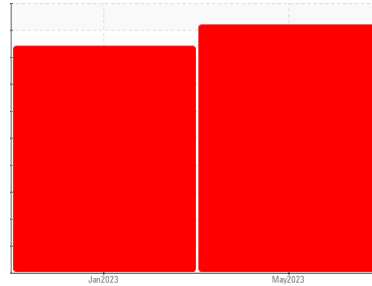


Machine Id
50043911 STARBOARD GEARBOX

Component
Starboard Gearbox

Fluid
PETRO CANADA DURON HP 15W40 (--- LTR)



DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

Wear

Copper ppm levels are severe. Tin ppm levels are abnormal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WA0018406	WA0018409	---
Sample Date	Client Info		01 May 2023	07 Jan 2023	---
Machine Age	hrs	Client Info	831	623	---
Oil Age	hrs	Client Info	416	268	---
Oil Changed	Client Info		Not Chngd	Not Chngd	---
Sample Status			SEVERE	SEVERE	---

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m)	>150	12	11	---
Chromium	ppm	ASTM D5185(m)	>10	0	0	---
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	---
Titanium	ppm	ASTM D5185(m)		4	4	---
Silver	ppm	ASTM D5185(m)		0	0	---
Aluminum	ppm	ASTM D5185(m)	>5	5	3	---
Lead	ppm	ASTM D5185(m)	>65	21	16	---
Copper	ppm	ASTM D5185(m)	>80	251	208	---
Tin	ppm	ASTM D5185(m)	>8	9	7	---
Antimony	ppm	ASTM D5185(m)	>5	0	<1	---
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)	0	163	171	---
Barium	ppm	ASTM D5185(m)	0	0	0	---
Molybdenum	ppm	ASTM D5185(m)	60	7	7	---
Manganese	ppm	ASTM D5185(m)	0	<1	<1	---
Magnesium	ppm	ASTM D5185(m)	1010	180	182	---
Calcium	ppm	ASTM D5185(m)	1070	2098	2150	---
Phosphorus	ppm	ASTM D5185(m)	1150	1039	1028	---
Zinc	ppm	ASTM D5185(m)	1270	1052	1082	---
Sulfur	ppm	ASTM D5185(m)	2060	3265	3331	---
Lithium	ppm	ASTM D5185(m)		<1	<1	---

CONTAMINANTS

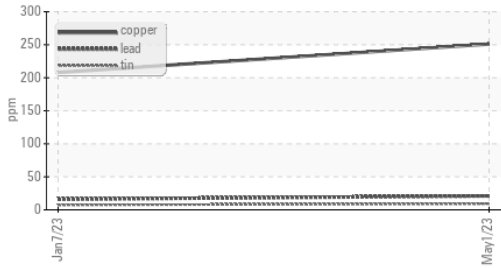
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	>20	2	2	---
Sodium	ppm	ASTM D5185(m)		3	3	---
Potassium	ppm	ASTM D5185(m)	>20	5	6	---

VISUAL

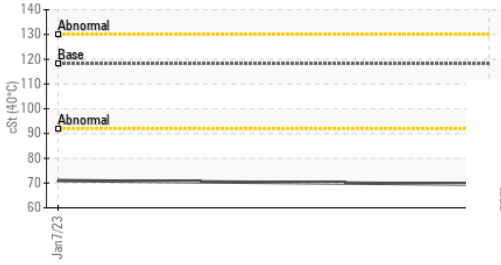
	method	limit/base	current	history1	history2	
White Metal	scalar	Visual*	NONE	NONE	NONE	---
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	---
Precipitate	scalar	Visual*	NONE	NONE	NONE	---
Silt	scalar	Visual*	NONE	NONE	NONE	---
Debris	scalar	Visual*	NONE	NONE	NONE	---
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	---
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	---

OIL ANALYSIS REPORT

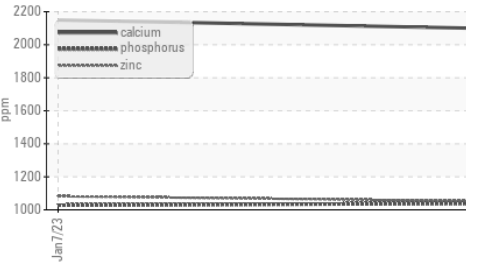
Non-ferrous Metals



Viscosity @ 40°C



Additives



FLUID PROPERTIES

method	limit/base	current	history1	history2
Visc @ 40°C	cSt ASTM D7279(m)	118.2 ▲ 69.5	▲ 71.0	---

SAMPLE IMAGES

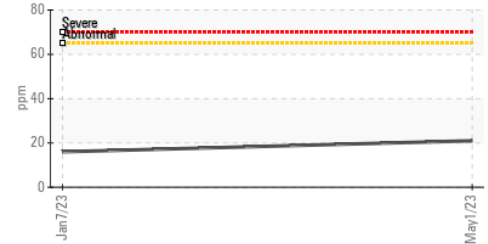
method	limit/base	current	history1	history2
Color				no image
Bottom				no image

GRAPHS

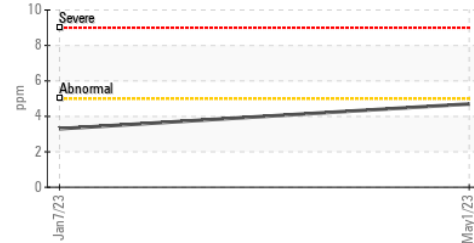
Iron (ppm)



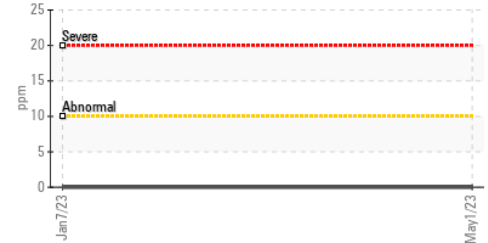
Lead (ppm)



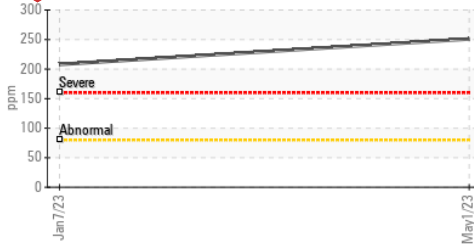
Aluminum (ppm)



Chromium (ppm)



Copper (ppm)



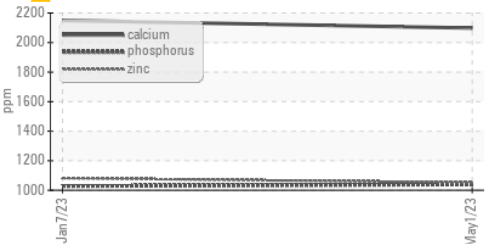
Silicon (ppm)



Viscosity @ 40°C



Additives



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WA0018406 **Received** : 09 May 2023
Lab Number : 02556246 **Diagnosed** : 09 May 2023
Unique Number : 5577286 **Diagnostician** : Kevin Marson
Test Package : MOB 1

CANADIAN COAST GUARD
 CCGS HARE BAY, 10 SAMBRO WHARF ROAD
 SAMBRO, NS
 CA B3V 1M7
 Contact: Enginner Manager
 sambro.engineer@dfp-mpo.qc.ca
 T: (902)868-2444
 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.