



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	NORMAL
OIL CONDITION	NORMAL



Machine Id
PH651-010-10 (S/N 2WB17757STBD)
Component
Starboard Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (68 LTR)

RECOMMENDATION

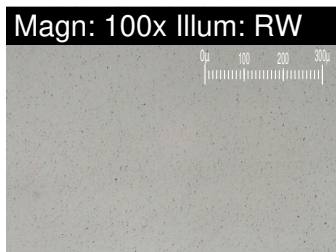
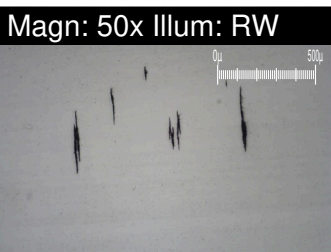
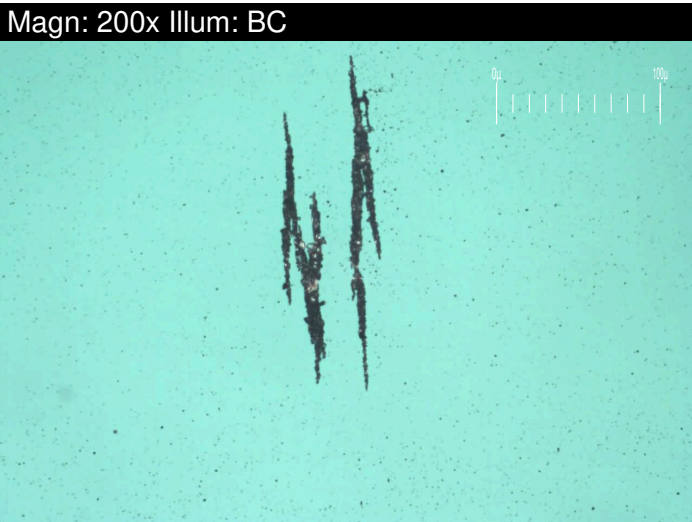
Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0873833	WC0797090	WC0442963
Sample Date		Client Info		09 Mar 2024	23 Mar 2023	18 Aug 2020
Machine Age	hrs	Client Info		23568	22603	20170
Oil Age	hrs	Client Info		441	476	464
Filter Age	hrs	Client Info		441	476	0
Oil Changed		Client Info		Not Changed	Not Changed	Changed
Filter Changed		Client Info		Not Changed	Not Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

PQ		ASTM D8184*		0	0	---
Iron	ppm	ASTM D5185(m)	>86	5	5	4
Chromium	ppm	ASTM D5185(m)	>3	0	0	<1
Nickel	ppm	ASTM D5185(m)	>3	0	0	<1
Titanium	ppm	ASTM D5185(m)	>2	0	0	<1
Silver	ppm	ASTM D5185(m)	>2	0	0	0
Aluminum	ppm	ASTM D5185(m)	>15	1	2	2
Lead	ppm	ASTM D5185(m)	>16	<1	4	3
Copper	ppm	ASTM D5185(m)	>250	5	10	74
Tin	ppm	ASTM D5185(m)	>2	0	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
Large Particles		DR-Ferr*		6.8	5.6	---
Small Particles		DR-Ferr*		5.4	2.5	---
Total Particles		DR-Ferr*	>---	12.2	8.1	---
Large Particles Percentage	%	DR-Ferr*		11.5	38.3	---
Severity Index		DR-Ferr*		10	17	---
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2	2	
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*		1		
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*			1	
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

There is no indication of any contamination in the oil.

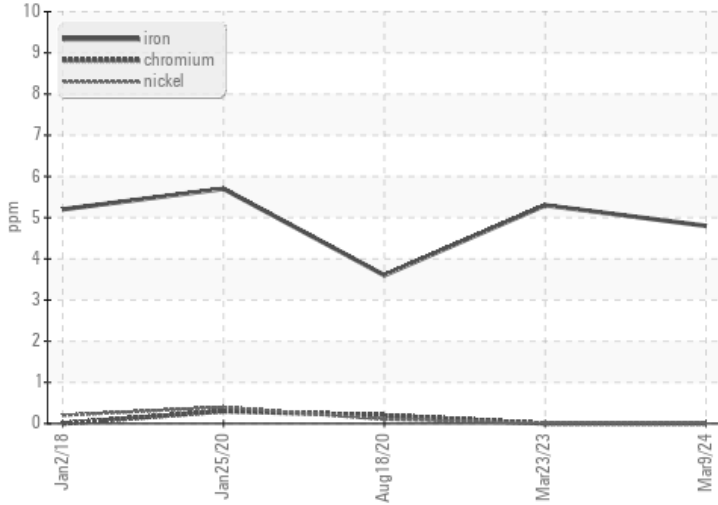
Silicon	ppm	ASTM D5185(m)	>35	<1	2	2
Potassium	ppm	ASTM D5185(m)	>20	<1	<1	0
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	ASTM D7844*	>3	0	0	0
Nitration	Abs/cm	ASTM D7624*	>20	7.0	7.8	7.1
Sulfation	Abs/.1mm	ASTM D7415*	>30	19.8	23.2	20.4
Emulsified Water	scalar	Visual*	>0.2	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

