

# **PROBLEM SUMMARY**

# Sample Rating Trend

# **VISCOSITY**

Saugeen Shores SP-17701 12K13

Component Grease

SKF LGWM 1 (--- LTR)





# COMPONENT CONDITION SUMMARY

No relevant graphs to display

## RECOMMENDATION

We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS								
Sample Status				SEVERE	ABNORMAL	NORMAL		
NLGI Consistency	NLGI Scale	SKF Method*	1	000-00	<u> </u>	00-0		
PrtFilter								

**Customer Id: VESTAS** Sample No.: PP0835233 Lab Number: 02590813 Test Package: GRS 1

To manage this report scan the QR code

To discuss the diagnosis or test data: Bill Quesnel CLS, OMA II, MLA-III, LLA-I+1 (289)291-4641 x4641

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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
Resample			?	We recommend an early resample to monitor this condition.

# HISTORICAL DIAGNOSIS

22 Aug 2022 Diag: Bill Quesnel

#### VISCOSITY



We recommend an early resample to monitor this condition. No other corrective action is recommended at this time.All component wear rates are normal. There is no indication of any contamination in the grease. The grease NLGI grade has changed from 1 to 00. The condition of the grease is acceptable for the time in service.



## 17 Sep 2021 Diag: Bill Quesnel

#### NORMAL



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





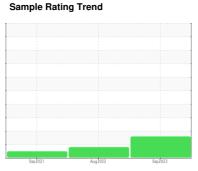
# **GREASE ANALYSIS**

# Saugeen Shores SP-17701 12K13

Component

Grease

SKF LGWM 1 (--- LTR)





# DIAGNOSIS

#### Recommendation

We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

# Grease Condition

Grease consistency has changed by 2-1/2 NLGI grades from NLGI 1 to 000-00.

#### **Contaminants**

There is no indication of any contamination in the grease.

Sample Number   Client Info   PP0835233   WC0577987   PP0546462   Sample Date   Client Info   19 Sep 2023   22 Aug 2022   17 Sep 202   17 Sep 202   Machine Age   yrs   Client Info   15			Se	p2021	Aug2022 Sep2	D23	
Sample Date   Cilient Info   19 Sep 2023   22 Aug 2022   17 Sep 202	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age Grease Age Grease Serviced         yrs         Client Info         15         14         0           Grease Serviced Sample Status         Client Info         15         14         0           WEAR METALS         method         Imit/base         Not Changd         N/A           WEAR METALS         method         Imit/base         current         history1         history1           PQ         ASTM D8184*         >200         360         20         210         210           Iron         ppm         ASTM D8188(m)         >250         119         114         144           Chromium         ppm         ASTM D8188(m)         >250         119         114         144           Chromium         ppm         ASTM D8188(m)         >50         -1         <1	Sample Number		Client Info		PP0835233	WC0577987	PP0546462
Grease Age         yrs         Client Info         15         14         0           Grease Serviced         Client Info         Not Changd         Not Changd         N/A           Sample Status         method         limit/base         current         history1         NoRMAL           WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184*         >200         360         20         210           Iron         ppm         ASTM D5185(m)         >25         -1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Sample Date		Client Info		19 Sep 2023	22 Aug 2022	17 Sep 202
Crease Serviced   Client Info   Severe   ABNORMAL   NORMAL	Machine Age	yrs	Client Info		15	14	0
SEVERE   ABNORMAL   NORMAL	Grease Age	yrs	Client Info		15	14	0
WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184*         >200         360         20         210           Iron         ppm         ASTM D8188/m)         >250         119         114         144           Chromium         ppm         ASTM D8188/m)         >10         <1	Grease Serviced		Client Info		Not Changd	Not Changd	N/A
PQ	Sample Status				SEVERE	ABNORMAL	NORMAL
	WEAR METALS		method	limit/base	current	history1	history2
Chromium	PQ		ASTM D8184*	>200	360	20	210
Nickel	Iron	ppm	ASTM D5185(m)	>250	119	114	144
Nickel	Chromium	ppm	ASTM D5185(m)	>10	<1	<1	<1
Description   Description	Nickel		ASTM D5185(m)	>5	<1	<1	<1
Vanadium         ppm         ASTM D5185(m)         0         0         0           Lead         ppm         ASTM D5185(m)         >25         0         0         0           Copper         ppm         ASTM D5185(m)         >75         <1	Cadmium	ppm	ASTM D5185(m)		0	0	0
Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Lead         ppm         ASTM D5185(m)         >25         0         0         0           Copper         ppm         ASTM D5185(m)         >5         <1         0         <1           Tin         ppm         ASTM D5185(m)         >5         <0         0         0           Silver         ppm         ASTM D5185(m)         >5         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         <1         <1         2           Magnesium         ppm         ASTM D5185(m)         0         <1         <1         <1         <1           Manganese         ppm         ASTM D5185(m)         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <th< td=""><td>Titanium</td><td></td><td>ASTM D5185(m)</td><td></td><th>0</th><td>0</td><td>0</td></th<>	Titanium		ASTM D5185(m)		0	0	0
Lead	Vanadium				0	0	0
Description	Lead		ASTM D5185(m)	>25	0	0	0
Tin	Copper		, ,		<1	0	<1
ADDITIVES		ppm	ASTM D5185(m)	>5	0	0	0
Boron	Silver	ppm	ASTM D5185(m)	>5	<1	0	<1
Magnesium         ppm         ASTM D5185(m)         0         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <td>ADDITIVES</td> <td></td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	ADDITIVES		method	limit/base	current	history1	history2
Manganese         ppm         ASTM D5185(m)         0         <1         <1         <1           Molybdenum         ppm         ASTM D5185(m)         0         0         0         <1           Phosphorus         ppm         ASTM D5185(m)         5         4         5         7           Zinc         ppm         ASTM D5185(m)         20         12         14         18           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Aluminum         ppm         ASTM D5185(m)         0         <1         <1         <1           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Calcium         ppm         ASTM D5185(m)         0         0         0         0         0           Sodium         ppm         ASTM D5185(m)         2         3         2         2         2           Lithium          ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         >150         614         646         681           CONTAMINANTS         method	Boron	ppm	ASTM D5185(m)	0	<1	<1	2
Molybdenum         ppm         ASTM D5185(m)         0         0         <1           Phosphorus         ppm         ASTM D5185(m)         5         4         5         7           Zinc         ppm         ASTM D5185(m)         20         12         14         18           Antimony         ppm         ASTM D5185(m)         0         0         0         0           THICKENER/SOAP         method         limit/base         current         history1         history2           Aluminum         ppm         ASTM D5185(m)         0         <1	Magnesium	ppm	ASTM D5185(m)	0	0	0	<1
Phosphorus         ppm         ASTM D5185(m)         5         4         5         7           Zinc         ppm         ASTM D5185(m)         20         12         14         18           Antimony         ppm         ASTM D5185(m)         0         0         0         0           THICKENER/SOAP         method         limit/base         current         history1         history2           Aluminum         ppm         ASTM D5185(m)         0         <1         <1         <1           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Calcium         ppm         ASTM D5185(m)         40         21         25         33           Sodium         ppm         ASTM D5185(m)         2         3         2         2           Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Grease Color         Visual*         Brown	Manganese	ppm	ASTM D5185(m)	0	<1	<1	<1
Zinc         ppm         ASTM D5185(m)         20         12         14         18           Antimony         ppm         ASTM D5185(m)         0         0         0         0           THICKENER/SOAP         method         limit/base         current         history1         history2           Aluminum         ppm         ASTM D5185(m)         0         <1         <1         <1           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Calcium         ppm         ASTM D5185(m)         40         21         25         33           Sodium         ppm         ASTM D5185(m)         2         3         2         2           Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1         1         1           Potassium         ppm         ASTM D5185(m)	Molybdenum	ppm	ASTM D5185(m)	0	0	0	<1
Antimony         ppm         ASTM D5185(m)         0         0         0         0           THICKENER/SOAP         method         limit/base         current         history1         history2           Aluminum         ppm         ASTM D5185(m)         0         <1	Phosphorus	ppm	ASTM D5185(m)	5	4	5	7
THICKENER/SOAP         method         limit/base         current         history1         history2           Aluminum         ppm         ASTM D5185(m)         0         <1	Zinc	ppm	ASTM D5185(m)	20	12	14	18
Aluminum         ppm         ASTM D5185(m)         0         <1         <1         <1           Barium         ppm         ASTM D5185(m)         0         0         0         0           Calcium         ppm         ASTM D5185(m)         40         21         25         33           Sodium         ppm         ASTM D5185(m)         2         3         2         2           Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1	Antimony	ppm	ASTM D5185(m)	0	0	0	0
Barium         ppm         ASTM D5185(m)         0         0         0         0           Calcium         ppm         ASTM D5185(m)         40         21         25         33           Sodium         ppm         ASTM D5185(m)         2         3         2         2           Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1	THICKENER/SOA	AΡ	method	limit/base	current	history1	history2
Calcium         ppm         ASTM D5185(m)         40         21         25         33           Sodium         ppm         ASTM D5185(m)         2         3         2         2           Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1         1         1           Potassium         ppm         ASTM D5185(m)         0         0         <1         1           GREASE CONDITION         method         limit/base         current         history1         history2           Grease Color         Visual*         Brown         Brown         Brown         Tan	Aluminum	ppm	ASTM D5185(m)	0	<1	<1	<1
Sodium         ppm         ASTM D5185(m)         2         3         2         2           Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1	Barium	ppm	ASTM D5185(m)	0	0	0	0
Lithium         ppm         ASTM D5185(m)         120         106         108         129           Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1         1         1           Potassium         ppm         ASTM D5185(m)         0         0         <1           GREASE CONDITION         method         limit/base         current         history1         history2           Grease Color         Visual*         Brown         Brown         Brown         Tan	Calcium	ppm	ASTM D5185(m)	40	21	25	33
Sulfur         ppm         ASTM D5185(m)         650         614         646         681           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1		ppm	ASTM D5185(m)	2	3	2	2
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >150         <1	Lithium	ppm	ASTM D5185(m)	120	106	108	129
Silicon         ppm         ASTM D5185(m)         >150         <1         1         1           Potassium         ppm         ASTM D5185(m)         0         0         <1           GREASE CONDITION         method         limit/base         current         history1         history2           Grease Color         Visual*         Brown         Brown         Brown         Tan	Sulfur	ppm	ASTM D5185(m)	650	614	646	681
Potassium         ppm         ASTM D5185(m)         0         0         <1           GREASE CONDITION         method         limit/base         current         history1         history2           Grease Color         Visual*         Brown         Brown         Brown         Tan	CONTAMINANTS	3	method	limit/base	current	history1	history2
GREASE CONDITION method limit/base current history1 history2  Grease Color Visual* Brown Brown Brown Tan	Silicon	ppm	ASTM D5185(m)	>150	<1	1	1
Grease Color Visual* Brown Brown Brown Tan	Potassium	ppm	ASTM D5185(m)		0	0	<1
	GREASE CONDI	TION	method	limit/base	current	history1	history2
Texture In-house* Buttery Buttery Short fibe	Grease Color		Visual*	Brown	Brown	Brown	Tan
	Texture		In-house*		Buttery	Buttery	Short fibe

NLGI Consistency NLGI Scale SKF Method\* 1

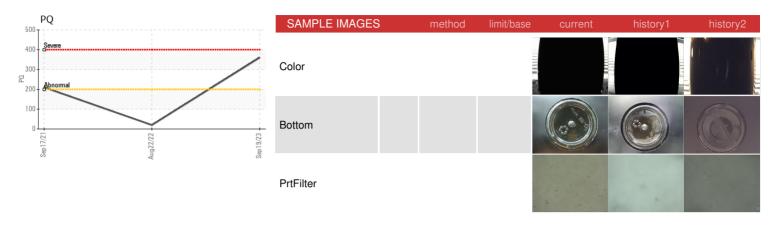
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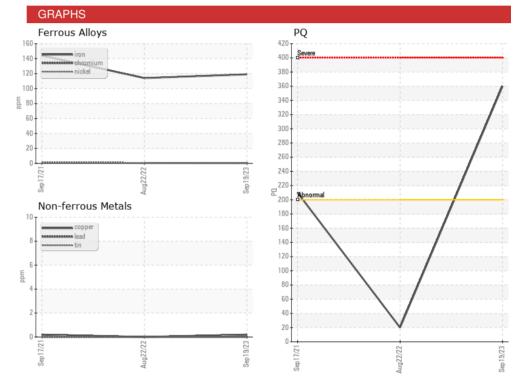
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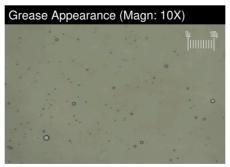
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# **GREASE ANALYSIS**









CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number : 5659879

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Vestas American Wind Technology Inc. : PP0835233 : 02590813

Validity of results and interpretation are based on the sample and information as supplied.

Received Diagnosed

: 20 Oct 2023 : 23 Oct 2023

Diagnostician : Bill Quesnel **Test Package**: GRS 1 (Additional Tests: BottomAnalysis)

1417 NW Everett Street Portland, OR US 97209 Contact: Eric German

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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.