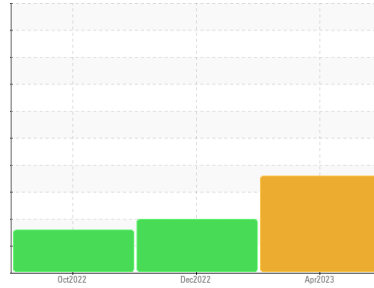




PROBLEM SUMMARY

Sample Rating Trend



WEAR

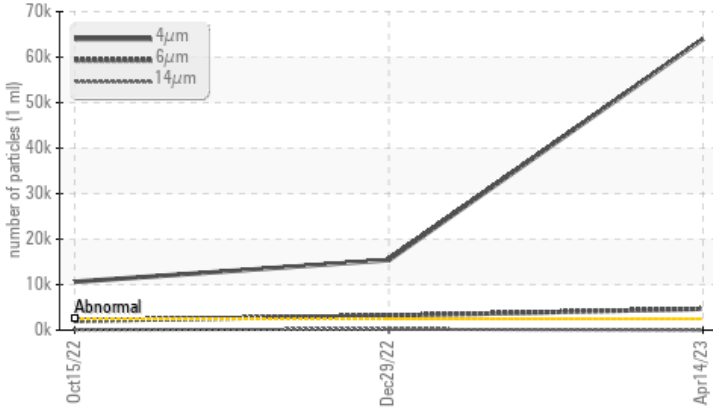


Area
Steering Gears
 Machine Id
Steering Gear Starboard

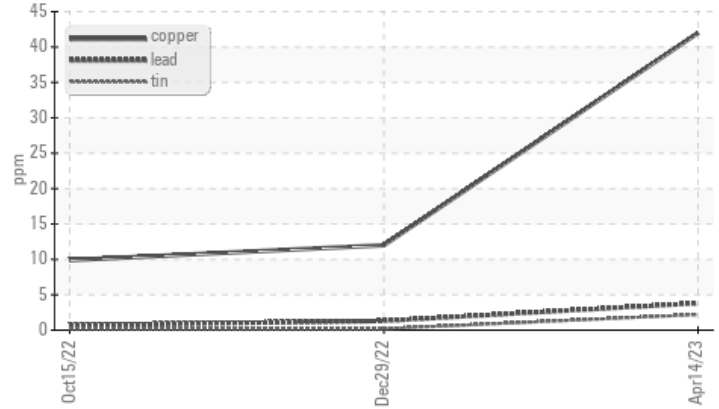
Component
Rear Right Steering
 Fluid
PETRO CANADA HYDREX XV ALL SEASON HYDRAULIC OIL (--- GAL)

COMPONENT CONDITION SUMMARY

Particle Trend



Non-ferrous Metals



RECOMMENDATION

Check seals and/or filters for points of contaminant entry. 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 recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	ABNORMAL	ABNORMAL
Copper	ppm	ASTM D5185(m)	>50	▲ 42	12	10
Tin	ppm	ASTM D5185(m)	>5	▲ 2	<1	<1
Particles >4µm		ASTM D7647	>2500	● 63977	▲ 15396	▲ 10627
Particles >6µm		ASTM D7647	>640	▲ 4684	▲ 3175	▲ 2081
Oil Cleanliness		ISO 4406 (c)	>18/16/13	● 23/19/11	▲ 21/19/15	▲ 21/18/14

Customer Id: VMASSEY
 Sample No.: WC0763476
 Lab Number: 02552851
 Test Package: MAR 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	MISSED	Aug 16 2023	?	We recommend you service the filters on this component.
Resample	MISSED	Aug 16 2023	?	Resample in 30-45 days to monitor this situation.
Check Breathers	MISSED	Aug 16 2023	?	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 Seals	MISSED	Aug 16 2023	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

29 Dec 2022 Diag: Kevin Marson

ISO



We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition. All component wear rates are normal. Oil Cleanliness are abnormally high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. Particles >4µm are abnormally high. Particles >6µm are abnormally high. The AN level is acceptable for this fluid. The fluid is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report



15 Oct 2022 Diag: Wes Davis

ISO



The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. Oil Cleanliness are abnormally high. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Particles >14µm are notably high. The AN level is acceptable for this fluid. The fluid is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

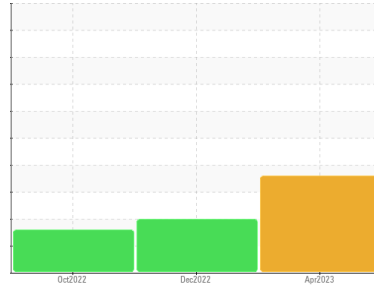
view report





OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area
Steering Gears
 Machine Id
Steering Gear Starboard
 Component
Rear Right Steering
 Fluid
PETRO CANADA HYDREX XV ALL SEASON HYDRAULIC OIL (--- GAL)

DIAGNOSIS

Recommendation

Check seals and/or filters for points of contaminant entry. 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 recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.

Wear

Copper and tin ppm levels are noted. All other component wear rates are normal.

Contamination

There is a high amount of silt (particulates < 14 microns in size) present in the fluid.

Fluid Condition

The AN level is acceptable for this fluid. The fluid is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0763476	WC0763490	WC0707623
Sample Date	Client Info		14 Apr 2023	29 Dec 2022	15 Oct 2022
Machine Age	hrs	Client Info	0	0	0
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	Oil Added	N/A
Sample Status			SEVERE	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m)	>50	1	<1	1
Chromium	ppm	ASTM D5185(m)	>15	0	0	0
Nickel	ppm	ASTM D5185(m)	>5	<1	0	0
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>5	<1	<1	0
Lead	ppm	ASTM D5185(m)	>10	4	1	<1
Copper	ppm	ASTM D5185(m)	>50	▲ 42	12	10
Tin	ppm	ASTM D5185(m)	>5	▲ 2	<1	<1
Antimony	ppm	ASTM D5185(m)		<1	<1	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185(m)	0	<1	<1	0
Barium	ppm	ASTM D5185(m)	0	0	0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm	ASTM D5185(m)	1	0	0	0
Magnesium	ppm	ASTM D5185(m)	0	<1	<1	<1
Calcium	ppm	ASTM D5185(m)	100	108	108	105
Phosphorus	ppm	ASTM D5185(m)	670	718	710	711
Zinc	ppm	ASTM D5185(m)	850	861	852	839
Sulfur	ppm	ASTM D5185(m)	1600	1687	1711	1667
Lithium	ppm	ASTM D5185(m)		<1	<1	<1

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	>15	1	<1	<1
Sodium	ppm	ASTM D5185(m)		<1	0	0
Potassium	ppm	ASTM D5185(m)	>20	<1	<1	<1

FLUID CLEANLINESS

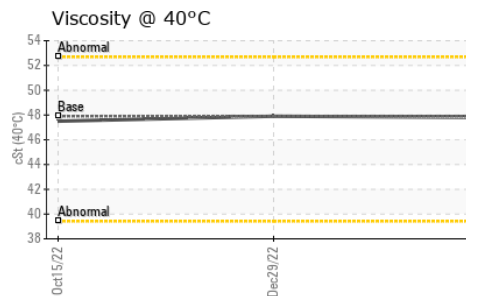
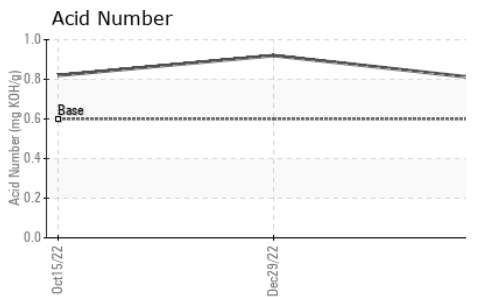
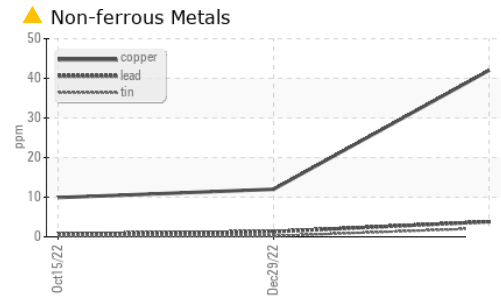
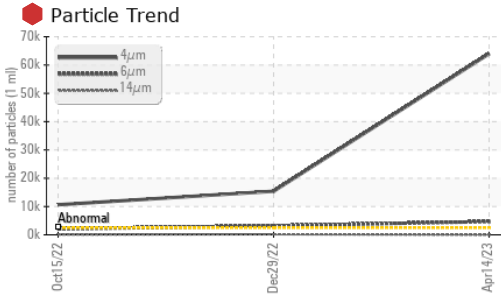
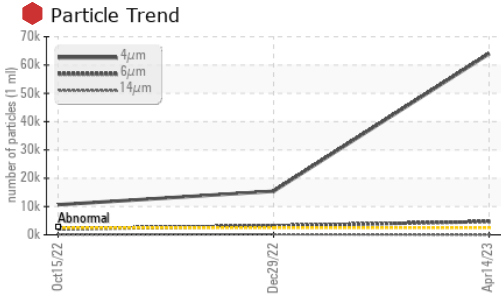
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	● 63977	▲ 15396	▲ 10627
Particles >6µm	ASTM D7647	>640	▲ 4684	▲ 3175	▲ 2081
Particles >14µm	ASTM D7647	>80	13	▲ 205	▲ 90
Particles >21µm	ASTM D7647	>20	3	▲ 47	23
Particles >38µm	ASTM D7647	>4	1	3	0
Particles >71µm	ASTM D7647	>3	1	1	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	● 23/19/11	▲ 21/19/15	▲ 21/18/14

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D974*	0.60	0.80	0.92	0.82



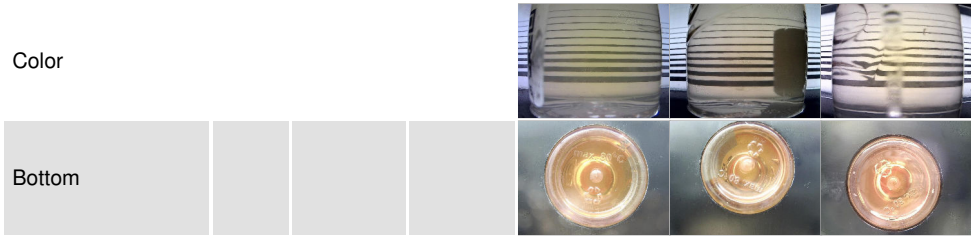
OIL ANALYSIS REPORT



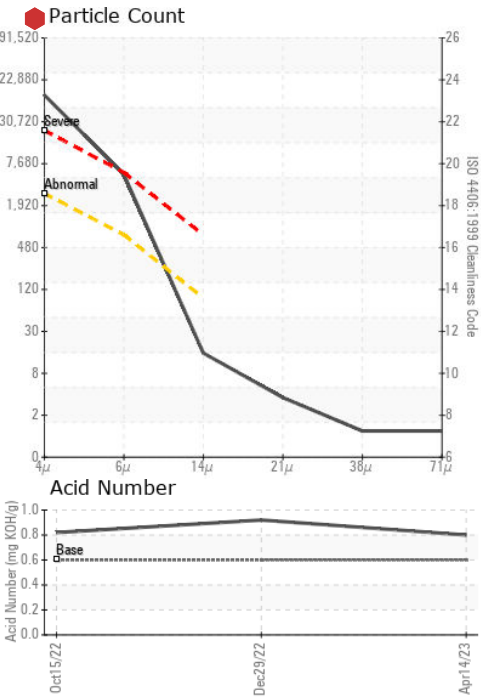
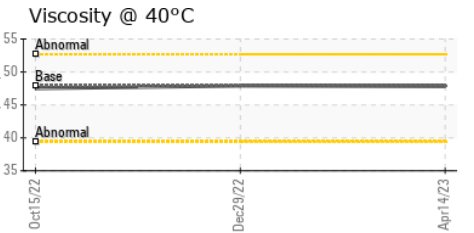
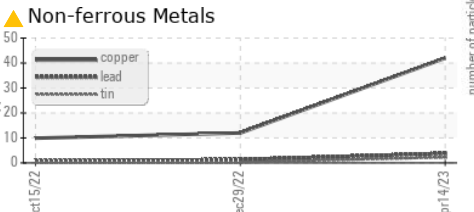
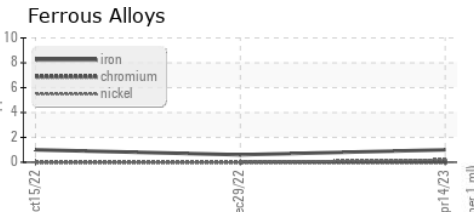
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE
Precipitate	scalar	Visual*	NONE	NONE	NONE
Silt	scalar	Visual*	NONE	NONE	NONE
Debris	scalar	Visual*	NONE	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE
Appearance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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	47.9	47.8	47.9

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0763476 **Received** : 21 Apr 2023
Lab Number : 02552851 **Diagnosed** : 24 Apr 2023
Unique Number : 5565866 **Diagnostician** : Kevin Marson
Test Package : MAR 2 (Additional Tests: PrtCount, TAN Man)

Canadian Coast Guard
 CCGS Vincent Massey, 101 Boul. Champlain
 Quebec, QC
 CA G1K 7Y7
 Contact: Vincent Massey
 vincentmasseyse@ccgs-ngcc.gc.ca
 T: (418)573-7423
 F:

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.