MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
HAL PANNELL (S/N 81-M1-1073)
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LS (380 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

WEAR

All component wear rates are normal.

CONTAMINATION

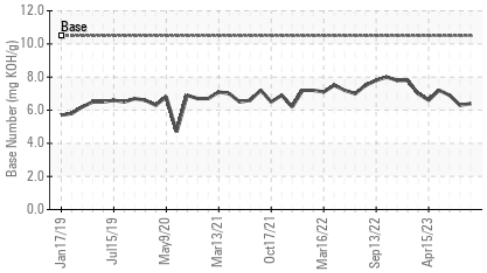
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

FLUID CONDITION

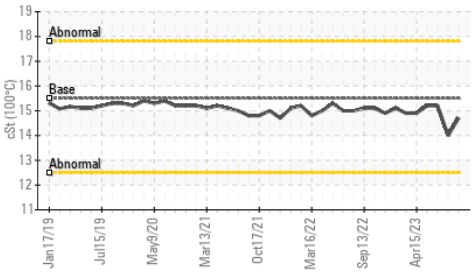
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0066525	MW0047891	MW0047831
Sample Date		Client Info		16 Jan 2024	15 Nov 2023	07 Jul 2023
Machine Age	hrs	Client Info		1998	501	44976
Oil Age	hrs	Client Info		568	501	44976
Filter Age	hrs	Client Info		568	501	637
Oil Changed		Client Info		N/A	N/A	Not Changd
Filter Changed		Client Info		N/A	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>75	18	13	12
Chromium	ppm	ASTM D5185m	>8	2	<1	1
Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Titanium	ppm	ASTM D5185m	>3	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	1	2	2
Lead	ppm	ASTM D5185m	>18	5	4	0
Copper	ppm	ASTM D5185m	>80	18	18	9
Tin	ppm	ASTM D5185m	>14	13	10	<1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	5	4	2
Potassium	ppm	ASTM D5185m	>20	4	2	9
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.1	0.1	1
Nitration	Abs/cm	*ASTM D7624	>20	8.1	6.7	8.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	15.7	14.6	18.3
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
Sodium	ppm	ASTM D5185m	>75	0	2	2
Boron	ppm	ASTM D5185m		45	41	38
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		51	44	47
Manganese	ppm	ASTM D5185m		<1	0	0
Magnesium	ppm	ASTM D5185m		12	10	11
Calcium	ppm	ASTM D5185m		3538	3102	3554
Phosphorus	ppm	ASTM D5185m		16	34	4
Zinc	ppm	ASTM D5185m		0	0	0
Sulfur	ppm	ASTM D5185m		2210	1959	2667
Oxidation	Abs/.1mm	*ASTM D7414	>25	9.4	7.9	10.6
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	6.4	6.3	6.9
Visc @ 100°C	cSt	ASTM D445	15.5	14.7	14.0	15.2

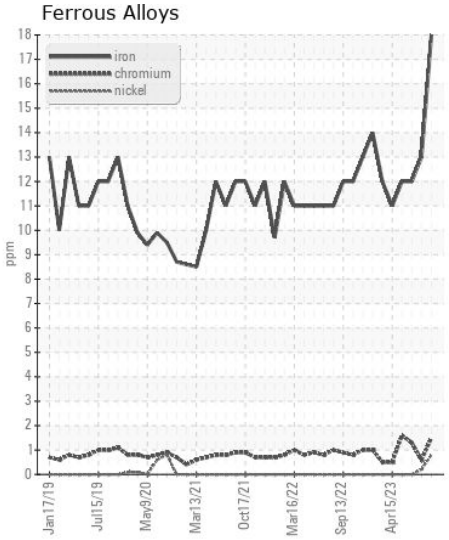
Base Number



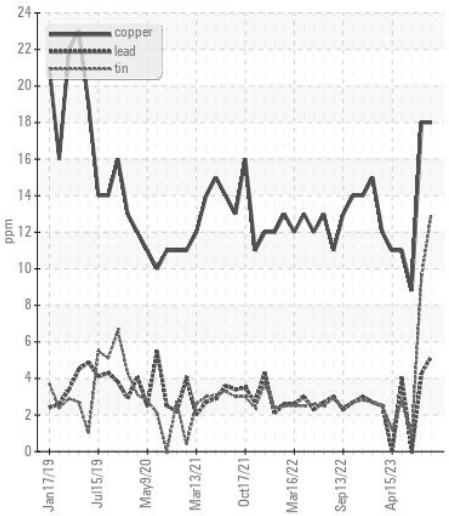
Viscosity @ 100°C



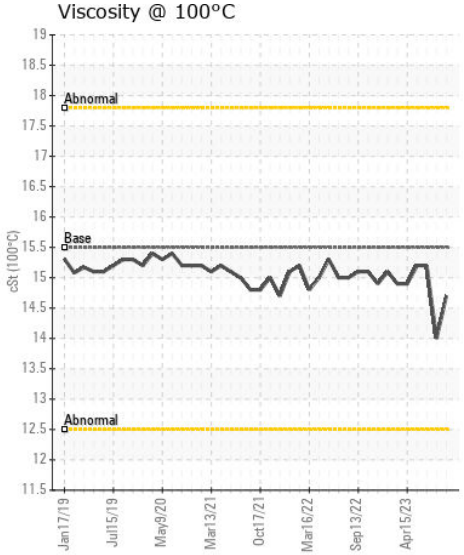
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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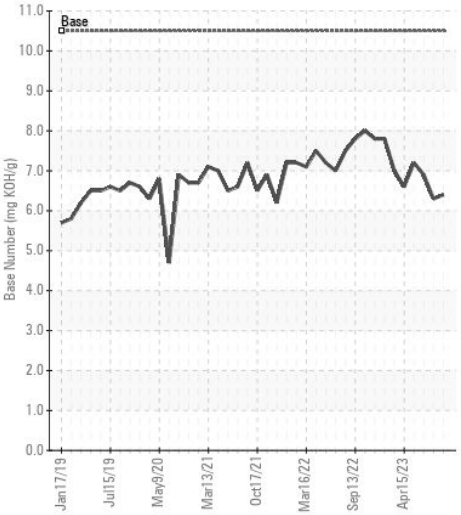

Certificate L2367

Laboratory	: WearCheck USA - 501 Madison Ave., Cary, NC 27513		
Sample No.	: MW0066525	**Received**	: 09 Feb 2024
Lab Number	: 06085239	**Tested**	: 12 Feb 2024
Unique Number	: 10872684	**Diagnosed**	: 12 Feb 2024 - Wes Davis
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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