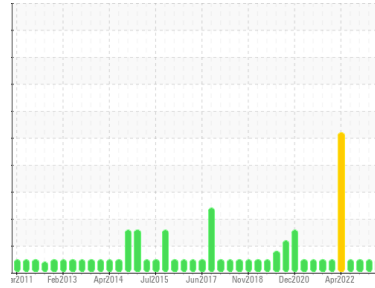




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Engine room
 Machine Id
G5-2113 Main Engine #3 (S/N C482)
 Component
3 Main Engine
 Fluid
SHELL ROTELLA T 30 (810 LTR)

DIAGNOSIS

Recommendation

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor.

Wear

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

Contaminants

There is no indication of any contamination in the oil.

Oil Condition

Additive levels indicate the addition of a different brand, or type of oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0855483	WC0700695	WC0700699
Sample Date	Client Info		11 Dec 2023	23 Apr 2023	30 Dec 2022
Machine Age	hrs	Client Info	74952	74331	73759
Oil Age	hrs	Client Info	2972	2351	1779
Oil Changed	Client Info		Not Changed	Not Changed	Not Changed
Sample Status			NORMAL	NORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0
Water	WC Method	>0.1	NEG	NEG	NEG
Glycol	WC Method		NEG	NEG	0.0

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m) >75	7	7	7
Chromium	ppm	ASTM D5185(m) >8	3	3	3
Nickel	ppm	ASTM D5185(m) >2	0	<1	<1
Titanium	ppm	ASTM D5185(m) >3	0	0	<1
Silver	ppm	ASTM D5185(m) >2	<1	0	0
Aluminum	ppm	ASTM D5185(m) >15	1	2	2
Lead	ppm	ASTM D5185(m) >18	1	1	2
Copper	ppm	ASTM D5185(m) >80	6	12	22
Tin	ppm	ASTM D5185(m) >14	<1	<1	<1
Antimony	ppm	ASTM D5185(m)	0	0	<1
Vanadium	ppm	ASTM D5185(m)	0	0	0
Beryllium	ppm	ASTM D5185(m)	0	0	0
Cadmium	ppm	ASTM D5185(m)	0	<1	<1

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m) 0	6	7	11
Barium	ppm	ASTM D5185(m)	<1	0	0
Molybdenum	ppm	ASTM D5185(m) 0	123	115	116
Manganese	ppm	ASTM D5185(m)	0	<1	<1
Magnesium	ppm	ASTM D5185(m)	21	23	23
Calcium	ppm	ASTM D5185(m) 1890	2765	2833	2852
Phosphorus	ppm	ASTM D5185(m) 680	1058	1147	1138
Zinc	ppm	ASTM D5185(m) 750	1223	1195	1197
Sulfur	ppm	ASTM D5185(m)	2718	2717	2764
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

CONTAMINANTS

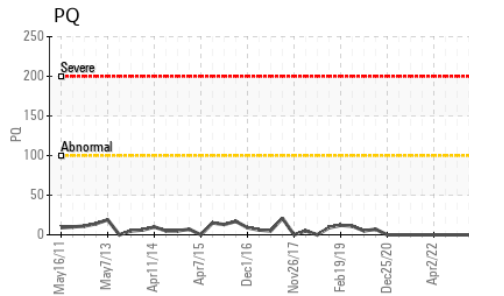
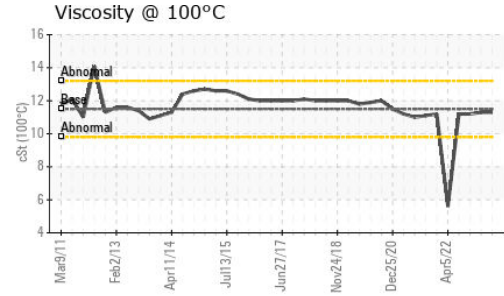
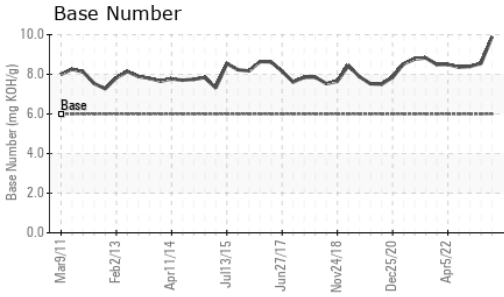
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >20	3	4	5
Sodium	ppm	ASTM D5185(m) >75	10	16	30
Potassium	ppm	ASTM D5185(m) >20	0	0	0

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	0.1	0	0
Nitration	Abs/cm	ASTM D7624* >20	4.1	4.3	4.6
Sulfation	Abs./1mm	ASTM D7415* >30	14.2	14.4	15.6



OIL ANALYSIS REPORT

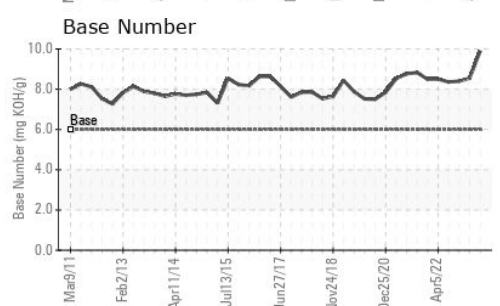
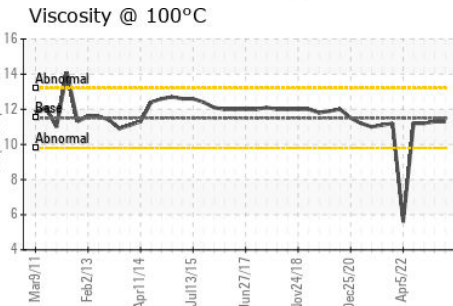
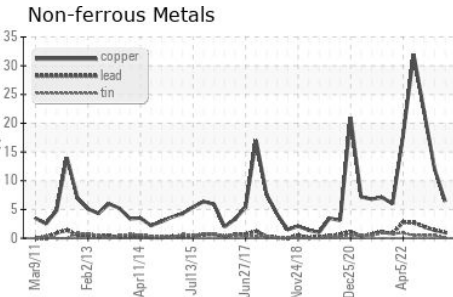
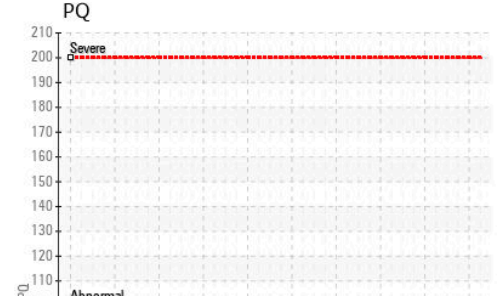
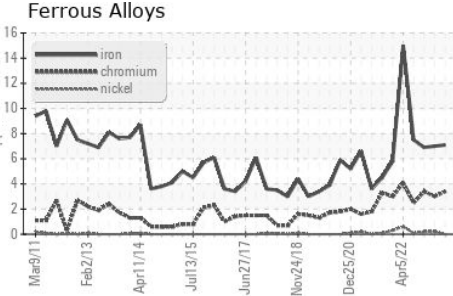


FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	>25	7.2	7.5	7.9
Base Number (BN)	mg KOH/g	ASTM D2896*	6.0	9.90	8.55	8.40

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	NORML	---	---
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>0.1	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	11.5	11.3	11.3	11.2

GRAPHS



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0855483 **Received** : 14 Dec 2023
Lab Number : **02603056** **Diagnosed** : 20 Dec 2023
Unique Number : 5696141 **Diagnostician** : Kevin Marson
Test Package : MAR 3 (Additional Tests: Visual)

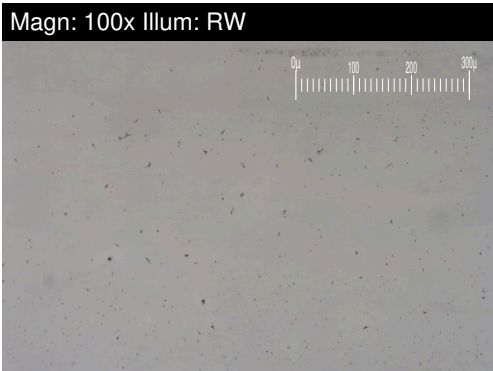
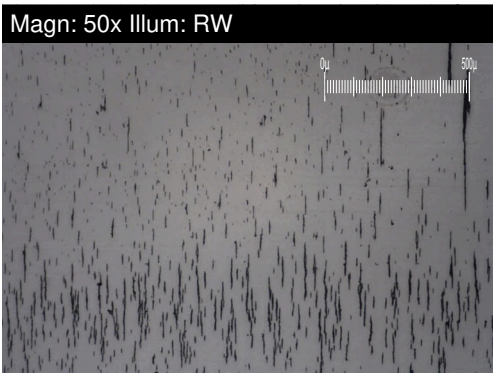
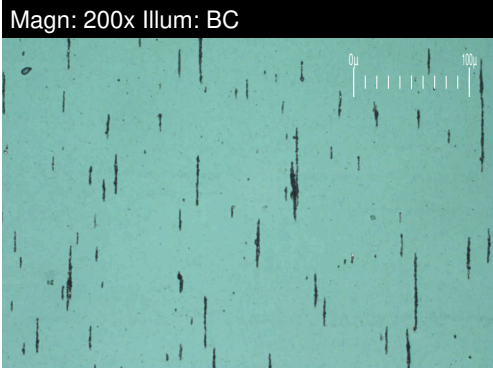
CANADIAN COAST GUARD
 CCGS GRIFFON, PO BOX 1000, 401 KING ST.W
 Prescott, ON
 CA K6V 5T3
 Contact: Laurie Bosley
 Laurie.Bosley@dfo-mpo.gc.ca
 T:
 F: (519)383-1994

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.



FERROGRAPHY REPORT

Area
Engine room
 Machine Id
G5-2113 Main Engine #3 (S/N C482)
 Component
3 Main Engine
 Fluid
SHELL ROTELLA T 30 (810 LTR)

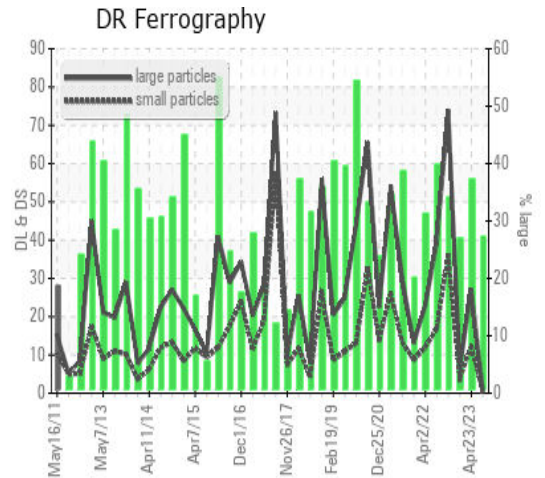


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		0.7	27.2	6.6
Small Particles		DR-Ferr*		0.4	12.4	3.8
Total Particles		DR-Ferr*	>---	1.1	39.6	10.4
Large Particles Percentage	%	DR-Ferr*		27.3	37.4	26.9
Severity Index		DR-Ferr*		0	403	18

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		3	3	3
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		1	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		1		
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		1	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		1	1	1

WEAR

All component wear rates are normal.
 The ferrography results are normal indicating no abnormal wear in the system.



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