

## [JUPITER, KAKWA / 01-35-60-5-W6] H-720

**Customer: PTRHTF20175**  
 QUADRA CHEMICALS  
 7802 98 STREET  
 CLAIRMONT, AB T0H 0W0 Canada  
 Attn: Quadra Samples  
 Tel:  
 E-Mail: quadra\_samples@quadra.ca

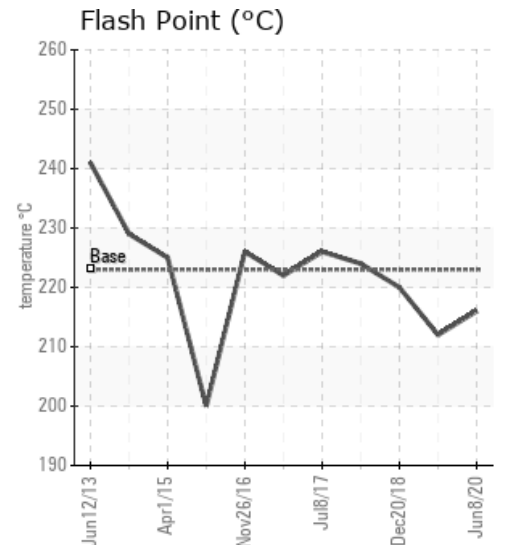
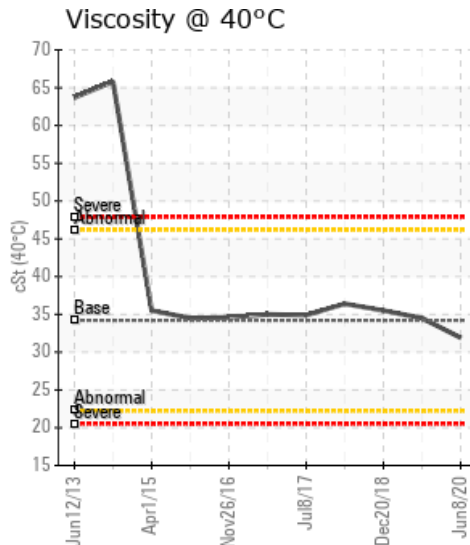
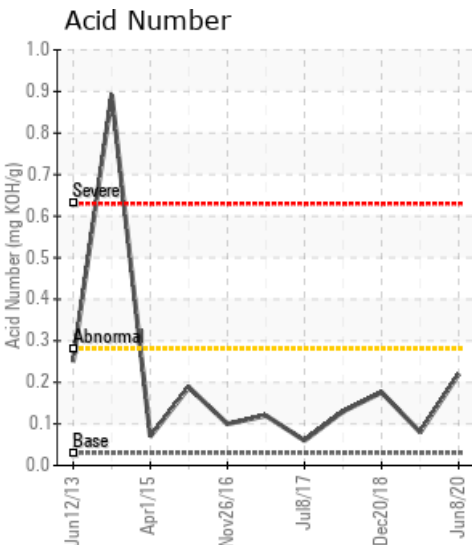
**System Information**  
 System Volume: 19600 ltr  
 Bulk Operating Temp: 338F / 170C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA PETRO-THERM  
 Make:

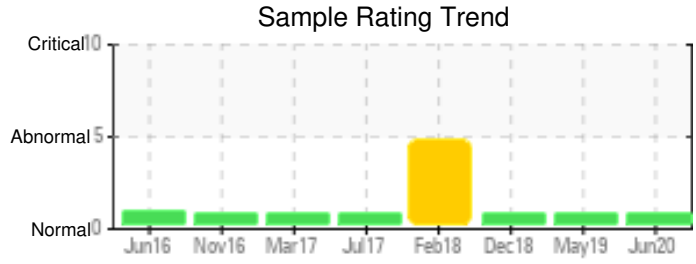
**Sample Information**  
 Lab No: 02360788  
 Analyst: Clinton Buhler  
 Sample Date: 06/08/20  
 Received Date: 06/22/20  
 Completed: 06/30/20  
 Clinton Buhler  
 Clinton.Buhler@PetroCanadaLSP.com

Recommendation: The fluid is in a good condition and suitable for further use. Venting of low boiler vapor to atmosphere on a regular basis is recommended to maintain the vapor % <335C close to that of the fresh oil. Please re-sample in 12 months.

