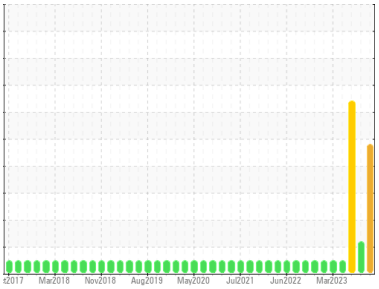
PROBLEM SUMMARY

Sample Rating Trend

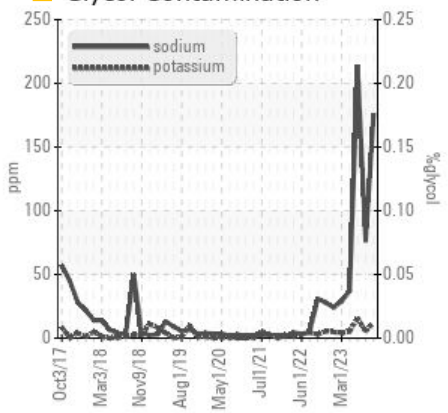


DIRT

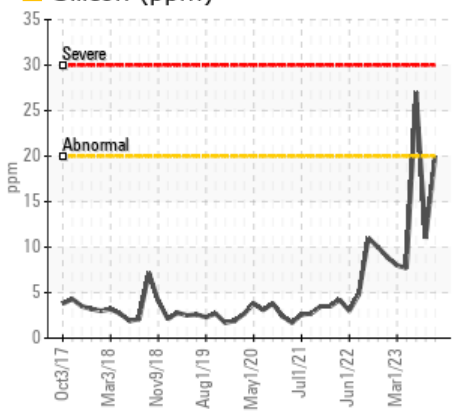
Area
ROBIN B INGRAM
Machine Id
[ROBIN B INGRAM] 003 617985-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LE (250 GAL)

COMPONENT CONDITION SUMMARY

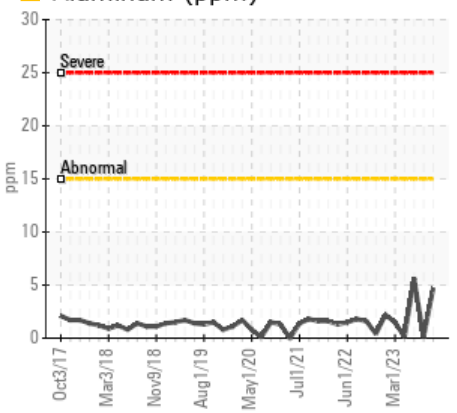
Glycol Contamination



Silicon (ppm)



Aluminum (ppm)



RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	ATTENTION
Aluminum	ppm	ASTM D5185m	>15	▲ **5**	▲ 6	<1
Silicon	ppm	ASTM D5185m	>20	▲ **20**	▲ 27	11
Sodium	ppm	ASTM D5185m	>75	▲ **176**	▲ 214	▲ 76
Potassium	ppm	ASTM D5185m	>20	▲ **12**	▲ 16	5

Customer Id: INGPAD
Sample No.: MW05901974
Lab Number: 05901974
Test Package: MAR 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

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

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Resample	---	---	?	We recommend an early resample to monitor this condition.
Check Dirt Access	---	---	?	We advise that you check the air filter, air induction system, and any areas where dirt may enter the component.
Check Glycol Access	---	---	?	We advise that you check for the source of the coolant leak.

HISTORICAL DIAGNOSIS

01 Jun 2023 Diag: Jonathan Hester

DIRT

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend an early resample to monitor this condition.Bearing and/or bushing wear is indicated. Sodium and/or potassium levels are high. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. The BN result indicates that there is suitable alkalinity remaining in the oil.

view report

01 Jun 2023 Diag: Don Baldridge

COOLANT

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. The high sodium (Na) level indicates the possible presence of salt water. 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

31 Mar 2023 Diag: Wes Davis

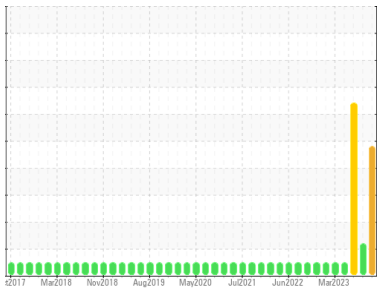
NORMAL

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.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Area
ROBIN B INGRAM
Machine Id
[ROBIN B INGRAM] 003 617985-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LE (250 GAL)

DIAGNOSIS

Recommendation
We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
Sodium and/or potassium levels are high. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

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		**MW05901974**	MW05901973	MW0027295
Sample Date		Client Info		**01 Jul 2023**	01 Jun 2023	01 Jun 2023
Machine Age	hrs	Client Info		**59214**	52520	57848
Oil Age	hrs	Client Info		**453**	0	57848
Oil Changed		Client Info		**N/A**	N/A	Not Changd
Sample Status				**ABNORMAL**	ABNORMAL	ATTENTION

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	**<1.0**	<1.0	<1.0

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	**18**	25	17
Chromium	ppm	ASTM D5185m	>8	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**<1**	<1	0
Titanium	ppm	ASTM D5185m	>3	**0**	<1	0
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>15	▲ **5**	▲ 6	<1
Lead	ppm	ASTM D5185m	>18	**22**	▲ 38	21
Copper	ppm	ASTM D5185m	>80	**31**	▲ 38	13
Tin	ppm	ASTM D5185m	>14	**2**	2	2
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**<1**	<1	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**59**	58	54
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**45**	46	44
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**87**	121	51
Calcium	ppm	ASTM D5185m		**3251**	3264	3394
Phosphorus	ppm	ASTM D5185m		**6**	8	15
Zinc	ppm	ASTM D5185m	10	**17**	24	6
Sulfur	ppm	ASTM D5185m		**2493**	2427	2669

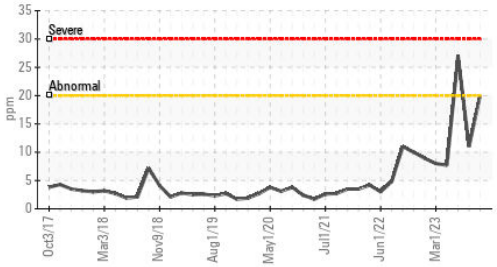
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	▲ **20**	▲ 27	11
Sodium	ppm	ASTM D5185m	>75	▲ **176**	▲ 214	▲ 76
Potassium	ppm	ASTM D5185m	>20	▲ **12**	▲ 16	5
Glycol	%	*ASTM D2982		**NEG**	NEG	NEG

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.5**	0.4	0.3
Nitration	Abs/cm	*ASTM D7624	>20	**6.4**	7.1	6.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	**15.4**	15.8	15.6

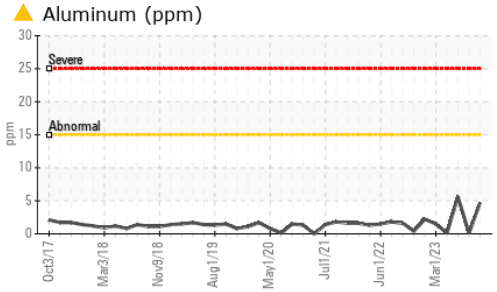
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**6.2**	6.4	6.6
Base Number (BN)	mg KOH/g	ASTM D2896	9.2	**8.49**	10.15	10.60

OIL ANALYSIS REPORT

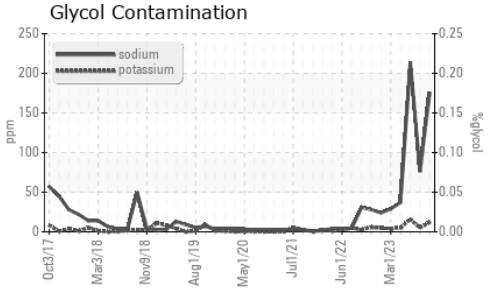
Silicon (ppm)



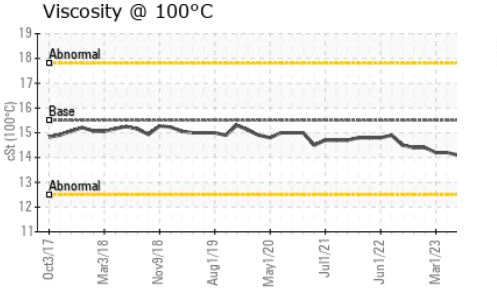
Aluminum (ppm)



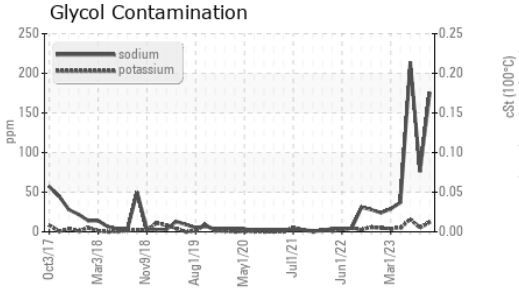
Glycol Contamination



Viscosity @ 100°C



Glycol Contamination

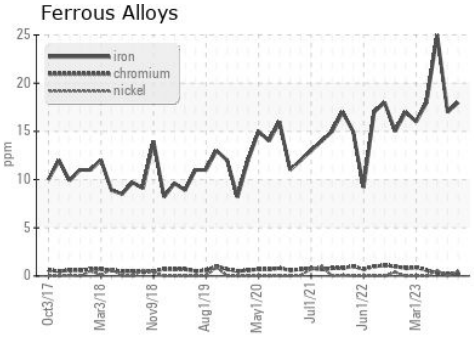


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

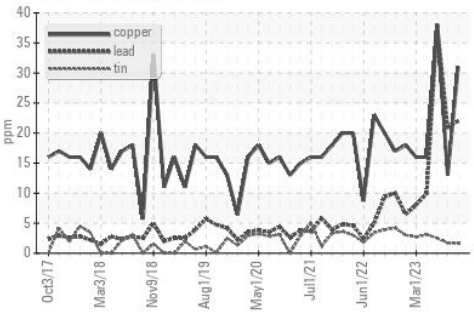
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.5	**14.4**	14.1	14.5

GRAPHS

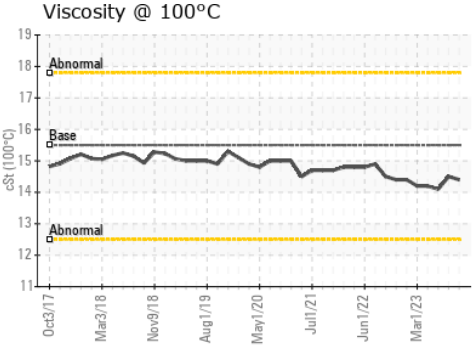
Ferrous Alloys



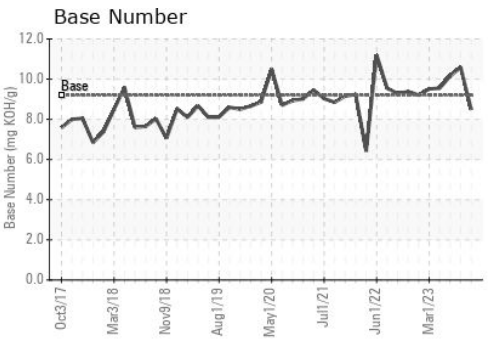
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW05901974 **Received** : 18 Jul 2023
Lab Number : 05901974 **Diagnosed** : 20 Jul 2023
Unique Number : 10563330 **Diagnostician** : Jonathan Hester
Test Package : MAR 2 (Additional Tests: Glycol)

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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