

## **OIL ANALYSIS REPORT**

Sample Rating Trend

**WEAR** 

# PIPER C-FXVH (S/N 28-444)

**Piston Aircraft Engine** 

SHELL AEROSHELL W 15W50 MGR (8 QTS)

#### DIAGNOSIS

#### Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

### 🔺 Wear

Copper ppm levels are abnormal. Bearing and/or bushing wear is indicated.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

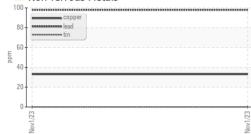
The oil is no longer serviceable as a result of the abnormal and/or severe wear.

	5)				Nov2023		
Sample Date         Client Info         D1 Nov 2023             TSN         hrs         Client Info         0             DIA ge         hrs         Client Info         25             Di Age         hrs         Client Info         25             CONTAMINATION         method         Imit/base         current         history1         history2           Fuel         WC Method         >4.0         <1.0             WAter         WC Method         >0.1         NEG             Silycol         WC Method         >0.1         NEG             WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM 05185(m)         >20         <1             Nickel         ppm         ASTM 05185(m)         >20         <1             Nickel         ppm         ASTM 05185(m)         >25         4             Aumium         ppm         ASTM 05185(m)	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
TSN         hrs         Client Info         0             TSO         hrs         Client Info         0             Dil Age         hrs         Client Info         25             Dil Changed         Client Info         N/A             Sample Status         method         limit/base         current         history1         history2           Fuel         WC Method         >-0.1         NEG             WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM 05185(m)         >0         4             WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM 05185(m)         >20         <1	Sample Number		Client Info		WC0852806		
FSO         hrs         Client Info         0             Dil Age         hrs         Client Info         25             Sample Status         Client Info         N/A             CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >4.0         <1.0	Sample Date		Client Info		01 Nov 2023		
Dil Age         hrs         Client Info         25             Dil Changed         Client Info         N/A             Sampie Status         Client Info         N/A             CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >4.0         <1.0	TSN	hrs	Client Info		0		
Dit Changed         Client Info         N/A             Sample Status         ABNORMAL             CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >0.1         NEG             Nater         WC Method         >0.1         NEG             VEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185(m)         >0             VEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185(m)         >20         <1	rso	hrs	Client Info		0		
Bample Status       ABNORMAL           CONTAMINATION       method       imit/base       current       history1       history2         Fuel       WC Method       >4.0       <1.0	Dil Age	hrs	Client Info		25		
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >4.0         <1.0	Oil Changed		Client Info		N/A		
Fuel         WC Method         >4.0.0         <1.0.	Sample Status				ABNORMAL		
Water         WC Method         >0.1         NEG             Slycol         WC Method         Imit/base         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185(m)         >90         4             Chromium         ppm         ASTM D5185(m)         >20         <1	CONTAMINATIC	N	method	limit/base	current	history1	history2
Biycol         WC Method         NEG             WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185(m)         >90         4             Chromium         ppm         ASTM D5185(m)         >20         <1	Fuel		WC Method	>4.0	<1.0		
WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185(m)         >90         4             Chromium         ppm         ASTM D5185(m)         >20         <1	Nater		WC Method	>0.1	NEG		
ronppmASTM D5185(m)>904ChromiumppmASTM D5185(m)>20<1	Glycol		WC Method		NEG		
Dromium         ppm         ASTM D5185(m)         >20         <1            Nickel         ppm         ASTM D5185(m)         >15         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel       ppm       ASTM D5185(m)       >15       <1           Fitanium       ppm       ASTM D5185(m)       >5       0           Silver       ppm       ASTM D5185(m)       >5       0           Aluminum       ppm       ASTM D5185(m)       >20000       98           Lead       ppm       ASTM D5185(m)       >20000       98           Copper       ppm       ASTM D5185(m)       >20000       98           Copper       ppm       ASTM D5185(m)       >30       0           Antimony       ppm       ASTM D5185(m)       0            Antimony       ppm       ASTM D5185(m)       0            Antimony       ppm       ASTM D5185(m)       0            Cadmium       ppm       ASTM D5185(m)       5       0           ADDITIVES       method       limit/base       current       history1       history2         Boron       ppm <td< td=""><td>ron</td><td>ppm</td><td>ASTM D5185(m)</td><td>&gt;90</td><td>4</td><td></td><td></td></td<>	ron	ppm	ASTM D5185(m)	>90	4		
Titanium       ppm       ASTM D5185(m)       >5       0           Silver       ppm       ASTM D5185(m)       >5       0           Aluminum       ppm       ASTM D5185(m)       >20000       98           Lead       ppm       ASTM D5185(m)       >20000       98           Copper       ppm       ASTM D5185(m)       >20       4           Copper       ppm       ASTM D5185(m)       >20       0           Antimony       ppm       ASTM D5185(m)       >30       0           Anadium       ppm       ASTM D5185(m)       0            Cadmium       ppm       ASTM D5185(m)       0            ADDITIVES       method       limit/base       current       history1       history2         Barium       ppm       ASTM D5185(m)       0            Molybdenum       ppm       ASTM D5185(m)       10       14            Mangasese       <	Chromium	ppm	ASTM D5185(m)	>20	<1		
Silver         ppm         ASTM D5185(m)         >5         0             Aluminum         ppm         ASTM D5185(m)         >25         4             Lead         ppm         ASTM D5185(m)         >20000         98             Copper         ppm         ASTM D5185(m)         >20000         98             Copper         ppm         ASTM D5185(m)         >20         0             Antimony         ppm         ASTM D5185(m)         >30         0             Anadium         ppm         ASTM D5185(m)         0              Cadmium         ppm         ASTM D5185(m)         0              ADDITIVES         method         limit/base         current         history1         history2           Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         0             Manganese         ppm         ASTM D5185(m)         10         14 <td>Nickel</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>&gt;15</td> <td>&lt;1</td> <td></td> <td></td>	Nickel	ppm	ASTM D5185(m)	>15	<1		
Numinum         ppm         ASTM D5185(m)         >255         4             ead         ppm         ASTM D5185(m)         >20000         98             Copper         ppm         ASTM D5185(m)         >25         A 33             Copper         ppm         ASTM D5185(m)         >30         0             Antimony         ppm         ASTM D5185(m)         0              Antimony         ppm         ASTM D5185(m)         0              Antimony         ppm         ASTM D5185(m)         0              Antimony         ppm         ASTM D5185(m)         0              Cadmium         ppm         ASTM D5185(m)         0              ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         10              Maganese         ppm         ASTM D5185(m) <td>Fitanium</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td></td> <td>0</td> <td></td> <td></td>	Fitanium	ppm	ASTM D5185(m)		0		
Lead         ppm         ASTM D5185(m)         >20000         98             Copper         ppm         ASTM D5185(m)         >25         ▲ 33             Tin         ppm         ASTM D5185(m)         >30         0             Antimony         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         5         0             Molybdenum         ppm         ASTM D5185(m)         5         0             Maganese         ppm         ASTM D5185(m)         10         14        C	Silver	ppm	ASTM D5185(m)	>5	0		
Copper         ppm         ASTM D5185(m)         >25         ▲ 33             Tin         ppm         ASTM D5185(m)         >30         0             Antimony         ppm         ASTM D5185(m)         0             Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         0             Marganese         ppm         ASTM D5185(m)         5         0             Vangenesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         1800         1286	Aluminum	ppm	ASTM D5185(m)	>25	4		
Tin         ppm         ASTM D5185(m)         >30         0             Antimony         ppm         ASTM D5185(m)         0             Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0             Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         5         0             Magnese         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         1800         1286	_ead	ppm	ASTM D5185(m)	>20000	98		
Antimony         ppm         ASTM D5185(m)         0             Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         4             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         5         0             Magnesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         1280         1181             Phosphorus         ppm         ASTM D5185(m)         1800         1286 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185(m)</td><td>&gt;25</td><td><u> </u></td><td></td><td></td></t<>	Copper	ppm	ASTM D5185(m)	>25	<u> </u>		
Vanadium       ppm       ASTM D5185(m)       0           Beryllium       ppm       ASTM D5185(m)       0           Cadmium       ppm       ASTM D5185(m)       4           ADDITIVES       method       limit/base       current       history1       history2         Boron       ppm       ASTM D5185(m)       0           Barium       ppm       ASTM D5185(m)       0           Barium       ppm       ASTM D5185(m)       0           Molybdenum       ppm       ASTM D5185(m)       5       0           Magnesium       ppm       ASTM D5185(m)       10       14           Calcium       ppm       ASTM D5185(m)       10       14           Phosphorus       ppm       ASTM D5185(m)       10       13           Sulfur       ppm       ASTM D5185(m)       1800       1286           CONTAMINANTS       method       limit/base       current       history1       history2<	Гin	ppm	ASTM D5185(m)	>30	0		
BerylliumppmASTM D5185(m)0CadmiumppmASTM D5185(m)4ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)0BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)50MaganeseppmASTM D5185(m)1014CalciumppmASTM D5185(m)101181PhosphorusppmASTM D5185(m)1013ZincppmASTM D5185(m)1001286SulfurppmASTM D5185(m)18001286LithiumppmASTM D5185(m)>153SodiumppmASTM D5185(m)>153SodiumppmASTM D5185(m)>153	Antimony	ppm	ASTM D5185(m)		0		
