

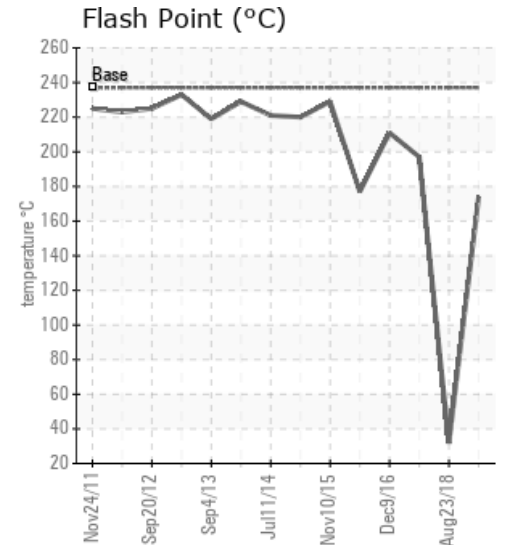
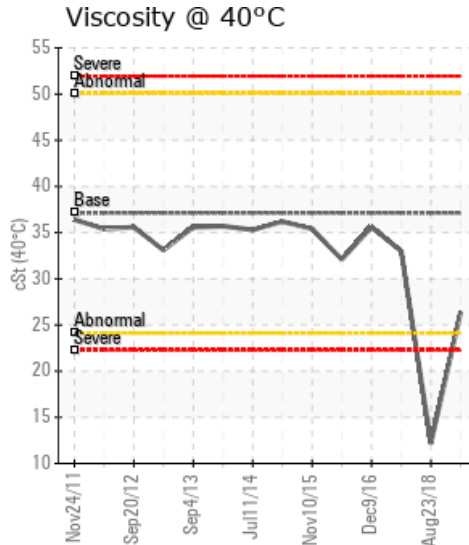
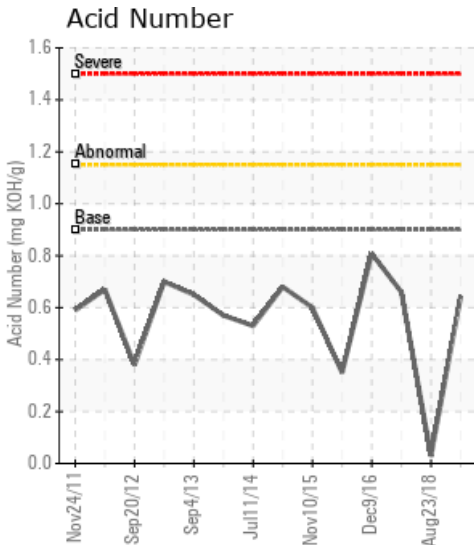
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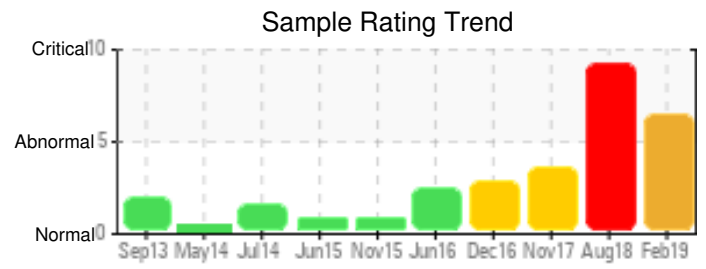
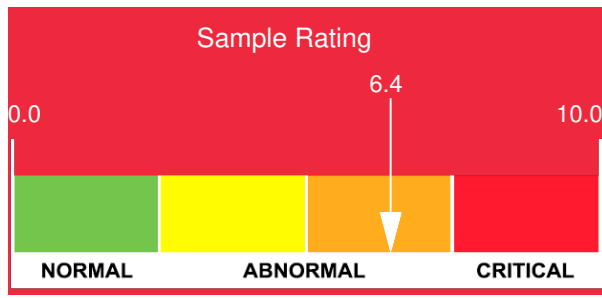
Customer: PTRHTF40043	System Information	Sample Information
MORA PRODUCTIE BV FREGATWEG 53 MAASTRICHT 6222NZ MAASTRICHT, 6222NZ Netherlands Attn: WILBERT SNIJERS Tel: E-Mail: w.snijers@klt.nl	System Volume: 800 ltr Bulk Operating Temp: 300F / 149C Heating Source: Blanket: Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID Make:	Lab No: 02269987 Analyst: Philip Riley Sample Date: 02/21/19 Received Date: 02/26/19 Completed: 02/28/19

Recommendation: This follows the critical sample recently which I am aware was addressed. The flash point is very low, the GC shows evidence of light ends and cracking. If the fluid cannot be recovered safely I would recommend a change, including a clean and flush with appropriate products.

Comments: Iron ppm levels are abnormal. (GCD) 10% Distillation Point is severely low. COC Flash Point is severely low. (GCD) % < 335°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	%
02/21/19	02/26/19	3y		345 / 174	11.2	26.4	0.644	0.121	484 / 251	781 / 416	909 / 487	15.89
08/23/18	08/28/18	7y		90 / 32	51.9	12.2	0.03	0.094	486 / 252	768 / 409	864 / 462	18.86
11/24/17	11/29/17	7y		387 / 197	30.7	33.0	0.660	0.211	732 / 389	813 / 434	895 / 479	0.00
12/09/16	12/16/16	6y		412 / 211	15.3	35.6	0.808	0.065	721 / 383	822 / 439	946 / 508	1.67
06/21/16	06/27/16	5y		351 / 177	101.5	32.1	0.35	0.098	676 / 358	774 / 412	870 / 466	3.08
11/10/15	11/23/15	5y	PTRHTF40043	444 / 229	13.2	35.4	0.60	0.064	714 / 379	808 / 431	889 / 476	1.64
Baseline Data				459 / 237		37.12	0.90		721 / 383	807 / 431	892 / 478	1.5

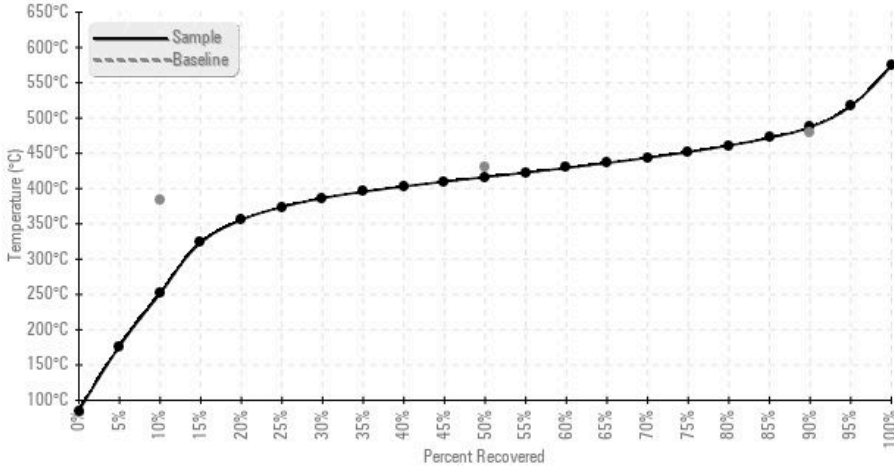




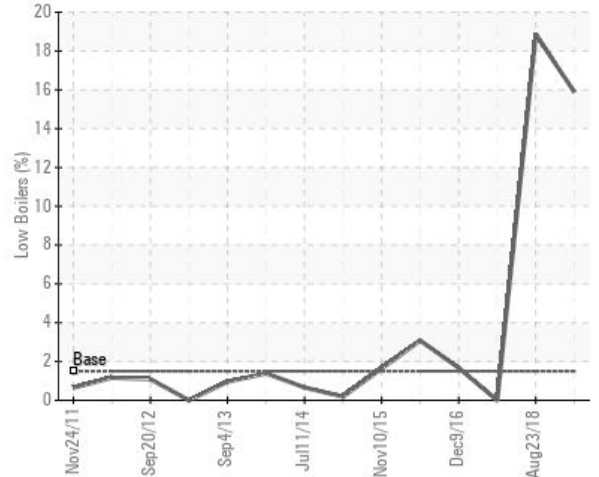
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
02/21/19	222	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	170	12
08/23/18	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55	6
11/24/17	271	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	2	0	0	0	0	0	137	13
12/09/16	139	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	90	9
06/21/16	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	4
11/10/15	131	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	86	8
Baseline Data			0	0						0			0	0					0				230	

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

Gas Chromatography Distillation (GCD)



% Boiling < 335°C



Historical Comments

08/23/18	*** NOTE: This sample represents a severe fire hazard. Please notify the customer urgently! ***Product must be changed immediately. Although we believe the system is not in use currently, the oil must be changed ahead of re-start. The flash point is dangerously low and as such presents a serious hazard. (GCD) % < 335°C is severely high. (GCD) 10% Distillation Point is severely low. COC Flash Point is severely low. Visc @ 40°C is severely low. (GCD) 90% Distillation Point is abnormally low.
11/24/17	Flash point slightly low and build up of iron particles showing high wear. Within condemnation limits on both parts but the fluid has significantly deteriorated since last sample. Similar degradation will require oil change in 12 months time unless filtration is used to try and reduce particles and wear, it may extend fluid life beyond the next 12 monthsPQ levels are abnormal. Iron ppm levels are abnormal. COC Flash Point is marginally low.
12/09/16	Higher than expected levels of Iron reported. Try to detect where the Iron is originating from as this will cause the oil to deteriorate. Oil appears to be acceptable for further use at this time. Suggest sample at next scheduled maintenance interval.Iron ppm levels are abnormal. (GCD) 90% Distillation Point is severely high.
06/21/16	COC Flash Point tested twice: 177°C and 178°C. There are some low boilers present - remove low boilers if possible. Oil is fit for further service. Suggest sample at next scheduled maintenance interval. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally low.
11/10/15	Oil appears to be in good condition and fit for further service.Sample at next scheduled maintenance interval. (GCD) 90% Distillation Point is marginally low.