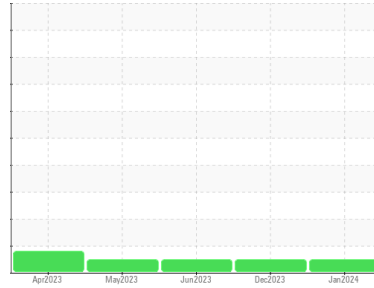


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
HERCULES (S/N SDN00667)
 Component
Starboard Main Engine
 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		PCA0101797	PCA0101795	PCA0099608
Sample Date	Client Info		16 Jan 2024	06 Dec 2023	15 Jun 2023
Machine Age	hrs	Client Info	27846	27189	25230
Oil Age	hrs	Client Info	779	123	1059
Oil Changed	Client Info		N/A	Not Changd	N/A
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 >120	25	7	39
Chromium	ppm	ASTM D5185m >10	1	<1	2
Nickel	ppm	ASTM D5185m >5	1	<1	1
Titanium	ppm	ASTM D5185m	<1	<1	0
Silver	ppm	ASTM D5185m >5	0	0	0
Aluminum	ppm	ASTM D5185m >20	2	2	0
Lead	ppm	ASTM D5185m >40	1	<1	3
Copper	ppm	ASTM D5185m >300	6	4	109
Tin	ppm	ASTM D5185m >10	<1	<1	<1
Vanadium	ppm	ASTM D5185m	<1	<1	0
Cadmium	ppm	ASTM D5185m	<1	<1	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	4	6	1
Barium	ppm	ASTM D5185m	0	12	0
Molybdenum	ppm	ASTM D5185m	57	60	60
Manganese	ppm	ASTM D5185m	<1	<1	<1
Magnesium	ppm	ASTM D5185m	916	924	919
Calcium	ppm	ASTM D5185m	1103	1067	1088
Phosphorus	ppm	ASTM D5185m	981	1031	958
Zinc	ppm	ASTM D5185m	1198	1207	1207
Sulfur	ppm	ASTM D5185m	3148	3034	2794

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	4	3	6
Sodium	ppm	ASTM D5185m	4	<1	4
Potassium	ppm	ASTM D5185m >20	1	2	<1

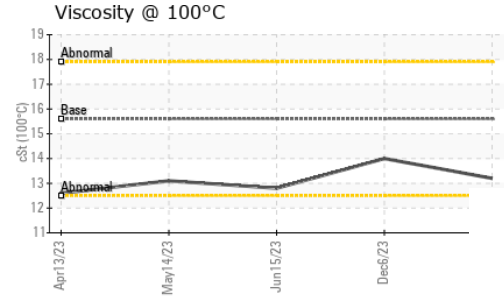
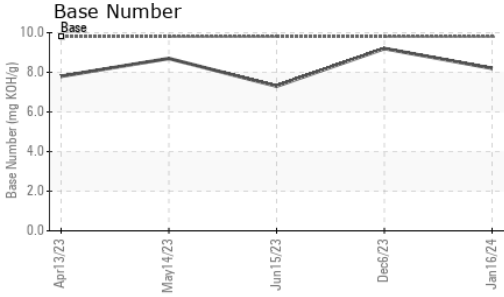
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	0.4	0.2	0.5
Nitration	Abs/cm	*ASTM D7624 >20	8.5	5.2	10.0
Sulfation	Abs/.1mm	*ASTM D7415 >30	20.8	18.1	22.4

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	17.5	13.8	19.4
Base Number (BN)	mg KOH/g	ASTM D2896 9.8	8.2	9.2	7.3

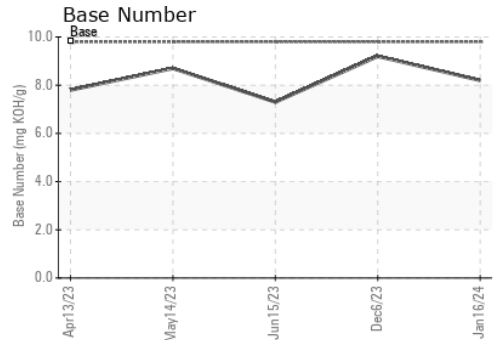
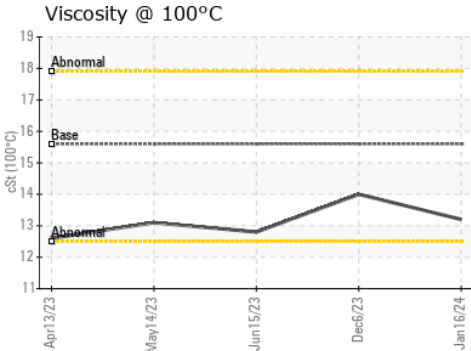
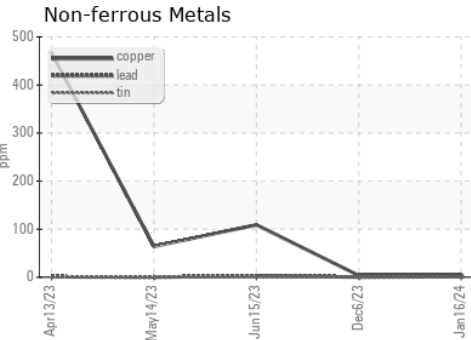
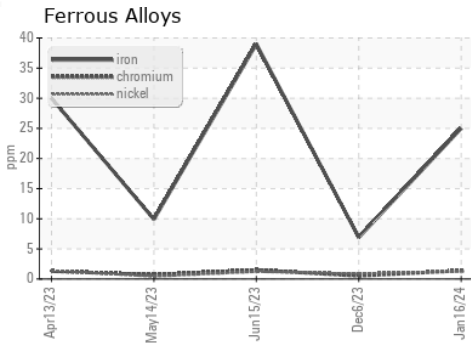
OIL ANALYSIS REPORT



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	13.2	14.0	12.8

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0101797 **Received** : 25 Jan 2024
Lab Number : **06070927** **Diagnosed** : 26 Jan 2024
Unique Number : 10847604 **Diagnostician** : Wes Davis
Test Package : FLEET

DUNLAP TOWING COMPANY - EVERETT
 2702 FEDERAL AVENUE
 EVERETT, WA
 US 98201
 Contact: Service Manager

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)

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F: