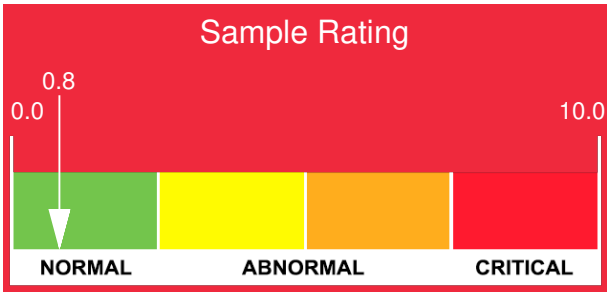
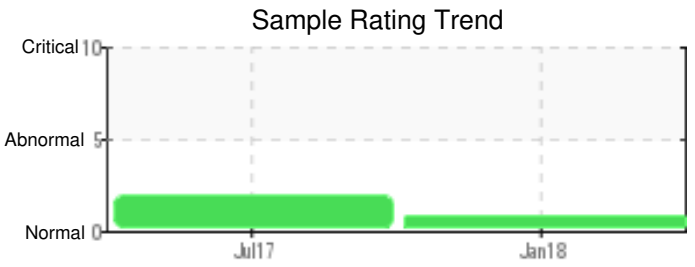




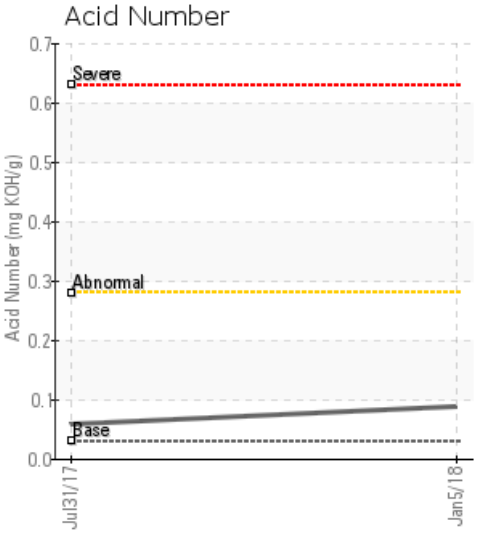
PRIMARY LOOP

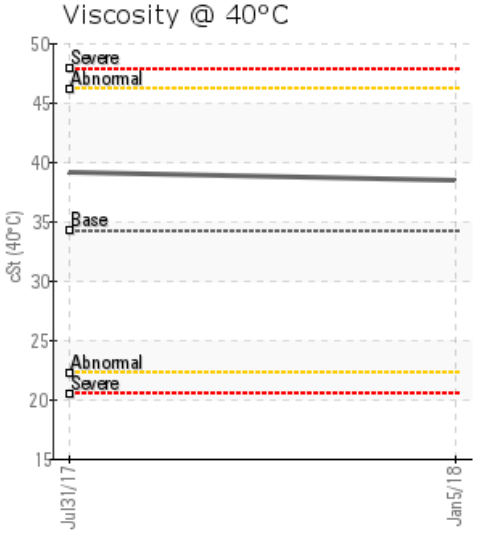
Customer: PTRHTF20049	System Information	Sample Information
WEYERHAEUSER CO. LTD. HUDSON BAY OSB 2000 HIGHWAY 9 SOUTH PO BOX 40 HUDSON BAY, SK S0E 0Y0 Canada Attn: SERVICE Tel: E-Mail:	System Volume: 0 gal Bulk Operating Temp: Not Specified Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02192816 Analyst: Ray Rolston Sample Date: 01/05/18 Received Date: 01/16/18 Completed: 01/17/18 To discuss this report contact Ray Rolston at (250)893-4496

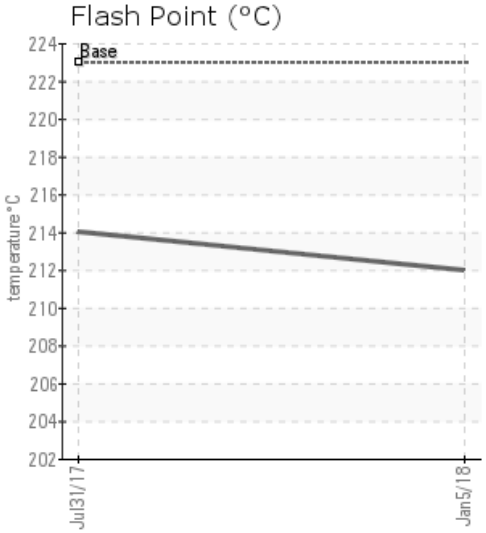
Recommendation: Iron wear in sample rose from 13 to 78 ppm; suspect that sampling port wasn't flushed when oil sample was obtained. Wear metals and water content remain low. Total Acid Number (TAN) increased slightly from 0.057 to 0.087 mg KOH/g. Gas Chromatography Distillation (GCD) 90% point lowered slightly from 512.4 to 501.7 C, although Final Boiling Point (FBP) increased from 587.5 to 588.9 C indicating the presence of high boilers. GCD comparison of July 2017 with January 2018 samples shows increase in low boilers (thermally cracked light ends). Pentane Insolubles increased from 0.043 to 0.056 suggesting greater sludge formation.Heat Transfer Fluid appears to be suitable for continued use. Recommend re-sampling in one year to monitor fluid condition.

