

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 # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

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 #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

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: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

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 <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
--	---

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> 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

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> 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:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
---	--	------------------------------------

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

TUBING RECORD:	Size:	Set At:	Packer At:	
----------------	-------	---------	------------	--

Form	ACO1 - Well Completion
Operator	Downing-Nelson Oil Co Inc
Well Name	MUHLHEIM "B" 11
Doc ID	1407791

Tops

Name	Top	Datum
Top Anhydrite	1605'	+632
Base Anhydrite	1650'	+587
Topeka	3265'	-1028
Heebner	3491'	-1254
Toronto	3512'	-1275
LKC	3526'	-1289
BKC	3768'	-1531
Marmaton	3844'	-1607
Arbuckle	3914'	-1677

Marc A. Downing		Geologic Report	
Consulting Petroleum Geologist		Drilling Time and Sample Log	
Operator Downing-Nelson Oil Co., Inc.		Elevation	
Lease Muhlheim B No. 11		KB 2237	
API # 15-195-23037-0000		DF 2235	
Field Muhlheim		GL 2229	
Location 2345' FSL & 1160' FEL		Casing Record Surface	
Sec. 15 Twp. 13s Rge. 21w		Production 8 5/8" @ 222'	
County Trego State Kansas		Electrical Surveys	
Formation		Datum	
Top Anhydrite	Sample tops	Log Tops	Struct Comp
Base Anhydrite	1594	1605	+632 -7
	1641	1650	+587 NA
Topeka	3263	3265	-1028 FL
Heebner	3490	3491	-1254 +1
Toronto	3510	3512	-1275 -2
LKC	3525	3526	-1289 +2
BKC	3767	3768	-1531 +3
Marmaton	3842	3844	-1607 +2
Arbuckle	3912	3914	-1677 +12
Total Depth	4020	4021	-1784
Reference Well For Structural Comparison Chester Williams			
Muhlheim #1 C-NE-SE Sec. 15-13s-21w			

Drilling Contractor		Discovery Drilling, Rig #2	
Commenced 2-3-18		Completed 2-9-18	
Samples Saved From 3200		To RTD	
Drilling Time Kept From 3100		To RTD	
Samples Examined From 3200		To RTD	
Geological Supervision From 3200		To RTD	

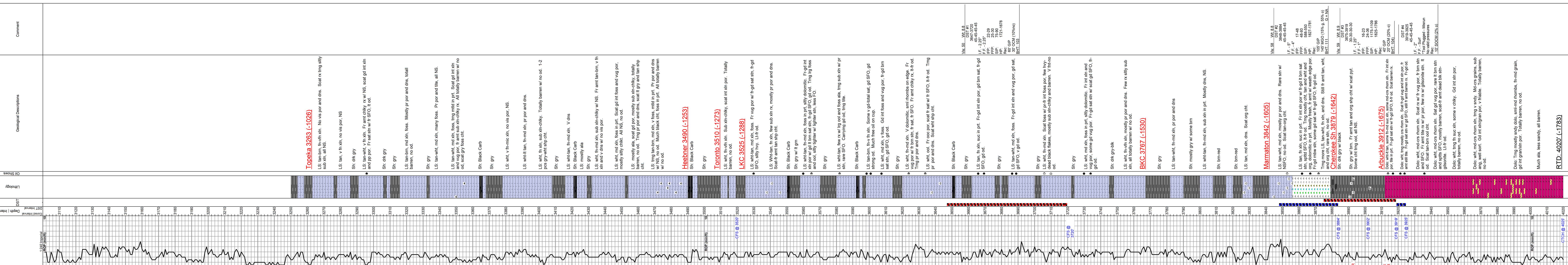
Summary and Recommendations

Due to structural position, DST recovery, and log evaluation, it was decided to set 5 1/2" production casing for completion.

Respectfully Submitted,

Marc A. Downing

Printed by GEGStrip V6 Striplog version 4.0.8.15 (www.gstri.com)



Geological Descriptions	Comment
LS: tan-brn, fn-vfn xln. No vis por and dns. Scat rx trng silty sub xln, all NS.	Vls. 58 - Vlt. 8.8 DST #1 3847-3720 45-45-45-45 I.F. - 5" F.F. - 2.25" IFF: 22-29 FFP: 25-30 SIP: 58-50 HP: 1827-1781 Rec: 105' GIP 145' MCO (10% o) BHT-103
LS: tan, v fn xln, no vis por, NS	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: dkf gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-wht, v fn xln. Fr amt chiky rx w/ NS, scat gd int xln and pp por. Fr sat sn w/ fr SFO, lt od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: dkf gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-brn, md xln, foss. Mostly pr por and dns, totall barren, no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-wht, md xln, many foss. Pr por and tile, all NS.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-wht, md xln, foss, trng mtld in prt. Scat gd int xln and vug por, fr amt sub xln-chiky rx. All totall barren w/ no od, scat gry foss cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: Black Carb	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, v fn-mc xln, no vis por, NS.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht-tan, fn-md xln, pr por and dns.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, fn xln, sub xln-chiky w/ NS. Fr amt tan-brn, v fn xln and v dns w/ no vis por.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, md xln, foss in prt. Scat gd int foss and vug por, mostly silty chikt. All NS, no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: mostly ala, scat gd por, mostly sub xln-chiky, totall barren, no od. Trng pr por and dns, scat lt gry and tan shp cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: trng tan-brn, md xln, v foss, mtld in prt. Pr por and dns w/ NS, no od. Much black cht, foss in prt. All totall barren w/ no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Heebner 3490 (-1253) Sh: Black Carb	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Toronto 3510 (-1273) LS: wht, fn-vfn xln. Sub xln-chiky, scat int xln por. Totall barren, no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LKC 3525 (-1288) LS: wht-tan, md xln, foss. Fr vug por w/ fr-gd sat sn, fr-gd SFO, silty tny. Lt-fr od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: Wht-tan, fn xln, few sub xln rx, mostly pr por and dns. Scat-fr amt tan shp cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: Black Carb	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-brn, fn-v fn xln. Some v gd-total sat, gd SFO, gd strong od. Much free oil on cup.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, md xln, v foss. Gd int foss and vug por, fr-gd brn sat sn, gd SFO, gd od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, fn-md xln. V dolomitic, sm rhombs on edge. Fr vug por w/ fr brn sn, fr sat, fr SFO. Fr amt chiky rx, lt-fr od. Trng pr por and dns.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, ool. Fr ool por, scat fr sat w/ fr SFO, lt-fr od. Trng pr por and dns. Scat wht shp cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: Black Carb	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan, fn xln, suc in prt. Fr-gd int xln por, gd brn sat, fr-gd SFO, gd od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, fn-md xln. Scat foss w/ pr-fr in foss por, few hvy-dead black flakes, mostly sub xln-chiky and barren. V mch no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, md xln, foss in prt, silty dolomitic. Fr int xln and vug por, some gd vug por. Fr-gd sat sn w/ scat gd SFO, fr-gd od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: dkf gry-bk	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: wht, fn-vfn xln, mostly pr por and dns. Few rx silty sub xln, all totall barren w/ no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
BKC 3767 (-1530)	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-wht, md xln, mostly pr por and dns. Rare sn w/ NSF0, no od. Scat tan-org cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Marmaton 3842 (-1605)	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan-wht, md xln, mostly pr por and dns. Rare sn w/ NSF0, no od. Scat tan-org cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
LS: tan, fn xln, suc in prt. Fr int xln por w/ fr-gd lt brn sat sn, spid SFO, lt-fr od. Trng mostly cht, tan and wht and dolomitic in prt. Mostly fresh, fr amt w/ weath edge por. Fr-gd mbw sn, some gd sat w/ fr-gd SFO, fr-gd od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Trng more LS, tan-wht, fn xln, and dns. Still fr amt tan, wht, and org cht, rare sn, no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Cherokee Sh 3879 (-1642) Sh: dkf gry w/ black	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Sh: gry w/ brn. Fr amt tan and org shp cht w/ scat pyt. Some cht, trng ool, all NS.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Arbuckle 3912 (-1675) Dolo: wht-tan, some fn-md suc xln, some md-crs rhom xln. Fr int xln por, tile in prt. Fr-gd sat sn w/ fr-gd SFO, lt-fr od. Scat barren rx.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Dolo: wht, trng mostly crs rhom xln. Scat fr-gd vug and int xln por, fr amt silty tile. Fr-gd sat sn w/ fr-gd SFO, still fr amt barren rx. Fr-gd od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Dolo: wht, md-crs rhom xln. Scat rx w/ fr vug por, fr brn sn and SFO. Fr amt tile rx w/ pr por, few rx w/ gilsonite sn. lt od. Scat tan-brn ool cht.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Dolo: wht, md-crs rhom xln. Sat gd vug por, rare lt brn sn and spid SFO, mostly barren, scat-fr amt dead blk shp rhombs. Lt-fr od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Dolo: wht, trng fn suc xln, some v chiky. Gd int xln por, totall barren, no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109 SIP: 24-36 HP: 1825-1786 Rec: 40' GIP 20' OCM (20% o) BHT-104
Dolo: wht, md-crs rhom xln, trng v sny. Md-crs grains, sub ang, well sort. Gd int xingran por, v friable. Totall barren, no od.	Vls. 59 - Vlt. 6.9 DST #3 3919-3925 3850-3850-30 I.F. - 1.25" F.F. - 1" IFF: 16-23 FFP: 175-1109



DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co Inc**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

Muhlheim B #11

15-13s-21w Trego,KS

Start Date: 2018.02.07 @ 03:20:19

End Date: 2018.02.07 @ 10:38:58

Job Ticket #: 63507 DST #: 1

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.02.12 @ 08:42:38



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63507

DST#: 1

ATTN: Marc Dow ning

Test Start: 2018.02.07 @ 03:20:19

GENERAL INFORMATION:

Formation: **LKC H-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:44:59

Time Test Ended: 10:38:58

Test Type: Conventional Bottom Hole (Initial)

Tester: Ray Schw ager

Unit No: 77

Interval: 3647.00 ft (KB) To 3720.00 ft (KB) (TVD)

Reference Elevations: 2237.00 ft (KB)

Total Depth: 3720.00 ft (KB) (TVD)

2229.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8360

Inside

Press@RunDepth: 30.80 psig @ 3653.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.02.07

End Date:

2018.02.07

Last Calib.:

2018.02.07

Start Time:

03:20:19

End Time:

10:38:58

Time On Btm:

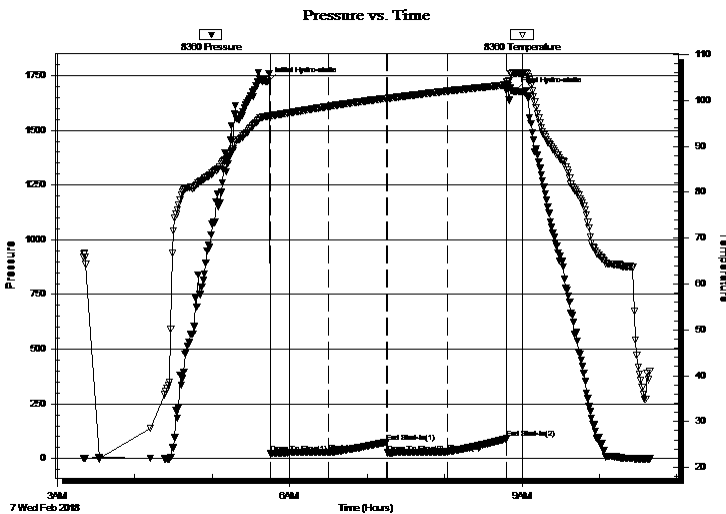
2018.02.07 @ 05:43:14

Time Off Btm:

2018.02.07 @ 08:53:58

TEST COMMENT: 45-IFP-w k bl thru-out 1/2" to 2 1/4" bl
45-ISIP-no bl bk
45-FFP-w k bl thru-out 1/2" to 2 1/4" bl
45-FSIP-no bl bk

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1721.07	96.57	Initial Hydro-static
2	22.21	96.36	Open To Flow (1)
47	29.77	98.68	Shut-In(1)
92	75.07	100.46	End Shut-In(1)
93	25.64	100.46	Open To Flow (2)
139	30.80	102.02	Shut-In(2)
185	90.35	103.35	End Shut-In(2)
191	1678.60	105.97	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	OCM 10%O 90%M	0.21
0.00	60' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63507

DST#: 1

ATTN: Marc Dow ning

Test Start: 2018.02.07 @ 03:20:19

Tool Information

Drill Pipe:	Length: 3341.00 ft	Diameter: 3.80 inches	Volume: 46.87 bbl	Tool Weight:	2200.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.70 inches	Volume: 2.20 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	85000.00 lb
			<u>Total Volume: 49.07 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	3647.00 ft			Final	58000.00 lb
Depth to Bottom Packer:	ft				
Interval betw een Packers:	73.00 ft				
Tool Length:	94.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			
Tool Comments:					

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3627.00	
Shut In Tool	5.00			3632.00	
Hydraulic tool	5.00			3637.00	
Packer	5.00			3642.00	21.00 Bottom Of Top Packer
Packer	5.00			3647.00	
Stubb	1.00			3648.00	
Perforations	5.00			3653.00	
Recorder	0.00	8360	Inside	3653.00	
Recorder	0.00	8673	Outside	3653.00	
Blank Spacing	64.00			3717.00	
Bullnose	3.00			3720.00	73.00 Bottom Packers & Anchor

Total Tool Length: 94.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63507

DST#: 1

ATTN: Marc Dow ning

Test Start: 2018.02.07 @ 03:20:19

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.14 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
30.00	OCM 10%O 90%M	0.212
0.00	60' GIP	0.000

Total Length: 30.00 ft Total Volume: 0.212 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8360

