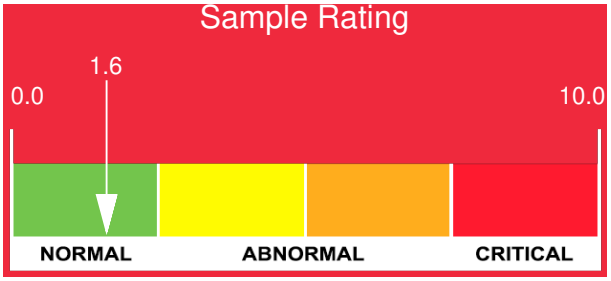
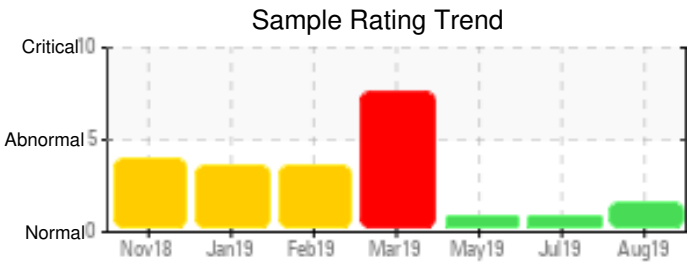




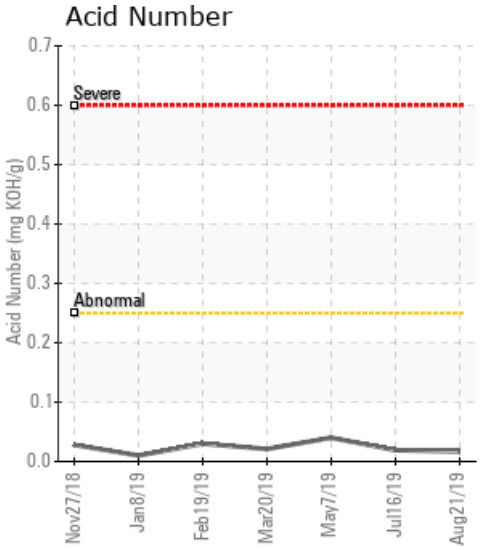
[/ 7-11-064-03W6 /] HEATER 2

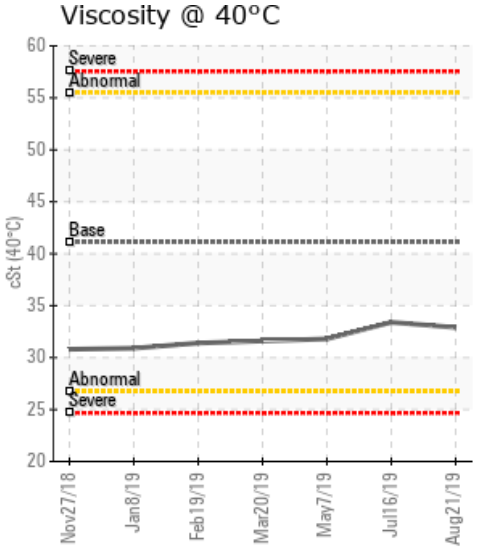
Customer: PTRHTF20207	System Information	Sample Information
SEVEN GENERATIONS ENERGY LTD 7-11-064-03W6 GRANDE PRAIRIE, AB T8V 8H7 Canada Attn: Justin Dery Tel: (587)435-4480 E-Mail: Justin.dery@7genergy.com	System Volume: 140000 ltr Bulk Operating Temp: 518F / 270C Heating Source: Blanket: Fluid: CHEVRON HEAT TRANSFER OIL 46 Make: PETRO TECH	Lab No: 02305734 Analyst: Peter Harteveld Sample Date: 08/21/19 Received Date: 08/29/19 Completed: 08/30/19

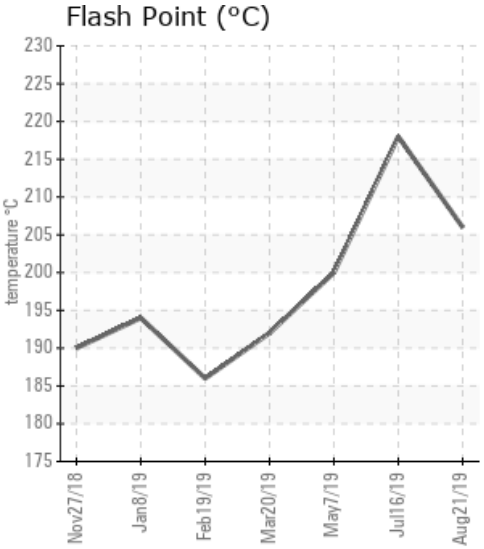
Recommendation: The fluid is in a good condition and suitable for further use. Reference data used for this sample is of Chevron Heat Transfer Oil 46. Viscosity of the sample is 32.9 cSt/40C which is low for the Chevron fluid. This can be the result of thermal degradation and/or topping-up the system with a lighter fluid like Petro-Therm. The low boiler vapor content (GCD% <335C.) of the sample is high with 6.38%. It is therefore advised to vent off the low boiler vapor to atmosphere on a regular basis and re-sample in 3 months time. Please label the sample with the brand name of the fluid predominantly present in the system.

Comments: COC Flash Point is marginally low. (GCD) 90% Distillation Point is marginally low.

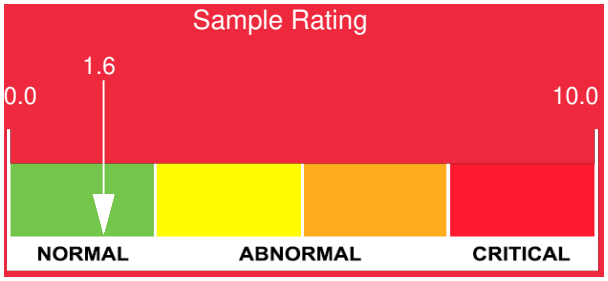
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
08/21/19	08/29/19	24m		403 / 206	66.2	32.9	0.017	0.152	698 / 370	818 / 437	912 / 489	6.38
07/16/19	07/22/19	24m	RETURN HEADER	424 / 218	131.6	33.4	0.019	0.092	725 / 385	814 / 435	908 / 487	1.41
05/07/19	05/15/19	2m	RETURN HEADER	392 / 200	242.3	31.8	0.040	0.032	724 / 384	833 / 445	924 / 495	2.99
03/20/19	03/28/19	2m		378 / 192	1123.5	31.6	0.021	0.087	679 / 359	814 / 435	907 / 486	7.30
02/19/19	02/28/19	1m	RETURN HEADS	367 / 186	229.1	31.4	0.030	0.084	693 / 367	803 / 429	897 / 481	4.91
01/08/19	01/15/19	1m		381 / 194	156.5	30.9	0.01	0.051	695 / 369	804 / 429	896 / 480	4.31
Baseline Data				464 / 240		41.1			727 / 386	828 / 442	932 / 500	1.4

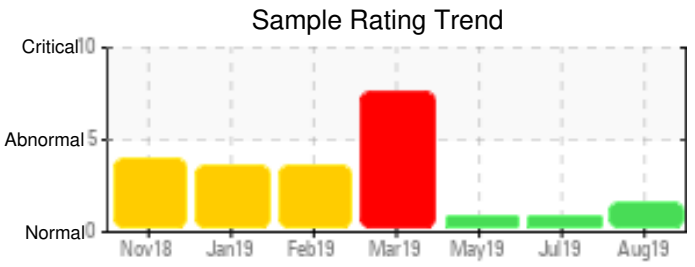






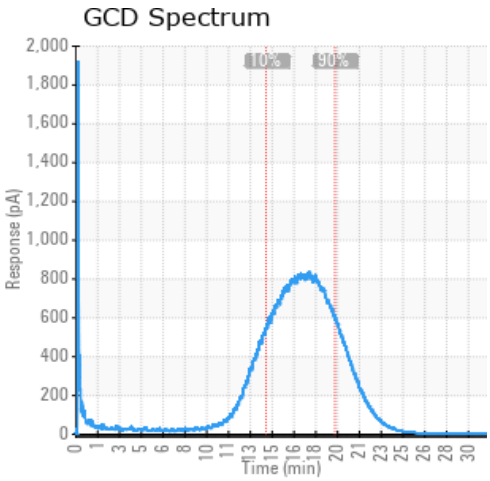
PETRO-CANADA LUBRICANTS

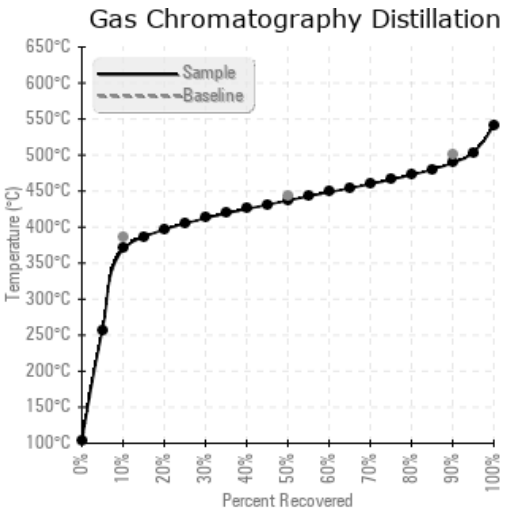


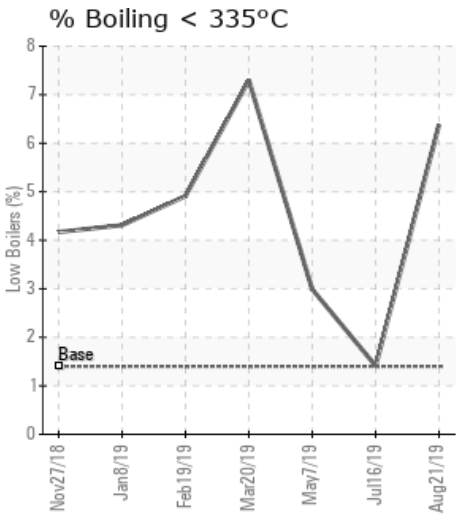


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
08/21/19	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
07/16/19	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05/07/19	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
03/20/19	3	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	1	0	1	0	0	0
02/19/19	3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
01/08/19	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	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

07/16/19	Sample results indicate that the heat transfer fluid is suitable for continued service. % boil-off, as indicated by GCD %<335°C, has improved from 2.99% on the last analysis to the like-new value of 1.41%. Please re-sample at the next scheduled interval. (GCD) 90% Distillation Point is marginally low.
05/07/19	Sample results indicate an improvement from March' results as it relates to water content.Distillation values have improved which may indicate that the water in the previous sample had a bearing on this. Fluid appears to be suitable for continued service.Re-sample per scheduled interval. COC Flash Point is marginally low.
03/20/19	Sample results indicate an increase in water contamination. Water >1000ppm poses a greater risk for fluid boil over. If this sample is representative, in that the sample valve and piping was thoroughly purged at pump discharge, then the water vapor needs to be safely vented if safe to do so. Water can be a catalyst for oxidation and can cause corrosion. Venting of the system is also beneficial to the increased volume of low boiling vapors (note the increase to 7.3% boil-off and reduced 10% distillation temperature). Please re-sample at next interval; please ensure sample point is thoroughly purged and take measures to keep water out of the system.
02/19/19	Sample results indicate that the fluid is suitable for continued service. There still appears to be the presence of low boiling vapors that should be vented to help restore the fluid's % boil-off, distillation points, flash point and the viscosity. Results appear to be consistent with the last two analysis.Please re-sample once able to safely vent low boiling vapors.
01/08/19	Sample results indicate that the fluid condition has remained relatively similar to previous analysis on Nov 27, 2018.Flash point and viscosity are steady and % boil-off very similar.10, 50 and 90% distillation values are lower than last analysis.Venting of low boiling vapors is required to help restore distillation values. This can also help restore flash point results.Once safe venting of low boilers has been performed, please re-sample in ~ 6 months.