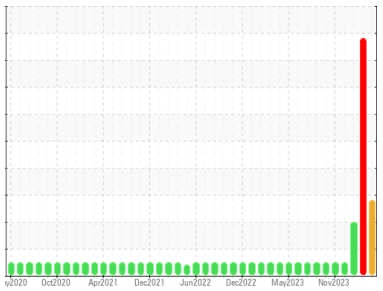
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Area
DENNIS T DELANEY
Machine Id
[DENNIS T DELANEY] 003 536790-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LS (--- GAL)

DIAGNOSIS

Recommendation
We advise that you check for possible coolant leak. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

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.

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

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**MW0067898**	MW0068127	MW0061594
Sample Date		Client Info		**01 Apr 2024**	01 Mar 2024	01 Feb 2024
Machine Age	hrs	Client Info		**74743**	74042	73353
Oil Age	hrs	Client Info		**74743**	74042	73353
Oil Changed		Client Info		**N/A**	Changed	Not Changd
Sample Status				**ABNORMAL**	SEVERE	ABNORMAL

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	**19**	19	18
Chromium	ppm	ASTM D5185m	>8	**1**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**1**	0	0
Titanium	ppm	ASTM D5185m	>3	**<1**	0	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>15	**2**	1	2
Lead	ppm	ASTM D5185m	>18	**8**	8	▲ 11
Copper	ppm	ASTM D5185m	>80	**20**	17	18
Tin	ppm	ASTM D5185m	>14	**4**	4	3
Vanadium	ppm	ASTM D5185m		**<1**	0	<1
Cadmium	ppm	ASTM D5185m		**1**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**140**	115	69
Barium	ppm	ASTM D5185m		**<1**	0	<1
Molybdenum	ppm	ASTM D5185m		**51**	44	43
Manganese	ppm	ASTM D5185m		**3**	2	2
Magnesium	ppm	ASTM D5185m		**22**	12	13
Calcium	ppm	ASTM D5185m		**3492**	3452	3229
Phosphorus	ppm	ASTM D5185m		**19**	3	3
Zinc	ppm	ASTM D5185m		**12**	0	1
Sulfur	ppm	ASTM D5185m		**2406**	2753	2197

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	▲ **29**	▲ 25	14
Sodium	ppm	ASTM D5185m	>75	● **505**	● 420	● 205
Potassium	ppm	ASTM D5185m	>20	**4**	3	3
Glycol	%	*ASTM D2982		**NEG**	▲ 0.10	NEG

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**1**	1	1.2
Nitration	Abs/cm	*ASTM D7624	>20	**8.9**	9.3	9.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	**18.3**	18.8	18.6

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**8.4**	8.7	8.3
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	**9.90**	9.51	9.12

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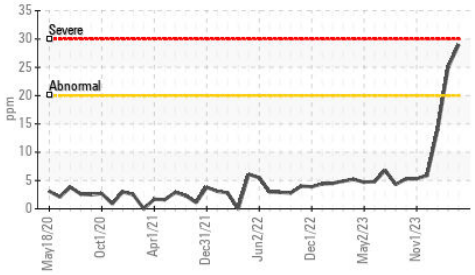
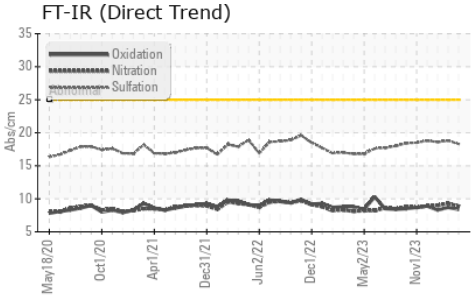
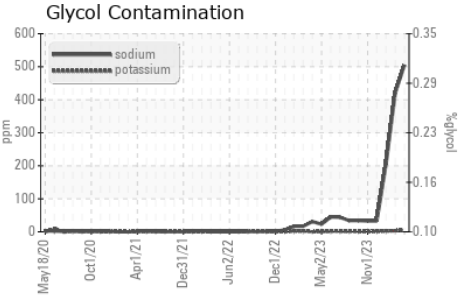
Silicon (ppm)



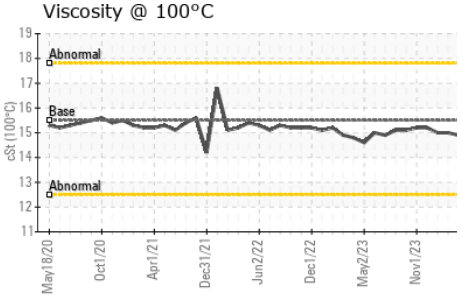
FT-IR (Direct Trend)



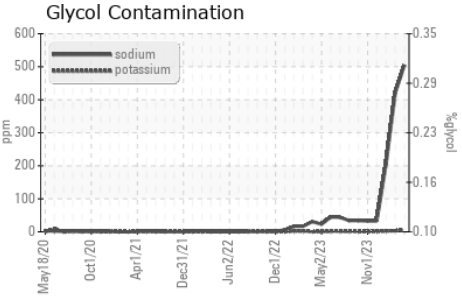
Glycol Contamination



Viscosity @ 100°C



Glycol Contamination

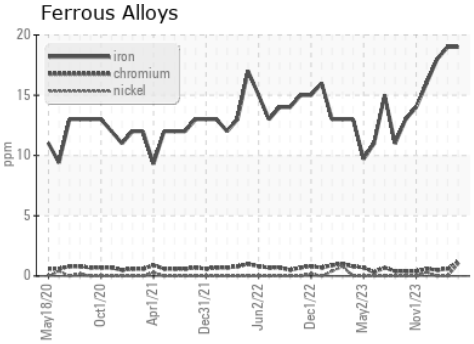


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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

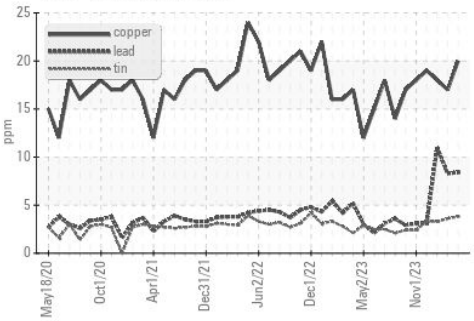
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.5	**14.9**	15.0	15.0

GRAPHS

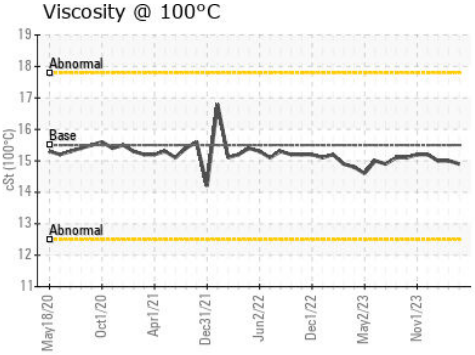
Ferrous Alloys



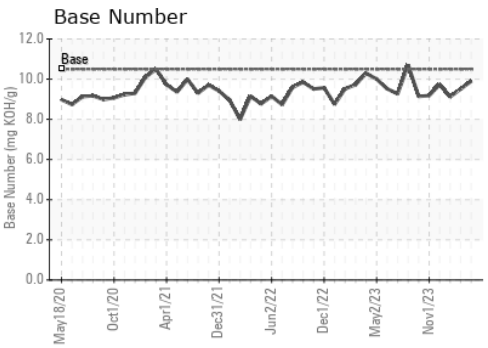
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0067898 **Received** : 11 Apr 2024
Lab Number : 06146705 **Tested** : 16 Apr 2024
Unique Number : 10976783 **Diagnosed** : 16 Apr 2024 - Jonathan Hester
Test Package : MAR 2

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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Report Id: INGPAD [WUSCAR] 06146705 (Generated: 04/17/2024 13:46:35) Rev: 1
Contact/Location: JEFF BISHOP - INGPAD