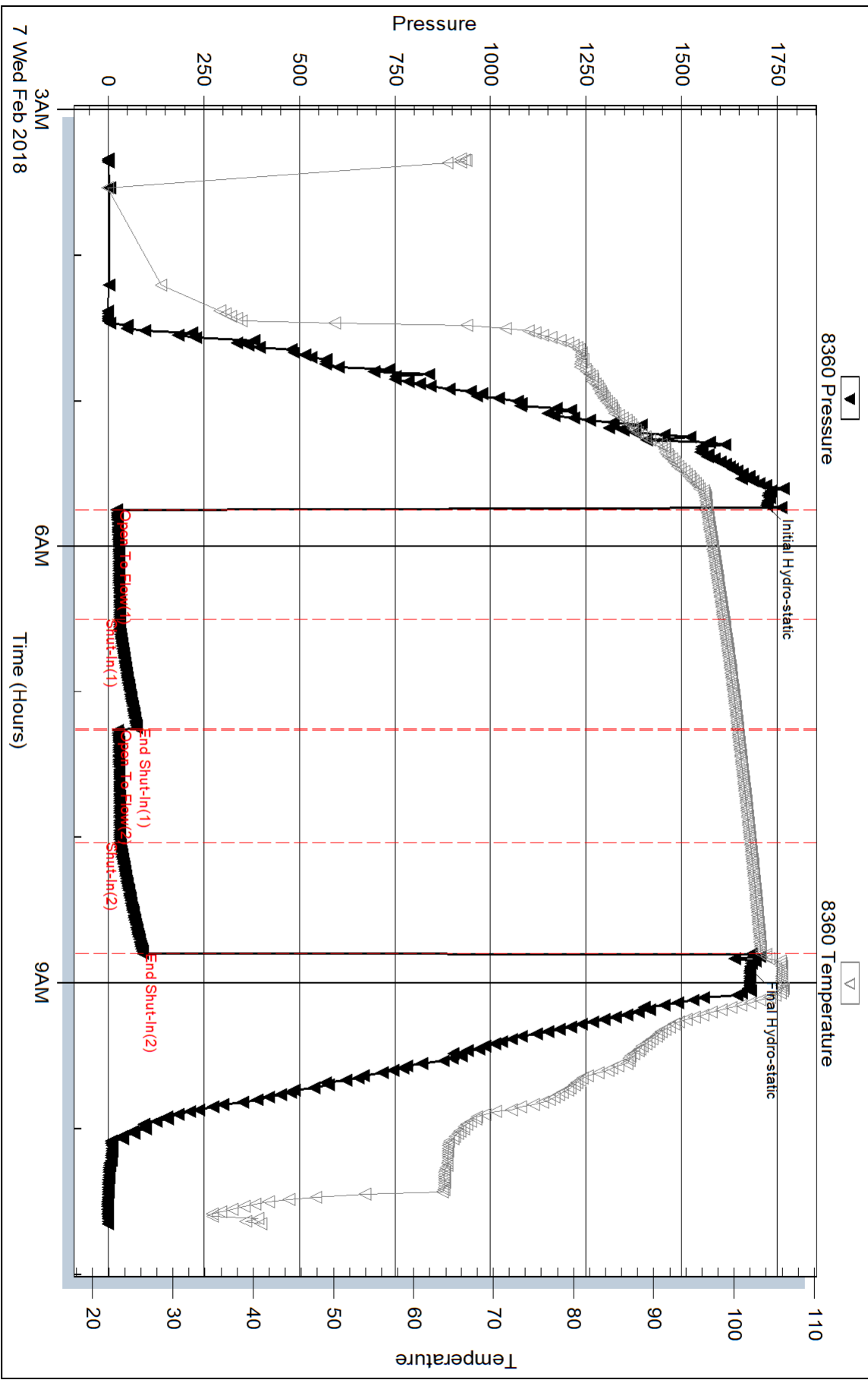
Inside

Dow n/mg-Nelson Oil Co Inc

Muhlheim B #11

DST Test Number: 1

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 63507

Printed: 2018.02.12 @ 08:42:39

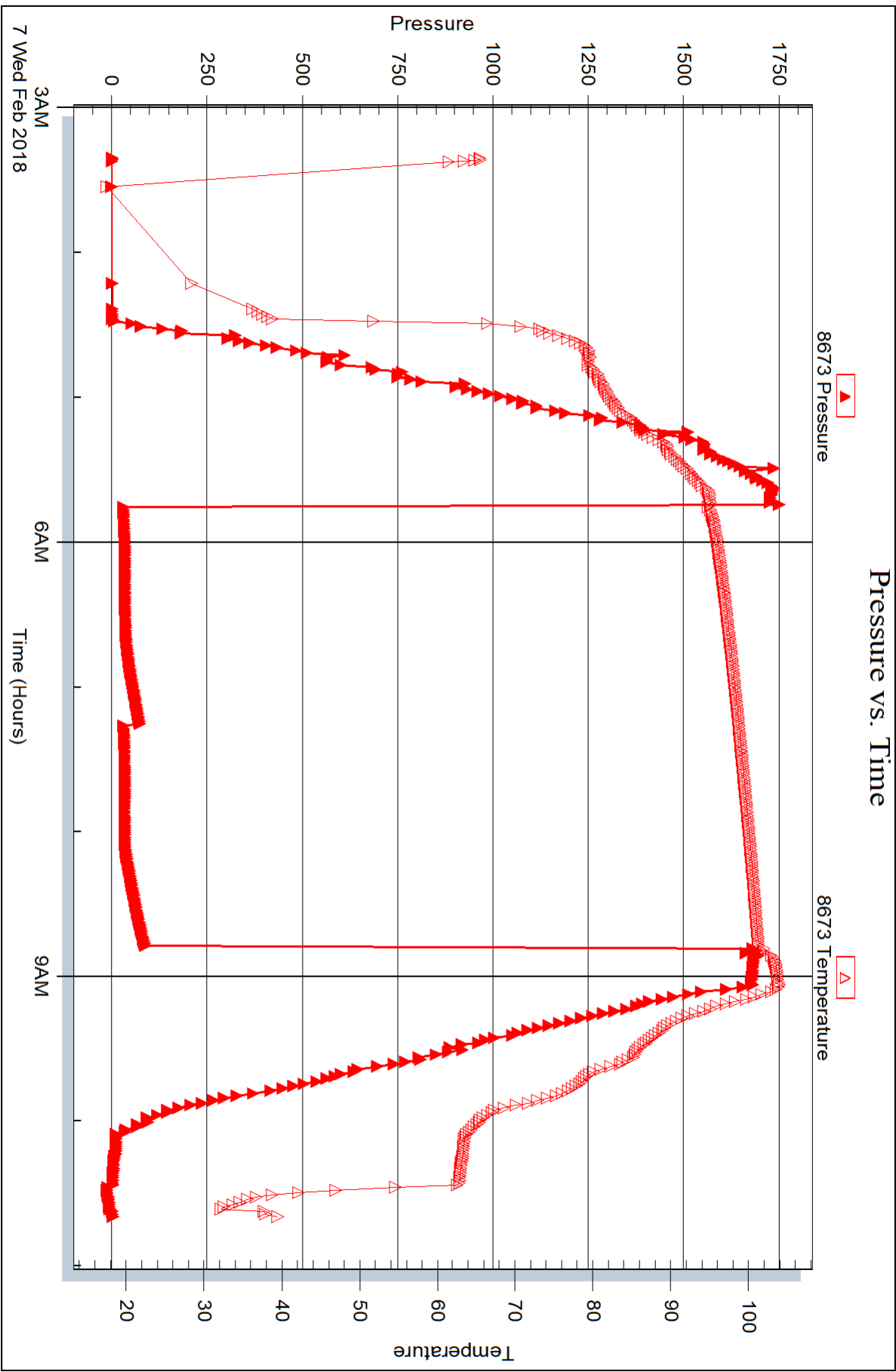
Serial #: 8673

Outside

Dow nung-Nelson Oil Co Inc

Muhlheim B #11

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co Inc**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

Muhlheim B #11

15-13s-21w Trego,KS

Start Date: 2018.02.08 @ 00:15:24

End Date: 2018.02.08 @ 06:54:03

Job Ticket #: 63508 DST #: 2

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.02.12 @ 08:42:07



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63508

DST#: 2

ATTN: Marc Dow ning

Test Start: 2018.02.08 @ 00:15:24

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:08:19

Time Test Ended: 06:54:03

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schw ager

Unit No: 77

Interval: 3848.00 ft (KB) To 3884.00 ft (KB) (TVD)

Reference Elevations: 2237.00 ft (KB)

Total Depth: 3884.00 ft (KB) (TVD)

2229.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8360

Inside

Press@RunDepth: 93.72 psig @ 3857.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.02.08

End Date:

2018.02.08

Last Calib.:

2018.02.08

Start Time:

00:15:24

End Time:

06:54:03

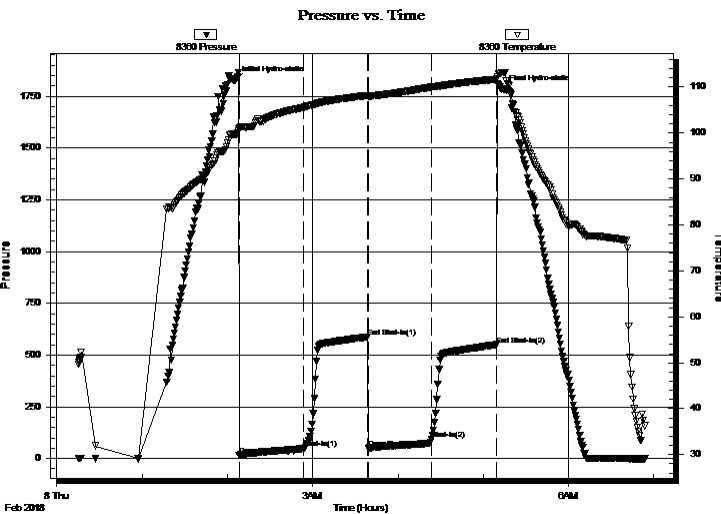
Time On Btm:

2018.02.08 @ 02:05:34

Time Off Btm:

2018.02.08 @ 05:13:18

TEST COMMENT: 45-IFP-w k to a fr bl 1/2" to 5" blow
45-ISIP-no bl bk
45-FFP-w k to a fr bl 1/2" to 4" blow
45-FSIP-no bl bk 1st 30 min, then surface bl bk



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1827.13	99.75	Initial Hydro-static
3	17.00	100.84	Open To Flow (1)
48	48.38	105.61	Shut-In(1)
93	588.14	108.19	End Shut-In(1)
94	48.53	108.05	Open To Flow (2)
138	93.72	110.11	Shut-In(2)
184	550.18	111.72	End Shut-In(2)
188	1781.75	113.12	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
145.00	MGO 15%G 30%M 55%O	1.03
0.00	105' GIP	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63508

DST#: 2

ATTN: Marc Dow ning

Test Start: 2018.02.08 @ 00:15:24

Tool Information

Drill Pipe:	Length: 3532.00 ft	Diameter: 3.80 inches	Volume: 49.54 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.70 inches	Volume: 2.20 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 51.74 bbl</u>	Tool Chased 5.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 61000.00 lb
Depth to Top Packer:	3848.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	36.00 ft			
Tool Length:	57.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3828.00	
Shut In Tool	5.00			3833.00	
Hydraulic tool	5.00			3838.00	
Packer	5.00			3843.00	21.00 Bottom Of Top Packer
Packer	5.00			3848.00	
Stubb	1.00			3849.00	
Perforations	8.00			3857.00	
Recorder	0.00	8360	Inside	3857.00	
Recorder	0.00	8673	Outside	3857.00	
Perforations	24.00			3881.00	
Bullnose	3.00			3884.00	36.00 Bottom Packers & Anchor

Total Tool Length: 57.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63508

DST#: 2

ATTN: Marc Dow ning

Test Start: 2018.02.08 @ 00:15:24

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.71 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
145.00	MGO 15%G 30%M 55%O	1.027
0.00	105' GIP	0.000

