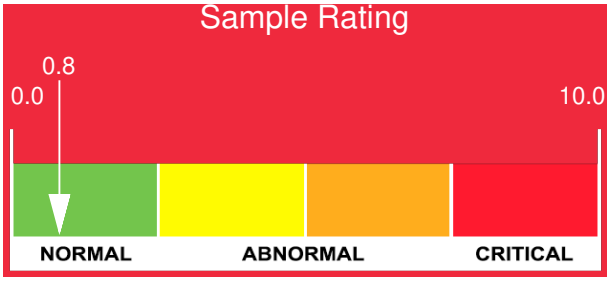
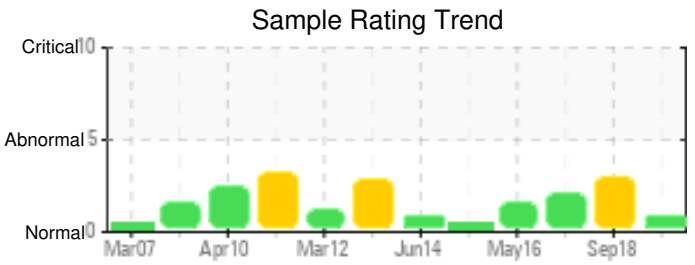




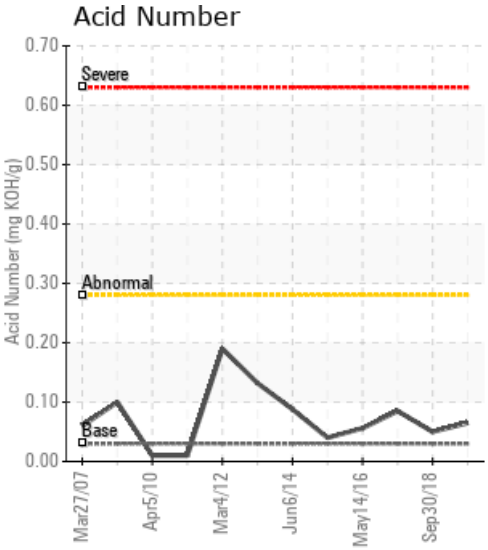
LINE 3 HOT OIL SYSTEM

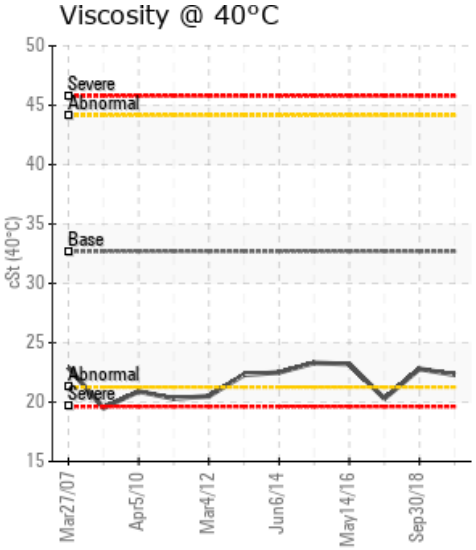
Customer: PTRHTF10069	System Information	Sample Information
CERTAINTEED - SAINT GOBAIN 3303 EAST 4TH AVENUE SHAKOPEE, MN 55379 USA Attn: Patrick Wallace Tel: E-Mail: patrick.wallace@saint-gobain.com	System Volume: 9450 gal Bulk Operating Temp: 474F / 246C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make:	Lab No: 02315483 Analyst: Gaston Arseneault Sample Date: 09/24/19 Received Date: 10/21/19 Completed: 11/12/19 Gaston Arseneault gaston.arseneault@hollyfrontier.com

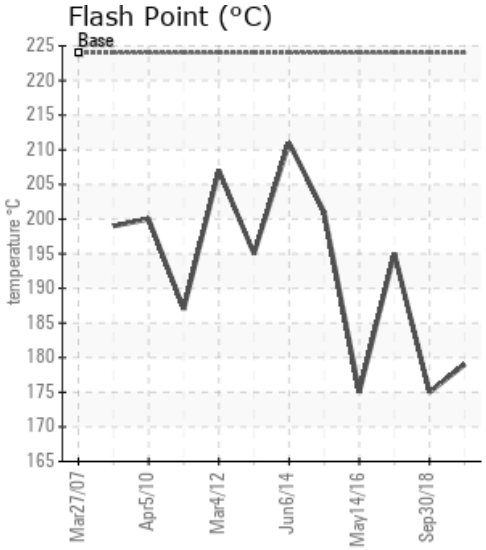
Recommendation: The oil is holding steady , although some properties like viscosity and flash point are flagged. This is likely due to the presence of Therminol 55 in this system when the computer compares to Calflo AF. Contamination by asphalt, water or other elements is insignificant or non-detectable. No actions needed at this time. Re-sample at next scheduled interval

Comments: COC Flash Point is abnormally low.

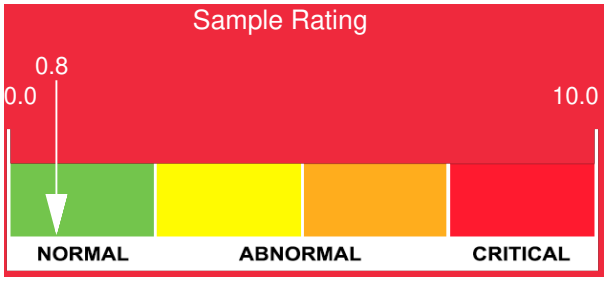
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/24/19	10/21/19	0.0y	MAIN SYSTEM FLOW	354 / 179	16.7	22.3	0.065	0.128	681 / 360	788 / 420	896 / 480	4.55
09/30/18	10/10/18	0.0y		347 / 175	10.0	22.8	0.050	0.031	671 / 355	766 / 408	862 / 461	4.41
09/02/17	09/12/17	4.0y	MAIN SYSTEM FLOW	383 / 195	12.1	20.3	0.085	0.029	682 / 361	773 / 412	870 / 466	2.62
05/14/16	05/24/16	0.0y	MAIN SYSTEM FLOW	347 / 175	2.9	23.2	0.056	0.166	667 / 353	764 / 407	852 / 455	5.29
04/15/15	05/07/15	0.0y	MN FLOW/MN SYS PUMP	394 / 201	11.4	23.3	0.04	0.026	685 / 363	776 / 413	877 / 469	2.02
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

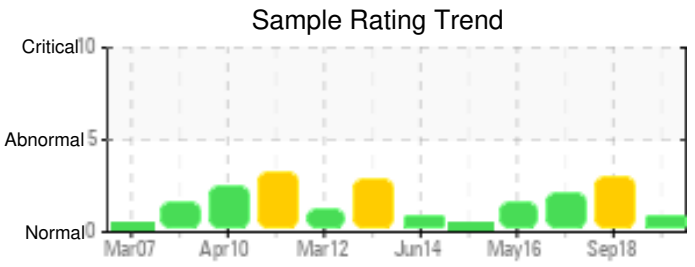






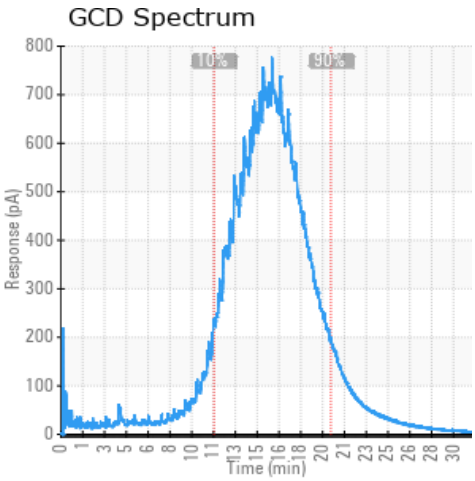
PETRO-CANADA LUBRICANTS

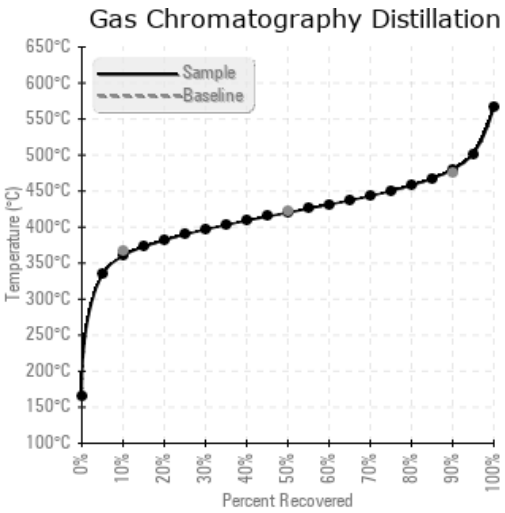


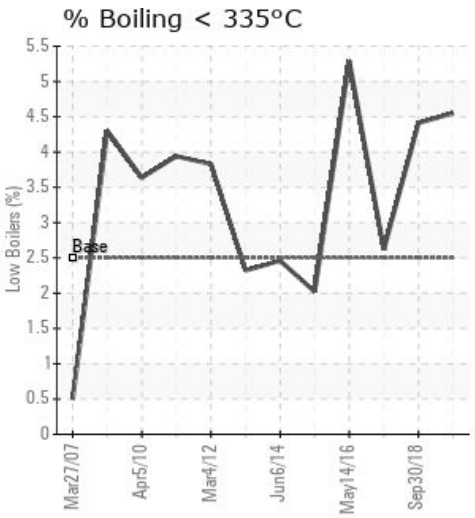


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
09/24/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0
09/30/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0
09/02/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0
05/14/16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
04/15/15	3	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	2	0	49	2
Baseline Data			0	0						0			0	0					0				270	

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







Historical Comments

09/30/18	This system has a history of having lower viscosity and what doesn't help is the flaws in the ASTM open cup flash point test is results jump up and down. So the viscosity is higher than on the last sample, yet the flash point is flagged for being lower. Overall you have managed this system well, just make sure the viscosity remains at least 23 cSt, but ideally we would like it to be a little higher. Since it seems to be more prone to thermal cracking, a slightly more frequent venting and replenishing might be needed on this system. COC Flash Point is abnormally low.
09/02/17	The viscosity remains low although the flash point and boiling properties remain normal. We suggest to maintain a certain venting schedule to prevent further reduction in viscosity and decrease in flash point. Remember to replace light ends vented off by adding fresh oil. Best practices suggest that the oil level in the expansion tank should be 75% full when in operation. Visc @ 40°C is abnormally low.
05/14/16	COC Flash Point is abnormally low. GCD IBP, 90% Distillation Point has decreased from the last sample. Pentane Insolubles have also increased and the phosphorus additive levels decreased markedly from the last sample. Resample next interval to monitor.
04/15/15	Sulfur levels are at 2112 ppm which is substantially higher than new oil values of <1 ppm. Investigate source of contamination. Viscosity at 40C is 23.3 cSt which is at >30% change condemning limit. Check for product used.Other properties are within normal ranges.