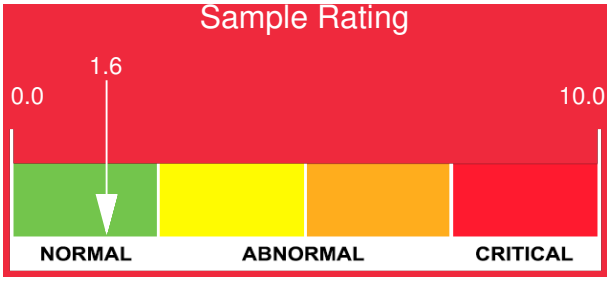
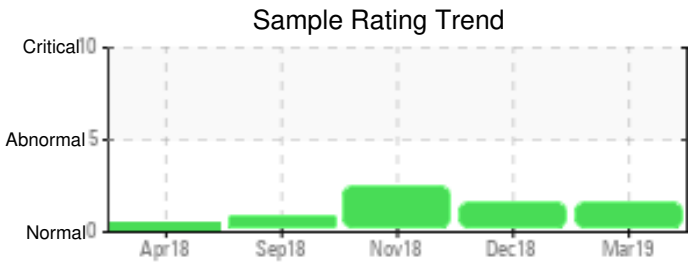




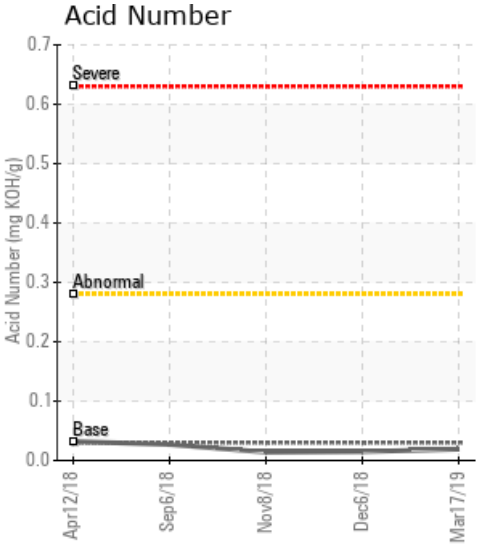
[LSD / 14-23-58-26W45] H-3700/H-3750

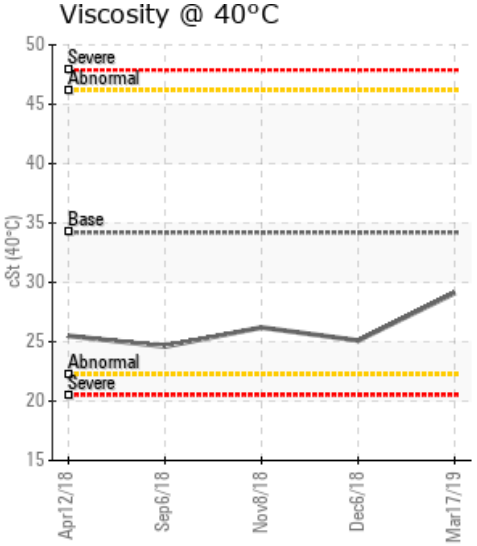
Customer: PTRHTF20103	System Information	Sample Information
CNRL WEST PLANT P.O. BOX 6808 EDSON, AB T7E 1L5 Canada Attn: Rodney Marcichiw Tel: (780)517-3542 E-Mail: rodney.marcichiw@cnrl.com	System Volume: 10000 ltr Bulk Operating Temp: 365F / 185C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: PETRO TECH HEATERS	Lab No: 02275659 Analyst: Peter Harteveld Sample Date: 03/17/19 Received Date: 03/27/19 Completed: 04/01/19

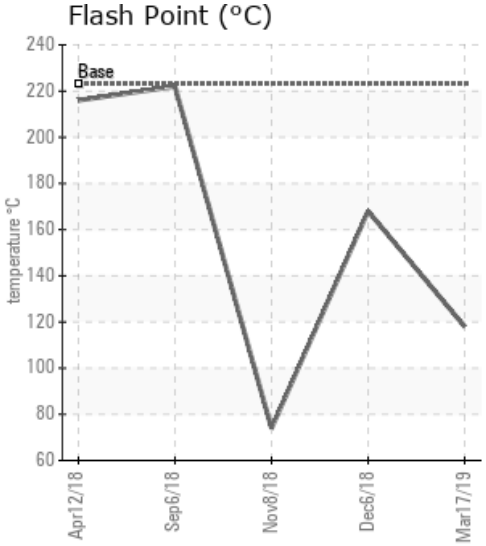
Recommendation: The fluid is in a reasonable condition and suitable for further use. After venting off the low boiler vapor and ingressed blanket gas the % vapor in the fluid has decreased from 4.15% to 3.32%. The viscosity has increased slightly as a result of this. Flash Point has decreased. This does not correlate with the other parameters.The decrease in fluid vapor content is an improvement which shows the effect of venting. It is advised to repeat venting to bring Flash Point back to a more acceptable level (>150C). Re-sample after venting.

Comments: COC Flash Point is severely low.

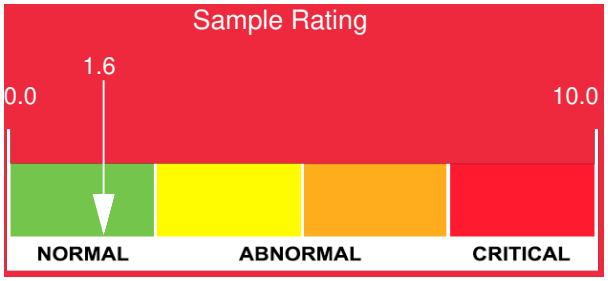
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/17/19	03/27/19	5y	PUMP DISCHARGE	244 / 118	25.2	29.1	0.019	0.040	705 / 374	808 / 431	901 / 483	3.32
12/06/18	12/12/18	0y		334 / 168	57.1	25.1	0.015	0.055	704 / 373	809 / 432	903 / 484	4.15
11/08/18	11/15/18	0y		165 / 74	19.6	26.2	0.014	0.045	694 / 368	787 / 420	877 / 469	1.53
09/06/18	09/11/18	11y		432 / 222	43.0	24.6	0.027	0.050	704 / 373	788 / 420	872 / 467	5.38
04/12/18	04/19/18	10y		421 / 216	48.8	25.5	0.032	0.024	716 / 380	818 / 436	909 / 487	2.16
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

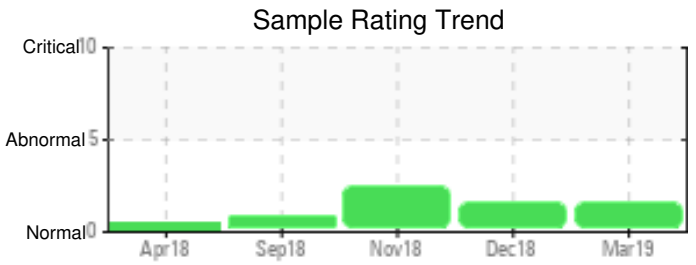






PETRO-CANADA LUBRICANTS

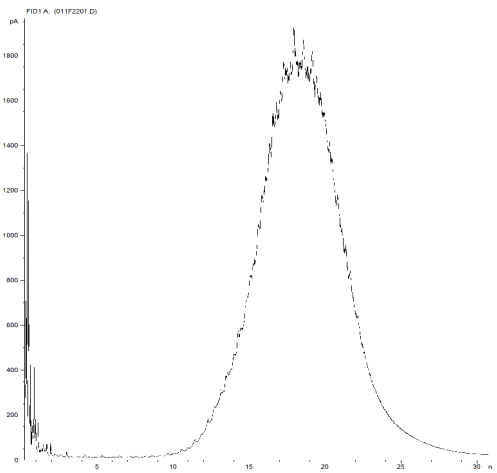


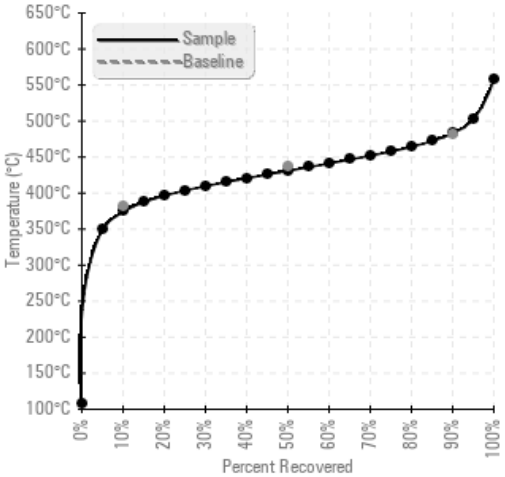


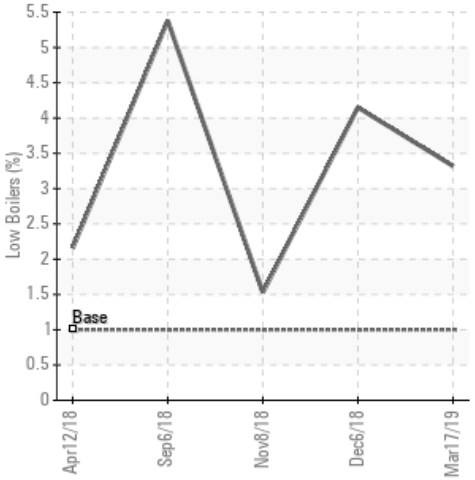
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/17/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
12/06/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/08/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/06/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
04/12/18	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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

GCD Spectrum







Historical Comments

12/06/18	The Flash Point and viscosity of the fluid are low and % boil-off <335C is slightly high. This can be the result of blanket gas ingress and/or thermal degradation. It is recommended to vent low boiler vapor to atmosphere on a regular basis. Fluid condition is good and suitable for further use. Please re-sample in 6 months. COC Flash Point is abnormally low.
11/08/18	The Flash Point of the fluid is very low. This can be a safety hazard when the fluid comes into contact with air and a source of ignition. The viscosity and 90% GCD temperature are low. All of this combined points to ingress of a hydro-carbon process fluid. Please check for internal leaks and re-sample after the problem has been corrected. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally low.
09/06/18	The fluid is in a good condition and suitable for further use. Viscosity and 90% GCD temperature are low and not representative for Petro-Therm. The % boil-off <335C. (low boiler vapor and blanket gas content of the fluid) is increasing. 5.4% is not yet a problem but it is recommended to start venting the low boiler vapors to atmosphere. Pump cavitation problems and flow stagnation may be observed when the low boiler vapor content exceeds 7%. (GCD) 90% Distillation Point is abnormally low.
04/12/18	The fluid is in a good condition and suitable for further use but the viscosity is very low and not representative for Petro-Therm. Please resample in 6 months.