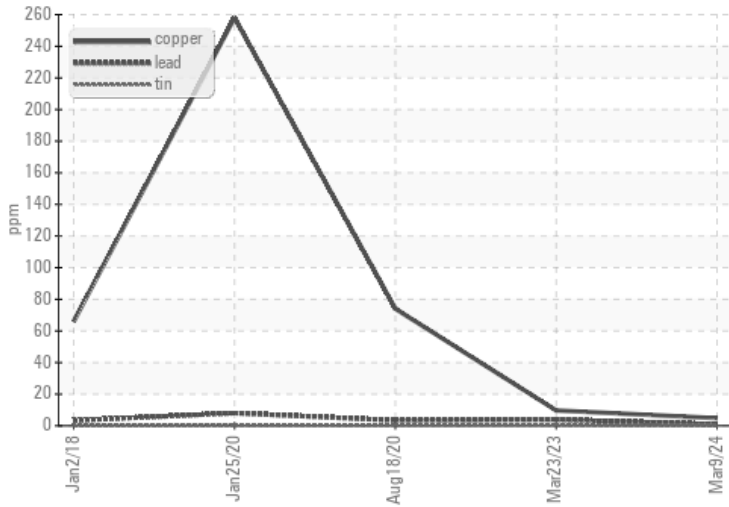
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185(m)	>158	1	2	1
Boron	ppm	ASTM D5185(m)	250	1	1	2
Barium	ppm	ASTM D5185(m)	10	0	0	<1
Molybdenum	ppm	ASTM D5185(m)	100	60	59	59
Manganese	ppm	ASTM D5185(m)		0	<1	<1
Magnesium	ppm	ASTM D5185(m)	450	1011	1013	1018
Calcium	ppm	ASTM D5185(m)	3000	1062	1144	1063
Phosphorus	ppm	ASTM D5185(m)	1150	990	1080	1017
Zinc	ppm	ASTM D5185(m)	1350	1178	1216	1267
Sulfur	ppm	ASTM D5185(m)	4250	2581	2591	2468
Oxidation	Abs/.1mm	ASTM D7414*	>25	16.3	17.5	16.5
Base Number (BN)	mg KOH/g	ASTM D2896*	8.5	10.22	9.19	---
Visc @ 40°C	cSt	ASTM D7279(m)	115	103	---	---
Visc @ 100°C	cSt	ASTM D7279(m)	14.4	14.1	13.2	14.2
Viscosity Index (VI)	Scale	ASTM D2270*	126	139	---	---
Lubricant Degradation	Scale 0-10	ASTM D7684*				

