

**[14-36-57-23W5] H7006**

**Customer: PTRHTF20276**  
 CANADIAN NATURAL RESOURCES (CNRL)  
 5510 - 1st Avenue  
 Edson, AB T7V 2E2 Canada  
 Attn: John Holuk  
 Tel: (780)223-4700  
 E-Mail: john.holuk@cnrl.com

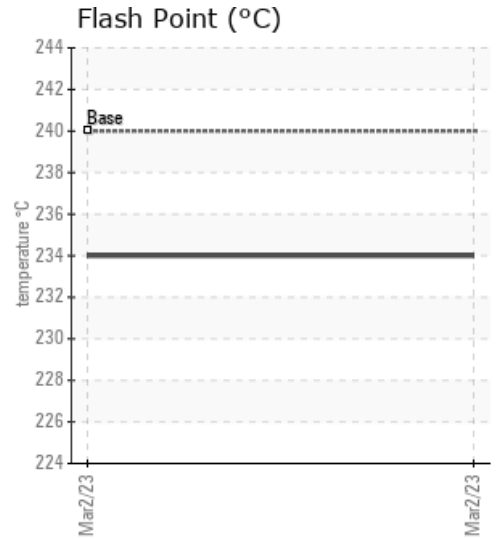
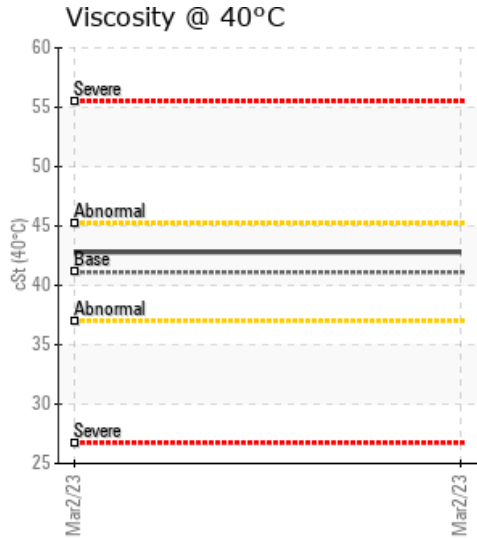
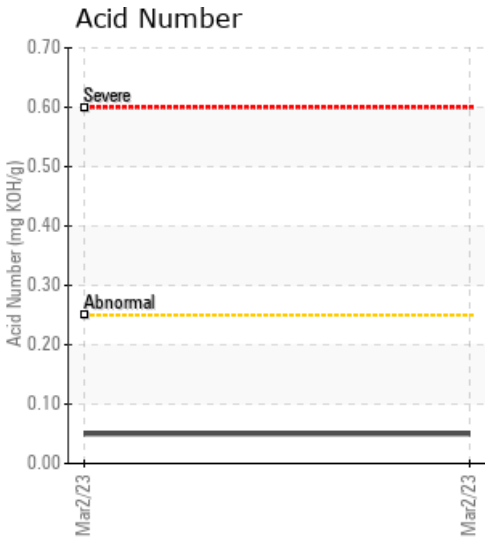
**System Information**  
 System Volume: 9000 ltr  
 Bulk Operating Temp: 437F / 225C  
 Heating Source:  
 Blanket:  
 Fluid: CHEVRON HEAT TRANSFER OIL 46  
 Make: TDE THERMODESIGN

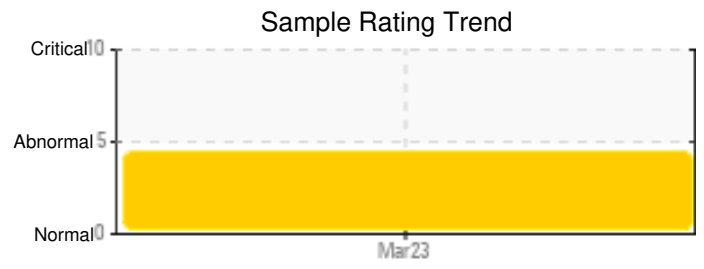
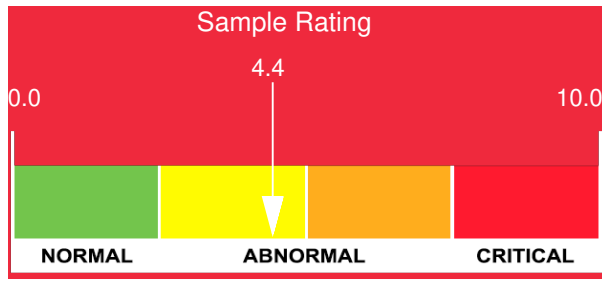
**Sample Information**  
 Lab No: 02543253  
 Analyst: Clinton Buhler  
 Sample Date: 03/02/23  
 Received Date: 03/06/23  
 Completed: 03/09/23  
 Clinton Buhler  
 Clinton.Buhler@HFSinclair.com

