

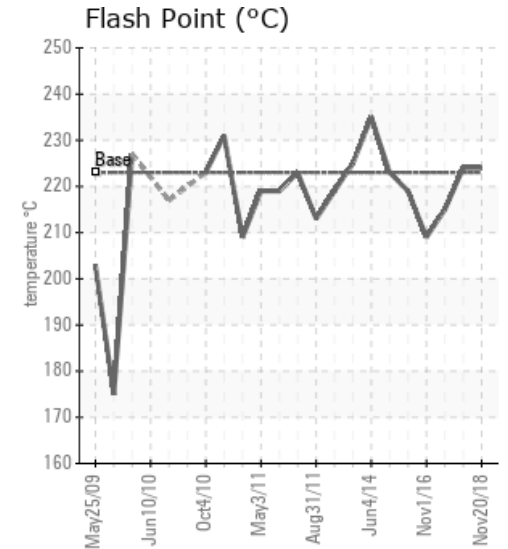
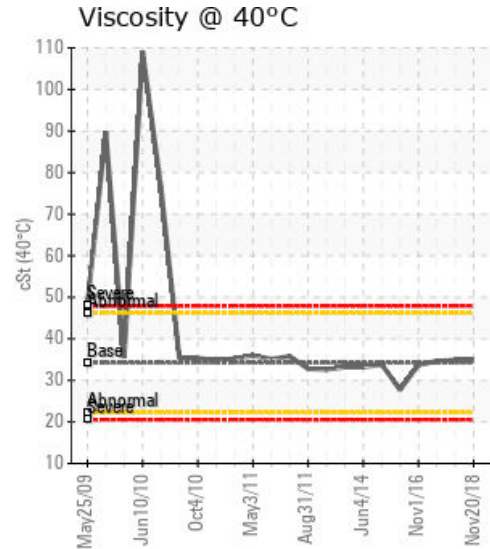
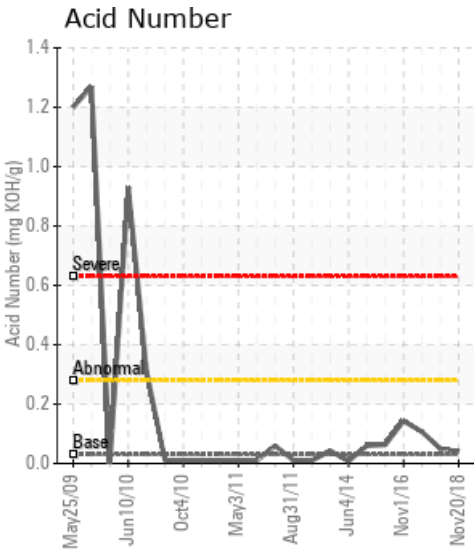
## [TIDEWATER MIDSTREAM LSD / 11-33-45-8W5] TRAIN B

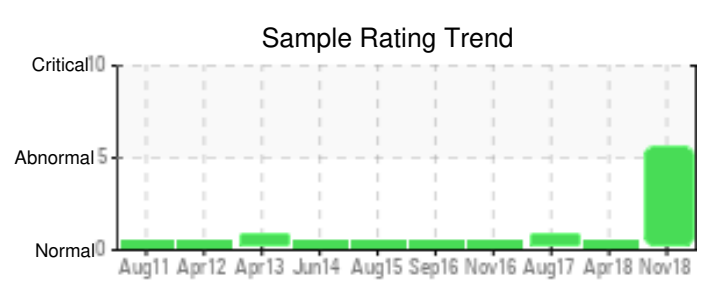
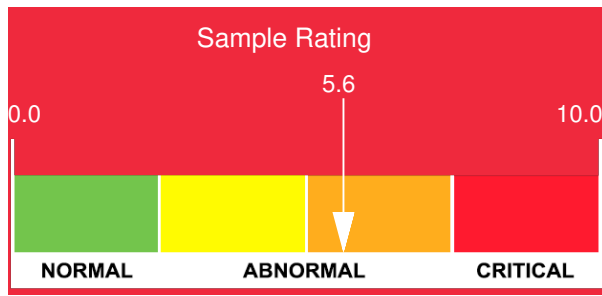
Customer: PTRHTF20006	System Information	Sample Information
Tidewater 21 Oxford Pl. Alder Flats, AB T0C 0A0 Canada Attn: Travis Smith Tel: (780)679-2498 E-Mail: tsmith@tidewatermidstream.com	System Volume: 10000 ltr Bulk Operating Temp: 383F / 195C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02253875 Analyst: Terry Veenstra Sample Date: 11/20/18 Received Date: 11/27/18 Completed: 12/10/18

Recommendation: This sample shows severe water contamination. GCD @ 10%, 50% and 90% are also severely low indicating possible contamination with process fluids. Vent off light ends from Expansion tank.

