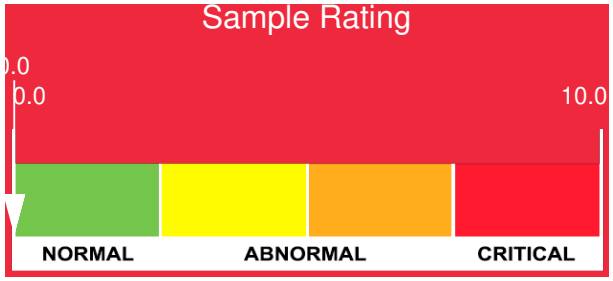
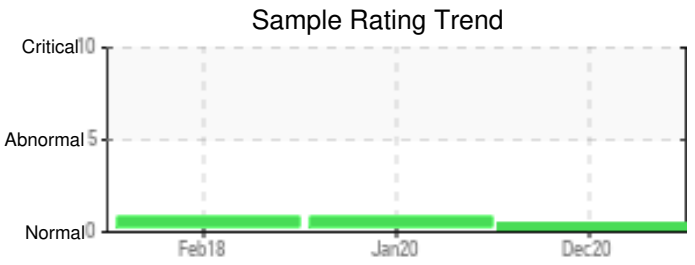




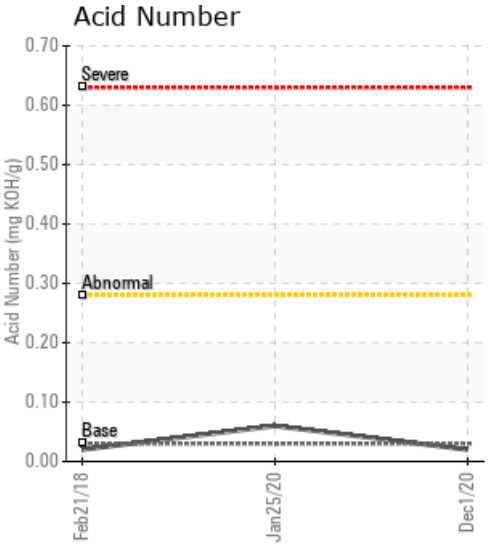
[LSD 08-10-68-08-W6 Clairmont] HEAT MEDIUM

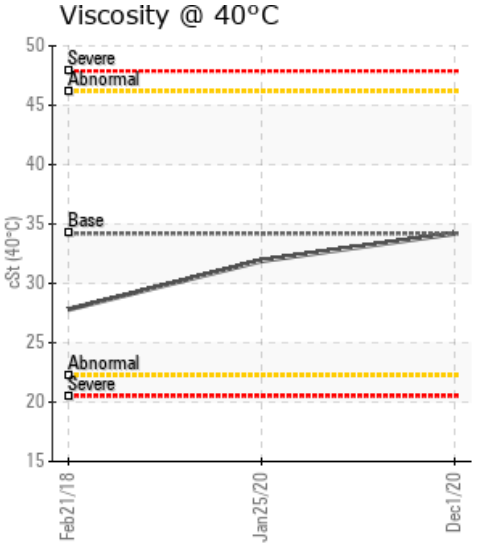
Customer: PTRHTF20245	System Information	Sample Information
NUVISTA ENERGY LTD RR 93 WEMBLY, AB T8W 0H6 Canada Attn: Eldon Weaver Tel: (780)831-5603 E-Mail: eweaver@nvaenergy.com	System Volume: 4000 gal Bulk Operating Temp: 536F / 280C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: ALCO	Lab No: 02397475 Analyst: Clinton Buhler Sample Date: 12/01/20 Received Date: 01/14/21 Completed: 01/18/21 Clinton Buhler Clinton.Buhler@PetroCanadaLSP.com

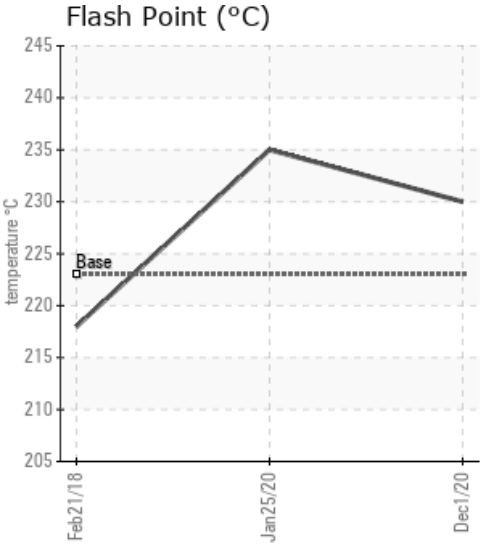
Recommendation: Analysis results indicate that the heat transfer fluid is in suitable condition for continued service.Please re-sample in 12 months

Comments:

