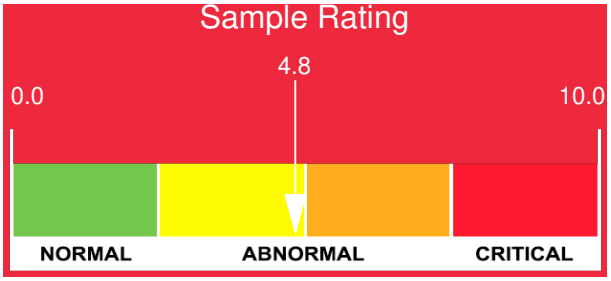
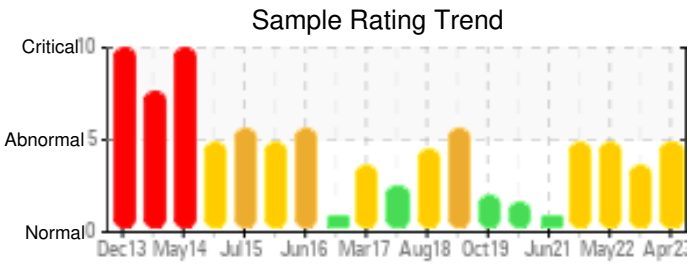
PETRO-CANADA LUBRICANTS





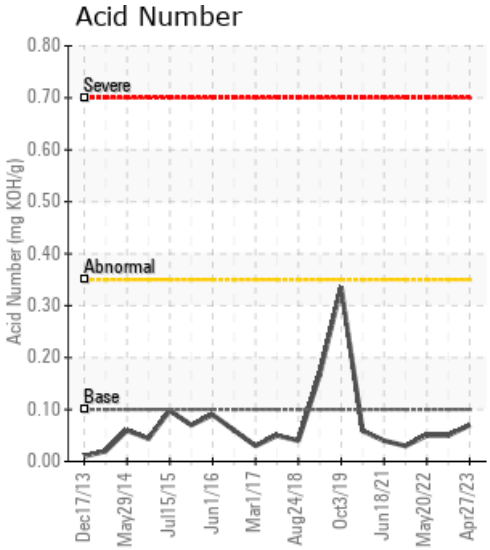
LN02 Filler Mixer Hot Oil System

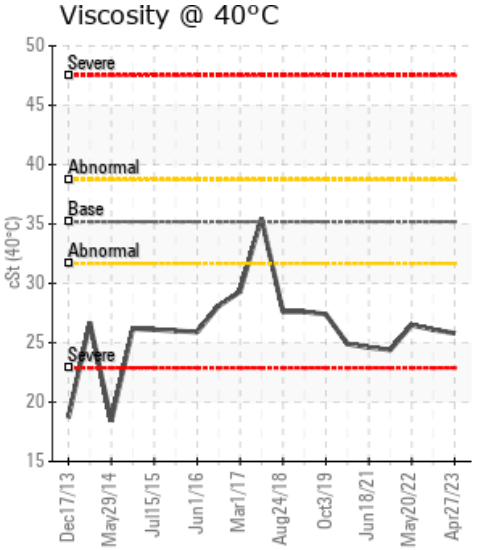
Customer: PTRHTF10141	System Information	Sample Information
TAMKO BUILDING PRODUCTS 2300 35TH ST TUSCALOOSA, AL 35401 US Attn: Greg Colburn Tel: (205)752-3555 E-Mail: gregory_colburn@tamko.com	System Volume: 650 gal Bulk Operating Temp: 530F / 277C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: HEATEC Inc.	Lab No: 02556717 Analyst: Jake Finn Sample Date: 04/27/23 Received Date: 05/10/23 Completed: 05/30/23 Jake Finn jake.finn@HFSinclair.com

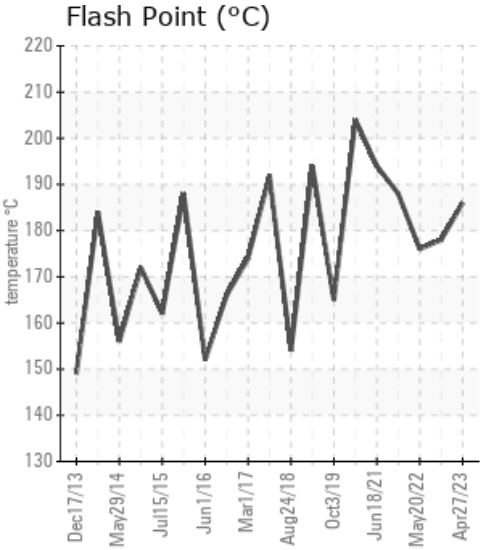
Recommendation: Overall sample is not bad. There are no signs of wear or contamination at this time, but GCD 10% Distillation point is low, indicating there may be some light ends within the fluid. I'd recommend venting the system if possible, to remove low boilers. It appears the 10% distillation point has been low since June 2021, so this is not a new development, but should be addressed. Please submit for testing again in 12 months.

Comments: (GCD) 10% Distillation Point is severely low. COC Flash Point 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	%
04/27/23	05/10/23	0.0m		367 / 186	24.0	25.8	0.07	0.040	616 / 325	802 / 428	909 / 487	10.79
11/07/22	11/15/22	0.0m		352 / 178	26.3	26.1	0.05	0.218	626 / 330	804 / 429	909 / 487	10.03
05/20/22	05/31/22	0.0m		349 / 176	17.0	26.5	0.05	0.111	612 / 322	803 / 428	912 / 489	11.14
12/03/21	12/13/21	0.0m		370 / 188	7.7	24.4	0.03	0.042	594 / 312	801 / 427	910 / 488	13.05
06/18/21	06/24/21	0.0m		381 / 194	24.2	24.6	0.04	0.042	572 / 300	781 / 416	891 / 477	17.31
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75







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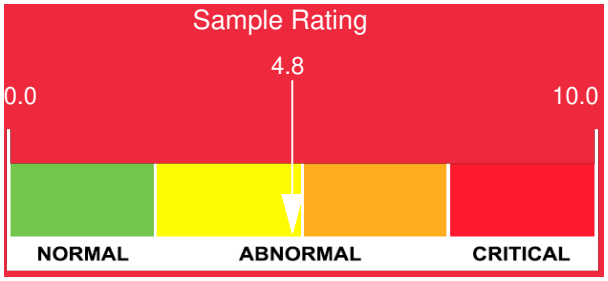
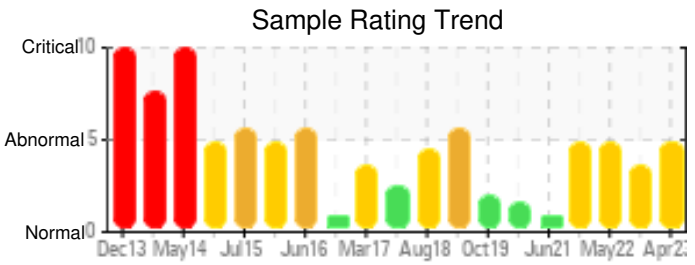
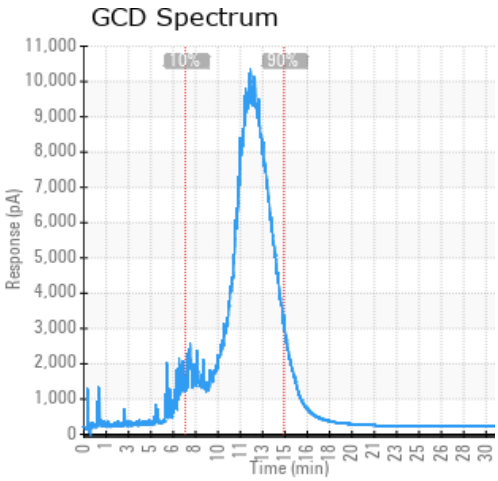
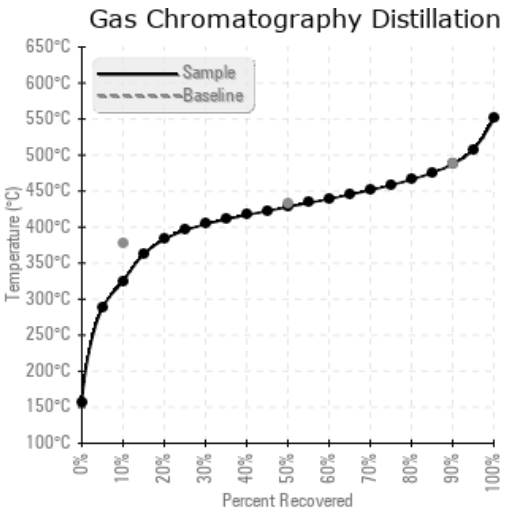


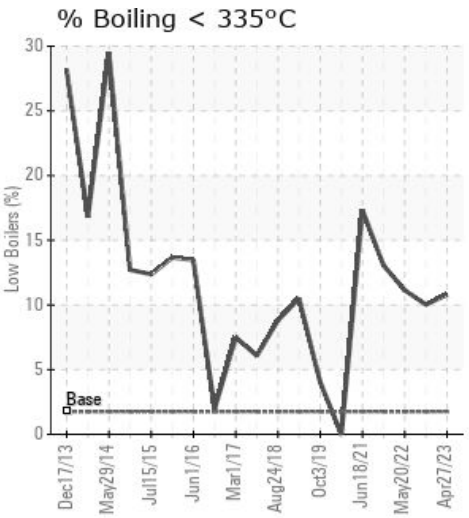


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
04/27/23	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0
11/07/22	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0
05/20/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	26	0
12/03/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
06/18/21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	20	0
Baseline Data			0	0						0			0	0				0	0				280	

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







Historical Comments

11/07/22	Slight improvement on GCD % <335°C and GCD 10% Distillation Point, Flash point has not changed significantly since the last sample but remains low compared to fresh fluid. As of right now, testing for this sample indicates the system fluid is suitable for continued use. Although the fluid seems suitable for now, I would suggest taking action soon to extend fluid life. Based on the lower flash and GCD distillation values, there is likely presence of some 'low boilers' in the system, possibly due to thermal cracking of the fluid or contamination from another source. These can be removed by venting the low boilers through an expansion tank, if possible. COC Flash Point is abnormally low. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high.
05/20/22	Sample indicates no signs of wear or contamination. Flash point and GCD 10% Distillation point remain low but similar to the previous sample, indicating the possible presence of light ends in the system. Properly venting the system may help to remove these low end boilers and improve fluid condition.This fluid is otherwise suitable for continued use, please resample and submit for testing in 12 months.(GCD) 10% Distillation Point is severely low. COC Flash Point is abnormally low. (GCD) % < 335°C is marginally high.
12/03/21	GCD 10% distillation point is severely low but has improved since last sample. GCD % <335°C is abnormally high but has also improved since last sample date. COC Flash point in marginally low and slightly lower than last sample date. Water content has also improved over the last several samples. If possible, consider venting the system to remove low boilers and improve GCD results. Despite the flagged results there is no current indication of acid generation or fluid breakdown that would cause concern. Fluid is therefore suitable for continued use and should be resampled for testing in one year.(GCD) 10% Distillation Point is severely low. (GCD) % < 335°C is abnormally high. COC Flash Point is marginally low.
06/18/21	GCD results indicate a higher formation of low-boilers as compared to previous samples. Venting the system may help in removing these low-boilers. Once system is vented and low ends are removed, I would recommend identifying the cause of low-end hydrocarbon formation and implementing measures to mitigate any potential risks. This will help to prolong the life of the fluid and system components. It could be as simple as changing system operating procedures to prevent prolonged heat sources applied to stagnant fluid pockets, i.e. continuing to circulate fluid during shutdown once heat source is turned off. Feel free to reach out for guidance if needed. Otherwise, the fluid is in good condition, shows no other signs of pump wear, water/dirt contamination or acid formation that could lead to sludge build-up. The fluid is currently suitable for continued use. Please resample and submit for testing in one year, or after changes have been made if desired. (GCD) % < 335°C is severely high. (GCD) 10% Distillation Point is severely low. (GCD) 90% Distillation Point is marginally low. COC Flash Point is marginally low.