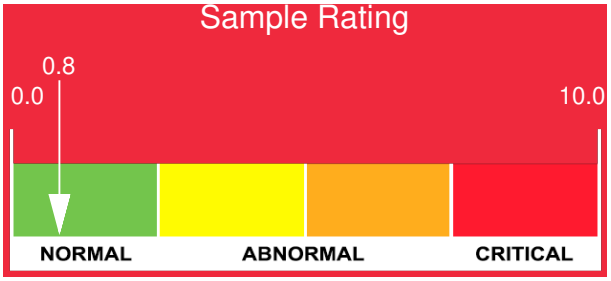
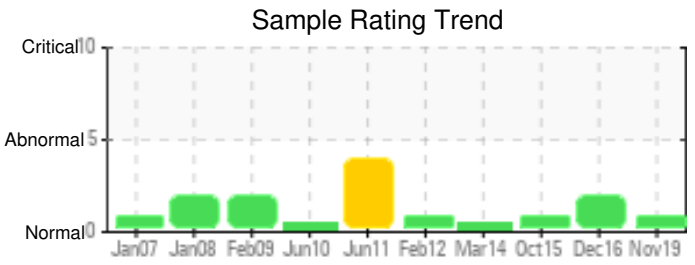




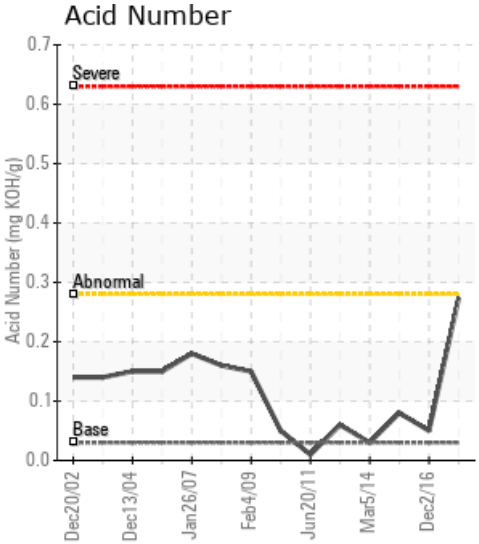
HEAT TRANSFER SYSTEM

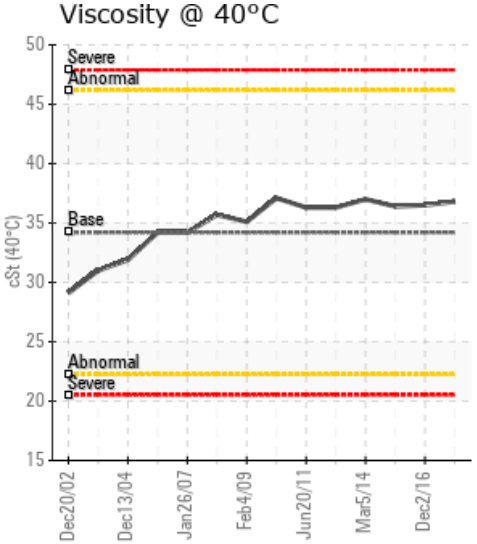
Customer: PTRHTF10019	System Information	Sample Information
LAKESIDE INDUSTRIES-PLANT 110 PLANT 110 - 4850 NW FRONT AVE PORTLAND, OR 97210 USA Attn: PATRICK L. DUNIGAN Tel: (503)227-6136 E-Mail: pat.dunigan@lakesideindustries.com	System Volume: 409 gal Bulk Operating Temp: 360F / 182C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: HYWAY HEAT GENCOR	Lab No: 02329287 Analyst: Ron LeBlanc Sample Date: 11/05/19 Received Date: 12/30/19 Completed: 01/13/20 Ron LeBlanc Ronald.LeBlancSr@petrocanadalsp.com

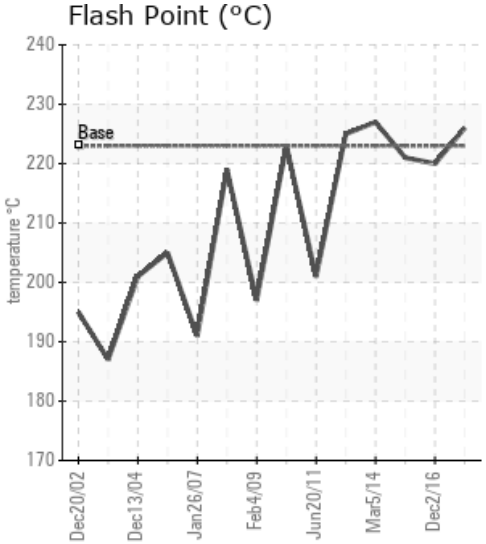
Recommendation: Sample is normal. Sample again at next scheduled date.

Comments: FG

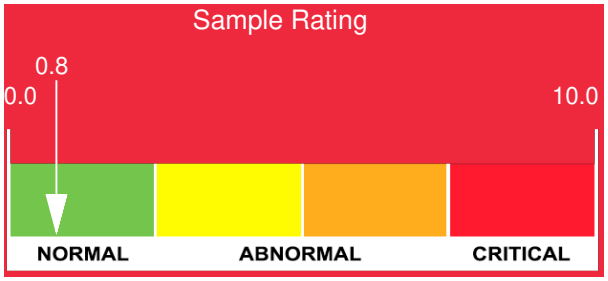
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/05/19	12/30/19	69m	RETURN	439 / 226	11.8	36.8	0.274	0.220	730 / 388	812 / 433	910 / 488	0.00
12/02/16	12/15/16	33m	BEFORE FILTER	428 / 220	13.3	36.5	0.05	0.108	714 / 379	818 / 437	957 / 514	1.46
10/15/15	10/30/15	0m	AFTER FILTER	430 / 221	22.8	36.4	0.08	0.094	713 / 379	811 / 433	922 / 495	1.41
03/05/14	03/20/14	9m	AFTER FILTER RETURN	441 / 227	0.00	37.0	0.03	0.160	714 / 379	817 / 436	925 / 496	1.62
02/13/12	02/20/12	10m	RETURN LINE	437 / 225	95	36.3	0.06	0.023	697 / 370	809 / 432	922 / 495	4.648
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

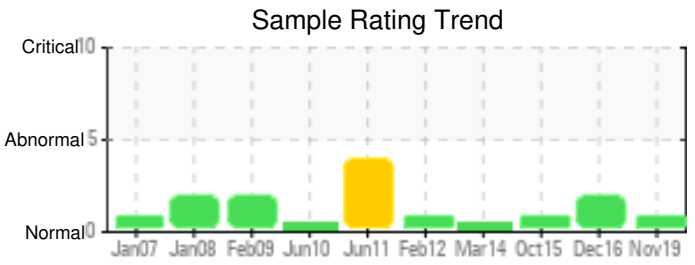






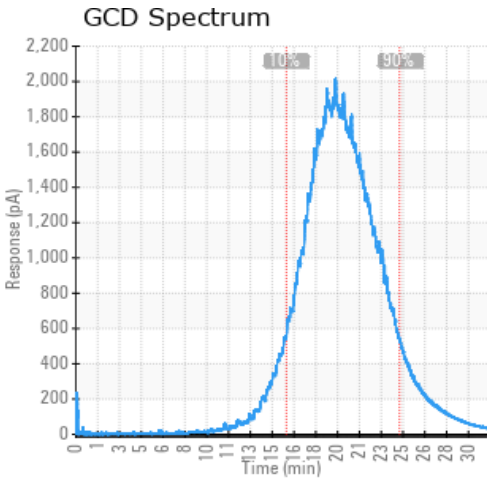
PETRO-CANADA LUBRICANTS

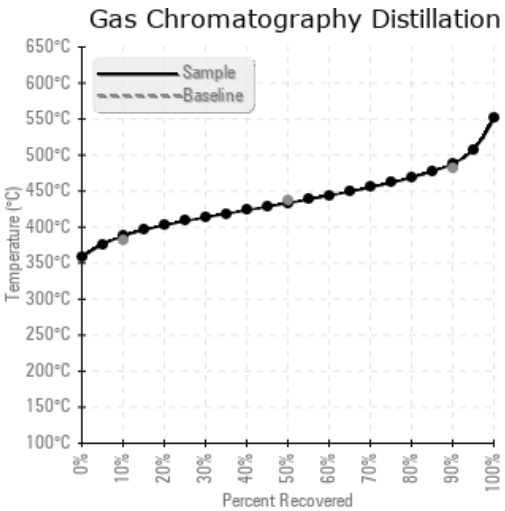


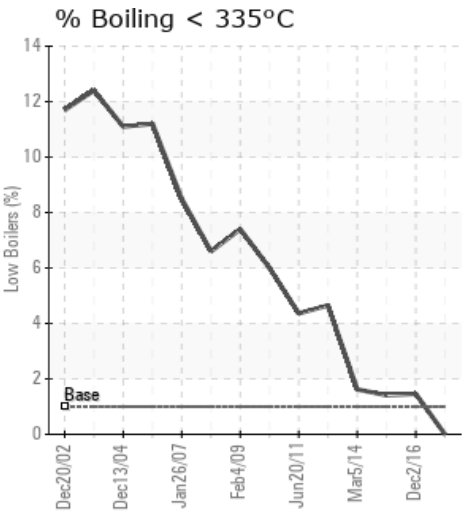


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
11/05/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12/02/16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/15/15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/05/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
02/13/12	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	7	2
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

12/02/16	(GCD) 90% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high.
10/15/15	The 90% distillation point has remained consistent over the last 4 samples. TAN has increased slightly over the last 4 samples. Resample in 6 months. (GCD) 90% Distillation Point is marginally high.
03/05/14	The oil condition appears to be similar to what it was in Feb 2012. Test results indicate the oil is in good condition and safe to use. Sample yearly to monitor the fluid condition.
02/13/12	The oil condition is virtually unchanged since the last sample. TAN is low, flash point is strong, viscosity is normal, no evidence of thermal degradation. Re-sample in 9 months or so to keep monitoring the fluid condition.