



# OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	NORMAL
OIL CONDITION	NORMAL

Area

**Propulsion/Salle des Machines**

Machine Id

**12A02#02 (S/N M4109-R)**

Component

**2 Diesel Engine**

Fluid

**PETRO CANADA RALUBE 40 CFS (720 LTR)**

## RECOMMENDATION

Resample at the next service interval to monitor.

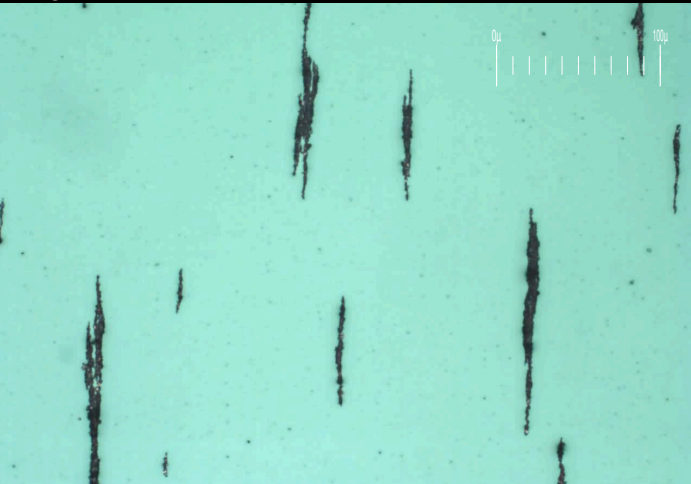
Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0751425</b>	WC0751418	WC
Sample Date		Client Info		<b>24 Oct 2023</b>	05 Apr 2023	25 Oct 2022
Machine Age	hrs	Client Info		<b>18224</b>	17739	17434
Oil Age	hrs	Client Info		<b>790</b>	305	4568
Filter Age	hrs	Client Info		<b>790</b>	305	4568
Oil Changed		Client Info		<b>Not Changd</b>	Not Changd	Changed
Filter Changed		Client Info		<b>N/A</b>	Not Changd	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

## WEAR

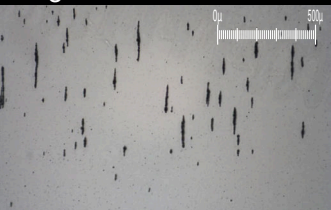
All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

PQ		ASTM D8184*		<b>0</b>	0	---
Iron	ppm	ASTM D5185(m)	>100	<b>6</b>	4	6
Chromium	ppm	ASTM D5185(m)	>20	<b>1</b>	2	0
Nickel	ppm	ASTM D5185(m)	>4	<b>&lt;1</b>	<1	0
Titanium	ppm	ASTM D5185(m)		<b>0</b>	0	0
Silver	ppm	ASTM D5185(m)	>3	<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185(m)	>20	<b>2</b>	2	2
Lead	ppm	ASTM D5185(m)	>40	<b>&lt;1</b>	<1	0
Copper	ppm	ASTM D5185(m)	>330	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185(m)	>15	<b>&lt;1</b>	<1	<1
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0	0
Large Particles		DR-Ferr*		<b>7.0</b>	3.7	---
Small Particles		DR-Ferr*		<b>5.5</b>	2.0	---
Total Particles		DR-Ferr*	>---	<b>12.5</b>	5.7	---
Large Particles Percentage	%	DR-Ferr*		<b>12</b>	29.8	---
Severity Index		DR-Ferr*		<b>11</b>	6	---
Ferrous Rubbing	Scale 0-10	ASTM D7684*		<b>3</b>	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	
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		<b>1</b>		
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*				

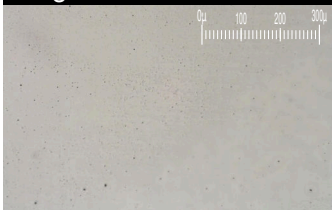
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW



## CONTAMINANTS

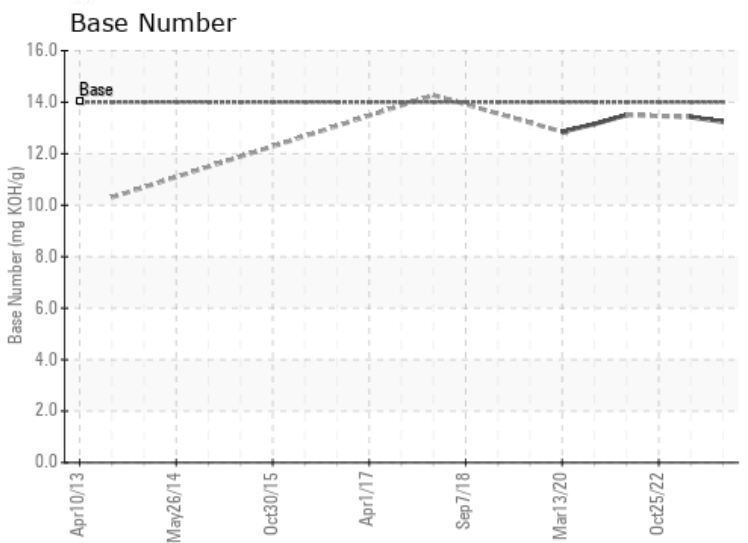
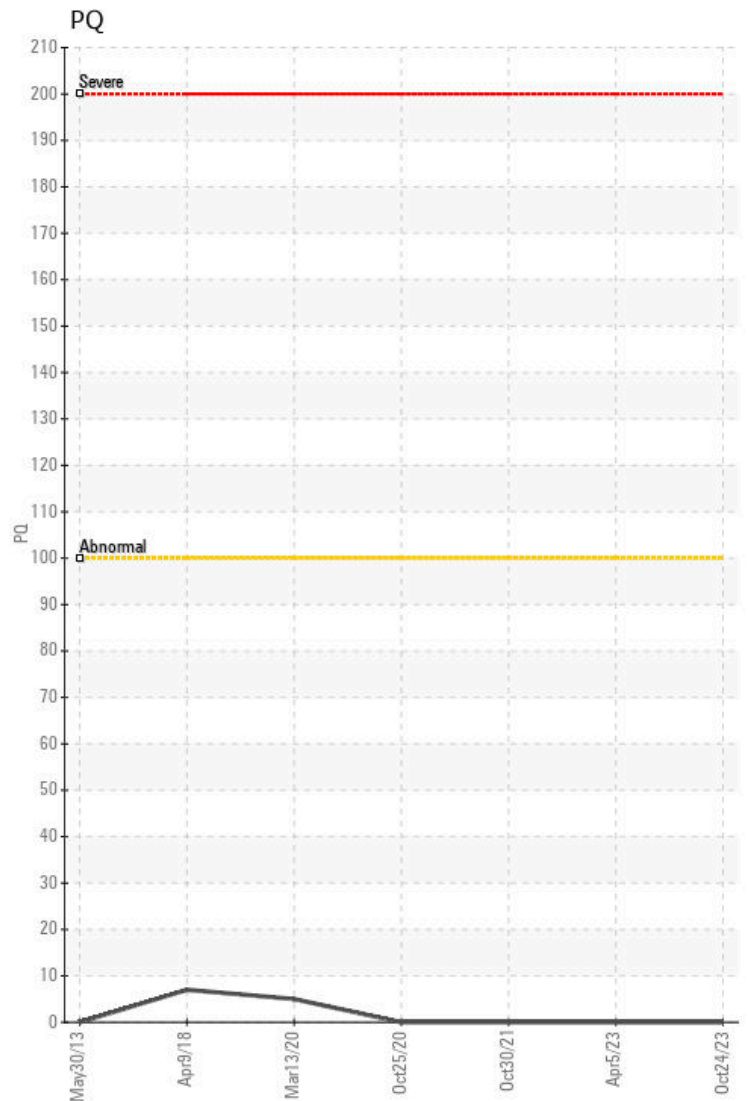
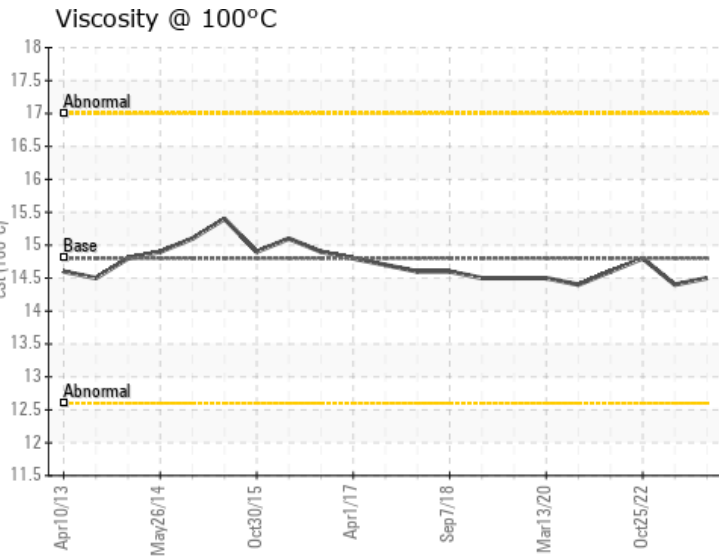
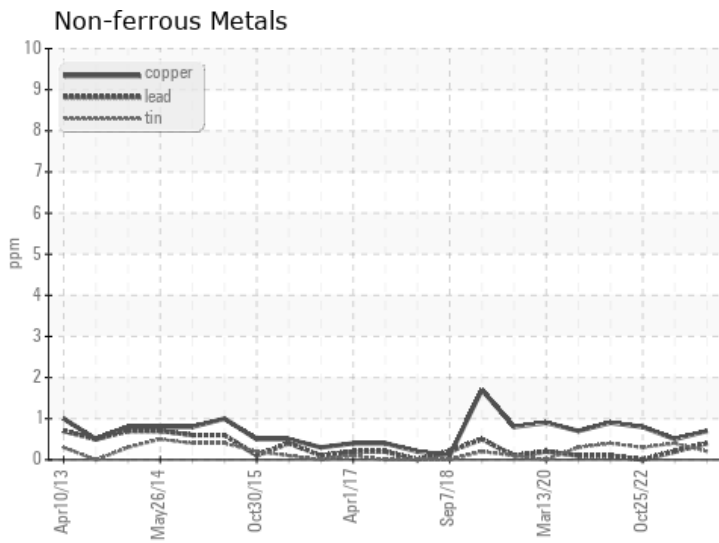
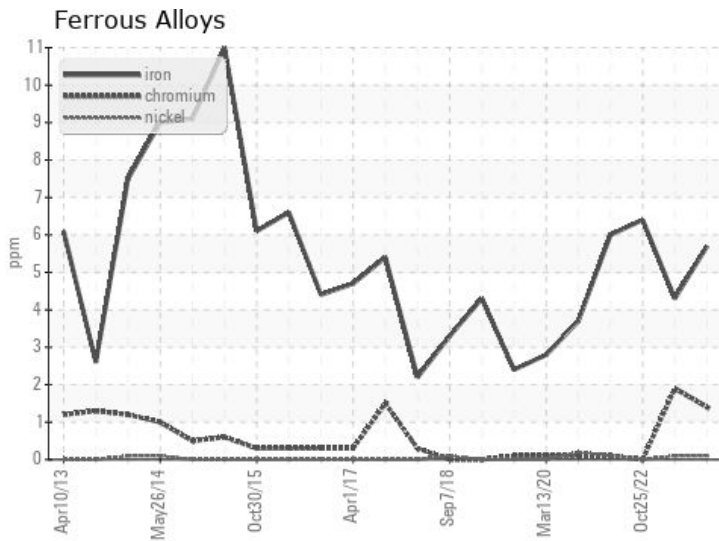
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185(m)	>25	<b>3</b>	3	2
Potassium	ppm	ASTM D5185(m)	>20	<b>&lt;1</b>	3	<1
Fuel		WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	ASTM D7844*	>2	<b>0</b>	0	0
Nitration	Abs/cm	ASTM D7624*	>20	<b>12.7</b>	11.0	14.7
Sulfation	Abs/.1mm	ASTM D7415*	>30	<b>14.5</b>	13.8	16.2
Emulsified Water	scalar	Visual*	>0.2	<b>NEG</b>	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		<b>1</b>	1	
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		<b>1</b>	1	

## OIL CONDITION

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)		<b>3</b>	3	2
Boron	ppm	ASTM D5185(m)	0	<b>&lt;1</b>	<1	<1
Barium	ppm	ASTM D5185(m)	0	<b>&lt;1</b>	0	0
Molybdenum	ppm	ASTM D5185(m)	0	<b>0</b>	<1	0
Manganese	ppm	ASTM D5185(m)	0	<b>0</b>	<1	<1
Magnesium	ppm	ASTM D5185(m)	25	<b>19</b>	21	21
Calcium	ppm	ASTM D5185(m)	4300	<b>4589</b>	4673	4773
Phosphorus	ppm	ASTM D5185(m)	1.6	<b>5</b>	4	2
Zinc	ppm	ASTM D5185(m)	2	<b>7</b>	7	4
Sulfur	ppm	ASTM D5185(m)	1500	<b>3044</b>	3157	3087
Oxidation	Abs/.1mm	ASTM D7414*	>25	<b>10.7</b>	9.5	13.7
Base Number (BN)	mg KOH/g	ASTM D2896*	14.0	<b>13.24</b>	13.42	---
Visc @ 100°C	cSt	ASTM D7279(m)	14.8	<b>14.5</b>	14.4	14.8
Lubricant Degradation	Scale 0-10	ASTM D7684*				



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0751425  
**Lab Number** : 02593086  
**Unique Number** : 5670165  
**Test Package** : MAR 3

**Canadian Coast Guard**  
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 Quebec, QC  
 CA G1K 7Y7  
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 amundsense@ccgs-ngcc.gc.ca  
 T: (418)953-8233  
 F: x:

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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