



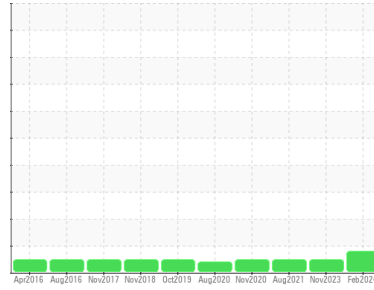
OIL ANALYSIS REPORT

Sample Rating Trend

ISO



Area
THUNDER SPIRIT [200005313]
 Machine Id
07WEA84038 (S/N 51297)
 Component
Hydraulic System
 Fluid
SHELL TELLUS S4 VX 32 (--- QTS)



DIAGNOSIS

Recommendation

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

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

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		NX013637	NX014823	NX004463
Sample Date	Client Info		29 Feb 2024	13 Nov 2023	11 Aug 2021
Machine Age	hrs	Client Info	45705	51862	0
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			ATTENTION	NORMAL	NORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184		13	16	20
Iron	ppm	ASTM D5185m >20	1	3	3
Chromium	ppm	ASTM D5185m >20	0	0	0
Nickel	ppm	ASTM D5185m >20	0	<1	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m	0	0	<1
Aluminum	ppm	ASTM D5185m >20	<1	<1	<1
Lead	ppm	ASTM D5185m >20	3	3	2
Copper	ppm	ASTM D5185m >20	0	0	<1
Tin	ppm	ASTM D5185m >20	2	2	1
Antimony	ppm	ASTM D5185m	---	---	0
Vanadium	ppm	ASTM D5185m	0	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	<1
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	0	3	0
Manganese	ppm	ASTM D5185m	0	0	0
Magnesium	ppm	ASTM D5185m	0	1	0
Calcium	ppm	ASTM D5185m	0	8	<1
Phosphorus	ppm	ASTM D5185m	545	558	547
Zinc	ppm	ASTM D5185m	65	66	63
Sulfur	ppm	ASTM D5185m	932	900	755

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >15	6	6	5
Sodium	ppm	ASTM D5185m	0	<1	<1
Potassium	ppm	ASTM D5185m >20	0	1	0
Water	%	ASTM D6304 >0.05	0.004	0.005	0.006
ppm Water	ppm	ASTM D6304 >500	49	56	61.2

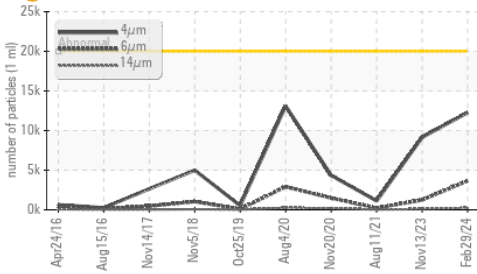
FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	12271	9140	1115
Particles >6µm	ASTM D7647	>2500	3668	1246	229
Particles >14µm	ASTM D7647	>320	245	96	18
Particles >21µm	ASTM D7647	>80	46	24	5
Particles >38µm	ASTM D7647	>20	1	1	0
Particles >71µm	ASTM D7647	>4	0	0	0
Oil Cleanliness	ISO 4406 (c)	>21/18/15	21/19/15	20/17/14	17/15/11

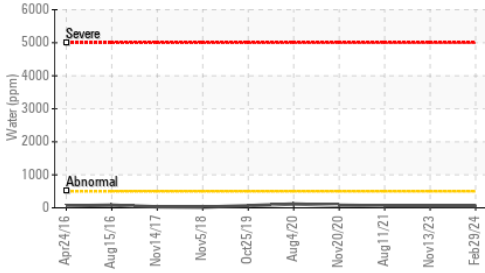


OIL ANALYSIS REPORT

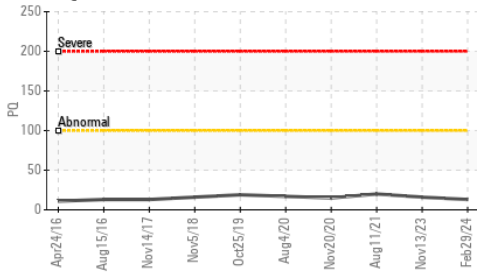
Particle Trend



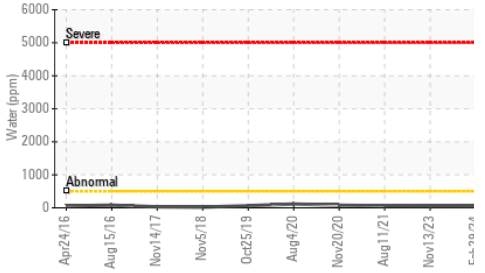
Water (KF)



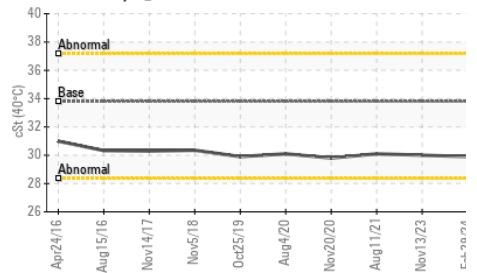
PQ



Water (KF)



Viscosity @ 40°C



FLUID DEGRADATION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.14	0.14	0.145

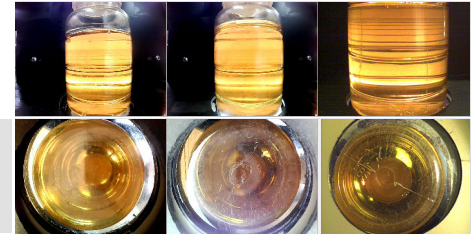
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	33.8	30.0	30.1

SAMPLE IMAGES	method	limit/base	current	history1	history2
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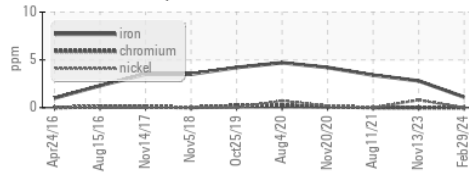
Color

Bottom

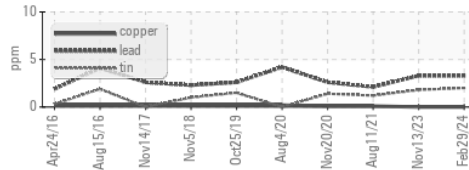


GRAPHS

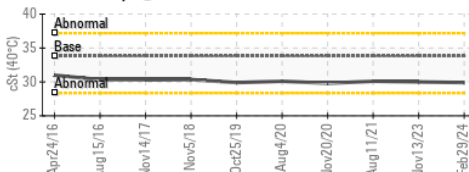
Ferrous Alloys



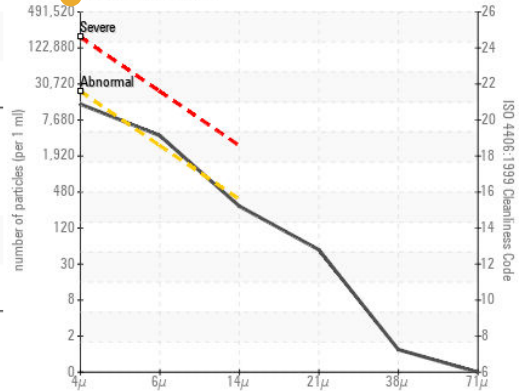
Non-ferrous Metals



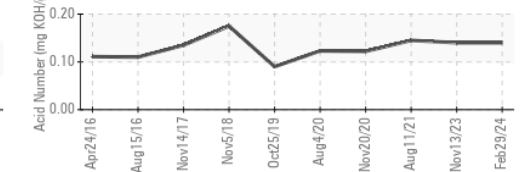
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

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

Sample No. : NX013637

Lab Number : **06123107**

Unique Number : 10937258

Test Package : IND 2 (Additional Tests: KF, PQ)

Received : 19 Mar 2024

Tested : 20 Mar 2024

Diagnosed : 21 Mar 2024 - Angela Borella

NORDEX USA - Chicago

300 SOUTH WACKER DRIVE, SUITE 1500

CHICAGO, IL

US 60606

Contact: DEVIN LINEHAN

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F: (312)386-7102

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)