MAR III

WEAR CHECK

OIL ANALYSIS REPORT

| | |
|---|---|
| WEAR | NORMAL |
| CONTAMINANTS | NORMAL |
| OIL CONDITION | NORMAL |

Area
## Production d`Energie Electrique/Salle des Machines
Machine Id
## 13B02#02 (S/N 524 101 595)
Component
## 2 Auxiliary Engine
Fluid
## PETRO CANADA DURON-E XL 15W40 (280 LTR)

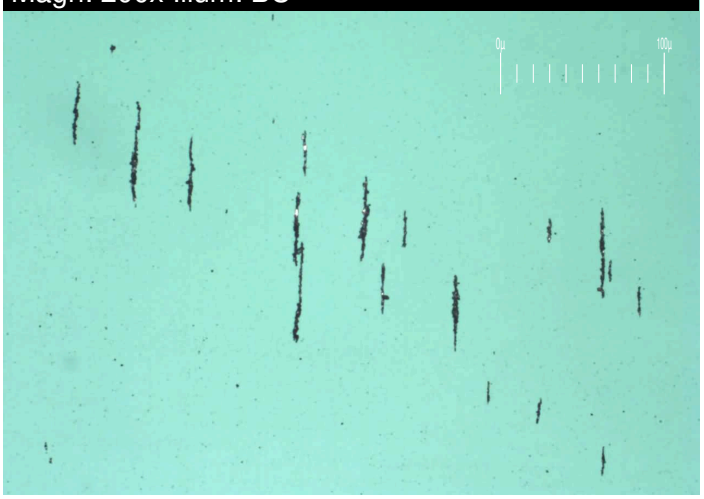
## RECOMMENDATION

Resample at the next service interval to monitor.

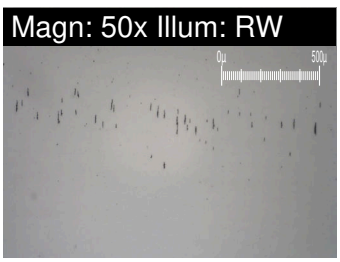
## WEAR

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

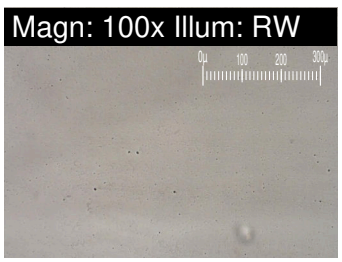
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW



| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | WC0829226 | WC0751392 | WC |
| Sample Date | | Client Info | | 23 Oct 2023 | 01 Apr 2023 | 18 Oct 2022 |
| Machine Age | hrs | Client Info | | 34817 | 32270 | 31472 |
| Oil Age | hrs | Client Info | | 0 | 658 | 1953 |
| Filter Age | hrs | Client Info | | 33697 | 658 | 1953 |
| Oil Changed | | Client Info | | Not Changd | Not Changd | N/A |
| Filter Changed | | Client Info | | N/A | Not Changd | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| PQ | | ASTM D8184* | | 0 | 0 | --- |
| Iron | ppm | ASTM D5185(m) | >35 | 6 | 4 | 8 |
| Chromium | ppm | ASTM D5185(m) | >4 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >2 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185(m) | >2 | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185(m) | >2 | <1 | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >25 | <1 | <1 | 1 |
| Lead | ppm | ASTM D5185(m) | >7 | <1 | <1 | 0 |
| Copper | ppm | ASTM D5185(m) | >65 | <1 | 1 | 2 |
| Tin | ppm | ASTM D5185(m) | >4 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Large Particles | | DR-Ferr* | | 7.5 | 6.7 | --- |
| Small Particles | | DR-Ferr* | | 5.7 | 5.4 | --- |
| Total Particles | | DR-Ferr* | >--- | 13.2 | 12.1 | --- |
| Large Particles Percentage | % | DR-Ferr* | | 13.6 | 10.7 | --- |
| Severity Index | | DR-Ferr* | | 13 | 9 | --- |
| Ferrous Rubbing | Scale 0-10 | ASTM D7684* | | 2 | 2 | |
| Ferrous Sliding | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Cutting | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Rolling | Scale 0-10 | ASTM D7684* | | 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 | 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* | | | | |

## CONTAMINANTS

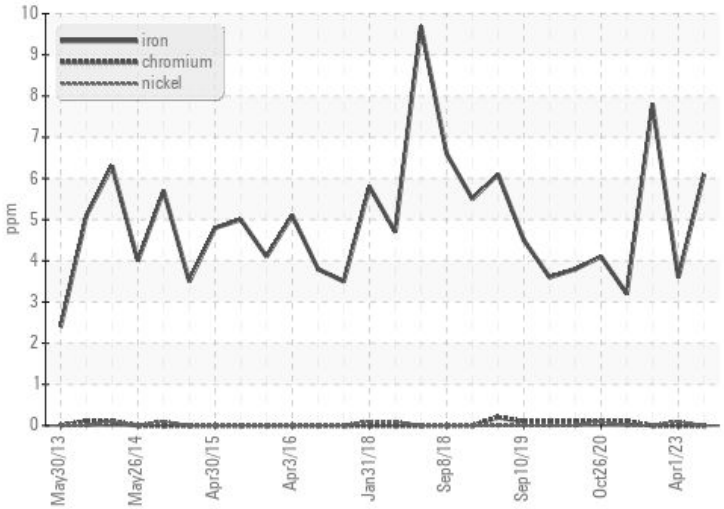
There is no indication of any contamination in the oil.

## OIL CONDITION

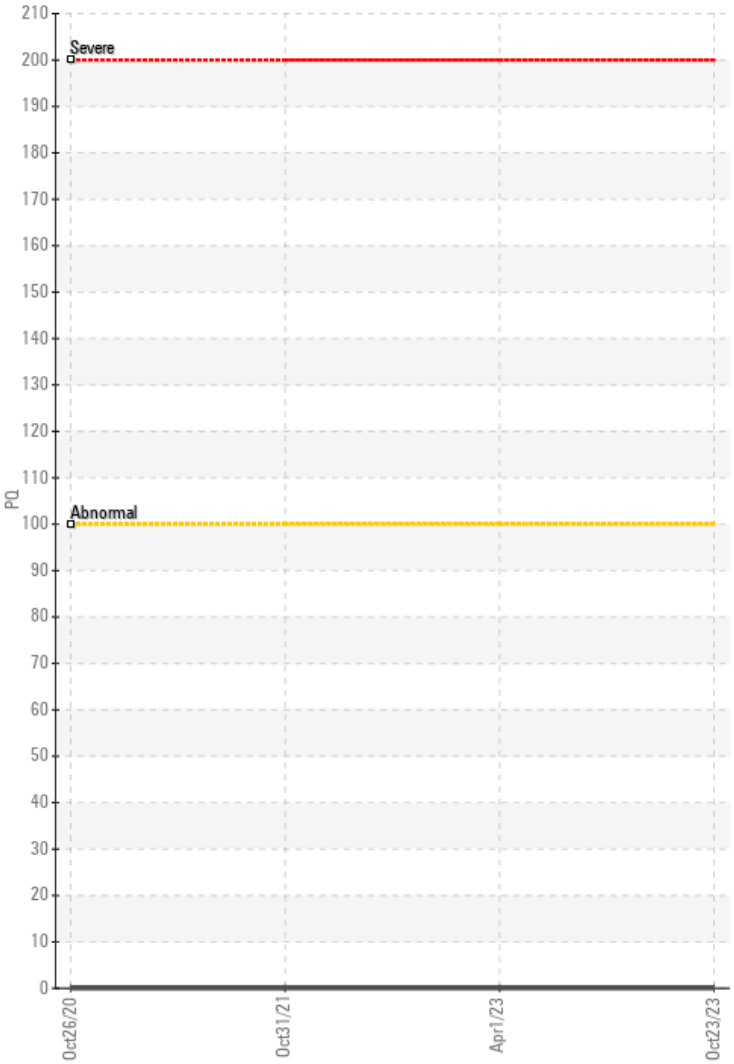
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >20 | **2** | 2 | 2 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | <1 | <1 |
| Fuel | | WC Method | >4.0 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |
| Soot % | % | ASTM D7844* | | **0.1** | 0 | 0 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **6.7** | 5.9 | 7.2 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **19.6** | 18.5 | 20.1 |
| Emulsified Water | scalar | Visual* | >0.1 | **NEG** | NEG | NEG |
| Carbonaceous Material | Scale 0-10 | ASTM D7684* | | | | |
| Sand/Dirt | Scale 0-10 | ASTM D7684* | | **1** | 1 | |
| Fibres | Scale 0-10 | ASTM D7684* | | | | |
| Spheres | Scale 0-10 | ASTM D7684* | | | | |
| Other | Scale 0-10 | ASTM D7684* | | **1** | 1 | |
| Sodium | ppm | ASTM D5185(m) | | **1** | 1 | 1 |
| Boron | ppm | ASTM D5185(m) | 1 | **3** | 2 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **62** | 61 | 62 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 1010 | **1008** | 1000 | 1006 |
| Calcium | ppm | ASTM D5185(m) | 1070 | **1105** | 1132 | 1137 |
| Phosphorus | ppm | ASTM D5185(m) | 1150 | **1048** | 1139 | 1138 |
| Zinc | ppm | ASTM D5185(m) | 1270 | **1248** | 1225 | 1239 |
| Sulfur | ppm | ASTM D5185(m) | 2060 | **2645** | 2734 | 2712 |
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **15.8** | 14.2 | 16.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | 10.0 | **8.84** | 9.86 | --- |
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.54 | **13.2** | 13.7 | 13.6 |
| Lubricant Degradation | Scale 0-10 | ASTM D7684* | | | | |

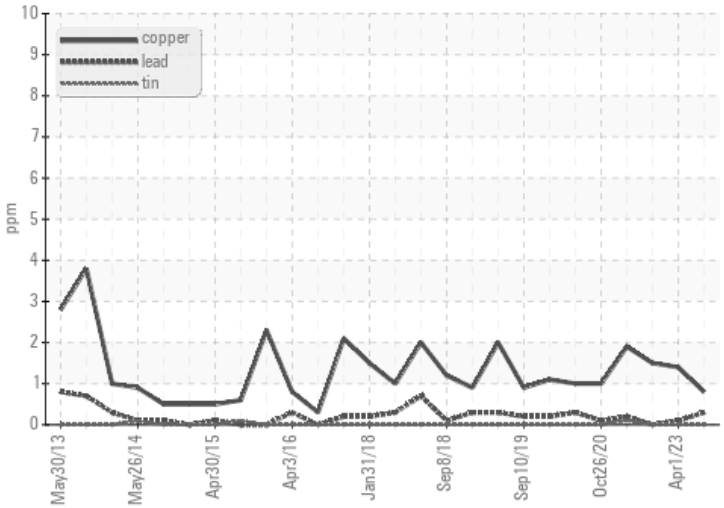
## Ferrous Alloys



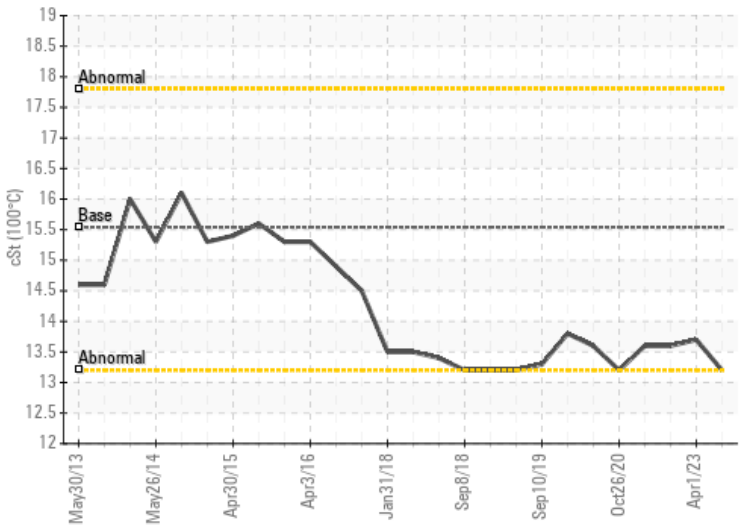

## PQ



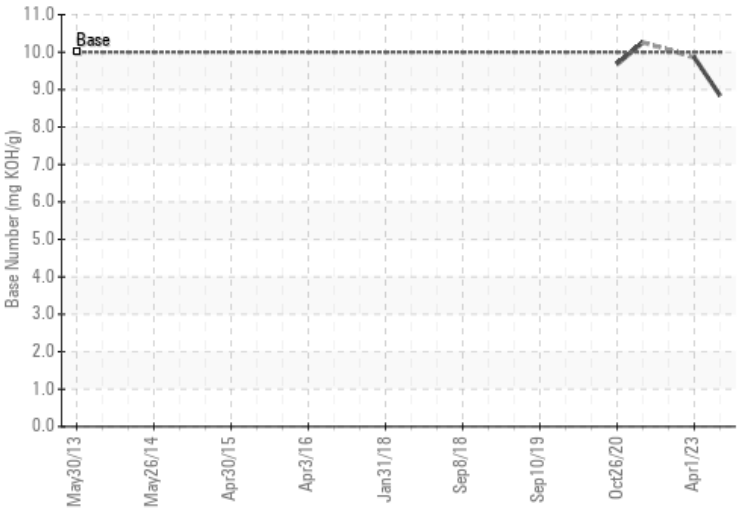

## Non-ferrous Metals




## Viscosity @ 100°C




## Base Number




CALA
ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0829226
**Lab Number** : 02593089
**Unique Number** : 5670168
**Test Package** : MAR 3

**Received** : 01 Nov 2023
**Tested** : 03 Nov 2023
**Diagnosed** : 03 Nov 2023 - Kevin Marson

*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.*

**Canadian Coast Guard**
CCGS Amundsen, 101 Boul. Champlain
Quebec, QC
CA G1K 7Y7
Contact: Chief Engineer
amundsense@ccgs-ngcc.gc.ca
T: (418)953-8233
F: x:

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