

PROBLEM SUMMARY

Sample Rating Trend



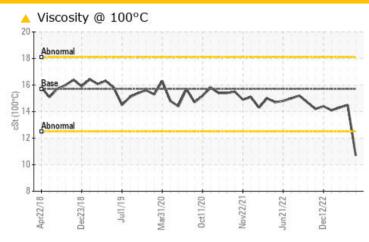
VISCOSITI

CRAIG E PHILIP Machine Id [CRAIG E PHILIP] 008 565024-8

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				ATTENTION	NORMAL	NORMAL			
Visc @ 100°C	cSt	ASTM D445	15.7	10.7	14.5	14.3			

Customer Id: INGPAD Sample No.: MW0060305 Lab Number: 05964050 Test Package: MAR 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 jhester@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

22 Jun 2023 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



25 May 2023 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

View report

18 Jan 2023 Diag: Don Baldridge

NORMAL



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





OIL ANALYSIS REPORT

SAMPLE INFORMATION

VISCOSITY



history2

history1

CRAIG E PHILIP [CRAIG E PHILIP] 008 565024-8

Starboard Genset

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

Recommendation

DIAGNOSIS

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

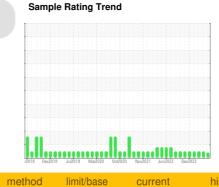
All component wear rates are normal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

▲ 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.



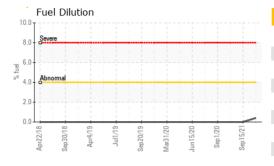
current

limit/base

Sample Date Imachine Age has Albania Age has Client Info Clien	Sample Number		Client Info		MW0060305	MW0052336	MW0052344	
Oil Age hrs Client Info 368 320 393 Oil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 7 6 Chromium ppm ASTM D5185m >4 -1	Sample Date		Client Info		10 Sep 2023	22 Jun 2023	25 May 2023	
Oil Changed Satus Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 7 6 Chromium ppm ASTM D5185m >50 16 7 6 Chromium ppm ASTM D5185m >50 0 0 0 Nickel ppm ASTM D5185m >5 0 0 0 Silver ppm ASTM D5185m >12 5 4 3 Lead ppm ASTM D5185m >17 3 -1 -1 Copper ppm ASTM D5185m >70 3 3 3 Tin ppm ASTM D5185m 0 0 0 0	Machine Age	hrs	Client Info		41673	40953	40633	
Sample Status	Oil Age	hrs	Client Info	368		320	393	
CONTAMINATION method limit/base current history1 history2 Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 7 6 Chromium ppm ASTM D5185m >4 <1 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 0 Silver ppm ASTM D5185m >5 0 0 0 0 Aluminum ppm ASTM D5185m >17 3 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Oil Changed		Client Info	N/A		N/A	N/A	
WEAR METALS	Sample Status				ATTENTION	NORMAL	NORMAL	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 7 6 Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >5 0 0 0 Aluminum ppm ASTM D5185m >12 5 4 3 Lead ppm ASTM D5185m >17 3 <1 <1 Copper ppm ASTM D5185m >70 3 3 3 Tin ppm ASTM D5185m >15 1 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0	CONTAMINATION		method	limit/base	current	history1	history2	
Iron	Glycol		WC Method		NEG	NEG	NEG	
Chromium ppm ASTM D5185m >4 <1	WEAR METALS		method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>50	16	7	6	
Titanium	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1	
Silver ppm ASTM D5185m >5 0 0 0 Aluminum ppm ASTM D5185m >12 5 4 3 Lead ppm ASTM D5185m >17 3 <1	Nickel	ppm	ASTM D5185m	>2	0	0	0	
Aluminum ppm ASTM D5185m >12 5 4 3 Lead ppm ASTM D5185m >17 3 <1 <1 Copper ppm ASTM D5185m >70 3 3 3 Tin ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 30 334 321 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Titanium	ppm	ASTM D5185m		0	0	0	
Lead	Silver	ppm	ASTM D5185m	>5	0	0	0	
Copper ppm ASTM D5185m >70 3 3 3 Tin ppm ASTM D5185m >15 1 0 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 30 334 321 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 54 148 134 Mangaese ppm ASTM D5185m 690 690 786 Calcium ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1200 674 812 830 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method	Aluminum	ppm	ASTM D5185m	>12	5	4	3	
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 30 334 321 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 54 148 134 Manganese ppm ASTM D5185m 690 690 786 Calcium ppm ASTM D5185m 1133 1786 1873 Phosphorus ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1300 825 977 1039 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Fuel	Vanadium	ppm	ASTM D5185m		0	0	0	
Boron	Cadmium		ASTM D5185m		0	0	0	
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 54 148 134 Manganese ppm ASTM D5185m 690 690 786 Calcium ppm ASTM D5185m 1133 1786 1873 Phosphorus ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1300 825 977 1039 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D5185m >20 13 2 1 Fuel % ASTM D5185m >20 13 2 1 <	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 54 148 134 Manganese ppm ASTM D5185m 690 690 786 Calcium ppm ASTM D5185m 690 690 786 Calcium ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1300 825 977 1039 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0 <1.0 INFRA-RED method limit/base current history1 hist	Boron	ppm	ASTM D5185m		30	334	321	
Manganese ppm ASTM D5185m 1 <1	Barium	ppm	ASTM D5185m		0	0	0	
Magnesium ppm ASTM D5185m 690 690 786 Calcium ppm ASTM D5185m 1133 1786 1873 Phosphorus ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1300 825 977 1039 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/cmm *ASTM D7624 >20 10.0 9.	Molybdenum	ppm	ASTM D5185m		54	148	134	
Calcium ppm ASTM D5185m 1133 1786 1873 Phosphorus ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1300 825 977 1039 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Potassium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/.mm *ASTM D7415 >30	Manganese	ppm	ASTM D5185m		1	<1	<1	
Phosphorus ppm ASTM D5185m 1200 674 812 830 Zinc ppm ASTM D5185m 1300 825 977 1039 Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base <th>Magnesium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>690</th> <th>690</th> <th>786</th>	Magnesium	ppm	ASTM D5185m		690	690	786	
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Sulfur ppm ASTM D5185m 3200 2304 2904 3279 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 13 2 1 Potassium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1200	674	812	830	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m 6 0 2 Potassium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7	Zinc	ppm	ASTM D5185m	1300	825	977	1039	
Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m 6 0 2 Potassium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0	Sulfur	ppm	ASTM D5185m	3200	2304	2904	3279	
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Potassium ppm ASTM D5185m >20 13 2 1 Fuel % ASTM D3524 >4.0 0.4 <1.0	Silicon	ppm	ASTM D5185m	>25	6	6	7	
Fuel % ASTM D3524 >4.0 0.4 <1.0	Sodium	ppm	ASTM D5185m		6	0	2	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7	Potassium	ppm	ASTM D5185m	>20	13	2	1	
Soot % % *ASTM D7844 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7	Fuel	%	ASTM D3524	>4.0	0.4	<1.0	<1.0	
Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7	INFRA-RED		method	limit/base	current	history1	history2	
Nitration Abs/cm *ASTM D7624 >20 10.0 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7	Soot %	%	*ASTM D7844		0.6	0.5	0.4	
Sulfation Abs/.1mm *ASTM D7415 >30 26.4 26.1 25.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7	Nitration	Abs/cm	*ASTM D7624	>20		9.3	9.4	
Oxidation Abs/.1mm *ASTM D7414 >25 21.4 21.6 19.7								
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	21.4	21.6	19.7	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.6		9.5	10.0	



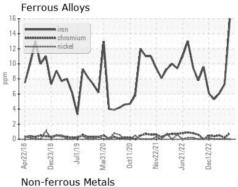
OIL ANALYSIS REPORT



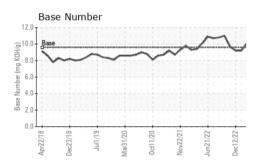
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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
ELLID DDODEDT	IEO	ام مطلع مصا	Line it /le e e e		la la tament	la la tarre O

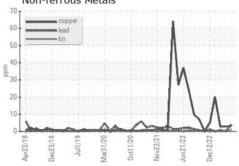
	el Dilu	tion						
8.0 Seve	re							
6.0 6.0 8.0 4.0	ormal							
2.0								
O. Apr22/18	Sep30/18	Apr4/19	- 61/1lnf	Sep20/19	Mar31/20	Jun15/20	Sep1/20	Seo 15/21

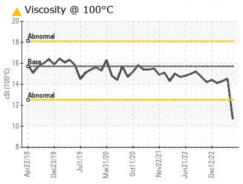


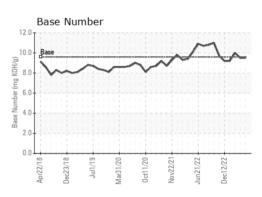


GRAPHS













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

: MW0060305 : 05964050

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 10670601

Received : 28 Sep 2023 Diagnosed : 02 Oct 2023

Diagnostician : Jonathan Hester Test Package : MAR 2 (Additional Tests: FuelDilution, PercentFuel)

US 42003 Contact: ANTHONY VAN CURA anthony.vancura@ingrambarge.com T: (270)415-4467

Contact/Location: ANTHONY VAN CURA - INGPAD

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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) F: (615)695-3697

INGRAM BARGE

900 S 3RD ST

PADUCAH, KY