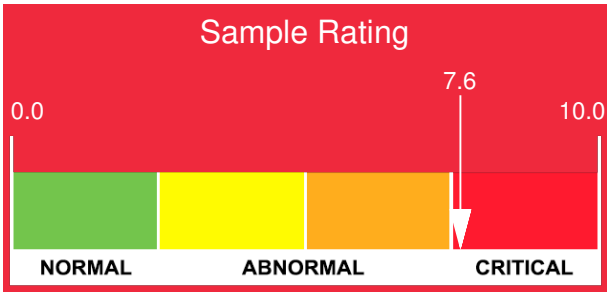
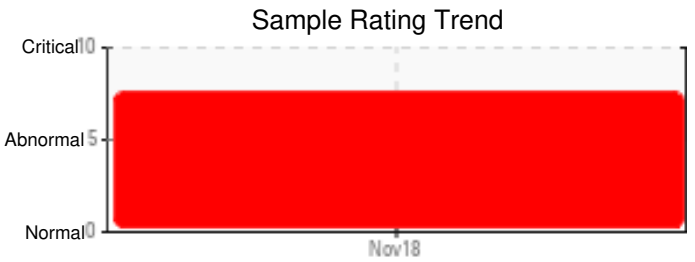




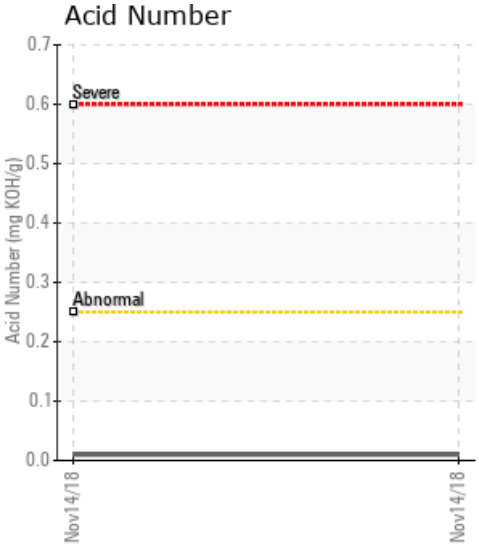
GTS

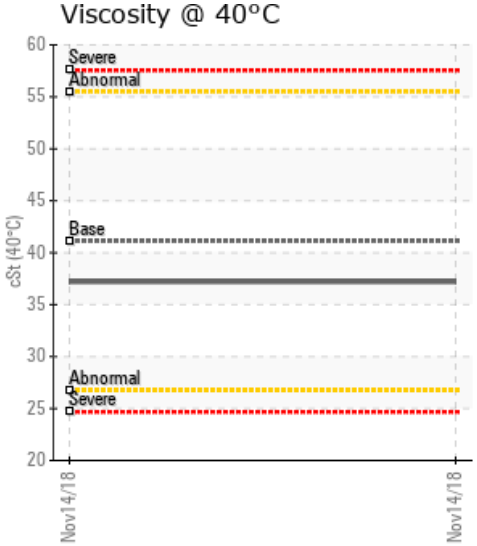
Customer: PTRHTF20206	System Information	Sample Information
Norbord Industries PO Box 1856 Highway 35 South High Level, AB T0H 1Z0 Canada Attn: Richard Boisvert Tel: E-Mail: richard.boisvert@norbord.com	System Volume: 120000 ltr Bulk Operating Temp: 500F / 260C Heating Source: Blanket: Fluid: CHEVRON HEAT TRANSFER OIL 46 Make: GTS	Lab No: 02252819 Analyst: Clinton Buhler Sample Date: 11/14/18 Received Date: 11/21/18 Completed: 12/18/18

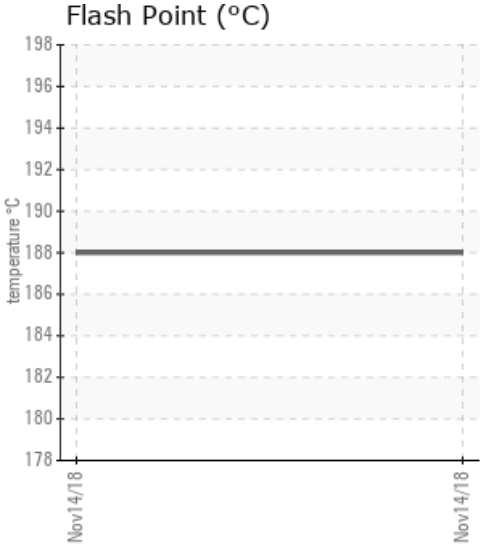
Recommendation: Based on the analysis results, it appears that the oil may have experienced some thermal degradation. This may be due in part to the length of service on the oil (7 years indicated). The flash point Is the lowest temperature at which the fluids vapor will momentarily ignite when contacted by an ignition source. Reduction is typically associated with thermal degradation of the heat transfer oil or possibly contamination. Thermal degradation: In the presence of excess heat, the hydrocarbon molecules reach the breaking point of normally stable C-C covalent bonds and crack into lighter hydrocarbons chains. These chains, when formed may have lower viscosities, lower flash points and start to boil before normal fresh oil would, thus, affecting the overall fluid efficiency in a negative way by requiring greater amounts of energy to produce the same amount of heat. As the oil thermally degrades it may deposit heavy carbonaceous material by baking it on the tubes and then act as an insulation layer. These carbonaceous layers can flake away and produce hot spots on the tubes possibly resulting in a tube rupture. The carbon residues that get carried away can settle downstream and obstruct the flow in small lines.We recommend that a resample be sent in at your convenience.

Comments: (GCD) 10% Distillation Point is severely low. (GCD) 90% Distillation Point is severely low. (GCD) 50% Distillation Point is abnormally low. COC Flash Point is abnormally low. (GCD) % < 335°C is marginally high.

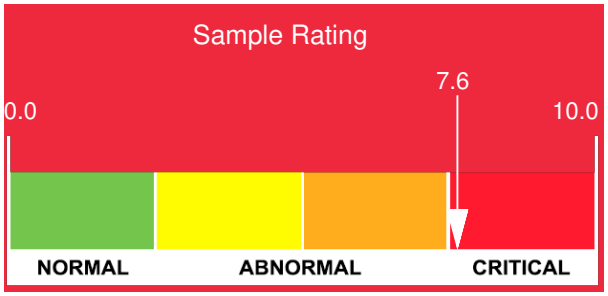
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/14/18	11/21/18	7y		370 / 188	84.2	37.2	0.01	0.029	702 / 372	818 / 437	949 / 510	2.75
Baseline Data				464 / 240		41.1			739 / 393	836 / 447	941 / 505	0.8

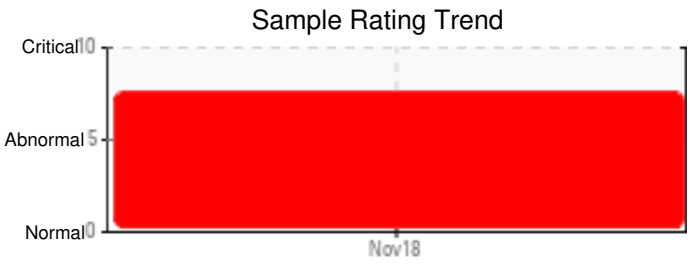






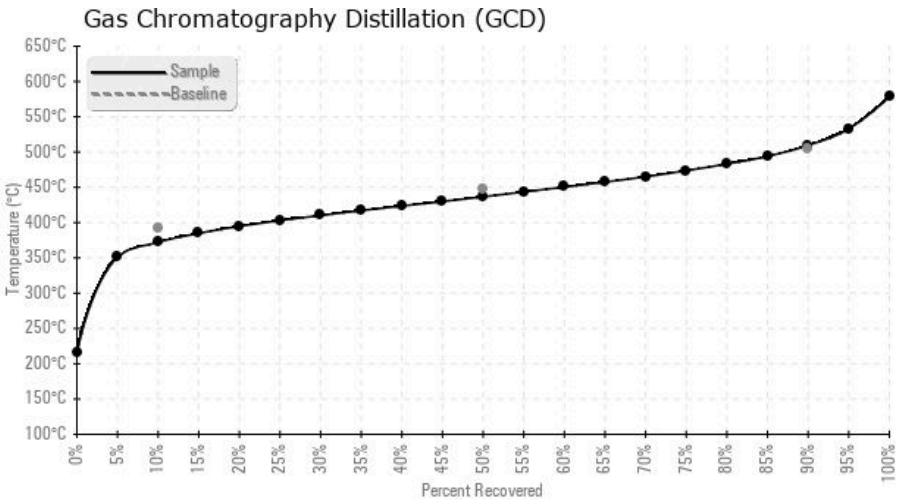
PETRO-CANADA LUBRICANTS

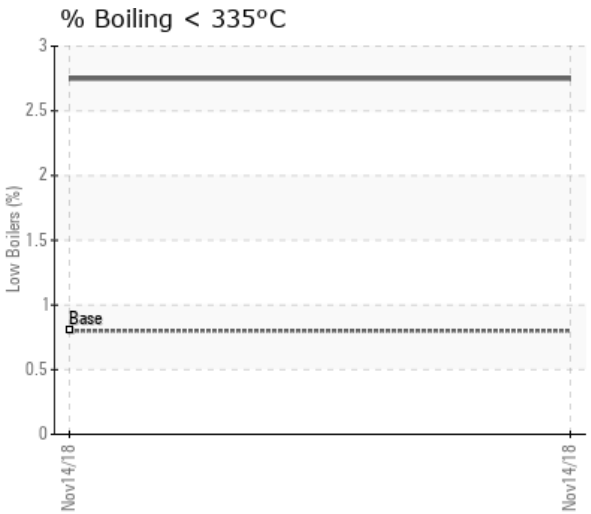




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
11/14/18	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
Baseline Data			0	0						0			0	0					0				0	

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





Historical Comments