Comments:

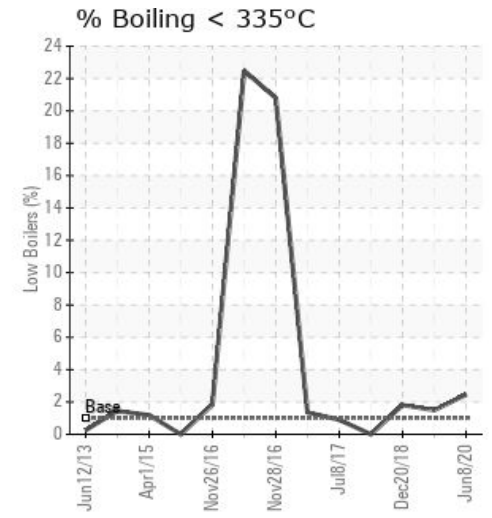
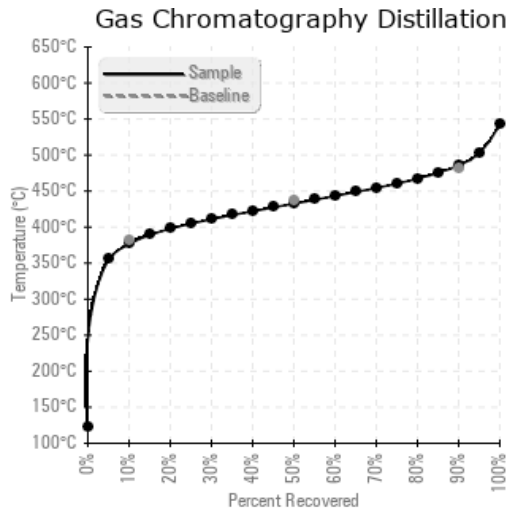
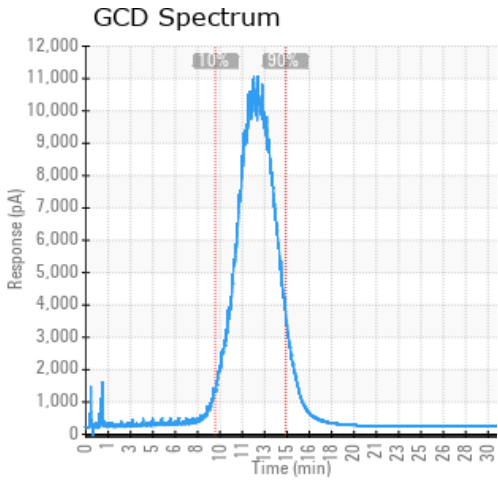
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/08/20	06/22/20	3y	PUMP DISCHARGE	421 / 216	13.2	31.9	0.22	0.421	710 / 377	811 / 433	906 / 486	2.45
05/30/19	06/06/19	0y		414 / 212	14.1	34.5	0.080	0.427	706 / 374	807 / 431	909 / 487	1.49
12/20/18	01/21/19	54y	DISCHARGE	428 / 220	145.1	35.5	0.176	0.433	692 / 367	789 / 420	883 / 473	1.81
02/09/18	02/20/18	54y		435 / 224	479.3	36.4	0.13	0.532	745 / 396	820 / 438	909 / 487	0.00
07/08/17	07/28/17	48y		439 / 226	255.1	34.9	0.06	0.359	719 / 382	816 / 436	920 / 494	0.90
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
06/08/20	38	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
05/30/19	40	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0
12/20/18	73	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	1	0	0	0
02/09/18	186	0	0	0	0	0	0	0	0	0	3	4	0	0	0	0	4	0	0	0	6	0	1	0
07/08/17	75	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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



Historical Comments	
05/30/19	Sample results indicate that the fluid is suitable for continued service. Solids content of 0.427% comparable to last analysis which is positive in that it hasn't increased, but solids content still undesirable. Plans for fluid filtration would be recommended if solids content increases much beyond 0.5%. Continue regular venting of fluid to remove low boiling vapors. Please re-sample in 6-12 months
12/20/18	Sample results indicate that the fluid is suitable for continued service. % boil-off has increased since last sample which can indicate some thermal degradation. Regular venting of low boiling vapors from the expansion tank is recommended. Solids continues to be present. Please ensure blanket gas is operational. Please re-sample in 6 months
02/09/18	Sample results indicate that the fluid itself is suitable for continued service. However, Iron, pentane insolubles and water levels may indicate that there is corrosion ongoing or that possibly the sample was drawn from a dead leg that may not have been purged thoroughly. Consider investigating source of Iron and Water in system. Please ensure future samples are drawn from a hot, turbulent zone that is representative of system condition, and not from still, low lying zones with little fluid movement. Please ensure sample card is completely filled out with machine # and time on fluid. Re-sample in 6 months. Iron ppm levels are marginal. Pentane Insolubles levels are abnormally high. ppm Water contamination levels are marginally high. Water contamination levels are marginally high.
07/08/17	90% GCD slightly elevated from new spec yet unchanged from previous sample. Elevated 90% GCD can indicate Oxidation of the fluid, however Acid Number is low which is ideal and Pentane Insolubles (solids) remains unchanged from last sample. Fluid is suitable for continued use. Please re-sample in 12 months.

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