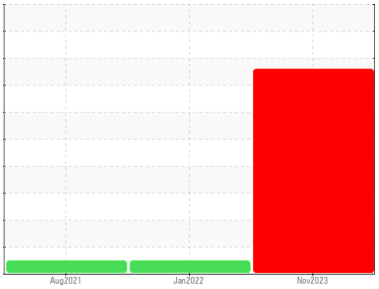
PROBLEM SUMMARY

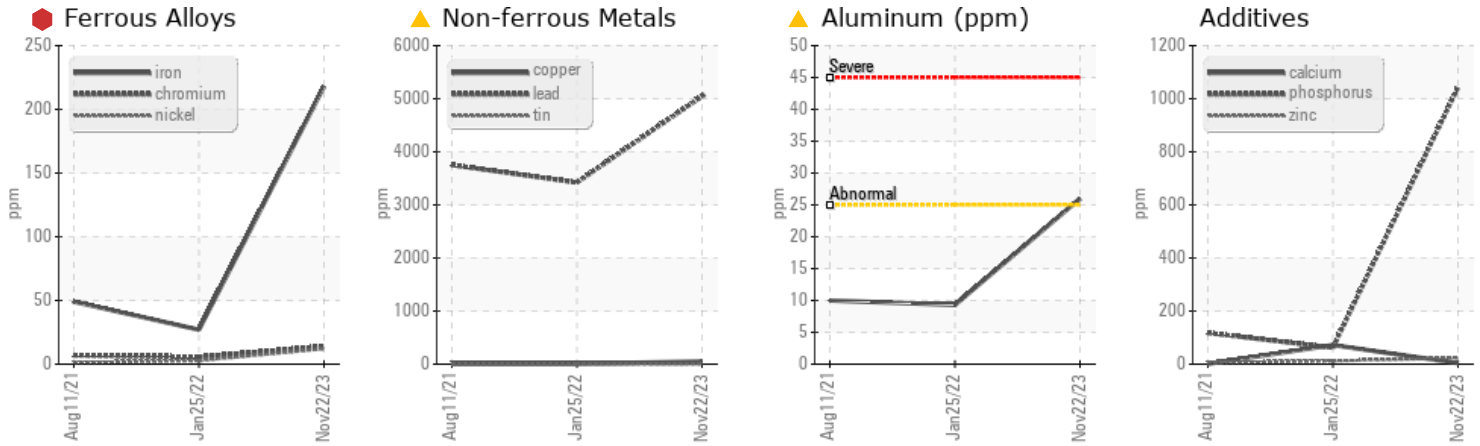
Sample Rating Trend



WEAR

Area
(C-GIMW)
Machine Id
[C-GIMW] DIAMOND DA40F L-40158-36A
Component
Piston Aircraft Engine
Fluid
PHILLIPS 66 AVIATION X/C OIL SAE20W50 (8 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check the engine magneto timing. We advise that you check for a possible too-lean mixture, or an over-advanced ignition timing. We advise that you monitor for an abnormal oil pressure drop and noise. We advise that you perform a compression test, and a borescope exam. The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. Provided compression test checks O.K., resample in 20 to 25 hours to monitor.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	NORMAL	NORMAL
Iron	ppm	ASTM D5185(m)	>90	**218**	27	49
Aluminum	ppm	ASTM D5185(m)	>25	**26**	9	10
Copper	ppm	ASTM D5185(m)	>25	**49**	9	7

Customer Id: WCSWIN
Sample No.: WC0882491
Lab Number: 02600947
Test Package: AVI 1

To manage this report scan the QR code

To discuss the diagnosis or test data:
Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@wearcheck.com

To change component or sample information:
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Monitor	---	---	?	We advise that you monitor for an abnormal oil pressure drop and noise. We advise that you perform a compression test, and a borescope exam.
Resample	---	---	?	We recommend an early resample to monitor this condition. Provided compression test checks O.K., resample in 20 to 25 hours to monitor.
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.
Check Timing	---	---	?	We advise that you check the engine magneto timing.

HISTORICAL DIAGNOSIS

25 Jan 2022 Diag: Kevin Marson

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

view report

11 Aug 2021 Diag: Kevin Marson

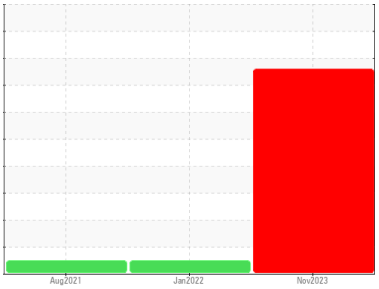
NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Area
(C-GIMW)
Machine Id
[C-GIMW] DIAMOND DA40F L-40158-36A
Component
Piston Aircraft Engine
Fluid
PHILLIPS 66 AVIATION X/C OIL SAE20W50 (8 LTR)

DIAGNOSIS

Recommendation

We advise that you check the engine magneto timing. We advise that you check for a possible too-lean mixture, or an over-advanced ignition timing. We advise that you monitor for an abnormal oil pressure drop and noise. We advise that you perform a compression test, and a borescope exam. The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. Provided compression test checks O.K., resample in 20 to 25 hours to monitor.

Wear

Iron ppm levels are severe. Aluminum and copper ppm levels are abnormal. Cylinder wear is indicated. High Aluminum (Al) level indicates abnormal bearing wear. Bearing and/or bushing wear is indicated.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

Additive levels indicate the addition of a different brand, or type of oil. 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		**WC0882491**	WC0651203	WC0603430
Sample Date		Client Info		**22 Nov 2023**	25 Jan 2022	11 Aug 2021
TSN	hrs	Client Info		**0**	0	0
TSO	hrs	Client Info		**2003**	1809	1760
Oil Age	hrs	Client Info		**56**	49	32
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
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

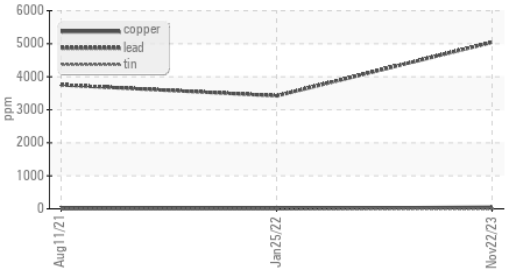
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*	>200	**104**	---	---
Iron	ppm	ASTM D5185(m)	>90	**218**	27	49
Chromium	ppm	ASTM D5185(m)	>20	**14**	6	7
Nickel	ppm	ASTM D5185(m)	>15	**12**	3	1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)	>5	**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>25	**26**	9	10
Lead	ppm	ASTM D5185(m)	>20000	**5046**	3422	3752
Copper	ppm	ASTM D5185(m)	>25	**49**	9	7
Tin	ppm	ASTM D5185(m)	>30	**1**	0	0
Antimony	ppm	ASTM D5185(m)		**0**	0	<1
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**1**	<1	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)		**6**	0	0
Manganese	ppm	ASTM D5185(m)		**<1**	0	0
Magnesium	ppm	ASTM D5185(m)		**1**	1	<1
Calcium	ppm	ASTM D5185(m)		**4**	72	1
Phosphorus	ppm	ASTM D5185(m)		**1042**	62	118
Zinc	ppm	ASTM D5185(m)		**23**	12	6
Sulfur	ppm	ASTM D5185(m)		**2899**	1358	1014
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

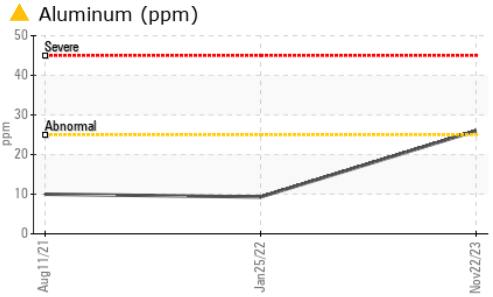
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**12**	4	5
Sodium	ppm	ASTM D5185(m)		**3**	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	**0**	1	<1

OIL ANALYSIS REPORT

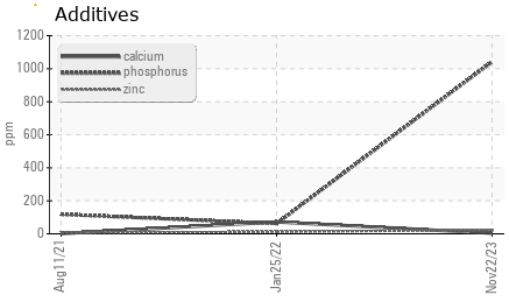
Non-ferrous Metals



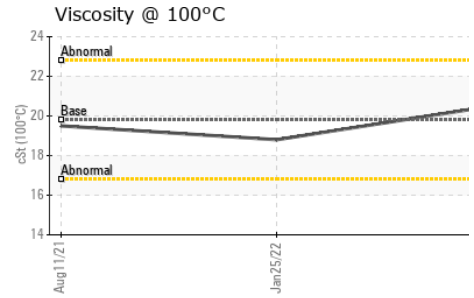
Aluminum (ppm)



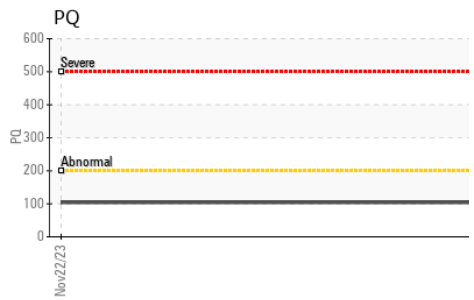
Additives



Viscosity @ 100°C



PQ

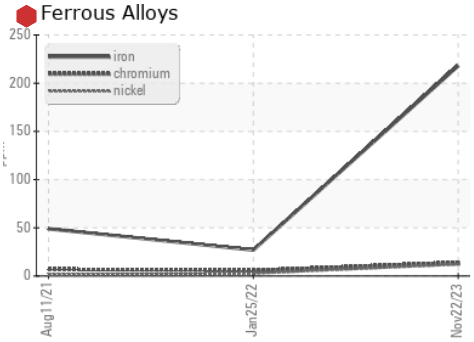


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	NONE	VLITE
Yellow Metal	scalar	Visual*	NONE	**NONE**	NONE	NONE
Precipitate	scalar	Visual*	NONE	**NONE**	NONE	NONE
Silt	scalar	Visual*	NONE	**NONE**	VLITE	VLITE
Debris	scalar	Visual*	NONE	**NONE**	NONE	NONE
Sand/Dirt	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**	.2%	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

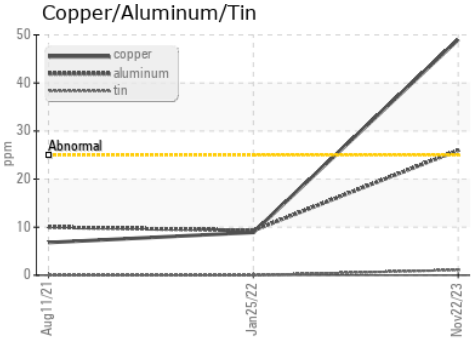
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	19.8	**20.5**	18.8	19.5

GRAPHS

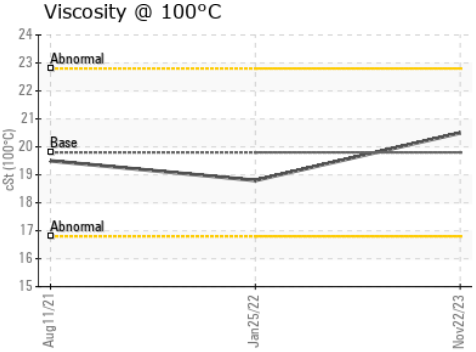
Ferrous Alloys



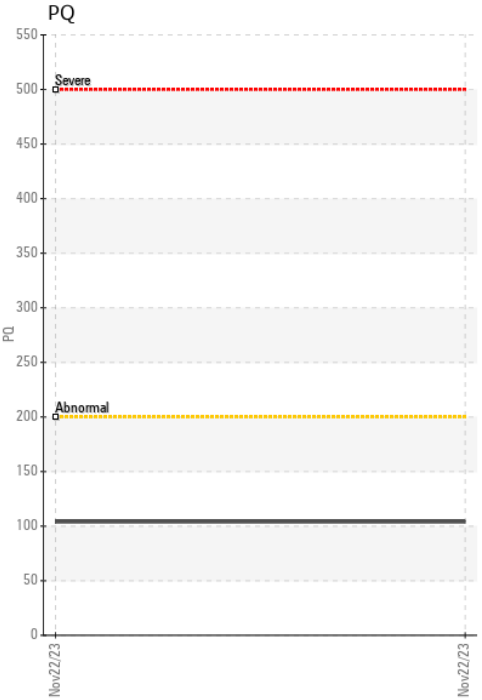
Copper/Aluminum/Tin



Viscosity @ 100°C



PQ



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0882491 **Received** : 05 Dec 2023
Lab Number : 02600947 **Diagnosed** : 06 Dec 2023
Unique Number : 5694032 **Diagnostician** : Kevin Marson
Test Package : AVI 1 (Additional Tests: PQ)

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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