**WEAR** CONTAMINATION **FLUID CONDITION** 

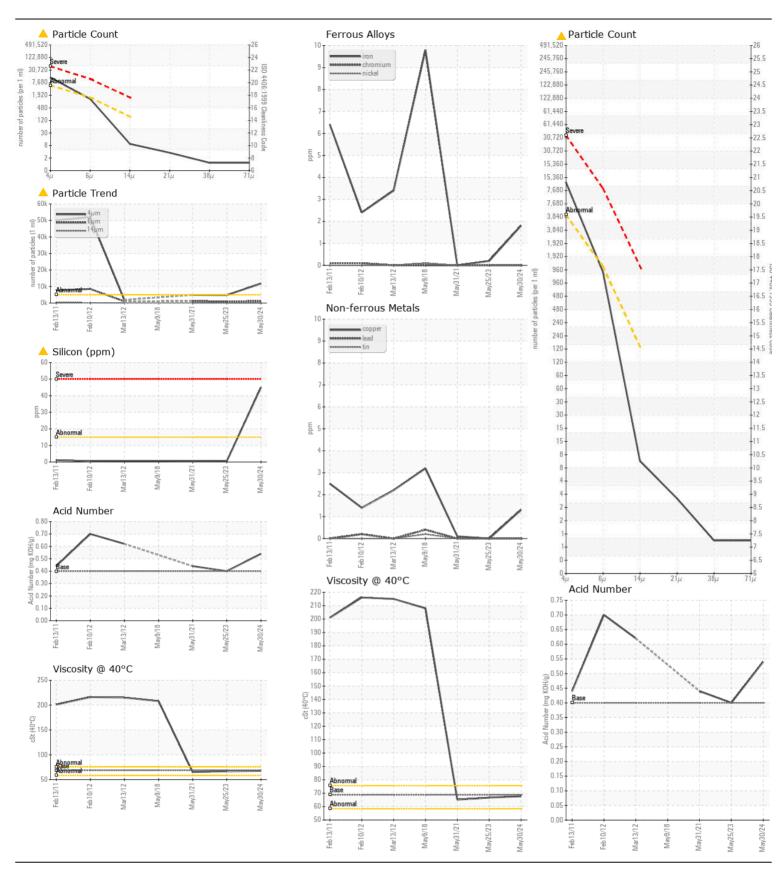
**NORMAL ABNORMAL NORMAL** 

Machine Id

## **HL5631 Forward Fuel Oil Purifier**

Lube System

Test	ESSO NUTO H ISO 68 (4 LTR)							
Check seals and/or filters for points of contaminant entry. We advise that you perform a filter service, and use of l-line filtration to improve the clearlines sof the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desicent place in the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desicent place in the breather. We recommend that you are recommend that you are recommend an early resample to mornitor into condition.    VEEAR	RECOMMENDATION	Test	UOM	Method	I imit/Abn	Current	History1	History2
Check seals and/or filters for points of contaminant entity. We advise that you perform a filter service, and use off-line filteration to improve the clean lines of the system fluid. The air breather requires service. If unrated, we recommend that you service/replace the breather. If rated, we recommend that you service/replace the breather. We recommend an early resample to monitor this condition.    VEAR	TEOOMMENDATION		OOW		Little7 ton		,	,
that you perform a filter service, and use of hire literation to improve the cleanlines at the eystem fluid. The air breather, furtation to improve the cleanlines of the eystem fluid. The air breather, furtation we accommend that you service/replace the breather. We recommend that you aervice/replace the breather. We recommend that you aervice/replace the breather. We recommend that you pervice/replace the breather. We recommend that you service/replace the breather. We recommend that you pervice/replace the breather. We recommend an early resample to monitor ints condition.    VEAR								
Clanger   hrs   Client Info   1884   0   708			hrs			•		
Filter Age   nrs   Client Info   North Act Changed   Client Info   North		•		Client Info		1384	0	708
Col Changed   Client Info   Sample Status   Client Info   Client Info   Sample Status   Client Info   Client Info   Sample Status   Client Info   Client		Filter Age	hrs	Client Info		0	0	0
Filter Changed Sample Status   Client Info   NA   NA   NA   NA   NA   NA   NA   N		Oil Changed		Client Info		Not Changd	N/A	N/A
Iron		Filter Changed		Client Info		None	N/A	N/A
All component wear rates are normal.    Chromium   ppm   ASTR D5866m  >10   0   0   0   0   0   0   0   0   0		Sample Status				ABNORMAL	NORMAL	NORMAL
Nickel   ppm   ASTILOSIS(m)   10   0   0   0   0   0   0   0   0	WEAR	Iron	ppm	ASTM D5185(m)	>20	2	<1	0
Titanium   ppm   SilVest   Silver   ppm   SilVest   SilVest   SilVest   ppm   SilVest   SilVest	All component week votes are named		ppm	ASTM D5185(m)	>10	0	0	0
Silver   ppm   ASTM (585m)   >10   0   <1	All component wear rates are normal.	Nickel	ppm		>10	0	0	
Aluminum   ppm   ASTM D585m   3-0   0   0   0   0   0   0   0   0   0			ppm	\ /				
Lead   ppm   ASTM DSIS(m)   >20   1   0   0   0   0   1   1   0   0			ppm	. ,		_		
Copper			ppm	. ,		-		
Tin						_		
Vanadium   ppm   ASTM D5165   NONE   NONE				( /				
White Metal Yellow Metal Yell				. ,	>10			
Vallow Metal   Scalar   Visual*   NONE   NONE   NONE   NONE   NONE				. ,	NONE	-		
CONTAMINATION								
Potassium   ppm   ASTM D5185/m   > 20   < 1   0   0   0			Scalar	visuai	NONE	NONE	NONE	NONE
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material and/or dirt.	CONTAMINATION	Silicon	ppm	ASTM D5185(m)	>15	<b>4</b> 5	<1	<1
present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material and/or dirt.    Particles > 4µm	TI : 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Potassium	ppm	ASTM D5185(m)	>20	<1	0	0
Particles S-glum   ASTM D7647   >1300   11724   4920   4920   11734   7920   1133   7976   1133   7976   7970   1133   7976   1133   7976   7970   1133   7976   7970   1133   7976   7970   1133   7976   7970		Water		WC Method	>0.05	NEG		
Particles >6µm	, , ,			ASTM D7647	>5000		4812	
Particles >21µm   ASTM D7647   >40   3   25   16     Particles >38µm   ASTM D7647   >10   1   3   1     Particles >38µm   ASTM D7647   >3   1   1   0     Particles >38µm   ASTM D7647   >3   1   1   0     Particles >71µm   ASTM D7647   >3   1   1   0     Oil Cleanliness   ISO 4406 (c)   191/171   21/17/10   19/17/13   19/17/13     Silt   scalar   Visual*   NONE   NONE   NONE   NONE   NONE   NONE   NONE   NONE     Sand/Dirt   scalar   Visual*   NONE	mg. coc or coal material and or and	·						
Particles >38 \( \text{um} \)		•						
Particles >71 μm								
Oil Cleanliness   ISO 4406 (c)   x19/17/14   A 21/17/10   19/17/13   19/17/13   19/17/13   Silt   scalar   Visual*   NONE   NO		•						
Silt   Scalar   Visual*   NONE   NORML   N								
Debris   Scalar   Visual*   NONE   NORML			coalar					
Sand/Dirt   Scalar   Visual*   NONE   NONE   NONE   NONE   Appearance   Scalar   Visual*   NORML   N								
Appearance								
Codor   Scalar   Visual*   NORML   N								
Sodium   ppm   ASTM D5185(m)   Calcium   ppm   ASTM D5185(m)   Sodium   ppm   ASTM D5185(m)   Calcium   ppm   ASTM D5185(m)   Sodium   Sodium								
Boron   ppm   ASTM D5185(m)   0   0   0   0   0   0   0   0   0		<b>Emulsified Water</b>	scalar	Visual*	>0.05	NEG	NEG	NEG
Boron   ppm   ASTM D5185(m)   0   0   0   0   0   0   0   0   0	ELUID CONDITION	0 11:		AOTM DE40E()			^	
The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.    Barium   ppm   ASTM D5185(m)   0   0   0   0   0   0   0   0   0	FLUID CONDITION			. ,	0			
Datition	The AN level is acceptable for this fluid. The oil is still serviceable							
Manganese         ppm         ASTM D5185(m)         0         0         0           Magnesium         ppm         ASTM D5185(m)         5         <1	·							
Magnesium         ppm         ASTM D5185(m)         5         <1		,		\ /	U			
Calcium         ppm         ASTM D5185(m)         50         67         56         52           Phosphorus         ppm         ASTM D5185(m)         330         376         402         356           Zinc         ppm         ASTM D5185(m)         420         455         469         460           Sulfur         ppm         ASTM D5185(m)         3100         6985         7328         7257           Acid Number (AN)         mg KOH/g         ASTM D974*         .40         0.54         0.40         0.44				, ,	5			
Phosphorus         ppm         ASTM D5185(m)         330         376         402         356           Zinc         ppm         ASTM D5185(m)         420         455         469         460           Sulfur         ppm         ASTM D5185(m)         3100         6985         7328         7257           Acid Number (AN)         mg KOH/g         ASTM D974*         .40         0.54         0.40         0.44								
Zinc         ppm         ASTM D5185(m)         420         455         469         460           Sulfur         ppm         ASTM D5185(m)         3100         6985         7328         7257           Acid Number (AN)         mg KOH/g         ASTM D974*         .40         0.54         0.40         0.44				. ,				
Sulfur         ppm         ASTM D5185(m)         3100         6985         7328         7257           Acid Number (AN)         mg KOH/g         ASTM D974*         .40         0.54         0.40         0.44		•						
Acid Number (AN)         mg KOH/g         ASTM D974*         .40         0.54         0.40         0.44				. ,				
				. ,				
		Visc @ 40°C		ASTM D7279(m)	68.8	67.7	66.7	65.2





CALA ISO 17025:2017 Accredited

Laboratory

Laboratory Sample No. Lab Number

: WC0929731 : 02639994

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received **Tested** Unique Number : 5789156

: 05 Jun 2024 : 06 Jun 2024 Diagnosed

: 06 Jun 2024 - Kevin Marson

**CANADIAN COAST GUARD** CCGS HENRY LARSEN, P.O. BOX 5667, 280 SOUTHSIDE RD. ST. JOHN'S, NL CA A1C 5X1

Contact: Chief Engineer henrylarsence@ccgs-ngcc.gc.ca T: (709)687-5198

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.

Test Package : MAR 2 ( Additional Tests: TAN Man )

F: (709)685-3187