Total Length: 145.00 ft Total Volume: 1.027 bbl

Num Fluid Samples: 0

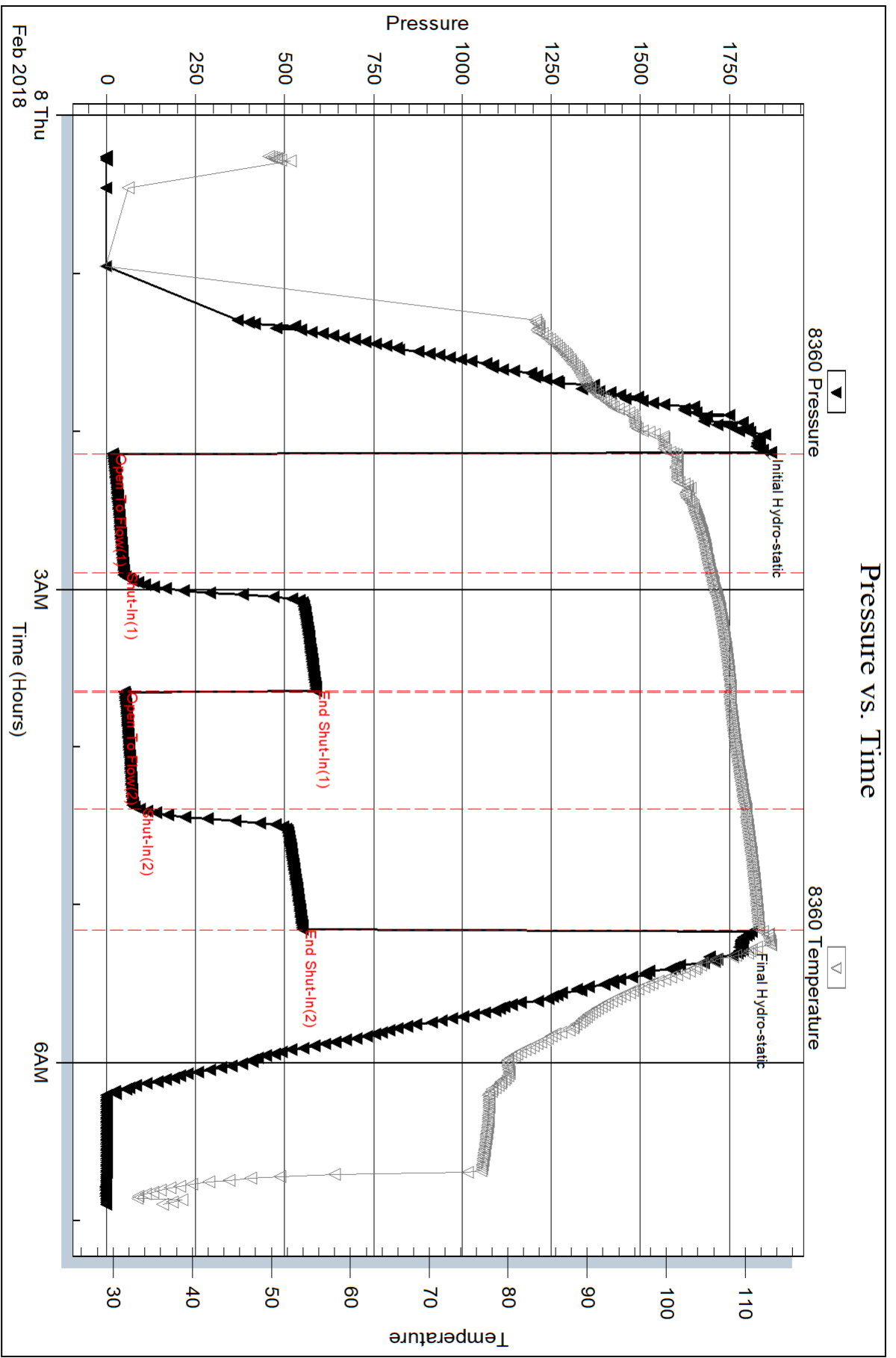
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



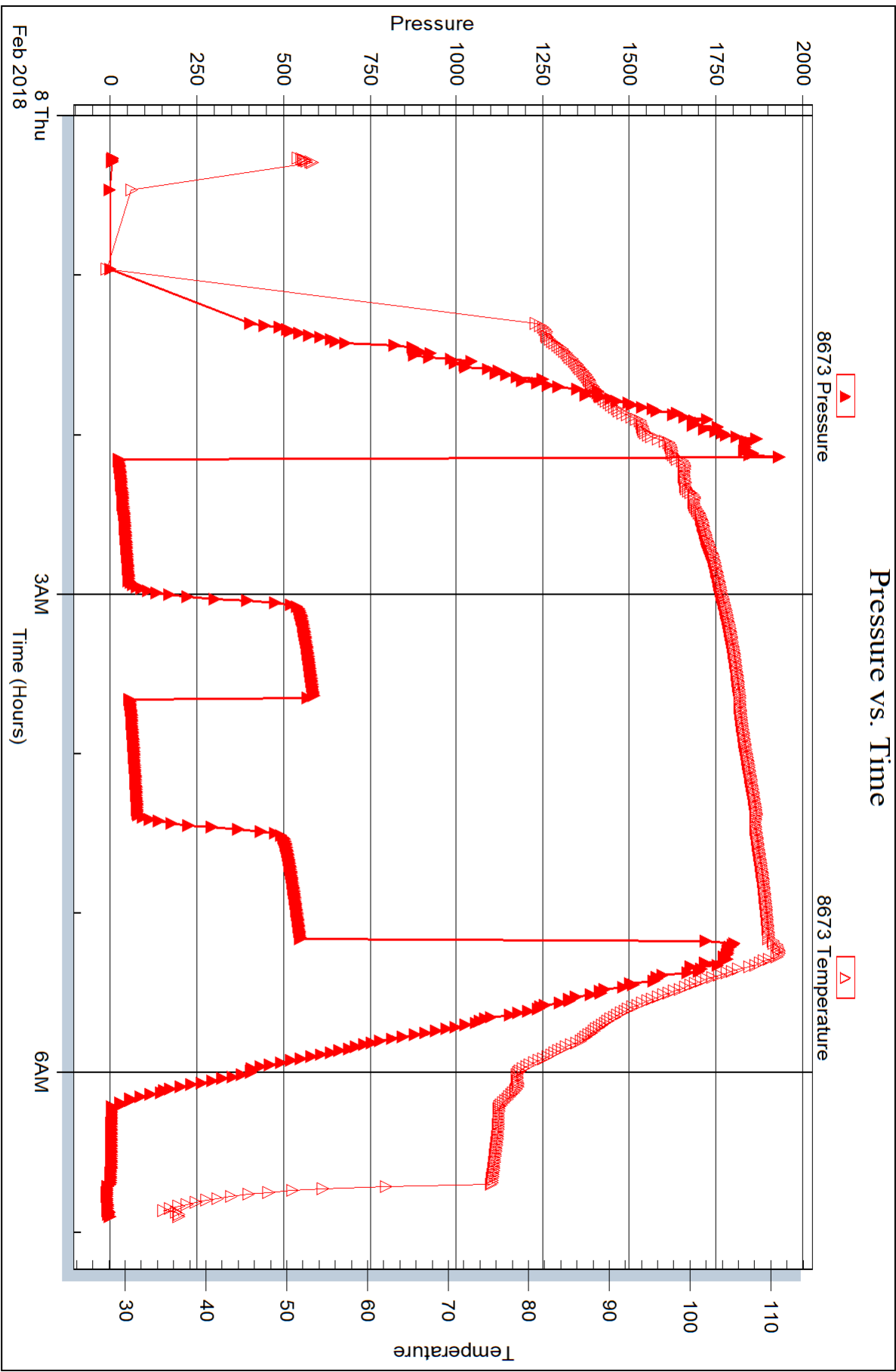
Serial #: 8673

Outside

Dow nting-Nelson Oil Co Inc

Muhlheim B #11

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co Inc**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

Muhlheim B #11

15-13s-21w Trego,KS

Start Date: 2018.02.08 @ 15:20:47

End Date: 2018.02.08 @ 22:59:56

Job Ticket #: 63509 DST #: 3

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.02.12 @ 08:41:40



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63509

DST#: 3

ATTN: Marc Dow ning

Test Start: 2018.02.08 @ 15:20:47

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:29:57

Time Test Ended: 22:59:56

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schw ager

Unit No: 77

Interval: 3875.00 ft (KB) To 3919.00 ft (KB) (TVD)

Reference Elevations: 2237.00 ft (KB)

Total Depth: 3919.00 ft (KB) (TVD)

2229.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8360

Inside

Press@RunDepth: 36.08 psig @ 3883.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.02.08

End Date:

2018.02.08

Last Calib.:

2018.02.08

Start Time:

15:20:47

End Time:

22:59:56

Time On Btm:

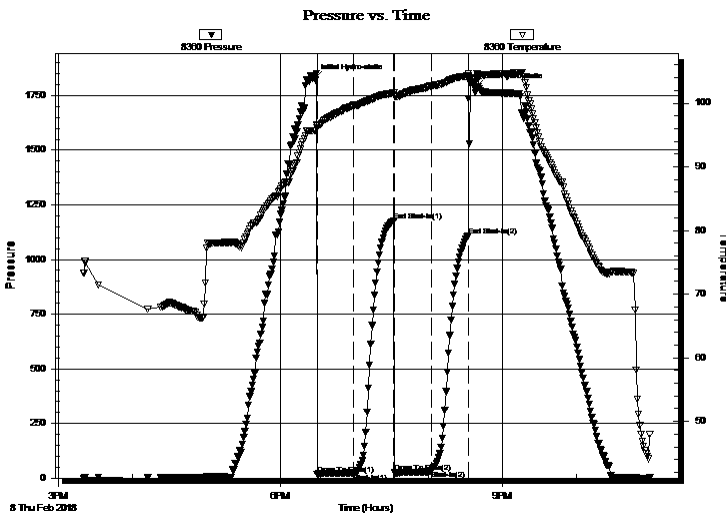
2018.02.08 @ 18:27:57

Time Off Btm:

2018.02.08 @ 20:37:56

TEST COMMENT: 30-IFP-w k bl thru-out 1/2" to 1 1/4" bl
30-ISIP-no bl
30-FFP-w k bl thru-out 1/2" to 1" bl
30-FSIP-no bl bk

