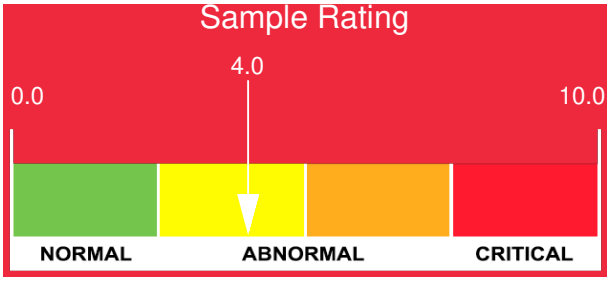
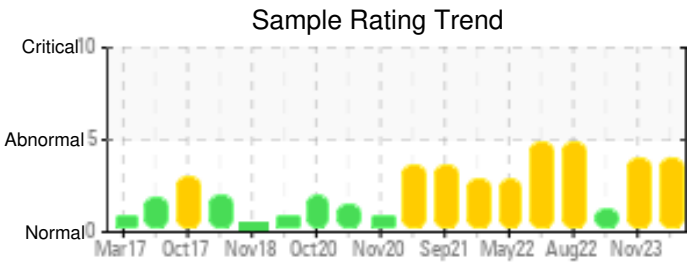




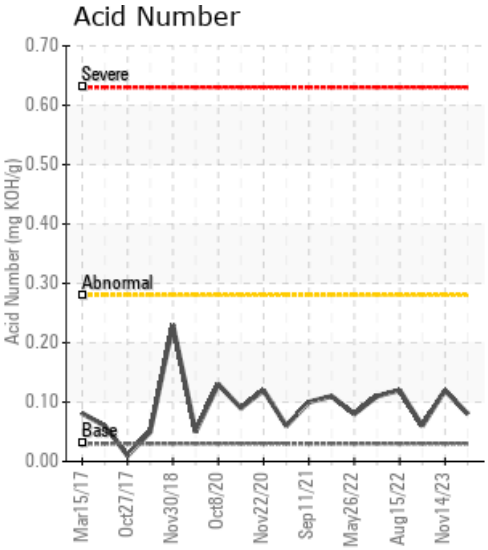
TFS H/O SYSTEM #1

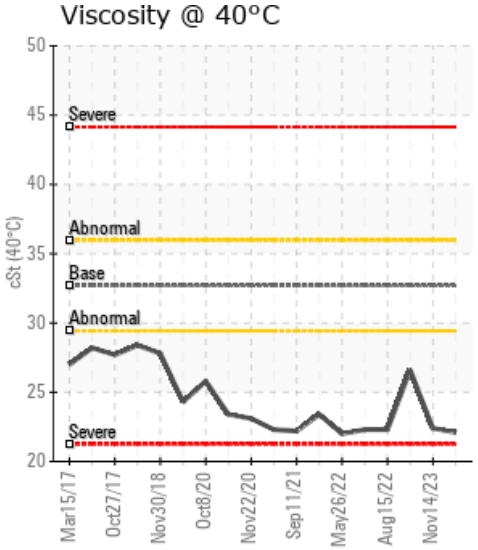
Customer: PTRHTF10176	System Information	Sample Information
CERTAINTEED ROOFING 100 CERTAINTEED DR JONESBURG, MO 63351 US Attn: Jeff Montgomery Tel: (952)261-9532 E-Mail: jeffrey.d.montgomery@saint-gobain.com	System Volume: 4462 gal Bulk Operating Temp: 553F / 289C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: FSE	Lab No: 02630811 Analyst: Neil Buchanan Sample Date: 04/12/24 Received Date: 04/22/24 Completed: 04/25/24 Neil Buchanan neil.buchanan@HFSinclair.com

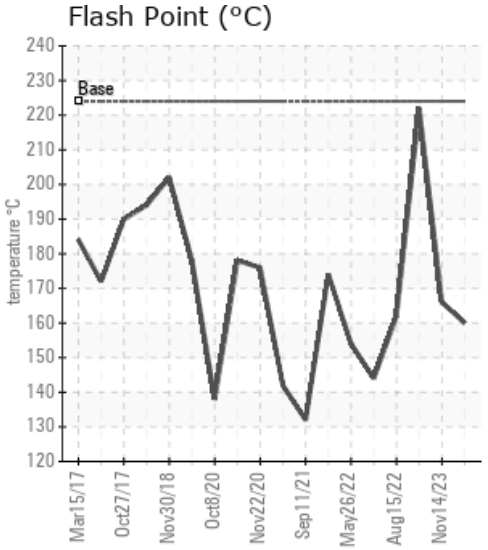
Recommendation: Flash point is severely low and GCD shows the formation of light ends. Consider safely venting through the expansion tank and resample.

Comments: COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high.

