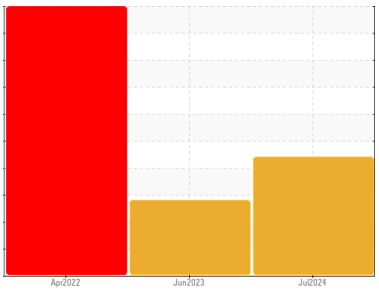
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Area
(C-GDAY)
Machine Id
[C-GDAY] BELLANCA 17-30A 557025
Component
Piston Aircraft Engine
Fluid
PHILLIPS 66 AVIATION X/C OIL SAE20W50 (12 QTS)

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 perform a compression test, and a borescope exam. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Provided compression test checks O.K., resample in 20 to 25 hours to monitor.

Wear

PQ levels are abnormal. Aluminum and iron ppm levels are abnormal. Wear particle analysis indicates that the ferrous rubbing particles are abnormal. Cylinder wear is indicated. High Aluminum (Al) level indicates abnormal bearing wear. The high ferrous density (PQ) index indicates that abnormal wear is occurring.

Contaminants

There is no indication of any contamination in the oil.

Oil Condition

The AN level is acceptable for this fluid. 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		**WC0725560**	WC0725540	WC0613866
Sample Date		Client Info		**09 Jul 2024**	21 Jun 2023	20 Apr 2022
TSN	hrs	Client Info		**21197**	2097	2089
TSO	hrs	Client Info		**523**	501	493
Oil Age	hrs	Client Info		**23**	8	66
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	ABNORMAL	SEVERE

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*		▲ **206**	▲ 217	▲ 177
Iron	ppm	ASTM D5185(m)	>90	▲ **313**	▲ 241	▲ 364
Chromium	ppm	ASTM D5185(m)	>20	**14**	12	▲ 23
Nickel	ppm	ASTM D5185(m)	>15	**29**	15	▲ 34
Titanium	ppm	ASTM D5185(m)		**<1**	<1	<1
Silver	ppm	ASTM D5185(m)	>5	**0**	0	0
Aluminum	ppm	ASTM D5185(m)	>25	▲ **60**	30	▲ 25
Lead	ppm	ASTM D5185(m)	>20000	**3599**	2201	4183
Copper	ppm	ASTM D5185(m)	>25	**10**	11	10
Tin	ppm	ASTM D5185(m)	>30	**0**	0	0
Antimony	ppm	ASTM D5185(m)		**0**	0	0
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**2**	2	2

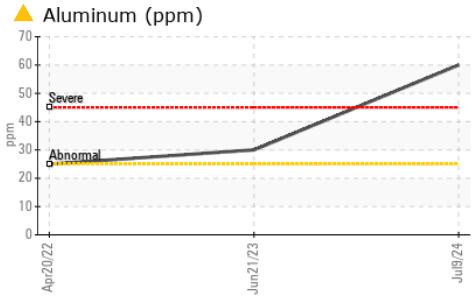
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)		**10**	7	12
Manganese	ppm	ASTM D5185(m)		**2**	2	2
Magnesium	ppm	ASTM D5185(m)		**2**	2	2
Calcium	ppm	ASTM D5185(m)		**13**	71	4
Phosphorus	ppm	ASTM D5185(m)		**13**	145	16
Zinc	ppm	ASTM D5185(m)		**2**	3	2
Sulfur	ppm	ASTM D5185(m)		**990**	1524	987
Lithium	ppm	ASTM D5185(m)		**<1**	<1	0

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**12**	11	13
Sodium	ppm	ASTM D5185(m)		**<1**	1	<1
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	2

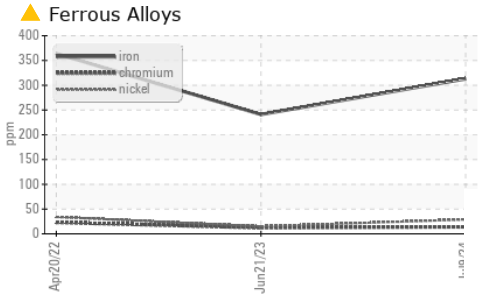
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.15	**1.08**	---	---

OIL ANALYSIS REPORT

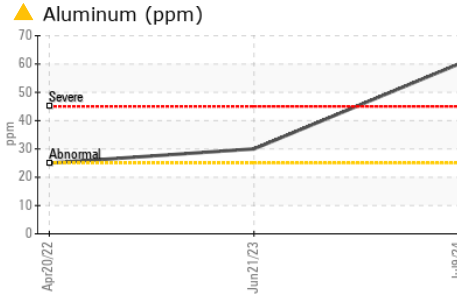
Aluminum (ppm)



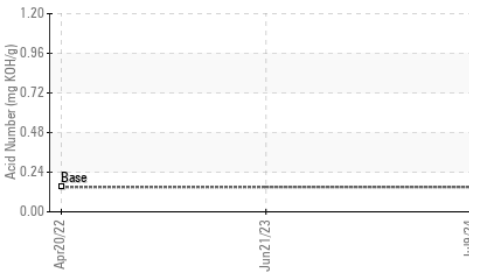
Ferrous Alloys



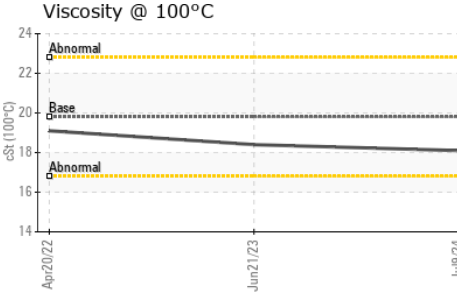
Aluminum (ppm)



Acid Number



Viscosity @ 100°C

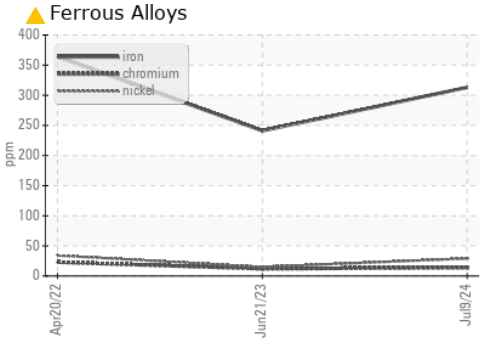


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	**NONE**	NONE	NONE
Precipitate	scalar	Visual*	NONE	**NONE**	NONE	NONE
Silt	scalar	Visual*	NONE	**VLITE**	VLITE	NONE
Debris	scalar	Visual*	NONE	**NONE**	NONE	VLITE
Sand/Dirt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

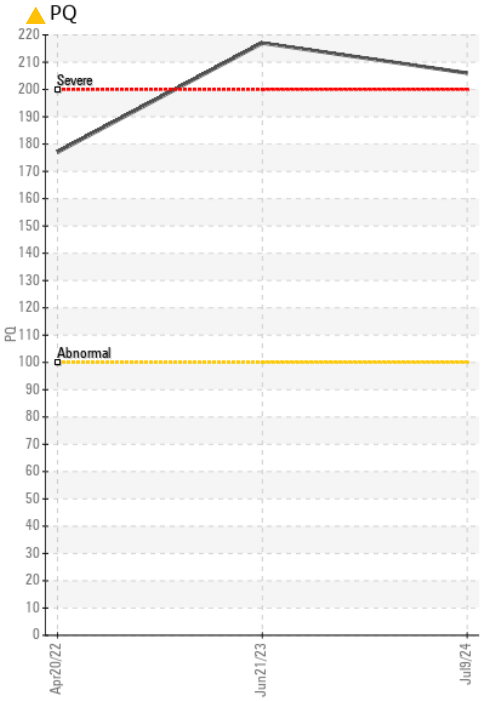
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	19.8	**18.1**	18.4	19.1

GRAPHS

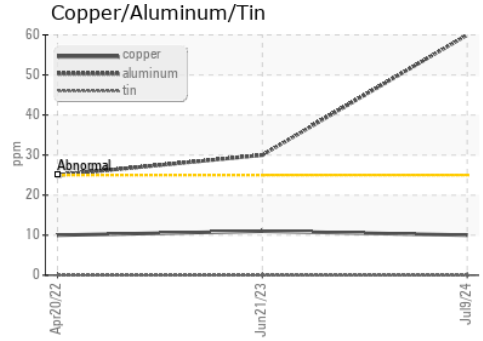
Ferrous Alloys



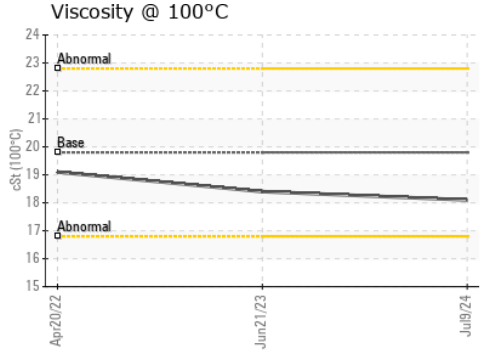
PQ



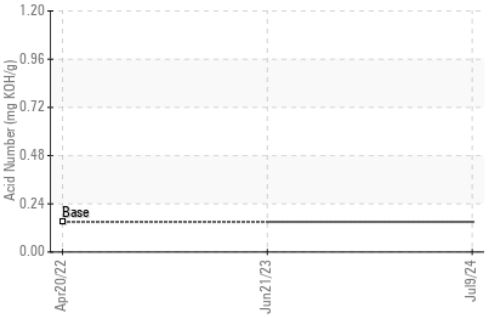
Copper/Aluminum/Tin



Viscosity @ 100°C



Acid Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0725560 **Received** : 10 Jul 2024
Lab Number : 02646992 **Tested** : 17 Jul 2024
Unique Number : 5812544 **Diagnosed** : 17 Jul 2024 - Kevin Marson
Test Package : AVI 3 (Additional Tests: PQ)

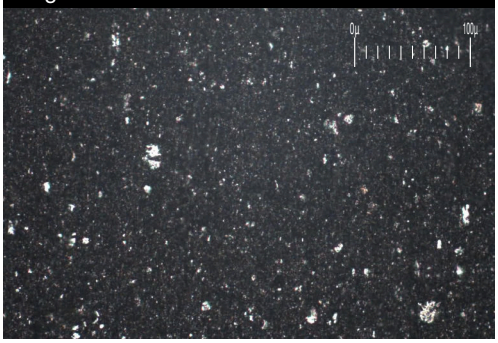
To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

GENERAL AIRSPRAY LTD.
6375 AIRPORT DRIVE, R.R. #1
LUCAN, ON
CA N0M 2J0
Contact: Paul Hodgins
genairspray@hotmail.com
T: (519)227-4091
F: (519)227-1588

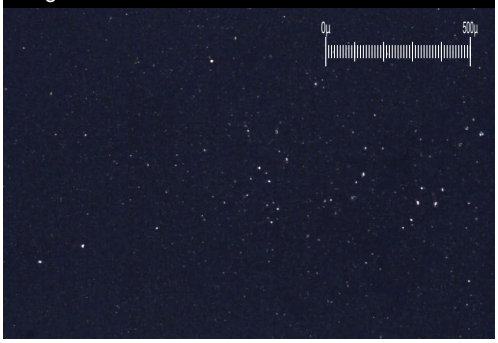
FERROGRAPHY REPORT

Area
(C-GDAY)
Machine Id
[C-GDAY] BELLANCA 17-30A 557025
Component
Piston Aircraft Engine
Fluid
PHILLIPS 66 AVIATION X/C OIL SAE20W50 (12 QTS)

Magn: 200x Illum: BC



Magn: 50x Illum: RW



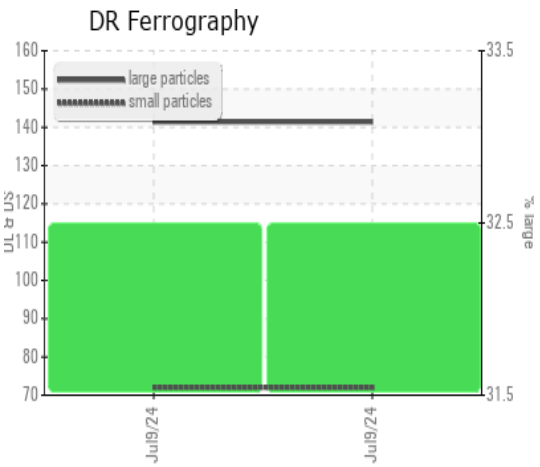
Magn: 100x Illum: RW

DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		**141.4**	---	---
Small Particles		DR-Ferr*		**72.0**	---	---
Total Particles		DR-Ferr*	>---	**213.4**	---	---
Large Particles Percentage	%	DR-Ferr*		**32.5**	---	---
Severity Index		DR-Ferr*		**9813**	---	---

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		▲ 8		
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		**4**		
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		**2**		
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*		**2**		
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*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**		
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**2**		

WEAR

PQ levels are abnormal. Aluminum and iron ppm levels are abnormal. Wear particle analysis indicates that the ferrous rubbing particles are abnormal. Cylinder wear is indicated. High Aluminum (Al) level indicates abnormal bearing wear. The high ferrous density (PQ) index indicates that abnormal wear is occurring.



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