



# OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	NORMAL
OIL CONDITION	NORMAL

Machine Id  
**EGR-2212 (S/N 6919558)**

Component  
**2 Main Engine**

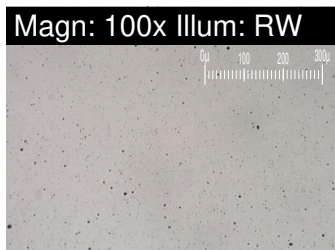
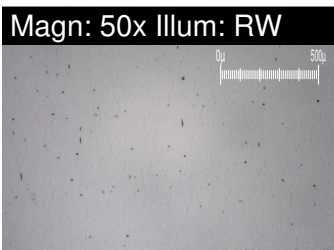
Fluid  
**SHELL ROTELLA T4 15W40 (900 LTR)**

## RECOMMENDATION

We advise that you check the cylinder liner seals for deterioration to ensure that cooling water is not entering the sump. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

## WEAR

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



Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0574867</b>	WC0494649	WC0494650
Sample Date		Client Info		<b>31 Dec 2023</b>	16 Aug 2023	18 Mar 2023
Machine Age	hrs	Client Info		<b>67500</b>	67000	66500
Oil Age	hrs	Client Info		<b>2742</b>	2242	1742
Filter Age	hrs	Client Info		<b>2742</b>	2242	1742
Oil Changed		Client Info		<b>Not Changed</b>	Not Changed	Not Changed
Filter Changed		Client Info		<b>Not Changed</b>	Not Changed	Not Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

PQ		ASTM D8184*		<b>0</b>	0	0
Iron	ppm	ASTM D5185(m)	>75	<b>4</b>	4	4
Chromium	ppm	ASTM D5185(m)	>8	<b>0</b>	<1	0
Nickel	ppm	ASTM D5185(m)	>2	<b>0</b>	0	<1
Titanium	ppm	ASTM D5185(m)	>3	<b>0</b>	<1	<1
Silver	ppm	ASTM D5185(m)	>2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185(m)	>15	<b>1</b>	<1	<1
Lead	ppm	ASTM D5185(m)	>18	<b>0</b>	0	<1
Copper	ppm	ASTM D5185(m)	>80	<b>1</b>	1	1
Tin	ppm	ASTM D5185(m)	>14	<b>&lt;1</b>	0	<1
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0	0
Large Particles		DR-Ferr*		<b>7.9</b>	1.9	1.2
Small Particles		DR-Ferr*		<b>6.0</b>	1.7	0.8
Total Particles		DR-Ferr*	>---	<b>13.9</b>	3.6	2
Large Particles Percentage	%	DR-Ferr*		<b>13.7</b>	5.6	20
Severity Index		DR-Ferr*		<b>15</b>	0	0
Ferrous Rubbing	Scale 0-10	ASTM D7684*		<b>1</b>	1	2
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		<b>1</b>	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*				
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*				

## CONTAMINANTS

Elemental level of sodium (Na) and/or boron (B) indicates a possible cooling water leak.

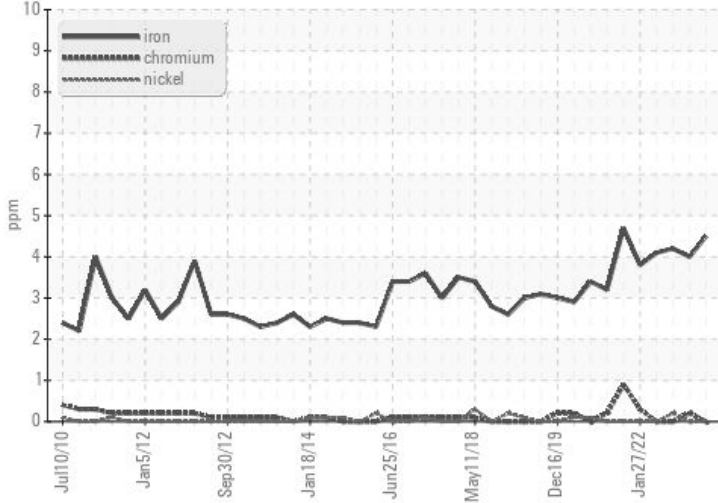
Silicon	ppm	ASTM D5185(m)	>20	<b>2</b>	2	3
Potassium	ppm	ASTM D5185(m)	>20	<b>7</b>	6	6
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	ASTM D7844*		<b>0.1</b>	0	0
Nitration	Abs/cm	ASTM D7624*	>20	<b>9.4</b>	9.1	8.9
Sulfation	Abs/.1mm	ASTM D7415*	>30	<b>22.4</b>	22.7	24.1
Emulsified Water	scalar	Visual*	>0.1	<b>NEG</b>	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		<b>1</b>	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		<b>2</b>	1	1

