

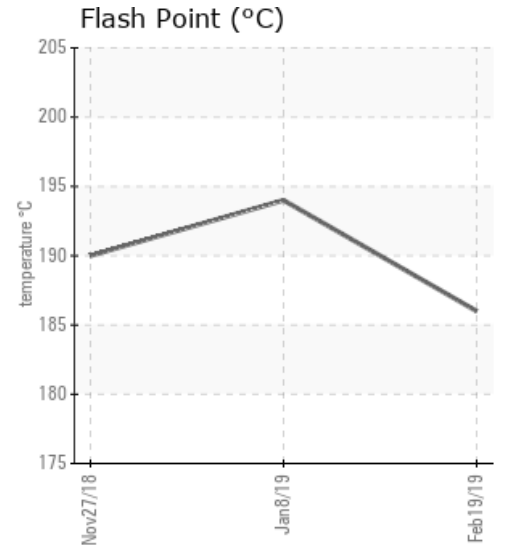
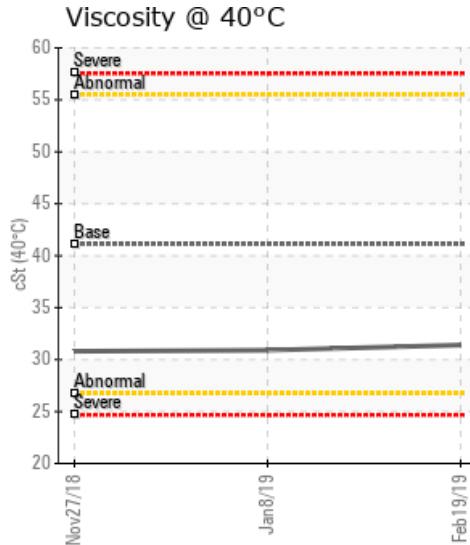
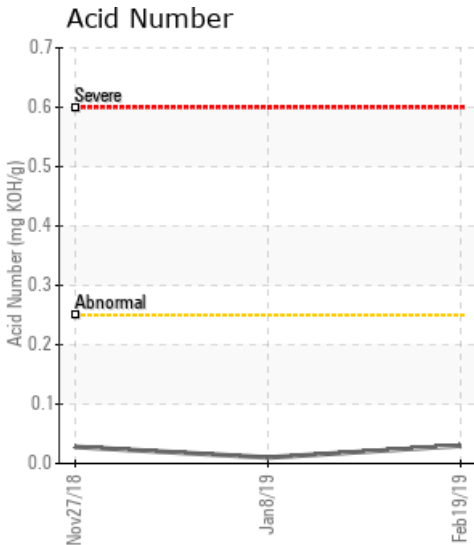
[/ 7-11-064-03W6 /] HEATER 2

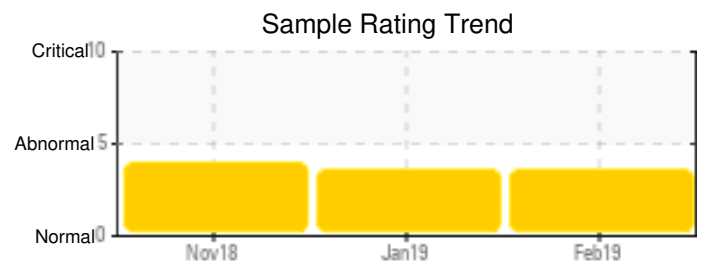
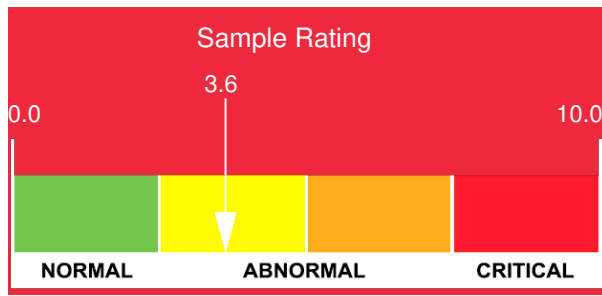
Customer: PTRHTF20207	System Information	Sample Information
SEVEN GENERATIONS ENERGY LTD 7-11-064-03W6 GRANDE PRAIRIE, AB T8V 8H7 Canada Attn: Justin Dery Tel: (587)435-4480 E-Mail: Justin.dery@7genergy.com	System Volume: 140000 ltr Bulk Operating Temp: 320F / 160C Heating Source: Blanket: Fluid: CHEVRON HEAT TRANSFER OIL 46 Make: PETRO TECH	Lab No: 02270619 Analyst: Clinton Buhler Sample Date: 02/19/19 Received Date: 02/28/19 Completed: 03/04/19

Recommendation: 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.