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1825.80	95.70	Initial Hydro-static
2	16.53	96.19	Open To Flow (1)
32	23.93	99.68	Shut-In(1)
65	1175.17	101.58	End Shut-In(1)
65	24.32	101.13	Open To Flow (2)
95	36.08	102.67	Shut-In(2)
125	1109.49	104.27	End Shut-In(2)
130	1786.82	103.71	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	OCM 20%O 80%M	0.14
0.00	40' GIP	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63509

DST#: 3

ATTN: Marc Dow ning

Test Start: 2018.02.08 @ 15:20:47

Tool Information

Drill Pipe:	Length: 3565.00 ft	Diameter: 3.80 inches	Volume: 50.01 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.70 inches	Volume: 2.20 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 52.21 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 61000.00 lb
Depth to Top Packer:	3875.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	44.00 ft			
Tool Length:	65.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			3855.00	
Shut In Tool	5.00			3860.00	
Hydraulic tool	5.00			3865.00	
Packer	5.00			3870.00	21.00 Bottom Of Top Packer
Packer	5.00			3875.00	
Stubb	1.00			3876.00	
Perforations	7.00			3883.00	
Recorder	0.00	8360	Inside	3883.00	
Recorder	0.00	8673	Outside	3883.00	
Blank Spacing	33.00			3916.00	
Bullnose	3.00			3919.00	44.00 Bottom Packers & Anchor

Total Tool Length: 65.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Downing-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63509

DST#: 3

ATTN: Marc Downing

Test Start: 2018.02.08 @ 15:20:47

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.55 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
20.00	OCM 20%O 80%M	0.142
0.00	40' GIP	0.000

Total Length: 20.00 ft Total Volume: 0.142 bbl

Num Fluid Samples: 0

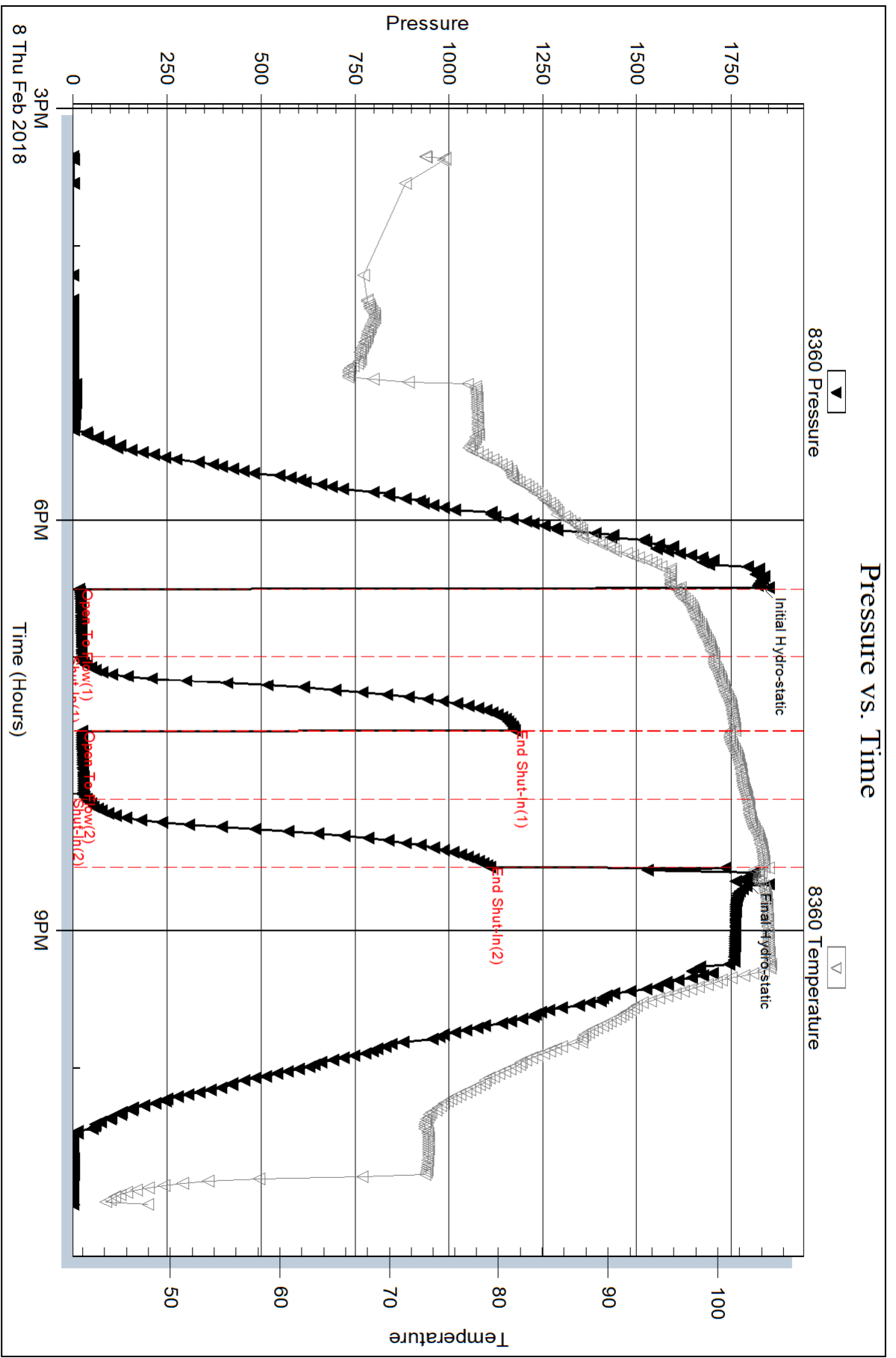
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

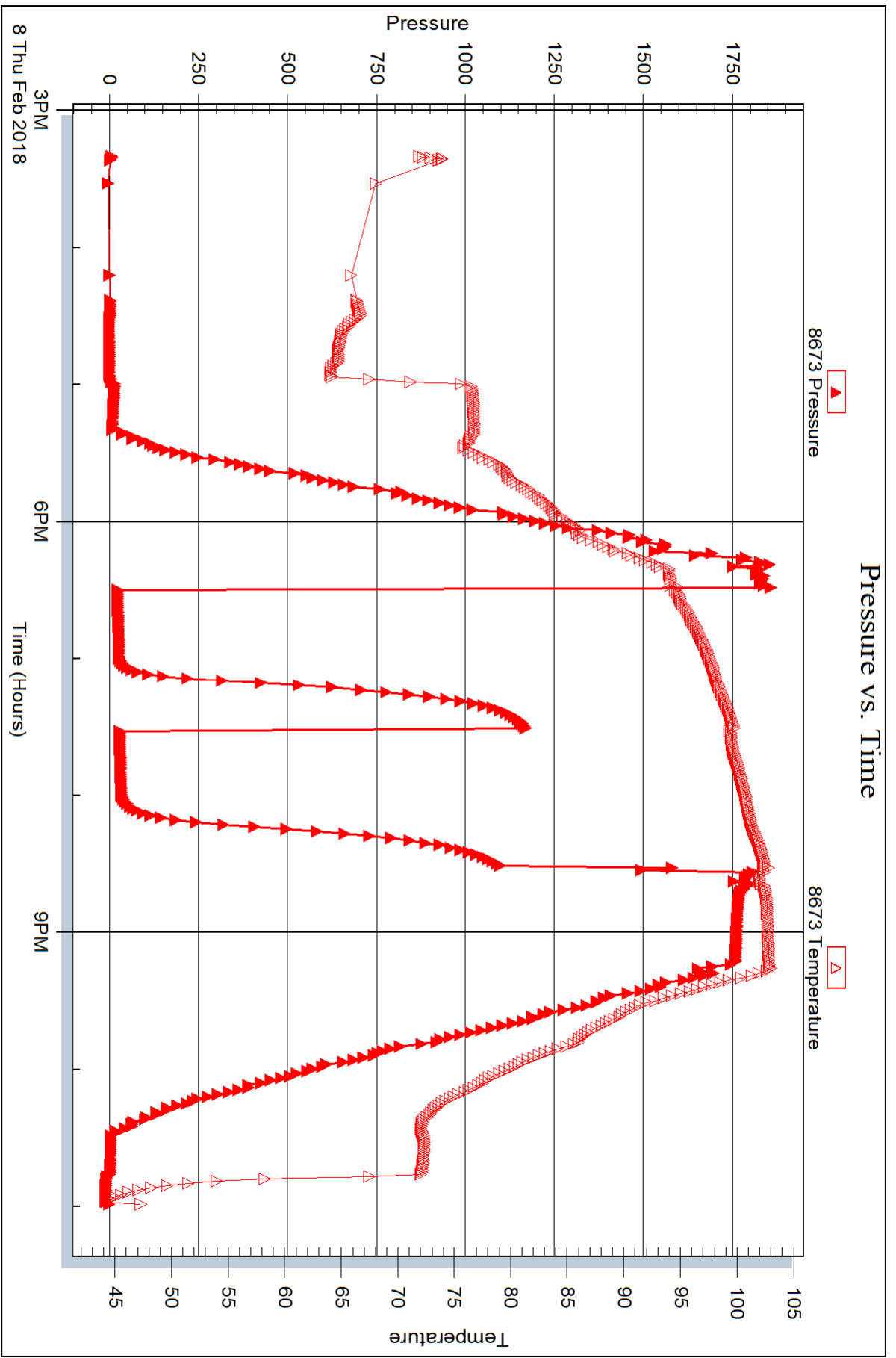


Serial #: 8673

Outside Dow nting-Nelson Oil Co Inc

Muhlheim B #11

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co Inc**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