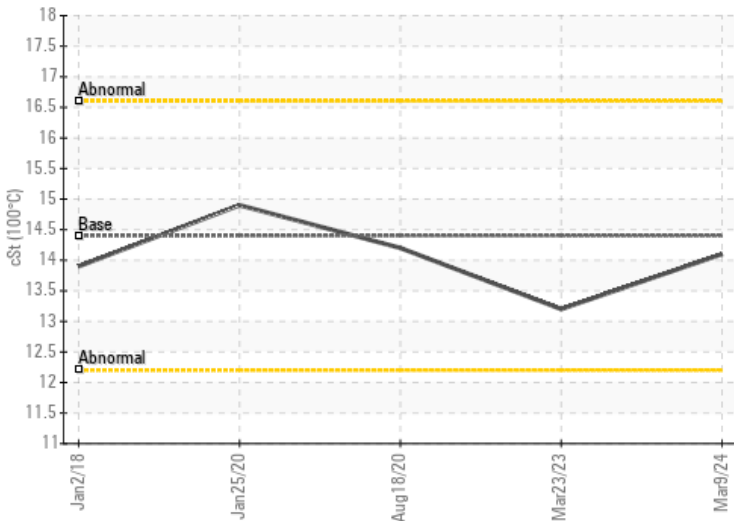
Ferrous Alloys



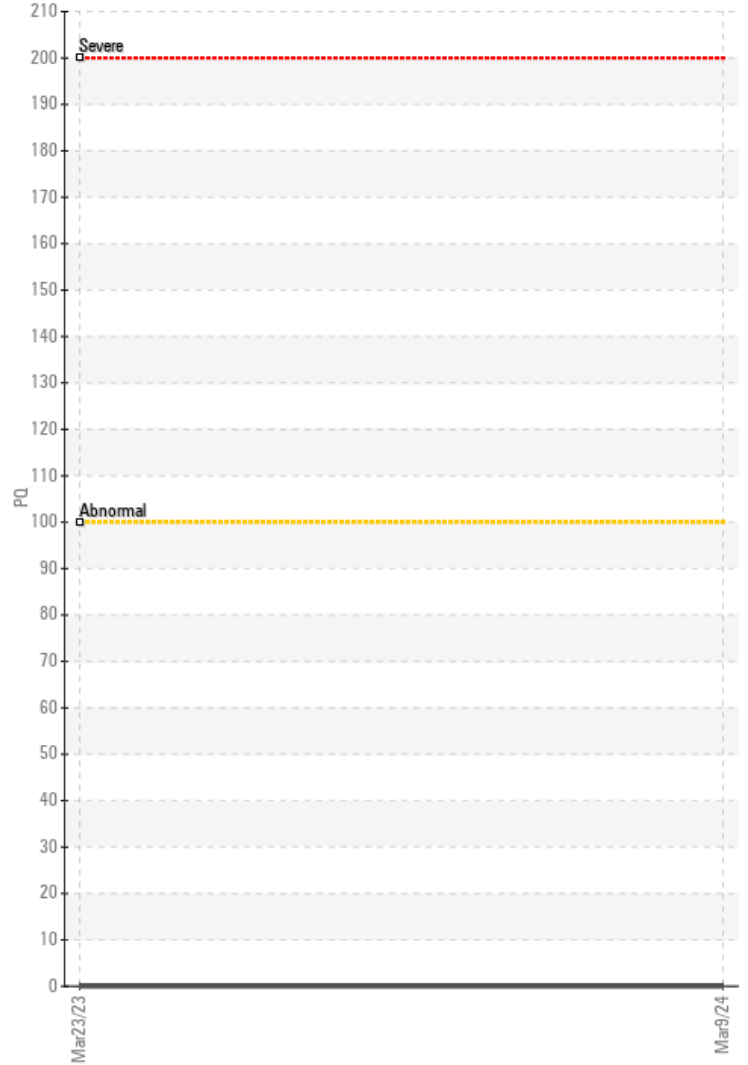
Non-ferrous Metals



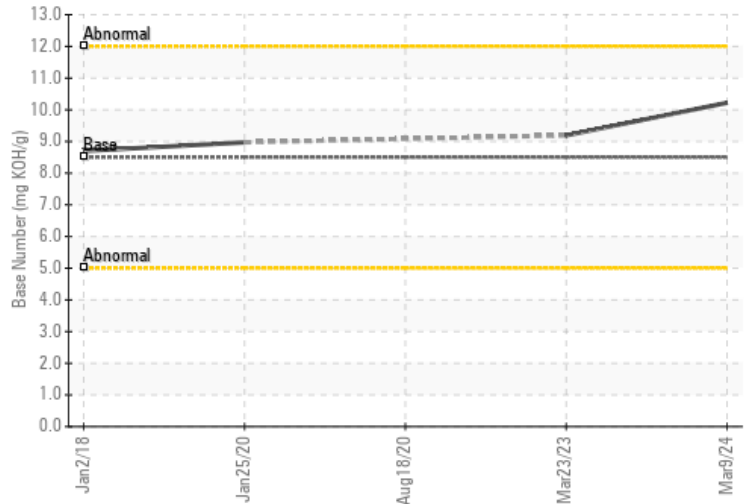
Viscosity @ 100°C



PQ



Base Number



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0873833
Lab Number : 02627106
Unique Number : 5760238
Test Package : MAR 3 (Additional Tests: KV40, VI)
Received : 05 Apr 2024
Tested : 09 Apr 2024
Diagnosed : 11 Apr 2024 - Kevin Marson

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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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