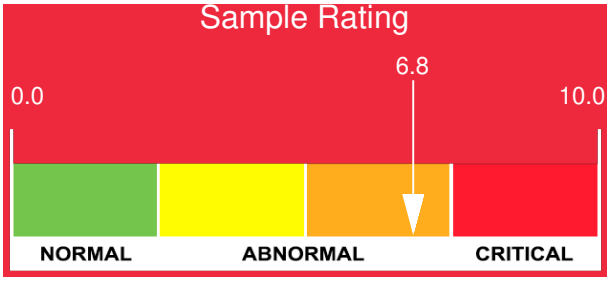
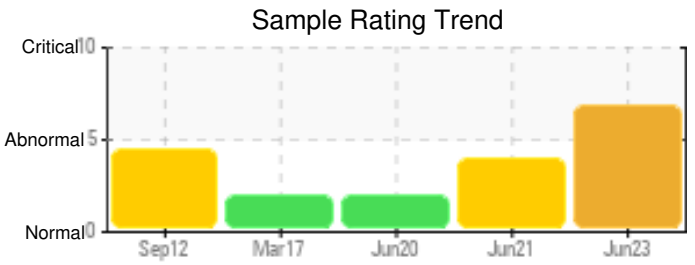




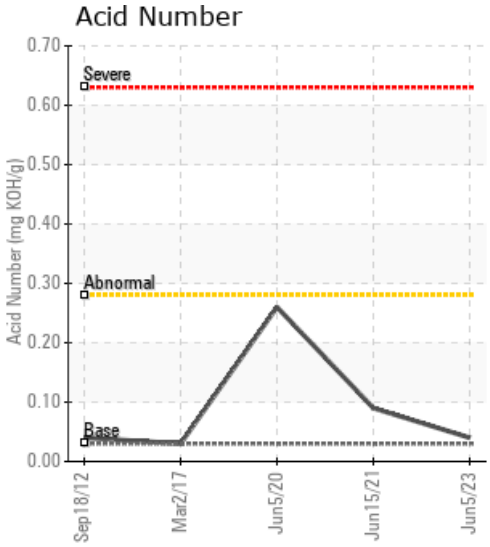
HEAT TRANSFER SYSTEM

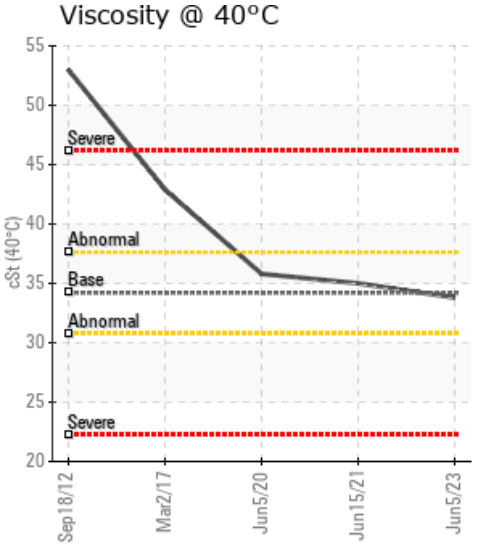
Customer: PTRHTF30062	System Information	Sample Information
ARBEC FOREST GROUP 1101 WATER STREET MIRAMICHI, NB E1N 4C6 CA Attn: Arsene Hachey Tel: (506)778-2727 E-Mail: ahachey@arbec.ca	System Volume: 12000 ltr Bulk Operating Temp: 491F / 255C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: GTS	Lab No: 02563320 Analyst: Luc Leblanc Sample Date: 06/05/23 Received Date: 06/09/23 Completed: 06/16/23 Luc Leblanc luc.leblanc@HFSinclair.com

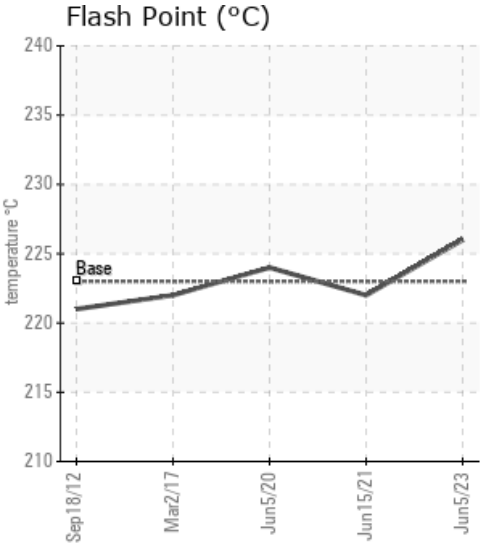
Recommendation: The fluid is generally in good condition, with no evidence of thermal degradation and deposits. Venting the increasing light fractions through the expansion reservoir is advised to prevent flashing volatile vapors. Please indicate whenever relevant maintenance is performed (volume topped off, filtration, cleaning, etc.). Resample in 12 months.

Comments: Iron and copper ppm levels continue to rise, and indicate potential wear or corrosion. Sodium ppm levels have continued to climb and are severely high. Investigate for outside source of contamination. Water levels are consistently low, as are pentane insolubles. Flash point is very good at 226degC, so is the 0.04 Acid Number. Viscosity is stable over time. Since the last sample, there is a noticeable increase in volatile low boilers evident by the GCD tests (%<335 and the curve @0.25min). While these values remain in 'caution' ratings, we suggest venting to prevent further degradation.

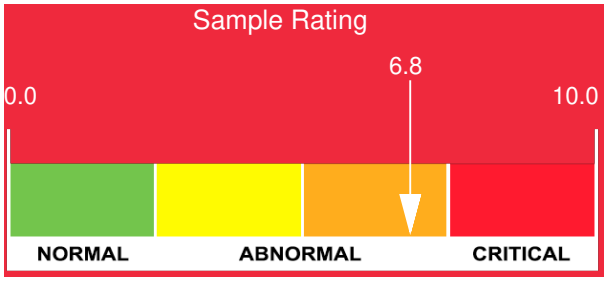
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/05/23	06/09/23	0.0y	west loop	439 / 226	24.1	33.8	0.04	0.020	721 / 383	815 / 435	911 / 489	2.01
06/15/21	06/18/21	0.0y	WESP	432 / 222	26.8	35.0	0.09	0.201	732 / 389	818 / 437	913 / 489	0.35
06/05/20	06/15/20	8.0y	WESP HEATING LOOP	435 / 224	29.4	35.8	0.26	0.222	731 / 389	821 / 438	915 / 490	0.35
03/02/17	03/09/17	0.0y	HOT POND THRML LOOP	432 / 222	27.5	42.9	0.03	0.195	731 / 389	840 / 449	927 / 497	1.45
09/18/12	09/19/12	132.0y	OVERHEAD A PUMP	430 / 221	63	53	0.04	0.021	790 / 421	849 / 454	917 / 492	0.977
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

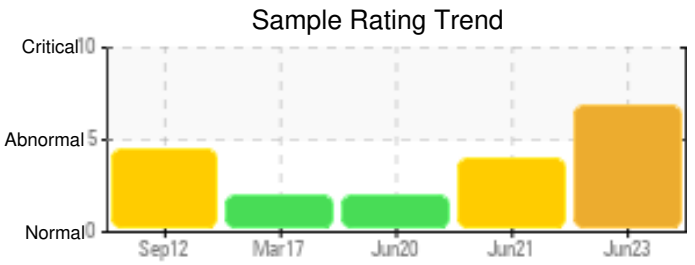






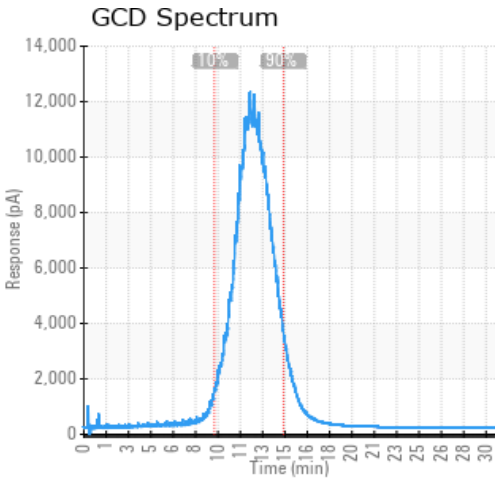
PETRO-CANADA LUBRICANTS

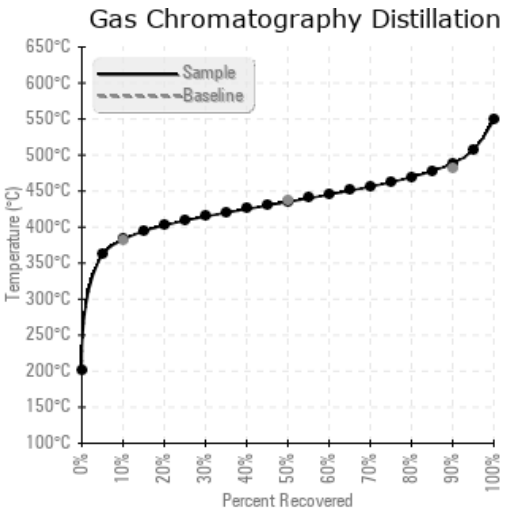


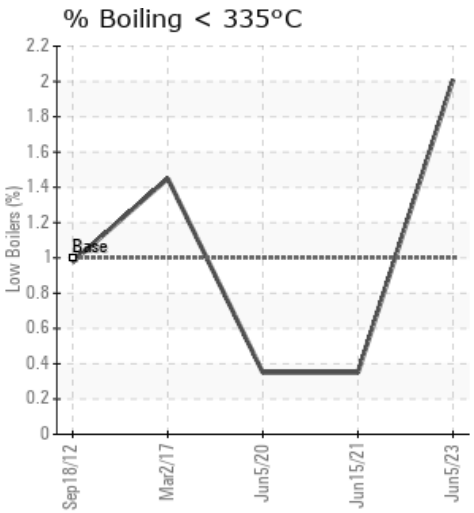


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
06/05/23	297	0	0	0	12	0	0	0	0	0	2	57	0	0	0	0	4	0	0	0	18	0	5	16
06/15/21	252	0	0	0	10	0	0	0	0	0	2	39	0	0	0	0	3	0	0	1	12	0	6	13
06/05/20	156	0	0	0	10	0	0	0	0	0	1	37	0	0	0	0	2	0	0	0	12	0	4	6
03/02/17	38	0	0	0	1	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	9	0	2	2
09/18/12	27	0	0	0	0	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0	3	0	2	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

06/15/21	Le nombre de ppm de Fer est elevee. Le nombre de ppm de Sodium est elevee. LE PQ est elevee.Il y a presence de metaux dans, verifier la source de cette contamination.L<huile est OK pour usage continu.PQ levels are abnormal. Iron ppm levels are abnormal. Sodium ppm levels are abnormally high.
06/05/20	the Iron is in warning level, at 156, it can indicate a possible presence of corrosion at a low level. the AN Level is 0.26 and it is acceptable up to 0.4. it is to watch. the GCD graph is good and the GCD 10%, 50% and 90% are all normal. The sodium is marginal could be provide by external source. If it is a departure after a shutdown period there may have been an accumulation of moisture which caused corrosion. Continue operations redo analysis in 6 monthsle fer est au niveau d'avertissement, à 156, il peut indiquer une présence possible de corrosion à un niveau bas. le niveau AN est de 0,26 et il est acceptable jusqu'à 0,4. c'est regarder. le graphique GCD est bon et les GCD 10%, 50% et 90% sont tous normaux. Le sodium pourrait provenir d'une présence extérieure. Le sodium est marginal il peut provenir d:une source externe. S'il s'agit d'un départ après une période d'arrêt, il peut y avoir eu une accumulation d'humidité qui a provoqué la corrosion. Poursuivre l'analyse des opérations dans 6 moisIron ppm levels are marginal. Sodium ppm levels are abnormally high.
03/02/17	We notice traces of sodium (Na= 22ppm) in the sample. This could indicate contamination from another type of lubricant. The GCD 90% Distillation Point is abnormally high and potentially related to presence of sodium in the Petro-Therm. All other parameters are normal. Your Petro-Therm is in good condition and can stay in service until next sampling. We recommend a new sample in 12 months. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is abnormally high.
09/18/12	The oil is in acceptable condition for further use. The viscosity is heavier than Petro-Therm but still considered normal because Petro-Therm was a higher viscosity oil before 2006. Plus this system may have been topped-up with competitive oils of higher viscosity. Please re-sample every 9-12 months to take advantage of this free service and keep monitoring the fluid and system condition.