



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ATTENTION
FLUID CONDITION	NORMAL

Area
THUNDER SPIRIT [200005313]
Machine Id
46WEA85484 (S/N EWP 02188)

Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (--- GAL)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		NX013617	NX009489	NX004851
Sample Date		Client Info		24 Aug 2023	24 Aug 2022	08 Jun 2021
Machine Age	hrs	Client Info		35768	29230	19134
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ATTENTION	NORMAL	NORMAL

WEAR

All component wear rates are normal.

PQ		ASTM D8184	>80	16	6	15
Iron	ppm	ASTM D5185m	>150	<1	<1	<1
Chromium	ppm	ASTM D5185m	>5	<1	0	0
Nickel	ppm	ASTM D5185m	>10	0	0	0
Titanium	ppm	ASTM D5185m	>10	<1	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	0	0	0
Lead	ppm	ASTM D5185m	>20	<1	0	0
Copper	ppm	ASTM D5185m	>50	<1	<1	<1
Tin	ppm	ASTM D5185m	>10	<1	0	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

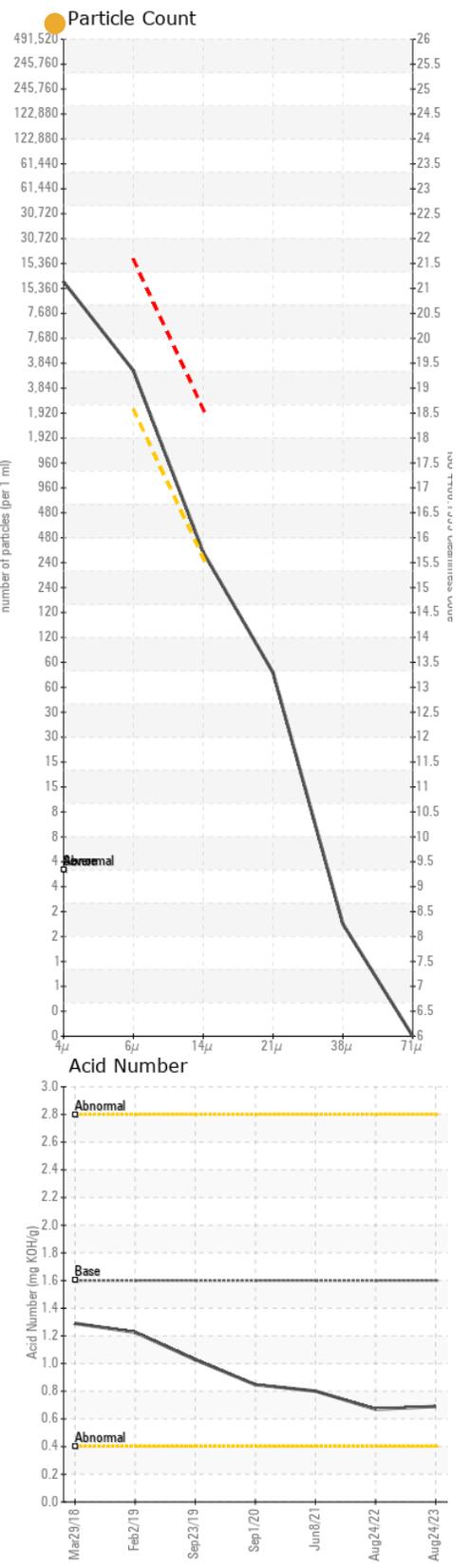
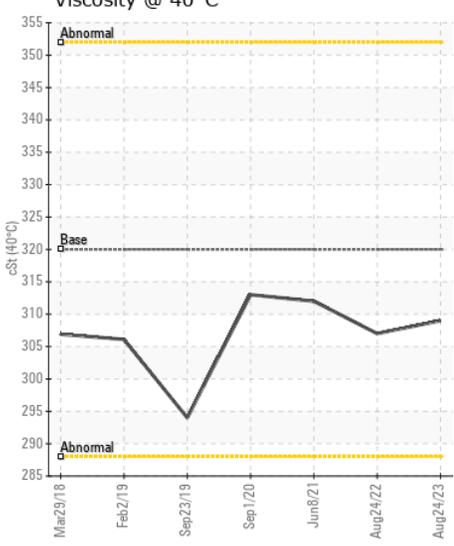
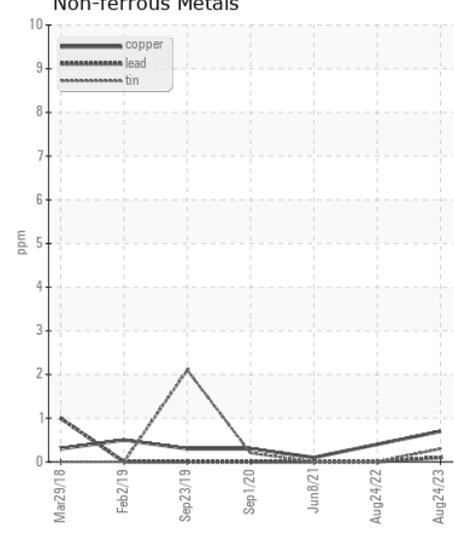
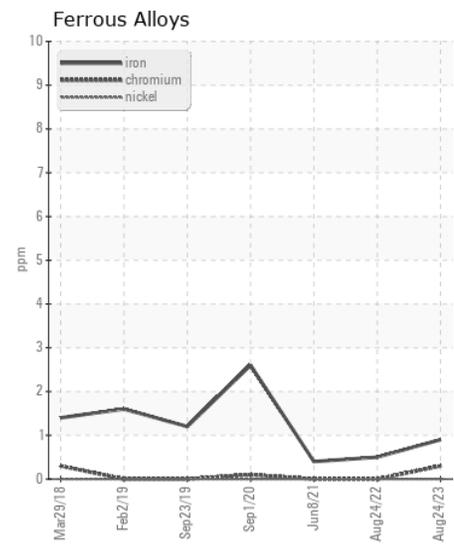
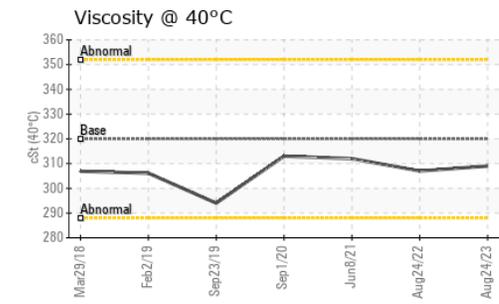
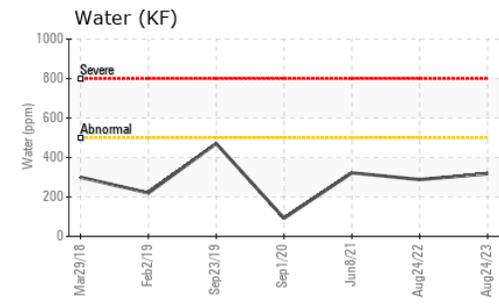
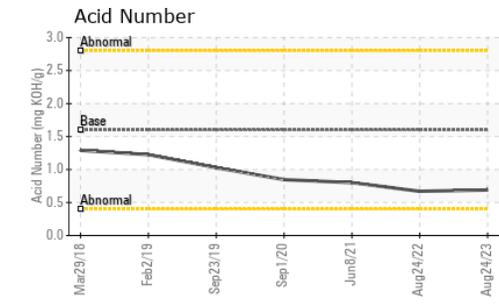
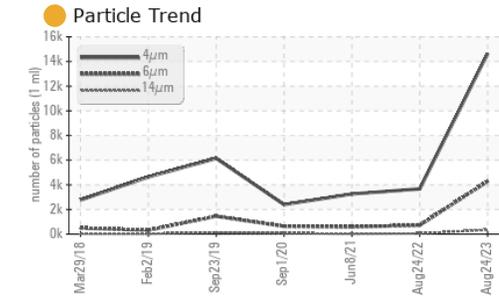
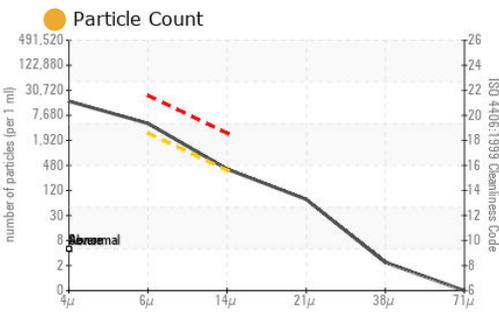
There is a moderate amount of particulates present in the oil.

Silicon	ppm	ASTM D5185m	>50	8	13	9
Potassium	ppm	ASTM D5185m	>20	1	0	0
Water	%	ASTM D6304	>0.05	0.031	0.028	0.032
ppm Water	ppm	ASTM D6304	>500	317.7	288.2	322.2
Particles >4µm		ASTM D7647		14635	3664	3254
Particles >6µm		ASTM D7647	>2500	4277	720	577
Particles >14µm		ASTM D7647	>320	345	49	21
Particles >21µm		ASTM D7647	>80	65	8	3
Particles >38µm		ASTM D7647	>20	2	1	0
Particles >71µm		ASTM D7647	>4	0	1	0
Oil Cleanliness		ISO 4406 (c)	--/18/15	21/19/16	19/17/13	19/16/12
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	>0.05	NEG	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	6	4	4
Boron	ppm	ASTM D5185m		0	6	<1
Barium	ppm	ASTM D5185m		0	3	3
Molybdenum	ppm	ASTM D5185m	1150	760	776	721
Manganese	ppm	ASTM D5185m		<1	<1	0
Magnesium	ppm	ASTM D5185m		6	6	4
Calcium	ppm	ASTM D5185m	2000	1544	1606	1420
Phosphorus	ppm	ASTM D5185m	400	364	363	327
Zinc	ppm	ASTM D5185m	0	0	<1	0
Sulfur	ppm	ASTM D5185m	1850	1925	2263	1537
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	0.69	0.67	0.801
Visc @ 40°C	cSt	ASTM D445	320	309	307	312



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX013617
Lab Number : 05968987
Unique Number : 10675538
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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