

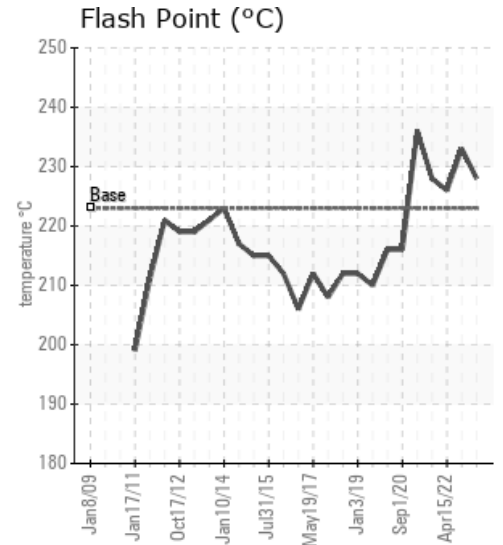
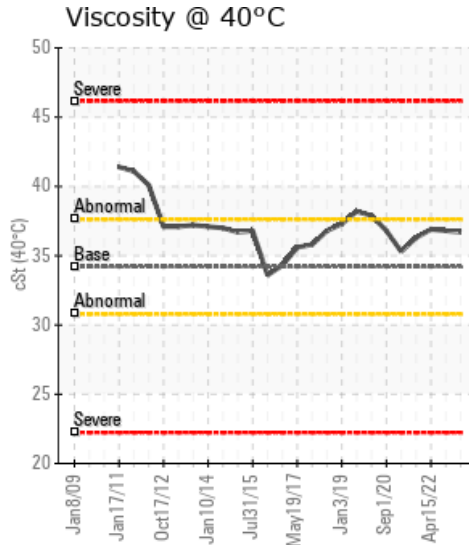
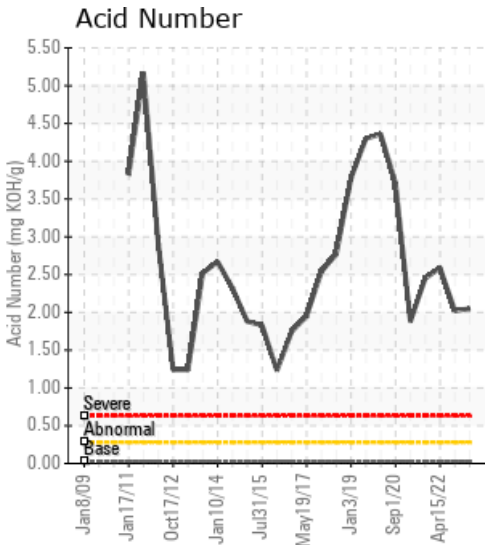
HOT WAX AREA

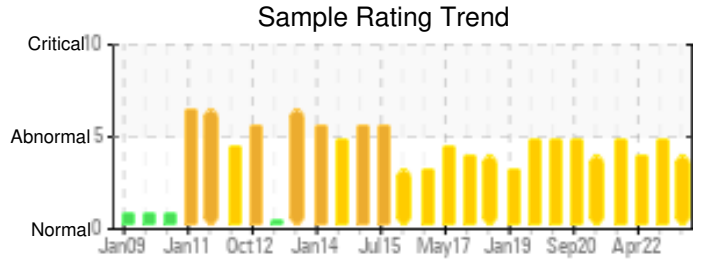
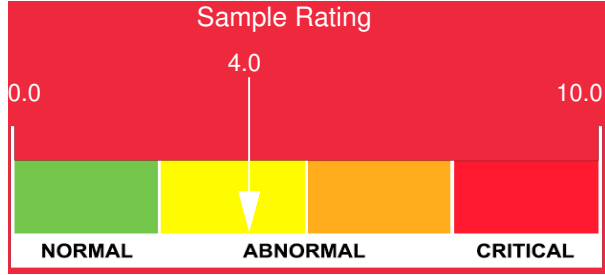
Customer: PTRHTF10102	System Information	Sample Information
METALSA INCORPORATED 301 BILL BRYAN BLVD HOPKINSVILLE, KY 42240 USA Attn: CHRIS HIGGINS Tel: (270)305-1347 E-Mail: chiggins@kimbrooil.com	System Volume: 4000 gal Bulk Operating Temp: 240F / 116C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02538518 Analyst: Joe Goecke Sample Date: 02/03/23 Received Date: 02/09/23 Completed: 03/14/23 Joe Goecke Joe.goecke@HFSinclair.com

Recommendation: Sample is duplicate of previous report that was diagnosed

Comments: Acid Number (AN) is severely high. (GCD) 90% Distillation Point is abnormally high.

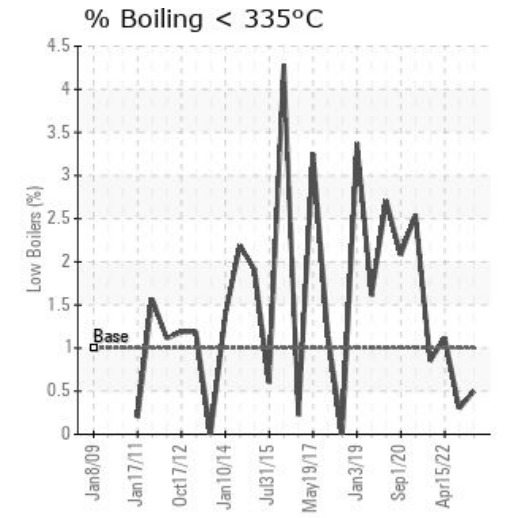
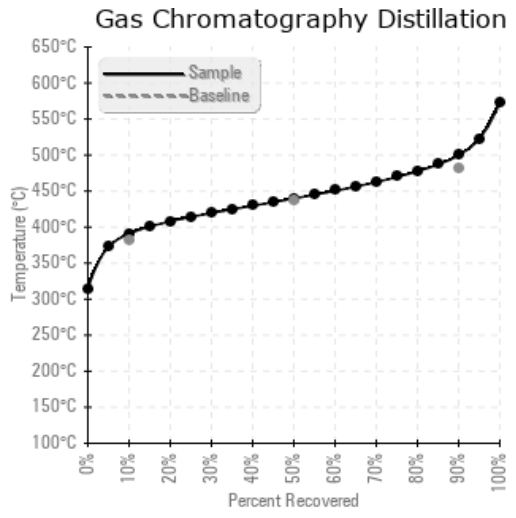
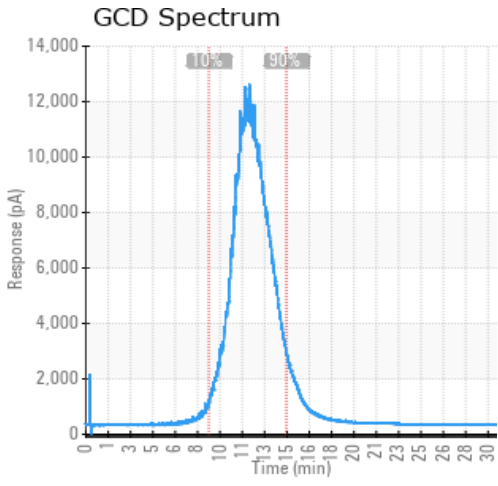
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/03/23	02/09/23	0.0y		442 / 228	20.5	36.7	2.05	0.350	735 / 391	823 / 440	931 / 500	0.50
02/03/23	02/09/23	0.0y		451 / 233	54.8	36.8	2.02	0.497	736 / 391	824 / 440	933 / 501	0.30
04/15/22	04/21/22	0.0y		439 / 226	39.8	36.9	2.59	0.468	725 / 385	818 / 437	925 / 496	1.12
11/16/21	11/23/21	0.0y		442 / 228	24.6	36.3	2.45	0.532	725 / 385	816 / 436	921 / 494	0.85
03/02/21	03/17/21	0.0y		457 / 236	20.2	35.3	1.88	0.411	703 / 373	803 / 428	921 / 494	2.54
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





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	
02/03/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02/03/23	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4
04/15/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/16/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
03/02/21	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0		

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



Historical Comments	
02/03/23	Aside from the two items that are always flagged Acid number and pentanes insoluble the sample looks good. The viscosity, flash point and light ends all show great numbers. The fluid should be resampled at next scheduled interval. Pentane Insolubles levels are abnormally high. Acid Number (AN) is severely high.
04/15/22	Acid number slightly higher than last sample but all other parameters look good. Continue to monitor and add petrotherm as needed. Resample at next scheduled interval. Pentane Insolubles levels are abnormally high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.
11/16/21	The normal out of spec items are still showing up, however not to a higher extreme. The dirt levels are still high but only the 4th highest out of the last 5 samples. The Acid number is also high but again only 4th highest out of last 5. Since this acid number is always high this must be an environmental contaminant and not a byproduct of oil breakdown. Flash point and viscosity remain well in spec so I recommend to continue to operate this system as normal and resample at next scheduled interval. Pentane Insolubles levels are abnormally high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.
03/02/21	Large drop in acid number although still high. Lower dirt level as well. All other main parameters with this sample look great. Continue to use and resample at next scheduled interval. Pentane Insolubles levels are abnormally high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.

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