



# OIL ANALYSIS REPORT

WEAR  
CONTAMINATION  
FLUID CONDITION

**ATTENTION**  
**NORMAL**  
**ABNORMAL**

Area

(C-GDME)

Machine Id

[C-GDME] DIAMOND DA20 806487

Component

Piston Aircraft Engine

Fluid

PHILLIPS 66 AVIATION TYPE M SAE 20W50 (6 LTR)

## RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time.

| Test           | UOM | Method      | Limit/Abn | Current     | History1    | History2    |
|----------------|-----|-------------|-----------|-------------|-------------|-------------|
| Sample Number  |     | Client Info |           | WC0936594   | WC0882492   | WC0869660   |
| Sample Date    |     | Client Info |           | 01 May 2024 | 01 Dec 2023 | 13 Nov 2023 |
| TSN            | hrs | Client Info |           | 0           | 0           | 0           |
| TSO            | hrs | Client Info |           | 44          | 1944        | 1900        |
| Oil Age        | hrs | Client Info |           | 44          | 44          | 38          |
| Filter Age     | hrs | Client Info |           | 44          | 44          | 38          |
| Oil Changed    |     | Client Info |           | Changed     | Changed     | Changed     |
| Filter Changed |     | Client Info |           | Changed     | Changed     | Changed     |
| Sample Status  |     |             |           | ABNORMAL    | NORMAL      | NORMAL      |

## WEAR

A sharp increase in the copper level is noted. All other component wear rates are normal.

|              |        |               |        |      |      |      |
|--------------|--------|---------------|--------|------|------|------|
| Iron         | ppm    | ASTM D5185(m) | >90    | 24   | 19   | 16   |
| Chromium     | ppm    | ASTM D5185(m) | >20    | 4    | 3    | 3    |
| Nickel       | ppm    | ASTM D5185(m) | >15    | 1    | 1    | 1    |
| Titanium     | ppm    | ASTM D5185(m) |        | 0    | 0    | 0    |
| Silver       | ppm    | ASTM D5185(m) | >5     | 0    | 0    | <1   |
| Aluminum     | ppm    | ASTM D5185(m) | >25    | 3    | 5    | 5    |
| Lead         | ppm    | ASTM D5185(m) | >20000 | 3925 | 5320 | 5263 |
| Copper       | ppm    | ASTM D5185(m) | >25    | 23   | 3    | 3    |
| Tin          | ppm    | ASTM D5185(m) | >30    | 1    | 0    | 0    |
| Vanadium     | ppm    | ASTM D5185(m) |        | 0    | 0    | 0    |
| White Metal  | scalar | Visual*       | NONE   | NONE | NONE | NONE |
| Yellow Metal | scalar | Visual*       | NONE   | NONE | NONE | NONE |

## CONTAMINATION

Light fuel dilution occurring. No other contaminants were detected in the oil.

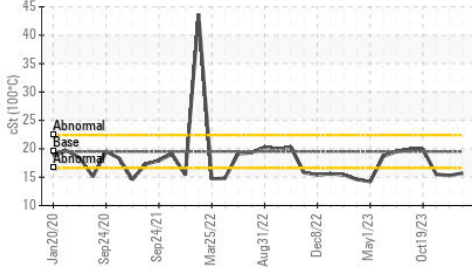
|                  |        |               |       |       |       |       |
|------------------|--------|---------------|-------|-------|-------|-------|
| Silicon          | ppm    | ASTM D5185(m) | >15   | 18    | 8     | 8     |
| Potassium        | ppm    | ASTM D5185(m) | >20   | <1    | 23    | 0     |
| Fuel             | %      | ASTM D7593*   | >4.0  | 1.1   | <1.0  | <1.0  |
| Water            |        | WC Method     | >0.1  | NEG   | NEG   | NEG   |
| Glycol           |        | WC Method     |       | NEG   | NEG   | NEG   |
| Silt             | scalar | Visual*       | NONE  | VLITE | NONE  | NONE  |
| Debris           | scalar | Visual*       | NONE  | NONE  | NONE  | NONE  |
| Sand/Dirt        | scalar | Visual*       | NONE  | NONE  | NONE  | NONE  |
| Appearance       | scalar | Visual*       | NORML | NORML | NORML | NORML |
| Odor             | scalar | Visual*       | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | Visual*       | >0.1  | NEG   | NEG   | NEG   |

## FLUID CONDITION

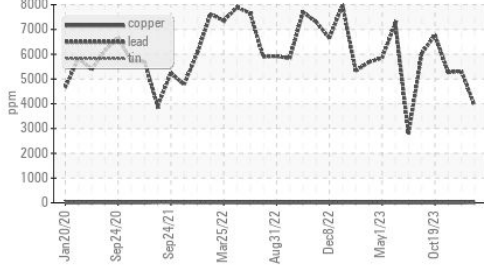
Viscosity of sample indicates oil is within SAE 40 range, advise investigate. The condition of the oil is acceptable for the time in service.

|              |     |               |      |      |      |      |
|--------------|-----|---------------|------|------|------|------|
| Sodium       | ppm | ASTM D5185(m) |      | 2    | <1   | 1    |
| Boron        | ppm | ASTM D5185(m) |      | <1   | 0    | <1   |
| Barium       | ppm | ASTM D5185(m) |      | 0    | <1   | <1   |
| Molybdenum   | ppm | ASTM D5185(m) |      | 2    | <1   | <1   |
| Manganese    | ppm | ASTM D5185(m) |      | 0    | 0    | 0    |
| Magnesium    | ppm | ASTM D5185(m) |      | <1   | <1   | 0    |
| Calcium      | ppm | ASTM D5185(m) |      | 4    | 2    | 1    |
| Phosphorus   | ppm | ASTM D5185(m) |      | 29   | 1145 | 1094 |
| Zinc         | ppm | ASTM D5185(m) |      | 18   | 6    | 6    |
| Sulfur       | ppm | ASTM D5185(m) |      | 820  | 2270 | 2117 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 19.5 | 15.7 | 15.3 | 15.5 |

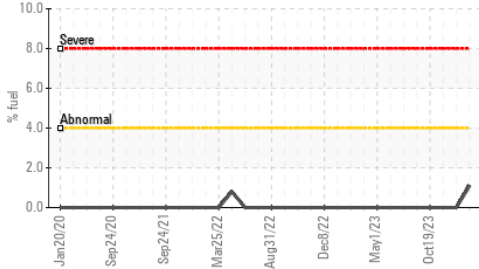
▲ Viscosity @ 100°C



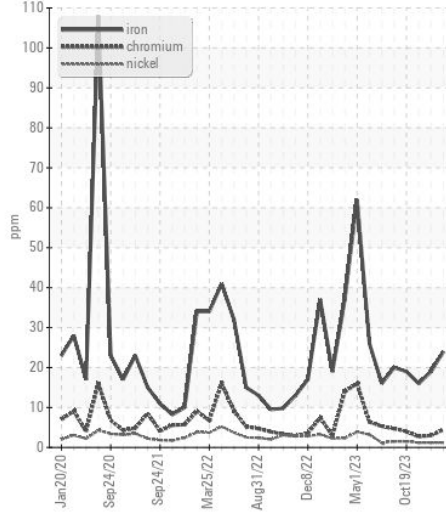
● Non-ferrous Metals



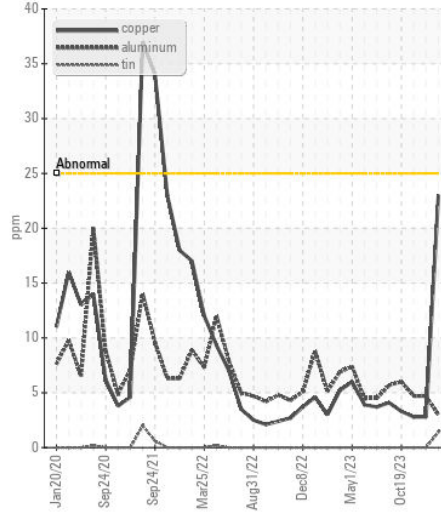
Fuel Dilution



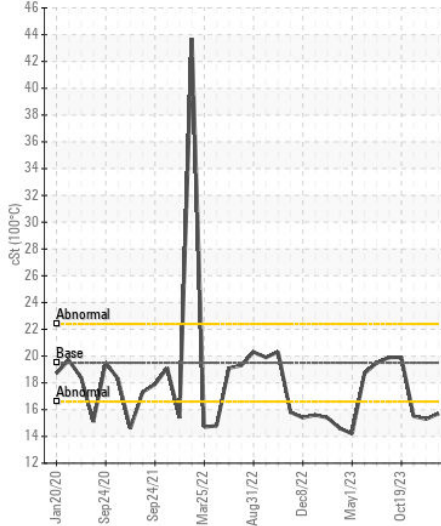
Ferrous Alloys



Copper/Aluminum/Tin



▲ Viscosity @ 100°C



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0936594  
**Lab Number** : 02638441  
**Unique Number** : 5787603  
**Test Package** : AVI 1 ( Additional Tests: FuelDilution, PercentFuel )

**Received** : 29 May 2024  
**Tested** : 31 May 2024  
**Diagnosed** : 31 May 2024 - 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.

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