

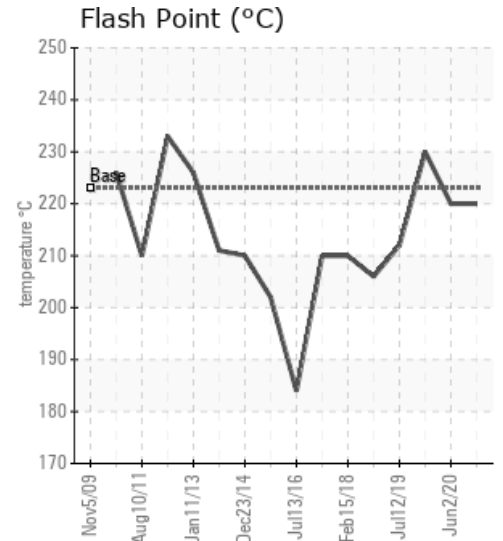
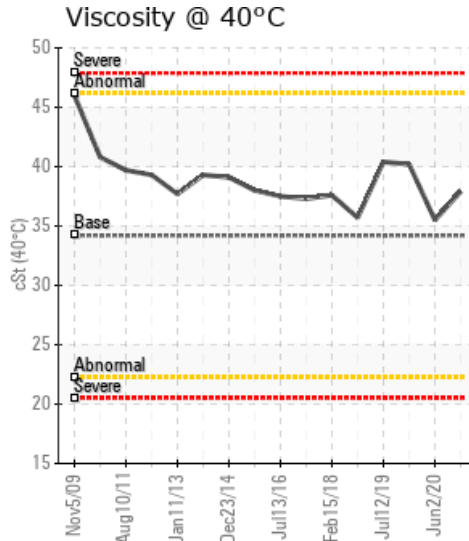
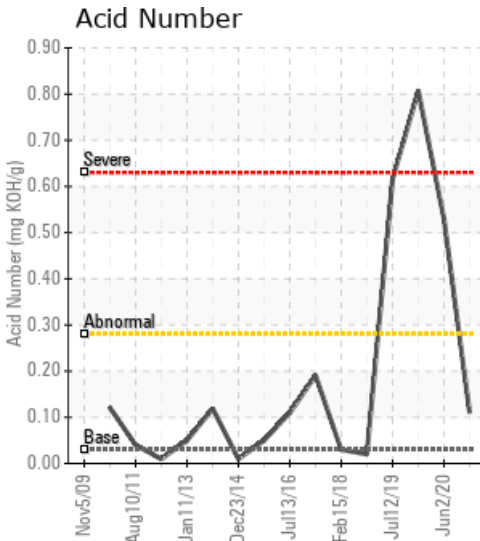
API BOILER

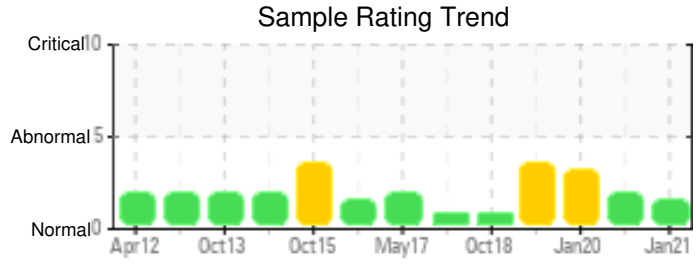
Customer: PTRHTF30020	System Information	Sample Information
IKO INDUSTRIES HAWKESBURY 1451 SPENCE ROAD HI-PARTS-HAWK YARD HAWKESBURY, ON K6A 3T4 Canada Attn: Roy Paquette Tel: (613)632-8581 E-Mail: roy.paquette@iko.com	System Volume: 25000 ltr Bulk Operating Temp: 518F / 270C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: INDUSTRIAL	Lab No: 02399426 Analyst: Pierre Castagne Sample Date: 01/19/21 Received Date: 01/22/21 Completed: 01/28/21 Pierre Castagne pierre.castagne@hollyfrontier.com

Recommendation: Solids (Pentane Insolubles) are high. High boilers (GCD @90%) are high. GCD <335C have increase. We could see some deposits in elbow, small lines etc. The heat transfer fluid is OK, for continuous use.

Comments: Pentane Insolubles levels are abnormally high. (GCD) 90% Distillation Point is abnormally high.

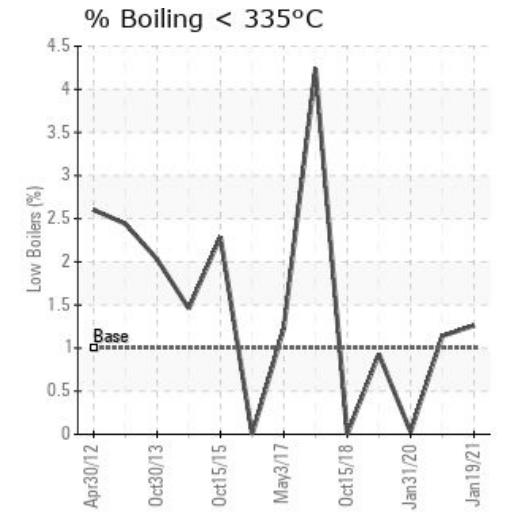
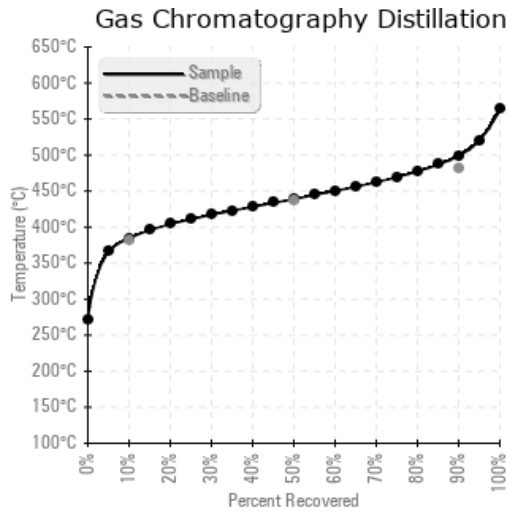
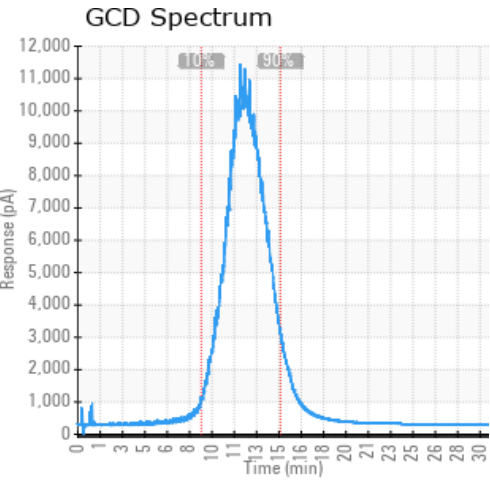
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/19/21	01/22/21	11y		428 / 220	5.3	37.9	0.11	0.454	724 / 384	822 / 439	930 / 499	1.26
06/02/20	06/11/20	10y	HOT OIL BOILER	428 / 220	37.9	35.5	0.53	0.244	724 / 385	820 / 438	918 / 492	1.14
01/31/20	02/05/20	10y	API HOT OIL HEATER	446 / 230	6.2	40.2	0.808	0.359	690 / 366	784 / 418	893 / 478	0.03
07/12/19	07/18/19	10y		414 / 212	41.0	40.4	0.616	0.600	711 / 377	812 / 433	929 / 498	0.93
10/15/18	10/18/18	10y		403 / 206	16.7	35.7	0.02	0.035	725 / 385	820 / 438	932 / 500	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	
01/19/21	4	0	0	0	0	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	6	
06/02/20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01/31/20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	5	
07/12/19	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10/15/18	2	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	
06/02/20	Oil is OK for continuous use. GCD @ 90% is slightly higher than normal. Acid number is higher than normal. Sulphur is higher than normal. verify that when you top-up the system, you are using dedicated equipment to minimise cross contamination of products. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
01/31/20	attention, augmentation de l'acidité de l'huile Le Acid Number (AN) est au delà de 0.800.L'augmentation du AN pourrait provenir d'une infiltration d'eau au système. Toutes les autres constantes sont ok.Le profil GCD s'élargit mais est toujours ok.Le Acid Number est élevé et indique que l'huile serait à changer. Acid Number (AN) is severely high.
07/12/19	You have trace of asphalt in the sample, carbon buildup (GCD @90%) are high, the oil is oxidising, viscosity is closer to ISO 46, Pentane Insolubles are high.Recommendation: The oil has reached its useful life, recommend draining the system, cleaning and flushing the system and refill with PetroTherm. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is abnormally high.
10/15/18	Les fractions Lourdes (GCD @90%) sont élevées, les fractions lourdes augmentent la viscosité, favorise les dépôts de carbone. (GCD) 90% Distillation Point is abnormally high.

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