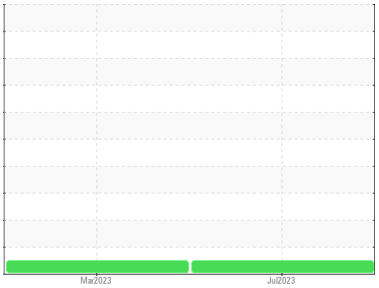
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
SEAWARD ENDEAVOR
Machine Id
Endeavor - PME
Component
Port Main Engine
Fluid
SHELL ROTELLA T 30 (160 GAL)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
There is no indication of any contamination in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0779528**	WC0779534	---
Sample Date		Client Info		**06 Jul 2023**	18 Mar 2023	---
Machine Age	hrs	Client Info		**13761**	13207	---
Oil Age	hrs	Client Info		**700**	480	---
Oil Changed		Client Info		**Not Changd**	Not Changd	---
Sample Status				**NORMAL**	NORMAL	---

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	**<1.0**	<1.0	---
Water		WC Method	>0.1	**NEG**	NEG	---
Glycol		WC Method		**NEG**	NEG	---

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	**7**	3	---
Chromium	ppm	ASTM D5185m	>8	**0**	<1	---
Nickel	ppm	ASTM D5185m	>2	**0**	0	---
Titanium	ppm	ASTM D5185m	>3	**4**	3	---
Silver	ppm	ASTM D5185m	>2	**<1**	0	---
Aluminum	ppm	ASTM D5185m	>15	**1**	<1	---
Lead	ppm	ASTM D5185m	>18	**0**	0	---
Copper	ppm	ASTM D5185m	>80	**<1**	<1	---
Tin	ppm	ASTM D5185m	>14	**0**	0	---
Vanadium	ppm	ASTM D5185m		**0**	0	---
Cadmium	ppm	ASTM D5185m		**0**	0	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**135**	132	---
Barium	ppm	ASTM D5185m		**1**	0	---
Molybdenum	ppm	ASTM D5185m	0	**72**	56	---
Manganese	ppm	ASTM D5185m		**<1**	<1	---
Magnesium	ppm	ASTM D5185m		**509**	463	---
Calcium	ppm	ASTM D5185m	1890	**2141**	1767	---
Phosphorus	ppm	ASTM D5185m	680	**1185**	1007	---
Zinc	ppm	ASTM D5185m	750	**1371**	1207	---
Sulfur	ppm	ASTM D5185m		**4561**	4078	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	**3**	4	---
Sodium	ppm	ASTM D5185m	>75	**0**	<1	---
Potassium	ppm	ASTM D5185m	>20	**2**	<1	---

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.2**	0.1	---
Nitration	Abs/cm	*ASTM D7624	>20	**7.0**	5.8	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	**18.9**	18.3	---

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.1**	13.6	---
Base Number (BN)	mg KOH/g	ASTM D2896	6.0	**9.49**	9.0	---

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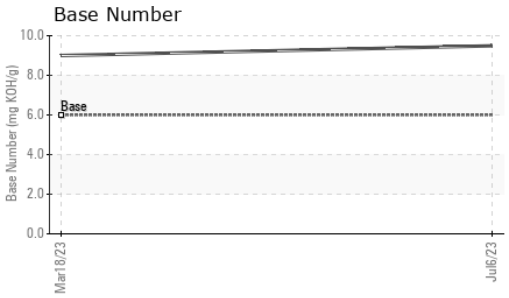
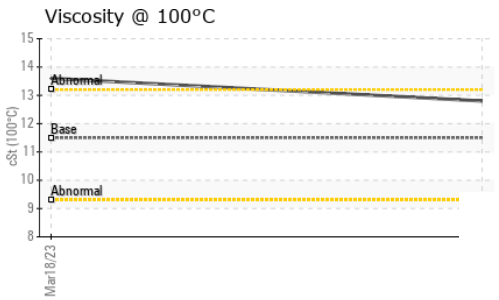


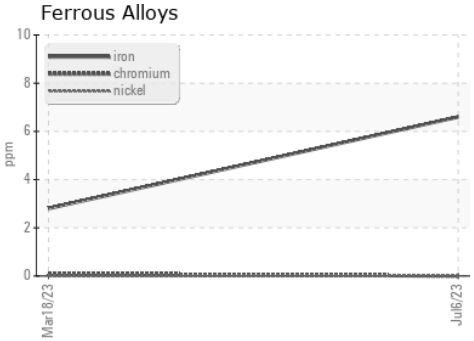


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	---
Silt	scalar	*Visual	NONE	**NONE**	NONE	---
Debris	scalar	*Visual	NONE	**NONE**	NONE	---
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	---
Appearance	scalar	*Visual	NORML	**NORML**	NORML	---
Odor	scalar	*Visual	NORML	**NORML**	NORML	---
Emulsified Water	scalar	*Visual	>0.1	**NEG**	NEG	---
Free Water	scalar	*Visual		**NEG**	NEG	---

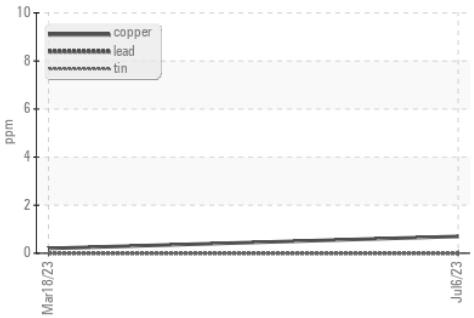
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	11.5	**12.8**	13.6	---

GRAPHS

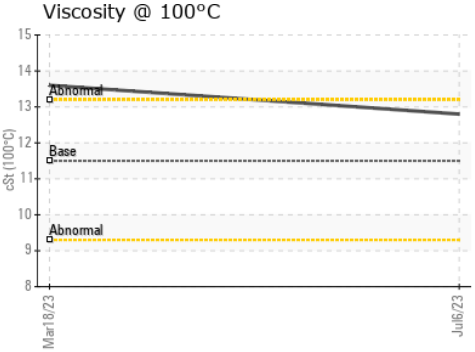
Ferrous Alloys



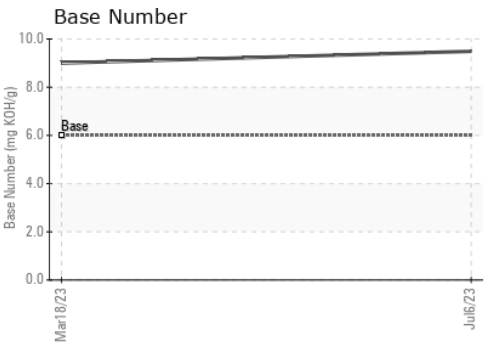
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0779528 **Recieved** : 20 Jul 2023
Lab Number : 05903909 **Diagnosed** : 25 Jul 2023
Unique Number : 10565265 **Diagnostician** : Doug Bogart
Test Package : MAR 2

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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