CadmiumppmASTM D5185(m)4ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)0BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)1014MagnesiumppmASTM D5185(m)1014CalciumppmASTM D5185(m)10181PhosphorusppmASTM D5185(m)1013SulfurppmASTM D5185(m)18001286LithiumppmASTM D5185(m)18001286CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>153SodiumppmASTM D5185(m)>153	Vanadium	ppm	ASTM D5185(m)		0		
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)0BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)1014MagnesiumppmASTM D5185(m)1014CalciumppmASTM D5185(m)10181PhosphorusppmASTM D5185(m)1013SulfurppmASTM D5185(m)18001286LithiumppmASTM D5185(m)18001286CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>153SodiumppmASTM D5185(m)-15	Beryllium	ppm	ASTM D5185(m)		0		
Boron         ppm         ASTM D5185(m)         0             Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         5         0             Manganese         ppm         ASTM D5185(m)         5         0             Magnesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         <11	Cadmium	ppm	ASTM D5185(m)		4		
Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         5         0             Manganese         ppm         ASTM D5185(m)         5         0             Magnesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         <11	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         5         0             Manganese         ppm         ASTM D5185(m)         10         14             Magnesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         14             Phosphorus         ppm         ASTM D5185(m)         1280         1181             Zinc         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         1800         1286             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         3             Sodium         p	Boron	ppm	ASTM D5185(m)		0		
Manganese         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         <1	Barium	ppm	ASTM D5185(m)		0		
Magnesium         ppm         ASTM D5185(m)         10         14             Calcium         ppm         ASTM D5185(m)         10         <1	Nolybdenum	ppm	ASTM D5185(m)	5	0		
Data         ppm         ASTM D5185(m)         10         <1             Phosphorus         ppm         ASTM D5185(m)         1280         1181             Zinc         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         1800         1286             Lithium         ppm         ASTM D5185(m)         1800         1286             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         3             Sodium         ppm         ASTM D5185(m)          0	Manganese	ppm	ASTM D5185(m)		0		
Phosphorus         ppm         ASTM D5185(m)         1280         1181             Zinc         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         1800         1286             Lithium         ppm         ASTM D5185(m)         I800         1286             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         3             Sodium         ppm         ASTM D5185(m)         0         0	Magnesium	ppm	ASTM D5185(m)	10	14		
Zinc         ppm         ASTM D5185(m)         10         13             Sulfur         ppm         ASTM D5185(m)         1800         1286             ithium         ppm         ASTM D5185(m)         1800         1286             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         3             Sodium         ppm         ASTM D5185(m)          0	Calcium	ppm	ASTM D5185(m)	10	<1		
Sulfur         ppm         ASTM D5185(m)         1800         1286             Lithium         ppm         ASTM D5185(m)         1800         1286             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         3             Sodium         ppm         ASTM D5185(m)         >15         3	•	ppm	ASTM D5185(m)	1280			
Lithium     ppm     ASTM D5185(m)     <1         CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185(m)     >15     3         Sodium     ppm     ASTM D5185(m)     0		ppm	( )	10	13		
CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185(m)     >15     3         Sodium     ppm     ASTM D5185(m)     0	Sulfur		1 /	1800			
Silicon         ppm         ASTM D5185(m)         >15         3             Sodium         ppm         ASTM D5185(m)         0	Lithium	ppm	ASTM D5185(m)		<1		
Sodium         ppm         ASTM D5185(m)         0	CONTAMINANT	S	method	limit/base	current	history1	history2
	Silicon	ppm	ASTM D5185(m)	>15	3		
Potassium         ppm         ASTM D5185(m)         >20         2	Sodium	ppm	ASTM D5185(m)		0		
	Potassium	ppm	ASTM D5185(m)	>20	2		



# **OIL ANALYSIS REPORT**

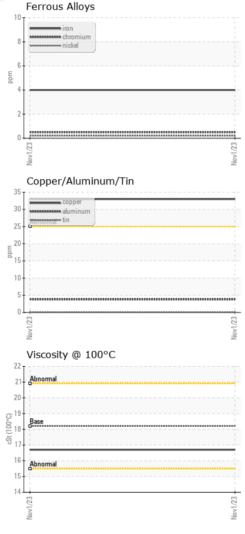
#### A Non-ferrous Metals



#### Viscosity @ 100°C



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	VLITE		
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 PROPER	TIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	18.2	16.7		
GRAPHS						
<b>E A</b>						



: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

: 02 Jan 2024

: 03 Jan 2024

Recieved

Diagnosed

CAMX AEROSPACE

8281 AVIATION RD GARSON, ON CA P3L 1V4 Contact: Kyle Marcoux sales@camxaerospace.com T: (866)279-7880 F:



 
 Accredited Laboratory
 Unique Number
 : 5706968
 Diagnostician
 : 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.

: WC0852806

: 02605882

CALA

ISO 17025:2017

Laboratory

Sample No.

Lab Number