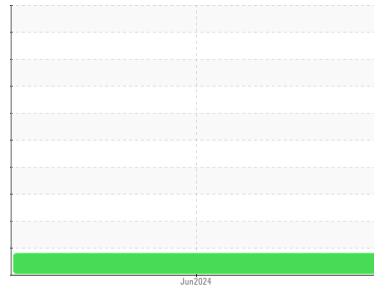


OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Machine Id
TWIN DISC MORGAN LEIGH
Component
Starboard Genset
Fluid
KENDALL SUPER-D XA 15W40 (--- GAL)

DIAGNOSIS

Recommendation

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

Wear

Cylinder, crank, or cam shaft wear is indicated. All other 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 acceptable for the time in service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			HRE0000289	---	---
Sample Date	Client Info			19 Jun 2024	---	---
Machine Age	hrs	Client Info		18425	---	---
Oil Age	hrs	Client Info		250	---	---
Oil Changed	Client Info			Not Chngd	---	---
Sample Status				ABNORMAL	---	---

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	▲ 83	---	---
Chromium	ppm	ASTM D5185m	>4	1	---	---
Nickel	ppm	ASTM D5185m	>2	2	---	---
Titanium	ppm	ASTM D5185m		101	---	---
Silver	ppm	ASTM D5185m	>5	<1	---	---
Aluminum	ppm	ASTM D5185m	>12	4	---	---
Lead	ppm	ASTM D5185m	>17	4	---	---
Copper	ppm	ASTM D5185m	>70	2	---	---
Tin	ppm	ASTM D5185m	>15	2	---	---
Vanadium	ppm	ASTM D5185m		2	---	---
Cadmium	ppm	ASTM D5185m		<1	---	---

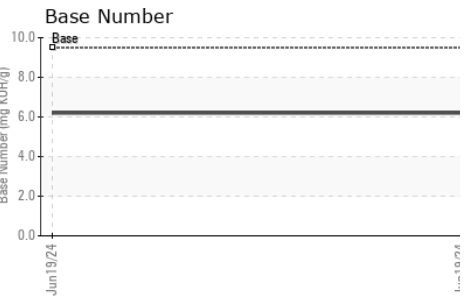
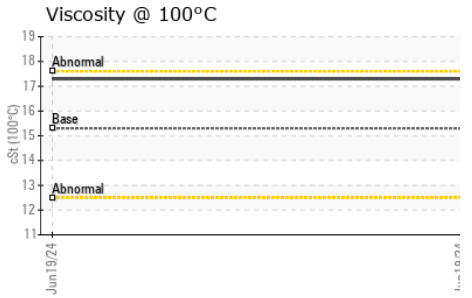
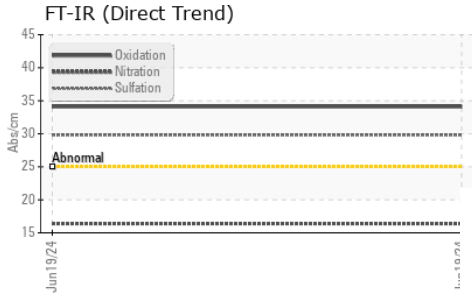
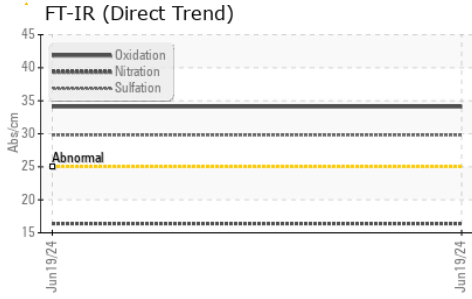
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	50	81	---	---
Barium	ppm	ASTM D5185m		1	---	---
Molybdenum	ppm	ASTM D5185m		11	---	---
Manganese	ppm	ASTM D5185m		1	---	---
Magnesium	ppm	ASTM D5185m	270	497	---	---
Calcium	ppm	ASTM D5185m	1900	2061	---	---
Phosphorus	ppm	ASTM D5185m	1000	1198	---	---
Zinc	ppm	ASTM D5185m	1260	1432	---	---
Sulfur	ppm	ASTM D5185m	3400	4269	---	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	9	---	---
Sodium	ppm	ASTM D5185m		5	---	---
Potassium	ppm	ASTM D5185m	>20	10	---	---

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		0.4	---	---
Nitration	Abs/cm	*ASTM D7624	>20	16.4	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	29.8	---	---

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	34.1	---	---
Base Number (BN)	mg KOH/g	ASTM D2896	9.5	6.2	---	---

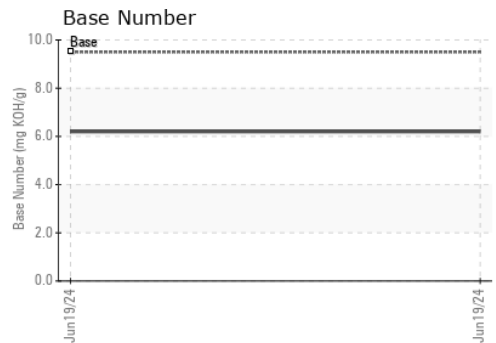
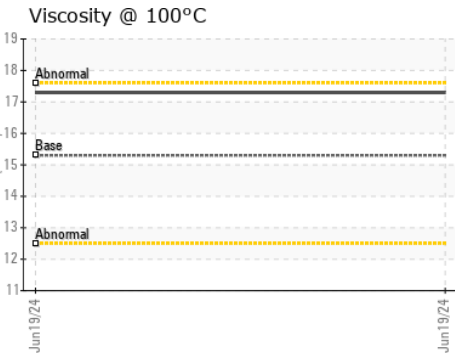
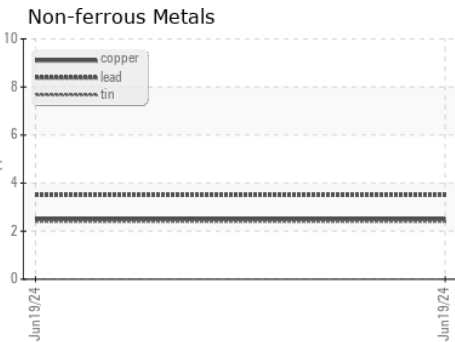
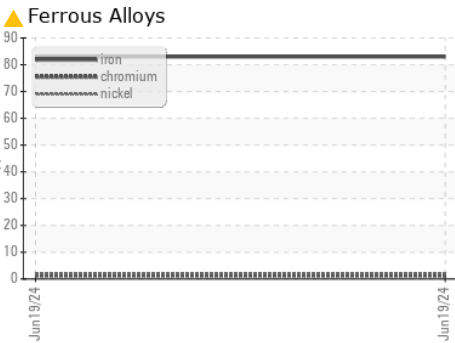
OIL ANALYSIS REPORT



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

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445	15.3	17.3	---	---

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HRE0000289 **Received** : 24 Jun 2024
Lab Number : 06217873 **Tested** : 25 Jun 2024
Unique Number : 11096070 **Diagnosed** : 25 Jun 2024 - Don Baldrige
Test Package : FLEET

SUPERIOR MARINE
 201 KELLY LANE
 CHESAPEAKE, OH
 US 45619

Contact: DARRELL KEARNS
 darrellkearns@superiormarineinc.com

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)

T:
F: