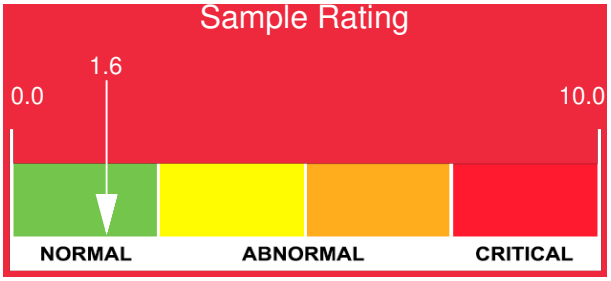
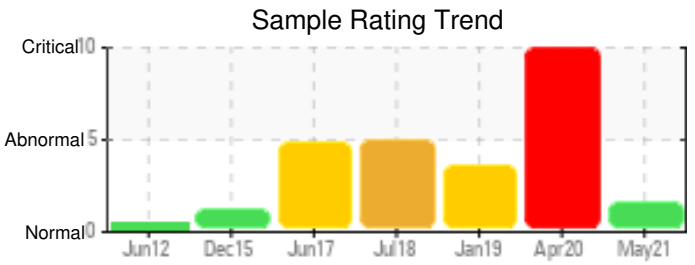




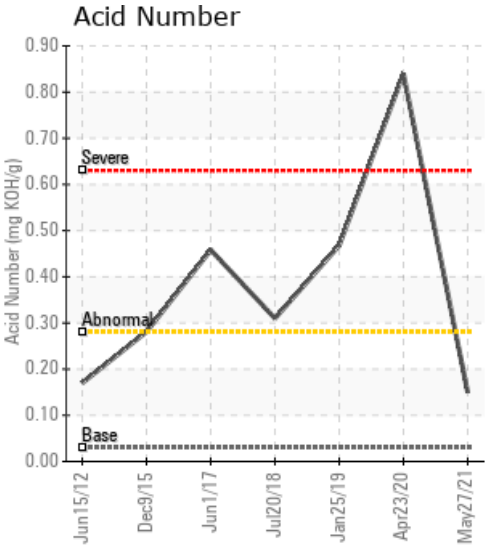
PASTE PLANT 2 HTF

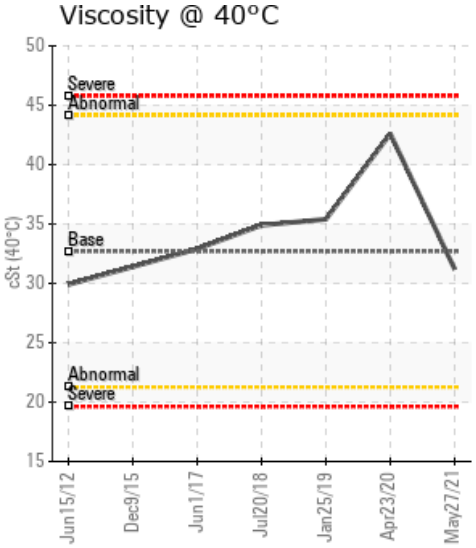
Customer: PTRHTF60012	System Information	Sample Information
TOMAGO ALUMINIUM COMPANY 638 TAMAGO ROAD, TOMAGO NEW SOUTH WALES NEWCASTLE, 2324 Australia Attn: Adam Whiting Tel: 6(140)914-0530 E-Mail: adam.whiting@tomago.com.au	System Volume: 15000 ltr Bulk Operating Temp: 414F / 212C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make:	Lab No: 02438613 Analyst: Philip Riley Sample Date: 05/27/21 Received Date: 08/13/21 Completed: 09/01/21 Philip Riley philip.riley@hollyfrontier.com

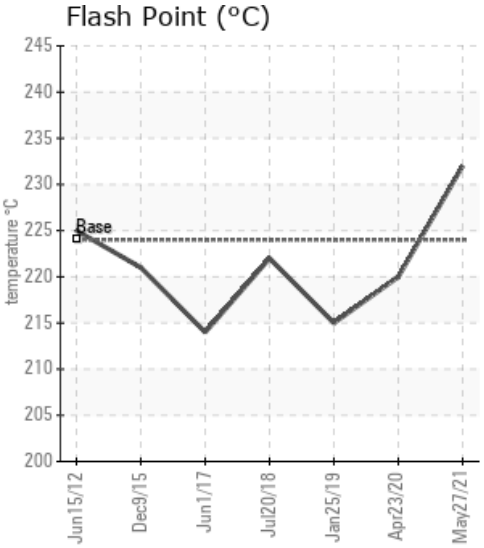
Recommendation: All parameters meet expected limits except the pentane insolubles. This is likely some carryover from the previous oil charge, despite the clean and flush. Please monitor the levels and if it can be done safely, consider filtration to remove

Comments: Pentane Insolubles levels are severely high.

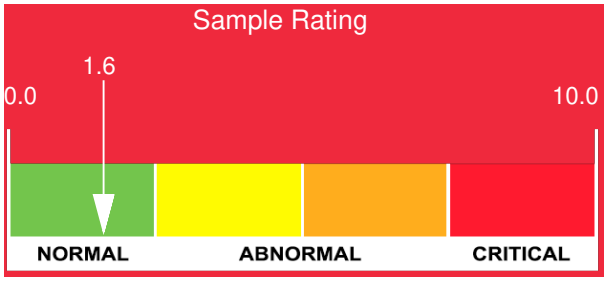
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/27/21	08/13/21	0.0y	SAMPLE 1	450 / 232	12.7	31.2	0.15	0.680	696 / 369	801 / 427	895 / 480	2.47
04/23/20	08/14/20	9.0y	PP2 BUSS COOLER	428 / 220	153.4	42.6	0.84	1.22	707 / 375	801 / 427	906 / 486	0.87
01/25/19	04/01/19	0.0y		419 / 215	26.9	35.4	0.468	0.583	696 / 369	795 / 424	900 / 482	1.63
07/20/18	08/08/18	0.0y		432 / 222	28.2	34.9	0.31	0.718	701 / 372	798 / 425	906 / 486	0.18
06/01/17	08/08/17	0.0y	HEATER ROOM	417 / 214	48.5	32.9	0.458	0.233	755 / 402	819 / 437	916 / 491	0.23
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

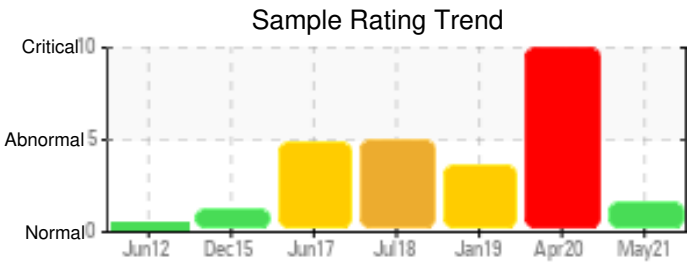






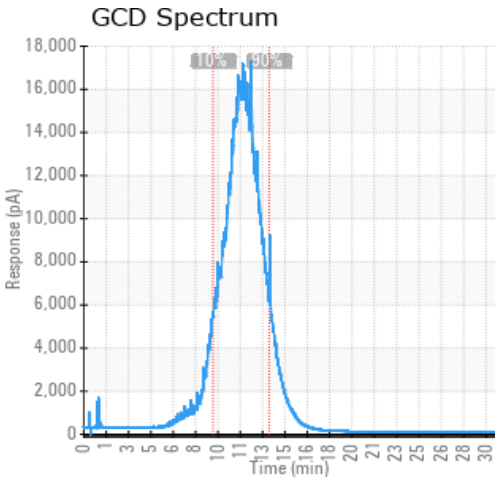
PETRO-CANADA LUBRICANTS

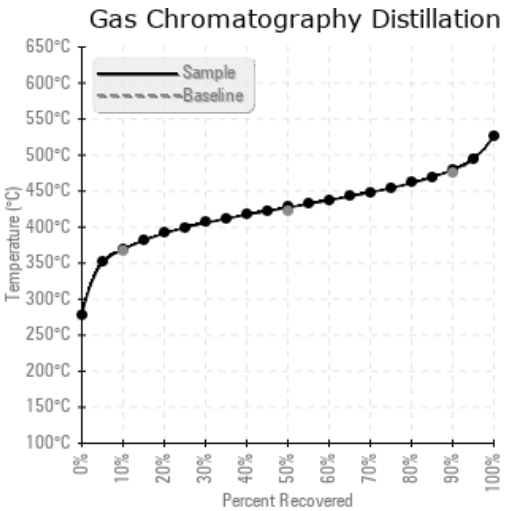


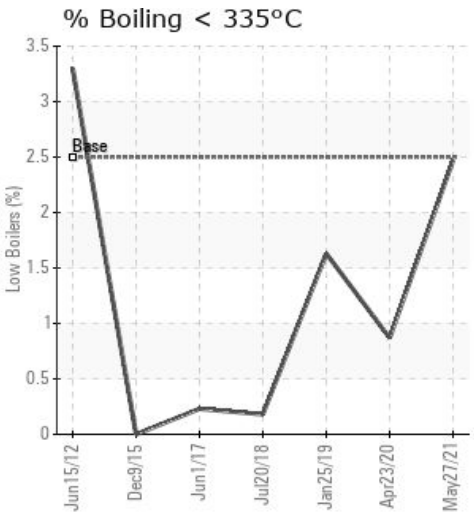


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
05/27/21	57	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	240	1
04/23/20	496	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	6	0	0	0	0	0	228	2
01/25/19	186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	203	1
07/20/18	96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	209	0
06/01/17	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	172	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

04/23/20	Several parameters show great concern regarding the condition of the fluid. Iron levels are severely high, and looking at previous reports, has there been some change in service that has potentially introduced this? Acid number is high, insoluble are high and the viscosity is very high and out of range. This translates to the oil being oxidized and with the increase in viscosity for example, to achieve the same effect, you need to put more heat into the system, which will have an accelerated effect on the degradation. Recommend that you look to change the fluid, including a clean and flush as suspect there will be degraded product that needs to be removed at the next convenient opportunity.Iron ppm levels are severe. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.
01/25/19	Please send one email to Yutong Gao to inform the current fluid working hours (or months, years). The current fluid has adequate viscosity, flash point and distillation points. It is suitable for the further operation. The elevated Acid Number and Solid content all indicate the fluid has minor oxidation. The Fe level is extremely high, but I think it is because of the contamination during the sampling process, or the Fe particles are accumulating in the fluid through the system opening areas after years operation. Please take one sample in 12 months to monitor the oil conditions.Extremely high Iron ppm levels are noted. Solid content is high. Acid Number (AN) is high.
07/20/18	The current fluid has a moderate oxidation, however it is suitable for further operation. The solid content is high due to the fluid oxidation or third party contamination. The 96ppm Fe reading is also a concern because the system should not have wears and tears. Please continue to run the fluid and take one sample in 6 months to monitor the conditions. Please make sure to flush the sampling line well enough before taking the representative samples.Iron ppm levels are noted. Solid levels are high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
06/01/17	The current fluid has moderate oxidation, so that the AN number and GCD 10%, 50% and 90% have been increased. However, the fluid is still suitable for use. Please take one sample in 12 months to monitor the conditions.