PRODUCTION INTERVAL:
☐ Vented ☐ Sold ☐ Used on Lease *(If vented, Submit ACO-18.)*	☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*	Top / Bottom

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*

TUBING RECORD:	Size:	Set At:	Packer At:
	2.88	4880	

Mail to: KCC - Conservation Division, 266 N. Main, Suite 220, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	Ritchie Exploration, Inc.
Well Name	Koehn-Mollenkamp 1
Doc ID	1312670

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	8.625	28	250	Common	175	3% cc, 2% gel
Production	7.875	5.5	15.5	4923	OWC	200	10% salt, 2% gel, 1/4% CDI-26 and 5-1/2% Kol-Seal

RITCHIE
EXPLORATION, INC.
Wichita, Kansas

#1 Koehn-Mollenkamp

2480' FNL & 555' FWL
160' N & 105' W of W/2 W/2 Section 14-15S-36W
Logan County, Kansas
Dirks NE Prospect
2016 Drilling Program
API# 15-109-21459-0000
Elevation: GL: 3314', KB: 3319'

Sample Tops			Ref. Well
Anhydrite	2599'	+720	-15
B/Anhydrite	2618'	+701	-16
Heebner	4032'	-713	-17
Toronto	4054'	-735	-22
Lansing	4082'	-763	-18
Muncie Shale	4248'	-929	-13
Stark Shale	4343'	-1024	-14
Hush	4388'	-1069	-14
BKC	4422'	-1103	-12
Marmaton	4466'	-1147	-10
Altamont	4475'	-1156	-13
Pawnee	4556'	-1237	-15
Myrick	4601'	-1282	-17
Fort Scott	4616'	-1297	-17
Cherokee Shale	4647'	-1328	-20
Johnson	4718'	-1399	-7
Morrow Shale	4780'	-1461	-8
Mississippian	4855'	-1536	-19
RTD	4927'	-1608	

P.O. Box 783188
Wichita, Kansas 67278-3188

(316) 691-9500
Fax (316) 691-9550
rei@ritchie-exp.com

8100 E. 22nd St. N., Bldg. 700
Wichita, Kansas 67226-2328

ALLIED OIL & GAS SERVICES, LLC

Federal Tax I.D. #20-5975804

067625

REMIT TO P.O. BOX 93999
SOUTHLAKE, TEXAS 76092

SERVICE POINT: Oakley

DATE 4-23-12	SEC. 14	TWP. 15s	RANGE 36 W	CALLED OUT	ON LOCATION 1:30 pm	JOB START 2:00 pm	JOB FINISH 2:30 pm
LEASE Koehn-Mollenkamp	WELL # 1		LOCATION Russell Springs S TO Dakota			COUNTY Logan	STATE KS
OLD OR (NEW) (Circle one)			18 4E 1/2N E. into				

CONTRACTOR WTW 2
TYPE OF JOB Surface
HOLE SIZE 12¼ T.D. 251'
CASING SIZE 8 5/8 DEPTH 250.9'
TUBING SIZE DEPTH
DRILL PIPE DEPTH
TOOL DEPTH
PRES. MAX MINIMUM
MEAS. LINE SHOE JOINT
CEMENT LEFT IN CSG. 15
PERFS.
DISPLACEMENT 15.02 BBL

OWNER Same

CEMENT

AMOUNT ORDERED 175 sks com 3% cc. 2% gel

EQUIPMENT

PUMP TRUCK # 431 CEMENTER Andrew Forsland
HELPER Wayne Mashburn
BULK TRUCK # 891 DRIVER Cory Brown
BULK TRUCK # DRIVER

COMMON	175 sks	@ 12.90	3132.50
POZMIX		@	
GEL	329#	@ .50	164.50
CHLORIDE	494#	@ 1.10	543.40
ASC		@	
		@	
		@	
		@	
		@	
		@	
		@	
		@	
		@	
TOTAL			3,840.40
DISCOUNT	48 %		1,843.39

REMARKS:

Circulate approx 5 BBL to pit

thank you

SERVICE

HANDLING	189.23 cu/ft	@ 2.48	469.29
MILEAGE	2.25 ton/mile	8.63 ton	1305.28
DEPTH OF JOB	250.9'		
PUMP TRUCK CHARGE			1512.25
EXTRA FOOTAGE		@	
HV MILEAGE	55 miles	@ 7.70	423.50
LV MILEAGE	55 miles	@ 4.40	242.00
		@	
		@	
TOTAL			3,952.32
DISCOUNT	48 %		1897.11

CHARGE TO: Ritchie Exploration
STREET
CITY STATE ZIP

PLUG & FLOAT EQUIPMENT

	@	
	@	
	@	
	@	
	@	
TOTAL		
DISCOUNT	%	

To: Allied Oil & Gas Services, LLC.
You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME
SIGNATURE

SALES TAX (If Any)
TOTAL CHARGES 7,792.72
DISCOUNT 3,740.50 (48%) IF PAID IN 30 DAYS
NET TOTAL 4,052.21 IF PAID IN 30 DAYS

5742
5647
Invoice #807570

CONSOLIDATED
Oil Well Services, LLC

PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

TICKET NUMBER 51480
LOCATION Oakley Ks
FOREMAN Jerry Y
Walt

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
5-10-16	7173	Kochn-Mollenkamp #1	14	~~36~~ 15S	36w	Logan KS

CUSTOMER: Ritchie Exp
MAILING ADDRESS:
CITY: STATE: ZIP CODE:

Lot: NE Dakota E to 200 ½N E into

TRUCK #	DRIVER	TRUCK #	DRIVER
753	Miles S		
529-7127	Rob S		

JOB TYPE Port Collar HOLE SIZE ____ HOLE DEPTH ____ CASING SIZE & WEIGHT 5½ 15.5
CASING DEPTH ____ DRILL PIPE ____ TUBING ____ OTHER PC@2544
SLURRY WEIGHT 12.5 SLURRY VOL 1.89 WATER gal/sk ____ CEMENT LEFT in CASING ____
DISPLACEMENT 14 bbl DISPLACEMENT PSI ____ MIX PSI ____ RATE ____

REMARKS: Safty meeting & rig up on Husker Services test tool @ 1200# held 5 min open tool taking inject rate 4½ bbl pm @ 600# mix 350 sks 60/40 8% gel ¼# flo seal and 500# hulls wash up & displace with 14 bbl H2O close tool press to 1200# held 5 min run 5 jts in & reversed clean with 30 bbl. pull tubing pressure casing to 500# & shut in.

Cement circulated

Thank you
Jerry & crew

ACCOUNT CODE	QUANITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0451	1	PUMP CHARGE	1900.00	1900.00
CE0002	45	MILEAGE	7.15	321.75
CE0710	15.05	ton mileage delivery	1.75	1185.19
CC5831	350 sks	Lite blend VII	17.50	6125.00
CC6075	88 #	floseal	2.00	176.00
CC6080	500 #	cotton seed hulls	.50	250.00
			subtotal	9957.94
			-40%	3983.18
			subtotal	5974.76
			SALES TAX	314.45
			ESTIMATED TOTAL	6289.21

8438

Ravin 3737

AUTHORIZTION Greg Bowe TITLE ____ DATE ____

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

5720
5626

CONSOLIDATED
Oil Well Services, LLC

PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

Invoice #801553

TICKET NUMBER 51478
LOCATION Oakley Ks
FOREMAN Jerry V / Myles S / KS

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
5-4-16	7173	Kocha-Mollenkamp #1	14	15S	36W	Logan

CUSTOMER: Ritchie Exp
MAILING ADDRESS:
CITY / STATE / ZIP CODE:

Local: N to Dakota E to 200 1/2 N E into

TRUCK #	DRIVER	TRUCK #	DRIVER
731	Cory D		
515	Ross		
640			
763			

JOB TYPE longstring HOLE SIZE 7 7/8 HOLE DEPTH 4923 CASING SIZE & WEIGHT 5 1/2 15.5#
CASING DEPTH 4921 DRILL PIPE TUBING OTHER PC @ 2544
SLURRY WEIGHT 14.2 SLURRY VOL 1.42 WATER gal/sk CEMENT LEFT in CASING 21'
DISPLACEMENT 116 1/2 bbl DISPLACEMENT PSI MIX PSI RATE

REMARKS: Safty meeting - rig up to 5 1/2 csg. run float shoe, turbo on 1, 2, 4, 6, 8, 12, 56, 58, 76 baskets on 9, 57, 75, Port Collar on 57 @ 2544 ran casing to bottom pump ball thru - circulate 1 hr. pump mud flush with 5 bbl H2O spacers mix 230 sks thixoblend III shut down release plug clean pump and lines, displace with 116 bbl fresh water plug landed @ 1700# 0 psi / lift 1200# released back - float held press back to 500# - shut in.

Thank you
Jerry + crew

30 sks Rathole

ACCOUNT CODE	QUANITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE 0450	1	PUMP CHARGE	3900.00	3900.00
CE 0002	45	MILEAGE	7.15	321.75
CE 0710	10.81	ton mileage delivery	1.25	851.25
CC 5862	230 sks	Thixoblend III	26.00	5980.00
CC 6077	1150 #	Kol seal	.50	575.00
CC 6000	58 #	CDI-26	7.85	455.30
CC 6155	32 #	CAF-38	10.20	326.40
CC 6125	500 gal	mud flush	.65	325.00
CP 8485	1	5 1/2 AFU Floatshoe	585.00	585.00
CP 8254	1	5 1/2 latch down assy	400.00	400.00
CP 8576	9	5 1/2 turbolizers	110.00	990.00
CP 8629	3	5 1/2 baskets	385.00	1155.00
CP 8776	1	5 1/2 Port Collar # 150696	2850.00	2850.00
			Subtotal	18,744.74
			-35%	6,550.16
			Subtotal	12,164.58
			SALES TAX	709.38
			ESTIMATED TOTAL	12873.96

Ravin 3737

AUTHORIZTION Cory Ross. TITLE DATE

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

Wellsite Service, LLC

John Goldsmith
(316) 640-0236
427 Roosevelt St.
Cheney, KS 67025

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

Well Name:	#1 Koehn-Mollenkamp
Location:	2480' FNL, 555' FWL, SECTION 14-15S-36W, W/2 W/2
License Number:	API: 15-109-21459
Region:	Logan County
Spud Date:	04/23/2016
Drilling Completed:	05/04/2016
Surface Coordinates:	LAT 38.7526672 LONG -101.2961880
Bottom Hole Coordinates:	Vertical hole 3/4" Deviation
Ground Elevation (ft):	3314'
K.B. Elevation (ft):	3319'
Logged Interval (ft):	3750' To: RTD
Total Depth (ft):	4927'
Formation:	Mississippian at RTD
Type of Drilling Fluid:	Chemical

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

OPERATOR

Company: Ritchie Exploration, Inc.
Address: 8100 E 22nd St N #700
Wichita, KS 67226
(316) 691-9500

GEOLOGIST

Name: John Goldsmith
Company: Wellsite Service, LLC
Address: 427 Roosevelt St
Cheney, KS 67025
(316) 640-0236

COMMENTS

Contractor: WW Drilling Rig #2
Pusher: Lonnie Lang
Surface Casing: 5 joints of 8 5/8" set at 250'
Production Casing: 5 1/2" casing set at 4923'
Mud by: MudCo
DST's by: Diamond Testing
Logs by: Pioneer Energy Services (DIL, CN-CD, ML)
RTD=4927'
LTD=4925'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Heebner Shale	4032'	-713	4030'	-711
Toronto	4053'	-734	4050'	-731
Lansing	4081'	-762	4078'	-759
Muncie Creek Shale	4248'	-929	4243'	-924
Stark Shale	4351'	-1032	4347'	-1028
Hushpuckney Shale	4394'	-1075	4390'	-1071
Base of KC	4424'	-1105	4422'	-1103
Marmaton	4471'	-1152	4470'	-1151
Altamont	4480'	-1161	4478'	-1159
Pawnee	4561'	-1242	4560'	-1241
Myrick Station	4596'	-1277	4593'	-1274
Ft Scott	4616'	-1297	4613'	-1294
Cherokee Shale	4647'	-1328	4644'	-1325
Johnson Zone	4729'	-1410	4727'	-1408
Morrow	4769'	-1450	4766'	-1447
Mississippian	4855'	-1536	4853'	-1534
RTD	4927'	-1608		
LTD			4925'	-1606

DSTs

DST #1 4002'-4076' "Toronto" 04/27/2016 30-45-45-60
1st Blow: Wk surf blw blt to 11" (No BB)
2nd Blow: Wk surf blw blt to 8" (No BB)
IFP: 14-106# ISIP: 1098# FFP: 109-186# FSIP: 1084#
HYD: 1873-1866#
Rec: 75' Mud, 125' HWCM (43%WTR), 180' MCW (68%WTR).

DST #2 4102'-4138' "LKC C" 04/27/2016 30-45-45-60
1st Blow: 1" blw blt to BOB in 5 1/2" (No BB)
2nd Blow: 1/4" blw blt to BOB in 6 1/2" (No BB)
IFP: 38-298# ISIP: 1146# FFP: 310-561# FSIP: 1141#
HYD: 1946-1935#
Rec: 280' HWCM (49%WTR), 940' SMCW (92%WTR).

DST #3 4160'-4192' "LKC E/F" 04/28/2016 30-45-45-60
1st Blow: 1/4" blw blt to 4" (No BB)
2nd Blow: Wk surf blw blt to 1/4" (No BB)
IFP: 9-55# ISIP: 1194# FFP: 59-84# FSIP: 1187#
HYD: 1994-1991#
Rec: 30' CO, 20' HOWCM (34%O, 22%WTR), 60' SOHWCM (6%O, 44%WTR), 60' SOMCW (1%O, 89%WTR).

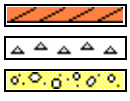
DST #4 4264'-4312' "LKC H/I" 04/29/2016 30-45-45-60
1st Blow: 1/4" blw blt to BOB in 14" (No BB)
2nd Blow: Wk surf blw blt to BOB in 17" (No BB)
IFP: 45-183# ISIP: 1272# FFP: 187-340# FSIP: 1264#
HYD: 2106-2104#
Rec: 55' HMCWtrO (56%WTR), 125' MCW (68%WTR), 500' SMCW (95%WTR).

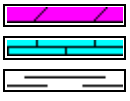
DST #5 4441'-4506' "Altamont A" 04/30/2016 30-45-45-60
1st Blow: 1/4" blw blt to BOB in 14 1/2" (Surf BB)
2nd Blow: 1/2" blw blt to BOB in 14" (1 1/2 BB)
IFP: 19-153# ISIP: 1271# FFP: 159-298# FSIP: 1267#
HYD: 2217-2211#
Rec: 160' GIP, 220' GSWMCO (63%O, 9%WTR), 190' GOHWCM(14%O, 33%WTR), 240' SOMCW(3%O, 75%WTR).

DST #6 4498'-4546' "Altamont B/C" 05/01/2016 30-45-45-60
1st Blow: 1" blw blt to BOB in 5 1/2" (9.5" BB)
2nd Blow: 1 1/2" blw blt to BOB in 7 1/2" (Surf BB)
IFP: 25-205# ISIP: 1258# FFP: 209-398# FSIP: 1238#
HYD: 2191-2191#
Rec: 570' GIP, 910' GO, 60' GSMCO(89%O), 60' GHMCO(57%O).

DST #7 4540'-4584' "Pawnee" 05/01/2016 30-30-30-30
1st Blow: Wk Surf blw blt to 1/2" (No BB)
2nd Blow: V Wk Surf blw blt to 1" (No BB)
IFP: 14-19# ISIP: 51# FFP: 20-23# FSIP: 33#
HYD: 2169-2158#
Rec: 10' Mw/Ospts.

ROCK TYPES


Anhy
Cht
Congl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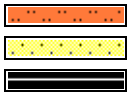
Lmst
Shale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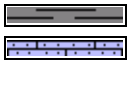
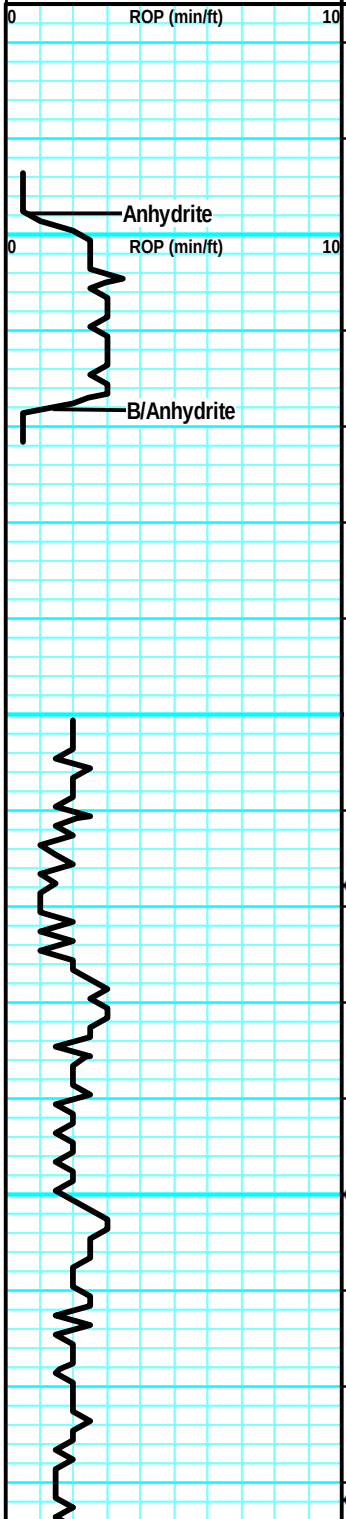

Gry sh
Sandylms

ACCESSORIES

FOSSIL
- Brach
- Bryozoa
- Crin
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Fuss
- Oomold

MINERAL
- Calc
- Chert
- Glau
- Pyr

TEXTURE
- Chalky
- Crsxln
- Finexln
- Microxln



Depth | Lithology | CFS Point | Oil Shows

Geological Descriptions

Morning Report Depth/Activity

4/23/2016: Spud 9:30am
4/24/16: drlg, 760'
4/25/16: drlg, 2756'
4/26/16: drlg, 3650'
4/27/16: testing, 4076' (DST #1, DST #2)
4/28/16: circ, 4138' (DST #3)
4/29/16: testing, 4312' (DST #4)
4/30/16: testing, 4506' (DST #5, DST #6)
5/1/16: testing, 4584' (DST #7)
5/2/16: drlg, 4610
5/3/16: drlg, 4876' (TD)

Drilling Time started on 4/26/2016

Remarks

Mud-Co Check #1
@ 0' 4/15/16

Survey @ 251' = 3/4 Degree

Anhydrite @ 2598' (+721)

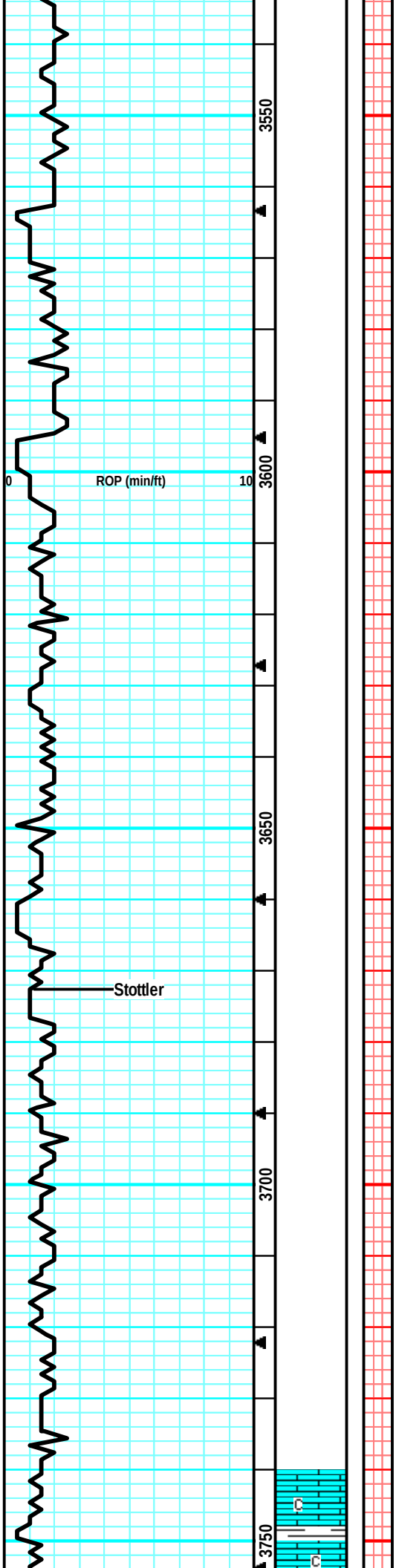
B/Anhydrite @ 2618' (+701)

Mud-Co Check #2
@ 1015' 4/24/15
8:45am

wt	vis	pH
8.9	29	7.0
Filt	chlr	LCM
n/c	140	tr

Mud-Co Check #3
@ 2837' 4/25/15
9:00am

wt	vis	pH
9.6	33	7.0
Filt	chlr	LCM
n/c	49K	3#

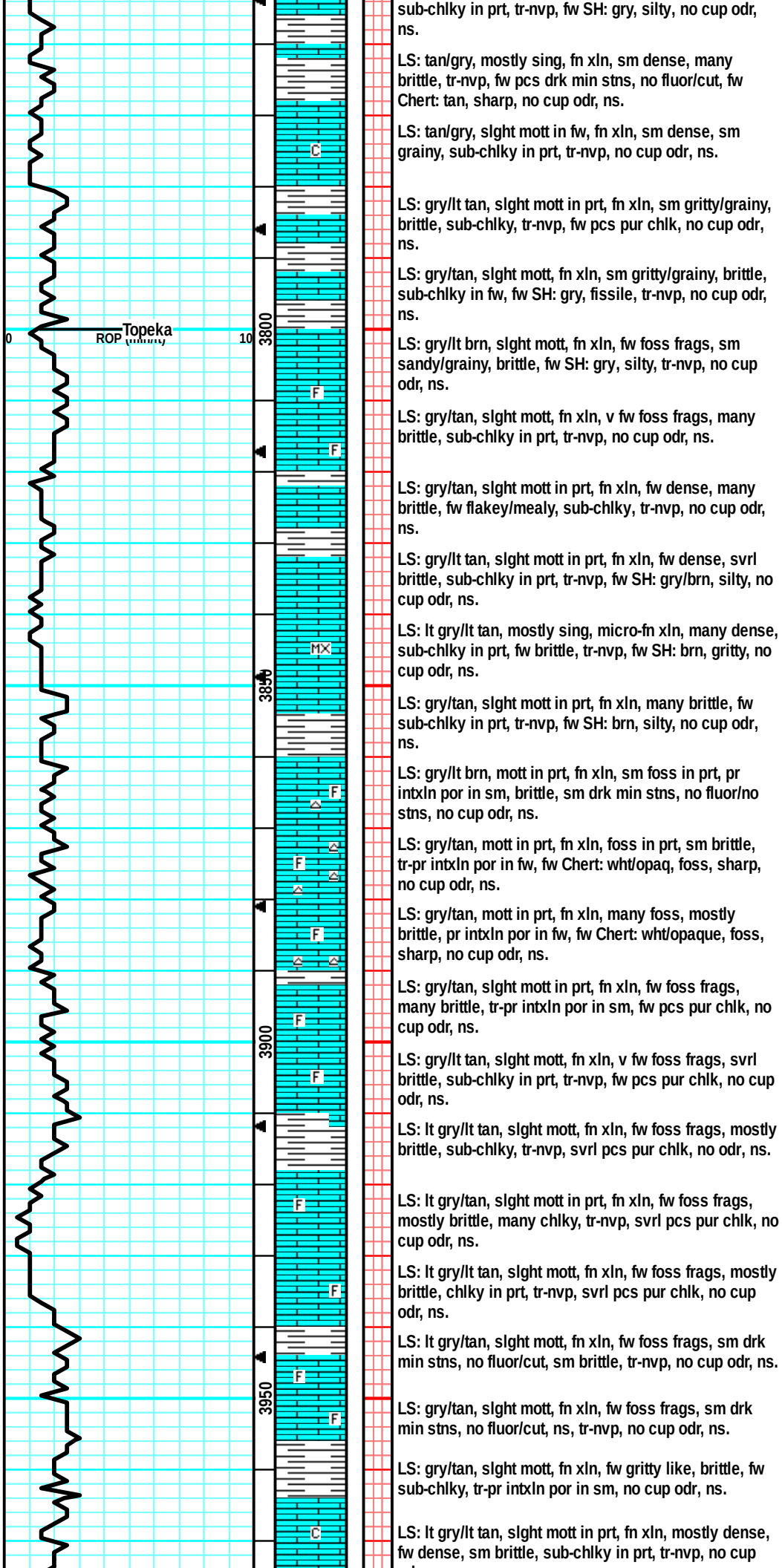


Began catching samples 4/26/2016

LS: gry/tan, slght mott in prt, fn xln, sm grainy/sandy, sub-chlky, brittle, tr-nvp, fw SH: gry, silty, fissile, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm dense, many brittle,

Mud-Co Check #4
@ 3715' 4/26/15
9:20am
wt vis pH
8.8 58 11.0
Filt chlr LCM
7.4 3.4K 2#



sub-chlky in prt, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: tan/gry, mostly sing, fn xln, sm dense, many brittle, tr-nvp, fw pcs drk min stns, no fluor/cut, fw Chert: tan, sharp, no cup odr, ns.

LS: tan/gry, slght mott in fw, fn xln, sm dense, sm grainy, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: gry/lt tan, slght mott in prt, fn xln, sm gritty/grainy, brittle, sub-chlky, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm gritty/grainy, brittle, sub-chlky in fw, fw SH: gry, fissile, tr-nvp, no cup odr, ns.

LS: gry/lt brn, slght mott, fn xln, fw foss frags, sm sandy/grainy, brittle, fw SH: gry, silty, tr-nvp, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, v fw foss frags, many brittle, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: gry/tan, slght mott in prt, fn xln, fw dense, many brittle, fw flakey/mealy, sub-chlky, tr-nvp, no cup odr, ns.

LS: gry/lt tan, slght mott in prt, fn xln, fw dense, svrl brittle, sub-chlky in prt, tr-nvp, fw SH: gry/brn, silty, no cup odr, ns.

LS: lt gry/lt tan, mostly sing, micro-fn xln, many dense, sub-chlky in prt, fw brittle, tr-nvp, fw SH: brn, gritty, no cup odr, ns.

LS: gry/tan, slght mott in prt, fn xln, many brittle, fw sub-chlky in prt, tr-nvp, fw SH: brn, silty, no cup odr, ns.

LS: gry/lt brn, mott in prt, fn xln, sm foss in prt, pr intxln por in sm, brittle, sm drk min stns, no fluor/no stns, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, foss in prt, sm brittle, tr-pr intxln por in fw, fw Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, many foss, mostly brittle, pr intxln por in fw, fw Chert: wht/opaque, foss, sharp, no cup odr, ns.

LS: gry/tan, slght mott in prt, fn xln, fw foss frags, many brittle, tr-pr intxln por in sm, fw pcs pur chlk, no cup odr, ns.

LS: gry/lt tan, slght mott, fn xln, v fw foss frags, svrl brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: lt gry/lt tan, slght mott, fn xln, fw foss frags, mostly brittle, sub-chlky, tr-nvp, svrl pcs pur chlk, no odr, ns.