Muhlheim B #11

15-13s-21w Trego,KS

Start Date: 2018.02.09 @ 04:45:51

End Date: 2018.02.09 @ 11:59:30

Job Ticket #: 63510 DST #: 4

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.02.12 @ 08:30:42



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63510

DST#: 4

ATTN: Marc Dow ning

Test Start: 2018.02.09 @ 04:45:51

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:05:00

Time Test Ended: 11:59:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schw ager

Unit No: 77

Interval: 3919.00 ft (KB) To 3925.00 ft (KB) (TVD)

Reference Elevations: 2237.00 ft (KB)

Total Depth: 3925.00 ft (KB) (TVD)

2229.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8360

Inside

Press@RunDepth: psig @ 3920.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.02.09

End Date:

2018.02.09

Last Calib.:

2018.02.09

Start Time: 04:45:51

End Time:

11:59:30

Time On Btm:

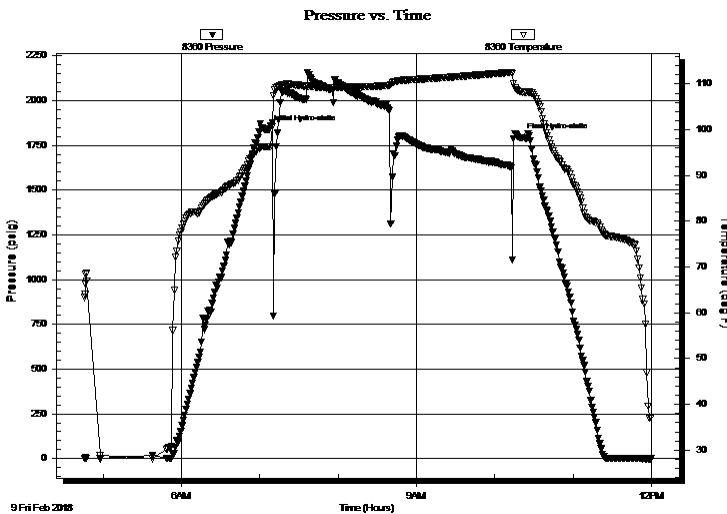
2018.02.09 @ 07:06:01

Time Off Btm:

2018.02.09 @ 10:20:00

TEST COMMENT: 45-IFP-w k bl 1/2" to 2" bl - Tool plugged
45-ISIP-no bl
45-FFP-surface blow - Tool Plugged
45-FSIP-no bl

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1837.64	96.23	Initial Hydro-static
194	1791.55	108.29	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	SOCM 2%O 98%M	0.07

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63510

DST#: 4

ATTN: Marc Dow ning

Test Start: 2018.02.09 @ 04:45:51

Tool Information

Drill Pipe:	Length: 3596.00 ft	Diameter: 3.80 inches	Volume: 50.44 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.70 inches	Volume: 2.20 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 52.64 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 59000.00 lb
Depth to Top Packer:	3919.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	6.00 ft			
Tool Length:	27.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3899.00	
Shut In Tool	5.00			3904.00	
Hydraulic tool	5.00			3909.00	
Packer	5.00			3914.00	21.00 Bottom Of Top Packer
Packer	5.00			3919.00	
Stubb	1.00			3920.00	
Recorder	0.00	8360	Inside	3920.00	
Recorder	0.00	8673	Outside	3920.00	
Perforations	2.00			3922.00	
Bullnose	3.00			3925.00	6.00 Bottom Packers & Anchor
Total Tool Length:	27.00				



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

15-13s-21w Trego,KS

PO Box 1019
Hays KS 67601

Muhlheim B #11

Job Ticket: 63510

DST#: 4

ATTN: Marc Dow ning

Test Start: 2018.02.09 @ 04:45:51

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.56 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	SOCM 2%O 98%M	0.071

Total Length: 10.00 ft Total Volume: 0.071 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

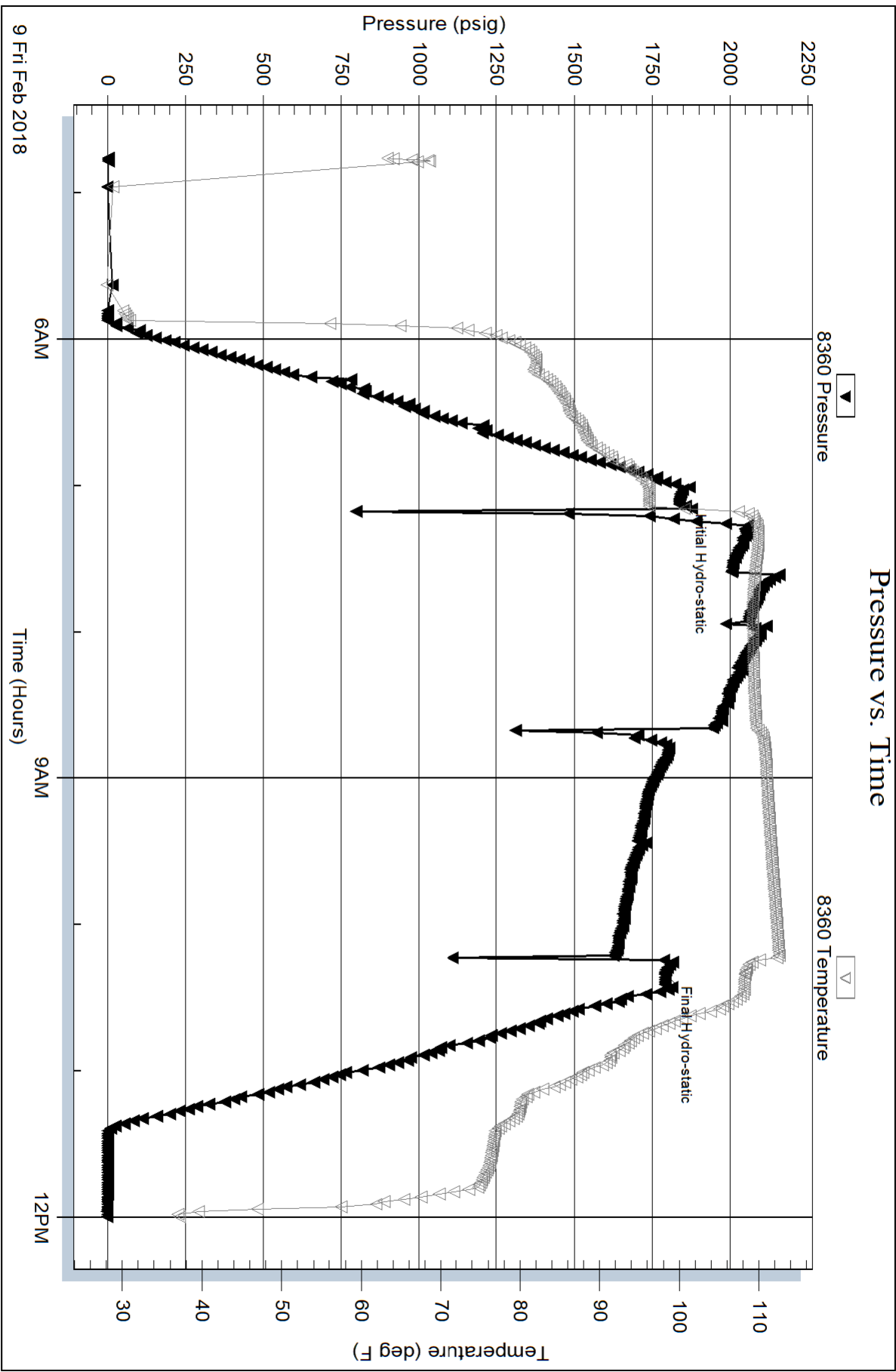
Serial #: 8360

Inside

Dow nting-Nelson Oil Co Inc

Muhlheim B #11

DST Test Number: 4

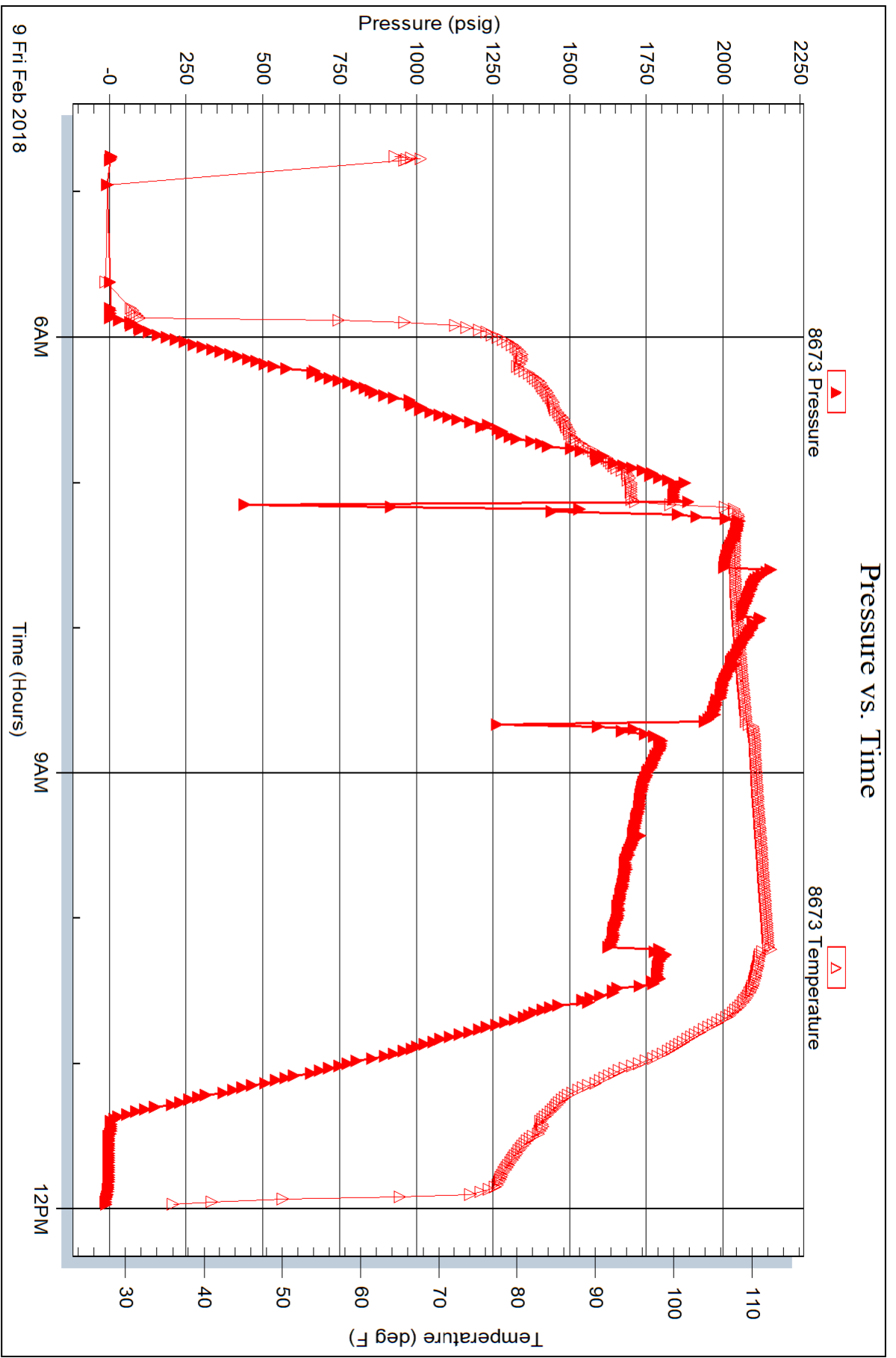


Serial #: 8673

Outside Dow nting-Nelson Oil Co Inc

Muhlheim B #11

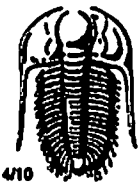
DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 63510

Printed: 2018.02.12 @ 08:30:43



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63507

Well Name & No. Muhlheim B" H Test No. 1 Date 2-7-18
 Company Downing-Nelson Oil Co Inc Elevation 2237 KB 2229 GL
 Address Po Box 1019 Hays, Ks 67601
 Co. Rep / Geo. MARC Downing Rig DISCOVERY 192
 Location: Sec. 15 Twp 13^s Rge. 21^w Co. TREGO State Ks

Interval Tested 3647-3720 Zone Tested LKC H-5
 Anchor Length 73 Drill Pipe Run 3341 Mud Wt. 8.8
 Top Packer Depth 3642 Drill Collars Run - Vis 50
 Bottom Packer Depth 3647 Wt. Pipe Run 310 WL 7.2
 Total Depth 3720 Chlorides 3000 ppm System LCM 2 1/2 #
 Blow Description IFP-WEAK Blow thru-out 1/2" TO 2 1/4" Blow
ISIP-NO BLOW BACK
FFP-WEAK Blow thru-out 1/2" TO 2 1/4" Blow
FSIP-NO BLOW BACK

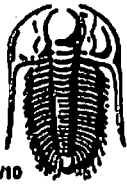
Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>GIP</u>				
<u>30</u>	<u>OCM</u>		<u>10</u>		<u>80</u>

Rec Total 30 BHT 103 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1721 Test 1050 T-On Location 0145
 (B) First Initial Flow 22 Jars - T-Started 0320
 (C) First Final Flow 29 Safety Joint - T-Open 0540
 (D) Initial Shut-In 75 Circ Sub - T-Pulled 0840
 (E) Second Initial Flow 25 Hourly Standby - T-Out 0038
 (F) Second Final Flow 30 Mileage 48 RT 48 Comments -
 (G) Final Shut-In 90 Sampler -
 (H) Final Hydrostatic 1678 Straddle - Ruined Shale Packer -
 Shale Packer - Ruined Packer -
 Extra Packer - Extra Copies -
 Extra Recorder - Sub Total 0
 Day Standby - Total 1098
 Accessibility - MP/DST Disc't -
 Sub Total 1098

Approved By _____ Our Representative RAY SCHWAGER Thank you

TriLOBITE TESTING INC. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63508

Well Name & No. Muhlheim "B" 11 Test No. 2 Date 2-7-18
 Company Downing-Nelson Oil Co Inc Elevation 2237 KB 2229 GL
 Address Po Box 1019 Hays, Ks 67601
 Co. Rep / Geo. MARC Downing Rig DISCOVERY rig 2
 Location: Sec. 15 Twp 13⁵⁹ Rge. 21^W Co. Trego State Ks

Interval Tested 3848-3884 Zone Tested MARMA TON
 Anchor Length 36 Drill Pipe Run 3532 Mud Wt. 8.8
 Top Packer Depth 3843 Drill Collars Run — Vis 58
 Bottom Packer Depth 3848 Wt. Pipe Run 310 WL 8.8
 Total Depth 3884 Chlorides 5000 ppm System LCM 2#

Blow Description IFP - WEAK TO A FAIR BLOW 1/2" TO 5" BLOW
ISIP - NO BLOW BACK
FFP - WEAK TO A FAIR BLOW 1/2" TO 4" BLOW
FSIP - NO BLOW BACK, 1st 30 min, Then surface blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>105</u>	<u>GIP</u>				
<u>145</u>	<u>MGO</u>	<u>15</u>	<u>55</u>	<u>30</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 145 BHT 111 Gravity — API RW — @ — ° F Chlorides — ppm
 Test 1050
 Jars
 Safety Joint
 Circ Sub
 Hourly Standby
 Mileage 48
 Sampler
 Straddle
 Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby
 Accessibility
 Sub Total 1098

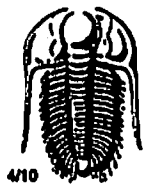
T-On Location 2335
 T-Started 0015
 T-Open 0205
 T-Pulled 0505
 T-Out 0654

(A) Initial Hydrostatic 1827
 (B) First Initial Flow 17
 (C) First Final Flow 48
 (D) Initial Shut-In 588
 (E) Second Initial Flow 48
 (F) Second Final Flow 93
 (G) Final Shut-In 550
 (H) Final Hydrostatic 1781
 Initial Open 45
 Initial Shut-In 45
 Final Flow 45
 Final Shut-In 45

Comments _____
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1098
 MP/DST Disc't _____

Approved By _____ Our Representative Ray Schwager Thank you

TriLOBITE TESTING INC. shall not be liable for damaged or any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63509

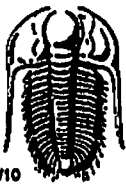
Well Name & No. Muhlheim 'B' 11 Test No. 3 Date 2-8-18
 Company Downing-Nelson Oil Co Inc Elevation 2237 KB 2229 GL
 Address PO Box 1019 Hays, Ks 67601
 Co. Rep / Geo. MARC Downing Rig Discovery rig 2
 Location: Sec. 15 Twp 13^s Rge. 21^w Co. Trego State Ko

Interval Tested 3875-3919 Zone Tested Arbuckle
 Anchor Length 44 Drill Pipe Run 3565 Mud Wt. 8.9
 Top Packer Depth 3870 Drill Collars Run — Vis 59
 Bottom Packer Depth 3875 Wt. Pipe Run 310 WL 9.6
 Total Depth 3919 Chlorides 7500 ppm System LCM 2[#]
 Blow Description IJP - WEAK Blow thru-out 1/2" to 1/4" Blow
ISIP - NO BLOW
FFP - WEAK Blow thru-out 1/2" to 1" Blow
FSTIP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>40</u>	<u>GIP</u>				
<u>20</u>	<u>OCM</u>	<u>20</u>		<u>80</u>	

