

PROBLEM SUMMARY

Sample Rating Trend

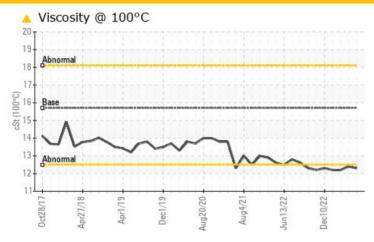
VISCOSITY

AUBREY B HARWELL JR [AUBREY B HARWELL JR] 008 579561-8

Starboard Genset

CHEVRON DELO 400 LE 15W40 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS							
Sample Status				MARGINAL	MARGINAL	MARGINAL	
Visc @ 100°C	cSt	ASTM D445	15.7	12.3	<u>12.4</u>	<u>▲</u> 12.2	

••••••

Customer Id: INGPAD Sample No.: MW0060456 Lab Number: 05925239 Test Package: MAR 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Doug Bogart +1 (800)237-1369 x4016 dougb@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

09 Jun 2023 Diag: Don Baldridge

VISCOSITY



No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



30 Mar 2023 Diag: Don Baldridge

VISCOSITY



No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



18 Feb 2023 Diag: Don Baldridge

VISCOSITY



No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



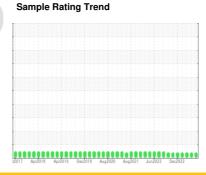


OIL ANALYSIS REPORT

AUBREY B HARWELL JR [AUBREY B HARWELL JR] 008 579561-8

Starboard Genset

CHEVRON DELO 400 LE 15W40 (--- GAL)





DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

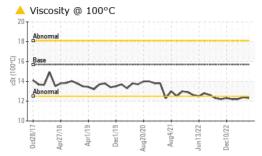
▲ Fluid Condition

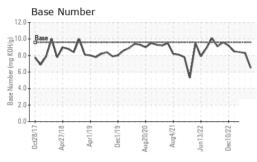
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		MW0060456	MW0052498	MW0041833
Sample Date		Client Info		23 Jul 2023	09 Jun 2023	30 Mar 2023
Machine Age	hrs	Client Info		8490	7995	7150
Oil Age	hrs	Client Info		395	405	411
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				MARGINAL	MARGINAL	MARGINAL
CONTAMINATIO	V	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	>25	11	6	8
Chromium	ppm	ASTM D5185m	>5	<1	0	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		1	<1	1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	2	4	2
Lead	ppm	ASTM D5185m	>10	0	0	0
Copper	ppm	ASTM D5185m	>20	0	0	<1
Tin	ppm	ASTM D5185m	>5	0	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 282	history1 268	history2 328
	ppm ppm		limit/base			
Boron	• • •	ASTM D5185m	limit/base	282	268	328
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	282 0	268 5	328 0
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	282 0 129	268 5 114	328 0 120
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	282 0 129	268 5 114 <1	328 0 120 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	282 0 129 0 778	268 5 114 <1 594	328 0 120 <1 694
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		282 0 129 0 778 1740	268 5 114 <1 594 1477	328 0 120 <1 694 1608
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1200	282 0 129 0 778 1740 759	268 5 114 <1 594 1477 607	328 0 120 <1 694 1608 706
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1200 1300	282 0 129 0 778 1740 759	268 5 114 <1 594 1477 607 760	328 0 120 <1 694 1608 706 851
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1200 1300 3200	282 0 129 0 778 1740 759 967 3739	268 5 114 <1 594 1477 607 760 2776	328 0 120 <1 694 1608 706 851 3204
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1200 1300 3200 limit/base	282 0 129 0 778 1740 759 967 3739 current	268 5 114 <1 594 1477 607 760 2776 history1	328 0 120 <1 694 1608 706 851 3204 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1200 1300 3200 limit/base	282 0 129 0 778 1740 759 967 3739 current 6	268 5 114 <1 594 1477 607 760 2776 history1 6	328 0 120 <1 694 1608 706 851 3204 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1200 1300 3200 Iimit/base >25	282 0 129 0 778 1740 759 967 3739 current 6 0	268 5 114 <1 594 1477 607 760 2776 history1 6 1	328 0 120 <1 694 1608 706 851 3204 history2 6 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1200 1300 3200 limit/base >25 >20	282 0 129 0 778 1740 759 967 3739 current 6 0	268 5 114 <1 594 1477 607 760 2776 history1 6 1 <1	328 0 120 <1 694 1608 706 851 3204 history2 6 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1200 1300 3200 limit/base >25 >20 limit/base	282 0 129 0 778 1740 759 967 3739 current 6 0 0	268 5 114 <1 594 1477 607 760 2776 history1 6 1 <1	328 0 120 <1 694 1608 706 851 3204 history2 6 2 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1200 1300 3200 limit/base >25 >20 limit/base	282 0 129 0 778 1740 759 967 3739 current 6 0 0	268 5 114 <1 594 1477 607 760 2776 history1 6 1 <1 0.1	328 0 120 <1 694 1608 706 851 3204 history2 6 2 0 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	ASTM D5185m method ASTM D5185m	1200 1300 3200 Iimit/base >25 >20 Iimit/base	282 0 129 0 778 1740 759 967 3739 current 6 0 0 current 0.1 8.6	268 5 114 <1 594 1477 607 760 2776 history1 6 1 <1 history1 0.1 7.8	328 0 120 <1 694 1608 706 851 3204 history2 6 2 0 history2 0.1 7.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	1200 1300 3200 limit/base >25 >20 limit/base	282 0 129 0 778 1740 759 967 3739 current 6 0 0 current 0.1 8.6 22.3	268 5 114 <1 594 1477 607 760 2776 history1 6 1 <1 history1 0.1 7.8 23.2 history1	328 0 120 <1 694 1608 706 851 3204 history2 6 2 0 history2 0.1 7.5 22.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	1200 1300 3200 limit/base >25 >20 limit/base >30 limit/base >25	282 0 129 0 778 1740 759 967 3739 current 6 0 0 current 0.1 8.6 22.3 current	268 5 114 <1 594 1477 607 760 2776 history1 6 1 <1 0.1 7.8 23.2	328 0 120 <1 694 1608 706 851 3204 history2 6 2 0 history2 0.1 7.5 22.4 history2



OIL ANALYSIS REPORT



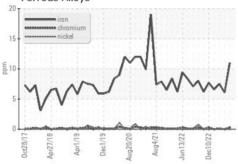


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

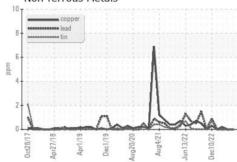
FLUID PHOPENITES		method	iiiiii/base	current	riistory i	nistoryz	
Visc @ 100°C	cSt	ASTM D445	15.7	12.3	△ 12.4	<u> </u>	

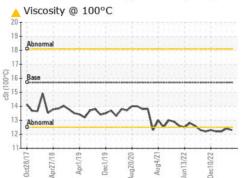
GRAPHS

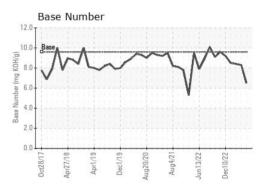
Ferrous Alloys















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: MW0060456 : 05925239 : 10605186 Test Package : MAR 2

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 15 Aug 2023 Diagnosed : 16 Aug 2023

Diagnostician : Doug Bogart

INGRAM BARGE 900 S 3RD ST PADUCAH, KY

F: (615)695-3697

Contact: ALLEN WILLHELM

allen.willhelm@ingrambarge.com T: (270)415-4467

* - 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)

Contact/Location: ALLEN WILLHELM - INGPAD

US 42003