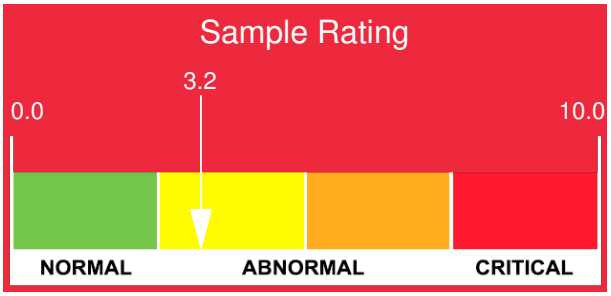
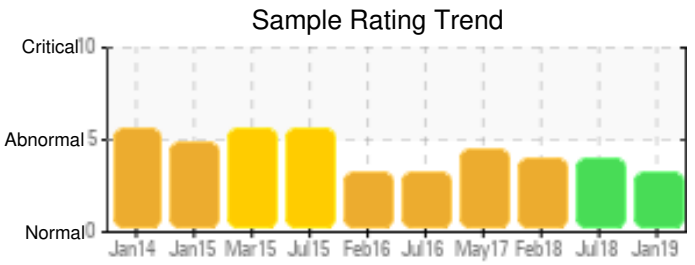




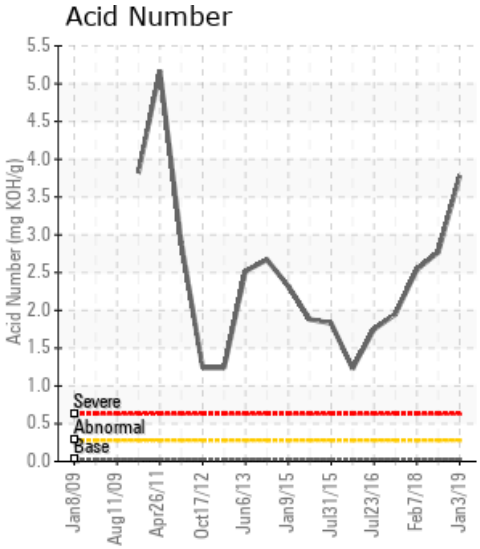
HOT WAX AREA

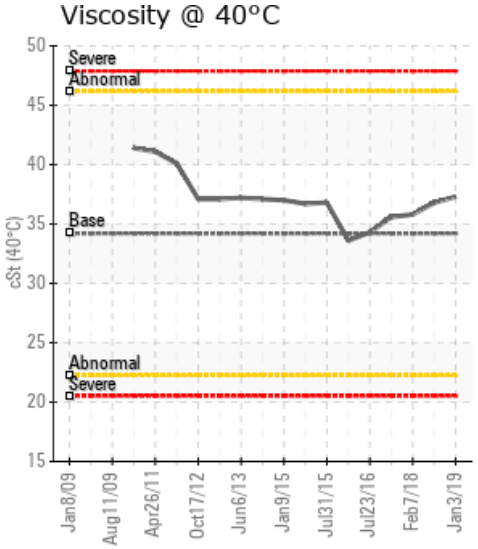
Customer: PTRHTF10102	System Information	Sample Information
METALSA INCORPORATED 301 BILL BRYAN BLVD HOPKINSVILLE, KY 42240 USA Attn: CHRIS HIGGINS Tel: (270)305-1347 E-Mail: chiggins@kimbrooil.com	System Volume: 4000 gal Bulk Operating Temp: 240F / 116C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02261310 Analyst: Joe Goecke Sample Date: 01/03/19 Received Date: 01/10/19 Completed: 01/11/19

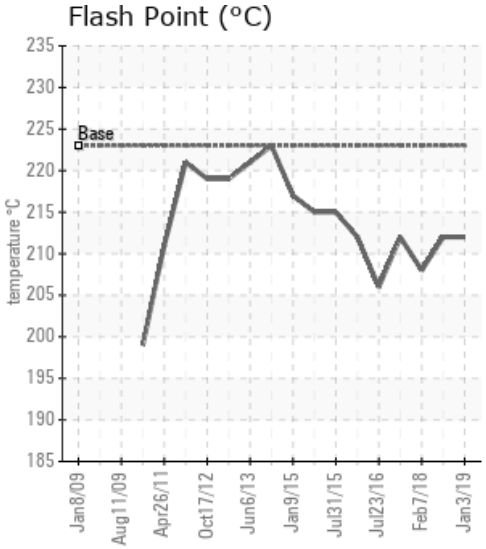
Recommendation: Aside from the acid number being extremely high the sample is in excellent condition. The acid number has continued to increase over the past 6 samples. Although this is high wear metals do not show any negative effects from the high acid.Continue to use and look for any possible contaminants that could increase acid number.

Comments: Acid Number (AN) is severely high.

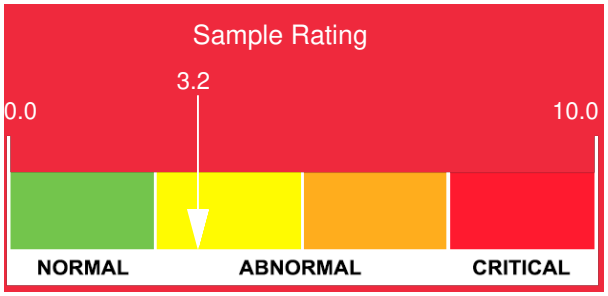
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/03/19	01/10/19	4y		414 / 212	20.6	37.3	3.78	0.205	681 / 360	784 / 418	893 / 479	3.37
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
02/07/18	02/08/18	0y		406 / 208	19.4	35.8	2.54	0.435	694 / 368	788 / 420	884 / 474	1.18
05/19/17	05/25/17	0y		414 / 212	33.7	35.6	1.95	0.642	695 / 368	810 / 432	918 / 492	3.25
07/23/16	07/25/16	0y	EXPANSION TANK	403 / 206	30.0	34.3	1.75	0.358	697 / 369	797 / 425	900 / 482	0.22
02/19/16	03/01/16	0y		414 / 212	16.3	33.6	1.23	0.384	681 / 361	806 / 430	916 / 491	4.29
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

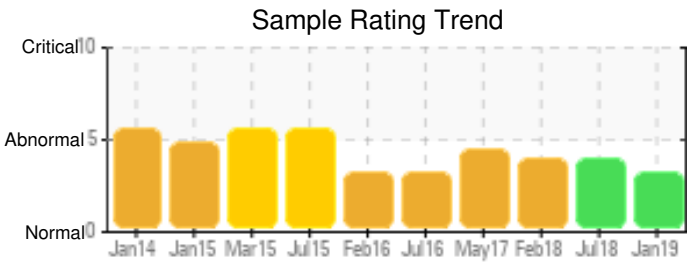






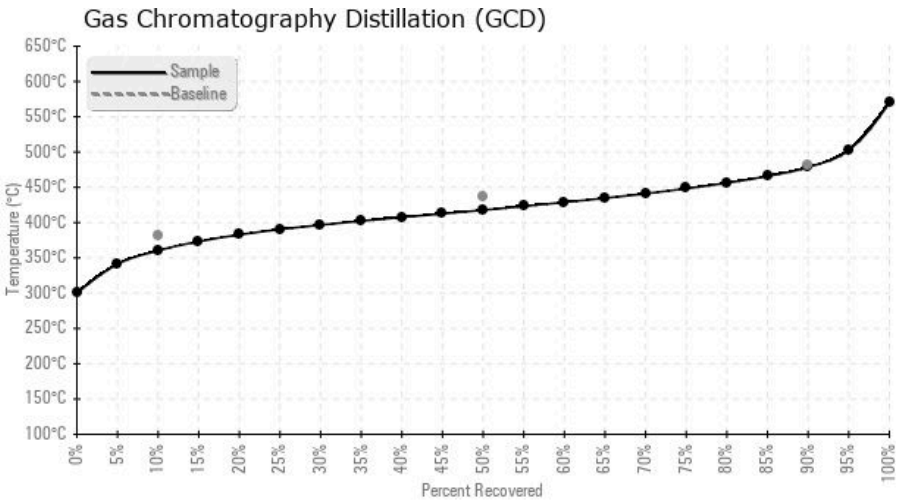
PETRO-CANADA LUBRICANTS

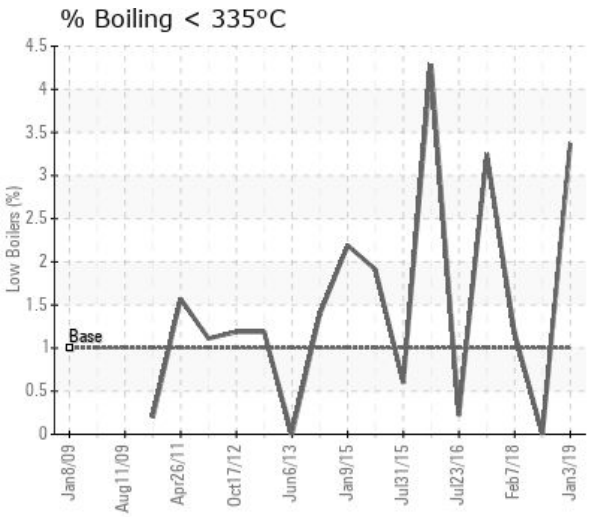




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/03/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
07/31/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/07/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/19/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07/23/16	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
02/19/16	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Baseline Data			0	0						0			0	0					0				0	

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





Historical Comments

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.
02/07/18	Acid number is very high at 2.54, not sure what is causing this but appears to be a constant issue and may be from and environmental contaminant similar to the pentane insoluble being high. Major characteristics of Flash Point, viscosity and low boilers are in very good condition as is metal wear and water. Continue to use product and resample at next regular interval. Pentane Insolubles levels are abnormally high. Acid Number (AN) is severely high.
05/19/17	Oil looks like there is some contamination possibly left over from cleaning. Acid number is high as well. could be residual from old oil or other product used. Flash point, viscosity, and low boilers look very good. Suggest resampling in 6 months to see how contaminants look. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.
07/23/16	Sample results look ok. Flash point is a little low but ok. Acid number is still better than previous 2 samples but getting higher. Suggest consider change in 6 months or after next sample results. Acid Number (AN) is severely high.
02/19/16	This current sample looks to be in very good condition for this unit and fluid. No action is needed suitable for further use and resample at next interval. Acid Number is higher than normal but lower than typical for this system. Flash point and viscosity also indicate fluid is in good condition. Acid Number (AN) is severely high.