MAR II

WEAR CHECK
Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	SEVERE
FLUID CONDITION	ABNORMAL

Area
RIVER EAGLE
Machine Id
REA
Component
Port Main Engine
Fluid
CHEVRON DELO 400 MULTIGRADE 15W40 (39 GAL)

RECOMMENDATION

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

WEAR

All component wear rates are normal.

CONTAMINATION

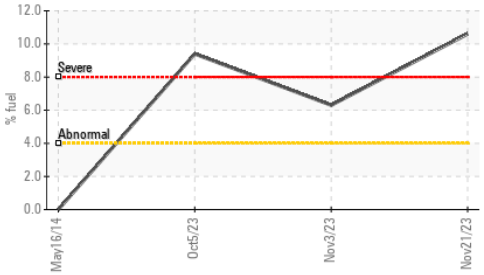
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

FLUID CONDITION

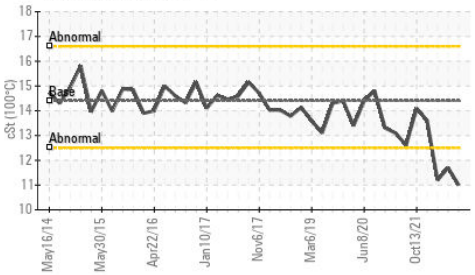
The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		**MW0054580**	MW0054533	MW0054572
Sample Date		Client Info		**21 Nov 2023**	03 Nov 2023	05 Oct 2023
Machine Age	hrs	Client Info		**1687**	1417	865
Oil Age	hrs	Client Info		**822**	600	800
Filter Age	hrs	Client Info		**822**	600	800
Oil Changed		Client Info		**Changed**	Not Changd	Changed
Filter Changed		Client Info		**Changed**	Not Changd	Changed
Sample Status				**SEVERE**	ABNORMAL	SEVERE
Iron	ppm	ASTM D5185m	>75	**13**	8	24
Chromium	ppm	ASTM D5185m	>8	**<1**	<1	1
Nickel	ppm	ASTM D5185m	>2	**0**	0	<1
Titanium	ppm	ASTM D5185m	>3	**15**	14	15
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>15	**1**	1	1
Lead	ppm	ASTM D5185m	>18	**1**	<1	5
Copper	ppm	ASTM D5185m	>80	**2**	<1	7
Tin	ppm	ASTM D5185m	>14	**0**	<1	2
Vanadium	ppm	ASTM D5185m		**0**	<1	<1
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	**5**	5	10
Potassium	ppm	ASTM D5185m	>20	**3**	2	0
Fuel	%	ASTM D3524	>4.0	▲ **10.6**	▲ 6.3	▲ 9.4
Water		WC Method	>0.1	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG
Soot %	%	*ASTM D7844		**0.2**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**8.3**	7.7	7.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**18.1**	18.0	17.4
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**	<1	5
Boron	ppm	ASTM D5185m	151	**83**	88	75
Barium	ppm	ASTM D5185m	0.4	**4**	0	0
Molybdenum	ppm	ASTM D5185m	250	**26**	25	23
Manganese	ppm	ASTM D5185m		**0**	<1	5
Magnesium	ppm	ASTM D5185m	0	**607**	709	574
Calcium	ppm	ASTM D5185m	2046	**1306**	1436	1606
Phosphorus	ppm	ASTM D5185m	1043	**618**	696	657
Zinc	ppm	ASTM D5185m	943	**711**	815	745
Sulfur	ppm	ASTM D5185m	5012	**2876**	2980	2740
Oxidation	Abs/.1mm	*ASTM D7414	>25	**13.4**	12.8	12.6
Base Number (BN)	mg KOH/g	ASTM D2896	12.5	**7.9**	8.2	7.7
Visc @ 100°C	cSt	ASTM D445	14.4	▲ **11.0**	▲ 11.7	▲ 11.2

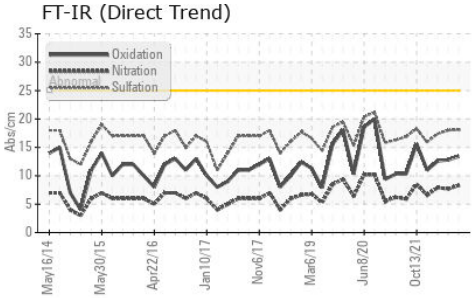
Fuel Dilution



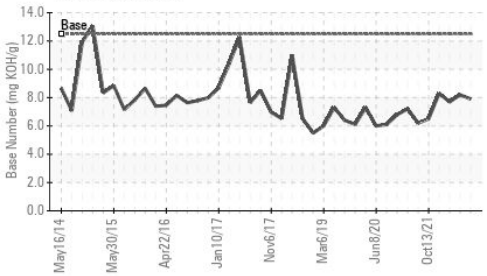
Viscosity @ 100°C



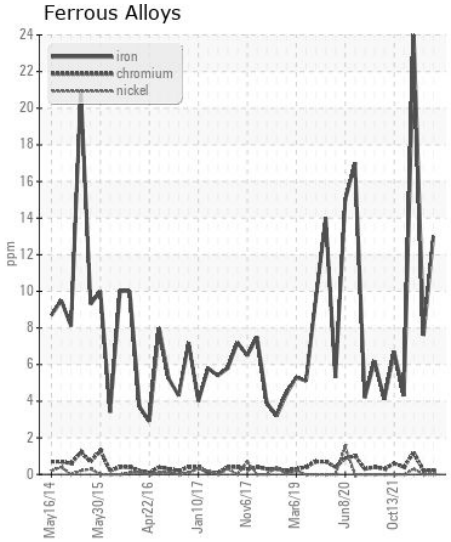
FT-IR (Direct Trend)



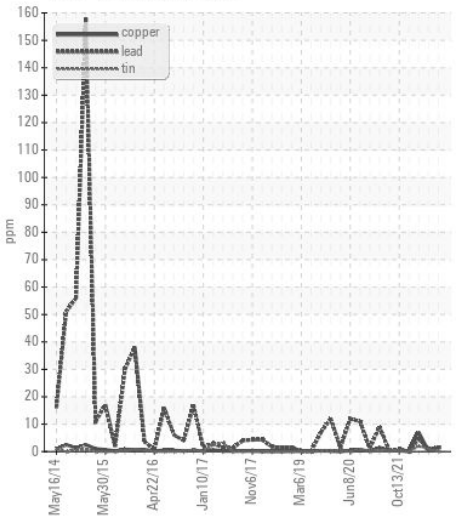
Base Number



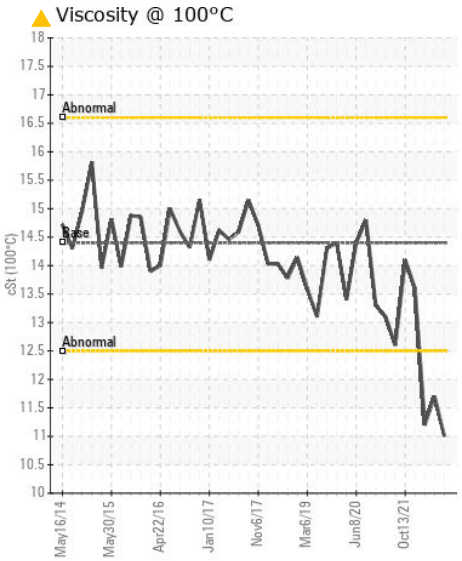
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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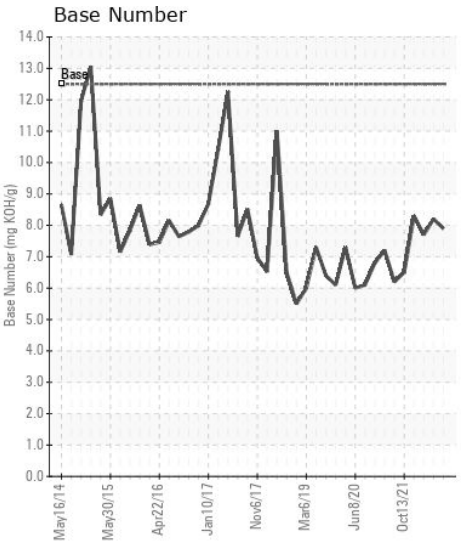

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0054580
Lab Number : 06029074
Unique Number : 10778865
Test Package : MAR 2 (Additional Tests: PercentFuel)

Received : 08 Dec 2023
Tested : 18 Dec 2023
Diagnosed : 18 Dec 2023 - Wes Davis

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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