LS: lt gry/tan, slght mott in prt, fn xln, fw foss frags, mostly brittle, many chlky, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

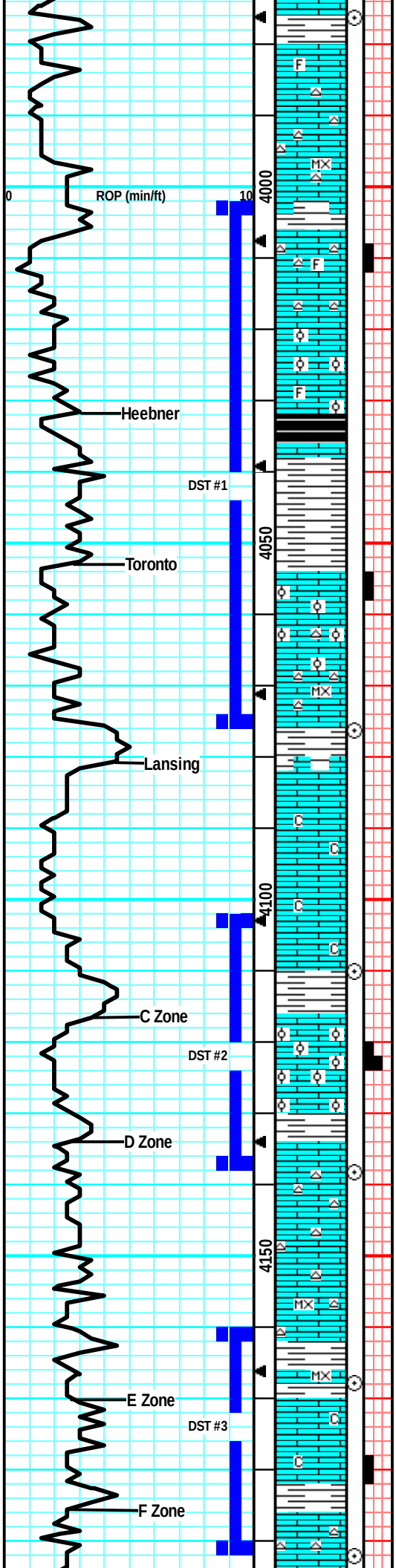
LS: lt gry/lt tan, slght mott, fn xln, fw foss frags, mostly brittle, chlky in prt, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

LS: lt gry/tan, slght mott, fn xln, fw foss frags, sm drk min stns, no fluor/cut, sm brittle, tr-nvp, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw foss frags, sm drk min stns, no fluor/cut, ns, tr-nvp, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw gritty like, brittle, fw sub-chlky, tr-pr intxln por in sm, no cup odr, ns.

LS: lt gry/lt tan, slght mott in prt, fn xln, mostly dense, fw dense, sm brittle, sub-chlky in prt, tr-nvp, no cup



odr, ns.

LS: lt gry/lt tan, slght mott, fn xln, fw foss frags, many brittle, sm pr intfoss por, sub-chlky, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm dense, sm brittle, fw sub-chlky, fw pcs w/ tr-pr intxln por, fw SH: gry/brn, silty, no cup odr, ns.

LS: lt tan/lt gry, sing, micro-fn xln, mostly dense, mostly brittle, chlky, tr-nvp, fw Chert: wht/opaqu, sharp, no cup odr, ns.

LS: lt tan/lt gry, mostly sing, fn xln, fw foss frags, mostly dense, sm brittle, sub-chlky, tr-nvp, fw Chert: wht/opaqu, sharp, no cup odr, ns.

LS: lt tan, slght mott, fn xln, mostly brittle, sub-chlky, fw pcs w/ fr-gd intxln por, 3-4 pcs w/ drk stns in por, sml sphr of oil cling to chip, ssfo on brk, no cup odr.

LS: gry/tan, slght mott in prt, fn xln, fw dense, many brittle, sub-chlky, tr-nvp, fw SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, fw dense, sm brittle, sub-chlky in prt, tr-nvp, abund SH: blk, silty, carb, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm foss, sm ool, mostly brittle, sm fr-gd intool por, faint cup odr, fsfo in 4-5 pcs, sml gas bub clng to por, dul yel fluor, strm cut.

LS: gry/lt tan, slght mott, fn xln, many dense, sub-chlky, brittle, 2-3 pcs w/ drk stns in por, sml sphr of on clng to rx chp, dul yel fluor, strm cut, no cup odr, ssfo.

LS: gry/lt tan, slght mott in prt, fn xln, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: crm/lt tan, mostly sing, micro-fn xln, dense, mostly brittle, chlky, tr-nvp, svrl pcs pur chlk, sm Chert: wht/opaque, sharp, no cup odr, ns.

LS: tan/lt gry, slght mott in prt, fn xln, mostly dense, sm brittle, fw sub-chlky in prt, tr-nvp, svrl SH: brn/gry, gritty, soft, no cup odr, ns.

LS: tan/lt tan, mostly sing, fn xln, many dense, sm brittle, sub-chlky in prt, tr-pr intxln por in fw pcs, fw pcs pur chlk, no cup odr, ns.

LS: lt tan/crm, sing, fn xln, mostly dense, mostly brittle, chlky in prt, fw pcs w/ scat vug por, svrl pcs pur chlk, no cup odr, ns.

LS: tan/lt gry, mostly sing, fn xln, mostly dense, many brittle, chlky, tr-nvp, svrl pcs pur chlk, sm SH: brn, gritty, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, sub-chlky in prt, pr intxln por in fw pcs, 2 pcs w/ spttd drk stns, dul yel fluor, strm cut, vssfo on brk, no cup odr.

LS: tan/lt tan, slght mott, fn xln, sm profus ool, mostly brittle, sm gd intool por in fw, 2-3 pcs w/ hvy stns in por, fr sfo, fw gas bub on brk, wk odr when htd undr lght.

LS: tan/lt tan, mott in prt, fn xln, sm foss, sm ool, mostly dense, many brittle, tr-nvp, svrl Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: tan/lt gry, slght mott in prt, fn xln, sm dense, sm brittle, fw sub-chlky, tr-nvp, fw Chert: wht/opaq, sharp, svrl SH: brn/gry, gritty, no cup odr, ns.

lt tan/crm, mostly sing, micro-fn xln, dense, brittle, many chlky, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

LS: lt tan/lt gry/crm, mostly sing, micro-fn xln, dense, brittle, chlky in prt, tr-nvp, fw pcs Chert: wht/opaq, sharp, no cup odr, ns.

LS: tan/lt gry, slght mott, fn xln, sm flakey/mealy, sm brittle, tr-pr intxln por, patchy lght brn stns, dul yel fluor, vssfo on brk, gd cup odr.

LS: tan/lt gry, slght mott, fn xln, sm brittle, pr intxln por in svrl pcs, sm slght vuggy, small gas bub pop in vug, fr sfo on brk, dul yel fluor, strm cut, gd cup odr.

60" smpl: cont svrl more pcs w/ sho, lght brn patchy stns, fr intxln/slght vuggy por, fr sfo, gd cup odr.

CFS @ 3976'
(30"/60")

Short Trip 25 Stands @ 3976', Circ 1hr, resume drilling.

DST #1 4002'-4076' "Toronto"
04/27/2016 30-45-45-60
1st Blow: Wk surf blw blt to 11" (No BB)
2nd Blow: Wk surf blw blt to 8" (No BB)
IFP: 14-106# ISIP: 1098# FFP: 109-186# FSIP: 1084#
HYD: 1873-1866#
Rec: 75' Mud, 125' HWCM (43%WTR), 180' MCW (68%WTR).

Heebner @ 4032' (-713)

Toronto @ 4053' (-734)

Mud-Co Check #5
@ 4076' 4/27/15
9:45am
wt vis pH
9.0 55 11.0
Filt chlr LCM
8.8 4.0K 2#

CFS @ 4076'
(30"/60")

Survey @ 4076' = 1/2 Degree

Lansing @ 4081' (-762)

CFS @ 4110'
(30"/60")

DST #2 4102'-4138' "LKC C"
04/27/2016 30-45-45-60
1st Blow: 1" blw blt to BOB in 5 1/2" (No BB)
2nd Blow: 1/4" blw blt to BOB in 6 1/2" (No BB)
IFP: 38-298# ISIP: 1146# FFP: 310-561# FSIP: 1141#
HYD: 1946-1935#
Rec: 280' HWCM (49%WTR), 940' SMCW (92%WTR).

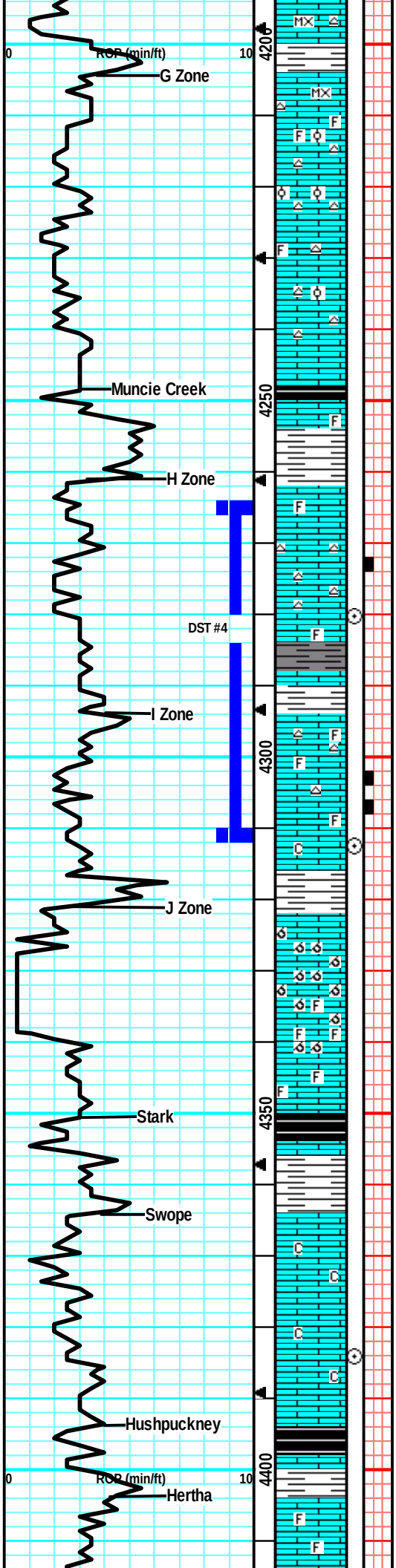
CFS @ 4138'
(30"/60")

Mud-Co Check #6
@ 4168' 4/28/15
9:45am
wt vis pH
8.9 56 11.0
Filt chlr LCM
8.0 5.0K 2#

CFS @ 4168'
(30"/60")

CFS @ 4192'

Pipe Strap was



LS: lt gry/tan, mostly sing, micro-fn xln, mostly dense, sm brittle, chlky in prt, tr-nvp, fw Chert: gry, foss, sharp, svrl SH: brn, silty, no cup odr, ns.

LS: lt tan, mostly sing, micro-fn xln, brittle, sub-chlky in prt, fw Chert: gry/wht, sharp, svrl SH: grn/brn, silty, sm waxy, no cup odr, ns.

LS: lt tan, mostly sing, fn xln, many dense, sm brittle, sub-chlky, tr-nvp, fw Chert: wht/lt gry, sharp, no cup odr, ns.

LS: tan/lt tan, mostly sing, fn xln, sm dense, sm brittle, sub-chlky in prt, tr-pr intxln por in fw, fw pcs pur chlk, no cup odr, ns.

LS: tan/lt tan, mostly sing, fn xln, many dense, sm brittle, fw pcs w/ pr intxln por, sm Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: lt gry/lt tan, mostly sing, fn xln, many dense, sm brittle, sub-chlky, tr-nvp, svrl Chert: gry/wht, foss, sharp, svrl SH: blk, drk gry/drk gry, silty, fw carb, sm waxy, no cup odr, ns.

LS: lt gry/lt tan, slght mott, fn xln, fw foss frags, mostly dense, sm brittle, chlky in prt, tr-nvp, svrl SH: drk gry/brn, silty, no cup odr, ns.

LS: gry/lt tan, slght mott in prt, fn xln, sm dense, sm brittle, sub-chlky in prt, fw flakey/mealy, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, dense, fw brittle, tr-nvp, 2 pcs w/ drk hvy vis oil stns on edges, tarry/sticky, gd fluor, strm cut, fr sfo, no cup odr.

60: Smpl, only one sml pcs w/ sho, betr flwing oil, lrg inflx Chert: wht/opaq, foss, sharp, ? fnt cup odr.

LS: tan/lt tan, mostly sing, fn xln, sm foss in prt, mostly dense, brittle, sm pr scat vuggy por, svrl Chert: tan/wht, foss, sharp, no cup odr, ns.

LS: lt gry/tan, slght mott in prt, fn xln, sm dense, sm brittle, sub-chlky, fw flakey, tr-nvp, svrl Chert: wht/gry, foss, sharp, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, flakey/mealy, pr intxln por on edge, 2-3 pcs w/ drk brn stns on edge, gd fluor/cut, vssfo on brk, no cup odr.

60"smpl: 4-5 pcs w/ pr-fr intxln por, patchy drk brn stns, faint-? cup odr, ssfo on brk.

LS: tan/lt gry, slght mott, fn xln, sm dense, many brittle, sub-chlky in prt, sm flakey/mealy, tr-nvp, svrl SH: brn, gritty, no cup odr, ns.

Sample was not caught. Mix up during tour change.

LS: tan/gry, mott in prt, fn xln, sm profus ool, mostly brittle, many gd oolcast por, svrl SH: brn, silty, no cup odr, ns.

LS: tan/gry, mostly mott, fn xln, many foss, many profus ool, gd oolcast por, brittle, chlky, svrl pcs pur chlk, no cup odr, ns.

LS: tan, mostly sing, fn xln, mostly dense, many brittle, sub-chlky in prt, tr-nvp, abund SH: blk/gry, silty, soft, many carb, no cup odr, ns.

LS: tan/lt tan, slght mott, fn xln, many dense, sm brittle, many flakey/mealy, tr-nvp, 1 pcs drk brn stns on edge, ? fluor, no cut, nsfo, no odr.

LS: tan, slght mott in prt, fn xln, many dense, sm brittle, sub-chlky in prt, fw flakey/mealy, tr-nvp, abund SH: brn, gritty, no cup odr, ns.

LS: tan/lt tan, mostly sing, fn xln, mostly brittle, chlky, tr-nvp, svrl pcs pur chlk, abund SH: brn, silty, fissile, no cup odr, ns.

60" Sampl: Much like above w/ brittle, chlky, LS: even more inflx of SH: brn, gritty, soft, no cup odr, ns.

SH: brn/gry/grn, silty, gritty, sm waxy, soft, v fw LS: lt tan, slght mott, fn xln, mostly brittle, sub-chlky, tr-nvp, no cup odr, ns.

LS: tan/lt tan, mostly sing, fn xln, many dense, sm brittle, sub-chlky in prt, tr-nvp, svrl SH: gry/blk, silty, soft, sm carb, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm foss in prt, many dense, sm flakey/mealy, sub-chlky, tr-nvp, sm SH: drk gry/brn, silty, no cup odr, ns.

LS: gry/lt tan, mott in prt, fn xln, many dense,

(30"/60")

0.13 Long

DST #3 4160'-4192' "LKC E/F"
04/28/2016 30-45-45-60
1st Blow: 1/4" blw blt to 4" (No BB)
2nd Blow: Wk surf blw blt to 1/4" (No BB)
IFP: 9-55# ISIP: 1194# FFP: 59-84#
FSIP: 1187#
HYD: 1994-1991#
Rec: 30' CO, 20' HOWCM (34%O, 22%WTR), 60' SOHWCM (6%O, 44%WTR), 60' SOMCW (1%O, 89%WTR).

Muncie Creek @ 4248' (-929)

CFS @ 4280'
(30"/60")

Mud-Co Check #7
@ 4312' 4/29/15
9:05am

wt	vis	pH
9.3	55	10.5
Filt	chlr	LCM
9.2	6.2K	2#

CFS @ 4312'
(30"/60")

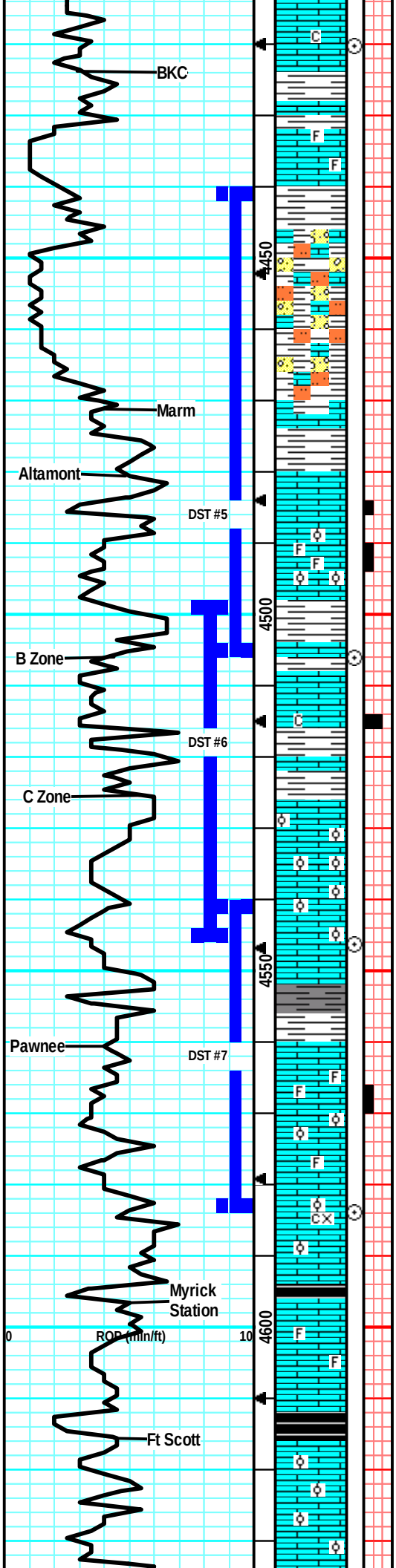
DST #4 4264'-4312' "LKC H/I"
04/29/2016 30-45-45-60
1st Blow: 1/4" blw blt to BOB in 14" (No BB)
2nd Blow: Wk surf blw blt to BOB in 17" (No BB)
IFP: 45-183# ISIP: 1272# FFP: 187-340# FSIP: 1264#
HYD: 2106-2104#
Rec: 55' HMCWtrO (56%WTR), 125' MCW (68%WTR), 500' SMCW (95%WTR).

Stark @ 4351' (-1032)

Sample Quality got bad from poor mud properties. Had large amounts of rain.

CFS @ 4384'
(30"/60")

Hushpuckney @ 4394' (-1075)



flakey/mealy, sub-chlky, tr-nvp, abund SH: gry/brn, silty, no cup odr, ns.

LS: gry/lt tan, slght mott, fn xln, mostly dense, fw brittle, sub-chlky in prt, tr-nvp, abund SH: gry/brn, silty, fissile, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw foss frags, sm dense, many brittle, tr-nvp, abund SH: brn, silty, no cup odr, ns.

LS: gry/lt tan, slght mott, fn xln, fw foss frags, many dense, sm brittle, sub-chlky, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

LS: lt gry/lt tan, slght mott, fn xln, chlky, brittle, tr-nvp, svrl SH: brn/drk gry, silty, waxy, fw SiltStn: tan/lt gry, gritty, v soft, no cup odr, ns.

LS: lt tan/lt gry, slght mott, fn xln, fw foss frags, mostly brittle, chlky, tr-nvp, fw SH: brn/gry, silty, fw SltStn: lt gry/lt brn, grity, v sft, no cup odr. ns.

LS: lt tan/lt gry, slght mott in prt, fn xln, fw foss frags, mostly dense, fw brittle, fw sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: lt tan, sing, fn xln, mostly dense, sub-chlky, pr intxln por in fw, patchy brn stns, dul yel fluor, strm cut, vssfo on brk in 3-4 pcs, no odr.

LS: tan/lt tan, slght mott, fn xln, many brittle, mostly chlky, svrl pcs pur chlk, pr scat intxln por in sm, patchy brn stns, dul yel fluor, strm cut, ssfo on brk in 5-6 pcs, faint-? cup odr.

LS: tan/lt tan, slght mott, fn xln, fw foss/ool, mostly chlky, brittle, tr-nvp, svrl pcs pur chlk, fw SH: gry/brn, silty, no cup odr, ns.
SH: gry/brn/blu, silty, soft, fw waxy, fw LS: gry/tan, slght mott, fn xln, dense, flakey, tr-nvp, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, slght ool, mostly brittle, sub-chlky in prt, sm fr intxln por in fw, 3-4 pcs w/ lght brn sptty stns, gd fluor, strm cut, ssfo, faint-? cup odr.

LS: gry/tan, mott in prt, fn xln, sm v ool, brittle, fw sub-chlky, fr intool por, scat brn stns in por, gd fluor/cut, ssfo in 6-8 pcs, faint cup odr.

LS: tan/lt gry, slght mott, fn xln, mostly dense, 3-4 pcs w/ slght stns on edge, tr-pr intxln por, vssfo on brk, ? cup odr.

LS: tan/gry, slght mott, fn xln, sm brittle, sm dense, fw w/ pr intxln por, 2-3 pcs w/ drk brn stns, vssfo, dul yel fluor, pos cut, no cup odr.

LS: gry/lt tan, mott in prt, fn xln, many foss in prt, mostly brittle, chlky in prt, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, fw foss, sm ool, sm dense, fw brittle, sub-chlky in prt, pr intool por in fw, hvy brn stns, gd fluor/cut, ssfo in 2 pcs, no cup odr.

LS: tan/lt gry, mott in prt, fn xln, sm foss, fw ool, 3-4 pcs w/ lght brn stns in por, sm fr intool por, ssfo no cup odr.

LS: gry/tan, slght mott, fn xln, sm foss/ool, mostly dense, sm firm, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: gry/lt brn, mott in prt, fn-crs xln, sm dense, many flakey/mealy, fw firm, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

SH: blk/drk gry, silty, soft, sm carb, fw LS: gry/lt brn, mott, fn-crs xln, foss in prt, sm firm, tr-nvp, no cup odr, ns.

LS: gry/tan, slght mott in prt, fn xln, sm foss in prt, sm dense, fw brittle, sub-chlky in prt, tr-nvp, svrl SH: drk gry, silty, no cup odr, ns.

LS: gry/lt tan, slght mott, fn xln, fw foss, many brittle, sub-chlky in prt, tr-nvp, svrl SH: blk/drk gry, silty, many carb, no cup odr, ns.

LS: lt gry/lt tan, mott in prt, fn xln, sm v ool, many brittle, chlky in prt, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

LS: lt gry/tan, mott in prt, fn xln, sm v ool, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: gry/lt brn, slght mott, fn xln, fw ool, sm dense,

CFS @ 4420'
(30"/60")

Base of KC @ 4424' (-1105)

DST #5 4441'-4506' "Altamont A" 04/30/2016 30-45-45-60
1st Blow: 1/4" blw blt to BOB in 14 1/2" (Surf BB)
2nd Blow: 1/2" blw blt to BOB in 14" (1 1/2 BB)
IFP: 19-153# ISIP: 1271# FFP: 159-298# FSIP: 1267#
HYD: 2217-2211#
Rec: 160' GIP, 220' GSWMCO (63%O, 9%WTR), 190' GOHWCM(14%O, 33%WTR), 240' SOMCW(3%O, 75%WTR).

Marmaton @ 4471' (-1152)

Altamont @ 4480' (-1161)

Mud-Co Check #8
@ 4506' 4/30/15
9:25am

wt	vis	pH
9.5	63	10.0
Filt	chlr	LCM
8.8	6.6K	2#

CFS @ 4506'
(30"/60")

DST #6 4498'-4546' "Altamont B/C" 05/01/2016 30-45-45-60
1st Blow: 1" blw blt to BOB in 5 1/2" (9.5" BB)
2nd Blow: 1 1/2" blw blt to BOB in 7 1/2" (Surf BB)
IFP: 25-205# ISIP: 1258# FFP: 209-398# FSIP: 1238#
HYD: 2191-2191#
Rec: 570' GIP, 910' GO, 60' GSMCO(89%O), 60' GHMCO(57%O).

Mud-Co Check #9
@ 4546' 5/1/15
9:15am

wt	vis	pH
9.2	59	10.0
Filt	chlr	LCM
9.6	9.0K	2#

Pawnee @ 4561' (-1242)

DST #7 4540'-4584' "Pawnee" 05/01/2016 30-30-30-30
1st Blow: Wk Surf blw blt to 1/2" (No BB)
2nd Blow: V Wk Surf blw blt to 1" (No BB)
IFP: 14-19# ISIP: 51# FFP: 20-23# FSIP: 33#
HYD: 2169-2158#
Rec: 10' Mw/Ospts.

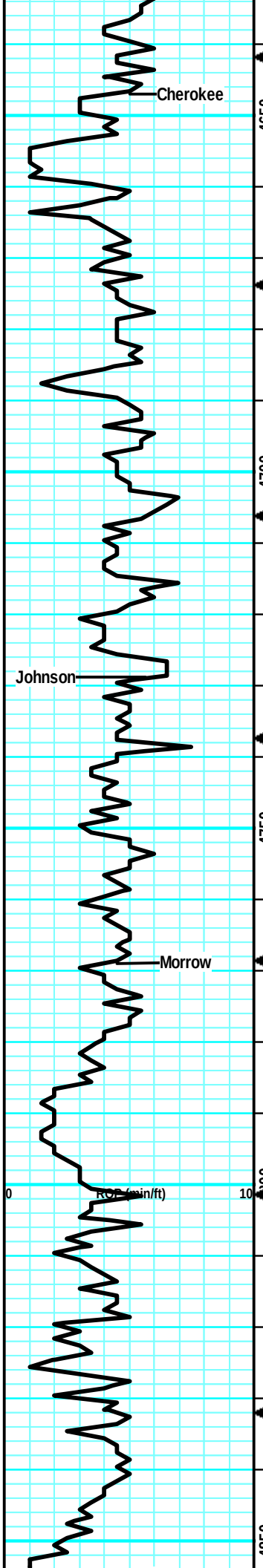
CFS @ 4584'
(30"/60")

Myrick Station @ 4596' (-1277)

Ft Scott @ 4616' (-1297)

Mud-Co Check #10
@ 4634' 5/2/15
9:00am

wt	vis	pH
9.1	54	10.5



Filt chlr LCM
10.4 11K 2#

LS: gry/lt brn, slght mott, fn xln, fw ool, sm dense, many flakey/mealy, tr-nvp, fw SH: gry, silty, no cup odr, ns.

CFS @ 4642'
(30"/60")

Cherokee @ 4647' (-1328)

LS: gry/lt brn, mott in prt, fn xln, many foss, fw brittle, sub-chlky, tr-nvp, svrl SH: gry/blk, silty, sm carb, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, many foss, mostly flakey/mealy, brittle, tr-nvp, abund SH: gry/blk, silty, sm carb, no cup odr, ns.

LS: gry/lt tan, slght mott, fn xln, sm foss/ool, sub-chlky, brittle, tr-nvp, svrl SH: gry/brn, silty, soft, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm foss in prt, sub-chlky, sm brittle, fw flakey, tr-nvp, abund SH: brn/gry/blk, silty, soft, fw carb, no odr, ns.

LS: tan/lt gry, mott in prt, fn xln, sm foss, sandy/grainy in prt, many brittle, tr-nvp, abund SH: drk gry/brn, silty, soft, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm foss in prt, many flakey/mealy, tr-nvp, abund SH: gry/brn, silty, soft, no cup odr, ns.

CFS @ 4698'
(30"/60")

LS: gry/tan, slght mott, fn xln, v fw foss frags, mostly flakey/mealy, sm firm, sub-chlky, tr-nvp, sm SH: gry, silty, soft, no cup odr, ns.

LS: gry/lt brn, slght mott, fn xln, sm foss, many flakey/mealy, sub-chlky, svrl firm, tr-nvp, fw SH: gry/brn, silty, no cup odr, ns.

LS: gry/lt brn, slght mott in prt, fn xln, sm foss, mostly flakey/mealy, sub-chlky in prt, firm, tr-nvp, svrl SH: gry/drk gry/brn, silty, no odr, ns.

Johnson @ 4729' (-1410)

LS: tan/gry, mott in prt, fn xln, fw foss frags, many dense, mostly flakey/mealy, tr-nvp, abund SH: gry/brn, silty, soft, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, v fw foss frags, sm brittle, mostly flakey/mealy, sub-chlky, tr-nvp, abund SH: brn/gry, silty, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw foss in prt, many flakey/mealy, sm brittle, tr-nvp, abund SH: gry/brn, silty, soft, fw waxy, no odr, ns.

LS: gry/lt tan, slght mott in prt, fn xln, many dense, sm flakey/mealy, sub-chlky, sm brittle, tr-nvp, svrl SH: gry/grn, silty, no cup odr, ns.

Morrow @ 4769' (-1450)

CFS @ 4770'
(30"/60")

LS: gry/lt tan, mott in prt, fn-crs xln, mostly dense, many flakey/mealy, sub-chlky, tr-nvp, abund SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn-crs xln, mostly flakey, sm dense/firm, sub-chlky, tr-nvp, abund SH: gry/blu, silty, soft, no cup odr, ns.

SH: gry/blu/brn, silty, fw gritty, sm waxy, fissile, fw LS: tan/lt gry, slght mott, fn xln, flakey/mealy, sub-chlky, tr-nvp, no cup odr, ns.

SH: gry/grn/brn, silty, soft, sm fissile, fw SS: gry, fn grn, arg, dirty, friable, tr-nvp, fw LS: gry/lt tan, fn xln, brittle, tr-nvp, no cup odr, ns.

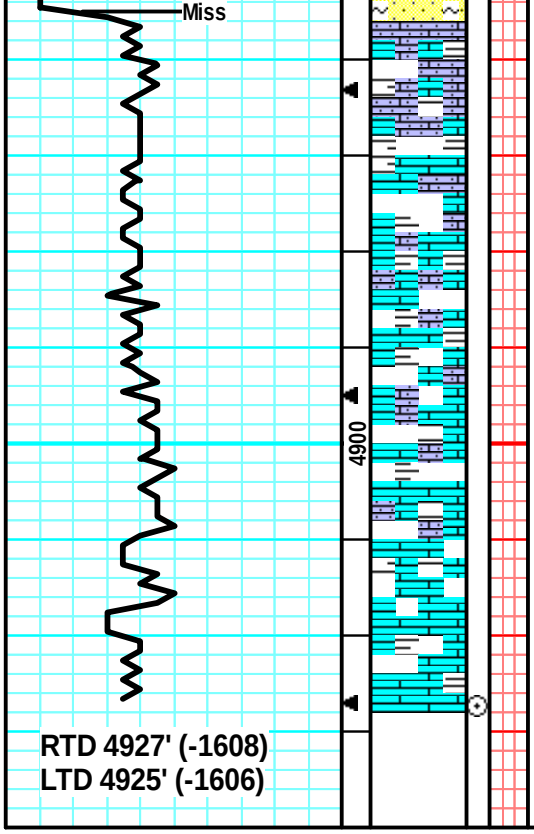
SH: gry/grn/brn, silty, soft, sm fissle, fw waxy, fw LS: lt tan/lt gry, fn xln, sm brittle, fw flakey/mealy, tr-nvp, no cup odr, ns.

SH: gry/grn/blu/brn, silty, soft, sm fissile, fw LS: lt tan, fn xln, sub-chlky, sm brittle, tr-nvp, fw SS: crm/wht, arg, friable, fn grn, glauc, tr-? intgrn por, no cup odr, ns.

SH: gry/grn/blu, silty, soft, fw fissile, fw SltStn: lt brn/gry, v soft, gritty, fw LS: lt gry, fn xln, mostly brittle, tr-nvp, no cup odr, ns.

SH: gry/grn/blu/grn, silty, soft, sm fissile, fw SltStn: lt brn/gry, silty, gritty, v soft, sm LS: lt tan/lt gry, slght mott, fn xln, brittle, tr-nvp, no odr, ns.

SH: gry/grn/blu/brn, silty, fissile, fw waxy, soft, fw SS:



RTD 4927' (-1608)
LTD 4925' (-1606)

gry, arg, drity, pr sortd, tr-nvp, fw SltStn: gry, gritty, friable, v soft, no cup odr, ns.

Abund SH: gry/grn/brn, silty, soft, fw fissile, v fw LS: lt tan/crm, fn xln, sm sandy/gritty, sub-chlky, brittle, tr-nvp, no cup odr, ns.

Very Poor Sample Quality. Large amounts of Shale in a known dense LS formation, v fw LS: lt tan, fn xln, brittle, sandy/gritty, tr-nvp.

Very Poor Sample Quality continued through the bottom of the hole. Mud was checked and remained consistant.

Mississippi @ 4855' (-1536)

Mud Properties checked and are good. Huge amounts of Shale in sample. Possible cavings from Morrow or turbide mud.

Mud-Co Check #11
@ 4925' 5/3/15
9:15am

wt	vis	pH
9.2	64	10.0
Filt	chlr	LCM
10.4	13K	2#

CFS @ 4927'
(30"/60")

Survey @ 4927' = 3/4 Degree

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T527
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #1, TORONTO, 4002-4076	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/04/27
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #1, TORONTO, 4002-4076
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2016/04/27	Start Test Time	06:20:00
Final Test Date	2016/04/27	Final Test Time	13:11:00

Gauge Name	5504

Test Results

RECOVERED: 75' MUD
125' HWCM, 43% WATER, 57% MUD
180' MCW, 68% WATER, 32% MUD
380' TOTAL FLUID

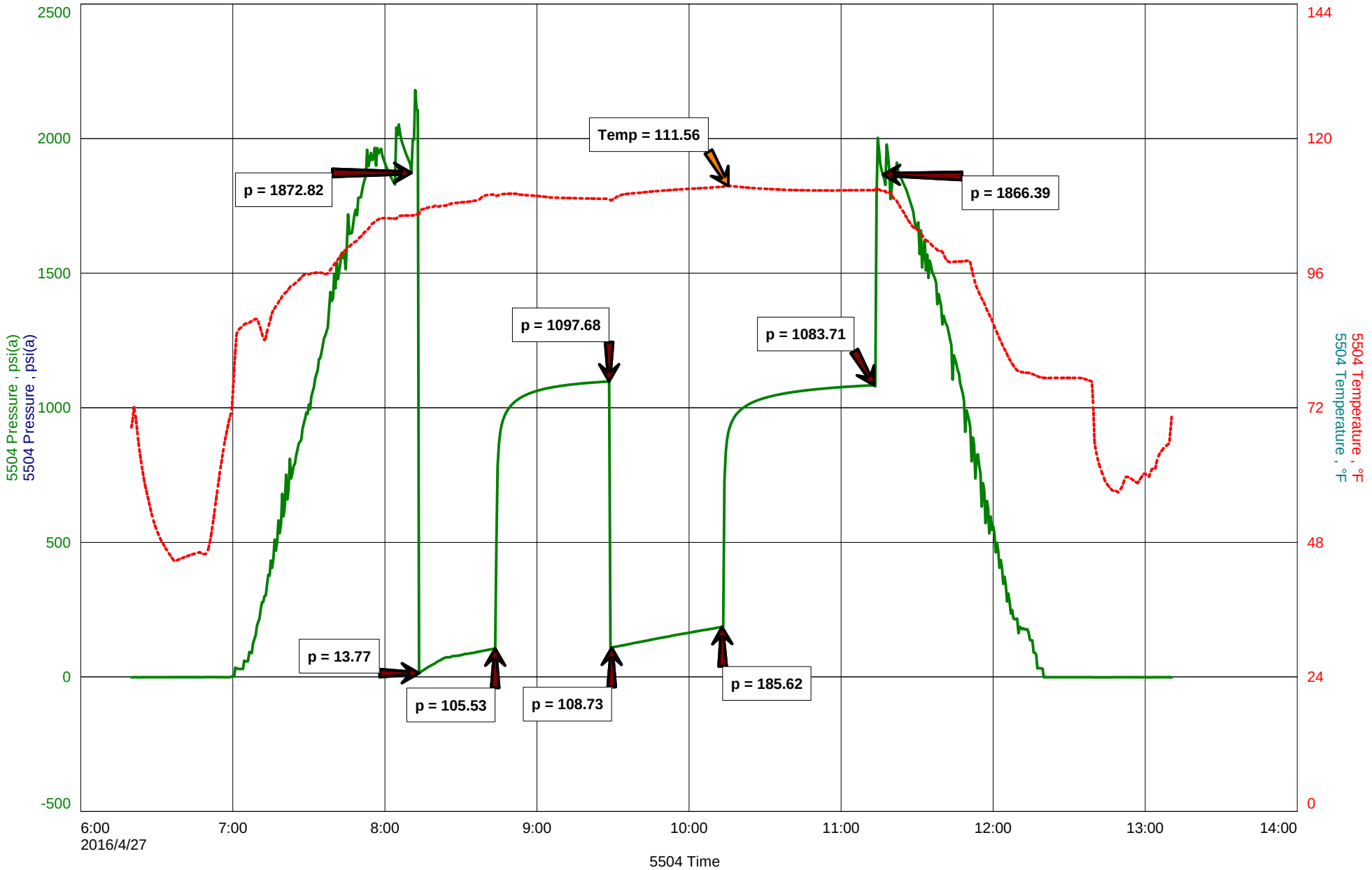
TOOL SAMPLE: 2% OIL, 66% WATER, 32% MUD

CHLORIDES: 25,000 ppm
PH: 7.5
RW: .39 @ 65 deg.

RITCHIE EXPLORATION, INC.
DST #1, TORONTO, 4002-4076
Start Test Date: 2016/04/27
Final Test Date: 2016/04/27

KOEHN-MOLLENKAMP #1
Formation: DST #1, TORONTO, 4002-4076
Job Number: T527

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET

FILE: KOEHN-MOLLENKAMP1DST1

TIME ON: 06:20

TIME OFF: 13:11

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor RITCHIE EXPLORATION, INC. Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation TORONTO Effective Pay _____ Ft. Ticket No. T527

Date 4-27-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 1 Interval Tested from 4002 ft. to 4076 ft. Total Depth 4076 ft.

Packer Depth 3997 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Packer Depth 4002 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 3983 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4073 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 58 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 8.8 Water Loss 7.4 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 3,400 P.P.M. Drill Pipe Length 3851 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 42 ft. Size 4 1/2-FH in

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. 32' DP IN ANCHOR Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: WEAK SURFACE BLOW, BUILDING TO 11 INCHES. (NO BB)

2nd Open: WEAK SURFACE BLOW, BUILDING TO 8 INCHES. (NO BB)

Recovered 75 ft. of MUD

Recovered 125 ft. of HWCM, 43% WATER, 57% MUD

Recovered 180 ft. of MCW, 68% WATER, 32% MUD

Recovered 380 ft. of TOTAL FLUID

Recovered _____ ft. of _____ CHLORIDES: 25,000 ppm

Recovered _____ ft. of _____ PH: 7.5

Remarks: _____ RW: .39 @ 65 deg.

TOOL SAMPLE: 2% OIL, 66% WATER, 32% MUD

Price Job	
Other Charges	
Insurance	
Total	

Time Set Packer(s) 8:13 AM A.M. P.M. Time Started Off Bottom 11:13 AM A.M. P.M. Maximum Temperature 112 deg.

Initial Hydrostatic Pressure..... (A) 1873 P.S.I.

Initial Flow Period..... Minutes 30 (B) 14 P.S.I. to (C) 106 P.S.I.

Initial Closed In Period..... Minutes 45 (D) 1098 P.S.I.

Final Flow Period..... Minutes 45 (E) 109 P.S.I. to (F) 186 P.S.I.

Final Closed In Period..... Minutes 60 (G) 1084 P.S.I.

Final Hydrostatic Pressure..... (H) 1866 P.S.I.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T528
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #2, LKC "C", 4102-4138	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/04/28
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #2, LKC "C", 4102-4138
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2016/04/27	Start Test Time	22:06:00
Final Test Date	2016/04/28	Final Test Time	04:46:00

Gauge Name	5504

Test Results

RECOVERED: 280' HWCM, 49% WATER, 51% MUD
940' SMCW, 92% WATER, 8% MUD
1220' TOTAL FLUID

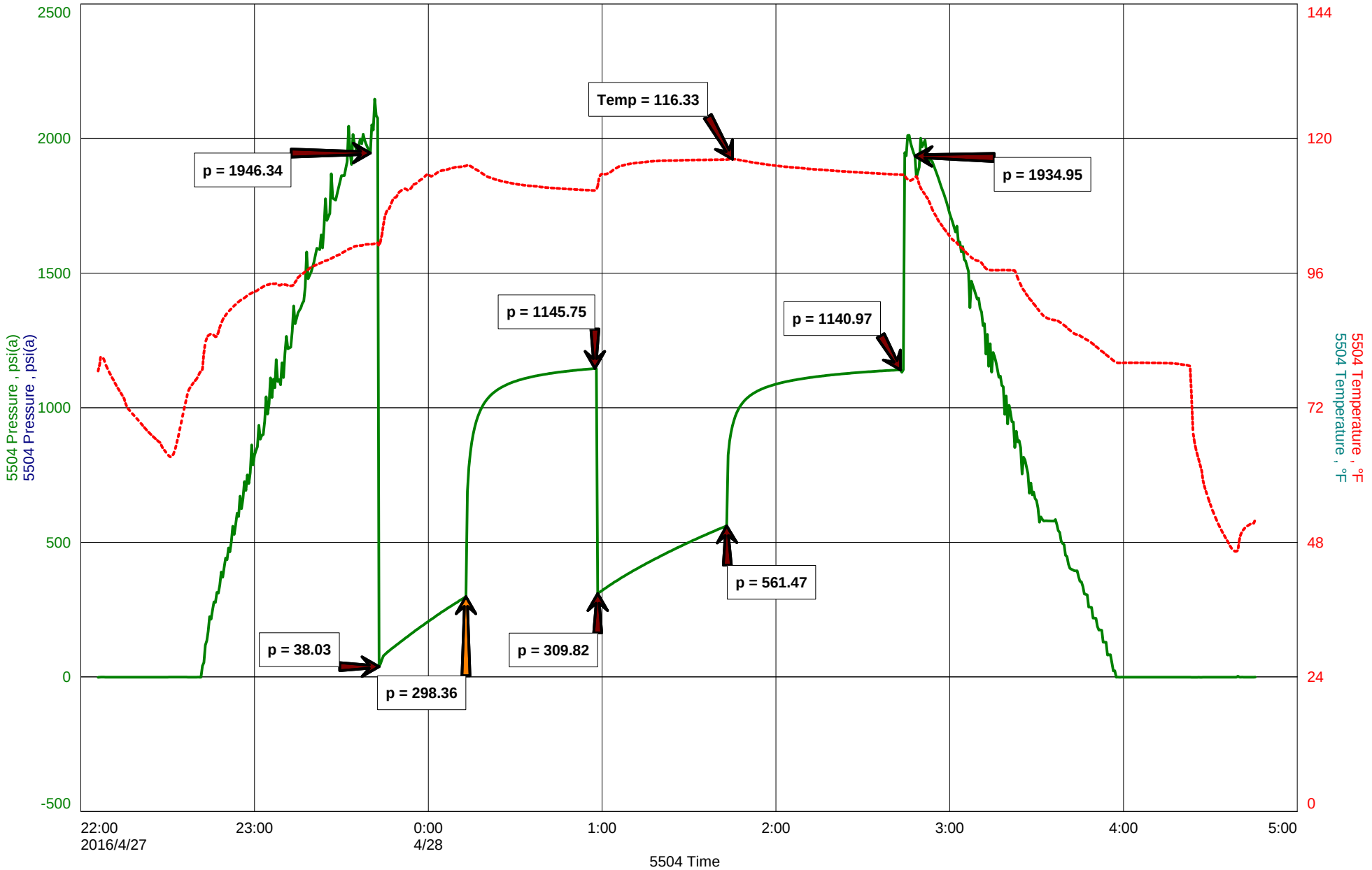
TOOL SAMPLE: 99% WATER, 1% MUD

CHLORIDES: 22,000 ppm
PH: 7.0
RW: .72 @ 54 deg.

RITCHIE EXPLORATION, INC.
DST #2, LKC "C", 4102-4138
Start Test Date: 2016/04/27
Final Test Date: 2016/04/28

KOEHN-MOLLENKAMP #1
Formation: DST #2, LKC "C", 4102-4138
Pool: WILDCAT
Job Number: T528

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET

FILE: KOEHN-MOLLENKAMP1DST2

TIME ON: 22:06 4-27-16

TIME OFF: 04:46 4-28-16

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor WW DRILLING, LLC RIG #2 Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation LKC "C" Effective Pay Ft. Ticket No. T528

Date 4-27-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 2 Interval Tested from 4102 ft. to 4138 ft. Total Depth 4138 ft.

Packer Depth 4097 ft. Size 6 3/4 in. Packer depth ft. Size 6 3/4 in.

Packer Depth 4102 ft. Size 6 3/4 in. Packer depth ft. Size 6 3/4 in.

Depth of Selective Zone Set

Top Recorder Depth (Inside) 4083 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4135 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth ft. Recorder Number Cap. P.S.I.

Mud Type CHEMICAL Viscosity 55 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 9.0 Water Loss 8.8 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 4,000 P.P.M. Drill Pipe Length 3951 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 36 ft. Size 4 1/2-FH in

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: GOOD 1 INCH BLOW, BUILDING, REACHING BOB 5 1/2 MIN. (NO BB)

2nd Open: WEAK 1/4 INCH BLOW, BUILDING, REACHING BOB 6 1/2 MIN. (NO BB)

Recovered 280 ft. of HWCM, 49% WATER, 51Q% MUD

Recovered 940 ft. of SMCW, 92% WATER, 8% MUD

Recovered 1220 ft. of TOTAL FLUID

Recovered ft. of

Recovered ft. of CHLORIDES: 22,000 ppm

Recovered ft. of PH: 7.0

Remarks: RW: .72 @ 54 deg.

TOOL SAMPLE: 99% WATER, 1% MUD

Price Job	
Other Charges	
Insurance	
Total	

Time Set Packer(s) 11:43 PM A.M. P.M. Time Started Off Bottom 2:43 AM A.M. P.M. Maximum Temperature 116 deg.

Initial Hydrostatic Pressure ..... (A) 1946 P.S.I.

Initial Flow Period ..... Minutes 30 (B) 38 P.S.I. to (C) 298 P.S.I.

Initial Closed In Period ..... Minutes 45 (D) 1146 P.S.I.

Final Flow Period ..... Minutes 45 (E) 310 P.S.I. to (F) 561 P.S.I.

Final Closed In Period ..... Minutes 60 (G) 1141 P.S.I.

Final Hydrostatic Pressure ..... (H) 1935 P.S.I.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T529
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #3, LKC "E&F", 4160-4192	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/04/28
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL		
Formation	DST #3, LKC "E&F, 4160-4192		
Well Fluid Type	01 Oil		
Test Purpose	Initial Test		
Start Test Date	2016/04/28	Start Test Time	13:53:00
Final Test Date	2016/04/28	Final Test Time	20:22:00
Gauge Name	5504		

Test Results

RECOVERED: 30' CLEAN OIL, 100% OIL, GRAVITY: 33
20' HO&WCM, 34% OIL, 22% WATER, 44% MUD
60' SOHWCM, 6% OIL, 44% WATER, 50% MUD
60' SO&MCW, 1% OIL, 89% WATER, 10% MUD
170' TOTAL FLUID

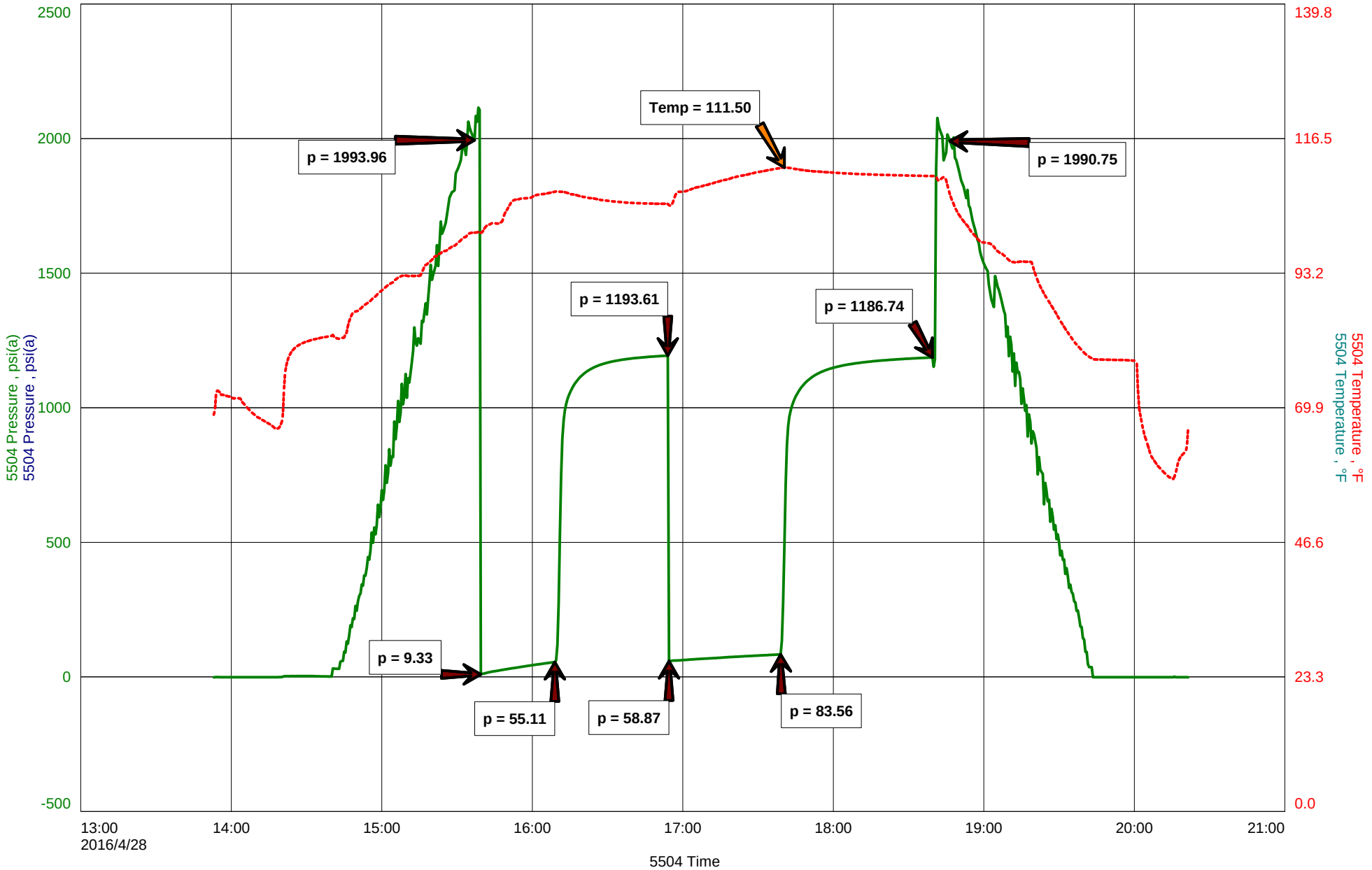
TOOL SAMPLE: 6% OIL, 73% WATER, 21% MUD

CHLORIDES: 20,000 ppm
PH: 7.5
RW: .47 @ 62 deg.

RITCHIE EXPLORATION, INC.
DST #3, LKC "E&F", 4160-4192
Start Test Date: 2016/04/28
Final Test Date: 2016/04/28

KOEHN-MOLLENKAMP #1
Formation: DST #3, LKC "E&F, 4160-4192
Pool: WILDCAT
Job Number: T529

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET

FILE: KOEHN-MOLLENKAMP1DST3

TIME ON: 13:53
TIME OFF: 20:22

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor WW DRILLING, LLC RIG #2 Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation LKC "E&F" Effective Pay _____ Ft. Ticket No. T529

Date 4-28-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 3 Interval Tested from 4160 ft. to 4192 ft. Total Depth 4192 ft.

Packer Depth 4155 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Packer Depth 4160 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4141 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4189 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 56 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 8.9 Water Loss 8.0 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 5,000 P.P.M. Drill Pipe Length 4009 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 32 ft. Size 4 1/2-FH in

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: WEAK 1/4 INCH BLOW, BUILDING TO 4 INCHES. (NO BB)

2nd Open: WEAK SURFACE BLOW, BUILDING TO 1/4 INCH. (NO BB)

Recovered 30 ft. of CLEAN OIL, 100% OIL, GRAVITY: 33

Recovered 20 ft. of HO&WCM, 34% OIL, 22% WATER, 44% MUD

Recovered 60 ft. of SWHWCM, 6% OIL, 44% WATER, 50% MUD

Recovered 60 ft. of SO&MCW, 1% OIL, 89% WATER, 10% MUD

Recovered 170 ft. of TOTAL FLUID

Recovered _____ ft. of CHLORIDES: 20,000 ppm

Remarks: PH: 7.5

RW: .47 @ 62 deg.

TOOL SAMPLE: 6% OIL, 73% WATER, 21% MUD

Price Job	
Other Charges	
Insurance	
Total	

Time Set Packer(s) 3:39 PM A.M. P.M. Time Started Off Bottom 6:39 PM A.M. P.M. Maximum Temperature 112 deg.

Initial Hydrostatic Pressure ..... (A) 1994 P.S.I.

Initial Flow Period ..... Minutes 30 (B) 9 P.S.I. to (C) 55 P.S.I.

Initial Closed In Period ..... Minutes 45 (D) 1194 P.S.I.

Final Flow Period ..... Minutes 45 (E) 59 P.S.I. to (F) 84 P.S.I.

Final Closed In Period ..... Minutes 60 (G) 1187 P.S.I.

Final Hydrostatic Pressure ..... (H) 1991 P.S.I.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T530
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #4, LKC "H&I", 4264-4312	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/04/29
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #4, LKC "H&I", 4264-4312
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2016/04/29	Start Test Time	09:01:00
Final Test Date	2016/04/29	Final Test Time	15:37:00

Gauge Name	5504

Test Results

RECOVERED: 55' HMCW,W/TR. O, TRACE OIL, 56% WATER, 44% MUD
125' MCW, 68% WATER, 32% MUD
500' SMCW, 95% WATER, 5% MUD
680' TOTAL FLUID

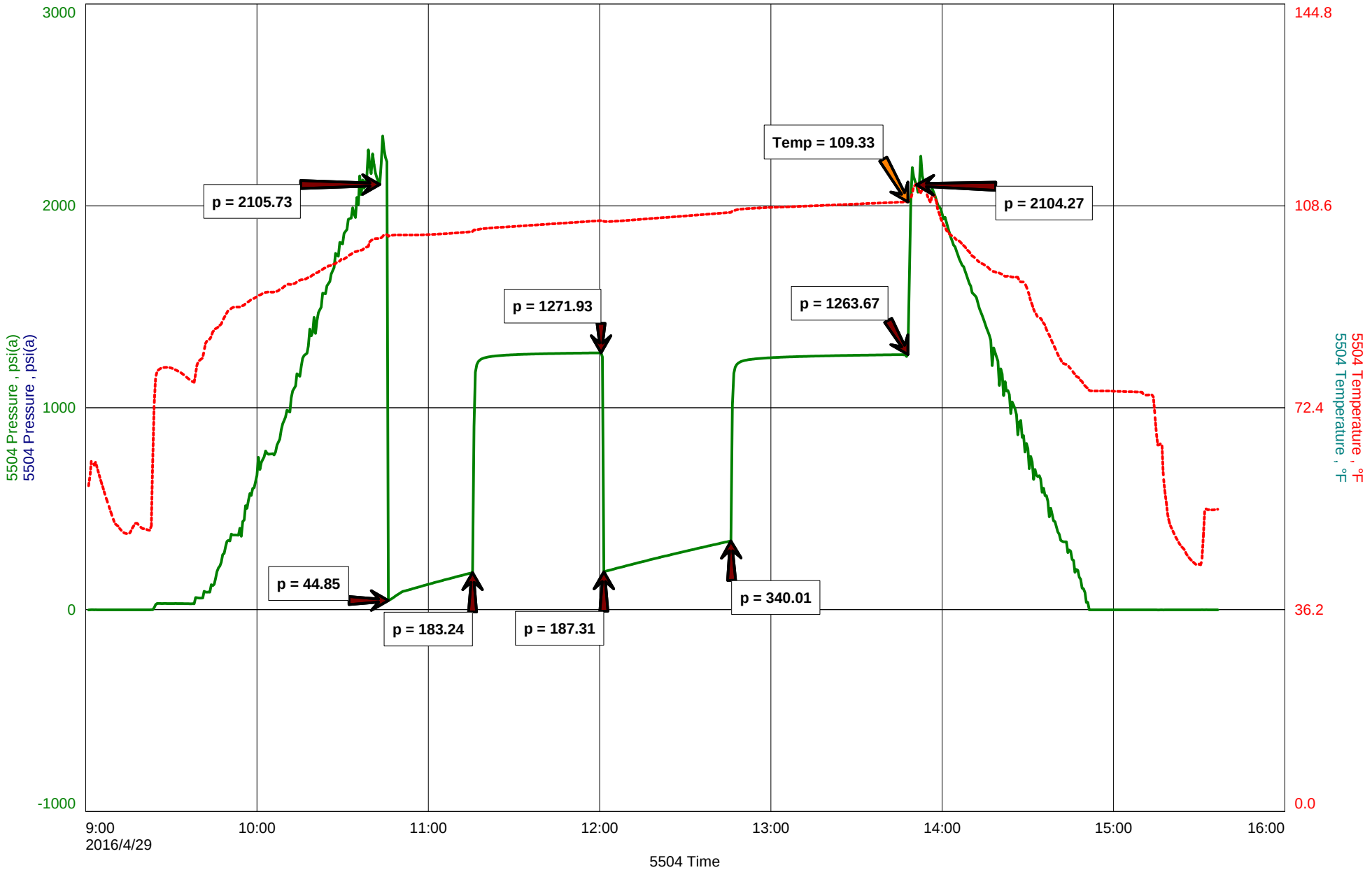
TOOL SAMPLE: 100% WATER

CHLORIDES: 22,000 ppm
PH: 6.0
RW: .52 @ 58 deg.

RITCHIE EXPLORATION, INC.
DST #4, LKC "H&I", 4264-4312
Start Test Date: 2016/04/29
Final Test Date: 2016/04/29

KOEHN-MOLLENKAMP #1
Formation: DST #4, LKC "H&I", 4264-4312
Pool: WILDCAT
Job Number: T530

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET
FILE: KOEHN-MOLLENKAMP1DST3

TIME ON: 09:01
TIME OFF: 15:37

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor WW DRILLING, LLC RIG #2 Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation LKC "H&I" Effective Pay _____ Ft. Ticket No. T530

Date 4-29-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 4 Interval Tested from 4264 ft. to 4312 ft. Total Depth 4312 ft.

Packer Depth 4259 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Packer Depth 4264 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4245 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4309 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 55 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 9.3 Water Loss 9.2 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 6,200 P.P.M. Drill Pipe Length 4113 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 16 ft. Size 4 1/2-FH in

32' DP IN ANCHOR

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: WEAK 1/4 INCH BLOW, BUILDING, REACHING BOB 14 MIN. (NO BB)

2nd Open: WEAK SURFACE BLOW, BUILDING, REACHING BOB 17 MIN. (NO BB)

Recovered 55 ft. of HMCW W/TR. O, TRACE OIL, 56% WATER, 44% MUD

Recovered 125 ft. of MCW, 68% WATER, 32% MUD

Recovered 500 ft. of SMCW, 95% WATER, 5% MUD

Recovered 680 ft. of TOTAL FLUID

Recovered _____ ft. of _____ | Price Job

Recovered _____ ft. of CHLORIDES: 22,000 ppm | Other Charges

Remarks: PH: 6.0 | Insurance

RW: .52 @ 58 deg.

TOOL SAMPLE: 100% WATER | Total

Time Set Packer(s) 10:45 AM A.M. P.M. Time Started Off Bottom 1:45 PM A.M. P.M. Maximum Temperature 109 deg.

Initial Hydrostatic Pressure..... (A) 2106 P.S.I.

Initial Flow Period..... Minutes 30 (B) 45 P.S.I. to (C) 183 P.S.I.

Initial Closed In Period..... Minutes 45 (D) 1272 P.S.I.

Final Flow Period..... Minutes 45 (E) 187 P.S.I. to (F) 340 P.S.I.

Final Closed In Period..... Minutes 60 (G) 1264 P.S.I.

Final Hydrostatic Pressure..... (H) 2104 P.S.I.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T531
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #5, ALTAMONT "A", 4441-4506	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/04/30
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #5, ALTAMONT "A", 4441-4506
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2016/04/30	Start Test Time	09:45:00
Final Test Date	2016/04/30	Final Test Time	16:25:00

Gauge Name	5504

Test Results

RECOVERED: 160' GAS IN PIPE
220' G,SWMCO, 6% GAS, 63% OIL, 9% WATER, 22% MUD
190' G,O&HWCM, 17% GAS, 14% OIL, 33% WATER, 36% MUD
240' SOMCW, 3% OIL, 75% WATER, 22% MUD
650' TOTAL FLUID

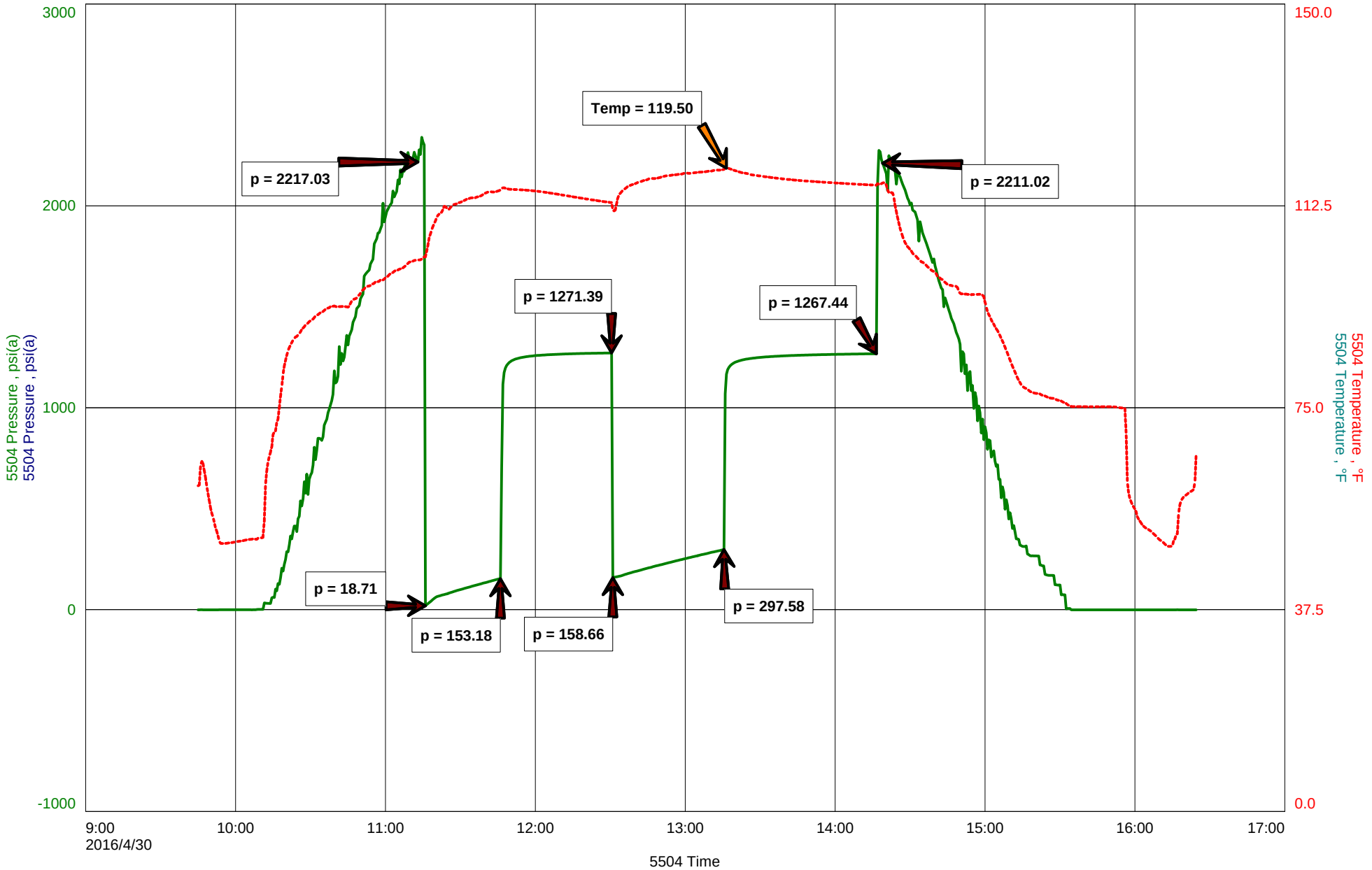
TOOL SAMPLE: 14% OIL, 74% WATER, 12% MUD

CHLORIDES: 24,000 PPM
PH: 7.0
RW: .42 @ 68 deg.

RITCHIE EXPLORATION, INC.
DST #5, ALTAMONT "A", 4441-4506
Start Test Date: 2016/04/30
Final Test Date: 2016/04/30

KOEHN-MOLLENKAMP #1
Formation: DST #5, ALTAMONT "A", 4441-4506
Pool: WILDCAT
Job Number: T531

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET

FILE: KOEHN-MOLLENKAMP1DST5

TIME ON: 09:45

TIME OFF: 16:25

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor WW DRILLING, LLC RIG #2 Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation ALTAMONT "A" Effective Pay _____ Ft. Ticket No. T531

Date 4-30-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 5 Interval Tested from 4441 ft. to 4506 ft. Total Depth 4506 ft.

Packer Depth 4436 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Packer Depth 4441 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4422 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4503 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 63 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 9.5 Water Loss 8.8 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 6,600 P.P.M. Drill Pipe Length 4290 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 33 ft. Size 4 1/2-FH in

32' DP IN ANCHOR

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: WEAK 1/4 INCH BLOW, BUILDING, REACHING BOB 14 1/2 MIN. (WS BB)

2nd Open: WEAK 1/2 INCH BLOW, BUILDING, REACHING BOB 14 1/2 MIN. (1 1/2" BB)

Recovered 160 ft. of GAS IN PIPE

Recovered 220 ft. of G,SWMCO, 6% GAS, 63% OIL, 9% WATER, 22% MUD

Recovered 190 ft. of G,O&HWCM, 17% GAS, 14% OIL, 33% WATER, 35% MUD

Recovered 240 ft. of SOMCW, 3% OIL, 75% WATER, 22% MUD

Recovered 650 ft. of TOTAL FLUID

Recovered _____ ft. of CHLORIDES: 24,000 ppm

Remarks: PH: 7.0

RW: .42 @ 68 deg.

TOOL SAMPLE: 14% OIL, 74% WATER, 12% MUD

Price Job	
Other Charges	
Insurance	
Total	

Time Set Packer(s) 11:15 AM A.M. P.M. Time Started Off Bottom 2:15 PM A.M. P.M. Maximum Temperature 120 deg.

Initial Hydrostatic Pressure..... (A) 2217 P.S.I.

Initial Flow Period..... Minutes 30 (B) 19 P.S.I. to (C) 153 P.S.I.

Initial Closed In Period..... Minutes 45 (D) 1271 P.S.I.

Final Flow Period..... Minutes 45 (E) 159 P.S.I. to (F) 298 P.S.I.

Final Closed In Period..... Minutes 60 (G) 1267 P.S.I.

Final Hydrostatic Pressure..... (H) 2211 P.S.I.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T532
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #6, ALT. "B&C", 4498-4546	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/05/01
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #6, ALT. "B&C", 4498-4546
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2016/05/01	Start Test Time	01:45:00
Final Test Date	2016/05/01	Final Test Time	09:37:00

Gauge Name	5504

Test Results

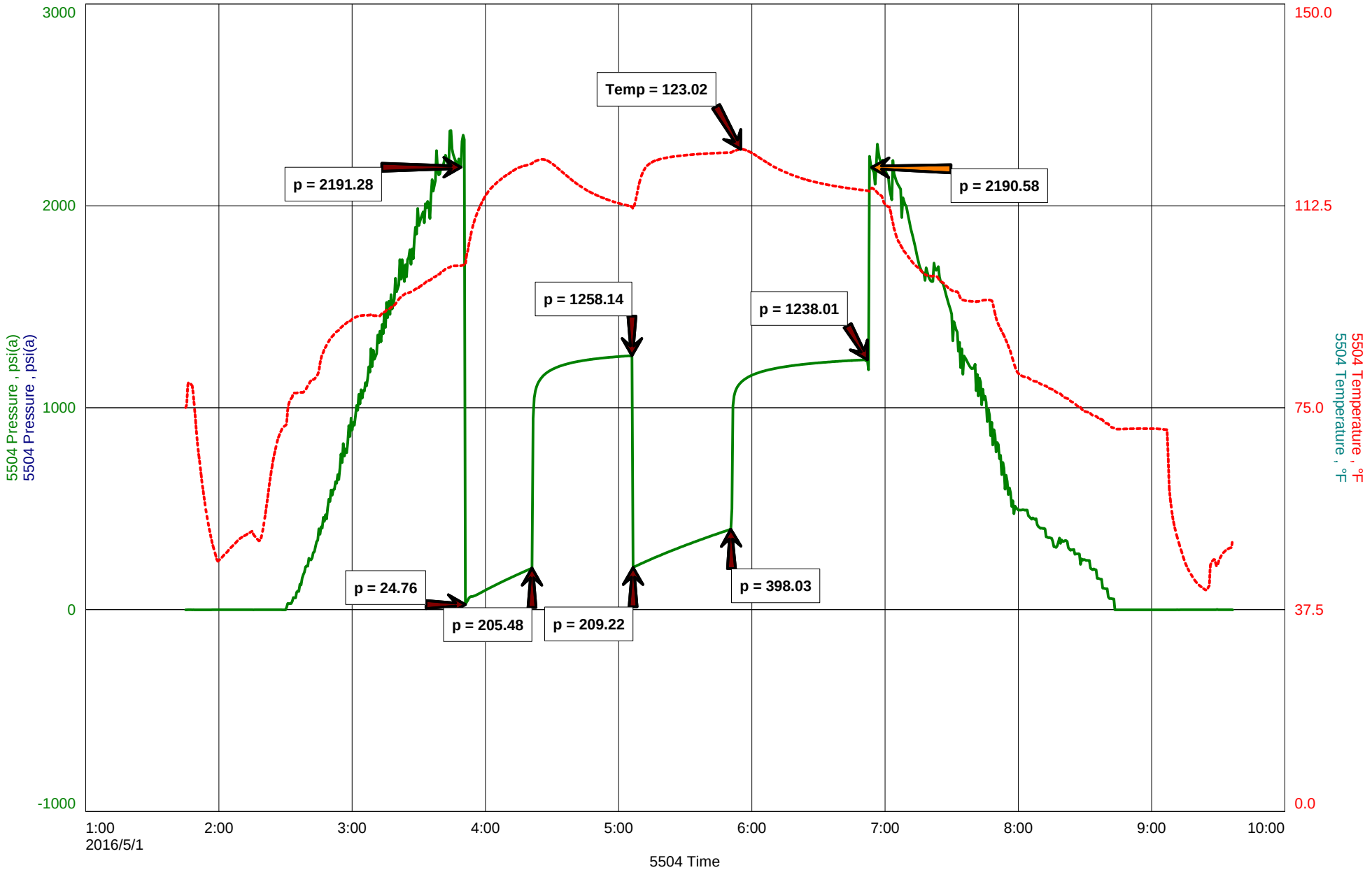
RECOVERED: 570' GAS IN PIPE
910' GO, 7% GAS, 93% OIL, GRAVITY: 31
60' G,SMCO, 5% GAS, 89% OIL, 6% MUD
60' G,HMCO, 7% GAS, 57% OIL, 36% MUD
1030' TOTAL FLUID

TOOL SAMPLE: 88% OIL, 12% MUD

RITCHIE EXPLORATION, INC.
DST #6, ALT. "B&C", 4498-4546
Start Test Date: 2016/05/01
Final Test Date: 2016/05/01

KOEHN-MOLLENKAMP #1
Formation: DST #6, ALT. "B&C", 4498-4546
Pool: WILDCAT
Job Number: T532

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET

FILE: KOEHN-MOLLENKAMP1DST6

TIME ON: 01:45

TIME OFF: 09:37

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor WW DRILLING, LLC RIG #2 Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation ALTAMONT "B&C" Effective Pay _____ Ft. Ticket No. T532

Date 5-1-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 6 Interval Tested from 4498 ft. to 4546 ft. Total Depth 4546 ft.

Packer Depth 4493 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Packer Depth 4498 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4479 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4543 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 63 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 9.5 Water Loss 8.8 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 6,600 P.P.M. Drill Pipe Length 4347 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 16 ft. Size 4 1/2-FH in

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. 32' DP IN ANCHOR Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: GOOD 1 INCH BLOW, BUILDING, REACHING BOB 5 1/2 MIN. (9 1/2" BB)

2nd Open: GOOD 1 1/2 INCH BLOW, BUILDING, REACHING BOB 7 1/2 MIN. (WS BB)

Recovered 570 ft. of GAS IN PIPE

Recovered 910 ft. of GO, 7% GAS, 93% OIL, GRAVITY: 31

Recovered 60 ft. of G,SMCO, 5% GAS, 89% OIL, 6% MUD

Recovered 60 ft. of G,HMCO, 7% GAS, 57% OIL, 36% MUD

Recovered 1030 ft. of TOTAL FLUID

Recovered _____ ft. of _____

Remarks: _____

TOOL SAMPLE: 88% OIL, 12% MUD

Price Job	
Other Charges	
Insurance	
Total	

Time Set Packer(s) 3:50 A.M. P.M. Time Started Off Bottom 6:50 A.M. P.M. Maximum Temperature 123 deg.

Initial Hydrostatic Pressure ..... (A) 2191 P.S.I.

Initial Flow Period ..... Minutes 30 (B) 25 P.S.I. to (C) 205 P.S.I.

Initial Closed In Period ..... Minutes 45 (D) 1258 P.S.I.

Final Flow Period ..... Minutes 45 (E) 209 P.S.I. to (F) 398 P.S.I.

Final Closed In Period ..... Minutes 60 (G) 1238 P.S.I.

Final Hydrostatic Pressure ..... (H) 2191 P.S.I.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.		
Contact	JUSTIN CLEGG	Job Number	T533
Well Name	KOEHN-MOLLENKAMP #1	Representative	TIM VENTERS
Unique Well ID	DST #7, PAWNEE, 4540-4584	Well Operator	RITCHIE EXPLORATION, INC.
Surface Location	SEC 14-15S-36W, LOGAN CO. KS.	Report Date	2016/05/02
Well License Number		Prepared By	TIM VENTERS
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #7, PAWNEE, 4540-4584
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2016/05/01	Start Test Time	17:41:00
Final Test Date	2016/05/01	Final Test Time	23:48:00

Gauge Name	5504

Test Results

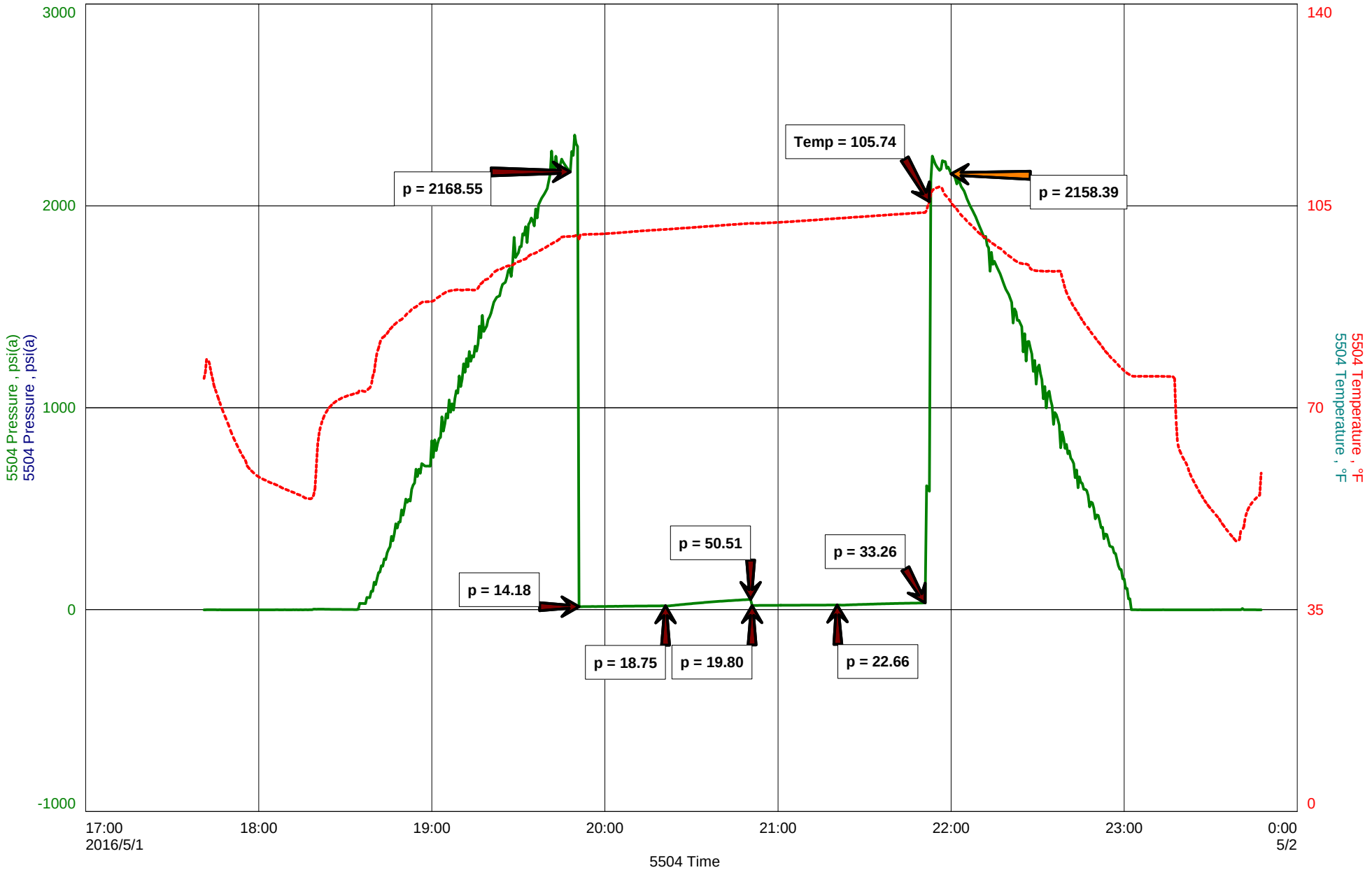
RECOVERED: 10' M W/O SP., SPECKS OIL, 100% MUD

TOOL SAMPLE: TRACE OIL, 100% MUD

RITCHIE EXPLORATION, INC.
DST #7, PAWNEE, 4540-4584
Start Test Date: 2016/05/01
Final Test Date: 2016/05/01

KOEHN-MOLLENKAMP #1
Formation: DST #7, PAWNEE, 4540-4584
Pool: WILDCAT
Job Number: T533

KOEHN-MOLLENKAMP #1



DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313

DRILL-STEM TEST TICKET

FILE: KOEHN-MOLLENKAMP1DST7

TIME ON: 17:41

TIME OFF: 23:48

Company RITCHIE EXPLORATION, INC. Lease & Well No. KOEHN-MOLLENKAMP #1

Contractor WW DRILLING, LLC RIG #2 Charge to RITCHIE EXPLORATION, INC.

Elevation 3319 KB Formation PAWNEE Effective Pay _____ Ft. Ticket No. T533

Date 5-1-16 Sec. 14 Twp. 15 S Range 36 W County LOGAN State KANSAS

Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 7 Interval Tested from 4540 ft. to 4584 ft. Total Depth 4584 ft.

Packer Depth 4535 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Packer Depth 4540 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4521 ft. Recorder Number 5504 Cap. 5000 P.S.I.

Bottom Recorder Depth (Outside) 4581 ft. Recorder Number 11029 Cap. 5,025 P.S.I.

Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 59 Drill Collar Length 118 ft. I.D. 2 1/4 in.

Weight 9.2 Water Loss 9.6 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in

Chlorides 9,000 P.P.M. Drill Pipe Length 4389 ft. I.D. 3 1/2 in

Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in

Did Well Flow? NO Reversed Out NO Anchor Length 44 ft. Size 4 1/2-FH in

Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. Surface Choke Size 1 in. Bottom Choke Size 5/8 in

Blow: 1st Open: WEAK SURFACE BLOW, BUILDING TO 1/2 INCH. (NO BB)

2nd Open: VERY WEAK SURFACE BLOW THROUGHOUT PERIOD. (NO BB)

Recovered 10 ft. of M W/O SP., SPECKS OIL, 100% MUD

Recovered _____ ft. of _____

Recovered _____ ft. of _____

Recovered _____ ft. of _____

Recovered _____ ft. of _____

Recovered _____ ft. of _____

Remarks: _____

TOOL SAMPLE: TRACE OIL, 100% MUD

Price Job	
Other Charges	
Insurance	
Total	

Time Set Packer(s) 7:51 PM A.M. P.M. Time Started Off Bottom 9:51 PM A.M. P.M. Maximum Temperature 106 deg.

Initial Hydrostatic Pressure..... (A) 2169 P.S.I.

Initial Flow Period..... Minutes 30 (B) 14 P.S.I. to (C) 19 P.S.I.

Initial Closed In Period..... Minutes 30 (D) 51 P.S.I.

Final Flow Period..... Minutes 30 (E) 20 P.S.I. to (F) 23 P.S.I.

Final Closed In Period..... Minutes 30 (G) 33 P.S.I.

Final Hydrostatic Pressure..... (H) 2158 P.S.I.