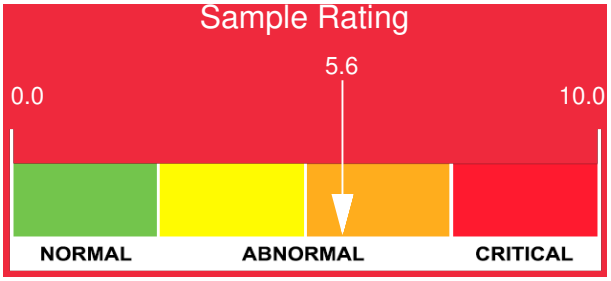
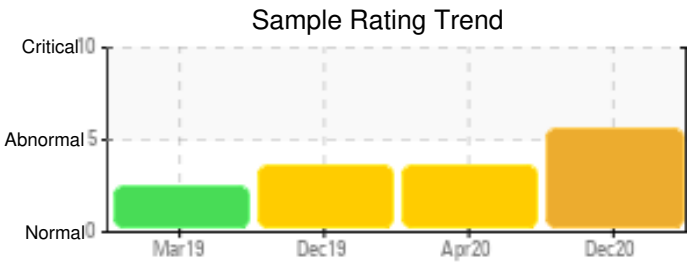




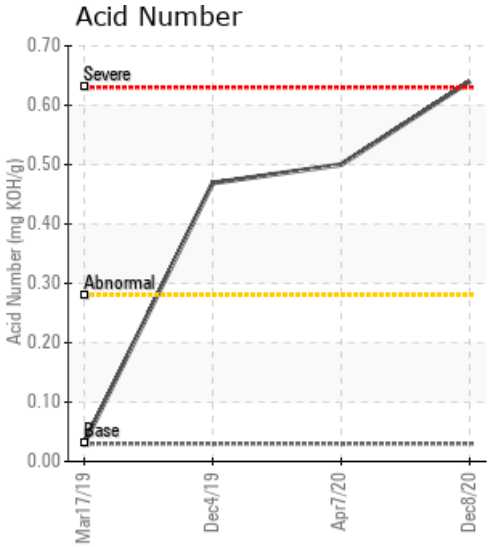
[11-21-55-20W5M] H-802

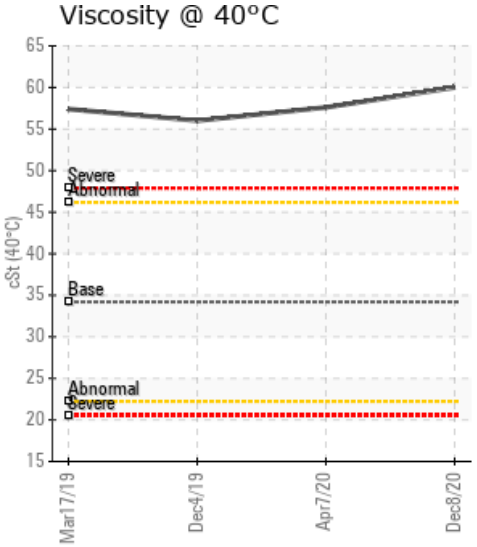
Customer: PTRHTF20228	System Information	Sample Information
PEYTO EXPLORATION Box 7198 EDSON, AB T7E 1V4 Canada Attn: Logan Pillage Tel: (780)712-9444 E-Mail: Lpillage@Peyto.com	System Volume: 27000 ltr Bulk Operating Temp: 370F / 188C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: ALCO	Lab No: 02392464 Analyst: Terry Veenstra Sample Date: 12/08/20 Received Date: 12/11/20 Completed: 12/16/20 Terry Veenstra terry.veenstra@petrocanadalsp.com

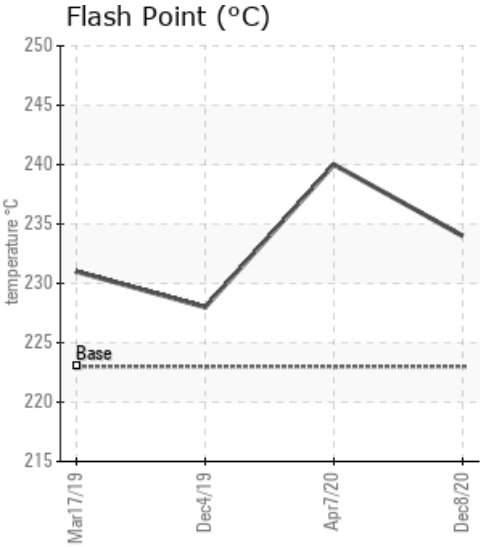
Recommendation: TAN, Viscosity and Pentane insolubles are severely high indicating oxidation of the fluid . Ensure gas blanket is functioning. Considering filtering out solids.

Comments: Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. Visc @ 40°C is severely high.

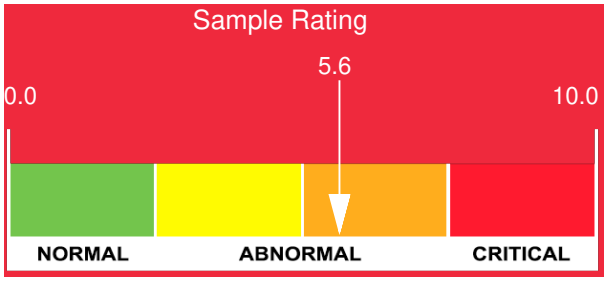
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/08/20	12/11/20	0y	discharge of pump	453 / 234	18.9	60.0	0.64	1.33	744 / 396	839 / 448	899 / 482	0.69
04/07/20	04/14/20	0y		464 / 240	26.5	57.6	0.50	1.80	749 / 398	840 / 449	899 / 482	0.00
12/04/19	12/09/19	0y	DISCHARGE	442 / 228	39.5	56.0	0.469	2.41	724 / 384	821 / 438	894 / 479	1.65
03/17/19	03/18/19	0y	DISCHARGE OF THE PUM	448 / 231	28.8	57.4	0.03	1.35	735 / 391	832 / 445	895 / 479	0.73
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

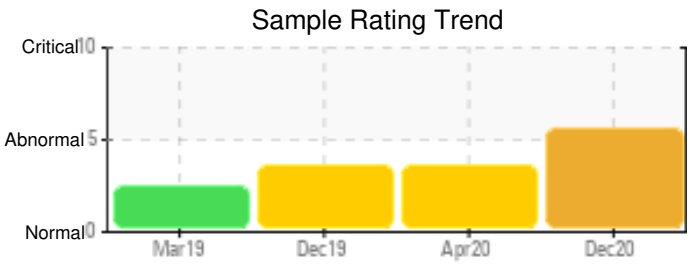






PETRO-CANADA LUBRICANTS

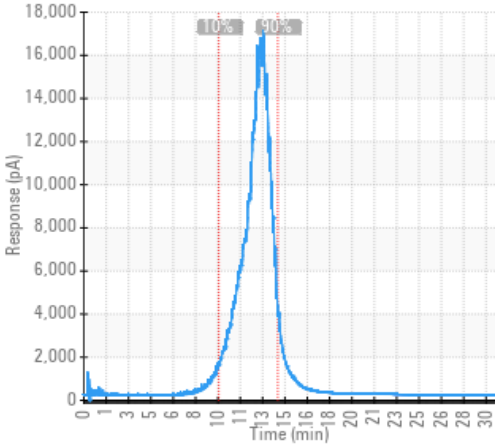




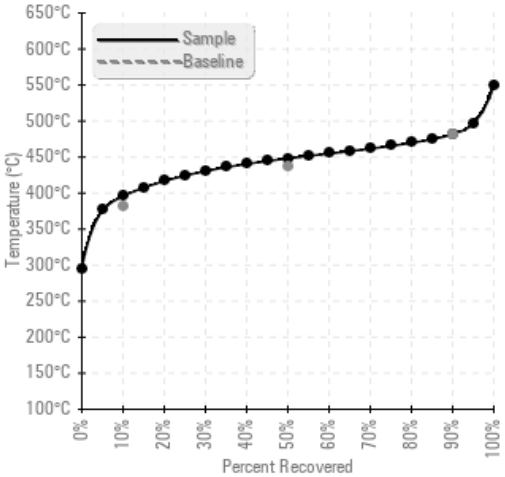
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
12/08/20	65	0	0	0	0	0	1	0	0	0	2	4	0	0	0	0	1	0	0	0	1	0	0	0
04/07/20	75	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	1	0	0	0	1	0	0	0
12/04/19	78	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	1	0	0	0	1	0	0	1
03/17/19	68	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	1	0	0	0	1	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%]

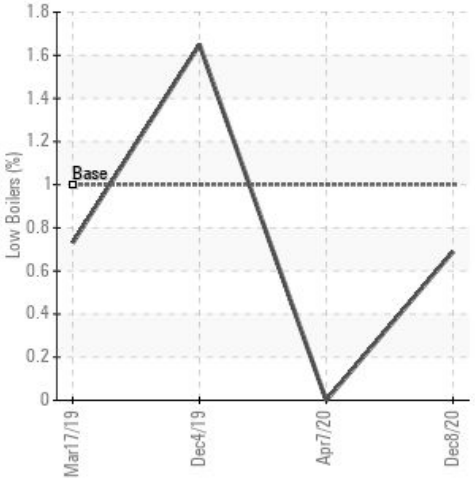
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

04/07/20	The fluid is in a reasonable condition and suitable for further use. Viscosity and AN have remained at appr. the same level as the Dec. 2019 sample. Corrosion has not progressed further judging by AN and Fe content. Pentane Insolubles (solids) content is still too high (3x) but has decreased from 2.4% to 1.8%Please re-sample in 6 months. (list Time on Oil) Pentane Insolubles levels are severely high. Visc @ 40°C is severely high. Acid Number (AN) is abnormally high.
12/04/19	The AN of the fluid has increased. AN has not reached the condemning limit yet (=1.0) but the acidity of the fluid is starting to cause more corrosion. Fe content increased from 68 to 78 ppm which is an indication of this.The viscosity of the fluid is high with 56 cSt/40C. This is the result of a high Pentane Insolubles (solids) content (2.41%). Filtration of the fluid is recommended. If filtration is in place, it is not efficient and should be looked at. Your Petro-Canada Tech Service Advisor can assist with this. Please re-sample in 6 months.
03/17/19	The viscosity and Pentane Insoluble (solids) content of the fluid are high. It is recommended to start filtration of the fluid and re-sample after filtration. Pentane Insolubles levels are severely high. Visc @ 40°C is severely high.