MAR III

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	NORMAL
OIL CONDITION	NORMAL

Machine Id
L14-2311 Port Propulsion
Component
Port Hydraulic System
Fluid
MOBIL DTE 25 (568 LTR)

RECOMMENDATION

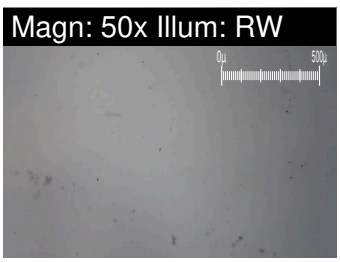
Resample at the next service interval to monitor.

WEAR

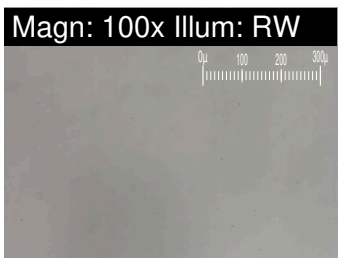
All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system.

Magn: 200x Illum: BC

Magn: 50x Illum: RW



Magn: 100x Illum: RW



Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0729396	WC0668909	WC0570893
Sample Date		Client Info		26 Jan 2023	06 Jul 2022	16 Dec 2021
Machine Age	hrs	Client Info		22643	21278	20515
Oil Age	hrs	Client Info		6137	301	0
Filter Age	hrs	Client Info		431	301	500
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	ATTENTION	NORMAL
PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>20	2	2	2
Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		1	0	<1
Aluminum	ppm	ASTM D5185(m)	>10	0	<1	<1
Lead	ppm	ASTM D5185(m)	>20	<1	<1	<1
Copper	ppm	ASTM D5185(m)	>20	4	4	4
Tin	ppm	ASTM D5185(m)	>10	<1	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Large Particles		DR-Ferr*		1.6	8.1	5.1
Small Particles		DR-Ferr*		2.1	7.1	5.0
Total Particles		DR-Ferr*	>---	3.7	15.2	10.1
Large Particles Percentage	%	DR-Ferr*		0	6.6	1
Severity Index		DR-Ferr*		1	8	1
Ferrous Rubbing	Scale 0-10	ASTM D7684*		1	1	1
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*			1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				

CONTAMINANTS

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

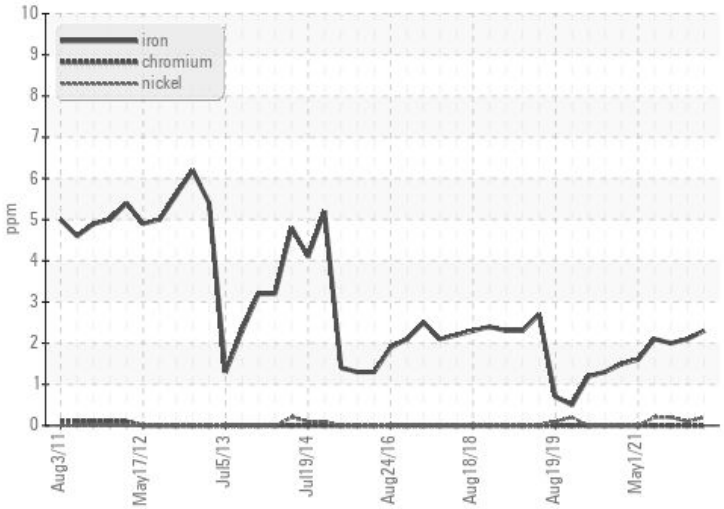
Silicon	ppm	ASTM D5185(m)	>15	**2**	2	2
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	1
Water		WC Method	>0.05	**NEG**	NEG	NEG
Particles >4µm		ASTM D7647	>5000	**324**	5740	964
Particles >6µm		ASTM D7647	>1300	**83**	1913	206
Particles >14µm		ASTM D7647	>160	**8**	266	15
Particles >21µm		ASTM D7647	>40	**3**	75	4
Particles >38µm		ASTM D7647	>10	**1**	4	0
Particles >71µm		ASTM D7647	>3	**1**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**16/14/10**	20/18/15	17/15/11
Silt	scalar	Visual*	NONE	**NONE**	NONE	NONE
Debris	scalar	Visual*	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	**NONE**	VLITE	NONE
Appearance	scalar	Visual*	NORML	**NORML**	NORML	NORML
Odor	scalar	Visual*	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	Visual*	>0.05	**NEG**	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**	1	
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	1	

OIL CONDITION

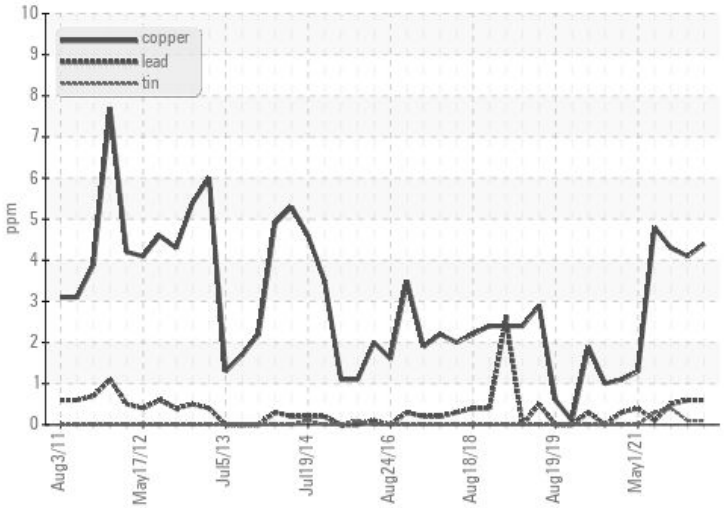
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185(m)		**11**	9	8
Boron	ppm	ASTM D5185(m)		**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**0**	0	<1
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**<1**	<1	<1
Calcium	ppm	ASTM D5185(m)		**134**	134	134
Phosphorus	ppm	ASTM D5185(m)		**525**	491	521
Zinc	ppm	ASTM D5185(m)		**687**	693	726
Sulfur	ppm	ASTM D5185(m)		**3417**	3448	3485
Acid Number (AN)	mg KOH/g	ASTM D974*		**1.08**	0.91	0.97
Visc @ 40°C	cSt	ASTM D7279(m)	44.2	**47.0**	41.8	47.0
Lubricant Degradation	Scale 0-10	ASTM D7684*				

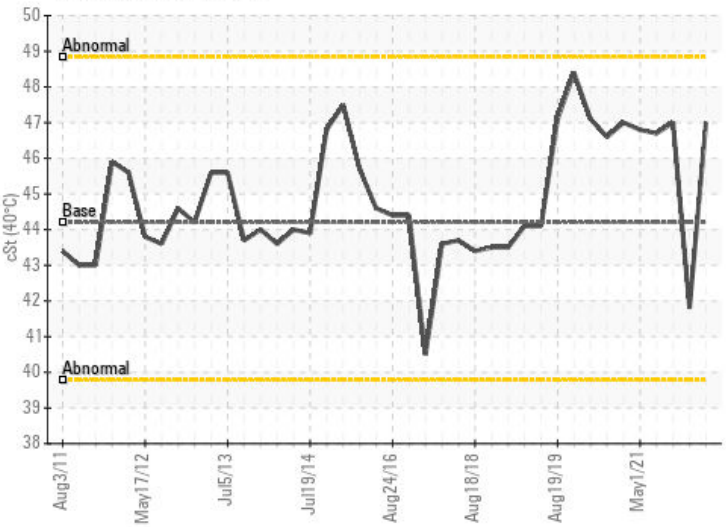
Ferrous Alloys



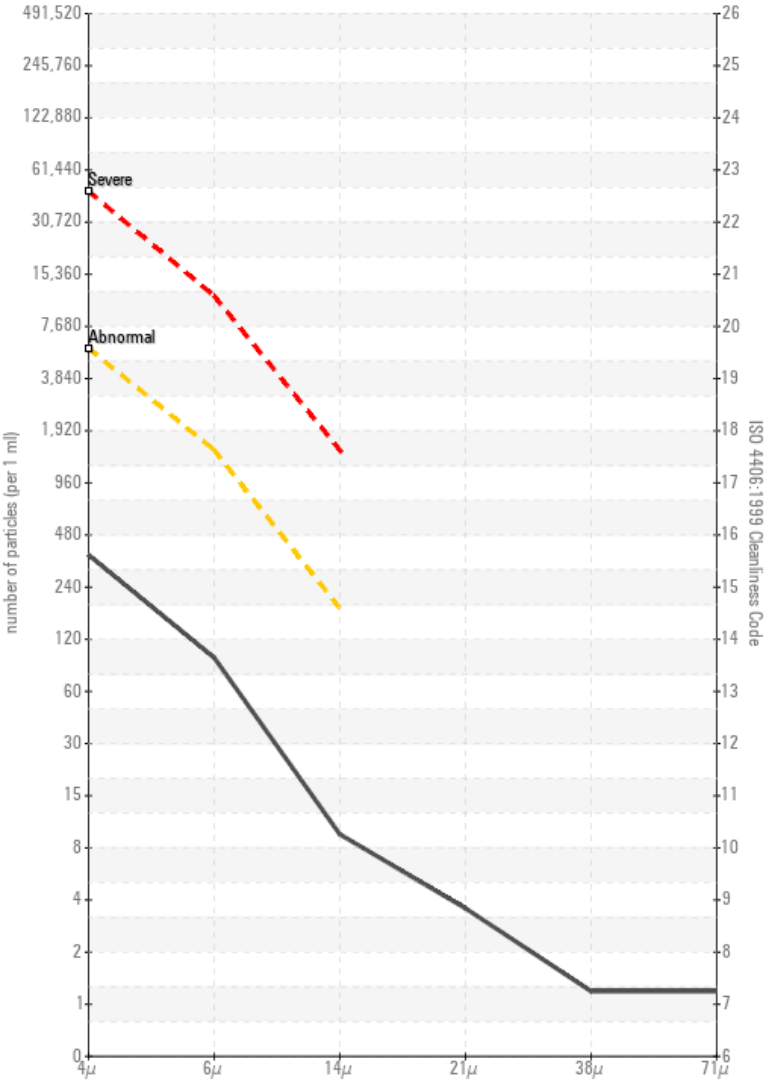
Non-ferrous Metals



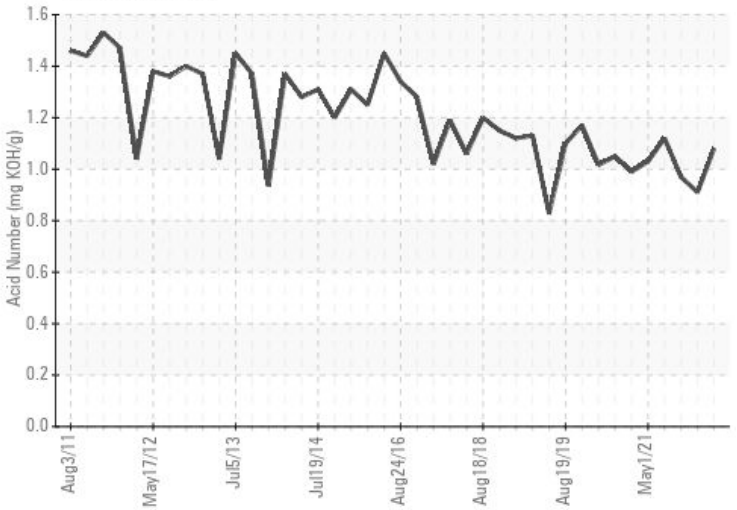
Viscosity @ 40°C



Particle Count



Acid Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0729396
Lab Number : 02537418
Unique Number : 5526418
Test Package : MAR 3 (Additional Tests: TAN Man)

Received : 03 Feb 2023
Tested : 06 Feb 2023
Diagnosed : 07 Feb 2023 - Kevin Marson

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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