Comments: (GCD) 90% Distillation Point is severely low. (GCD) 10% Distillation Point is abnormally low. (GCD) 50% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high.

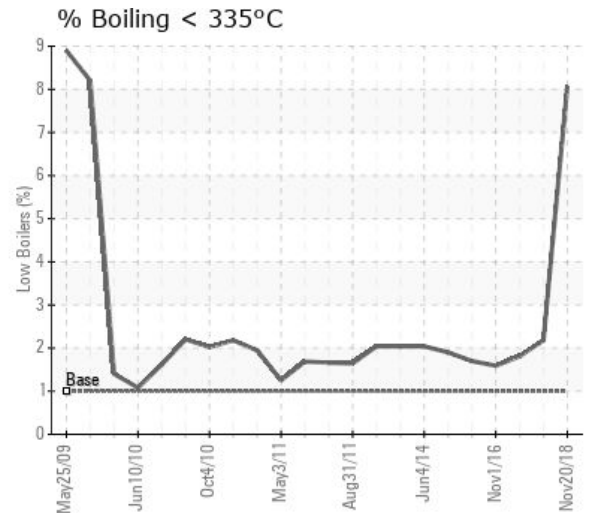
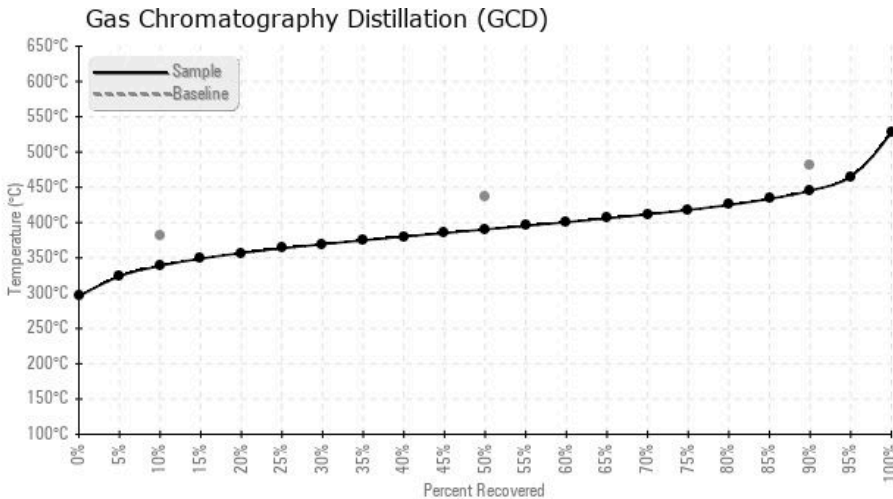
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/20/18	11/27/18	8y		435 / 224	7.1	34.9	0.04	0.140	641 / 339	735 / 390	833 / 445	8.07
04/10/18	04/18/18	7y		435 / 224	10.0	34.9	0.05	0.344	700 / 371	800 / 427	891 / 477	2.18
08/22/17	08/28/17	7y	HEATER BATH	419 / 215	19.6	34.6	0.107	0.390	698 / 370	797 / 425	901 / 483	1.81
11/01/16	11/08/16	6y		408 / 209	49.5	33.7	0.143	0.230	709 / 376	812 / 433	908 / 487	1.59
09/09/16	09/14/16	6y	HEATER BATH	426 / 219	15.6	27.7	0.063	0.133	707 / 375	809 / 431	904 / 484	1.70
08/25/15	09/02/15	5y	HEATER BATH	433 / 223	17.4	33.8	0.06	0.080	707 / 375	813 / 434	912 / 489	1.90
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





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
11/20/18	8	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	2	0	0	0
04/10/18	9	0	0	0	0	0	0	0	0	0	2	10	0	0	0	0	0	0	0	0	3	0	0	0
08/22/17	17	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11/01/16	7	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
09/09/16	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08/25/15	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Baseline Data</b>			0	0						0			0	0					0				0	

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



Historical Comments	
04/10/18	This fluid is in good condition and suitable for continued use. Resample in 6-8 months.
08/22/17	Fluid remains in very good condition. The only concern is the increasing trend in solids content over time. Also the iron content seems to be increasing. Those two things combined suggest some corrosion is taking place. Sample in 6-12 months to see if trend continues. Pentane Insolubles levels are abnormally high.
11/01/16	This sample looks good. The oil is suitable for continued use.
09/09/16	This oil is in good condition and suitable for continued use. Resample in six months.
08/25/15	Fluid remains in very good condition showing very little change since the June 2014 sample. Continue with annual sample submissions to monitor fluid condition.

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