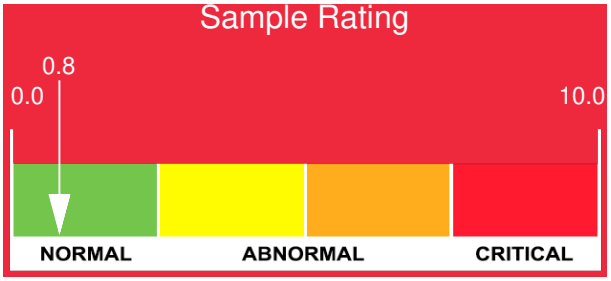
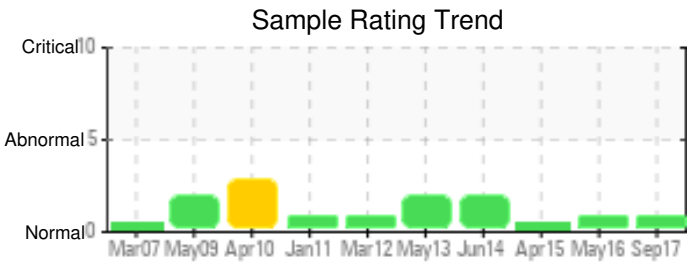




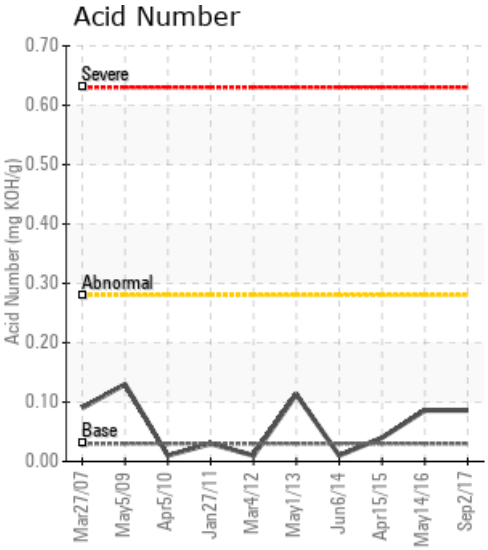
MODIFIED ROOM HOT OIL SYSTEM

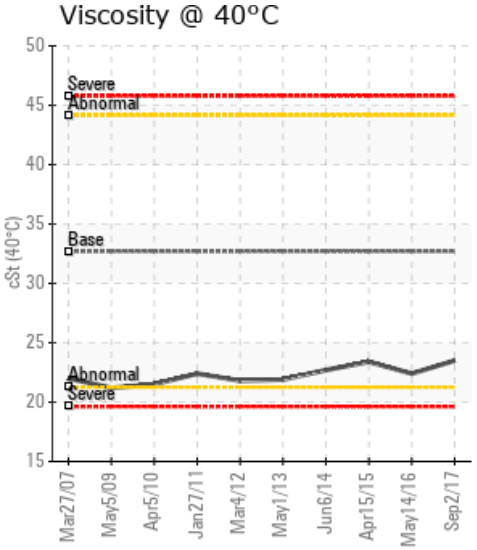
Customer: PTRHTF10069	System Information	Sample Information
CERTAINTEED - SAINT GOBAIN 3303 EAST 4TH AVENUE SHAKOPEE, MN 55379 USA Attn: Patrick Wallace Tel: E-Mail: patrick.wallace@saint-gobain.com	System Volume: 4158 gal Bulk Operating Temp: 500F / 260C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make:	Lab No: 02168852 Analyst: Gaston Arseneault Sample Date: 09/02/17 Received Date: 09/12/17 Completed: 09/13/17 Gaston Arseneault gaston.arseneault@hollyfrontier.com

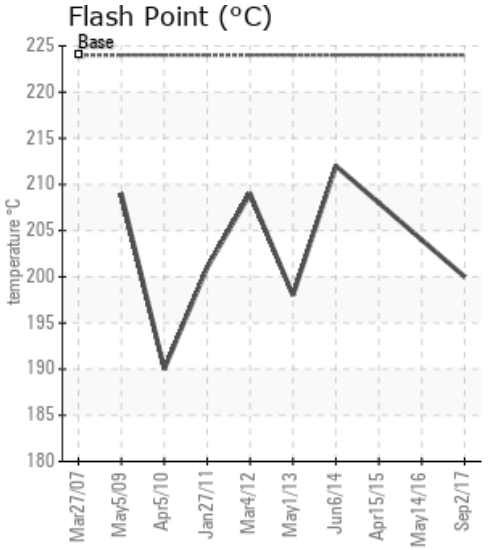
Recommendation: The oil condition is consistent with previous samples. The viscosity remains low but the flash point is staying strong. No immediate action is required at this time but you can vent the low boilers out and replace the lost volume with fresh oil as preventative measure. Re-sample at next normal interval.

Comments: (GCD) 90% Distillation Point is marginally low.

