

OIL ANALYSIS REPORT

Sample Rating Trend

WEAR

Machine Id

TURBINA 05 (S/N 101182)

Wind Turbine Gearbox

Fluid FUCHS RENOLIN UNISYN CLP 320 (320 LTR)

DIAGNOSIS

A Recommendation

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

A Wear

The iron level is abnormal.

Contamination

There is no indication of any contamination in the oil. 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 INFORM	ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0831486	WC0505302	WC05582427
Sample Date		Client Info		03 May 2024	22 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	Changed	N/A
Sample Status				ABNORMAL	ABNORMAL	NORMAL
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>50	10	16	19
Iron	ppm	ASTM D5185m	>30	<u> </u>	4 9	23
Chromium	ppm	ASTM D5185m	>3	<1	<1	0
Nickel	ppm	ASTM D5185m	>3	<1	0	0
Titanium	ppm	ASTM D5185m	>10	<1	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>30	1	0	<1
Lead	ppm	ASTM D5185m	>15	<1	<1	<1
Copper	ppm	ASTM D5185m	>10	<1	<1	<1
Tin	ppm	ASTM D5185m	>10	<1	0	0
Antimony	ppm	ASTM D5185m	>5			
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		1	2	0
Molybdenum	ppm	ASTM D5185m		<1	0	0
Manganese	ppm	ASTM D5185m		0	0	0
Magnesium	ppm	ASTM D5185m		<1	0	0
Calcium	ppm	ASTM D5185m		8	7	4
Phosphorus		AOTH DELOF		100	100	105
	ppm	ASTM D5185m		199	196	135
Zinc	ppm ppm	ASTM D5185m ASTM D5185m		199	196	96
-						
-	ppm ppm	ASTM D5185m	limit/base	125	125	96
Sulfur CONTAMINANTS	ppm ppm	ASTM D5185m ASTM D5185m method	limit/base	125 3808	125 4100	96 3122
Sulfur	ppm ppm	ASTM D5185m ASTM D5185m method		125 3808 current	125 4100 history1	96 3122 history2
Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m		125 3808 current 1	125 4100 history1 <1	96 3122 history2 <1
Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	>+15 >20	125 3808 current 1	125 4100 history1 <1 0	96 3122 history2 <1 <1
Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	>+15 >20 >0.02	125 3808 current 1 5 1	125 4100 history1 <1 0 <1	96 3122 history2 <1 <1 <1 0
Sulfur CONTAMINANTS Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304	>+15 >20 >0.02	125 3808 current 1 5 1 0.012	125 4100 history1 <1 0 <1 ▲ 0.025	96 3122 history2 <1 <1 <1 0 0 0.010
Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304	>+15 >20 >0.02 >200	125 3808 current 1 5 1 0.012 125	125 4100 history1 <1 0 <1 ▲ 0.025 ▲ 253.9	96 3122 <1 <1 0 0.010 107.9
Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304 method	>+15 >20 >0.02 >200 limit/base	125 3808 current 1 5 1 0.012 125 current	125 4100 history1 <1 0 <1 ▲ 0.025 ▲ 253.9 history1	96 3122 history2 <1 <1 <1 0 0.010 107.9 history2
Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647	>+15 >20 >0.02 >200 limit/base	125 3808 current 1 5 1 0.012 125 current 5759	125 4100 history1 <1 <1 <1 <1 ▲ 0.025 ▲ 253.9 history1 2937	96 3122 history2 <1 <1 0 0.010 107.9 history2 68826
Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647 ASTM D7647	>+15 >20 >0.02 >200 limit/base >5000 >640	125 3808 current 1 5 1 0.012 125 current 5759 1616	125 4100 history1 <1 0 <1 0.025 ≥253.9 history1 2937 653	96 3122 history2 <1 <1 <1 0 0.010 107.9 history2 68826 1887
Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647 ASTM D7647 ASTM D7647	>+15 >20 >0.02 >200 limit/base >5000 >640	125 3808 current 1 5 1 0.012 125 current 5759 1616 85	125 4100 history1 <1 0.025 0.025 253.9 history1 2937 653 39	96 3122 history2 <1 <1 0 0.010 107.9 history2 68826 1887 55
Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	>+15 >20 >0.02 >200 limit/base >5000 >640 >160	125 3808 current 1 5 1 0.012 125 current 5759 1616 85 19	125 4100 history1 <1 0 <1 <1 0.025 ▲ 253.9 history1 2937 653 39 12	96 3122 history2 <1 <1 0 0.010 107.9 history2 68826 1887 55 18



Jan 15/13

70 60 € 601 € 501 of particles (

600

500 Sev

400

300

200

100

360 Abnorma

350 340

() 330 () 320 () 320 () 330 ()

300

290 Abnorm

280

LE

B

Viscosity @ 40°C

Aug 10/15 /1/1/m

Mater |

Jan 15/1 1/1CVEN

Water (KF)

/lav21/14 Vua10/15

Particle Trend

Aug10/1

OIL ANALYSIS REPORT

method

Water (KF)		TION
600 T	FLUID DEGRADA	
500 - Severe	Acid Number (AN)	mg KOH/g
and and a second secon	VISUAL	
an 300 + ≥ 200 + Abnormal	White Metal	scalar
	Yellow Metal	scalar
	Precipitate	scalar
Jan 15/13 - May21/14 - Jun30/16 - Jul24/18 - Mar29/20 - Mar29/22 -	Silt	scalar
Jan 15/13 May21/15 Aug 10/15 Sep 21/17 Jul24/18 May20/20 May2/22 May3/24	Debris	scalar
20	Sand/Dirt	scalar
PQ 100 τ Severe	Appearance	scalar
80	Odor	scalar
	Emulsified Water	scalar
60 Abnormal	Free Water	scalar
40	FLUID PROPERT	IES
	Visc @ 40°C	cSt

I LOID DEGRADATION		mounou		000	Thotory	Thotory E
Acid Number (AN)	mg KOH/g	ASTM D8045	0.6	1.00	0.93	0.98
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	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	LIGHT	NONE	NONE
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	>0.02	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	342	350	344
SAMPLE IMAGES		method	limit/base	current	history1	history2

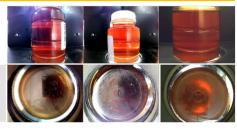
limit/base

current

Color

May3/24

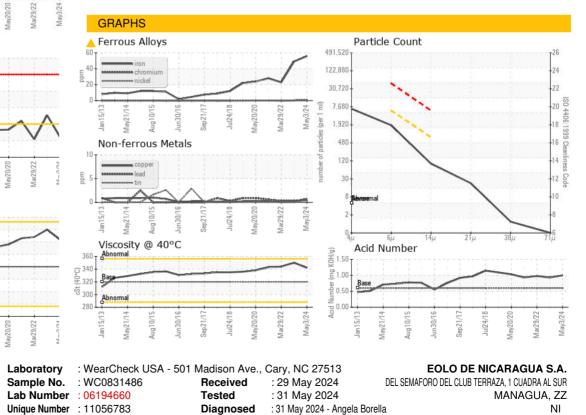
ar79/77



historv1

historv2

Bottom



Certificate 12367

Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount) To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - 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)

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Contact/Location: Rafael Bermudez - EOLOMAN

T:

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Contact: Rafael Bermudez