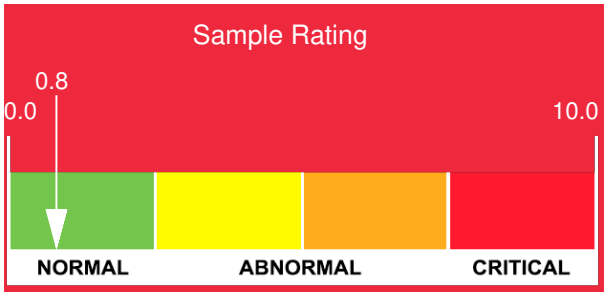
Comments: (GCD) 90% Distillation Point is abnormally high.

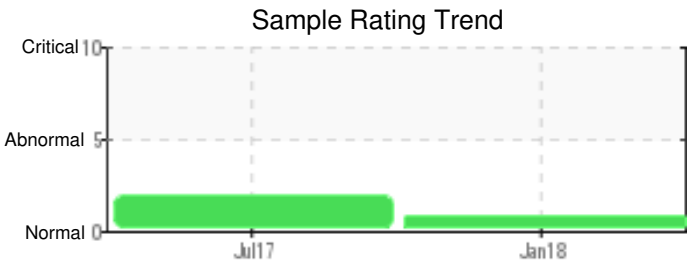
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/05/18	01/16/18	17y		414 / 212	18.3	38.4	0.087	0.056	715 / 380	811 / 433	935 / 502	0.00
07/31/17	08/08/17	0y		417 / 214	11.8	39.1	0.057	0.043	741 / 394	828 / 442	954 / 512	0.33
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





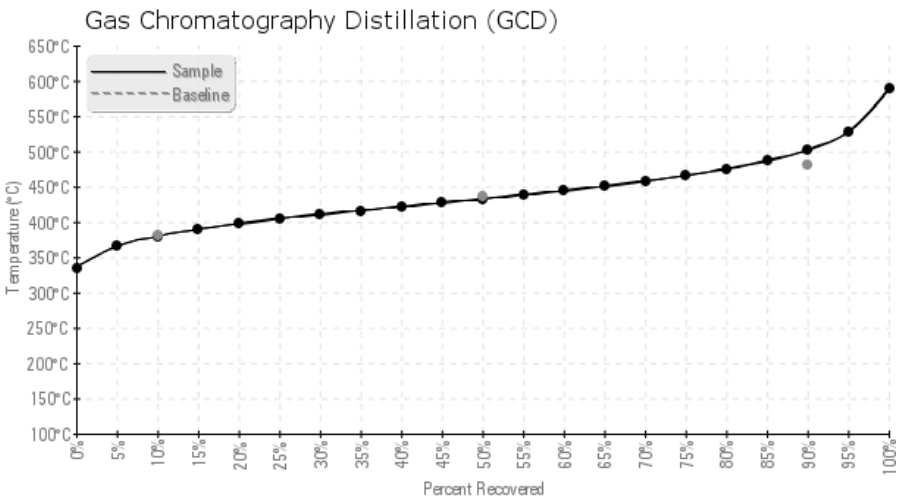


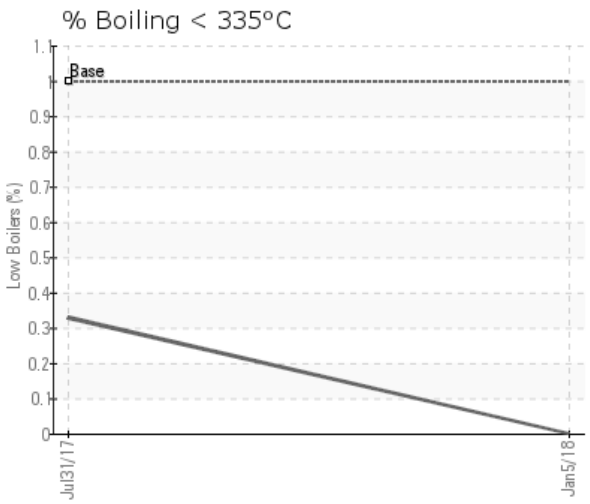




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/05/18	78	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1
07/31/17	13	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	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%]





Historical Comments

07/31/17	Heat transfer fluid sample is assumed to be Petro-Therm. There is no indication of the fluid's age.The heat transfer fluid appears to be quite dark from the photo. ICP metals content is normal. Water content is low at 11.8 ppm. The Total Acid Number (TAN) is low at 0.057 which is close to fresh oil value. The viscosity at 39.1 cSt is slightly higher than fresh oil typical of 35.8 cSt. Pentane insoluble results are acceptable.Gas Chromatography Distillation (GCD) combined with an increase in the fluid's viscosity shows the presence of high boilers as indicated by the 90% and Final Boiling Point (FBP). This suggests a build up of oxidation products in the heat transfer system.Continued monitoring is recommended; re-sample in 6 months. (GCD) 90% Distillation Point is severely high.