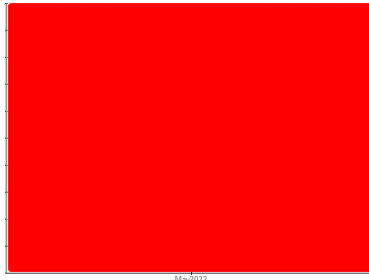




PROBLEM SUMMARY

Sample Rating Trend



WEAR



Machine Id

CONTINENTAL N415SS

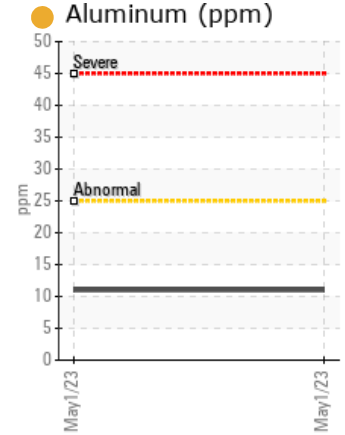
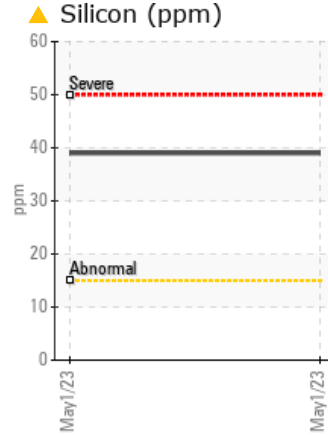
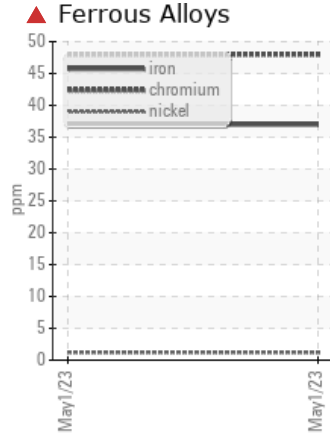
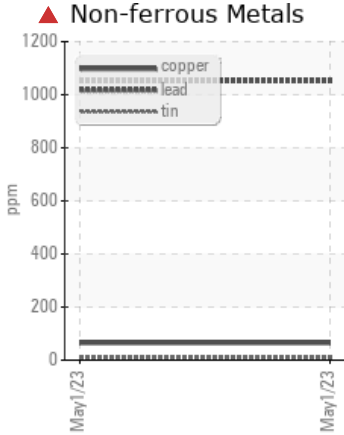
Component

Piston Aircraft Engine

Fluid

PHILLIPS 66 AVIATION X/C OIL SAE20W50 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We advise that you check the engine magneto timing. We advise that you monitor for an abnormal oil pressure drop and noise. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | --- | --- |
|---------------|-----|-------------|-----|--------|-----|-----|
| Chromium | ppm | ASTM D5185m | >20 | ▲ 48 | --- | --- |
| Copper | ppm | ASTM D5185m | >25 | ▲ 65 | --- | --- |
| Silicon | ppm | ASTM D5185m | >15 | ▲ 39 | --- | --- |

Customer Id: JOHHUMTX
 Sample No.: WC0674751
 Lab Number: 05839933
 Test Package: AVI 1



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Doug Bogart +1 (800)237-1369 x4016
dougb@wearcheckusa.com

To change component or sample information:
 Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

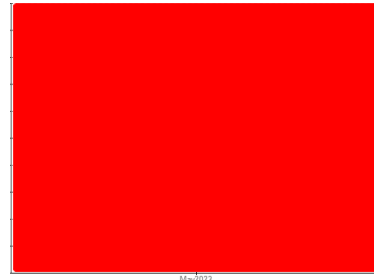
| Action | Status | Date | Done By | Description |
|-------------------|--------|------|---------|--|
| Monitor | --- | --- | ? | We advise that you monitor for an abnormal oil pressure drop and noise. |
| Change Fluid | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Change Filter | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Dirt Access | --- | --- | ? | We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. |
| Check Timing | --- | --- | ? | We advise that you check the engine magneto timing. |

HISTORICAL DIAGNOSIS



OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Machine Id

CONTINENTAL N415SS

Component

Piston Aircraft Engine

Fluid

PHILLIPS 66 AVIATION X/C OIL SAE20W50 (--- GAL)

DIAGNOSIS

▲ Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We advise that you check the engine magneto timing. We advise that you monitor for an abnormal oil pressure drop and noise. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

▲ Wear

Chromium and copper ppm levels are severe. Aluminum ppm levels are noted. Ring wear is indicated. Bearing and/or bushing wear is indicated. A cylinder ring may be cracked or broken.

▲ Contamination

There is a moderate concentration of dirt present in the oil. High amount of ingressed dirt has caused abrasive wear to the component.

Fluid Condition

The oil is no longer serviceable as a result of the abnormal and/or severe wear.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|--------------------|-------------|-------------|------------|-------------|----------|----------|
| Sample Number | Client Info | | | WC0674751 | --- | --- |
| Sample Date | Client Info | | | 01 May 2023 | --- | --- |
| TSN | hrs | Client Info | | 0 | --- | --- |
| TSO | hrs | Client Info | | 23 | --- | --- |
| Oil Age | hrs | Client Info | | 22 | --- | --- |
| Oil Changed | | Client Info | | Changed | --- | --- |
| Sample Status | | | | SEVERE | --- | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---------------|-----------|--------|------------|---------|----------|----------|
| Water | WC Method | | >0.1 | NEG | --- | --- |
| Glycol | WC Method | | | NEG | --- | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|-------------|-----|-------------|------------|---------|----------|----------|
| Iron | ppm | ASTM D5185m | >90 | 37 | --- | --- |
| Chromium | ppm | ASTM D5185m | >20 | ▲ 48 | --- | --- |
| Nickel | ppm | ASTM D5185m | >15 | 1 | --- | --- |
| Titanium | ppm | ASTM D5185m | | 1 | --- | --- |
| Silver | ppm | ASTM D5185m | >5 | 0 | --- | --- |
| Aluminum | ppm | ASTM D5185m | >25 | ● 11 | --- | --- |
| Lead | ppm | ASTM D5185m | >20000 | 1052 | --- | --- |
| Copper | ppm | ASTM D5185m | >25 | ▲ 65 | --- | --- |
| Tin | ppm | ASTM D5185m | >30 | 9 | --- | --- |
| Vanadium | ppm | ASTM D5185m | | <1 | --- | --- |
| Cadmium | ppm | ASTM D5185m | | 2 | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|------------|-----|-------------|------------|---------|----------|----------|
| Boron | ppm | ASTM D5185m | | 0 | --- | --- |
| Barium | ppm | ASTM D5185m | | 0 | --- | --- |
| Molybdenum | ppm | ASTM D5185m | | 0 | --- | --- |
| Manganese | ppm | ASTM D5185m | | <1 | --- | --- |
| Magnesium | ppm | ASTM D5185m | | 1 | --- | --- |
| Calcium | ppm | ASTM D5185m | | 5 | --- | --- |
| Phosphorus | ppm | ASTM D5185m | | 27 | --- | --- |
| Zinc | ppm | ASTM D5185m | | 21 | --- | --- |
| Sulfur | ppm | ASTM D5185m | | 1522 | --- | --- |

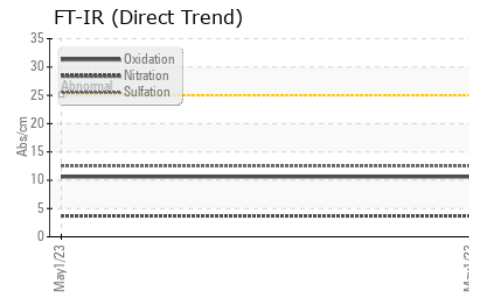
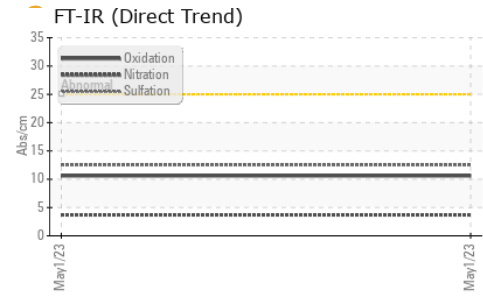
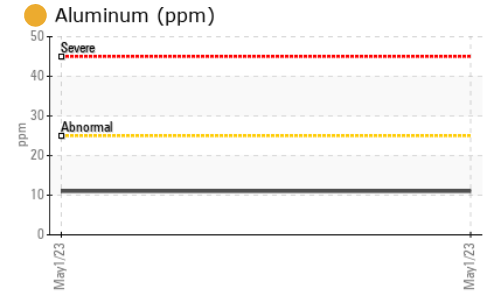
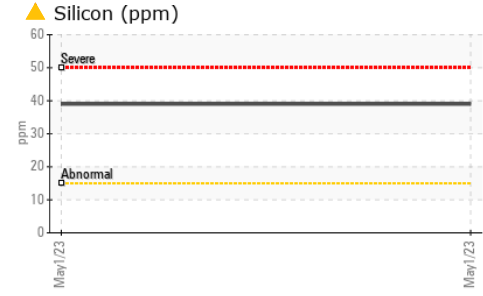
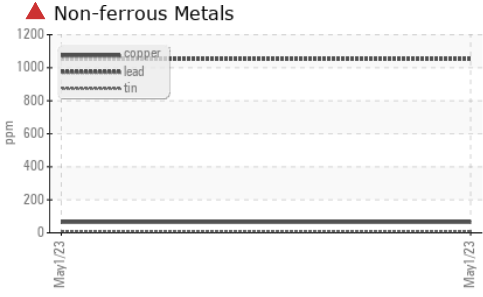
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|--------------|-----|-------------|------------|---------|----------|----------|
| Silicon | ppm | ASTM D5185m | >15 | ▲ 39 | --- | --- |
| Sodium | ppm | ASTM D5185m | | 6 | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | <1 | --- | --- |
| Fuel | % | ASTM D3524 | >4.0 | <1.0 | --- | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|-----------|----------|-------------|------------|---------|----------|----------|
| Soot % | % | *ASTM D7844 | | 0 | --- | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 3.7 | --- | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 12.5 | --- | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|-------------|------------|---------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 10.6 | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 0.2 | --- | --- |



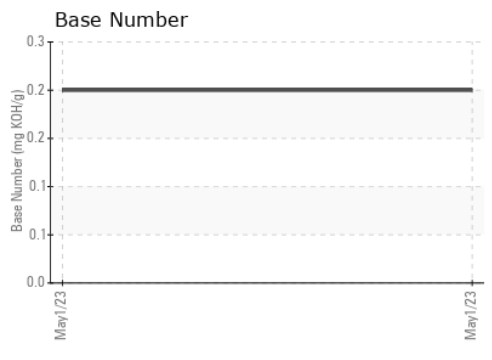
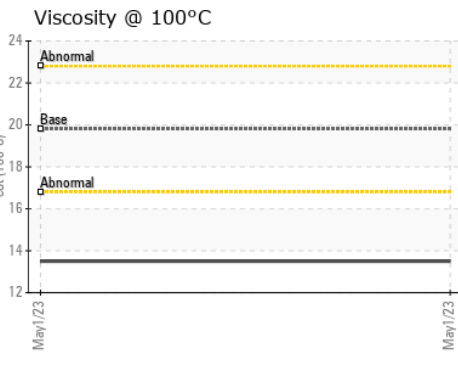
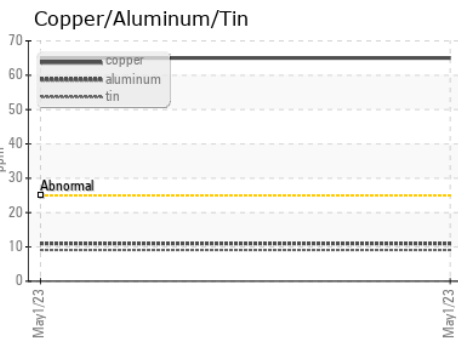
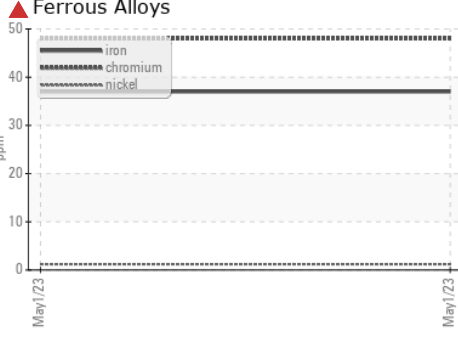
OIL ANALYSIS REPORT



| VISUAL | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|----------|----------|-----|
| White Metal | scalar | *Visual | NONE | NONE | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | --- | --- |
| Precipitate | scalar | *Visual | NONE | NONE | --- | --- |
| Silt | scalar | *Visual | NONE | NONE | --- | --- |
| Debris | scalar | *Visual | NONE | NONE | --- | --- |
| Sand/Dirt | scalar | *Visual | NONE | NONE | --- | --- |
| Appearance | scalar | *Visual | NORML | NORML | --- | --- |
| Odor | scalar | *Visual | NORML | NORML | --- | --- |
| Emulsified Water | scalar | *Visual | >0.1 | NEG | --- | --- |
| Free Water | scalar | *Visual | | NEG | --- | --- |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|----------|----------|-----|
| Visc @ 100°C | cSt | ASTM D445 | 19.8 | 13.5 | --- | --- |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0674751 **Received** : 05 May 2023
Lab Number : 05839933 **Tested** : 16 May 2023
Unique Number : 10458736 **Diagnosed** : 16 May 2023 - Doug Bogart
Test Package : AVI 1 (Additional Tests: FT-IR, FuelDilution, TBN)

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To discuss this sample report, contact Customer Service at 1-800-237-1369.
 * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.
 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)