Comments:

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	%
02/19/19	02/28/19	1y	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	1y		381 / 194	156.5	30.9	0.01	0.051	695 / 369	804 / 429	896 / 480	4.31
11/27/18	12/07/18	1y		374 / 190	475.0	30.8	0.028	0.096	718 / 381	828 / 442	918 / 492	4.17
Baseline Data				464 / 240		41.1			739 / 393	836 / 447	941 / 505	0.8

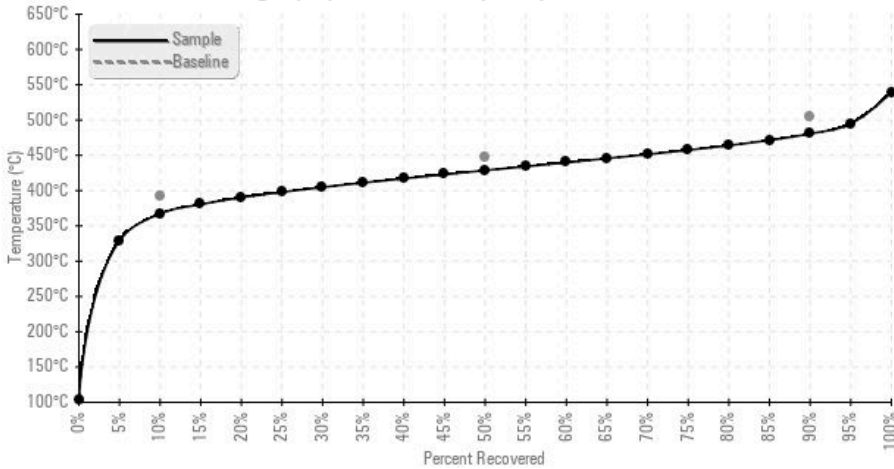




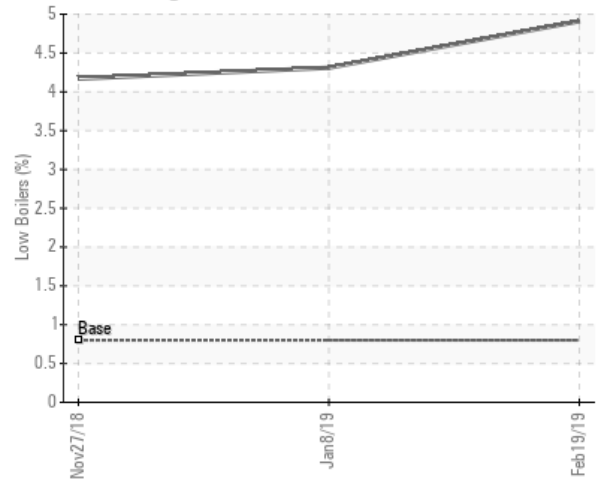
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
02/19/19	3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
01/08/19	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0
11/27/18	7	0	0	0	0	0	0	0	0	0	2	11	0	0	0	0	0	0	1	0	2	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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

Gas Chromatography Distillation (GCD)



% Boiling < 335°C



Historical Comments

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.
11/27/18	Sample results indicate that the heat transfer fluid is suitable for continued service. Please note reduced flash point and increased % boil-off (GCD % < 335C). That, and also the fluid's viscosity is 30.8 cSt vs 41cSt of new fluid can indicate a mixture of different fluids, but it can also indicate thermal degradation. Depending on system design, that is, if a high blanket gas pressure is not required to provide the circulation pumps positive suction head pressure, it is recommended to perform regular venting of the expansion tank to remove the low boiling vapors from the system. This can help restore distillation values as well as flash point. Water level is not ideal. This may be an indication of where the sample was drawn from. Venting will also assist in removing water from the system if results are representative. Once venting (if safe to do so) has been completed thoroughly, please re-sample in 6 months. Water contamination levels are marginally high. COC Flash Point is abnormally low. (GCD) 90% Distillation Point is marginally low.

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