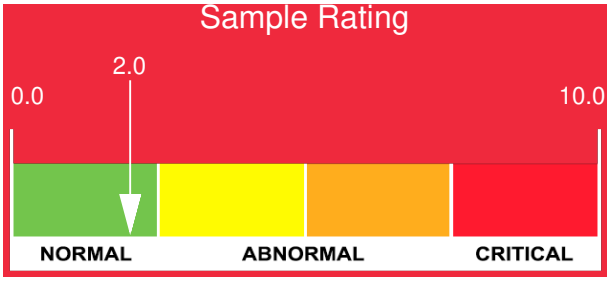
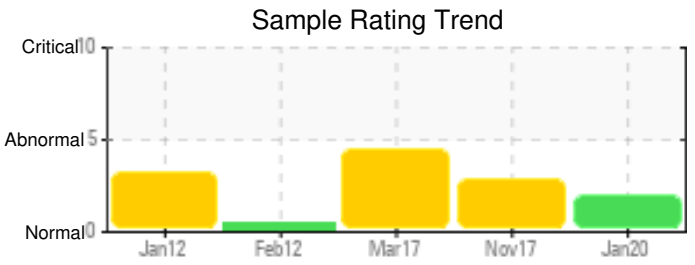




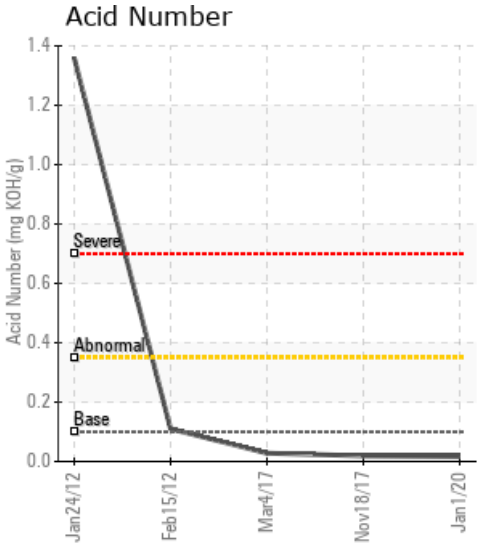
VAPORIZER #7

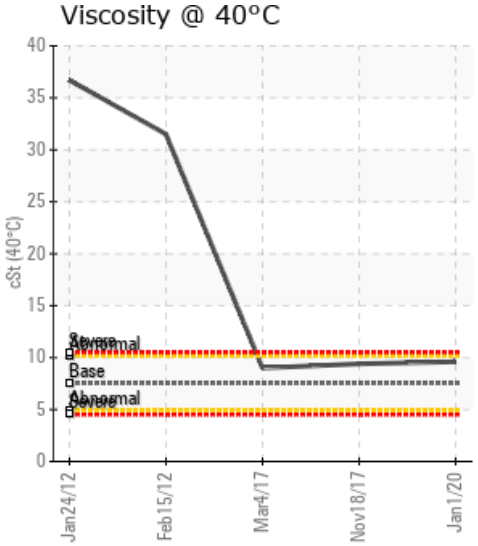
Customer: PTRHTF10092	System Information	Sample Information
REC GROUP 119410 RICK JONES WAY BUTTE (SILVER BOW), MT 59750 USA Attn: ZACK KELLY Tel: (406)496-9717 E-Mail: zack.kelly@recgroup.com	System Volume: 100 gal Bulk Operating Temp: 250F / 121C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make:	Lab No: 02332064 Analyst: Ron LeBlanc Sample Date: 01/01/20 Received Date: 01/15/20 Completed: 01/21/20

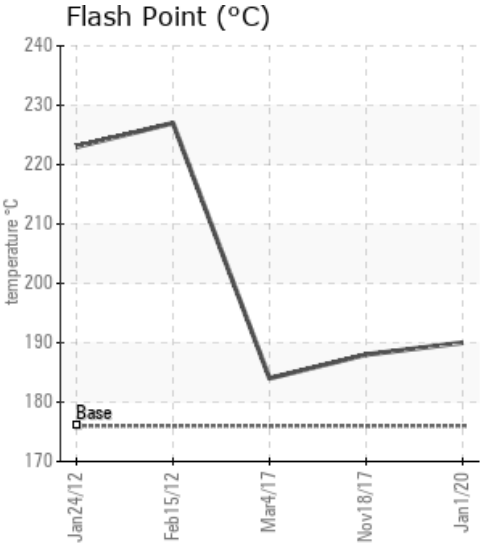
Recommendation: Sample appears normal. Sample at next scheduled interval. Be sure to purge oil at sample point before filling container.

Comments: (GCD) % < 335°C is marginally high.

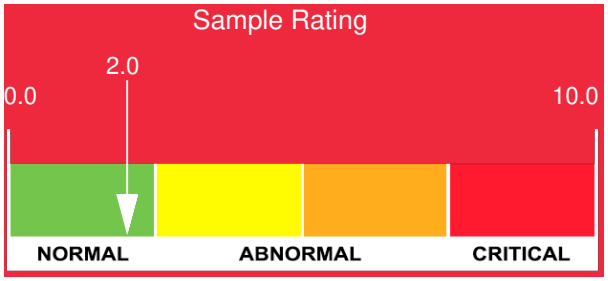
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/01/20	01/15/20	7y		374 / 190	9.9	9.6	0.017	0.096	611 / 322	647 / 342	739 / 393	43.27
11/18/17	12/04/17	5y		370 / 188	3.6	9.4	0.019	0.021	619 / 326	689 / 365	842 / 450	23.02
03/04/17	03/15/17	5y	SST #7 REBOILER	363 / 184	364.3	9.0	0.028	0.013	616 / 324	674 / 357	791 / 421	30.01
02/15/12	02/22/12	0y	BOTTOM DRAIN	441 / 227	40	31.5	0.11	0.005	689 / 365	795 / 424	891 / 477	3.766
01/24/12	01/31/12		NA	433 / 223	21	36.7	1.36	0.219	699 / 370	787 / 420	882 / 472	0.789
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	35.0

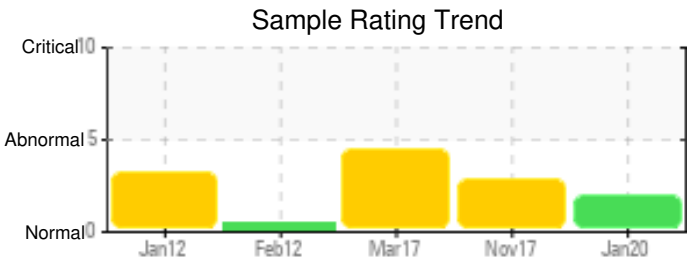






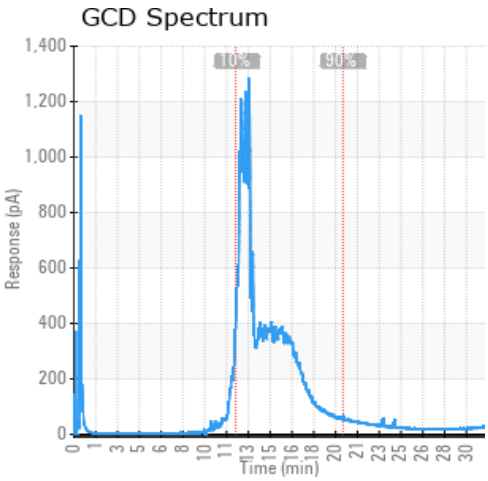
PETRO-CANADA LUBRICANTS

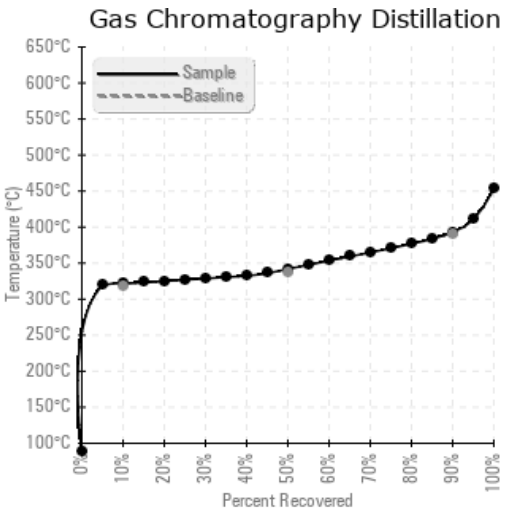


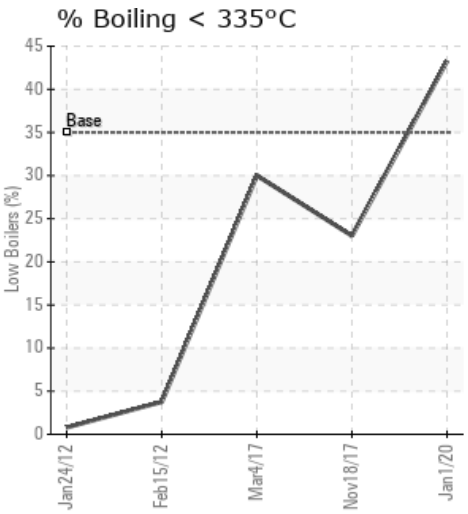


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/01/20	0	0	0	0	0	0	0	0	0	0	11	8	0	0	0	0	0	0	0	0	0	0	236	0
11/18/17	0	0	0	0	0	1	0	0	0	0	11	9	0	0	0	0	0	0	0	0	0	0	233	0
03/04/17	0	0	0	0	0	1	1	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	232	0
02/15/12	1	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	0	6	6	25	0	232	23
01/24/12	0	0	0	0	0	0	1	0	0	0	6	0	0	0	0	1	0	0	4	0	3	1	237	2
Baseline Data			0	0						0			0	0					0				270	

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







Historical Comments

11/18/17	(GCD) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is abnormally high. It appears there is a process leak as the silicon has doubled in comparison to last time. (GCD) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is abnormally high.
03/04/17	Water level is high. Viscosity has dropped significantly. Determine where water has entered system. Resample in one month to determine if this sample was taken improperly or if the sample reflects actual condition of the oil. Purge oil at collection point to get a respective sample. Water contamination levels are marginally high. ppm Water contamination levels are marginally high. (GCD) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is marginally high.
02/15/12	The oil appears to be in great shape, which is expected since it's after a full cleaning of the Vaporizer system. We see the TAN is higher than fresh oil and we observe some Calcium and Zinc which are not part of the Calflo AF. We are suspecting they might come from the cleaning solution or flushing oil used, which may have been a AW hydraulic oil or something with detergents in it. Let's re-sample in 6 months time to monitor the oil condition and degradation rate in those Vaporizer systems.
01/24/12	The oil appear to be oxidized. The Total Acid Number is elevated at 1.4. The viscosity is also higher than fresh oil which is also a sign of oxidation, even though the additives seem to be present at healthy levels. Which bring the question if the acid number is due to some acid contamination, maybe through a chlorosilane leak, but the silicon is very low at 6 ppm.