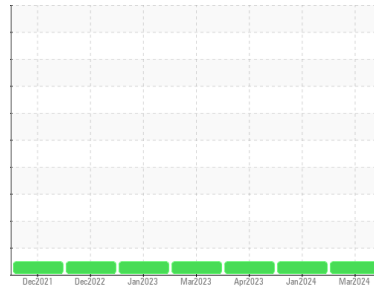




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
BARGE TRANSPORTATION
 Machine Id
BARRY GRIFFITH - SGEN
 Component
Starboard Genset
 Fluid
PETRO CANADA DURON HP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

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

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KFS0002956	KFS0002962	KFS0003173
Sample Date	Client Info		15 Mar 2024	22 Jan 2024	16 Apr 2023
Machine Age	hrs	Client Info	18064	0	0
Oil Age	hrs	Client Info	500	500	500
Oil Changed	Client Info		Changed	Changed	Changed
Sample Status			NORMAL	NORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0
Water	WC Method	>0.1	NEG	NEG	NEG
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>50	7	6	7
Chromium	ppm	ASTM D5185m	>4	1	0	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>12	2	<1	<1
Lead	ppm	ASTM D5185m	>17	4	4	6
Copper	ppm	ASTM D5185m	>70	<1	<1	0
Tin	ppm	ASTM D5185m	>15	1	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		<1	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		<1	0	0
Molybdenum	ppm	ASTM D5185m		57	59	64
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		963	951	1096
Calcium	ppm	ASTM D5185m		1114	1043	1193
Phosphorus	ppm	ASTM D5185m		1054	978	1087
Zinc	ppm	ASTM D5185m		1235	1201	1412
Sulfur	ppm	ASTM D5185m		3354	2843	3493

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>25	4	3	3
Sodium	ppm	ASTM D5185m		2	2	<1
Potassium	ppm	ASTM D5185m	>20	2	0	<1

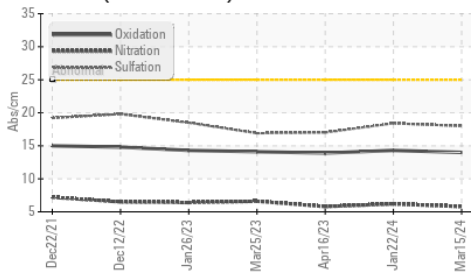
INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	5.8	6.2	5.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.0	18.4	17.0

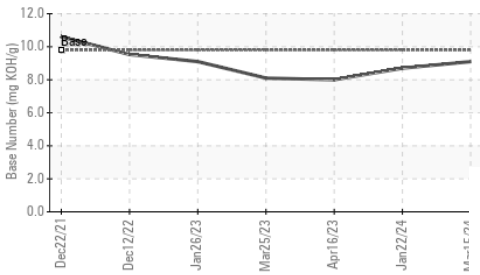
FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.0	14.3	13.9
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	9.1	8.7	8.0

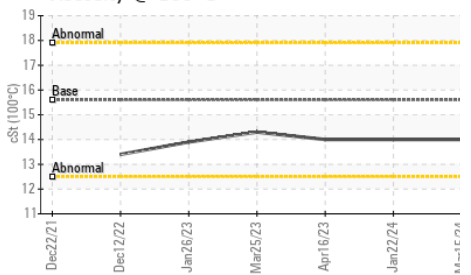
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

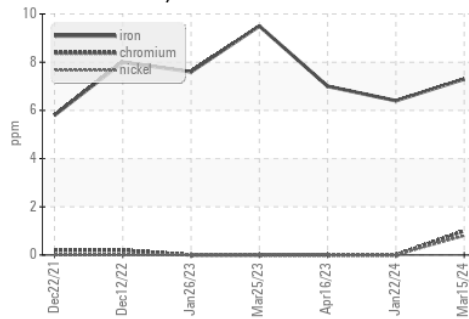


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

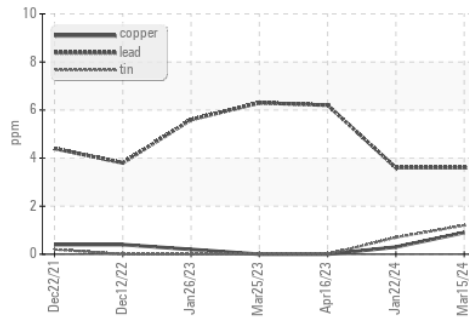
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.6	14.0	14.0

GRAPHS

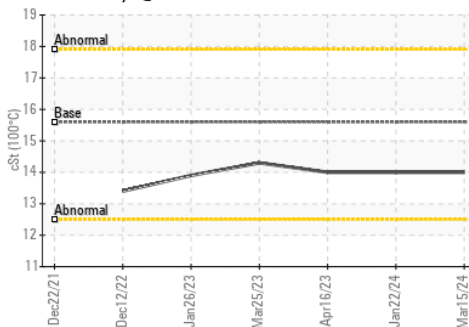
Ferrous Alloys



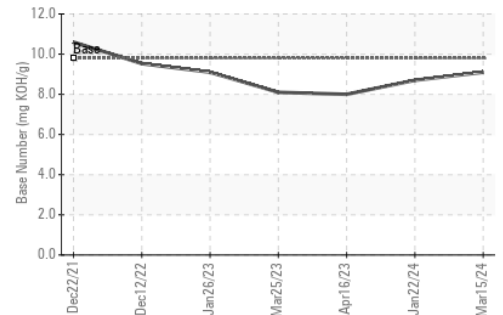
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KFS0002956 **Received** : 09 Apr 2024
Lab Number : **06142862** **Tested** : 10 Apr 2024
Unique Number : 10967670 **Diagnosed** : 11 Apr 2024 - Don Baldrige
Test Package : FLEET

M/V BARRY GRIFFITH
 3501 STARLITE DR
 PADUCAH, KY
 US 42003

Contact: BARRY GRIFFITH
 bgriffith@hflines.com

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)

T:
F: