

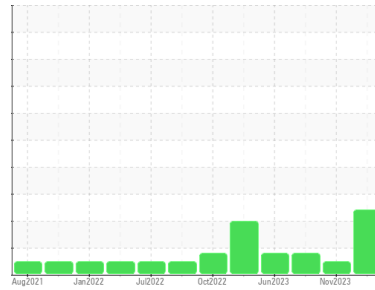


# OIL ANALYSIS REPORT



Area  
**Power Generation**  
Machine Id  
**Main Engine #2 (S/N PAG00372)**  
Component  
**2 Main Engine**  
Fluid  
**CASTROL CRB Multi 15W-40 CK-4 (800 LTR)**

Sample Rating Trend



**WATER**



## DIAGNOSIS

### Recommendation

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The oil change at the time of sampling has been noted. 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 use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid. this testkit includes BN to determine the suitability of the oil for continued use.

### Wear

Component wear rates appear to be normal (unconfirmed).

### Contamination

Light fuel dilution occurring. There is a moderate concentration of water present in the oil. Free water present. Test for glycol is negative. No other contaminants were detected in the oil.

### Fluid Condition

The condition of the oil is acceptable for the time in service (unconfirmed). The oil 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		<b>WC0850479</b>	WC0754042	WC0754031
Sample Date	Client Info		<b>16 Mar 2024</b>	02 Nov 2023	22 Aug 2023
Machine Age	hrs	Client Info	<b>54331</b>	53335	52324
Oil Age	hrs	Client Info	<b>1000</b>	1011	994
Oil Changed	Client Info		<b>Changed</b>	Changed	Changed
Sample Status			<b>ABNORMAL</b>	NORMAL	MARGINAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.1	<b>NEG</b>	NEG	NEG

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>75	<b>5</b>	5
Chromium	ppm	ASTM D5185(m)	>8	<b>0</b>	0
Nickel	ppm	ASTM D5185(m)	>2	<b>&lt;1</b>	<1
Titanium	ppm	ASTM D5185(m)	>3	<b>0</b>	0
Silver	ppm	ASTM D5185(m)	>2	<b>0</b>	<1
Aluminum	ppm	ASTM D5185(m)	>15	<b>2</b>	1
Lead	ppm	ASTM D5185(m)	>18	<b>&lt;1</b>	1
Copper	ppm	ASTM D5185(m)	>80	<b>2</b>	2
Tin	ppm	ASTM D5185(m)	>14	<b>0</b>	0
Antimony	ppm	ASTM D5185(m)		<b>0</b>	0
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0
Beryllium	ppm	ASTM D5185(m)		<b>0</b>	0
Cadmium	ppm	ASTM D5185(m)		<b>0</b>	<1

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		<b>56</b>	57
Barium	ppm	ASTM D5185(m)		<b>0</b>	<1
Molybdenum	ppm	ASTM D5185(m)		<b>34</b>	33
Manganese	ppm	ASTM D5185(m)		<b>0</b>	0
Magnesium	ppm	ASTM D5185(m)		<b>16</b>	21
Calcium	ppm	ASTM D5185(m)		<b>3434</b>	3598
Phosphorus	ppm	ASTM D5185(m)		<b>815</b>	826
Zinc	ppm	ASTM D5185(m)		<b>975</b>	983
Sulfur	ppm	ASTM D5185(m)		<b>2599</b>	2672
Lithium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1

## CONTAMINANTS

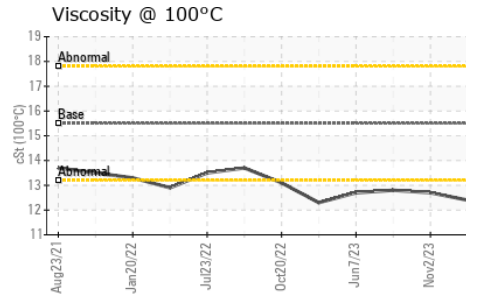
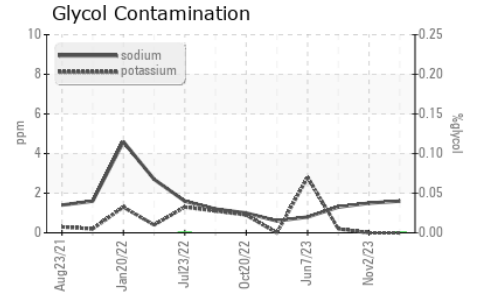
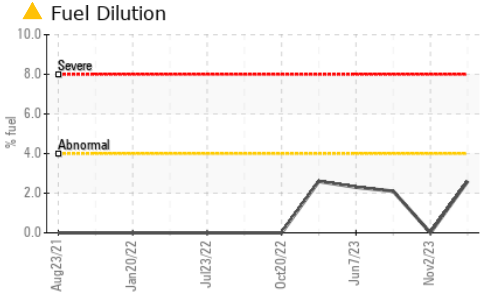
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>20	<b>2</b>	2
Sodium	ppm	ASTM D5185(m)	>75	<b>2</b>	2
Potassium	ppm	ASTM D5185(m)	>20	<b>0</b>	0
Fuel	%	ASTM D7593*	>4.0	<b>▲ 2.6</b>	<1.0
Glycol	%	ASTM D7922*		<b>0.0</b>	NEG

## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		<b>0</b>	0
Nitration	Abs/cm	ASTM D7624*	>20	<b>8.4</b>	8.3
Sulfation	Abs./1mm	ASTM D7415*	>30	<b>17.2</b>	17.4



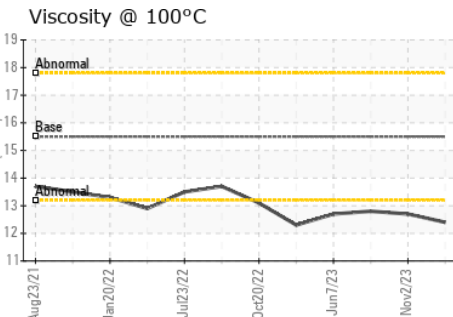
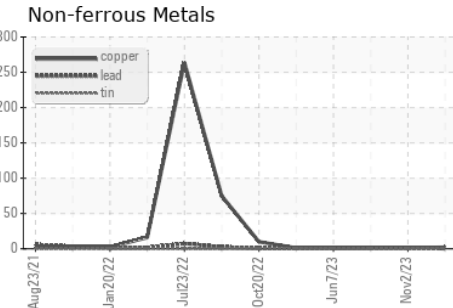
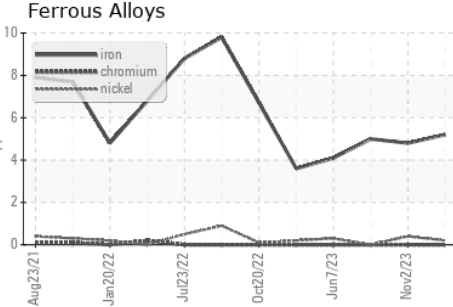
# OIL ANALYSIS REPORT



FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	>25	<b>11.4</b>	11.9	10.8
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	<b>LIGHT</b>	VLITE	VLITE
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>0.1	▲ <b>.2%</b>	NEG	NEG
Free Water	scalar	Visual*		▲ <b>1%</b>	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	15.5	<b>12.4</b>	12.7	12.8

### GRAPHS



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0850479  
**Lab Number** : **02624591**  
**Unique Number** : 5749710  
**Test Package** : MAR 1 ( Additional Tests: FuelDilution, Glycol, PercentFuel )

**Horizon Maritime Services Ltd. - Horizon Enabler**  
 87 Water Street, 2nd Floor  
 St. John's, NL  
 CA A1C 1A5  
 Contact: Andrew Whalen  
 chiefeng.enabler@horizonmaritime.com

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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F: