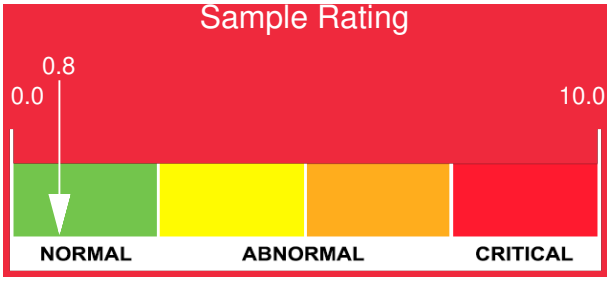
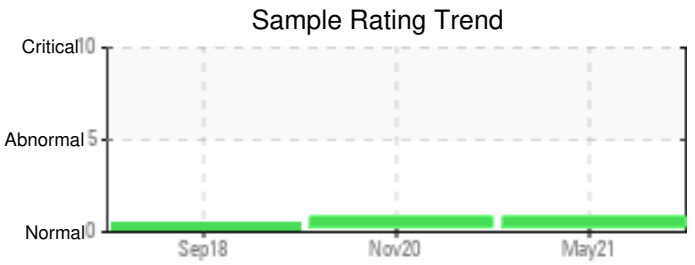




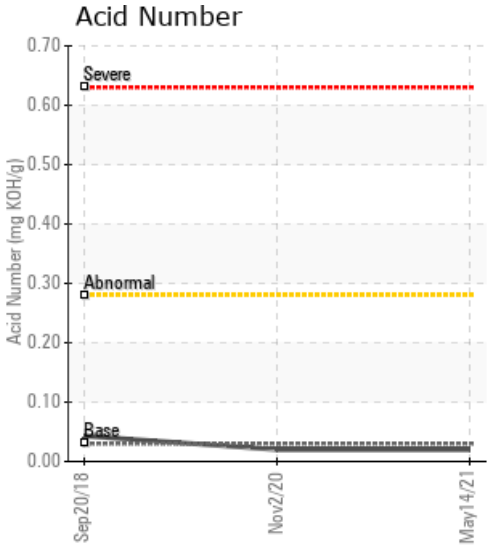
[CIRCULATING PUMP DISCHARGE LINE] 5-02-76-12W6M H941 A/B

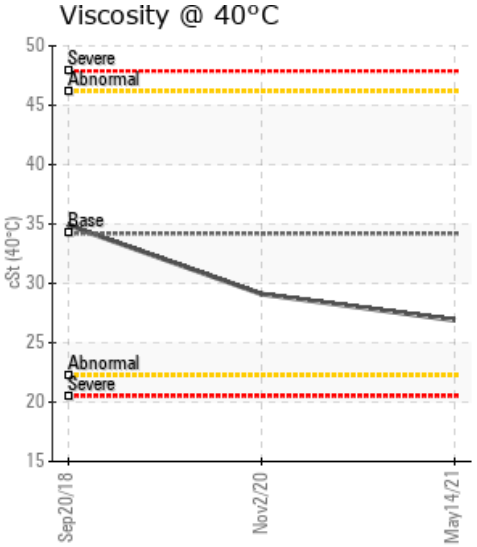
Customer: PTRHTF20204	System Information	Sample Information
ADVANTAGE OIL AND GAS 05-02-76-12W6M HYTHE, AB Canada Attn: Lorne Kingdon Tel: (780)552-3083 E-Mail: lkingdon@advantageog.com	System Volume: 110000 ltr Bulk Operating Temp: 410F / 210C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: PETROTECH	Lab No: 02424209 Analyst: Clinton Buhler Sample Date: 05/14/21 Received Date: 05/31/21 Completed: 07/22/21 Clinton Buhler Clinton.Buhler@hollyfrontier.com

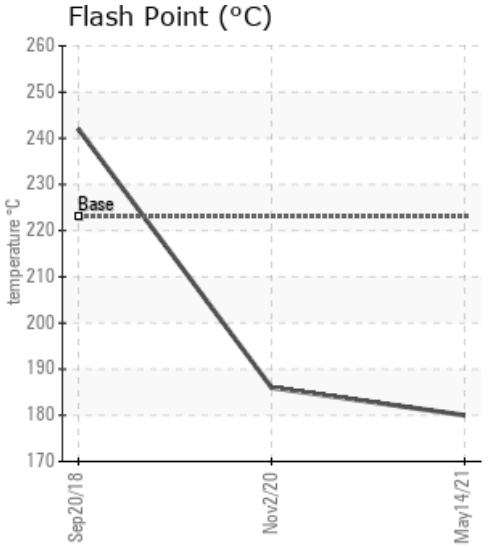
Recommendation: Sample results indicate that the fluid is suitable for continued service. Flash point and fluid viscosity continue to be reduced and increasing low boiling vapor content suggest that there is thermal degradation or mixture with process fluid ongoing. It is advised to regularly vent off low boiling vapors from the expansion tank to help bring these parameters back in line. Solids content also has increased which may be an indication of solids formed from thermal cracking. However, with the sample being drawn from the level column, this may be questionable. Please sample from the hottest, most turbulent zone, preceded by a thorough purge of the sample valve, so we are confident in the sample being representative. Please re-sample in 6 months, after thorough venting.

Comments:

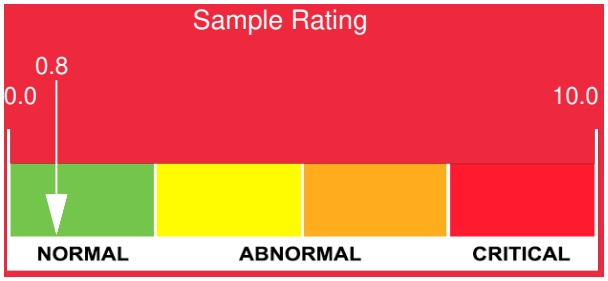
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/14/21	05/31/21	0.0y	Level column	356 / 180	134.3	26.9	0.02	0.372	685 / 363	794 / 423	904 / 484	6.13
11/02/20	11/16/20	2.0y	RETURNLINE TO BOILER	367 / 186	92.4	29.1	0.02	0.041	712 / 378	813 / 434	916 / 491	3.64
09/20/18	10/26/18	2.0y		468 / 242	88.8	34.9	0.043	0.048	727 / 386	817 / 436	920 / 493	0.00
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

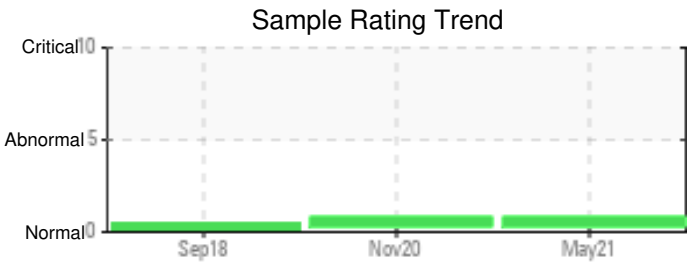






PETRO-CANADA LUBRICANTS

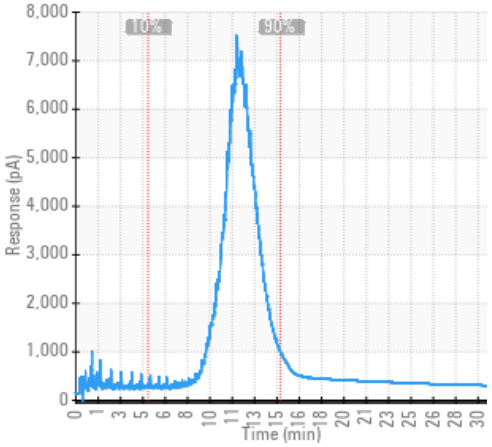




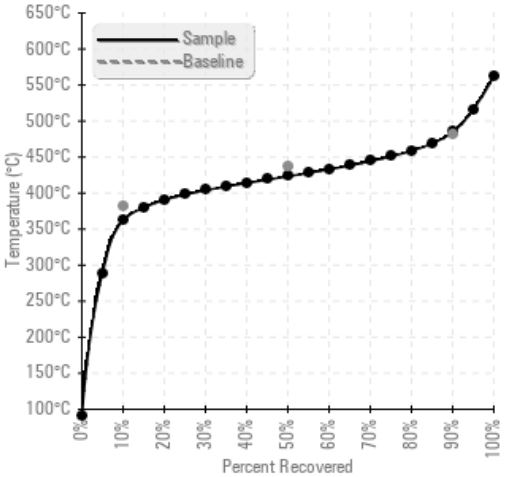
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
05/14/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/02/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/20/18	6	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%]

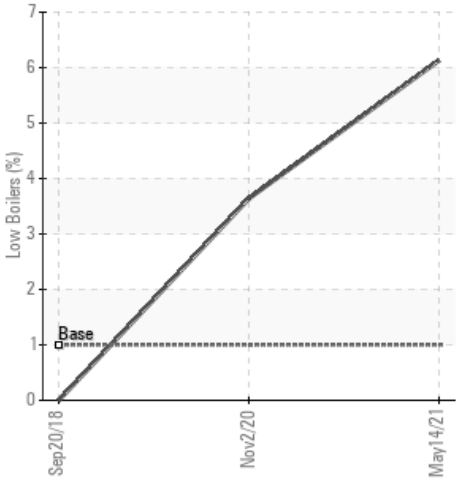
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

11/02/20	Sample results indicate that the fluid is suitable for continued service. Reduced flash point and fluid viscosity and increased low boiling vapor content suggest that there is some thermal degradation ongoing.It is advised to regularly vent off low boiling vapors from the expansion tank to help bring these parameters back in line.Please re-sample in 12 months, after thorough venting. COC Flash Point is marginally low.
09/20/18	Sample results indicate that the heat transfer fluid is suitable for continued service.If total service time on fluid is 2 years, please re-sample in 12 months