

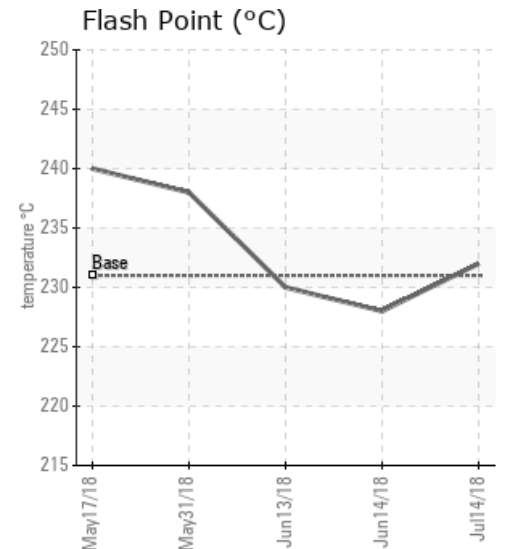
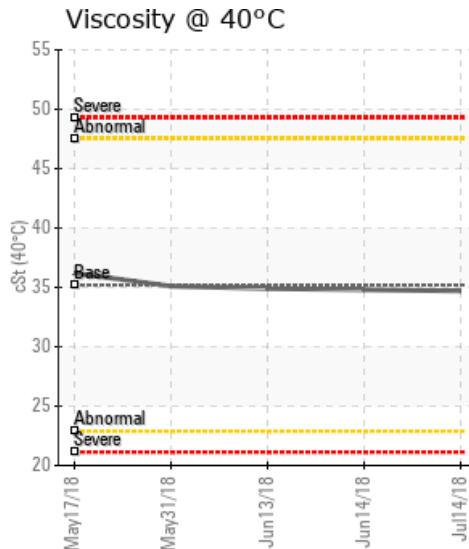
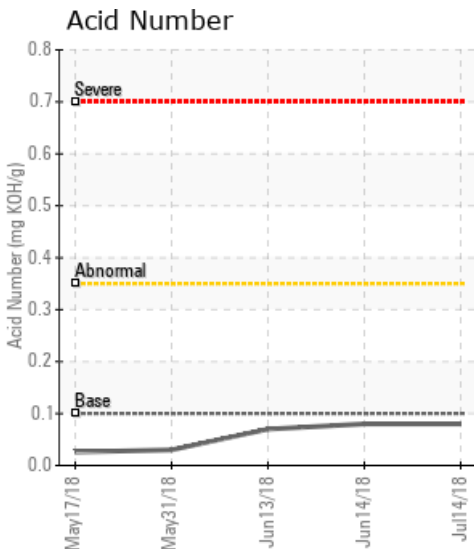
[SUNCOR MACKAY RIVER] TANK 750

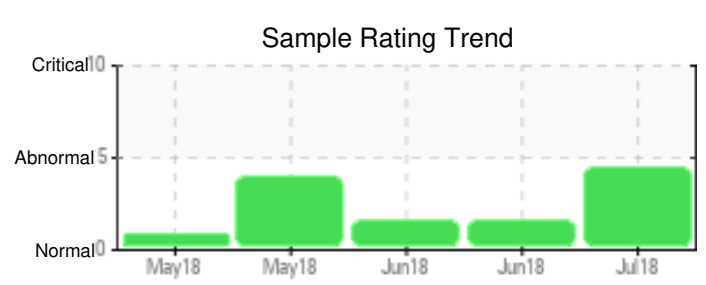
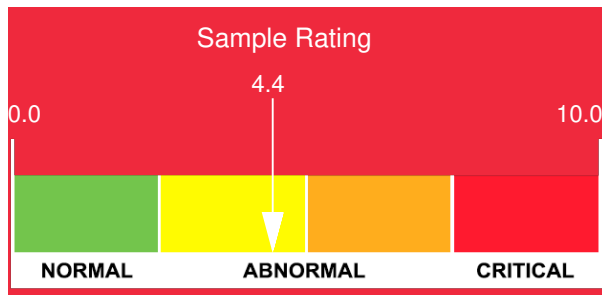
Customer: PTRHTF20196	System Information	Sample Information
SUNCOR ENERGY MACKAY RIVER PROJECT DOCK M FORT MCMURRAY, AB T9H 4W1 Canada Attn: Patrick Spargo Tel: (780)792-2977	System Volume: 13000 ltr Bulk Operating Temp: 518F / 270C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make:	Lab No: 02229557 Analyst: Benjamin Latorre Sample Date: 07/14/18 Received Date: 07/20/18 Completed: 09/04/18 To discuss this report contact Benjamin Latorre at (587)275-0499

Recommendation: 1. Vent the expansion tank regularly to reduce water contaminants and low boilers. 2. Wear metals, Pentane Insolubles and Acid Number are low/normal. 3. Resample periodically to check on trending of test values.

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

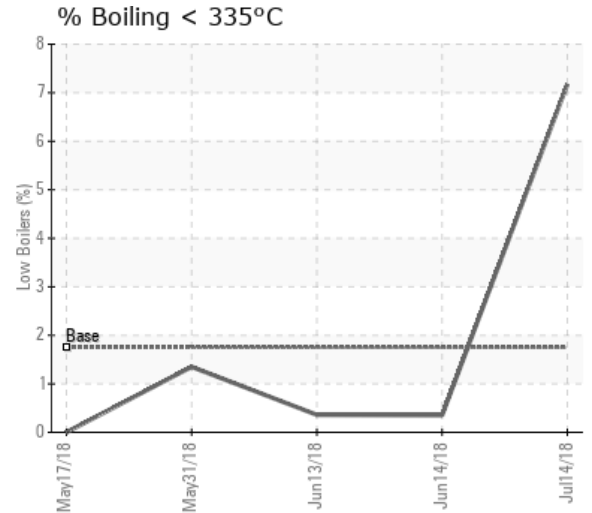
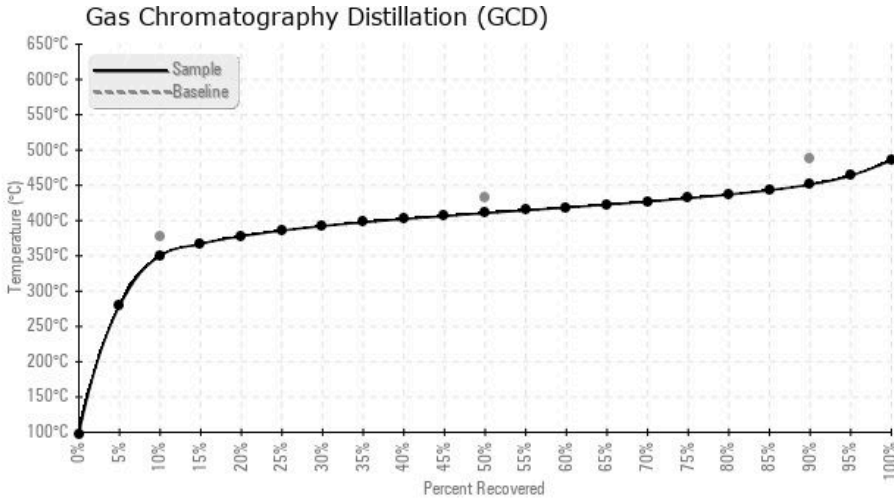
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/14/18	07/20/18	0d		450 / 232	508.7	34.7	0.08	0.043	663 / 351	771 / 411	844 / 451	7.17
06/14/18	06/26/18	0d		442 / 228	503.8	34.8	0.08	0.030	726 / 386	800 / 427	899 / 482	0.35
06/13/18	06/26/18	0d		446 / 230	541.6	34.9	0.07	0.045	726 / 386	801 / 427	905 / 485	0.36
05/31/18	06/12/18	0d	HOT OIL TANK #1	460 / 238	1887.2	35.1	0.03	0.072	717 / 381	798 / 426	889 / 476	1.35
05/17/18	05/28/18	2d	HOT TANK OIL #1	464 / 240	4968.5	36.2	0.026	0.034	729 / 387	813 / 434	906 / 486	0.00
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75





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
07/14/18	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	10	0
06/14/18	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0	12	0
06/13/18	1	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	1	0	0	16	0
05/31/18	5	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	1	0	1	0	84	0
05/17/18	5	0	0	0	0	0	0	0	0	0	7	1	1	0	1	0	0	0	3	0	6	0	292	1
Baseline Data			0	0						0			0	0					0				280	

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



Historical Comments	
06/14/18	Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high.
06/13/18	Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high.
05/31/18	Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. (GCD) 90% Distillation Point is marginally low.
05/17/18	1. Locate and correct source of recurring water contamination. Check heat exchanger for leaks.2. Check low lying areas of the system, such as the expansion tank, where water can be trapped.3. Consider removal of water vapor by venting and addition of nitrogen to the expansion tank head space. Resample initially at 500 hours after correcting source/removal of water contamination. If it has stopped, resample oil at longer intervals. Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high.

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