## OIL CONDITION

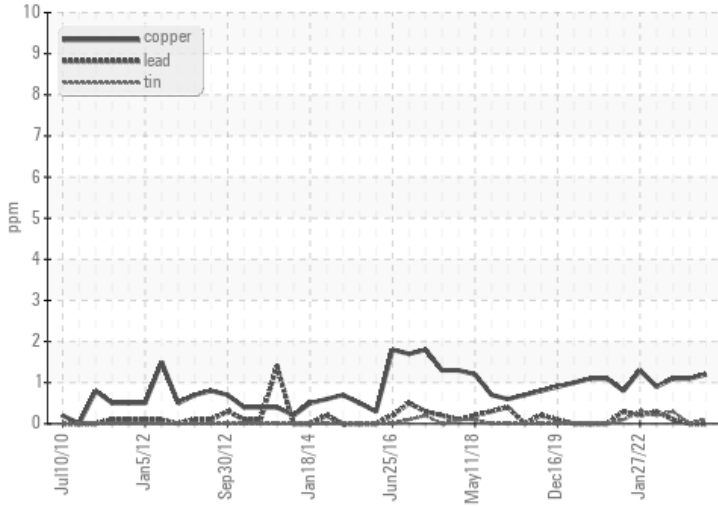
Additive levels indicate the addition of a different brand, or type of oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185(m)	>75	<b>3</b>	3	3
Boron	ppm	ASTM D5185(m)		<b>105</b>	112	110
Barium	ppm	ASTM D5185(m)		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185(m)		<b>2</b>	2	3
Manganese	ppm	ASTM D5185(m)		<b>0</b>	0	<1
Magnesium	ppm	ASTM D5185(m)		<b>17</b>	20	19
Calcium	ppm	ASTM D5185(m)		<b>2248</b>	2224	2415
Phosphorus	ppm	ASTM D5185(m)		<b>989</b>	1000	1070
Zinc	ppm	ASTM D5185(m)		<b>1136</b>	1126	1146
Sulfur	ppm	ASTM D5185(m)		<b>3138</b>	2926	3115
Oxidation	Abs/.1mm	ASTM D7414*	>25	<b>18.6</b>	17.7	17.4
Base Number (BN)	mg KOH/g	ASTM D2896*	10.1	<b>7.35</b>	6.64	7.05
Visc @ 100°C	cSt	ASTM D7279(m)	15	<b>13.4</b>	13.5	13.4
Lubricant Degradation	Scale 0-10	ASTM D7684*				

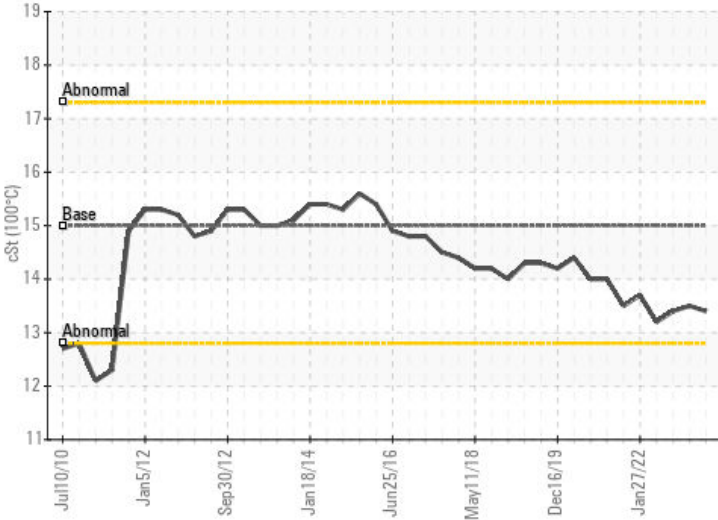
### Ferrous Alloys



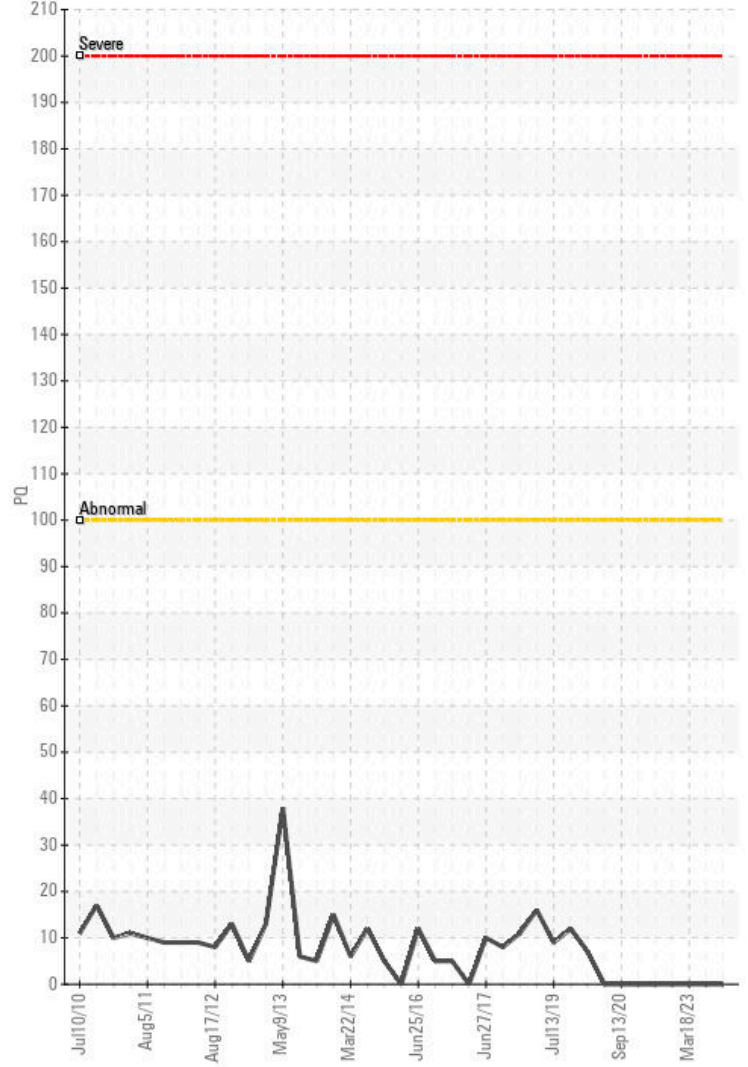
### Non-ferrous Metals



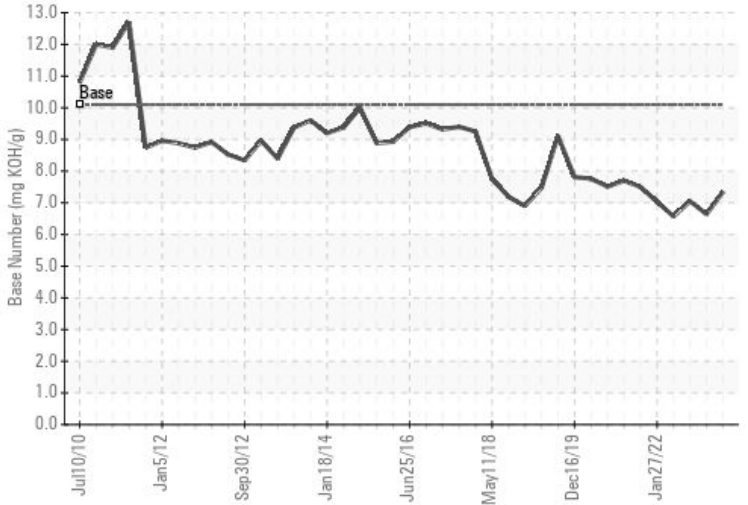
### Viscosity @ 100°C



### PQ



### Base Number



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0574867  
**Lab Number** : 02609167  
**Unique Number** : 5710253  
**Test Package** : MAR 3

**Received** : 17 Jan 2024  
**Diagnosed** : 23 Jan 2024  
**Diagnostician** : Kevin Marson

**DFO, CCGS EARL GREY**  
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 CA B2Y 4A2  
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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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