

PROBLEM SUMMARY

Area (C-GBNE) [C-GBNE] CESSNA 560 PCE-108428

Component Jet Turbine Fluid EASTMAN TURBO OIL 2380 (2 GAL)

COMPONENT CONDITION SUMMARY



No relevant graphs to display

RECOMMENDATION	PROBLEMATIC TEST RESULTS	PROBLEMATIC TEST RESULTS				
We recommend that you drain the oil from the	Sample Status	SEVERE				

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.

THOBELMATIO TEST RESOLTS								
	Sample Status				SEVERE			
	Ferrous Cutting	Scale 0-10	ASTM D7684*		• 1			

Customer Id: KEEWIN Sample No.: WC0880036 Lab Number: 02604116 Test Package: AVI 3



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 <u>gloria.gonzalez@wearcheck.com</u>

RECOMMENDED ACTIONS								
Action	Status	Date	Done By	Description				
Change Fluid			?	We recommend that you drain the oil from the component if this has not already been done.				
Resample			?	We recommend an early resample to monitor this condition.				

HISTORICAL DIAGNOSIS



OIL ANALYSIS REPORT

Sample Rating Trend

WEAR PARTICLES

(C-GBNE) [C-GBNE] CESSNA 560 PCE-108428 omponent

Jet Turbine Fluid

EASTMAN TURBO OIL 2380 (2 GAL)

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

Wear particle analysis indicates that the ferrous cutting particles are severe. Cutting wear particles are caused by either hard protuberances (misaligned components, etc.), or abrasives entering the system and embedding themselves in softer materials (sand, etc.), and gouging out mating surfaces.

Contaminants

The water content is negligible. 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.

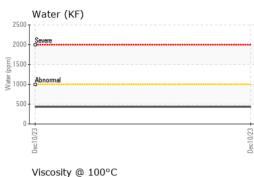


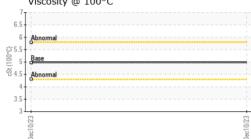
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0880036		
Sample Date		Client Info		10 Dec 2023		
TSN	hrs	Client Info		0		
TSO	hrs	Client Info		0		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		Not Changd		
Sample Status				SEVERE		
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>8	0		
Chromium	ppm	ASTM D5185(m)	>2	0		
Nickel	ppm	ASTM D5185(m)	>2	0		
Titanium	ppm	ASTM D5185(m)	>2	0		
Silver	ppm	ASTM D5185(m)	>2	<1		
Aluminum	ppm	ASTM D5185(m)	>2	0		
Lead	ppm	ASTM D5185(m)	>3	<1		
Copper	ppm	ASTM D5185(m)	>3	<1		
Tin	ppm	ASTM D5185(m)	>2	0		
Antimony	ppm	ASTM D5185(m)		0		
Vanadium	ppm	ASTM D5185(m)		0		
Beryllium	ppm	ASTM D5185(m)		0		
Cadmium	ppm	ASTM D5185(m)		0		
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	<1		
Barium	ppm	ASTM D5185(m)	0	<1		
Molybdenum	ppm	ASTM D5185(m)	0	0		
Manganese	ppm	ASTM D5185(m)		0		
Magnesium	ppm	ASTM D5185(m)	0	0		
Calcium	ppm	ASTM D5185(m)	0	<1		
Phosphorus	ppm	ASTM D5185(m)	2500	2673		
Zinc	ppm	ASTM D5185(m)	0	<1		
Sulfur	ppm	ASTM D5185(m)	0	3		
Lithium	ppm	ASTM D5185(m)		<1		
CONTAMINANTS	;	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>8	<1		
Sodium	ppm	ASTM D5185(m)		<1		
Potassium	ppm	ASTM D5185(m)	>20	0		
Water	%	ASTM D6304*	>0.1	0.043		
ppm Water	ppm	ASTM D6304*	>1000	433		

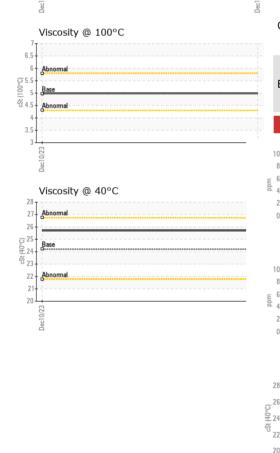
ppm Water	ppm	ASTM D6304*	>1000	433		
FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.43	0.51		



