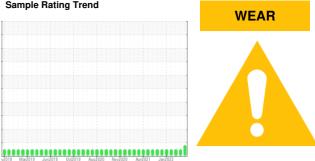


PROBLEM SUMMARY

Sample Rating Trend

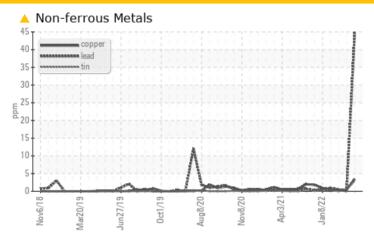


Machine Id

Component **Starboard Genset**

CHEVRON DELO 710 LS (8 GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC T	EST RE	SULTS				
Sample Status				ABNORMAL	NORMAL	NORMAL
Lead	nnm	ASTM D5185m	>10	A 45	0	<1

Customer Id: AMESAI Sample No.: MW0017043 Lab Number: 05905219 Test Package: MAR 2 To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1

don.b505@comcast.net

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.

HISTORICAL DIAGNOSIS

13 Dec 2022 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



12 Mar 2022 Diag: Jonathan Hester

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

20 Feb 2022 Diag: Jonathan Hester

NORMAL



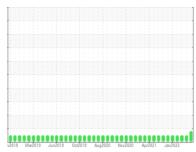
Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id GST

Component Starboard Genset

CHEVRON DELO 710 LS (8 GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

The lead level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

Fluid Condition

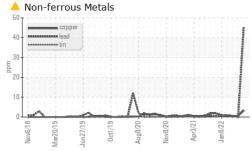
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date Client Info 06 Apr 2023 13 Dec 2022 12 Mar 2022 Machine Age hrs Client Info 5290 4174 2870 Oil Age hrs Client Info 308 309 242 Oil Changed Client Info Changed Changed Changed Changed Changed Changed Changed NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >4.0 <1.0 <1.0 <1.0 <1.0 Glycol WE Method MC Method NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1			v2018 Mar20	19 Jun2019 Oct2019	Aug2020 Nov2020 Apr2021	Jan 2022	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 5290 4174 2870 Oil Age hrs Client Info 308 309 242 Oil Changed Client Info Changed Changed Changed Sample Status Image: Control of Changed Changed Changed NORMAL NORMAL CONTAMINATION method Ilmit/base current history1 history2 Fuel WC Method >4.0 < 1.0	Sample Number		Client Info		MW0017043	MW0031676	MW0025234
Oil Age hrs Client Info 308 309 242 Oil Changed Client Info Changed Changed	Sample Date		Client Info		06 Apr 2023	13 Dec 2022	12 Mar 2022
Client Info	Machine Age	hrs	Client Info		5290	4174	2870
ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2	Oil Age	hrs	Client Info		308	309	242
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >4.0 <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				ABNORMAL	NORMAL	NORMAL
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >25 25 7 5 Chromium ppm ASTM D5185m >5 1 -1 -1 Nickel ppm ASTM D5185m >5 3 <1	CONTAMINATION	V	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >25 25 7 5 Chromium ppm ASTM D5185m >5 1 <1	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 1 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>25	25	7	5
Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >5 0 0 <1	Chromium	ppm	ASTM D5185m	>5	1	<1	<1
Silver ppm ASTM D5185m >5 0 0 <1 Aluminum ppm ASTM D5185m >10 2 1 1 Lead ppm ASTM D5185m >10 45 0 <1 Copper ppm ASTM D5185m >20 3 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 43 46 40 Barium ppm ASTM D5185m <1 <1 <1 0 Molydenum ppm ASTM D5185m <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <td>Nickel</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>5</td> <th>3</th> <td><1</td> <td>0</td>	Nickel	ppm	ASTM D5185m	>5	3	<1	0
Aluminum ppm ASTM D5185m >10	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >10 ▲ 45 0 <1 Copper ppm ASTM D5185m >20 3 <1 <1 Tin ppm ASTM D5185m >5 3 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 43 46 40 Barium ppm ASTM D5185m 43 46 40 Barium ppm ASTM D5185m 41 <1 0 Molybdenum ppm ASTM D5185m 83 58 51 Manganese ppm ASTM D5185m <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Silver	ppm	ASTM D5185m	>5	0	0	<1
Copper ppm ASTM D5185m >20 3 -1 <1 Tin ppm ASTM D5185m >5 3 <1	Aluminum	ppm	ASTM D5185m	>10	2	1	1
Tin	Lead	ppm	ASTM D5185m	>10	45	0	<1
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 43 46 40 Barium ppm ASTM D5185m <1 <1 0 Molybdenum ppm ASTM D5185m 83 58 51 Manganese ppm ASTM D5185m 15 13 9 Calcium ppm ASTM D5185m 15 13 9 Calcium ppm ASTM D5185m 4720 3986 3436 Phosphorus ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 2 1 0 Soliton ppm ASTM D5185m 2 2 1 4	Copper	ppm	ASTM D5185m	>20	3	<1	<1
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 43 46 40 Barium ppm ASTM D5185m <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 83 58 51 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 15 13 9 Calcium ppm ASTM D5185m 4720 3986 3436 Phosphorus ppm ASTM D5185m 14 12 11 Zinc ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m >25 4 2 2 Soliticon ppm ASTM D5185m 2 4 2 2 Soliticon ppm ASTM D5185m 20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/.1mm *ASTM D7415 >30 21.8	Boron	ppm	ASTM D5185m		43	46	40
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 15 13 9 Calcium ppm ASTM D5185m 4720 3986 3436 Phosphorus ppm ASTM D5185m 14 12 11 Zinc ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 3353 3013 1854 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m >20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/cm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method	Barium	ppm	ASTM D5185m		<1	<1	0
Magnesium ppm ASTM D5185m 15 13 9 Calcium ppm ASTM D5185m 4720 3986 3436 Phosphorus ppm ASTM D5185m 14 12 11 Zinc ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 3353 3013 1854 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 13.8 8.6 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION	Molybdenum	ppm	ASTM D5185m		83	58	51
Calcium ppm ASTM D5185m 4720 3986 3436 Phosphorus ppm ASTM D5185m 14 12 11 Zinc ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 3353 3013 1854 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 2 <1	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 14 12 11 Zinc ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 3353 3013 1854 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 2 <1	Magnesium	ppm	ASTM D5185m		15	13	9
Zinc ppm ASTM D5185m 2 1 0 Sulfur ppm ASTM D5185m 3353 3013 1854 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 13.8 8.6 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	Calcium	ppm	ASTM D5185m		4720	3986	3436
Sulfur ppm ASTM D5185m 3353 3013 1854 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 2 <1	Phosphorus	ppm	ASTM D5185m		14	12	11
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 2 <1	Zinc	ppm	ASTM D5185m		2	1	0
Silicon ppm ASTM D5185m >25 4 2 2 Sodium ppm ASTM D5185m 2 <1 4 Potassium ppm ASTM D5185m >20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 13.8 8.6 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	Sulfur	ppm	ASTM D5185m		3353	3013	1854
Sodium ppm ASTM D5185m 2 <1	CONTAMINANTS	1	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 13.8 8.6 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	Silicon	ppm	ASTM D5185m	>25	4	2	2
INFRA-RED	Sodium	ppm	ASTM D5185m		2	<1	4
Soot % % *ASTM D7844 1.1 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 13.8 8.6 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	Potassium	ppm	ASTM D5185m	>20	0	0	0
Nitration Abs/cm *ASTM D7624 >20 13.8 8.6 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.8 15.2 16.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	Soot %	%	*ASTM D7844		1.1	0.3	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 9.3 9.4	Nitration	Abs/cm	*ASTM D7624	>20	13.8	8.6	8.5
Oxidation	Sulfation						
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.5	9.3	9.4
	Base Number (BN)	mg KOH/g			7.7	7.3	7.1



Base Number

OIL ANALYSIS REPORT

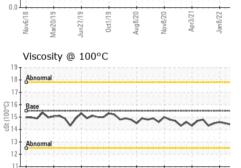


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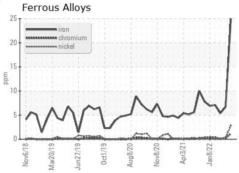
VISUAL		method	limit/base	current	history1	history2
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Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
ELLUD DDODEDT	150					

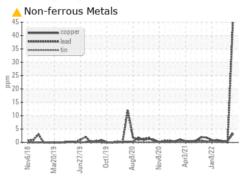
(B/)	10.0	Commence and a series of the s
mg KOH	8.0	
nber (m	6.0	~~~~~~
e Num	4.0	
Bas	2.0	

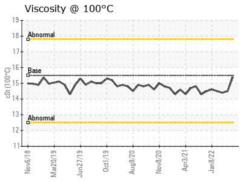


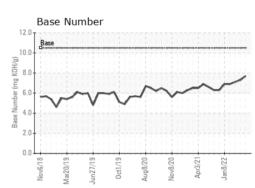


GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MAR 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : MW0017043 : 05905219 : 10566575

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Received Diagnosed

: 24 Jul 2023 : 26 Jul 2023 Diagnostician : Don Baldridge AMERICAN RIVER TRANSPORTATION CO.

P.O. BOX 2889 ST. LOUIS, MO US 63111

Contact: BRIAN GRIEWING brian.griewing@adm.com

* - 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)

F: (314)481-5278

Contact/Location: BRIAN GRIEWING - AMESAI

T: