



Area
RICH MCCARTY
Machine Id
RICH MCCARTY
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LS (350 GAL)

RECOMMENDATION

We advise that you check for the source of the coolant leak. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0057637	MW0057655	MW0057724
Sample Date		Client Info		15 May 2024	15 Apr 2024	01 Mar 2024
Machine Age	hrs	Client Info		43451	42749	41711
Oil Age	hrs	Client Info		6009	5307	4239
Filter Age	hrs	Client Info		264	995	1372
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Filter Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				SEVERE	SEVERE	SEVERE

WEAR

Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>75	38	38	43
Chromium	ppm	ASTM D5185m	>8	<1	<1	1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>3	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	3	3	3
Lead	ppm	ASTM D5185m	>18	▲ 21	▲ 22	▲ 26
Copper	ppm	ASTM D5185m	>80	▲ 26	▲ 30	▲ 28
Tin	ppm	ASTM D5185m	>14	4	5	3
Vanadium	ppm	ASTM D5185m		0	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

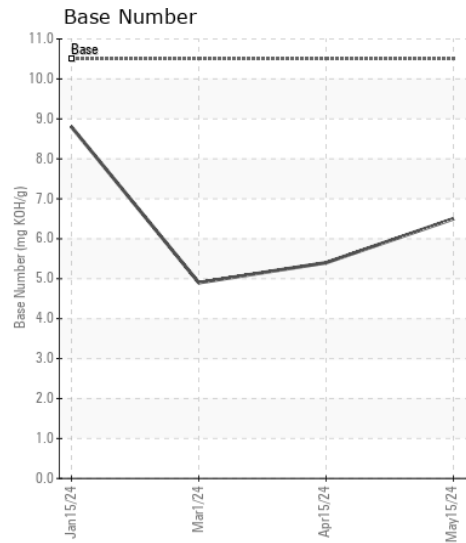
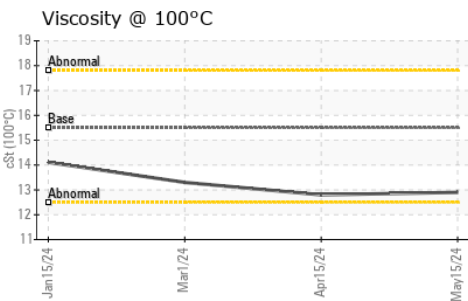
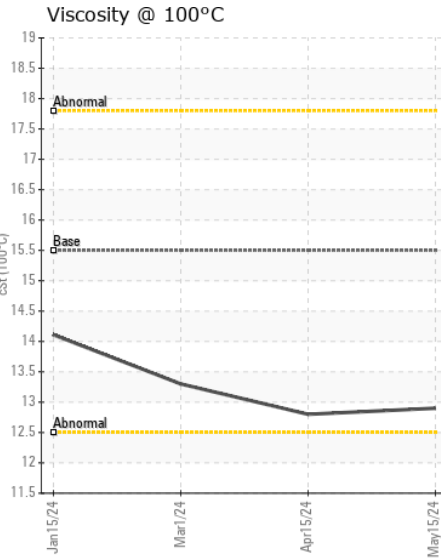
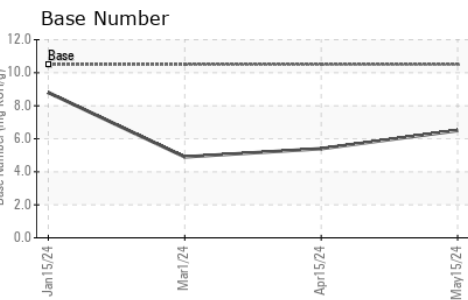
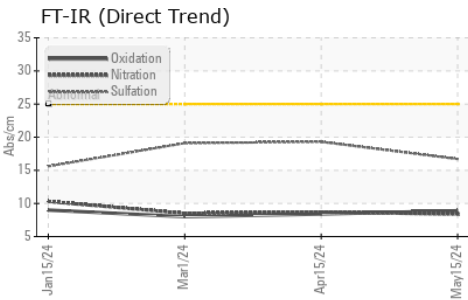
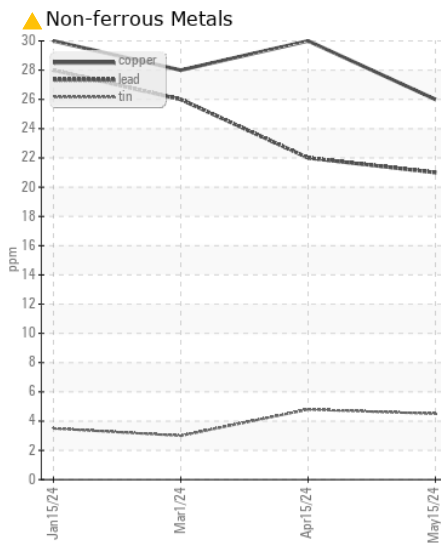
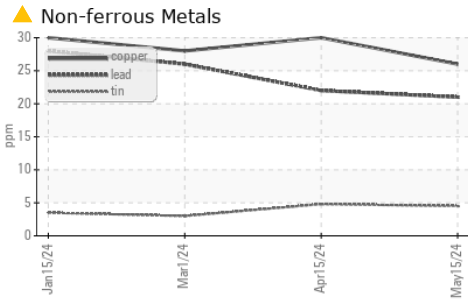
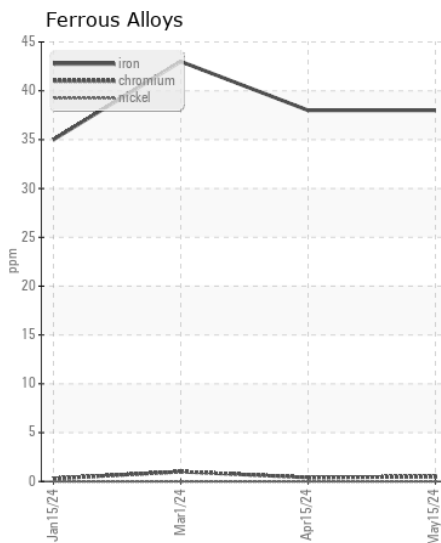
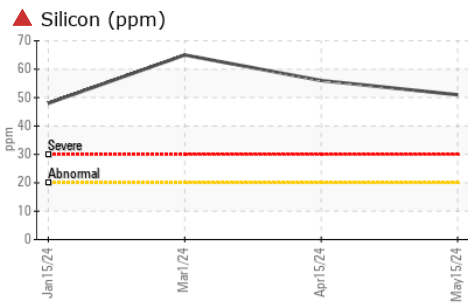
The high sodium (Na) level indicates the possible presence of salt water. Elemental level of sodium (Na) and/or boron (B) indicates a possible cooling water leak. Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>20	▲ 51	▲ 56	▲ 65
Potassium	ppm	ASTM D5185m	>20	▲ 14	▲ 16	▲ 20
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol	%	*ASTM D2982		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.8	1.2	1
Nitration	Abs/cm	*ASTM D7624	>20	8.4	8.7	8.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	16.7	19.3	19.1
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

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185m	>75	▲ 528	▲ 691	▲ 715
Boron	ppm	ASTM D5185m		92	101	102
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		46	44	44
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		53	73	91
Calcium	ppm	ASTM D5185m		2512	2508	2188
Phosphorus	ppm	ASTM D5185m		0	0	19
Zinc	ppm	ASTM D5185m		0	0	28
Sulfur	ppm	ASTM D5185m		2451	2424	2590
Oxidation	Abs/.1mm	*ASTM D7414	>25	8.9	8.4	8.0
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	6.5	5.4	4.9
Visc @ 100°C	cSt	ASTM D445	15.5	12.9	12.8	13.3



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0057637 **Received** : 23 May 2024
Lab Number : 06188934 **Tested** : 29 May 2024
Unique Number : 11045686 **Diagnosed** : 29 May 2024 - Jonathan Hester
Test Package : MAR 2 (Additional Tests: Glycol)

AMERICAN RIVER TRANSPORTATION CO.
P.O. BOX 2889
ST. LOUIS, MO
US 63111
Contact: BRIAN GRIEWING
brian.griewing@adm.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)

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