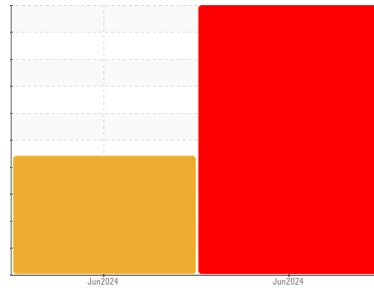


PROBLEM SUMMARY

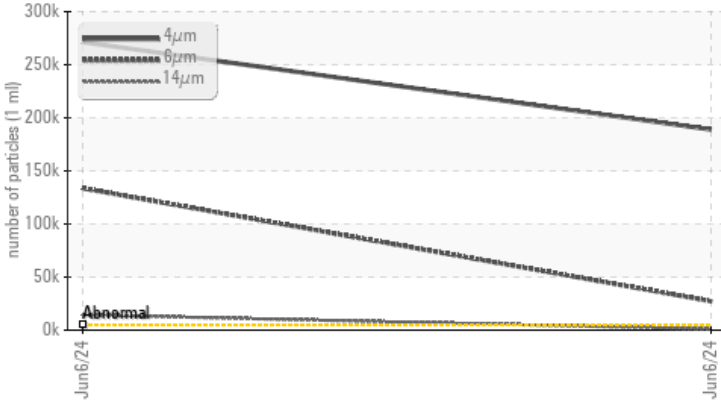
Machine Id
HRM #2
Component
Lube System
Fluid
PETRO CANADA ENDURATEX EP 460 (--- GAL)

Sample Rating Trend



COMPONENT CONDITION SUMMARY

▲ Particle Trend



RECOMMENDATION

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you follow the water drain-off procedure for this component. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

PROBLEMATIC TEST RESULTS

Sample Status			SEVERE	SEVERE	---
Particles >4µm	ASTM D7647	>5000	▲ 271278	▲ 188962	---
Particles >6µm	ASTM D7647	>1300	▲ 133648	▲ 27200	---
Particles >14µm	ASTM D7647	>160	▲ 14356	▲ 990	---
Particles >21µm	ASTM D7647	>40	▲ 3326	▲ 271	---
Particles >38µm	ASTM D7647	>10	▲ 89	10	---
Oil Cleanliness	ISO 4406 (c)	>19/17/14	▲ 25/24/21	▲ 25/22/17	---
Free Water	scalar	Visual*	▲ 1%	NEG	---

Customer Id: PCA_164787
Sample No.: PC0070433
Lab Number: 02640870
Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@wearcheck.com

To change component or sample information:
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Water Drain-off	---	---	?	We advise that you follow the water drain-off procedure for this component.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Information Required	---	---	?	NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.
Check Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

HISTORICAL DIAGNOSIS

ISO

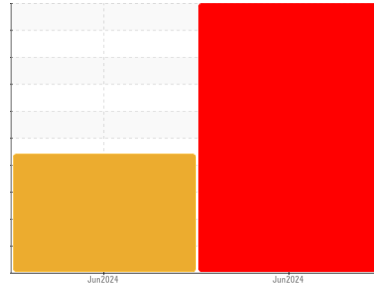


06 Jun 2024 Diag: Wes Davis

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report





Machine Id
HRM #2
Component
Lube System
Fluid

PETRO CANADA ENDURATEX EP 460 (--- GAL)

DIAGNOSIS

▲ Recommendation

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you follow the water drain-off procedure for this component. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

Wear

All component wear rates are normal.

▲ Contamination

There is a high amount of particulates (2 to 100 microns in size) present in the oil. Free water present.

Fluid Condition

The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			PC0070433	PC0070428	---
Sample Date	Client Info			06 Jun 2024	06 Jun 2024	---
Machine Age	days	Client Info		14	14	---
Oil Age	days	Client Info		0	0	---
Oil Changed	Client Info			N/A	N/A	---
Sample Status				SEVERE	SEVERE	---

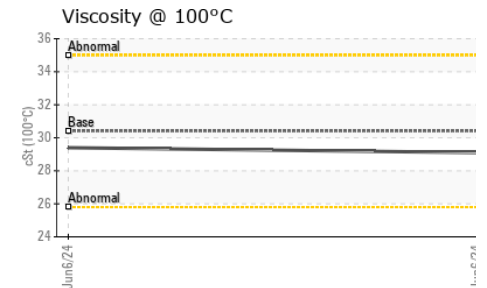
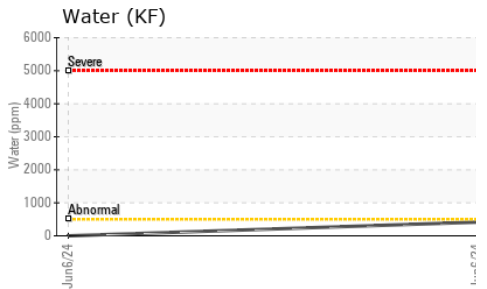
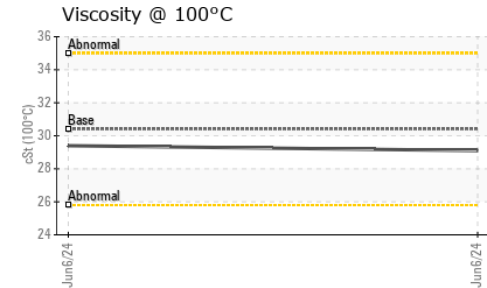
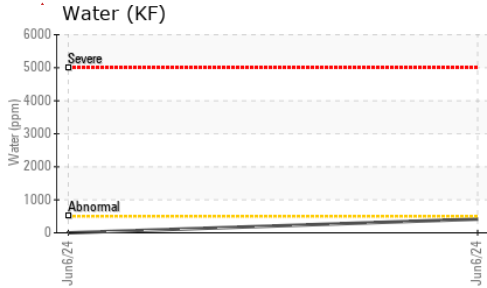
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	2	<1	---
Chromium	ppm	ASTM D5185(m)	>20	0	0	---
Nickel	ppm	ASTM D5185(m)	>20	0	0	---
Titanium	ppm	ASTM D5185(m)		0	0	---
Silver	ppm	ASTM D5185(m)		0	0	---
Aluminum	ppm	ASTM D5185(m)	>20	5	0	---
Lead	ppm	ASTM D5185(m)	>20	0	0	---
Copper	ppm	ASTM D5185(m)	>20	1	<1	---
Tin	ppm	ASTM D5185(m)	>20	0	0	---
Antimony	ppm	ASTM D5185(m)		0	0	---
Vanadium	ppm	ASTM D5185(m)		0	0	---
Beryllium	ppm	ASTM D5185(m)		0	0	---
Cadmium	ppm	ASTM D5185(m)		0	0	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	55	10	15	---
Barium	ppm	ASTM D5185(m)	0	0	0	---
Molybdenum	ppm	ASTM D5185(m)	0	0	0	---
Manganese	ppm	ASTM D5185(m)	0	0	0	---
Magnesium	ppm	ASTM D5185(m)	2	2	1	---
Calcium	ppm	ASTM D5185(m)	6	13	3	---
Phosphorus	ppm	ASTM D5185(m)	240	164	160	---
Zinc	ppm	ASTM D5185(m)	3	6	5	---
Sulfur	ppm	ASTM D5185(m)	10310	6587	6552	---
Lithium	ppm	ASTM D5185(m)		<1	<1	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	10	3	---
Sodium	ppm	ASTM D5185(m)		<1	0	---
Potassium	ppm	ASTM D5185(m)	>20	1	<1	---
Water	%	ASTM D6304*	>0.05	0.041	---	---
ppm Water	ppm	ASTM D6304*	>500	415	---	---

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	▲ 271278	▲ 188962	---
Particles >6µm		ASTM D7647	>1300	▲ 133648	▲ 27200	---
Particles >14µm		ASTM D7647	>160	▲ 14356	▲ 990	---
Particles >21µm		ASTM D7647	>40	▲ 3326	▲ 271	---
Particles >38µm		ASTM D7647	>10	▲ 89	10	---
Particles >71µm		ASTM D7647	>3	4	2	---
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ 25/24/21	▲ 25/22/17	---

OIL ANALYSIS REPORT



FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D974*	0.5	0.29	0.31	---

VISUAL

	method	limit/base	current	history1	history2	
White Metal	scalar	Visual*	NONE	NONE	NONE	---
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	---
Precipitate	scalar	Visual*	NONE	VLITE	NONE	---
Silt	scalar	Visual*	NONE	NONE	NONE	---
Debris	scalar	Visual*	NONE	VLITE	NONE	---
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	---
Appearance	scalar	Visual*	NORML	NORML	NORML	---
Odor	scalar	Visual*	NORML	NORML	NORML	---
Emulsified Water	scalar	Visual*	>0.05	NEG	NEG	---
Free Water	scalar	Visual*		1%	NEG	---

FLUID PROPERTIES

	method	limit/base	current	history1	history2	
Visc @ 40°C	cSt	ASTM D7279(m)	452	437	434	---
Visc @ 100°C	cSt	ASTM D7279(m)	30.41	29.1	29.4	---
Viscosity Index (VI)	Scale	ASTM D2270*	97	94	95	---

SAMPLE IMAGES

	method	limit/base	current	history1	history2
Color					no image
Bottom					no image

GRAPHS

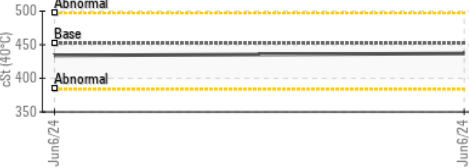
Ferrous Alloys



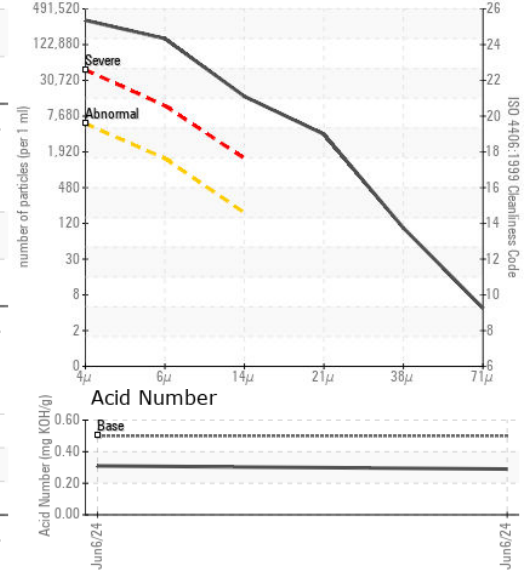
Non-ferrous Metals



Viscosity @ 40°C



Particle Count



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **Petro-Canada Technical/Luc LeBlanc**
Sample No. : PC0070433 **Received** : 10 Jun 2024
Lab Number : **02640870** **Tested** : 12 Jun 2024
Unique Number : 5798409 **Diagnosed** : 12 Jun 2024 - Kevin Marson
Test Package : IND 2 (Additional Tests: KF, KV100, VI)

To discuss this sample report, contact Customer Service at 1-800-268-2131.

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

Validity of results and interpretation are based on the sample and information as supplied.

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 Contact: Luc LeBlanc
 luc.leblanc@HFSinclair.com

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 F: (905)403-6740