



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	SEVERE
OIL CONDITION	NORMAL

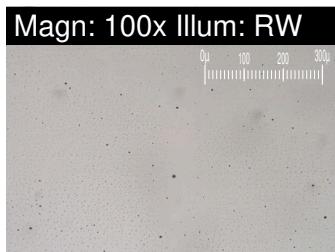
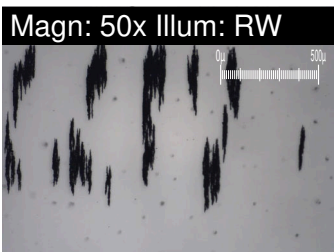
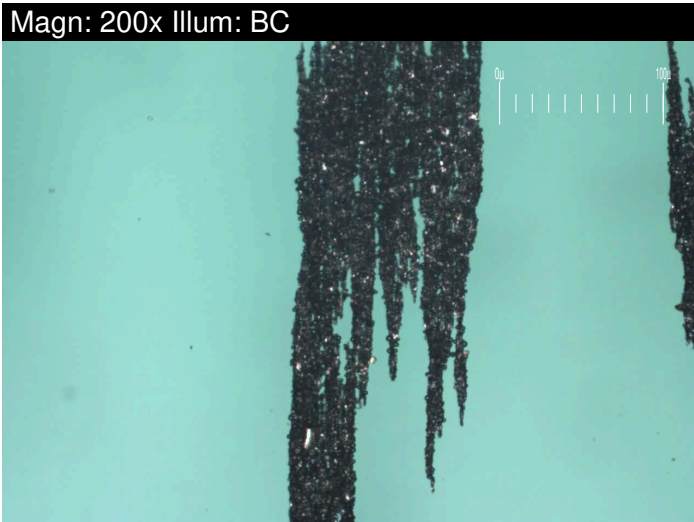
Machine Id
EGR-23154 CPP
Component
Starboard Hydraulic System
Fluid
SHELL TELLUS S2 VX 46 (1000 LTR)

RECOMMENDATION

Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.

WEAR

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



Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0574866	WC0574862	WC0494654
Sample Date		Client Info		07 Jan 2024	30 Aug 2023	21 Sep 2022
Machine Age	hrs	Client Info		72271	71798	70800
Oil Age	hrs	Client Info		1470	997	7909
Filter Age	hrs	Client Info		1470	997	0
Oil Changed		Client Info		Not Changed	Not Changed	Changed
Filter Changed		Client Info		Not Changed	Not Changed	Not Changed
Sample Status				SEVERE	SEVERE	ABNORMAL

PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>20	3	4	4
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)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>10	1	<1	2
Lead	ppm	ASTM D5185(m)	>20	0	<1	<1
Copper	ppm	ASTM D5185(m)	>20	5	4	24
Tin	ppm	ASTM D5185(m)	>10	0	0	<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*		46.3	49.8	27.9
Small Particles		DR-Ferr*		39.1	28.7	13.9
Total Particles		DR-Ferr*	>---	85.4	78.5	41.8
Large Particles Percentage	%	DR-Ferr*		8.4	26.9	33.5
Severity Index		DR-Ferr*		333	1051	391
Ferrous Rubbing	Scale 0-10	ASTM D7684*		4	5	3
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		2	2	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	1	2
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 a high amount of silt (particulates < 14 microns in size) present in the oil.

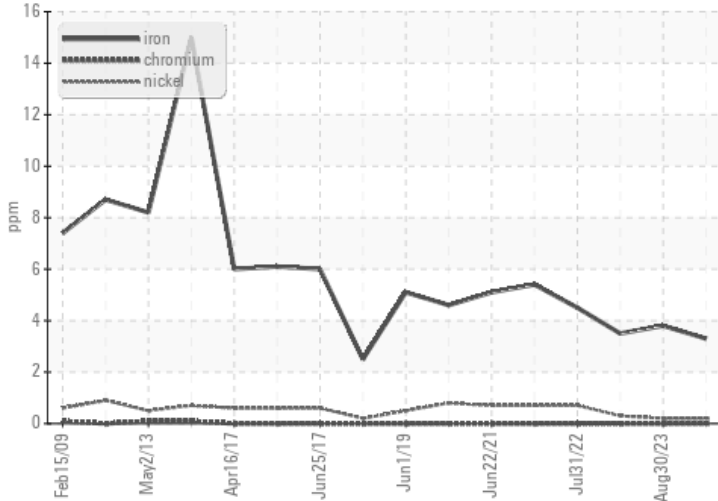
Silicon	ppm	ASTM D5185(m)	>15	2	3	1
Potassium	ppm	ASTM D5185(m)	>20	0	<1	<1
Water		WC Method	>0.05	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>5000	98607	96449	32858
Particles >6µm		ASTM D7647	>1300	13256	12457	774
Particles >14µm		ASTM D7647	>160	39	74	8
Particles >21µm		ASTM D7647	>40	6	11	3
Particles >38µm		ASTM D7647	>10	1	1	1
Particles >71µm		ASTM D7647	>3	1	0	1
Oil Cleanliness		ISO 4406 (c)	>19/17/14	24/21/12	24/21/13	22/17/10
Silt	scalar	Visual*	NONE	NONE	NONE	NONE
Debris	scalar	Visual*	NONE	VLITE	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*	>0.05	NEG	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		1	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		1	2	2

OIL CONDITION

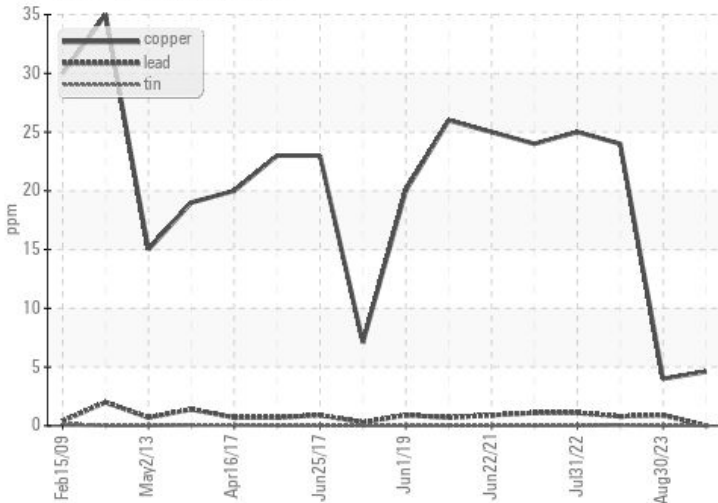
The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Sodium	ppm	ASTM D5185(m)		1	2	4
Boron	ppm	ASTM D5185(m)		0	<1	<1
Barium	ppm	ASTM D5185(m)		0	<1	<1
Molybdenum	ppm	ASTM D5185(m)		0	0	0
Manganese	ppm	ASTM D5185(m)		<1	<1	2
Magnesium	ppm	ASTM D5185(m)		71	73	8
Calcium	ppm	ASTM D5185(m)		19	18	41
Phosphorus	ppm	ASTM D5185(m)		289	310	294
Zinc	ppm	ASTM D5185(m)		344	359	324
Sulfur	ppm	ASTM D5185(m)		728	769	1050
Acid Number (AN)	mg KOH/g	ASTM D974*		0.32	0.33	0.28
Visc @ 40°C	cSt	ASTM D7279(m)	46	46.3	46.0	44.9
Lubricant Degradation	Scale 0-10	ASTM D7684*				

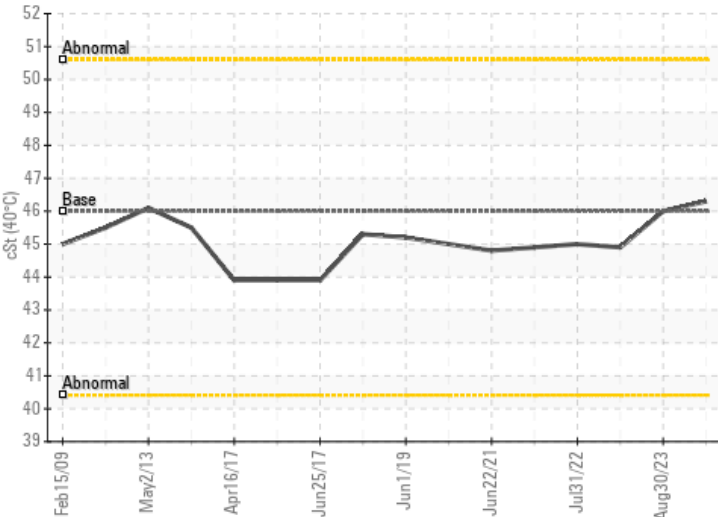
Ferrous Alloys



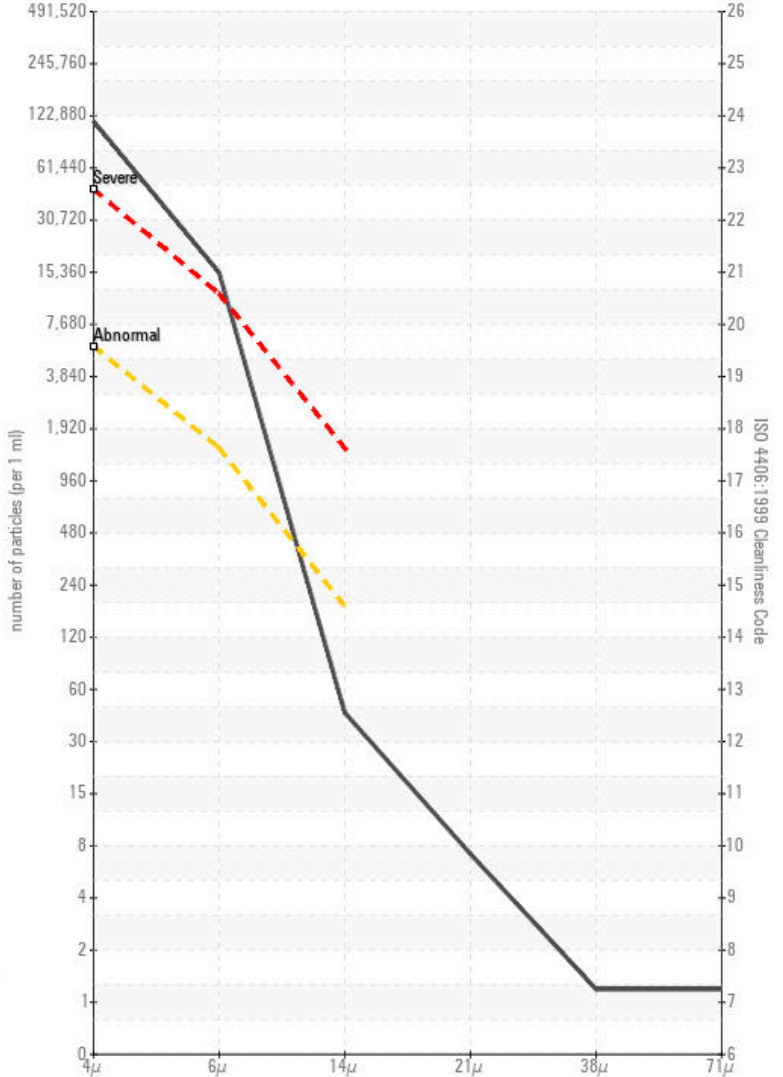
Non-ferrous Metals



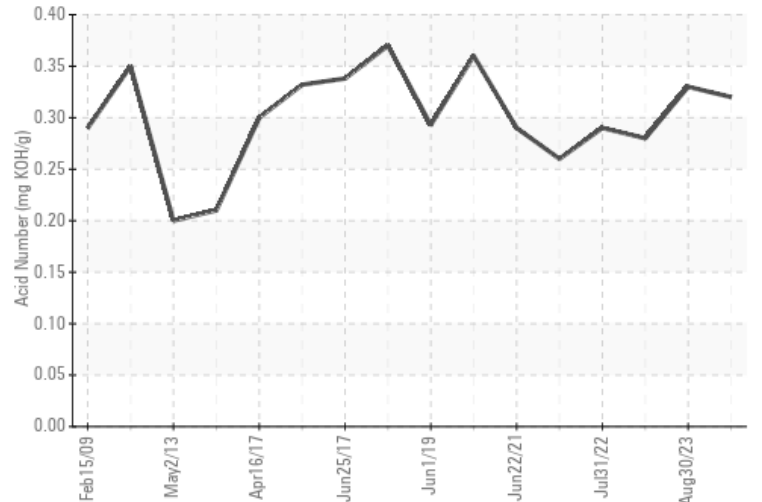
Viscosity @ 40°C



Particle Count



Acid Number



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0574866
Lab Number : 02609331
Unique Number : 5710417
Test Package : MAR 3

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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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