



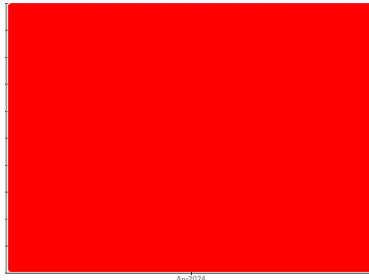
OIL ANALYSIS REPORT

Sample Rating Trend

WATER



Machine Id
HED HED
Component
Diesel Engine
Fluid
PETRO CANADA DURON-E 15W40 (--- GAL)



DIAGNOSIS

▲ Recommendation

We advise that you check for the source of the coolant leak. Recommend drain oil if not already done and flush with cleaner before refilling with oil. We recommend an early resample to monitor this condition. Please note that the oil was too thick and contaminated to perform some of the normal laboratory tests.

▲ Wear

Cylinder, crank, or cam shaft wear is indicated.

▲ Contamination

Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil. There is a high concentration of water present in the oil.

▲ Fluid Condition

The oil is no longer serviceable due to the presence of contaminants.

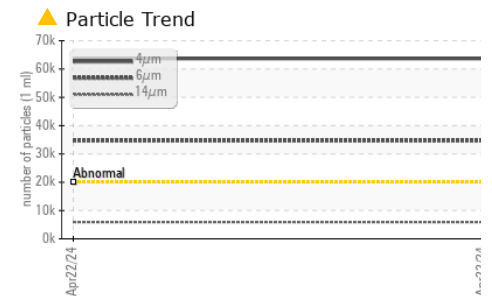
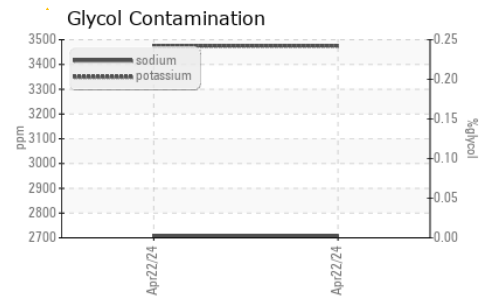
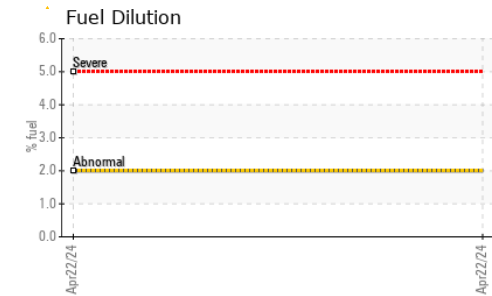
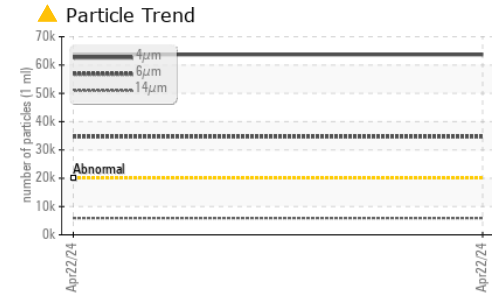
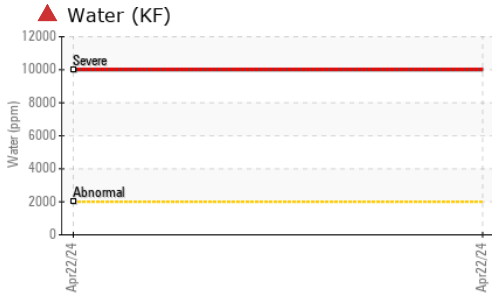
SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			KFS0003921	---	---
Sample Date	Client Info			22 Apr 2024	---	---
Machine Age	hrs	Client Info		0	---	---
Oil Age	hrs	Client Info		0	---	---
Oil Changed	Client Info			N/A	---	---
Sample Status				SEVERE	---	---

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	▲ 105	---	---
Chromium	ppm	ASTM D5185m	>20	1	---	---
Nickel	ppm	ASTM D5185m	>4	0	---	---
Titanium	ppm	ASTM D5185m		<1	---	---
Silver	ppm	ASTM D5185m	>3	0	---	---
Aluminum	ppm	ASTM D5185m	>20	11	---	---
Lead	ppm	ASTM D5185m	>40	<1	---	---
Copper	ppm	ASTM D5185m	>330	22	---	---
Tin	ppm	ASTM D5185m	>15	3	---	---
Vanadium	ppm	ASTM D5185m		0	---	---
Cadmium	ppm	ASTM D5185m		0	---	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	1	151	---	---
Barium	ppm	ASTM D5185m	1	1	---	---
Molybdenum	ppm	ASTM D5185m	60	249	---	---
Manganese	ppm	ASTM D5185m	1	2	---	---
Magnesium	ppm	ASTM D5185m	1010	736	---	---
Calcium	ppm	ASTM D5185m	1070	1381	---	---
Phosphorus	ppm	ASTM D5185m	1150	1123	---	---
Zinc	ppm	ASTM D5185m	1270	1348	---	---
Sulfur	ppm	ASTM D5185m	2060	3380	---	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	15	---	---
Sodium	ppm	ASTM D5185m		● 2709	---	---
Potassium	ppm	ASTM D5185m	>20	▲ 3475	---	---
Fuel	%	ASTM D3524	>2.0	2.0	---	---
Water	%	ASTM D6304	>0.2	▲ 1.00	---	---
ppm Water	ppm	ASTM D6304	>2000	▲ 10000	---	---
Glycol	%	*ASTM D2982		NEG	---	---

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>20000	▲ 63673	---	---
Particles >6µm		ASTM D7647	>5000	▲ 34686	---	---
Particles >14µm		ASTM D7647	>640	▲ 5903	---	---
Particles >21µm		ASTM D7647	>160	▲ 1988	---	---
Particles >38µm		ASTM D7647	>40	▲ 307	---	---
Particles >71µm		ASTM D7647	>10	▲ 31	---	---
Oil Cleanliness		ISO 4406 (c)	>21/19/16	▲ 23/22/20	---	---

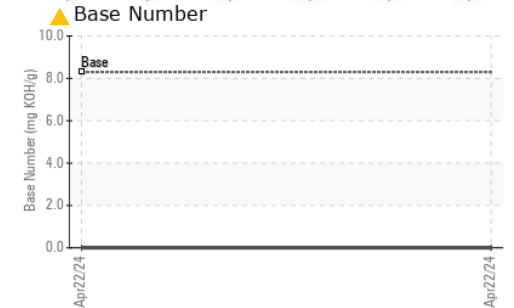
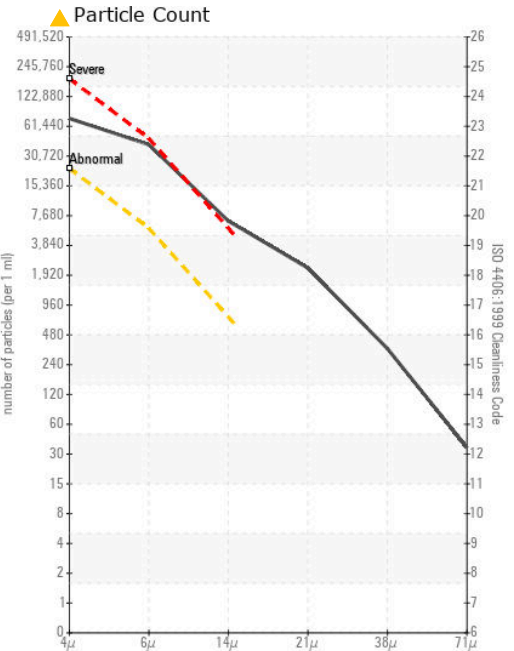
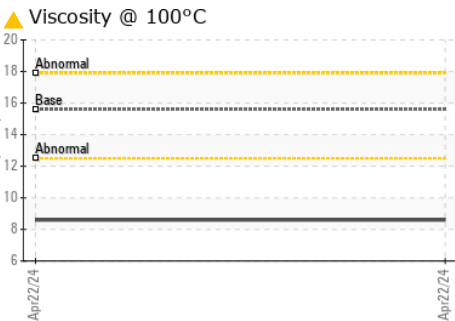
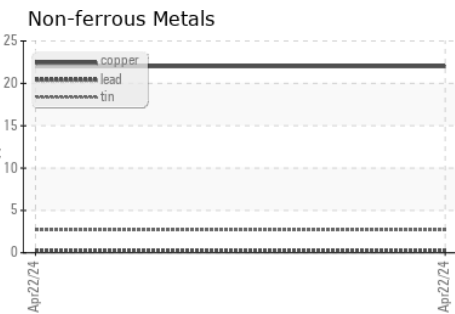
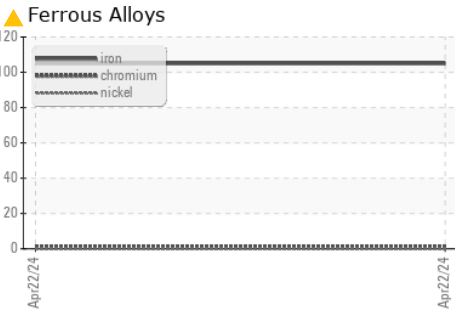


FLUID DEGRADATION	method	limit/base	current	history1	history2
Base Number (BN)	mg KOH/g	ASTM D2896	8.3	▲ 0.0	---

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	---
Precipitate	scalar	*Visual	NONE	NONE	---
Silt	scalar	*Visual	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	---
Appearance	scalar	*Visual	NORML	● THICK	---
Odor	scalar	*Visual	NORML	NORML	---
Emulsified Water	scalar	*Visual	>0.2	▲ 1.0%	---
Free Water	scalar	*Visual		NEG	---

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.6	▲ 8.6	---

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : KFS0003921

Lab Number : 06157850

Unique Number : 10993273

Test Package : MOB 2 (Additional Tests: FuelDilution, Glycol, KF, PercentFuel, PrtCount)

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Received : 23 Apr 2024

Tested : 07 May 2024

Diagnosed : 07 May 2024 - Doug Bogart

CONSTELLIUM

4805 SECOND STREET

MUSCLE SHOALS, AL

US 35661

Contact: Randy Nichols

randall.nichols@constellium.com

T: (256)386-6956

F: