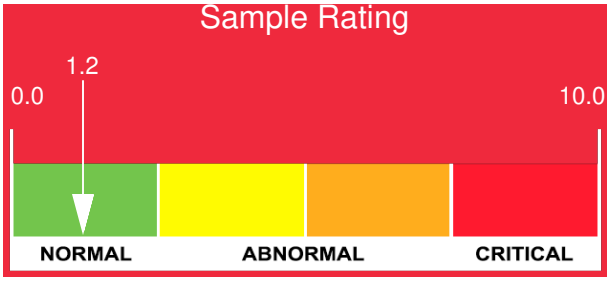
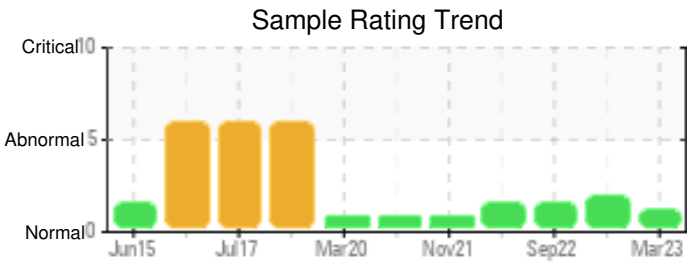




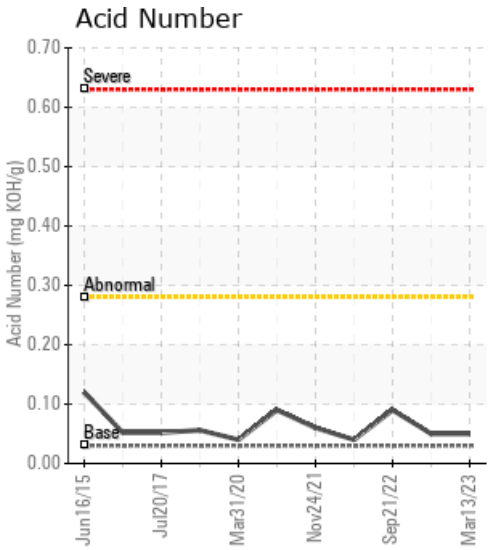
LINE 1/2

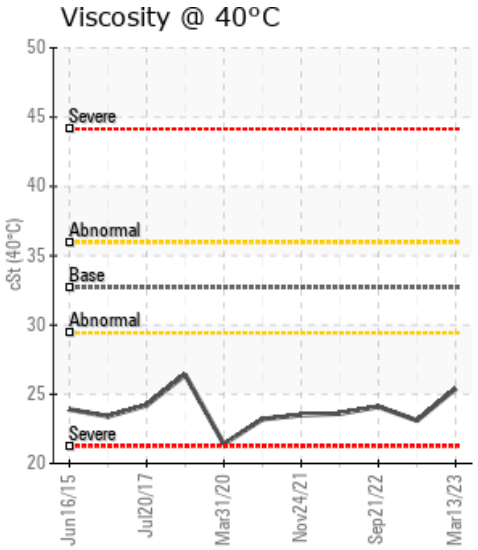
Customer: PTRHTF60002	System Information	Sample Information
BOYNE SMELTERS LTD-RIO TINTO HANDLEY DRIVE QUEENSLAND BOYNE ISLAND, QUE 4680 AUSTRALIA Attn: Heath Mitchell Tel:	System Volume: 20000 ltr Bulk Operating Temp: 514F / 268C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make:	Lab No: 02561482 Analyst: Philip Riley Sample Date: 03/13/23 Received Date: 06/02/23 Completed: 06/25/23 Philip Riley philip.riley@HFSinclair.com

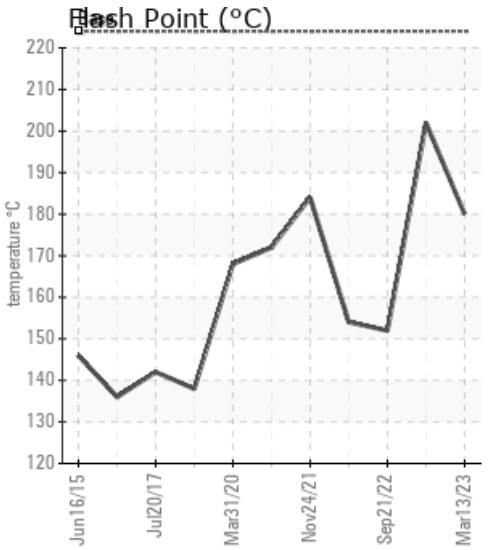
Recommendation: Fluid recovered slightly from partial change (?) previously. Viscosity tracking down, along with flash point which shows continued thermal stress to the fluid. Please resample at normal frequency and as I believe a change is scheduled, there may be degradation at a slightly higher rate as some residual fluid remains following sweetening.

Comments: Visc @ 40°C is abnormally low. COC Flash Point is marginally low.

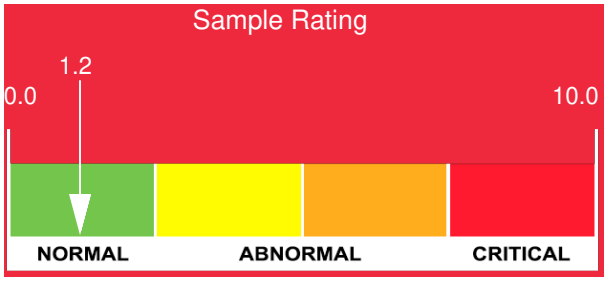
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/13/23	06/02/23	30.0y	HEATER	356 / 180	33.7	25.4	0.05	0.067	671 / 355	792 / 422	895 / 480	5.94
01/19/23	02/14/23	20.0y	HTF Heater	396 / 202	12.0	23.1	0.05	0.937	690 / 366	799 / 426	902 / 484	4.21
09/21/22	10/04/22	30.0y		306 / 152	17.9	24.1	0.09	0.044	658 / 348	789 / 420	895 / 480	7.48
05/27/22	06/07/22	0.0y		309 / 154	15.5	23.6	0.04	0.067	662 / 350	789 / 420	893 / 479	6.89
11/24/21	12/07/21	0.0y		363 / 184	0.1	23.5	0.06	0.052	657 / 347	788 / 420	894 / 479	7.47
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

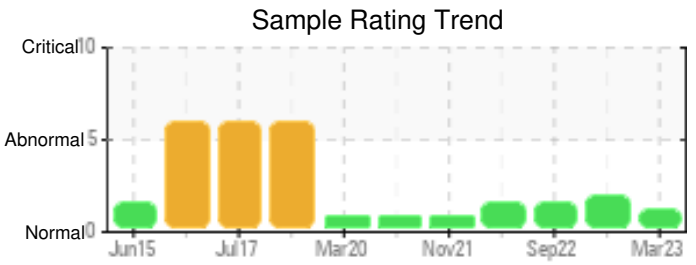






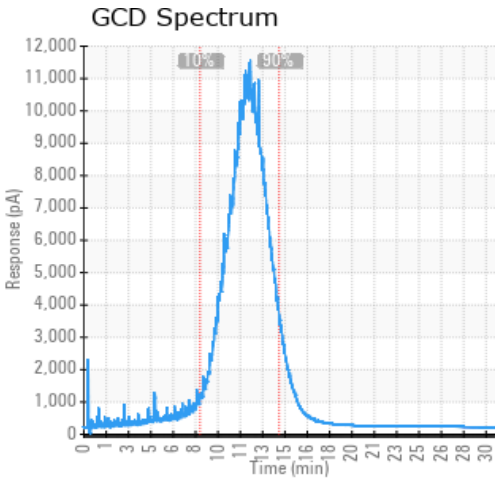
PETRO-CANADA LUBRICANTS

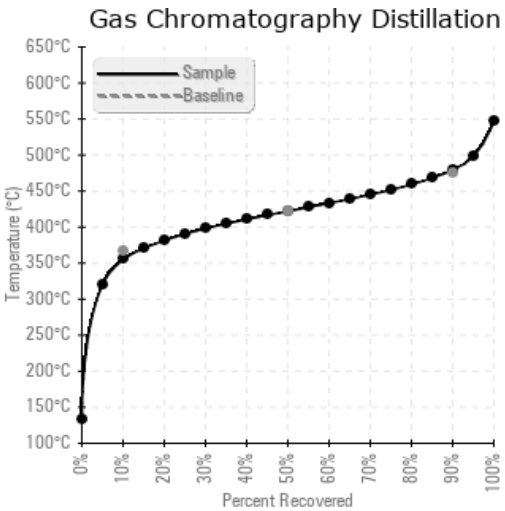


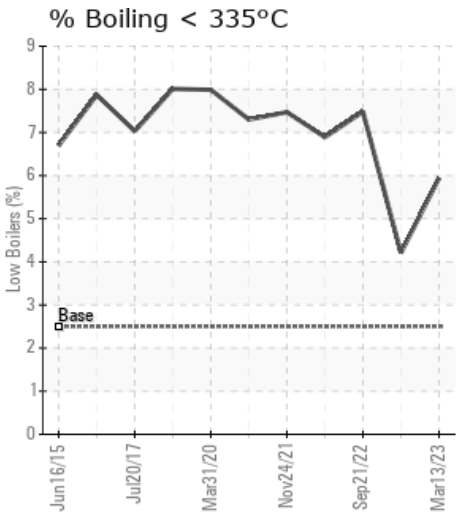


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/13/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	13	2
01/19/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
09/21/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
05/27/22	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	11	0
11/24/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	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

01/19/23	Partial change recovered the flash point as expected, but this is a temporary measure to get to a safe place. There is alot of sediment in the system and the visco is running low, evidence of cracking and whilst the low boiling point molecules are removed by venting, the other forms of degradation stay behind and will affect the oil.You have pushed back the urgency and should plan a change out in the coming months, including a clean and flush of the system Pentane Insolubles levels are severely high. Visc @ 40°C is abnormally low.
09/21/22	As per recent discussions, confirms the low flash point and you are doing the right thing on site by a partial change to increase this flash point and work ina safer zone. Change including a clean and flush should be planned for convenient point in coming months. I would resample a day after the partial change is done so you can get a new baseline COC Flash Point is severely low.
05/27/22	Fluid needs attention based on Flash Point at 154C. Unless the flash point can be recovered you need to look to change out this system. Viscosity has also dropped, supporting some form of increase in light molecules. Recommend venting if can be done safely and, allowing the system to settle and re-sampling to see if there has been flash point recovery. If there is little in the way of recovery then you need to work to change this oil based on the flash point COC Flash Point is severely low.
11/24/21	COC Flash Point is low, but improved from the previous sample. Again, there is viscosity drop, and in line with the GCD curve, evidence of fluid cracking (when you link viscosity drop, low flash point, graph). If the system can be safely vented then there is the possibility to recover the flash point and remove the light ends. Conscious this system was changed within the last 12 months, and the results on Line 3 are distinctly different, where the fluid is in very good condition. After venting (if possible), would be interesting to see another sample to see if and how the fluid has recovered somewhat COC Flash Point is marginally low.