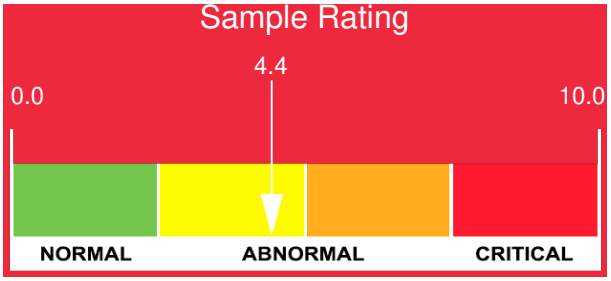
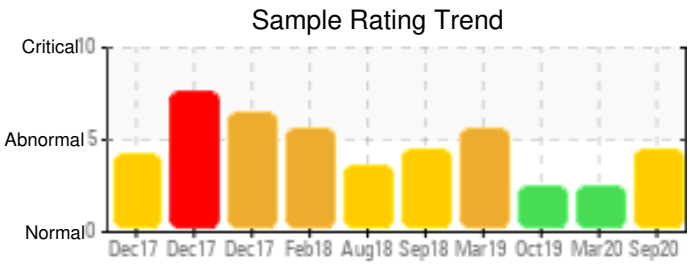




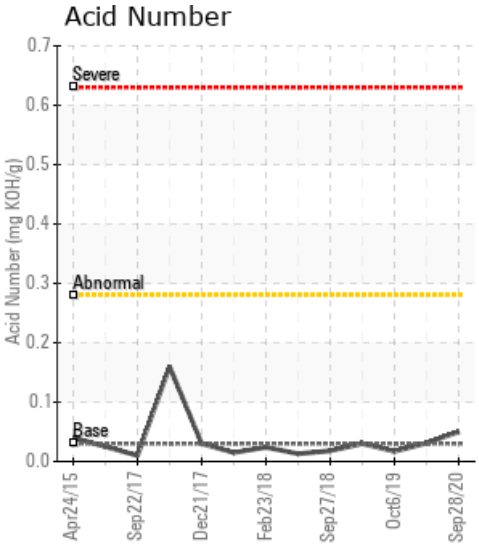
[16-11-54-15W5] BONAVISTA

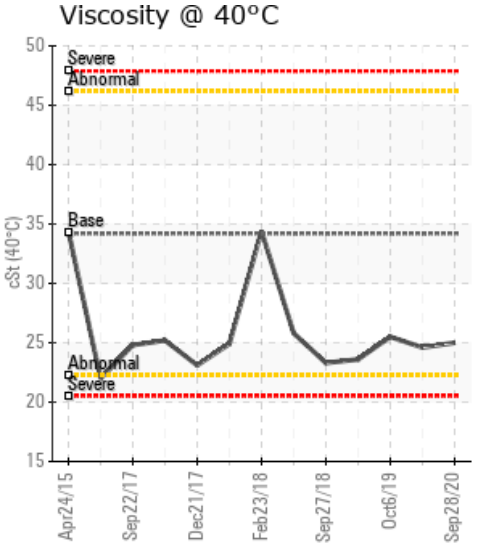
Customer: PTRHTF20158	System Information	Sample Information
BONAVISTA ENERGY 16-11-54-15-W5 PEERS, AB T0E 1W0 Canada Attn: Dan Duriez Tel: (780)728-3552 E-Mail: dan.duriez@bonavistaenergy.com	System Volume: 14000 ltr Bulk Operating Temp: 392F / 200C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02380380 Analyst: Terry Veenstra Sample Date: 09/28/20 Received Date: 10/08/20 Completed: 10/13/20 Terry Veenstra terry.veenstra@petrocanadalsp.com

