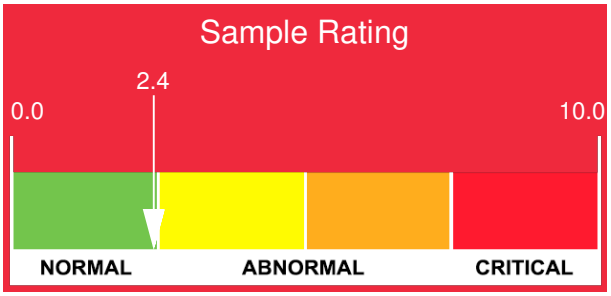
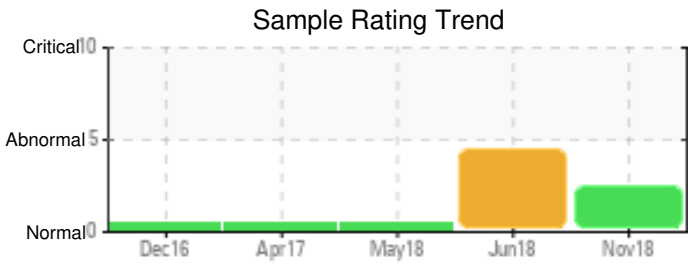




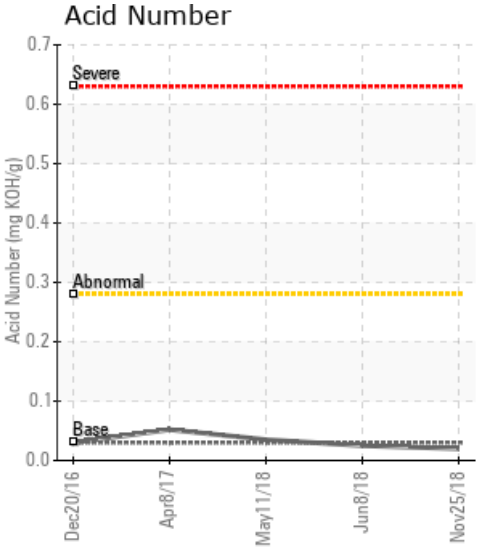
[Orlen Upstream Canada / 16-7-63-5W6] 1850

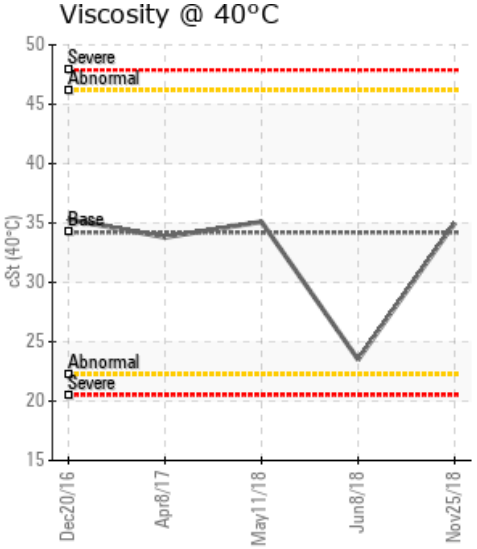
Customer: PTRHTF20175	System Information	Sample Information
QUADRA CHEMICALS 7802 98 STREET CLAIRMONT, AB T0H 0W0 Canada Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 20000 ltr Bulk Operating Temp: 419F / 215C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: RUSHTON	Lab No: 02257508 Analyst: Clinton Buhler Sample Date: 11/25/18 Received Date: 12/14/18 Completed: 12/18/18

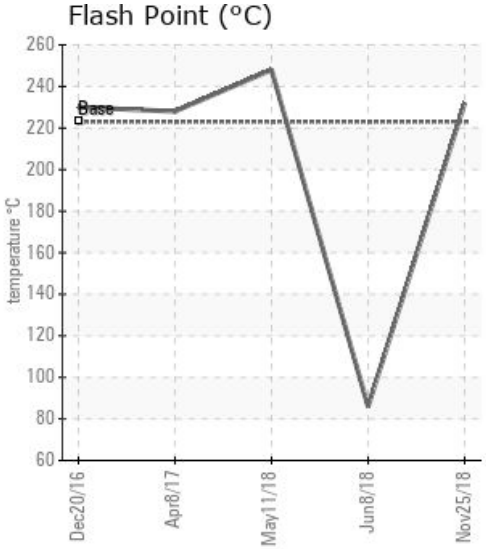
Recommendation: Sample results indicate that the heat transfer fluid is suitable for continued service. Please re-sample in 6 months.

Comments: Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high. (GCD) 90% Distillation Point is marginally high.

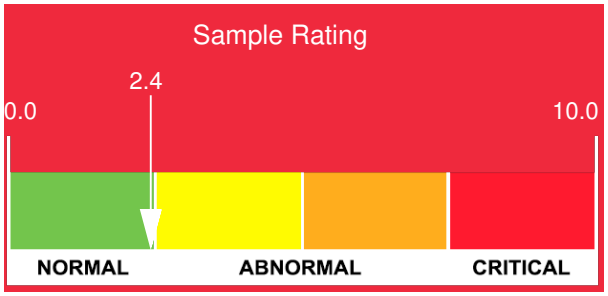
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/25/18	12/14/18	6m		450 / 232	484.4	35.0	0.02	0.093	723 / 384	812 / 433	919 / 493	0.45
06/08/18	06/15/18	0m	MIDDLE SIGHT GLASS	187 / 86	6.9	23.5	0.025	0.151	665 / 352	796 / 425	893 / 478	7.77
05/11/18	05/30/18	18m		478 / 248	8.2	35.1	0.035	0.028	722 / 383	812 / 434	917 / 492	0.19
04/08/17	05/26/17	5m	HEATER SIGHT GLASS	442 / 228	52.3	33.8	0.052	0.047	722 / 384	814 / 434	903 / 484	0.73
12/20/16	01/05/17	0m		446 / 230	123.3	35.3	0.030	0.060	724 / 385	816 / 436	905 / 485	0.38
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

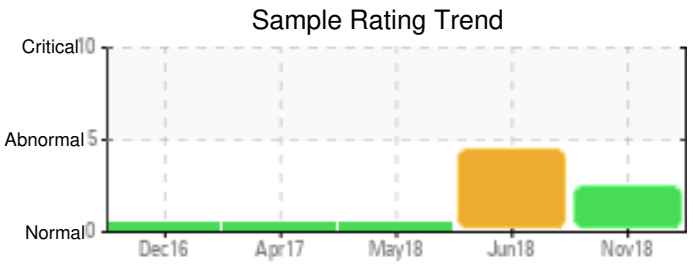






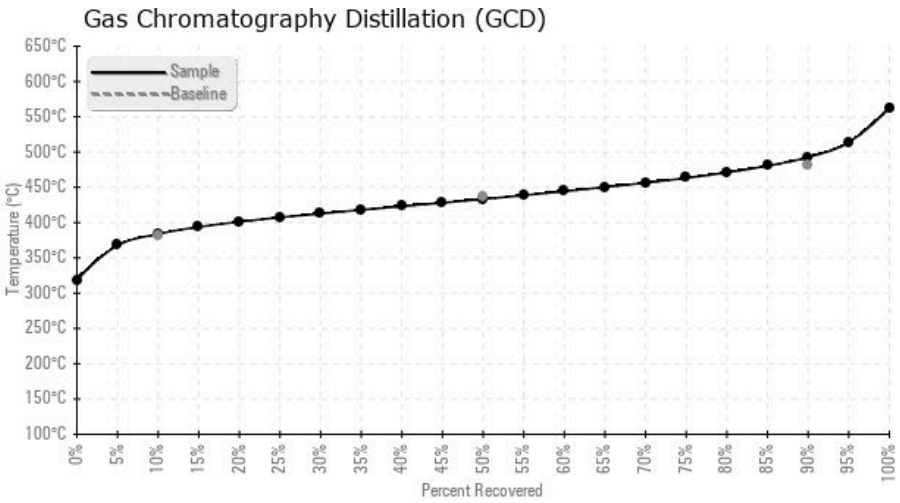
PETRO-CANADA LUBRICANTS

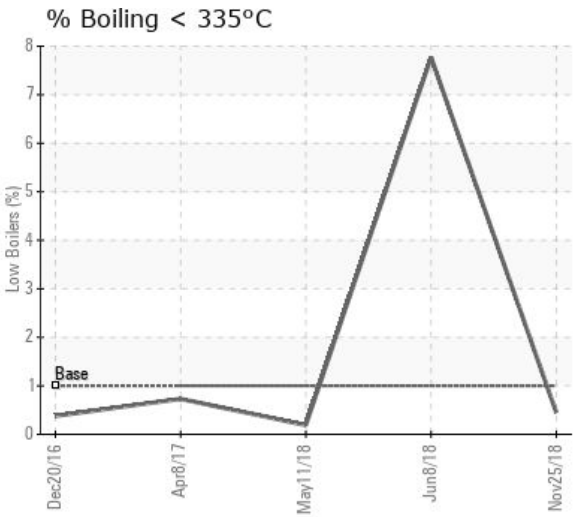




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
11/25/18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	1
06/08/18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/11/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/08/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/20/16	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 anaysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]





Historical Comments

06/08/18	Sample results indicate that the heat transfer fluid is not suitable for continued service. COC flash point is severely low. This poses a safety risk if the fluid was to be re-used. The % boil off < 335°C value of 7.77 (new is 1%) also indicates severe contamination of the fluid with condensate. The fluid's viscosity @40C and 10% GCD also indicates this contamination. Fluid replacement should be considered.Once system has been cleaned and filled with fresh fluid, take a base-line fluid sample after initial filling and again after 24 hours of service at normal operating temperature. Please ensure sample registration cards reflect the new time on fluid.
05/11/18	Unit 1850 sample results from May 11, 2018 indicate the fluid is suitable for continued service. At time of this sample review, it is known that the this system has been contaminated with condensate since the sample was drawn on May 11. Results of sample drawn June 8, 2018 will be reviewed once available.
04/08/17	Please ensure all sample registration information is included, such as system volume and if there is blanket gas in use and system age.Fluid is suitable for continued service. Check to ensure blanket gas is in use. Re-sample in 6-12 months
12/20/16	Fluid is in Good condition. Resample in 6 months.