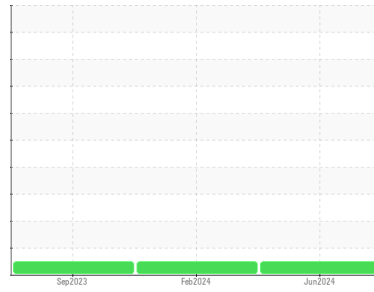


OIL ANALYSIS REPORT



Machine Id
CATERPILLAR STEPHEN T
Component
Starboard Genset
Fluid
KENDALL SUPER-D XA 15W40 (--- GAL)

Sample Rating Trend



NORMAL



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 acceptable for the time in service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			HRE0000263	WC0843967	WC0843992
Sample Date	Client Info			24 Jun 2024	23 Feb 2024	22 Sep 2023
Machine Age	hrs	Client Info		13121	11620	10025
Oil Age	hrs	Client Info		250	250	500
Oil Changed	Client Info			Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	24	35	16
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		81	69	91
Silver	ppm	ASTM D5185m	>5	<1	<1	0
Aluminum	ppm	ASTM D5185m	>12	2	2	<1
Lead	ppm	ASTM D5185m	>17	0	2	<1
Copper	ppm	ASTM D5185m	>70	1	4	<1
Tin	ppm	ASTM D5185m	>15	0	1	<1
Vanadium	ppm	ASTM D5185m		0	1	<1
Cadmium	ppm	ASTM D5185m		0	<1	0

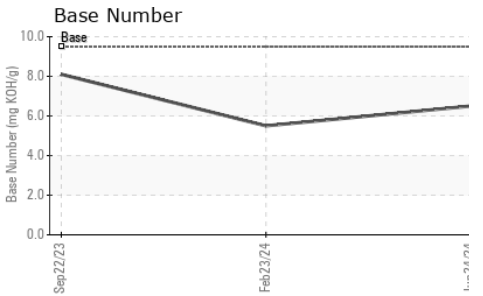
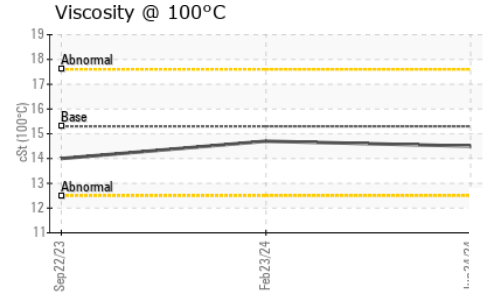
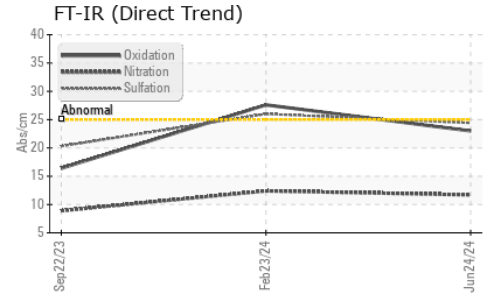
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	50	49	57	142
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		15	21	4
Manganese	ppm	ASTM D5185m		<1	1	<1
Magnesium	ppm	ASTM D5185m	270	418	369	437
Calcium	ppm	ASTM D5185m	1900	2149	2104	1901
Phosphorus	ppm	ASTM D5185m	1000	1072	1022	1045
Zinc	ppm	ASTM D5185m	1260	1340	1328	1320
Sulfur	ppm	ASTM D5185m	3400	4354	4520	4109

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	4	4	4
Sodium	ppm	ASTM D5185m		4	5	2
Potassium	ppm	ASTM D5185m	>20	4	4	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	11.7	12.4	8.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	24.4	26.0	20.3

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	23.0	27.6	16.4
Base Number (BN)	mg KOH/g	ASTM D2896	9.5	6.5	5.5	8.1

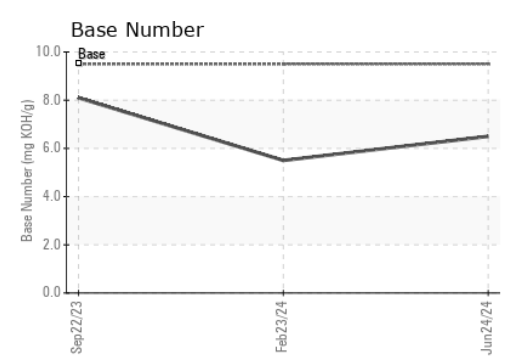
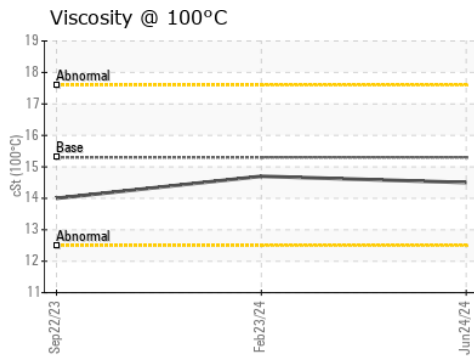
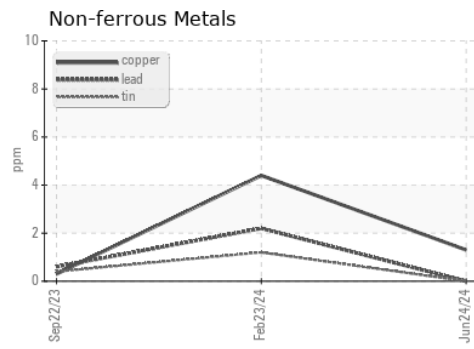
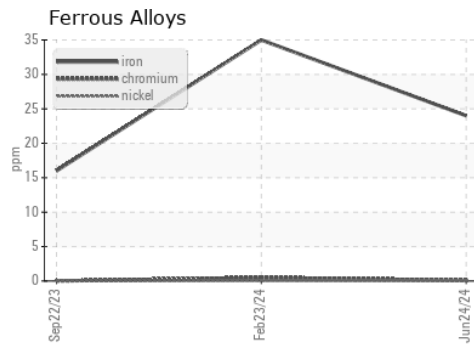
OIL ANALYSIS REPORT



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	15.3	14.5	14.7	14.0

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HRE0000263 **Received** : 11 Jul 2024
Lab Number : 06234367 **Tested** : 12 Jul 2024
Unique Number : 11123201 **Diagnosed** : 14 Jul 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)