

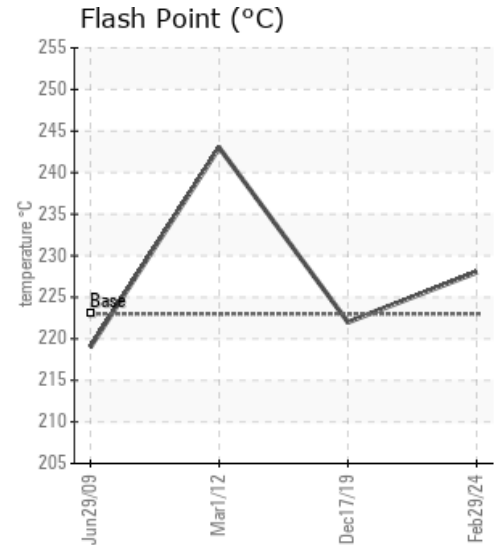
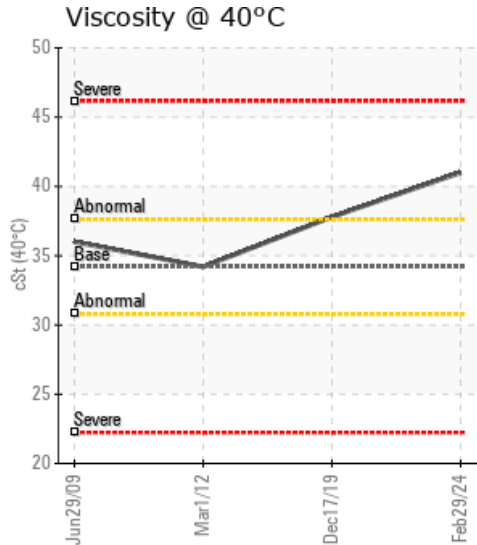
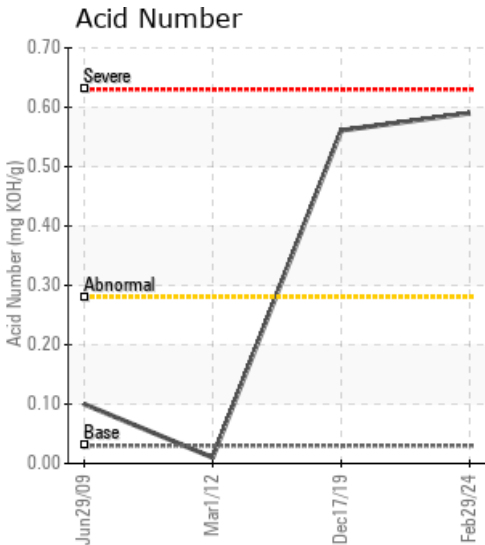
HEAT TRANSFER SYSTEM

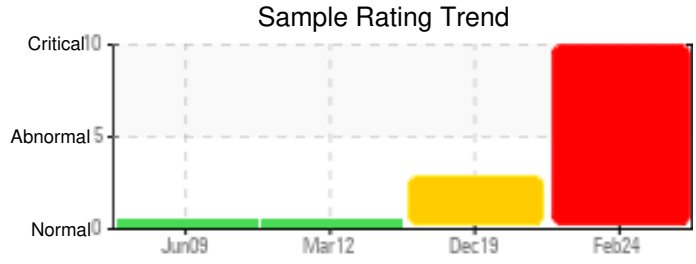
Customer: PTRHTF10020	System Information	Sample Information
LAKESIDE INDUSTRIES 18808 S.E. 257TH STREET COVINGTON, WA 98042 US Attn: Chris Gross Tel: E-Mail: Chris.gross@lakesideindustries.com	System Volume: 165 gal Bulk Operating Temp: 350F / 177C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: HIWAY	Lab No: 02622886 Analyst: Ron LeBlanc Sample Date: 02/29/24 Received Date: 03/18/24 Completed: 04/11/24 Ron LeBlanc Ronald.LeBlancSr@HFSinclair.com

Recommendation: Sodium ppm levels are severely high. Acid Number (AN) is abnormally high. Visc @ 40°C is abnormally high. Pentane Insolubles levels are severely high. When AN increases it usually indicates thermal stress (oxidation). Oxidation also causes sludge in the system. Pentane insolubles also indicate sludge could be forming in the system. Viscosity is increasing as well which indicates oxidation stress in the oil. Not knowing how long the oil has been in service, it might need cleaning, flushing and refill system with new Petro-Therm.

Comments: PQ levels are abnormal. Iron ppm levels are abnormal. Pentane Insolubles levels are severely high. Sodium ppm levels are severely high. Acid Number (AN) is abnormally high. Visc @ 40°C is abnormally high.

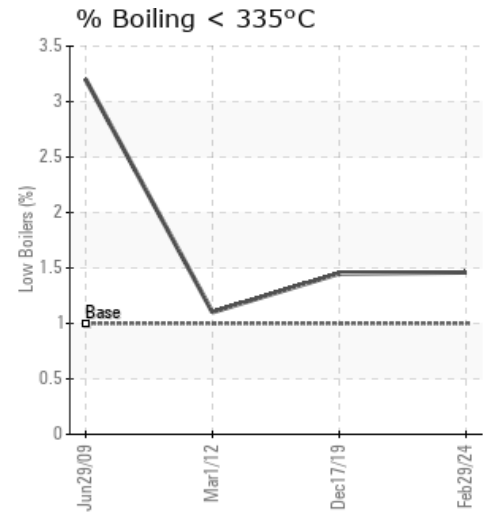
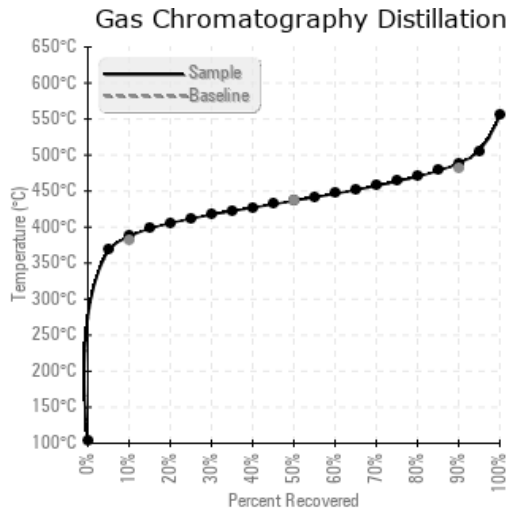
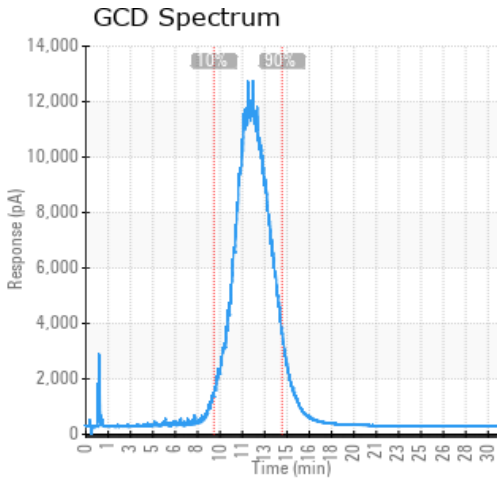
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/29/24	03/18/24	7.0y		442 / 228	43	41.0	0.59	2.48	728 / 387	818 / 437	911 / 489	1.46
12/17/19	01/20/20	2.5y	NEAR AK PUMP	432 / 222	36.8	37.8	0.561	0.642	726 / 386	815 / 435	906 / 486	1.45
03/01/12	03/09/12	4.0y	UNDER HOT OIL PUMP L	469 / 243	209	34.2	0.01	0.056	717 / 381	806 / 430	899 / 481	1.101
06/29/09	06/29/09			426 / 219	141	36	0.1		691 / 366		900 / 482	3.2
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
02/29/24	257	0	0	0	0	0	0	0	0	0	0	67	1	0	0	0	3	0	0	0	1	0	0	2
12/17/19	16	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1
03/01/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	2
06/29/09	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

12/17/19	Acid Number is significantly increased from previous sample. Pentane insolubles are severely high indicating contamination. Take another sample and purge a good amount of oil before capturing in sample container. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high.
03/01/12	The oil appears to be in great condition at this time, which is expected if it's only 4 months old as indicated on the report. Please keep up the sampling frequency to once or twice per year so trendable data can be gathered.
06/29/09	

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