Rec Total 20 BHT 104 Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 1825 Test 1050 T-On Location 1430
 (B) First Initial Flow 16 Jars — T-Started 1520
 (C) First Final Flow 23 Safety Joint — T-Open 1830
 (D) Initial Shut-In 1175 Circ Sub — T-Pulled 2030
 (E) Second Initial Flow 24 Hourly Standby — T-Out 2259
 (F) Second Final Flow 36 Mileage 48 Comments —
 (G) Final Shut-In 1109 Sampler —
 (H) Final Hydrostatic 1786 Straddle — Ruined Shale Packer —
 Shale Packer — Ruined Packer —
 Extra Packer — Extra Copies —
 Initial Open 30 Extra Recorder — Sub Total 0
 Initial Shut-In 30 Day Standby — Total 1098
 Final Flow 30 Accessibility — MP/DST Disc't —
 Final Shut-In 30 Sub Total 1098

Approved By _____ Our Representative Ray Schwagn Thank you
 Triobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63510

Well Name & No. Muhlheim "B" 11 Test No. 4 Date 2-9-18
 Company Downing-Nelson Oil Co. Inc Elevation 2237 KB 2229 GL
 Address PO Box 1019 Hays, Ks 67601
 Co. Rep / Geo. Marc Downing Rig Discovery rig 2
 Location: Sec. 15 Twp 13^s Rge. 21^w Co. Trego State Ks

Interval Tested 3919-3925 Zone Tested Arbuckle
 Anchor Length 6 Drill Pipe Run 3596 Mud Wt. 8.9
 Top Packer Depth 3914 Drill Collars Run - Vis 59
 Bottom Packer Depth 3919 Wt. Pipe Run 310 WL 9.6
 Total Depth 3925 Chlorides 7500 ppm System LCM 2#
 Blow Description TEP - WEAK Blow 2" To 2" Blow
ISIP - NO Blow
FFP - surface Blow
FSTP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>50CM</u>	<u>2</u>		<u>98</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of <u>MISRUN</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT _____ Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1837 Test 850 T-On Location 0420
 (B) First Initial Flow - Jars _____ T-Started 0445
 (C) First Final Flow - Safety Joint _____ T-Open 0705
 (D) Initial Shut-In - Circ Sub _____ T-Pulled 0005
 (E) Second Initial Flow - Hourly Standby _____ T-Out 1159
 (F) Second Final Flow - Mileage 96 Comments Loaded Tool 2-10-18
 (G) Final Shut-In - Sampler _____ 0230
 (H) Final Hydrostatic 1791 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 45 Extra Recorder _____ Sub Total 0
 Initial Shut-In 45 Day Standby _____ Total 946
 Final Flow 45 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 45 Sub Total 946

Approved By _____ Our Representative RAY SCHWAGER THANK YOU

Triobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.

ALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Home Office P.O. Box 32 Russell, KS 67665

No. 599

483-2025

324-1041

Date <u>2-2-18</u>		Sec. <u>15</u>	Twp. <u>13</u>	Range <u>21</u>	County <u>Trego</u>	State <u>KS</u>	On Location	Finish <u>9:30 p.m.</u>
Lease <u>Muhlheim</u>					Well No. <u>B-11</u>		Owner	
Contractor <u>Discovery #2</u>					To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.			
Type Job <u>Surface</u>					Charge To <u>Downing/ Nelson</u>			
Hole Size <u>12 1/4</u>		T.D. <u>222</u>			Street			
Csg. <u>8 5/8</u>		Depth <u>221</u>			City			
Tbg. Size		Depth			State			
Tool		Depth			The above was done to satisfaction and supervision of owner agent or contractor.			
Cement Left in Csg. <u>10</u>		Shoe Joint			Cement Amount Ordered <u>150 8/20 3/CC 2/CC</u>			
Meas Line		Displace <u>13 1/2 BBL</u>						
EQUIPMENT					Common <u>120</u>			
Pumptrk <u>5</u>	No.	Cement Helper <u>2213</u>			Poz. Mix <u>30</u>			
Bulktrk	No.	Driver			Gel. <u>3</u>			
Bulktrk <u>14</u>	No.	Driver <u>David</u>			Calcium <u>5</u>			
JOB SERVICES & REMARKS					Hulls			
Remarks:					Salt			
Rat Hole					Flowseal			
Mouse Hole					Kol-Seal			
Centralizers					Mud CLR 48			
Baskets					CFL-117 or CD110 CAF 38			
D/V or Port Collar					Sand			
<u>8 5/8 on bottom Est. Circulation</u>					Handling <u>159</u>			
<u>Mix 1500 lbs Dispac</u>					Mileage			
FLOAT EQUIPMENT								
<p><u>Cement Circulated 1</u></p> 					Guide Shoe			
					Centralizer			
					Baskets			
					AFU Inserts			
					Float Shoe			
					Latch Down			
					Pumptrk Charge <u>Surface</u>			
					Mileage <u>18</u>			
<p><u>[Signature]</u></p>					Tax			
					Discount			
					Total Charge			

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

No. 704

Home Office P.O. Box 32 Russell, KS 67665

Phone 785-483-2025
Cell 785-324-1041

Date	2-10-18	Sec.	15	Twp.	13	Range	21	County	Trego	State	KS	On Location		Finish	4:00pm
Location								Riga Hwy 40 1/2 S T Winto							

Lease Mehlheim B Well No. 11
 Contractor Discovery #2 Top Stage
 Type Job DV Job
 Hole Size 7 7/8 T.D. 4020
 Csg. 5 1/2 Depth 4008
 Tbg. Size Depth
 Tool DV Tool Depth 1595
 Cement Left in Csg. 42.40 Shoe Joint 42.40
 Meas Line Displace 39 BC

Owner
 To Quality Oilwell Cementing, Inc.
 You are hereby requested to rent cementing equipment and furnish
 cementer and helper to assist owner or contractor to do work as listed.
 Charge To Downing / Vulkan
 Street
 City
 State
 The above was done to satisfaction and supervision of owner agent or contractor.
 Cement Amount Ordered 350 80/20 @ MDC 1/4#FB

EQUIPMENT		
Pumptrk	20	Cementor Helper <u>Smith</u>
Bulktrk	14	Driver <u>DETT</u>
Bulktrk	21	Driver <u>Allen</u>

Common 350 80/20 @ MDC
 Poz. Mix
 Gel.
 Calcium
 Hulls
 Salt
 Flowseal 100 FT
 Kol-Seal
 Mud CLR 48
 CFL-117 or CD110 CAF 38
 Sand
 Handling 350
 Mileage

JOB SERVICES & REMARKS
 Remarks:
 Rat Hole 30 SK
 Mouse Hole 15 SK
 Centralizers
 Baskets
 DV or Port Collar
Plug Rathole & mouse hole.
Cement 5 1/2 with 30 SK
Displace Plug
Cement Circulated!
Plug landed @ 1500 FT

FLOAT EQUIPMENT	
Guide Shoe	
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	

Pumptrk Charge prodstoring
 Mileage 18
 Tax
 Discount
 Total Charge

X Signature [Handwritten Signature]

Top Stage

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

No. 703

Home Office P.O. Box 32 Russell, KS 67665

Phone 785-483-2025
Cell 785-324-1041

Date	2-10-18	Sec.	15	Twp.	13	Range	21	County	Trego	State	KS	On Location		Finish	2:45 pm	
Lease	Mannheim B							Well No.	11							
Contractor	Discovery #2							Bottom Stage								
Type Job	DV Job															
Hole Size	7 7/8							T.D.	4020							
Csg.	5 1/2							Depth	4008							
Tbg. Size								Depth								
Tool	DV Tool #59							Depth	1595							
Cement Left in Csg.	42.40							Shoe Joint	42.40							
Meas Line								Displace	96 3/4 B.L.							

Owner
To Quality Oilwell Cementing, Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Charge To
Downing / Nelson

Street
City
State

The above was done to satisfaction and supervision of owner agent or contractor.

Cement Amount Ordered
180 w/m 10/ Salt 5/ Carbonite

Common
500 gal mud clear
180

EQUIPMENT		
Pumptrk	20	No. Cementer/Helper Craig
Bulktrk	14	No. Driver Brett
Bulktrk	21	No. Driver C. Tenn

JOB SERVICES & REMARKS

Remarks:
Rat Hole
Mouse Hole
Centralizers
Baskets
D/V or Port Collar
5 1/2 size 4008. Insert @ 3965.00.
Est. Circulation Pump 500 gal mud clear
& 10 B.L. Spacer. Mix 180 sk. g. Displace
Plug. Displace 54 B.L. water &
36 B.L. mud & 7 B.L. water to land Plug
Plug landed @ 1500'
Drop Port & Open Tool.

Poz. Mix
Gel.
Calcium
Hulls
Salt 17
Flowseal
Kol-Seal 900#
Mud CLR 48 500 gal
CFL-117 or CD110 CAF 38
Sand
Handling 206
Mileage

FLOAT EQUIPMENT

Guide Shoe - DV Tool
Centralizer 7
Baskets 1
AFU Inserts
Float Shoe 1
Latch Down 1

Pumptrk Charge
Mileage 18 Prod String

Bottom Stage

Tax
Discount
Total Charge

X Signature
Paul White