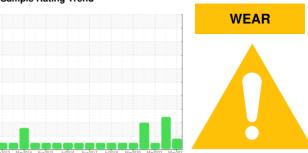


GREASE ANALYSIS

Sample Rating Trend



Machine Id

TURBINA 12 (S/N 101298)

Wind Turbine Gearbox

FUCHS RENOLIN UNISYN CLP 320 (320 LTR)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

The iron level is abnormal.

Contamination

The amount and size of particulates present in the system are acceptable.

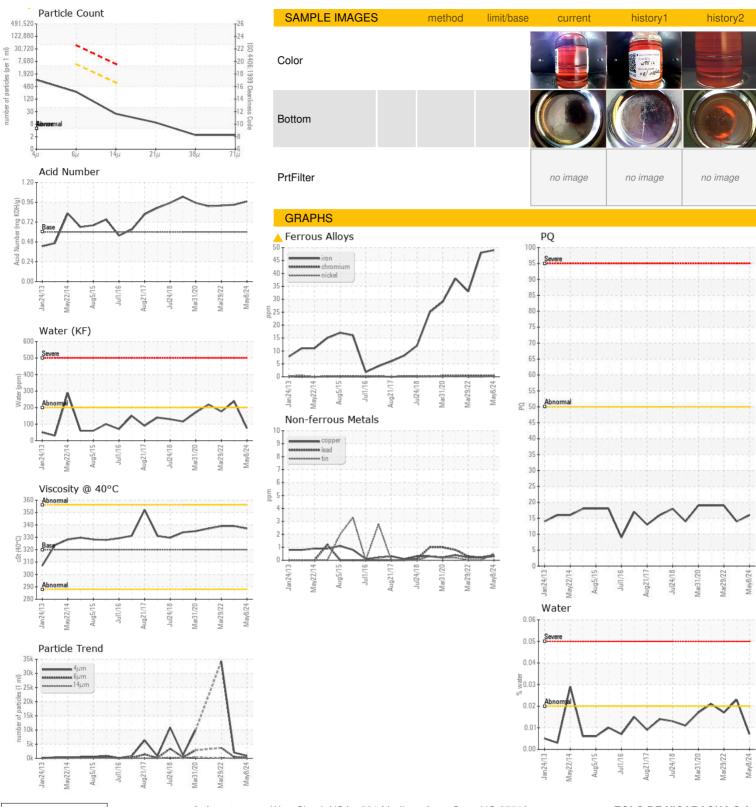
Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/base current history1 history2 Sample Number Client Info WC0881121 WC0831542 WC05582403 Sample Date Client Info 08 May 2024 08 Aug 2023 29 Mar 2022 Machine Age yrs Client Info 12 11 72 Oil Age yrs Client Info 9 7 0 Oil Changed Client Info N/A N/A N/A Sample Status Mehod Imilibase current history1 history2 PQ ASTM DS185m >30 49 A8 33 Iron ppm ASTM DS185m >3 <1 <1 <1 Vanadium ppm ASTM DS185m >3 <1 0 0 Lead ppm ASTM DS185m >10 <1 <1 <1 Copper ppm ASTM DS185m >10 <1 <1 <1 Vanadium ppm A	,						
Sample Date Client Info 08 May 2024 08 Aug 2023 29 Mar 2022 Machine Age yrs Client Info 12 11 72 Oil Age yrs Client Info 9 7 0 Oil Changed Client Info N/A N/A N/A Sample Status method limit/base current history1 history2 PQ ASTM D8184 >50 16 14 19 Iron PQ ASTM D8185m >30 49 48 33 Chromium ppm ASTM D8185m >3 <1	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age Oil Age yrs Oil Client Info 12 11 72 Oil Changed Oil Changed Sample Status Client Info N/A N/A N/A N/A WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 >50 16 14 19 Iron ppm ASTM D5185m >30 49 48 33 Chromium ppm ASTM D5185m >30 49 48 33 Chromium ppm ASTM D5185m >3 <1 0 0 Cadmium ppm ASTM D5185m >3 <1 0 0 Cadmium ppm ASTM D5185m >10 <1 0 0 Vanadium ppm ASTM D5185m >10 <1 0 0 Vanadium ppm ASTM D5185m >10 <1 <1 <1 Copper ppm ASTM D5185m >10 <1 <1 <1 Copper ppm ASTM D5185m >10 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 0	Sample Number		Client Info		WC0881121	WC0831542	WC05582409
Oil Age	Sample Date		Client Info		08 May 2024	08 Aug 2023	29 Mar 2022
Dil Changed Cilient Info	Machine Age	yrs	Client Info		12	11	72
WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 >50 16 14 19 Iron ppm ASTM D8185m >30 49 48 33 Chromium ppm ASTM D8185m >3 <1	Oil Age	yrs	Client Info		9	7	0
WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 >50 16 14 19 Iron ppm ASTM D5185m >3 <1	Oil Changed		Client Info		N/A	N/A	N/A
PQ ASTM D8184 >50 16 14 19 Iron ppm ASTM D5185m >30 49 48 33 Chromium ppm ASTM D5185m >3 <1 <1 <1 Nickel ppm ASTM D5185m >3 <1 0 0 Cadmium ppm ASTM D5185m >10 <1 0 0 Vanadium ppm ASTM D5185m >10 <1 0 0 Vanadium ppm ASTM D5185m >10 <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 Status				ABNORMAL	ABNORMAL	NORMAL
Irron	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >3 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <0 0 <1 <0 0 <0 <1 <1 <0 0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0	PQ		ASTM D8184	>50	16	14	19
Nickel	Iron	ppm	ASTM D5185m	>30	4 9	<u>48</u>	33
Cadmium ppm ASTM D5185m <1 0 0 Titanium ppm ASTM D5185m >10 <1	Chromium	ppm	ASTM D5185m	>3	<1	<1	<1
Titanium	Nickel	ppm	ASTM D5185m	>3	<1	0	0
Vanadium ppm ASTM D5185m 0 0 0 Lead ppm ASTM D5185m >15 <1	Cadmium	ppm	ASTM D5185m		<1	0	0
Lead ppm ASTM D5185m >15 <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 <1	Titanium	ppm	ASTM D5185m	>10	<1	0	0
Copper ppm ASTM D5185m >10 <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 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Tin ppm ASTM D5185m >10 <1 0 0 Silver ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m <1 <1 <1 Manganese ppm ASTM D5185m 0 0 <1 Manganese ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m 202 186 166 Zinc ppm ASTM D5185m 202 186 166 Zinc ppm ASTM D5185m 111 106 100 Antimony ppm ASTM D5185m 1 0 <1 THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 2 <th< td=""><td>Lead</td><td>ppm</td><td>ASTM D5185m</td><td>>15</td><th><1</th><td><1</td><td><1</td></th<>	Lead	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES method limit/base current history1 history2	Copper	ppm	ASTM D5185m	>10	<1	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1	Tin	ppm	ASTM D5185m	>10	<1	0	0
Boron ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m <1 <1 <1 Manganese ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m <1 0 0 Phosphorus ppm ASTM D5185m 202 186 166 Zinc ppm ASTM D5185m 111 106 100 Antimony ppm ASTM D5185m THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1 Barium ppm ASTM D5185m 9 6 6 Calcium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2<	Silver	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m <1	ADDITIVES		method	limit/base	current	history1	history2
Manganese ppm ASTM D5185m 0 0 <1 Molybdenum ppm ASTM D5185m <1 0 0 Phosphorus ppm ASTM D5185m 202 186 166 Zinc ppm ASTM D5185m 111 106 100 Antimony ppm ASTM D5185m THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1 Barium ppm ASTM D5185m 1 2 0 Calcium ppm ASTM D5185m 9 6 6 Sodium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m +15 1 1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 <t< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>0</th><td>0</td><td><1</td></t<>	Boron	ppm	ASTM D5185m		0	0	<1
Molybdenum ppm ASTM D5185m <1 0 0 Phosphorus ppm ASTM D5185m 202 186 166 Zinc ppm ASTM D5185m 111 106 100 Antimony ppm ASTM D5185m THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1	Magnesium	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 202 186 166 Zinc ppm ASTM D5185m 111 106 100 Antimony ppm ASTM D5185m THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1	Manganese	ppm	ASTM D5185m		0	0	<1
Zinc ppm ASTM D5185m 111 106 100 Antimony ppm ASTM D5185m THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1	Molybdenum	ppm	ASTM D5185m		<1	0	0
Antimony ppm ASTM D5185m THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1 Barium ppm ASTM D5185m 1 2 0 Calcium ppm ASTM D5185m 9 6 6 Sodium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1 Potassium ppm ASTM D5185m 1 <1 0 Water % ASTM D6304 >0.02 0.007 0.023 0.017	Phosphorus	ppm	ASTM D5185m		202	186	166
THICKENER/SOAP method limit/base current history1 history2 Aluminum ppm ASTM D5185m 1 0 <1	Zinc	ppm	ASTM D5185m		111	106	100
Aluminum ppm ASTM D5185m 1 0 <1 Barium ppm ASTM D5185m 1 2 0 Calcium ppm ASTM D5185m 9 6 6 Sodium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1 Potassium ppm ASTM D5185m 1 <1 0 Water % ASTM D6304 >0.02 0.007 0.023 0.017	Antimony	ppm	ASTM D5185m				
Barium ppm ASTM D5185m 1 2 0 Calcium ppm ASTM D5185m 9 6 6 Sodium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1	THICKENER/SOA	Р	method	limit/base	current	history1	history2
Calcium ppm ASTM D5185m 9 6 6 Sodium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1	Aluminum	ppm	ASTM D5185m		1	0	<1
Sodium ppm ASTM D5185m 3 0 1 Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1	Barium	ppm	ASTM D5185m		1	2	0
Sulfur ppm ASTM D5185m 4597 4905 4546 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1	Calcium	ppm	ASTM D5185m		9	6	6
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+15 1 1 <1	Sodium	ppm	ASTM D5185m		3	0	1
Silicon ppm ASTM D5185m >+15 1 1 <1 Potassium ppm ASTM D5185m 1 <1 0 Water % ASTM D6304 >0.02 0.007 ▲ 0.023 0.017	Sulfur	ppm	ASTM D5185m		4597	4905	4546
Potassium ppm ASTM D5185m 1 <1 0 Water % ASTM D6304 >0.02 0.007 ▲ 0.023 0.017	CONTAMINANTS		method	limit/base	current	history1	history2
Water % ASTM D6304 >0.02 0.007 △ 0.023 0.017							
Water % ASTM D6304 >0.02 0.007 △ 0.023 0.017	Silicon	ppm	ASTM D5185m	>+15	1	1	<1
ppm Water		• •		>+15			
	Potassium	ppm	ASTM D5185m		1	<1	0



GREASE ANALYSIS







Certificate 12367

Laboratory Sample No.

Lab Number : 06194674

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0881121

Received : 29 May 2024 **Tested** : 31 May 2024

EOLO DE NICARAGUA S.A. DEL SEMAFORO DEL CLUB TERRAZA, 1 CUADRA AL SUR MANAGUA, ZZ

Unique Number : 11056797 Diagnosed : 31 May 2024 - Angela Borella Test Package : GRS 1 (Additional Tests: Consistency, FilterPatch, GreaseColor, ICP, KF, KV40, PQ, PrtCount, Confident Rafael Bermudez

To discuss this sample report, contact Customer Service at 1-800-237-1369. st - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

NI

T:

F: