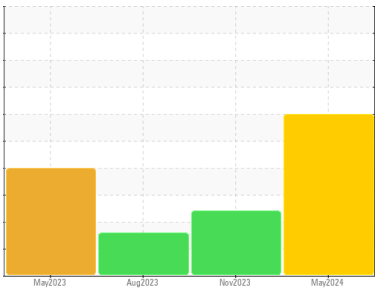
PROBLEM SUMMARY

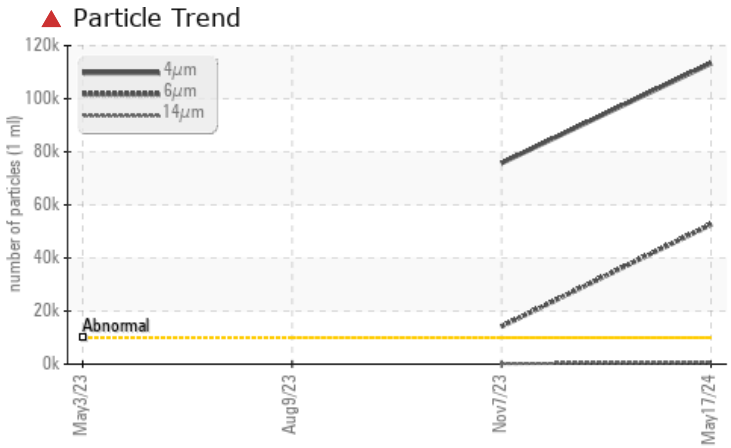
Sample Rating Trend



ISO

Area
PROPULSION EQUIPMENT
Machine Id
SIMPLEX STERN TUBE/ PROPELLER HUB (CAL012) (S/N CALVERT13)
Component
Sterntube
Fluid
VICKERS HYDROX BIO 100 (400 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	ABNORMAL	ABNORMAL
Titanium	ppm	ASTM D5185(m)	>8	▲ **12**	▲ 11	▲ 12
Particles >4µm		ASTM D7647	>10000	▲ **113301**	▲ 75724	---
Particles >6µm		ASTM D7647	>2500	▲ **52577**	▲ 14188	---
Particles >14µm		ASTM D7647	>160	▲ **569**	● 193	---
Particles >21µm		ASTM D7647	>40	▲ **107**	45	---
Particles >71µm		ASTM D7647	>3	▲ **11**	4	---
Oil Cleanliness		ISO 4406 (c)	>20/18/14	▲ **24/23/16**	▲ 23/21/15	---

Customer Id: MVCALVERT
Sample No.: PC0080229
Lab Number: 02638001
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@wearcheck.com

To change component or sample information:
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Check Breathers	---	---	?	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.
Check Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

HISTORICAL DIAGNOSIS

WEAR

07 Nov 2023 Diag: Kevin Marson

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.Titanium ppm levels are abnormal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

WEAR

09 Aug 2023 Diag: Kevin Marson

We recommend an early resample to monitor this condition. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MOB 3 test kits, this testkit includes Particle Count to determine the ISO cleanliness of the fluid. this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.Iron and titanium ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

view report

WATER

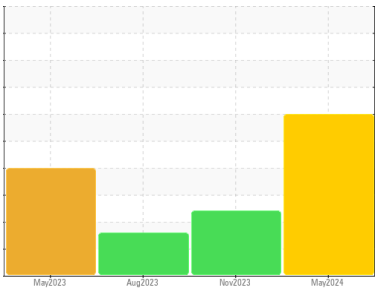
03 May 2023 Diag: Kevin Marson

We advise that you check for the source of water entry. 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 advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We recommend an early resample to monitor this condition.Iron and titanium ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. There is a moderate concentration of water present in the oil. The oil viscosity is lower than typical, possibly indicating the addition of lighter grade oil. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
PROPULSION EQUIPMENT
Machine Id
SIMPLEX STERN TUBE/ PROPELLER HUB (CAL012) (S/N CALVERT13)
Component
Sterntube
Fluid
VICKERS HYDROX BIO 100 (400 LTR)

DIAGNOSIS

Recommendation
We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation.

Wear
Titanium ppm levels are abnormal.

Contamination
There is a high amount of particulates (2 to 100 microns in size) present in the oil.

Fluid Condition
The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC0080229**	PC0076335	PC0011627
Sample Date		Client Info		**17 May 2024**	07 Nov 2023	09 Aug 2023
Machine Age	hrs	Client Info		**24544**	21847	20530
Oil Age	hrs	Client Info		**21847**	21847	2802
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**SEVERE**	ABNORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.1	**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>15	**11**	14	▲ 17
Chromium	ppm	ASTM D5185(m)	>2	**0**	0	<1
Nickel	ppm	ASTM D5185(m)	>2	**0**	<1	<1
Titanium	ppm	ASTM D5185(m)	>8	▲ **12**	▲ 11	▲ 12
Silver	ppm	ASTM D5185(m)		**0**	0	<1
Aluminum	ppm	ASTM D5185(m)	>4	**<1**	1	<1
Lead	ppm	ASTM D5185(m)	>15	**5**	5	6
Copper	ppm	ASTM D5185(m)	>25	**4**	5	6
Tin	ppm	ASTM D5185(m)	>10	**1**	1	1
Antimony	ppm	ASTM D5185(m)		**0**	0	<1
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

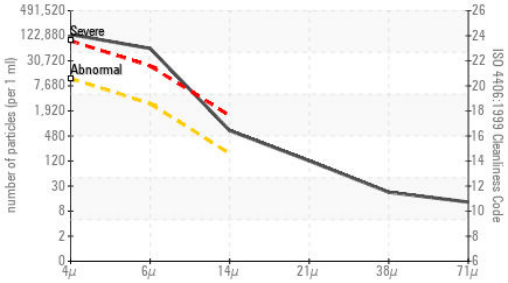
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**2**	2	3
Barium	ppm	ASTM D5185(m)		**0**	0	<1
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**4**	4	4
Calcium	ppm	ASTM D5185(m)		**4**	5	7
Phosphorus	ppm	ASTM D5185(m)		**642**	662	666
Zinc	ppm	ASTM D5185(m)		**5**	5	7
Sulfur	ppm	ASTM D5185(m)		**1354**	1601	1497
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**3**	4	4
Sodium	ppm	ASTM D5185(m)		**13**	16	14
Potassium	ppm	ASTM D5185(m)	>20	**<1**	2	<1

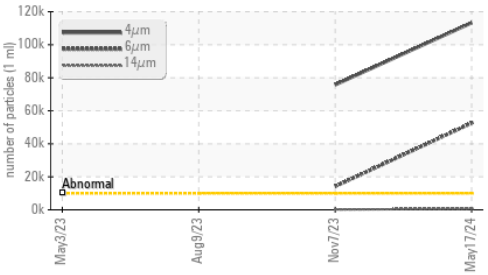
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	▲ **113301**	▲ 75724	---
Particles >6µm		ASTM D7647	>2500	▲ **52577**	▲ 14188	---
Particles >14µm		ASTM D7647	>160	▲ **569**	● 193	---
Particles >21µm		ASTM D7647	>40	▲ **107**	45	---
Particles >38µm		ASTM D7647	>10	● **19**	10	---
Particles >71µm		ASTM D7647	>3	▲ **11**	4	---
Oil Cleanliness		ISO 4406 (c)	>20/18/14	▲ **24/23/16**	▲ 23/21/15	---

OIL ANALYSIS REPORT

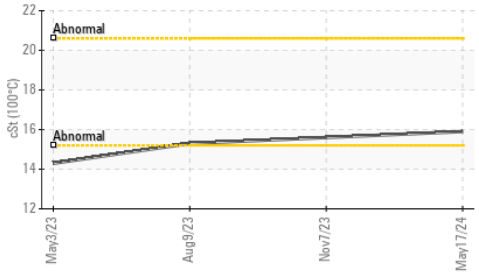
Particle Count



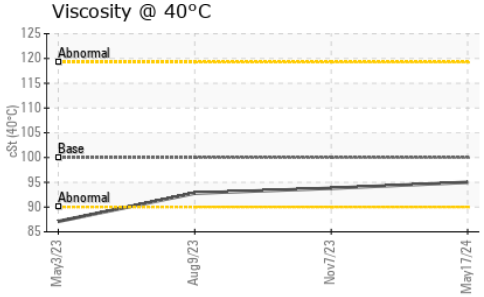
Particle Trend



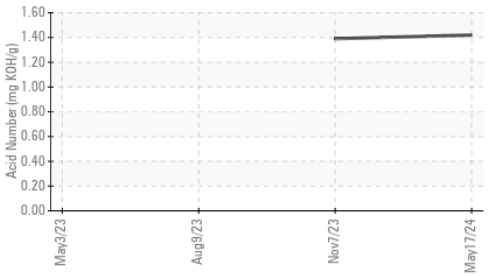
Viscosity @ 100°C



Viscosity @ 40°C



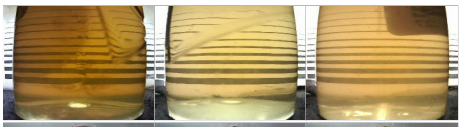
Acid Number



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*		**1.42**	1.39	---

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 @ 40°C	cSt	ASTM D7279(m)	100	**95.0**	93.8	92.8
Visc @ 100°C	cSt	ASTM D7279(m)		**15.9**	15.6	15.3
Viscosity Index (VI)	Scale	ASTM D2270*	205	**179**	177	174

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0080229
Lab Number : 02638001
Unique Number : 5787163
Test Package : IND 2 (Additional Tests: KV100, VI)

Received : 28 May 2024
Tested : 29 May 2024
Diagnosed : 29 May 2024 - Kevin Marson

Ocean Choice International - MV Calvert
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CA A1B 3N4
Contact: Calvert Engine Control Room
calvertengine@oceanchoice.com
T:
F:

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.