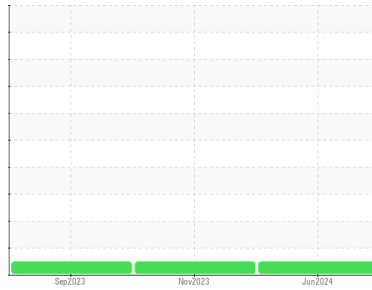


OIL ANALYSIS REPORT



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

Sample Rating Trend



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		HRE0000258	WC0843975	WC0843985
Sample Date	Client Info		07 Jun 2024	15 Nov 2023	19 Sep 2023
Machine Age	hrs	Client Info	20304	17828	17187
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
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	15	9	10
Chromium	ppm	ASTM D5185m >4	<1	<1	0
Nickel	ppm	ASTM D5185m >2	0	<1	0
Titanium	ppm	ASTM D5185m	62	49	33
Silver	ppm	ASTM D5185m >5	0	0	0
Aluminum	ppm	ASTM D5185m >12	2	2	<1
Lead	ppm	ASTM D5185m >17	<1	<1	<1
Copper	ppm	ASTM D5185m >70	<1	1	<1
Tin	ppm	ASTM D5185m >15	0	0	<1
Vanadium	ppm	ASTM D5185m	<1	<1	0
Cadmium	ppm	ASTM D5185m	0	<1	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 50	59	81	49
Barium	ppm	ASTM D5185m	0	9	0
Molybdenum	ppm	ASTM D5185m	27	34	36
Manganese	ppm	ASTM D5185m	0	<1	<1
Magnesium	ppm	ASTM D5185m 270	333	252	212
Calcium	ppm	ASTM D5185m 1900	1981	2110	2311
Phosphorus	ppm	ASTM D5185m 1000	940	1015	982
Zinc	ppm	ASTM D5185m 1260	1260	1183	1276
Sulfur	ppm	ASTM D5185m 3400	3426	3939	3813

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	5	4	3
Sodium	ppm	ASTM D5185m	2	<1	2
Potassium	ppm	ASTM D5185m >20	4	4	1
Fuel	%	ASTM D3524 >4.0	<1.0	<1.0	<1.0

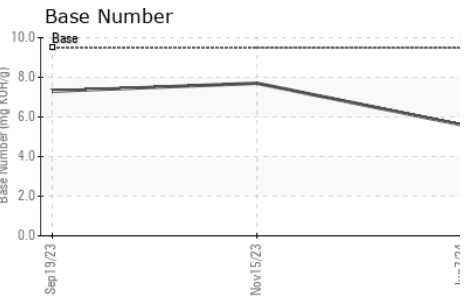
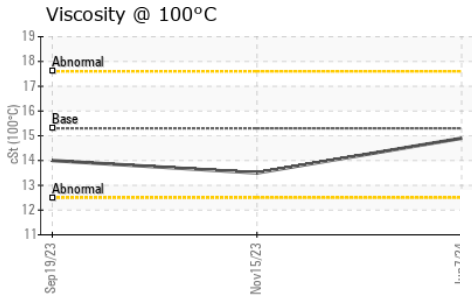
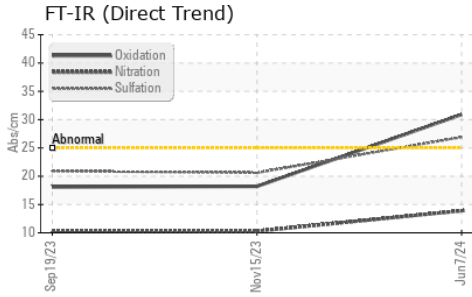
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624 >20	13.9	10.3	10.4
Sulfation	Abs/.1mm	*ASTM D7415 >30	26.9	20.6	20.9

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	30.9	18.2	18.1
Base Number (BN)	mg KOH/g	ASTM D2896 9.5	5.6	7.7	7.3

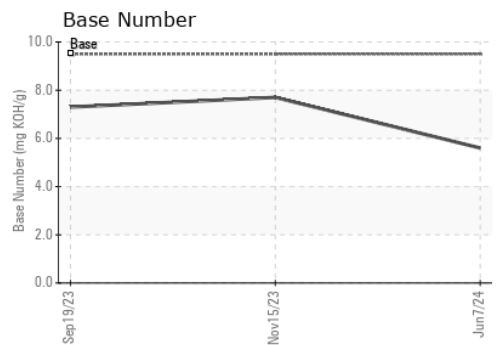
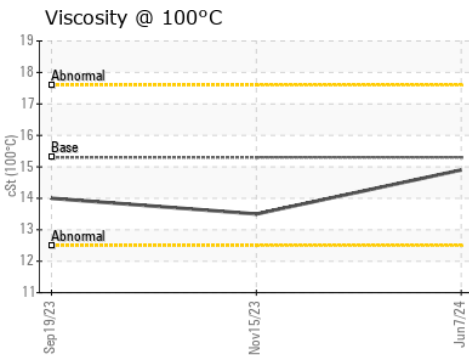
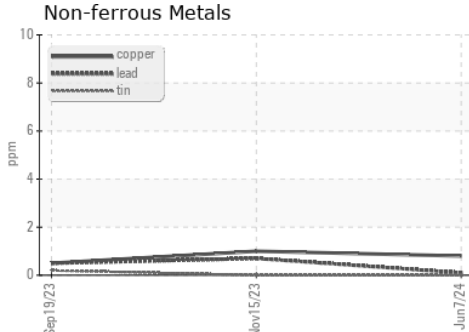
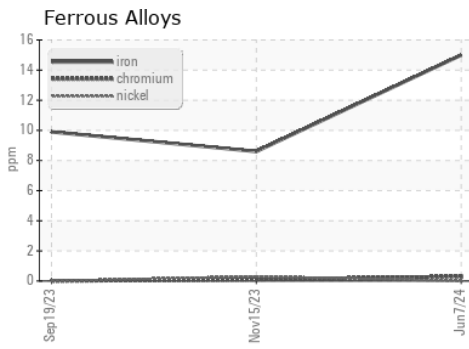
OIL ANALYSIS REPORT



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	14.9	13.5	14.0

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HRE0000258 **Received** : 20 Jun 2024
Lab Number : 06216469 **Tested** : 23 Jun 2024
Unique Number : 11089333 **Diagnosed** : 23 Jun 2024 - Don Baldrige
Test Package : FLEET (Additional Tests: FuelDilution, PercentFuel)

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)