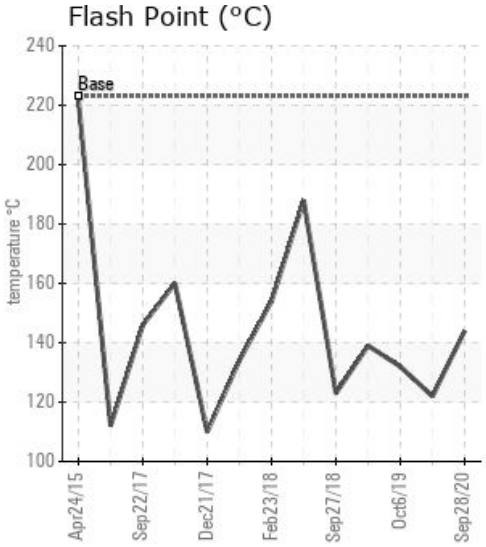
Recommendation: The condition of the fluid has improved compared with the previous analysis. This indicates proper operation of the venting system. Flash Point is still too low however has improved since last sample.Viscosity is low. These are signs of thermal degradation of the fluid. This degradation is however not excessive judging from thePentane Insoluble (solids) content which is low and has been stable over the past two years. The fluid is suitable for further use.Please re-sample in 6 months.

Comments: COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.

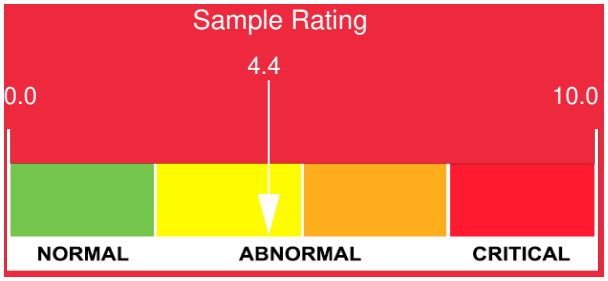
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/28/20	10/08/20	6y	Filter	291 / 144	17.1	25.0	0.05	0.032	649 / 343	793 / 423	906 / 486	8.59
03/14/20	03/23/20	6y	FILTER DRAIN	252 / 122	23.4	24.6	0.031	0.055	715 / 380	811 / 433	919 / 493	1.76
10/06/19	10/23/19	0y		270 / 132	3.4	25.5	0.017	0.088	689 / 365	810 / 432	919 / 493	5.31
03/13/19	03/26/19	6y	FILTERS	282 / 139	52.5	23.6	0.030	0.032	627 / 330	788 / 420	902 / 483	10.08
09/27/18	10/02/18	5y		253 / 123	39.0	23.3	0.018	0.033	633 / 334	785 / 418	892 / 478	9.64
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

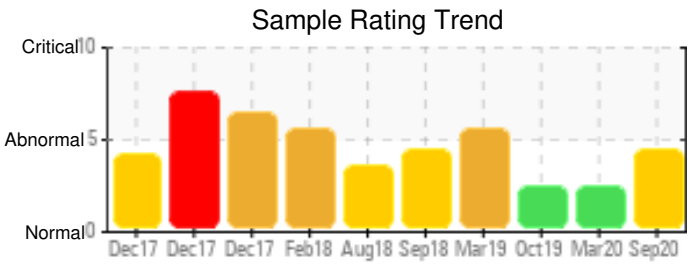






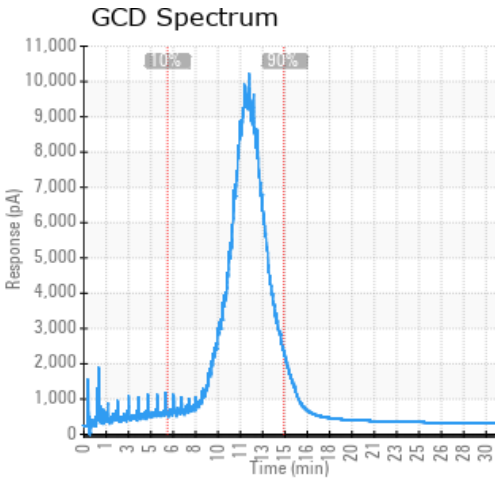
PETRO-CANADA LUBRICANTS

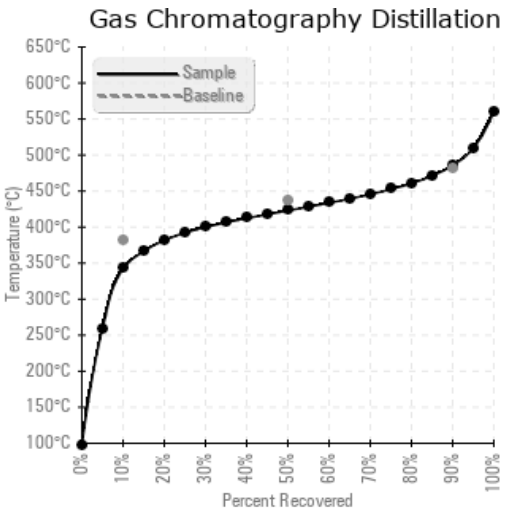


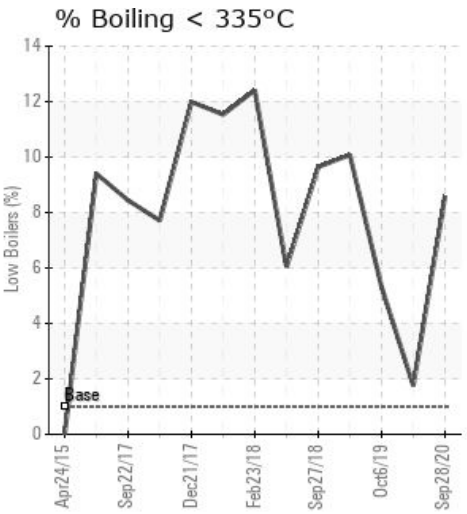


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
09/28/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/14/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/06/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/13/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/27/18	0	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%]







Historical Comments

03/14/20	The condition of the fluid has improved compared with the previous analysis. The low boiler vapor content (%<335C.) is close to that of the fresh fluid. This indicates proper operation of the venting system. Flash Point is still too low. Viscosity is low. These are signs of thermal degradation of the fluid. This degradation is however not excessive judging from the Pentane Insoluble (solids) content which is low and has been stable over the past two years. The fluid is suitable for further use. Please re-sample in 6 months. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally high.
10/06/19	The fluid is in a good condition and suitable for further use. There are still indications of thermal degradation. These are: Low viscosity, Flash Point, 10% GCD temperature and elevated low boiler vapor content (GCD <335C = 5.31%) Although the condition of the fluid has improved compared with the March 2019 sample, it is important to keep venting off the low boiler vapors. Flash Point should be at a minimum of 150C.Service life of the fluid is listed as 0 years. Has the fluid fill been changed since March or is this a mistake ? Please make sure to list fluid service life when taking the next sample which is recommended to do 6 months from now. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally high.
03/13/19	The condition of the fluid is similar to what it was in September of 2018. Low boiler vapor content is high, Flash Point low, 10% GCD temperature is low. All of these indicate the fluid is not degassing properly. The fluid is suitable for further use but to prevent pump cavitation or flow stagnation problems from happening it would be good to do a thorough venting of vapor. Perhaps this can take place prior to a facility maintenance turnaround. Please re-sample after venting. (GCD) 10% Distillation Point is severely low. COC Flash Point is severely low. (GCD) % < 335°C is marginally high.
09/27/18	The fluid is in a reasonable condition and suitable for further use but the analysis results reflect either increased thermal degradation of the fluid or ineffective degassing via system modification. The Flash Point is low and a safety concern in case an external leak occurs. The low boiler vapor content has increased and 10% GCD temperature has decreased. A vapor content of 9.6% may cause cavitation problems at the suction side of the heat medium pumps. The vapor has to be vented off. Also check if this condition can be caused by an internal leak of process fluid into the Petro-Therm. COC Flash Point is severely low. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high.