OIL ANALYSIS REPORT







Acid Number Acid Number Acid Number Acid Number Acid Number Acid Number MeanCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 WC0880036 Recieved : 19 Dec 2023 202604116 Diagnosed : 21 Dec 2023 50 Morberg Way Winnipeg, MB 5697201 Diagnostician : Kevin Marson CA R3H 0A4	VISUAL		method	limit/base	current	history1	history2
Precipitate scalar Visual' NONE NONE	White Metal	scalar	Visual*	NONE	NONE		
Silt scalar Visual* NONE NONE	Yellow Metal	scalar	Visual*	NONE	NONE		
Silt scalar Visual* NONE NONE	Precipitate	scalar	Visual*	NONE	NONE		
Sand/Dirit scalar Visual* NONE LIGHT Appearance scalar Visual* NORML NORML Emulsified Water scalar Visual* NORML NORML Free Water scalar Visual* Free Water scalar Visual* Free Water scalar Visual* FLUID PROPERTIES method limit/base current history1 history2 Viscosity Index (VI) Scale ASTM 0272/01 134 122 SAMPLE IMAGES method limit/base current history1 history2 Viscosity Index (VI) Scale ASTM 0272/01 134 122 Color no image no image no image no image Non-ferrous Metals Viscosity @ 40°C Viscosity @ 40°C Viscosity @ 40°C Viscosity @ 40°C Viscosity @ 40°C Wiscosity Index (VI) Scale Burlington, ON L/L 5H9 WearCheck- C8-1175 Appleby Line, Burlington, ON L/L 5H9 WearCheck - C8-1175 Appleby Line, Burlington, ON L/L 5H9 Viscosity Index (C3-1175 Appleby Line, Burlington, ON L/L 5H9 Viscosity Index (C3-1		scalar	Visual*	NONE	NONE		
Appearance scalar Visual* NORML Odor scalar Visual* NORML NORML Emulsified Water scalar Visual* NORML NORML Free Water scalar Visual* 0.1 NEG FLUID PROPERTIES method imit/base current history1 history2 Viscosity Index (VI) Scala ASTM D2270* 134 122 SAMPLE IMAGES method imit/base current history1 history2 Color Imit/base current history1 history2 Viscosity (models) Imit/base current history1 history2 Viscosity (modelor<	Debris	scalar	Visual*	NONE	NONE		
Odor scalar Visual* NORML Emulsified Water scalar Visual* NEG Free Water scalar Visual* NEG FLUID PROPERTIES method imit/base current history1 history2 Visc @ 40°C cSt ASTM 0729(m) 24.2 25.7 Visc @ 10°C cSt ASTM 0729(m) 4.97 5 SAMPLE IMAGES method imit/base current history1 history2 Color imit/base current history1 history2 SAMPLE IMAGES method imit/base current history1 history2 Gelar imit/base imit/base imit/base imit/base imit/base imit/base <t< th=""><th>Sand/Dirt</th><th>scalar</th><th>Visual*</th><th>NONE</th><th>LIGHT</th><th></th><th></th></t<>	Sand/Dirt	scalar	Visual*	NONE	LIGHT		
Emulsified Water scalar Visual* >0.1 NEG Free Water scalar Visual* NEG FLUID PROPERTIES method limit/base current history1 history2 Viscosity 100°C cSt ASIM 07279m 4.97 5 SAMPLE IMAGES method limit/base current history1 history2 SAMPLE IMAGES method limit/base current history1 history2 Color no image no image no image no image Reterved in the stand of	Appearance	scalar	Visual*	NORML	NORML		
Free Water scalar Visual* NEG FLUID PROPERTIES method imit/base current history1 history2 Visc @ 40°C cSt ASIM D723(m) 24.2 25.7 Visc @ 100°C cSt ASIM D723(m) 4.97 5 SAMPLE IMAGES method imit/base current history1 history2 Color imit/base current history1 history2 Bottom imit/base current history1 history2 Color imit/base current history1 history2 Bottom imit/base current history1 history2 GRAPHS imit/base current history1 history2 Viscosity @ 40°C imit/base current Acid Number imit/imit/imit/imit/imit/imit/imit/imit	Odor	scalar	Visual*	NORML	NORML		
FLUID PROPERTIES method limit/base current history1 history2 Visc @ 40°C cSt ASTM0729(m) 24.2 25.7 Visc @ 100°C cSt ASTM0729(m) 4.97 5 Visc @ 100°C cSt ASTM07279(m) 4.97 5 SAMPLE IMAGES method imit/base current history1 history2 Color imit/base current history1 history2 Color imit/base no image no image no image Bottom imit/base gr no image no image Viscosity @ 40°C imit/base Viscosity @ 40°C imit/base Viscosity @ 40°C WoeaCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Keewatin Air LP 50 Morberg Way 50 Morberg Way Wolas0036 Recieved : 19 Dec 2023 Winnipeg, 0A CA R3H 0A CA R3H 0A	Emulsified Water	scalar	Visual*	>0.1	NEG		
Visc @ 40°C cSt ASTM D7279(m) 24.2 25.7 Visc @ 100°C cSt ASTM D7279(m) 4.97 5 Viscosity Index (VI) Scale ASTM D2270' 134 122 SAMPLE IMAGES method limit/base current history1 history2 Color Ino image no image Bottom no image no image GRAPHS Ferrous Alloys Viscosity @ 40°C Viscosity @ 40°C	Free Water	scalar	Visual*		NEG		
Visc @ 100°C cSt ASTM D2270° 134 122 SAMPLE IMAGES method limit/base current history1 history2 Color no image no image Bottom no image no image Retrous Alloys GRAPHS Ferrous Alloys 0 0 0 0 0 0 0 0 0 0 0 0 0	FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 100°C cSt ASTM D2270° 134 122 SAMPLE IMAGES method limit/base current history1 history2 Color no image no image Bottom no image no image Retrous Alloys GRAPHS Ferrous Alloys 0 0 0 0 0 0 0 0 0 0 0 0 0	Visc @ 40°C	cSt	ASTM D7279(m)	24.2	25.7		
Viscosity Index (VI) Scale ASTM 02270 134 122 SAMPLE IMAGES method imit/base current history1 history2 Color Ino image no image Bottom Ino image no image Retorm Ino image no image Ino image no image Non-ferrous Metals Viscosity @ 40°C Index 175 Appleby Line, Burlington, ON L/L 5H9 WearCheck - C8-1175 Appleby Line, Burlington, ON L/L 5H9 S0 Morberg Way 19 Des 2023 S0 Morberg Way 19 Des 2023 S0 Morberg May CA R3H 0A4					-		
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Ferrous Alloys Ferrous Alloys Ferrous Metals Non-ferrous Metals Viscosity @ 40°C Wiscosity @ 40°C Ferrous Metals Ferrous Metals Ferrou	Bottom					no image	no image
Non-ferrous Metals Non-ferrous Metals Viscosity @ 40°C Viscosity @ 40°C WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 WC0880036 Recieved : 19 Dec 2023 Segretaria : 19 Dec 2023 Segret	GRAPHS						
Ahnormal Base Ahnormal Ahnormal Base Ahnormal Constrained Ahnormal Base Ahnormal Constrained Base Ahnormal Constrained Base Constrained	Non-ferrous Metal	5		Dec10/23	Acid Number		
No <th>Abnormal</th> <th></th> <th></th> <th>(B/H0.6</th> <th></th> <th></th> <th></th>	Abnormal			(B/H0.6			
No <td>26 + Base</td> <td></td> <td></td> <td>¥ 0.4</td> <th>G - Dase</th> <td></td> <td></td>	26 + Base			¥ 0.4	G - Dase		
No <td>24 7</td> <td></td> <td></td> <td>e 0.2</td> <th>4</th> <td></td> <td></td>	24 7			e 0.2	4		
No <th>22 3</th> <th></th> <th></th> <th>N 0.1</th> <th>2</th> <th></th> <th></th>	22 3			N 0.1	2		
: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 : WC0880036 Recieved : 19 Dec 2023 : 02604116 Diagnosed : 21 Dec 2023 Winnipeg, MB : 5697201 Diagnostician : Kevin Marson CA R3H 0A4				0/23	0/23		0/23 -
	: WearCheck - C8-11 : WC0880036 I : 02604116 I	Recieved Diagnos	d :191 ed :211	ington, ON L Dec 2023 Dec 2023			Keewatin Air LP 50 Morberg Way Winnipeg, MB
	: AVI 3	Liagilosi				Contact:	

Accredited Laboratory Test Package : AVI 3 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.

Report Id: KEEWIN [WCAMIS] 02604116 (Generated: 12/21/2023 11:19:29) Rev: 1

Laboratory

Sample No. Lab Number

Unique Number

CALA

ISO 17025:2017

Contact/Location: Rochelle Aranez - KEEWIN

raranez@keewatinair.ca

T: (204)888-0100

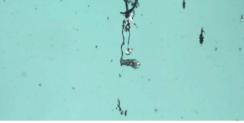
F: (204)888-5791

FERROGRAPHY REPORT

Area (C-GBNE) Machine Id [C-GBNE] CESSNA 560 PCE-108428

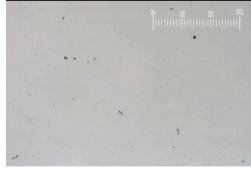
Jet Turbine Fluid EASTMAN TURBO OIL 2380 (2 GAL)

Magn: 200x Illum: BC





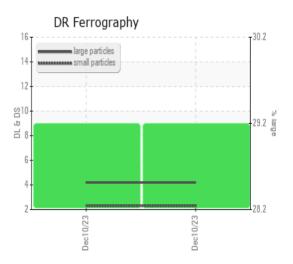
Magn: 100x Illum: RW



DR-FERROGRAP	PHY	method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		4.2		
Small Particles		DR-Ferr*		2.3		
Total Particles		DR-Ferr*	>	6.5		
Large Particles Percentage	%	DR-Ferr*		29.2		
Severity Index		DR-Ferr*		8		
FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2		
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*	(1		
Ferrous Rolling	Scale 0-10	ASTM D7684*		1		
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
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

Wear particle analysis indicates that the ferrous cutting particles are severe. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embedding themselves in softer materials (sand, etc.), and gouging out mating surfaces.



Report Id: KEEWIN [WCAMIS] 02604116 (Generated: 12/21/2023 11:19:32) Rev: 1

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