



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area  
**FOUR MILE RIDGE [200005315]**

Machine Id  
**83303 SITE 13**

Component  
**Wind Turbine Gearbox**

Fluid  
**CASTROL OPTIGEAR SYNTHETIC X 320 (--- LTR)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>NX012357</b>	NX004208	NX010428
Sample Date		Client Info		<b>02 Nov 2023</b>	29 Mar 2023	27 Oct 2022
Machine Age	hrs	Client Info		<b>70020</b>	63806	61275
Oil Age	hrs	Client Info		<b>70020</b>	63806	61275
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Not Changed</b>	Not Changed	Not Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

PQ		ASTM D8184	>80	<b>30</b>	18	20
Iron	ppm	ASTM D5185m	>150	<b>55</b>	48	40
Chromium	ppm	ASTM D5185m	>5	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	<b>6</b>	<1	<1
Lead	ppm	ASTM D5185m	>20	<b>0</b>	0	<1
Copper	ppm	ASTM D5185m	>50	<b>2</b>	2	2
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

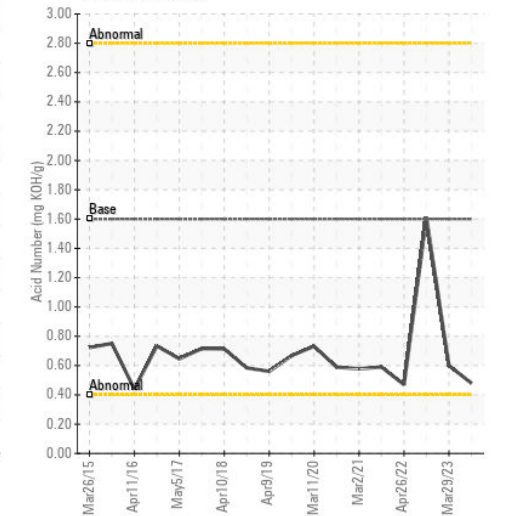
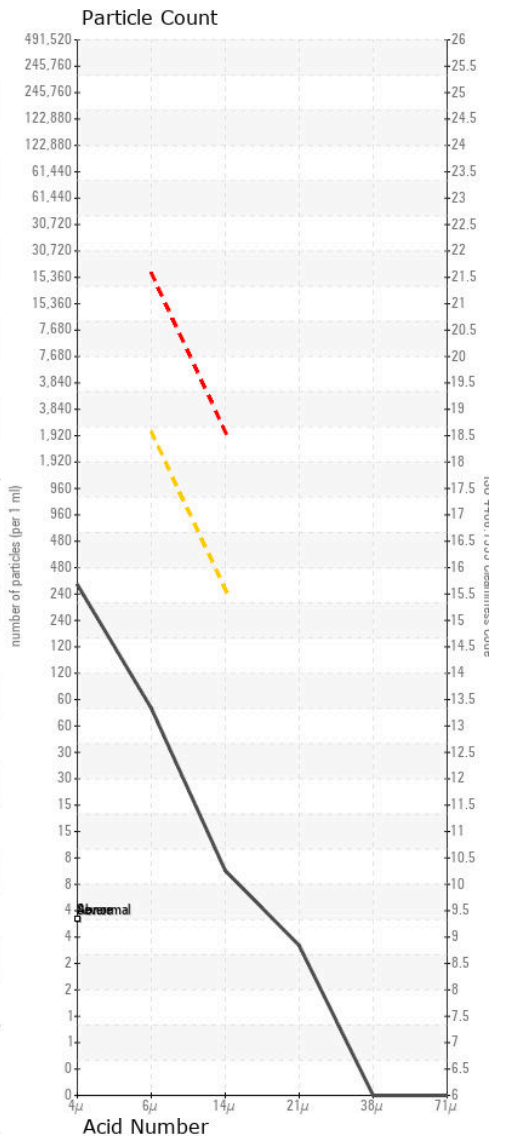
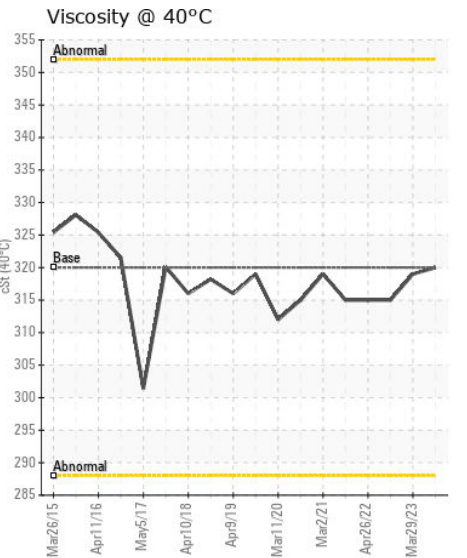
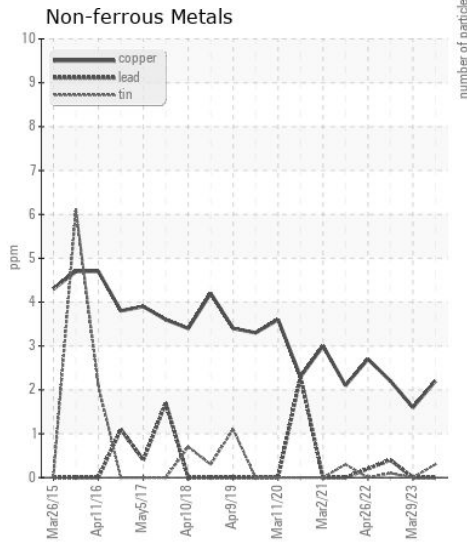
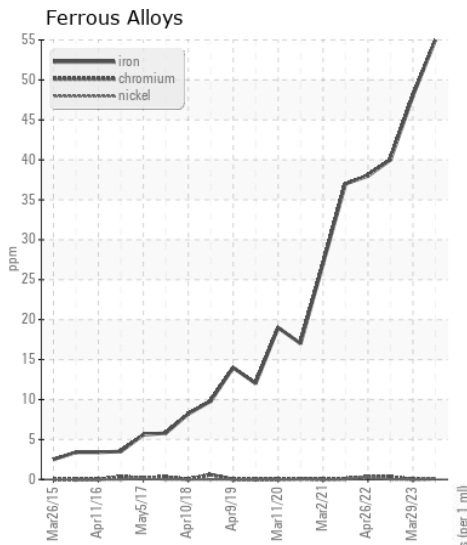
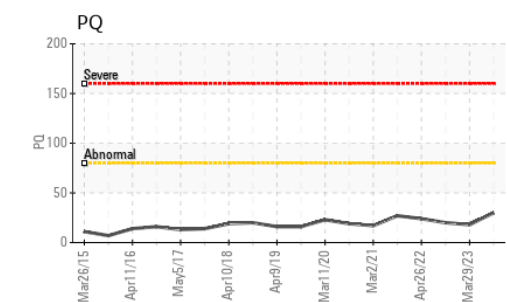
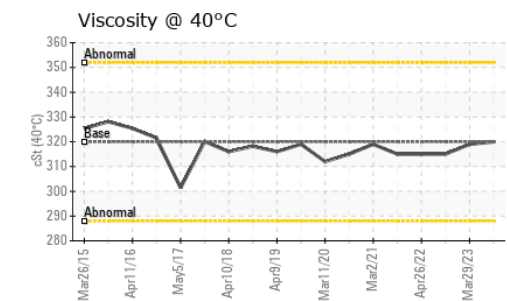
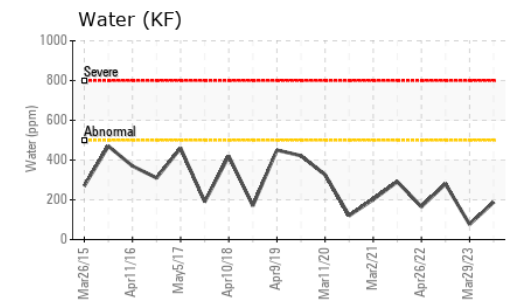
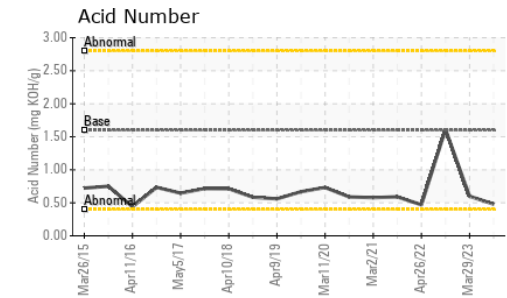
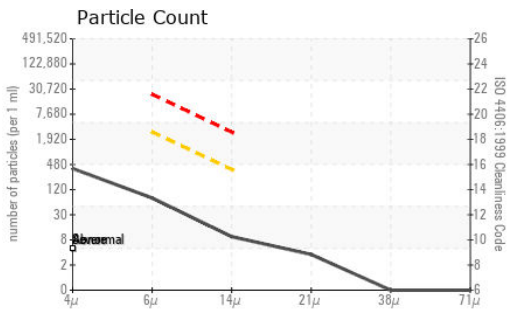
There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable.

Silicon	ppm	ASTM D5185m	>50	<b>10</b>	10	10
Potassium	ppm	ASTM D5185m	>20	<b>1</b>	0	<1
Water	%	ASTM D6304	>0.05	<b>0.018</b>	0.007	0.027
ppm Water	ppm	ASTM D6304	>500	<b>188</b>	76.4	279.8
Particles >4µm		ASTM D7647		<b>338</b>	682	379
Particles >6µm		ASTM D7647	>2500	<b>67</b>	102	126
Particles >14µm		ASTM D7647	>320	<b>8</b>	8	19
Particles >21µm		ASTM D7647	>80	<b>3</b>	1	6
Particles >38µm		ASTM D7647	>20	<b>0</b>	0	1
Particles >71µm		ASTM D7647	>4	<b>0</b>	0	0
Oil Cleanliness		ISO 4406 (c)	--/18/15	<b>16/13/10</b>	17/14/10	16/14/11
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	<b>NEG</b>	NEG	NEG

**FLUID CONDITION**

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

Sodium	ppm	ASTM D5185m	>20	<b>9</b>	9	9
Boron	ppm	ASTM D5185m		<b>29</b>	0	46
Barium	ppm	ASTM D5185m		<b>2</b>	0	2
Molybdenum	ppm	ASTM D5185m	1150	<b>773</b>	736	722
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>8</b>	10	7
Calcium	ppm	ASTM D5185m	2000	<b>1548</b>	1481	1461
Phosphorus	ppm	ASTM D5185m	400	<b>358</b>	341	324
Zinc	ppm	ASTM D5185m	0	<b>0</b>	0	2
Sulfur	ppm	ASTM D5185m	1850	<b>1817</b>	1671	1942
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	<b>0.48</b>	0.60	1.61
Visc @ 40°C	cSt	ASTM D445	320	<b>320</b>	319	315



Certificate L2367

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

Sample No. : NX012357

Lab Number : 06097720

Unique Number : 10890573

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)

Received : 22 Feb 2024

Tested : 23 Feb 2024

Diagnosed : 25 Feb 2024 - Doug Bogart

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