

FERROLI

Customer: PTRHTF40007
 BONFAIT
 FARADAYWEG 2
 OVERIJSEL
 DENEKAMP, OVE NETHERLANDS
 Attn: Maintenance Manager
 Tel:
 E-Mail:

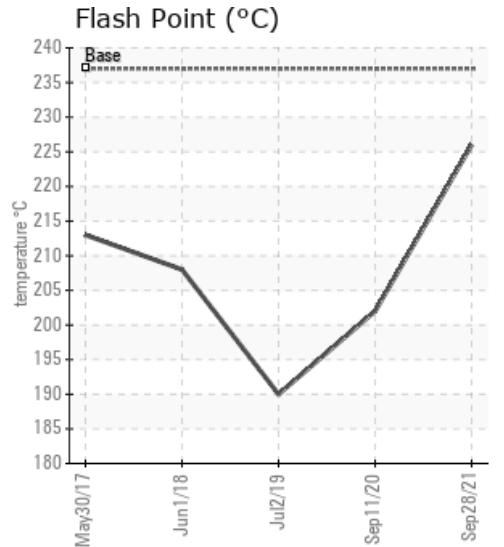
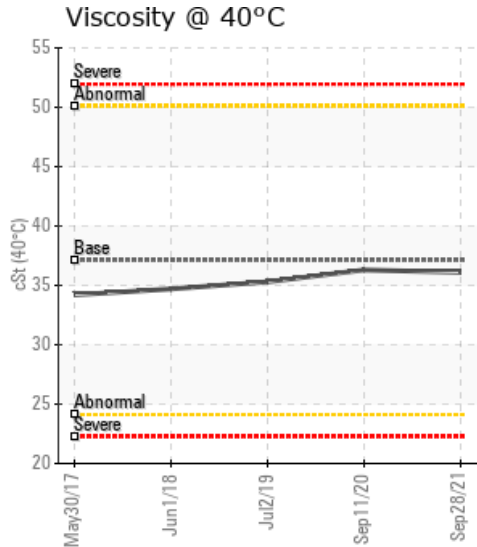
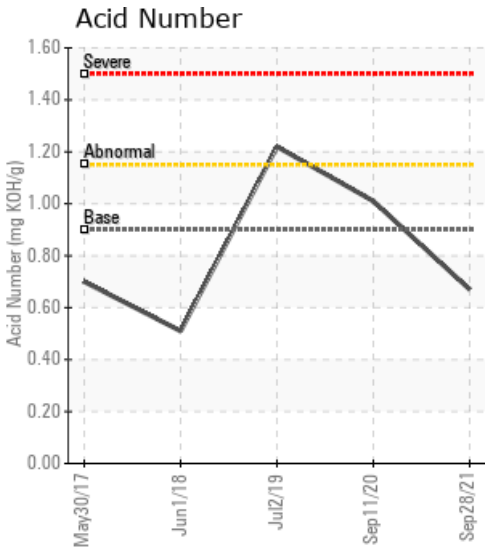
System Information
 System Volume: 0 ltr
 Bulk Operating Temp: 0F / -18C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID
 Make: WANSON

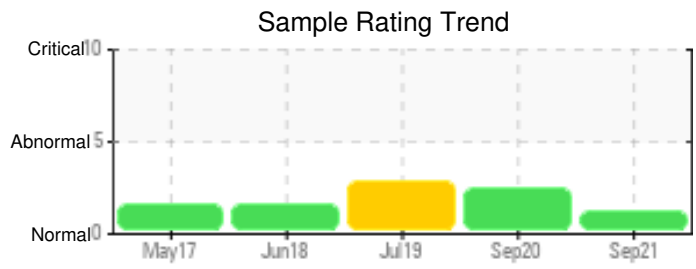
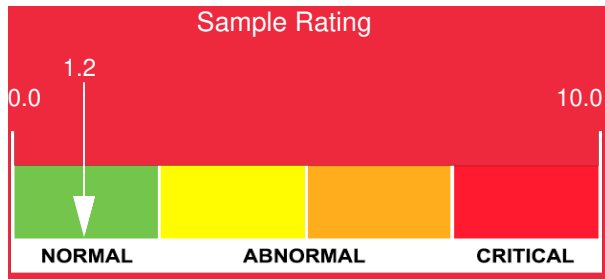
Sample Information
 Lab No: 02447941
 Analyst: Bill Quesnel CLS, OMA II, MLA-III, LLA-I
 Sample Date: 09/28/21
 Received Date: 10/04/21
 Completed: 10/15/21
 Bill Quesnel CLS, OMA II, MLA-III, LLA-I

Recommendation: Fluid condition is acceptable. Advise investigate for source of calcium contamination in fluid. Resample at next normal interval to monitor (1 year).

Comments: Calcium ppm levels are severely high.

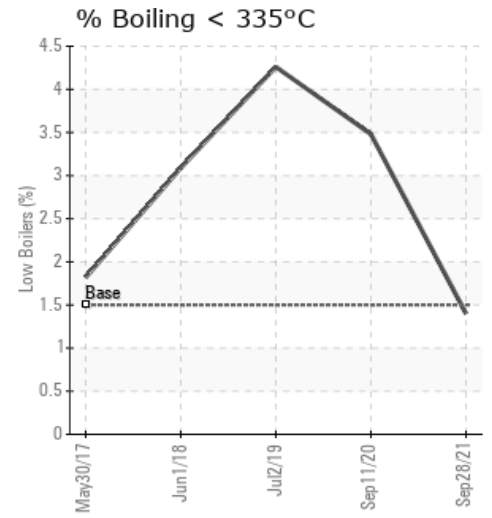
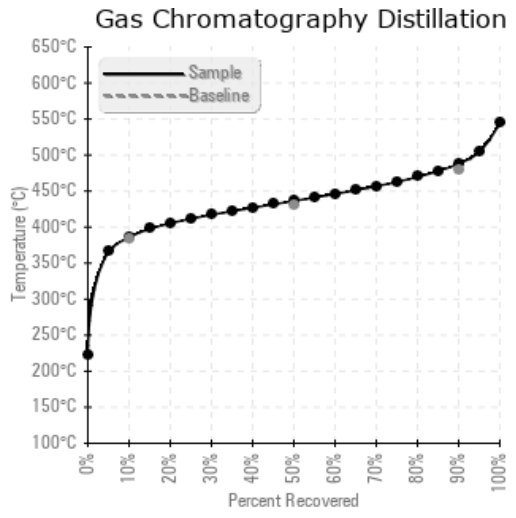
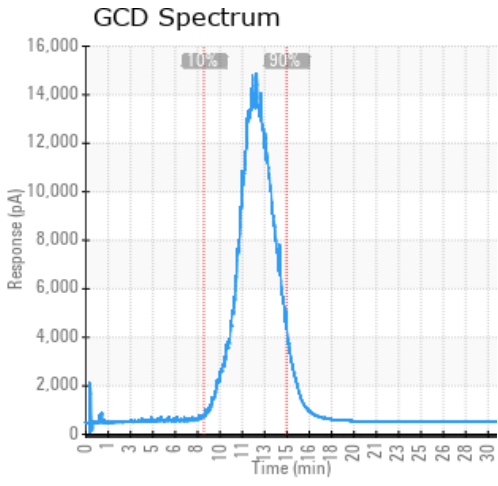
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/28/21	10/04/21	0.8y		439 / 226	91.0	36.1	0.67	0.325	727 / 386	817 / 436	910 / 488	1.40
09/11/20	09/17/20	13.0y		396 / 202	34.1	36.3	1.01	0.642	705 / 374	810 / 432	901 / 483	3.48
07/02/19	07/09/19	12.0y		374 / 190	42.6	35.3	1.22	0.476	692 / 366	801 / 427	893 / 479	4.26
06/01/18	06/08/18	11.0y		406 / 208	28.5	34.7	0.51	0.414	703 / 373	801 / 427	890 / 477	3.09
05/30/17	06/02/17	10.0y		415 / 213	41.1	34.2	0.70	0.805	713 / 378	813 / 434	902 / 483	1.82
Baseline Data				459 / 237		37.12	0.90		721 / 383	807 / 431	892 / 478	1.5





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
09/28/21	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148	0	179	0
09/11/20	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0
07/02/19	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	0
06/01/18	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	2
05/30/17	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	2
Baseline Data			0	0						0			0	0				0	0				230	

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



Historical Comments	
09/11/20	Oil appears to be fit for further use however we note that the insoluble are very high. If possible filter the insoluble out of the oil. Pentane Insolubles levels are severely high.
07/02/19	Pentane insols are higher than expected, likely linked to the high acid number and some early degradation. COC Flash Pt low and if system can be safely vented it may recover. If some form of filtration/conditioning can be safely employed may reduce the insols. Fit for further use but would expect further degradation over coming months, leading to a potential fluid change over time Pentane Insolubles levels are abnormally high. COC Flash Point is abnormally low.
06/01/18	All parameters within allowable limits, although Pentane Insols borderline, but improved from previous sample a year ago. Looks like water and insols been removed, has some maintenance and filtration occurred. FLuid fit for further use Pentane Insolubles levels are abnormally high.
05/30/17	Oil appears to be fit for further service however we note that the insoluble are very high. If possible filter the insoluble out of the oil. Pentane Insolubles levels are severely high.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.