

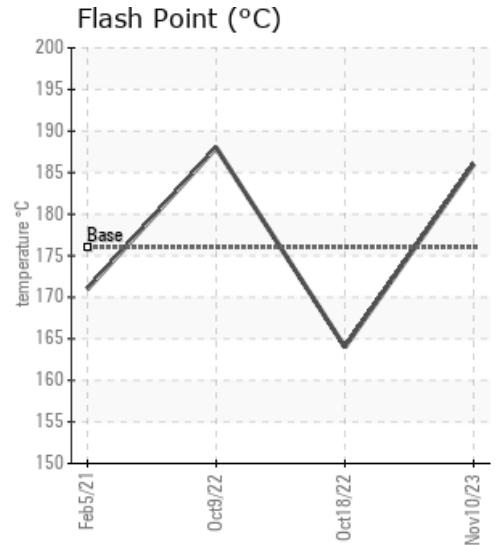
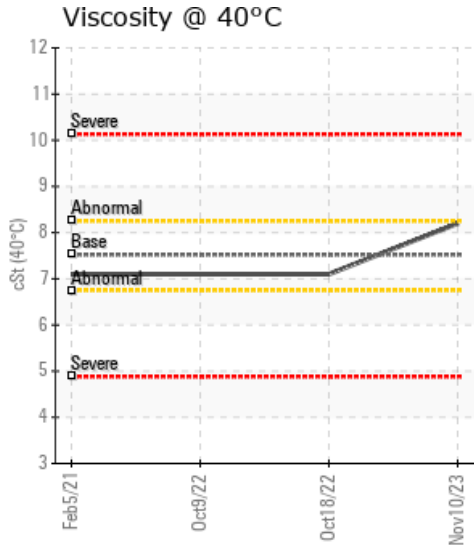
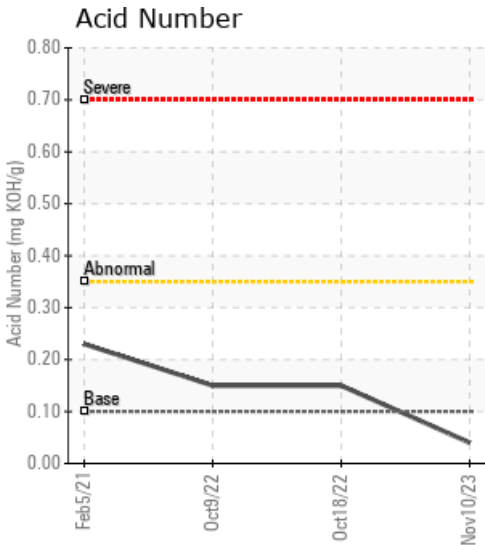
TOWN NORTH HOT OIL

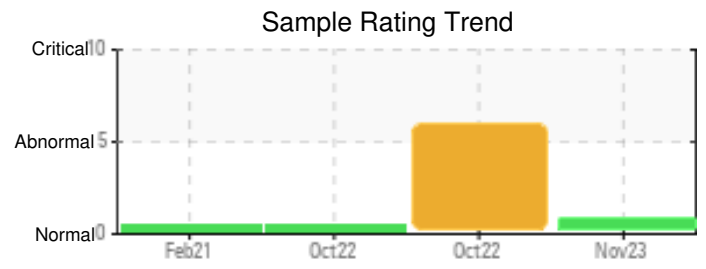
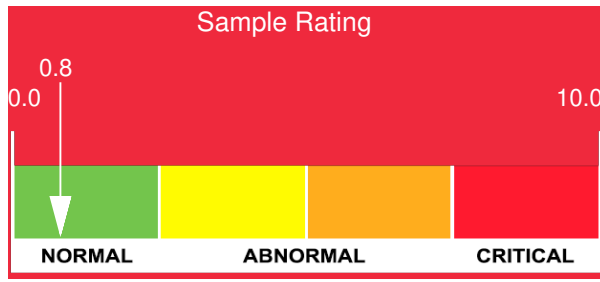
Customer: PTRHTF60062	System Information	Sample Information
Petronas Energy Canada Ltd. - Town ... B89-J/94-B-16 6954 100th Ave. Fort St. John, BC V1J 8L5 CA Attn: Zachary Luszc Tel: (250)794-5612 E-Mail: zluszc@petronascanada.com	System Volume: 120000 ltr Bulk Operating Temp: 410F / 210C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: CLEAVER BROOKS	Lab No: 02597683 Analyst: Clinton Buhler Sample Date: 11/10/23 Received Date: 11/20/23 Completed: 11/27/23 Clinton Buhler Clinton.Buhler@HFSinclair.com

Recommendation: This sample was drawn from the system following a fire event in November 2023. System is estimated to contain ~108 m3 of Calflo LT and ~15m3 of Petro-Therm. Sample results indicate that the fluid is in suitable condition for continued service. The addition of Petro-Therm to the system has (expectedly) increased the fluid viscosity, 90% GCD temperature and fluid flash point while also reducing the low boiler vapor content (42.31%). Acid Number is low, indicating that fluid oxidation is being mitigated. Please re-sample system after additional Petro-Therm is added to the system (please indicate the final mixing ratios and volumes for the next sample) and after at least 48-72 hours of operation at design temperature.

Comments:

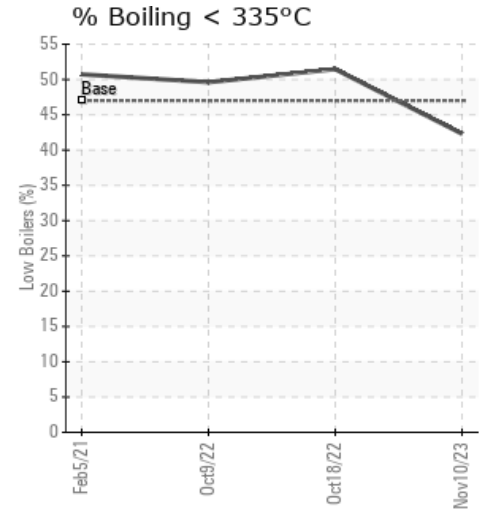
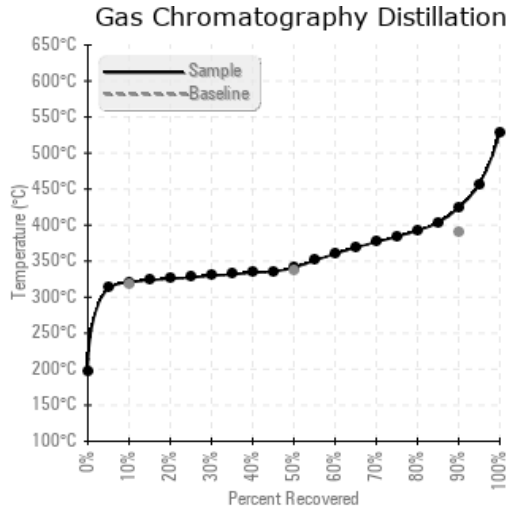
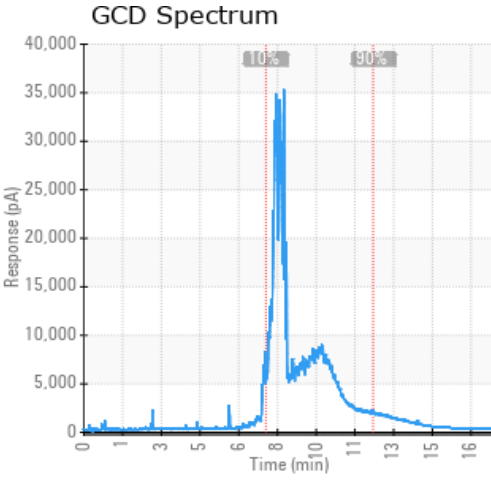
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/10/23	11/20/23	3.0y		367 / 186	26	8.2	0.04	0.035	609 / 320	645 / 341	795 / 424	42.31
10/18/22	11/07/22	5.0y		327 / 164	33.3	7.1	0.15	0.278	609 / 320	634 / 335	737 / 392	51.46
10/09/22	11/07/22	88.0y		370 / 188	46.1	7.1	0.15	0.072	609 / 320	635 / 335	737 / 392	49.61
02/05/21	02/23/21	12.0y	Suction of pump	340 / 171	0.6	7.1	0.23	0.088	608 / 320	634 / 335	737 / 392	50.73
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	47.0





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
11/10/23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0
10/18/22	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	59	0
10/09/22	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	59	0
02/05/21	18	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	2	0	175	2
Baseline Data			0	0						0		0	0				0	0					270	

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



Historical Comments	
10/18/22	Sample taken after 6m3 of Petro-Therm added to system. Sample results remain very similar to Calflo LT due to low mixing ratio. Please re-sample in 12 months
10/09/22	Sample results indicate the fluid is in suitable condition for continued service. This sample preceded top-up with 6m3 of Petro-Therm on top of the Calflo LT
02/05/21	Sample results indicate that the fluid is in suitable condition for continued service. Please re-sample in 6 months to help build a trend.

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