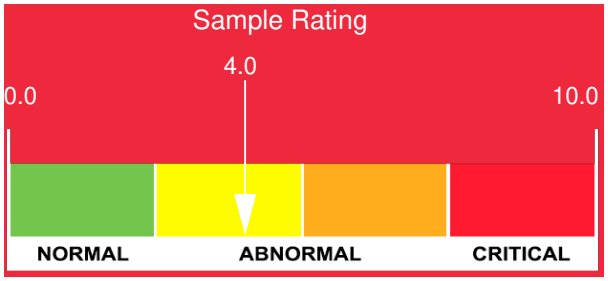
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
04/12/24	04/22/24	0.0y	side stream filter	320 / 160	18	22.1	0.08	0.103	642 / 339	790 / 421	902 / 484	9.05
11/14/23	11/16/23	7.0y	SIDE STREAM FILTER	331 / 166	9.9	22.4	0.12	0.077	625 / 329	785 / 419	892 / 478	10.14
11/14/22	11/22/22	0.0y		432 / 222	9.0	26.6	0.06	0.075	691 / 366	805 / 430	922 / 495	4.29
08/15/22	08/29/22	0.0y		324 / 162	92.8	22.3	0.12	0.064	634 / 334	786 / 419	898 / 481	9.62
07/15/22	07/26/22	0.0y		291 / 144	24.0	22.3	0.11	0.072	638 / 337	786 / 419	896 / 480	9.30
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

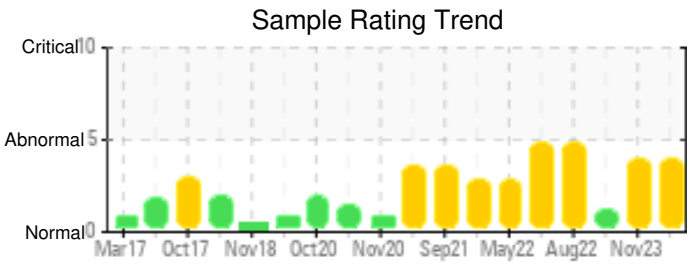






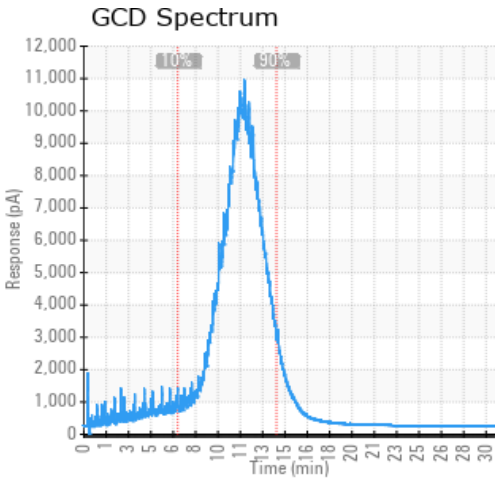
PETRO-CANADA LUBRICANTS

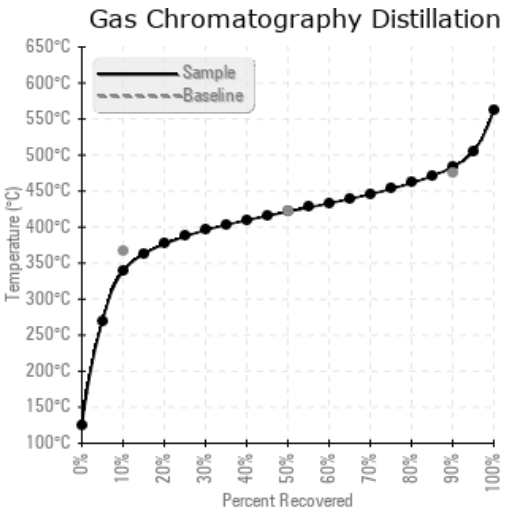


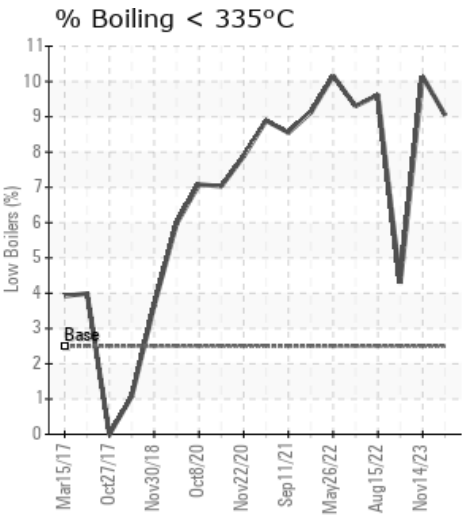


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
04/12/24	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57	0
11/14/23	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	0
11/14/22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	0
08/15/22	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	47	0
07/15/22	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0
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

11/14/23	Flash point is marginally low and this correlates to the higher GCD % below 335C. Consider venting low boilers through the expansion tank. Resample next interval to monitor. COC Flash Point is abnormally low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.
11/14/22	No indication of asphalt contamination. GCD at 90% is slightly higher than normal. Resample at the next interval to monitor. (GCD) 90% Distillation Point is abnormally high. Visc @ 40°C is abnormally low.
08/15/22	Flash point and viscosity remain abnormally low. GCD % <335C is elevated and the GCD graph shows the presence of low boilers from thermal degradation. Fluid should be safely vented through the expansion tank or a partial or full fluid change should be made. COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.
07/15/22	Flash Point is severely low and GCD% below 335C is high showing the formation of low boilers. COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.