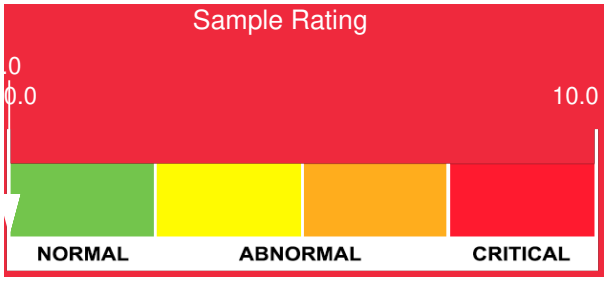
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/01/20	01/14/21	6y	PUMP DISCHARGE	446 / 230	15.3	34.2	0.02	0.066	733 / 390	816 / 436	910 / 488	0.43
01/25/20	02/04/20	2y	RETURN LOOP	455 / 235	9.9	31.9	0.060	0.097	770 / 410	817 / 436	888 / 476	0.00
02/21/18	02/27/18	2y		424 / 218	0.00	27.8	0.020	0.052	738 / 392	790 / 421	880 / 471	0.00
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

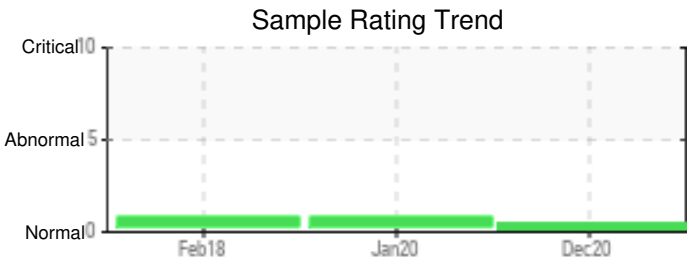






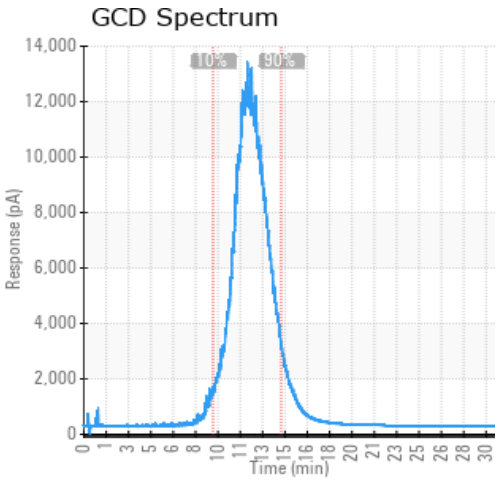
PETRO-CANADA LUBRICANTS

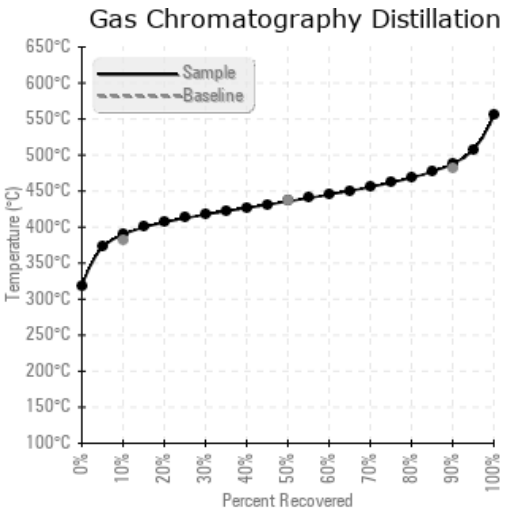


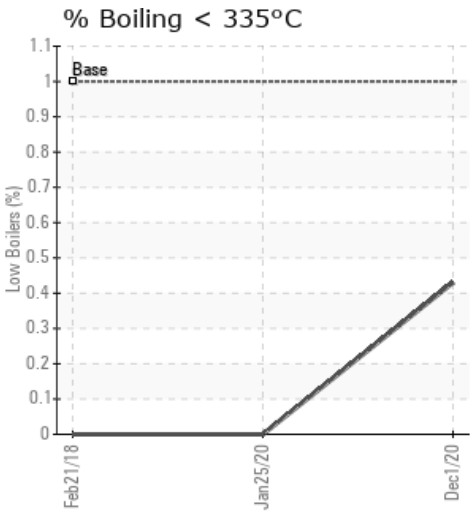


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
12/01/20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01/25/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/21/18	2	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

01/25/20	Sample results indicate that the heat transfer fluid is suitable for continued service. (GCD) 10% Distillation Point has increased as has the fluids Flash Point and viscosity but are still within acceptable ranges. Continue to monitor and re-sample in 6 months.
02/21/18	Slightly reduced viscosity and flashpoint, along with reduced 90% distillation temperature can indicate thermal degradation (cracking) of the heat transfer fluid.Ensure that system is operating within design parameters and within the design limitations of the heat transfer fluid.Perform venting of the expansion tank to vent off the low boiling vapors. Re-sample fluid in 6-12 months (GCD) 90% Distillation Point is marginally low.