Recommendation: Sample results show small amounts of Na, P and B which may represent cross contamination with a glycol based fluid. Excessive amounts of water are present (2301 ppm). Low points need to be drained of any potential water and it is advised to vent water vapor through the expansion IF safe to do so. Fluid properties are otherwise in reasonable condition. Ensure water is prevented from entering the system.

Comments: Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. Potassium ppm levels are abnormally high.

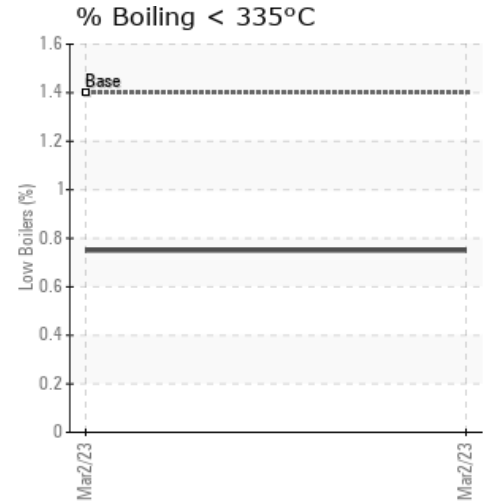
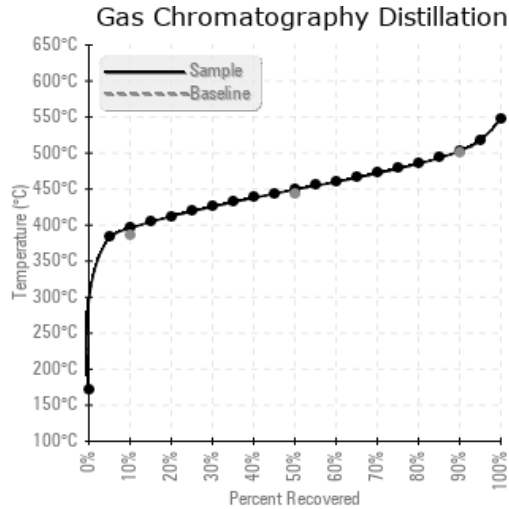
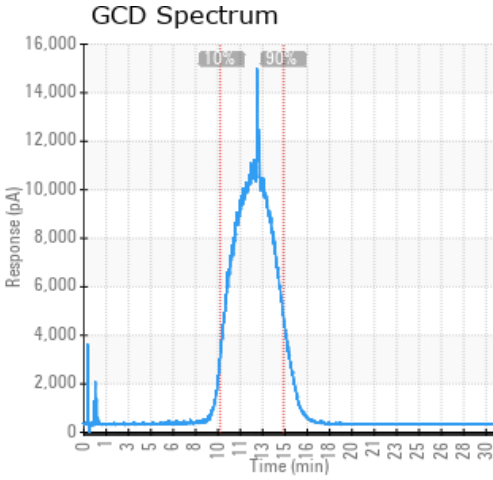
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/02/23	03/06/23	8.0y	downstream of pump	453 / 234	2301.1	42.8	0.05	0.291	744 / 396	841 / 449	937 / 503	0.75
Baseline Data				464 / 240		41.1			727 / 386	828 / 442	932 / 500	1.4





Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/02/23	16	0	0	0	0	0	0	0	0	0	0	7	34	0	0	0	0	0	9	0	1	0	13	0
<b>Baseline Data</b>			0	0						0			0	0					0				0	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



### Historical Comments


Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.