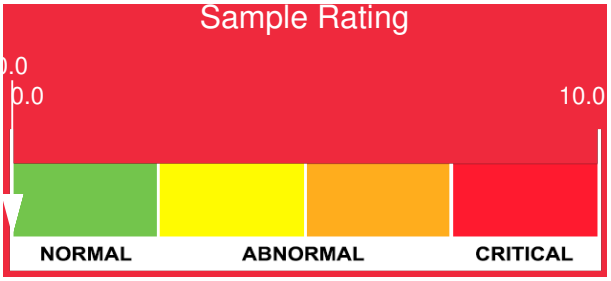
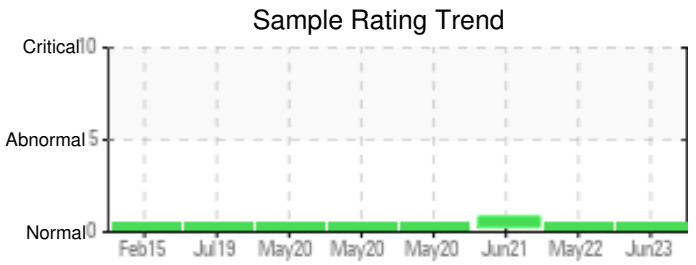




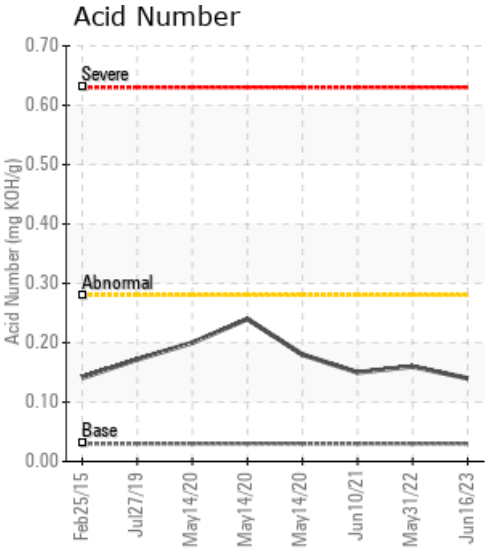
BABINE ENERGY SYSTEM

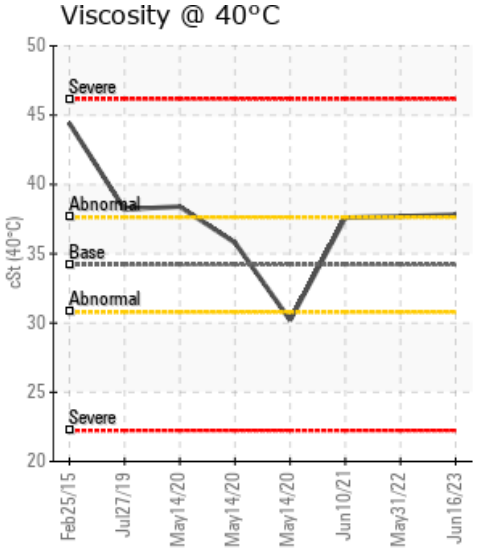
Customer: PTRHTF20130	System Information	Sample Information
BABINE FOREST PRODUCTS 19479 HIGHWAY 16 EAST BURNS LAKE, BC V0J1E0 CA Attn: Bob Petkau Tel: (250)692-6598 E-Mail: bobpetkau@hamptonlumber.com	System Volume: 50000 ltr Bulk Operating Temp: 500F / 260C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: WELLONS	Lab No: 02566736 Analyst: Ray Rolston Sample Date: 06/16/23 Received Date: 06/27/23 Completed: 06/28/23 Ray Rolston Ray.Rolston@HFSinclair.com

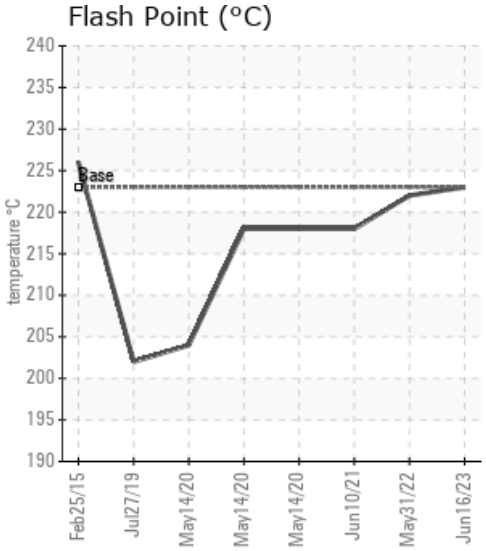
Recommendation: This Petro-Therm heat transfer fluid sample is in pristine condition. All inspections continue to be in 'like new' condition. Recommend re-sampling in one year to monitor the fluid's condition.

Comments:

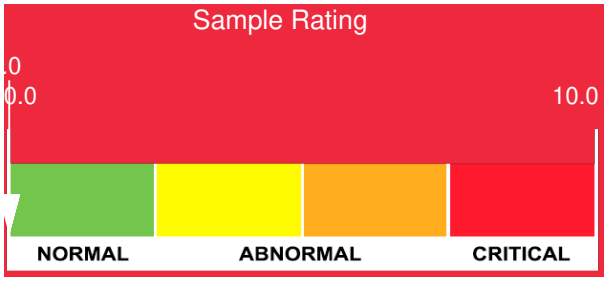
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/16/23	06/27/23	3.0y		433 / 223	24.7	37.8	0.14	0.074	727 / 386	824 / 440	907 / 486	1.80
05/31/22	06/13/22	0.0y	Pump	432 / 222	6.8	37.7	0.16	0.039	728 / 386	825 / 441	911 / 488	1.75
06/10/21	06/17/21	0.0y	PRIMARY PUMP	424 / 218	17.7	37.6	0.15	0.050	715 / 380	808 / 431	920 / 493	1.90
05/14/20	05/19/20	0.0y	BOOSTER PUMP	424 / 218	8.4	30.2	0.18	0.283	724 / 385	830 / 443	911 / 488	2.35
05/14/20	05/19/20	0.0y	RADIANT COIL	424 / 218	9.0	35.8	0.24	0.232	721 / 383	830 / 443	912 / 489	3.12
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

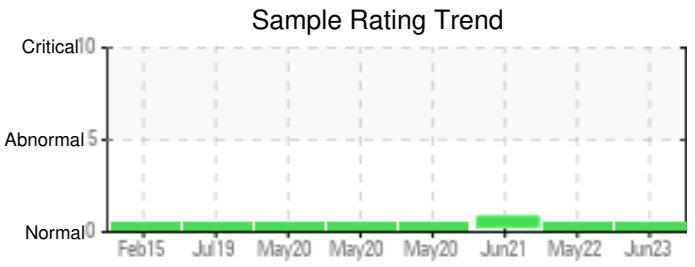






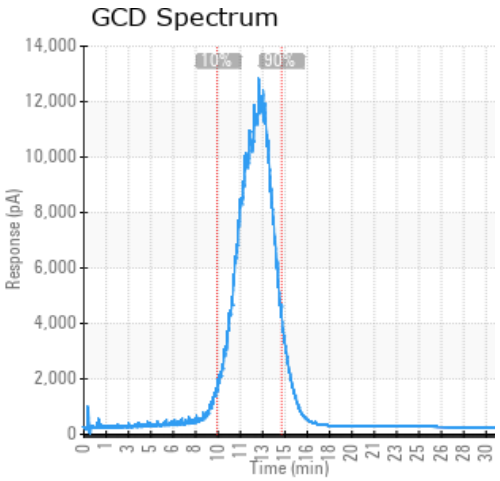
PETRO-CANADA LUBRICANTS

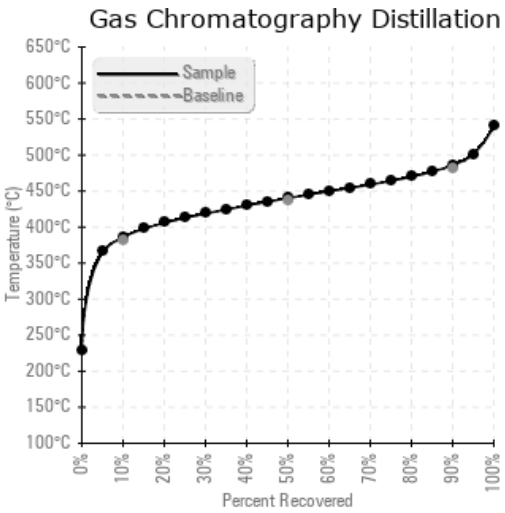


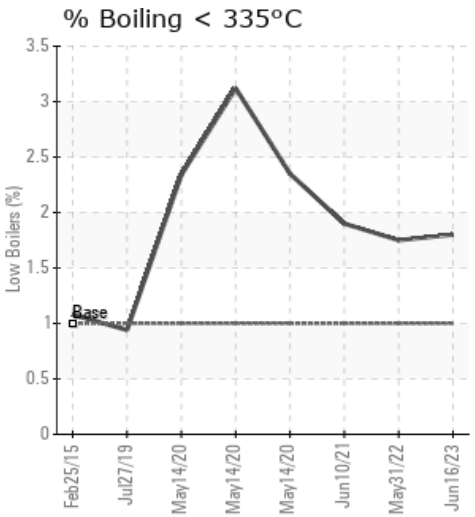


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
06/16/23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05/31/22	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
06/10/21	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/14/20	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
05/14/20	9	0	0	0	0	0	0	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

05/31/22	The Petro-Therm fluid's age is not known. The used Petro-Therm heat transfer fluid sample remains in very good condition. Iron wear at 6 ppm is lower than the previous sample which was 11 ppm. No other wear metals were detected. The Acid Number (AN) is low at 0.16 mg KOH/g, and the oil's viscosity is normal. Gas Chromatography Distillation (GCD) results are normal. Pentane Insolubles (solids content) has improved from 0.05wt% on the previous sample to 0.039wt%. Recommend resampling again next year to monitor.
06/10/21	The used Petro-Therm heat transfer fluid sample remains in very good condition. Iron wear at 11 ppm is lower than the previous sample which was 53 ppm. No other wear metals were detected. The Acid Number (AN) is low at 0.15 mg KOH/g, and the oil's viscosity is normal. Pentane Insolubles (solids content) has improved from 0.283wt% on the previous sample to 0.05wt%. Recommend submitting another sample next year. (GCD) 90% Distillation Point is marginally high.
05/14/20	Lab Number 0234552 sample was obtained from Booster Pump. Note 53 ppm iron wear content and lower viscosity (30.2 cSt @ 40 C). Petro-Therm heat transfer fluid is suitable for continued use; re-sample in one year to monitor fluid's condition.
05/14/20	Note: Lab Number 02354550 sample was obtained from Primary Pump; 02354551 was obtained from Radiant Coil Section; 0234552 was obtained from Booster Pump. Used oil analysis results from 02354550 were provided on May 25, 2020.Note 53 ppm iron wear content and lower viscosity (30.2 cSt @ 40 C) from 02354551 Booster Pump. Note low Initial Boiling Point on all 3 samples, but normal 10% through Final Boiling Point Distillation Range.Petro-Therm is suitable for continued use; re-sample in one year to monitor fluid's condition.