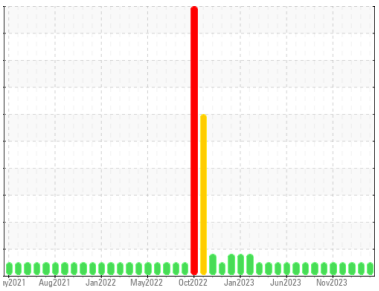
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
Findlay
Machine Id
[Findlay] Oil - Port Main Engine
Component
Port Main Engine
Fluid
MARATHON 15W40 (220 GAL)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor. (Customer Sample Comment: C.Kemper)

Wear
All component wear rates are normal.

Contamination
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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0845865**	WC0859882	WC0846047
Sample Date		Client Info		**23 Feb 2024**	24 Jan 2024	29 Dec 2023
Machine Age	hrs	Client Info		**12040**	11389	10898
Oil Age	hrs	Client Info		**9053**	8391	7912
Oil Changed		Client Info		**Not Changd**	Filtered	Not Changd
Sample Status				**NORMAL**	NORMAL	NORMAL

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	**10**	11	12
Chromium	ppm	ASTM D5185m	>8	**0**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**0**	0	<1
Titanium	ppm	ASTM D5185m	>3	**0**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>15	**0**	1	1
Lead	ppm	ASTM D5185m	>18	**10**	12	12
Copper	ppm	ASTM D5185m	>80	**56**	53	65
Tin	ppm	ASTM D5185m	>14	**0**	<1	1
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**29**	24	21
Barium	ppm	ASTM D5185m		**0**	0	2
Molybdenum	ppm	ASTM D5185m		**44**	56	45
Manganese	ppm	ASTM D5185m		**0**	<1	<1
Magnesium	ppm	ASTM D5185m		**1193**	1140	1089
Calcium	ppm	ASTM D5185m		**1573**	1536	1449
Phosphorus	ppm	ASTM D5185m		**921**	1020	957
Zinc	ppm	ASTM D5185m		**1242**	1276	1207
Sulfur	ppm	ASTM D5185m		**2911**	2788	2696

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	**2**	3	3
Sodium	ppm	ASTM D5185m	>75	**<1**	2	2
Potassium	ppm	ASTM D5185m	>20	**<1**	2	3
Water	%	ASTM D6304	>0.1	**NEG**	NEG	NEG

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.1**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**12.5**	11.9	12.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	**24.8**	24.1	24.8

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**26.9**	25.2	26.8
Base Number (BN)	mg KOH/g	ASTM D2896		**8.53**	8.45	7.75

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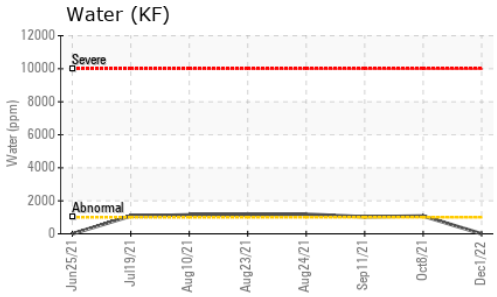
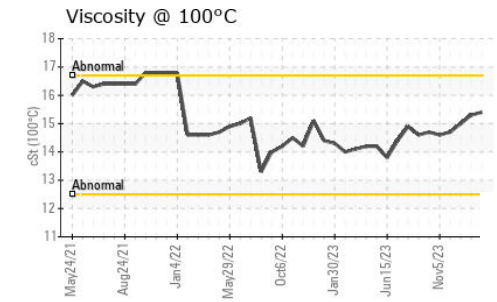
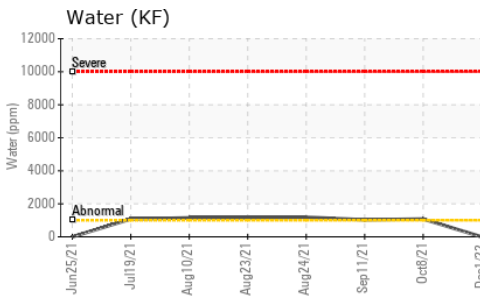


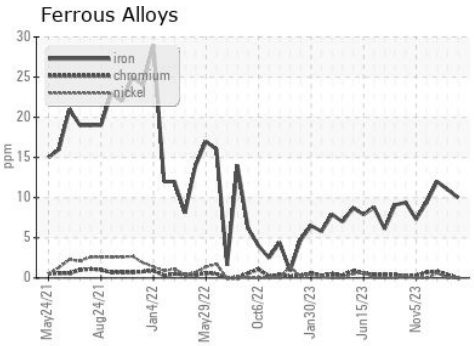


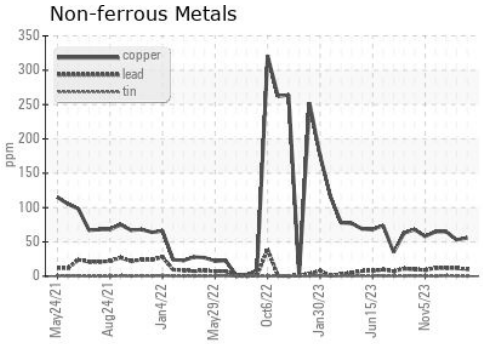


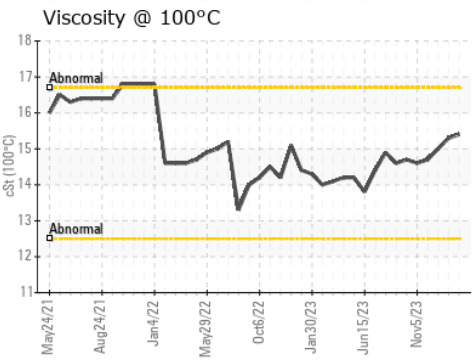
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

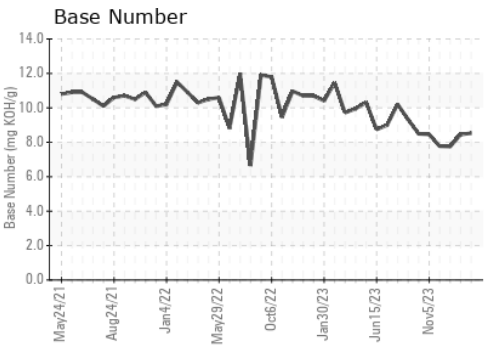
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		**15.4**	15.3	15.0

GRAPHS









Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0845865 **Received** : 19 Mar 2024
Lab Number : 06122611 **Tested** : 21 Mar 2024
Unique Number : 10936762 **Diagnosed** : 21 Mar 2024 - Jonathan Hester
Test Package : IND 2 (Additional Tests: KF)

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: MARCAT [WUSCAR] 06122611 (Generated: 03/21/2024 19:39:07) Rev: 1

Submitted By: M/V FINDLAY