

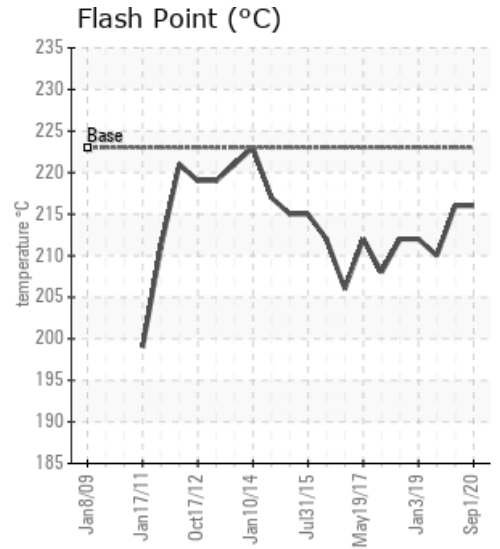
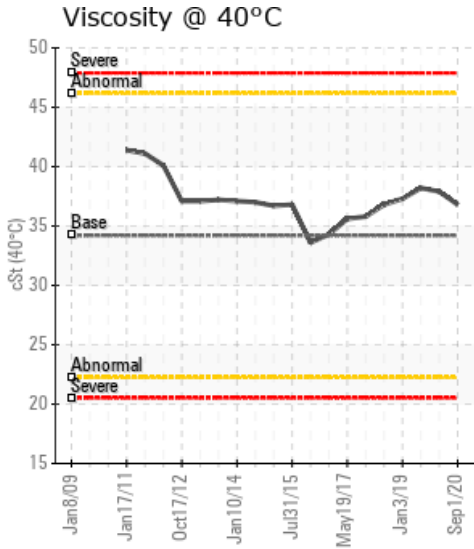
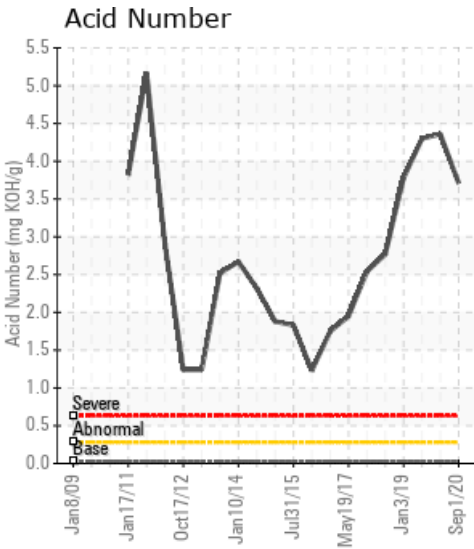
HOT WAX AREA

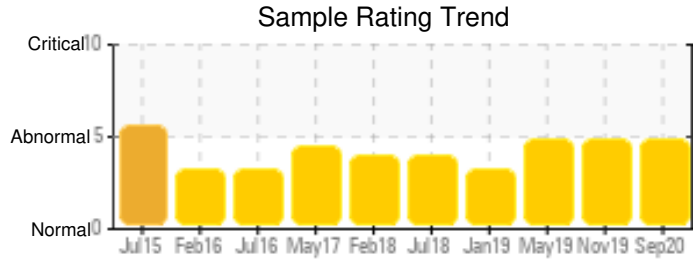
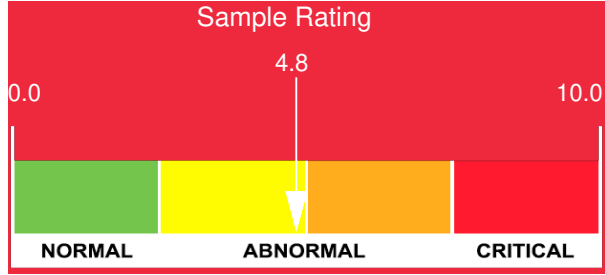
Customer: PTRHTF10102	System Information	Sample Information
METALSA INCORPORATED 301 BILL BRYAN BLVD HOPKINSVILLE, KY 42240 USA Attn: CHRIS HIGGINS Tel: (270)305-1347 E-Mail: chiggins@kimbrooil.com	System Volume: 4000 gal Bulk Operating Temp: 240F / 116C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02378293 Analyst: Joe Goecke Sample Date: 09/01/20 Received Date: 09/28/20 Completed: 10/06/20 Joe Goecke joe.goecke@petrocanadalsp.com

Recommendation: Still seeing higher than desired Acid Number and continuing dirt load that could damage the system over long term. Should consider planning for a fluid change in next 3-6 months or other maintenance procedure.

Comments: Pentane Insolubles levels are severely high. Acid Number (AN) is severely high.

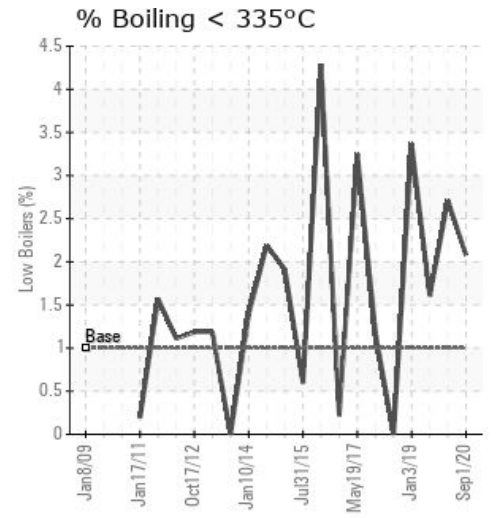
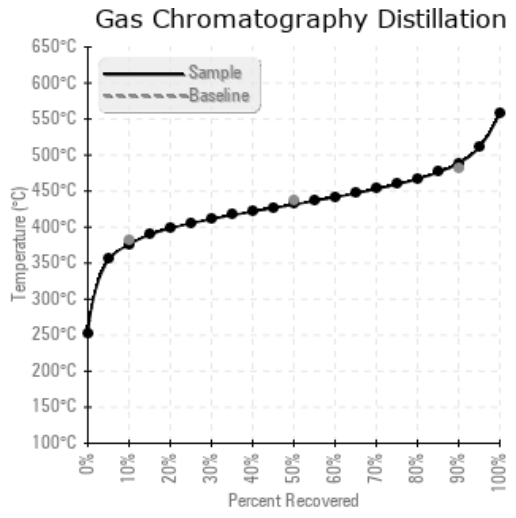
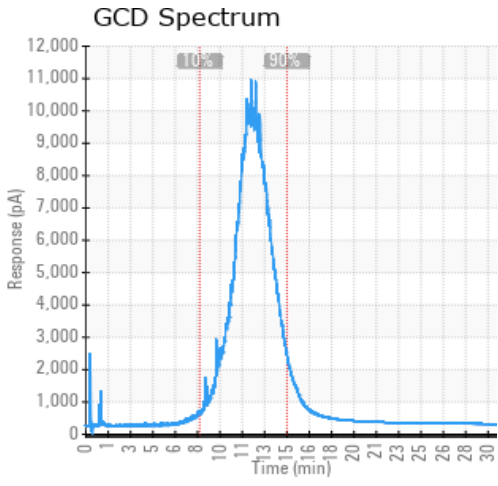
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/01/20	09/28/20	0y		421 / 216	67.3	36.8	3.71	0.577	709 / 376	808 / 431	911 / 488	2.08
11/28/19	11/29/19	0y		421 / 216	42.4	37.9	4.36	1.10	691 / 366	793 / 423	902 / 483	2.71
05/21/19	05/22/19	0y		410 / 210	44.8	38.2	4.30	0.580	698 / 370	798 / 426	910 / 488	1.61
01/03/19	01/10/19	4y		414 / 212	20.6	37.3	3.78	0.205	681 / 360	784 / 418	893 / 479	3.37
07/31/18	08/01/18	0y		414 / 212	39.8	36.8	2.77	0.236	703 / 373	786 / 419	867 / 464	0.00
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
09/01/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11/28/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
05/21/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01/03/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
07/31/18	0	0	0	0	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	
11/28/19	Although acid numbers is very high this system tends to run high. However combining this with the increase in pentane insoluble material could indicate an increase in oil breakdown or contamination. The flash point, viscosity and low boilers are all good which does not indicate breakdown. I suggest resampling in 30 days and look for possible sources of contamination that could contribute to acid number. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high.
05/21/19	Acid number increased again but not as much as last jump. Oil does not show signs of degradation. Flash point, low boilers, and viscosity are all in very good range. Continue to use and resample at next scheduled interval. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high.
01/03/19	Aside from the acid number being extremely high the sample is in excellent condition. The acid number has continued to increase over the past 6 samples. Although this is high wear metals do not show any negative effects from the high acid. Continue to use and look for any possible contaminants that could increase acid number. Acid Number (AN) is severely high.
07/31/18	This sample is very clean and looks to be in very good condition with the only exception being the high acid number which is difficult to explain unless some acidic material was added and is always high. The remaining properties of this look like new oil. Very little water, great flash point and viscosity and no light ends forming. No action needed a time. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is abnormally low.

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