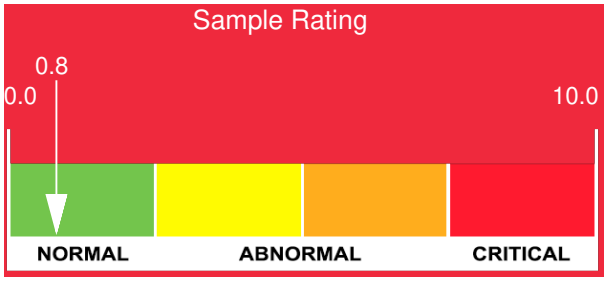
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/02/17	09/12/17	4.0y	MAIN SYSTEM FLOW	392 / 200	10.1	23.5	0.086	0.037	683 / 362	772 / 411	867 / 464	2.42
05/14/16	05/24/16	0.0y	MAIN SYSTEM FLOW	399 / 204	3.4	22.4	0.086	0.198	683 / 362	762 / 405	855 / 457	0.93
04/15/15	05/07/15	0.0y	MN FLOW/MN SYS PUMP	406 / 208	15.4	23.4	0.04	0.025	686 / 363	774 / 412	872 / 467	1.53
06/06/14	06/17/14	0.0y	MAIN FLOW NEAR PUMP	414 / 212	0.3	22.7	0.01	0.070	670 / 354	745 / 396	830 / 443	3.31
05/01/13	05/15/13	0.0y	MAIN SYSTEM FLOW	388 / 198	62.6	21.9	0.113	0.044	684 / 362	759 / 404	829 / 443	0.87
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

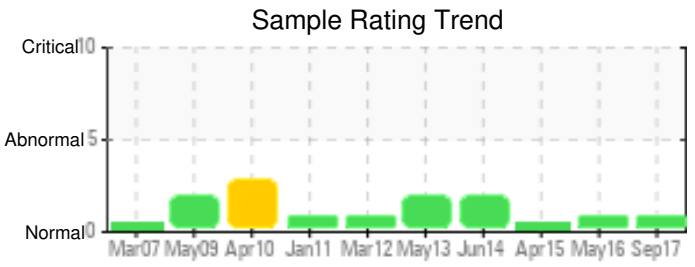






PETRO-CANADA LUBRICANTS

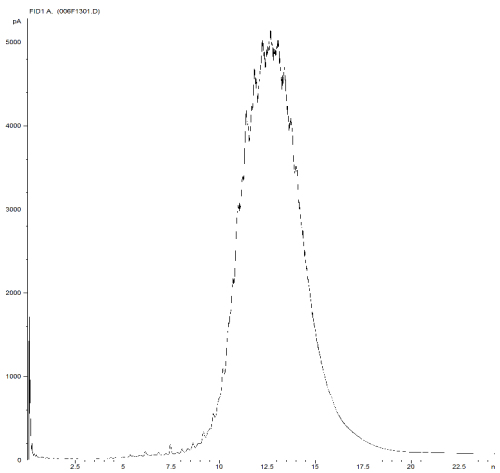




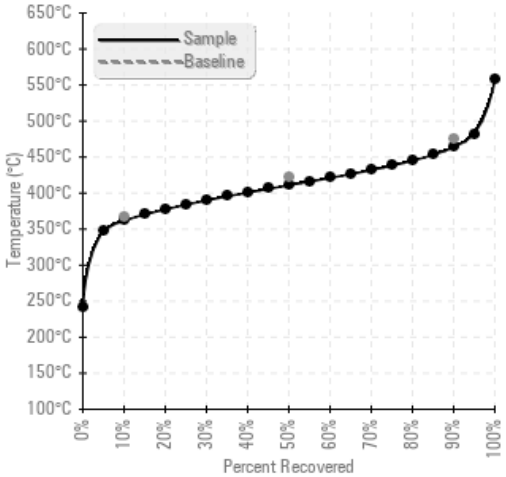
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
09/02/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0
05/14/16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0
04/15/15	4	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	5	0	50	4
06/06/14	4	0	0	2	0	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0	23	0	43	0
05/01/13	6	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1	0	36	0
Baseline Data			0	0						0			0	0					0				270	

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

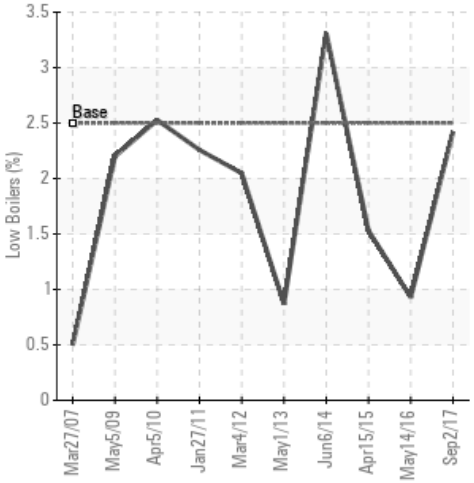
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

05/14/16	(GCD) 90% Distillation Point is marginally low. Pentane insolubles have increased but are still below the 0.5% condemning limit.
04/15/15	Viscosity of fluid at 23.4 cSt @ 40C and from previous used oil samples does not correspond to the viscosity of Calflo AF at 32.3 cSt. Sulfur levels of 2116 ppm are much higher than typical new oil values of less than 1 ppm. Investigate source of contaminants. Other properties look good.
06/06/14	Viscosity at 40C is substantially lower than new Calflo AF - investigate source. Sample looks good otherwise. (GCD) 90% Distillation Point is severely low.
05/01/13	The oil remains in good condition and is suitable for further use. The reason for the color coding is that the system is a mix of Mobiltherm and Calflo AF and the computer is trying to compare the oil against the known values for pure Calflo AF. Please continue to sample at the regular interval (9-12 months). (GCD) 90% Distillation Point is severely low.