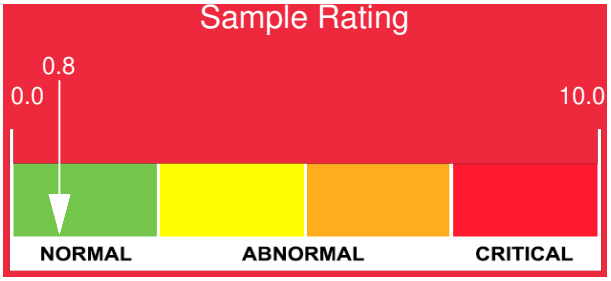
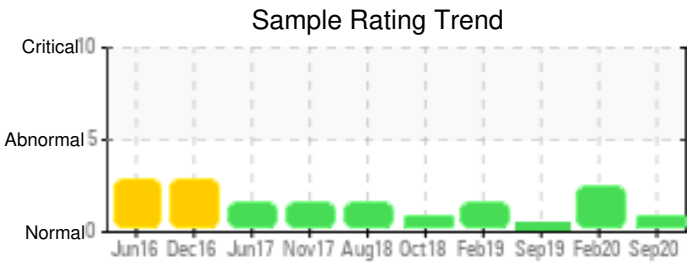
PETRO-CANADA LUBRICANTS





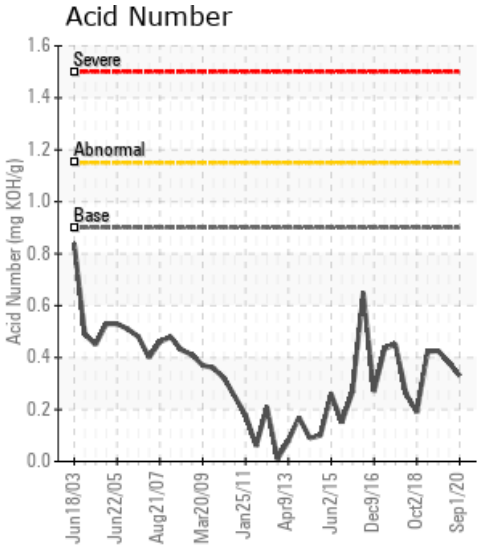
RELUTHERM RTAG-14

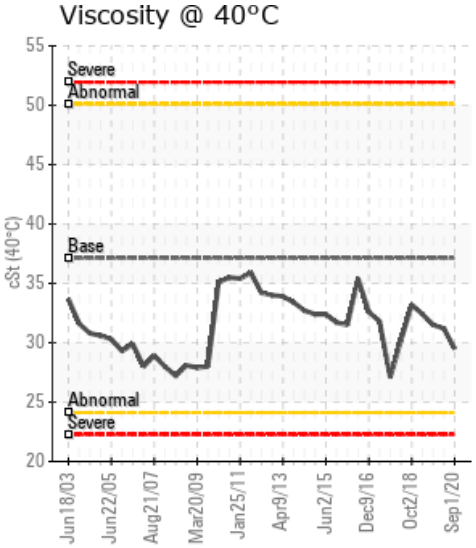
Customer: PTRHTF40043	System Information	Sample Information
MORA PRODUCTIE BV FREGATWEG 53 MAASTRICHT 6222NZ MAASTRICHT, 6222NZ Netherlands Attn: WILBERT SNIJERS Tel: E-Mail: w.snijers@klt.nl	System Volume: 10000 ltr Bulk Operating Temp: 275F / 135C Heating Source: Blanket: Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID Make: RELUTHERM	Lab No: 02374691 Analyst: Matthias Voss Sample Date: 09/01/20 Received Date: 09/09/20 Completed: 09/11/20 Matthias Voss Matthias.Voss@petrocanadalsp.com

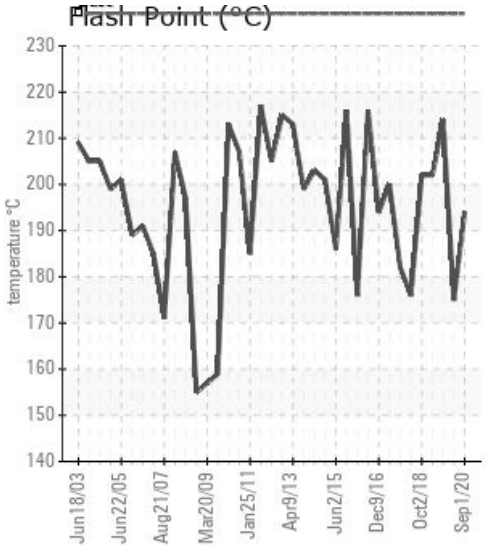
Recommendation: Product within normal working limits and fit for further use. Please sample at next designated interval

Comments: COC Flash Point is marginally low.

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	09/09/20	17y		381 / 194	5.9	29.5	0.33	0.150	678 / 359	805 / 429	908 / 487	5.89
02/18/20	02/25/20	17y		347 / 175	7.1	31.2	0.380	0.148	722 / 384	815 / 435	915 / 491	0.35
09/05/19	09/11/19	16y		417 / 214	22.6	31.5	0.426	0.099	681 / 361	791 / 422	880 / 471	4.31
02/21/19	02/26/19	16y		396 / 202	9.6	32.4	0.423	0.086	690 / 365	803 / 428	915 / 491	3.75
10/02/18	10/10/18	0y		396 / 202	14.1	33.2	0.19	0.042	704 / 373	803 / 428	902 / 484	1.30
Baseline Data				459 / 237		37.12	0.90		721 / 383	807 / 431	892 / 478	1.5







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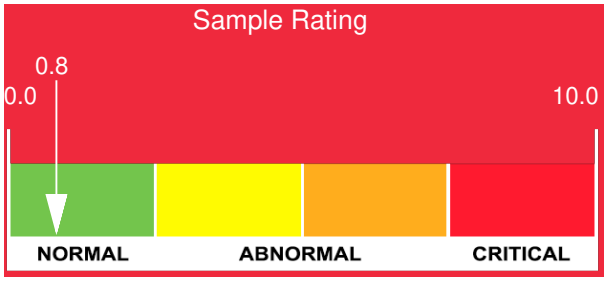
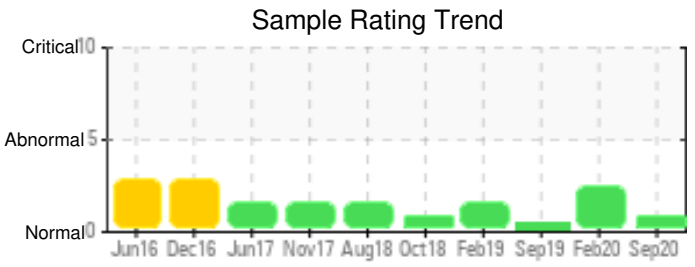
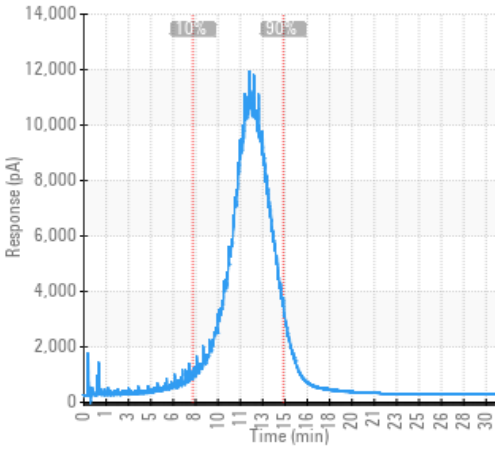




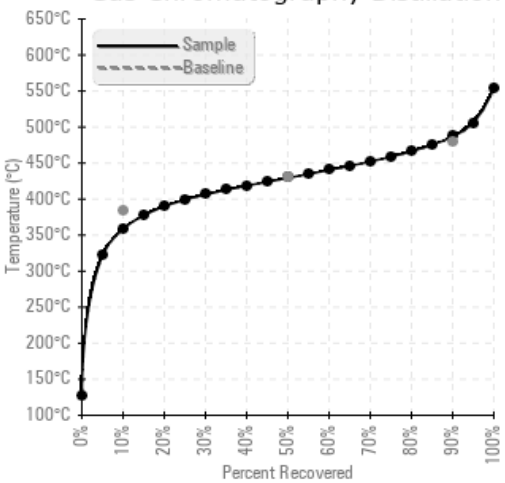
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
09/01/20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0
02/18/20	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	1
09/05/19	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	38	2
02/21/19	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0
10/02/18	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	1
Baseline Data			0	0						0			0	0				0	0				230	

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

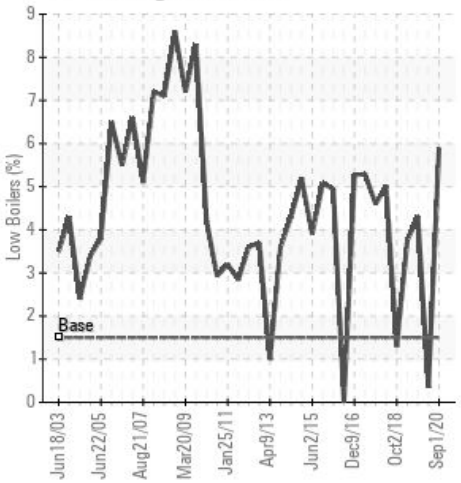
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

02/18/20	COC Flash Point has dropped out of acceptable limits low. If the fluid can be safely vented to recover (looks to have been done before). System temp is 275F (or 135C) which remains below the current flash point of the fluid but should still look to recover COC Flash Point is severely low. (GCD) 90% Distillation Point is abnormally high. (GCD) % < 335°C measurement of 0.35% too low, as flash point indicates much higher content of light molecules.
09/05/19	Product within normal working limits and fit for further use. Please sample at next designated interval
02/21/19	FLuid marginally low on flash point but in line with previous samples. Fluid fit for further use (GCD) 90% Distillation Point is marginally high. COC Flash Point is marginally low.
10/02/18	Looks to have undergone some system/fluid maintenance since last sample 12 months ago. The fluid has recovered but could still benefit a little venting to drive off any light ends. Evidence of some fluid cracking on the trace but with correct venting, if safe to do so, COC Flash point should further recover. COC Flash Point is marginally low.

