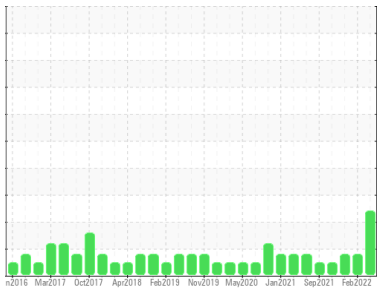
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR PARTICLES

Machine Id
Emergency Generator (S/N 40601268)
Component
Diesel Engine
Fluid
PETRO CANADA DURON HP 15W40 (30 LTR)

DIAGNOSIS

Recommendation
We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear
Wear particle analysis indicates that the ferrous cutting particles are marginal. All other component wear rates are normal. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embeding themselves in softer materials (sand, etc.), and gouging out mating surfaces.

Contaminants
There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Oil Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0603813**	WC0603792	WC0603799
Sample Date		Client Info		**26 Apr 2022**	11 Feb 2022	17 Dec 2021
Machine Age	hrs	Client Info		**1541**	1533	1526
Oil Age	hrs	Client Info		**7**	4	3
Oil Changed		Client Info		**Not Changd**	Not Changd	Not Changd
Sample Status				**ABNORMAL**	MARGINAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	0
Iron	ppm	ASTM D5185(m)	>80	**<1**	<1	<1
Chromium	ppm	ASTM D5185(m)	>4	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>4	**<1**	<1	<1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**0**	0	0
Aluminum	ppm	ASTM D5185(m)	>10	**<1**	<1	<1
Lead	ppm	ASTM D5185(m)	>15	**<1**	0	0
Copper	ppm	ASTM D5185(m)	>230	**<1**	<1	<1
Tin	ppm	ASTM D5185(m)	>4	**0**	<1	0
Antimony	ppm	ASTM D5185(m)		**0**	0	0
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	**1**	1	1
Barium	ppm	ASTM D5185(m)	0	**0**	0	0
Molybdenum	ppm	ASTM D5185(m)	60	**55**	54	54
Manganese	ppm	ASTM D5185(m)	0	**0**	0	0
Magnesium	ppm	ASTM D5185(m)	1010	**943**	958	951
Calcium	ppm	ASTM D5185(m)	1070	**984**	977	963
Phosphorus	ppm	ASTM D5185(m)	1150	**1023**	1016	1014
Zinc	ppm	ASTM D5185(m)	1270	**1158**	1152	1139
Sulfur	ppm	ASTM D5185(m)	2060	**2563**	2567	2542
Lithium	ppm	ASTM D5185(m)		**<1**	0	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**3**	4	4
Sodium	ppm	ASTM D5185(m)		**1**	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	<1
Fuel	%	ASTM D7593*	>5	▲ **5.7**	▲ 4.1	▲ 5.2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0**	0	0
Nitration	Abs/cm	ASTM D7624*	>20	**4.7**	4.6	4.6
Sulfation	Abs/.1mm	ASTM D7415*	>30	**19.4**	18.7	18.5

OIL ANALYSIS REPORT

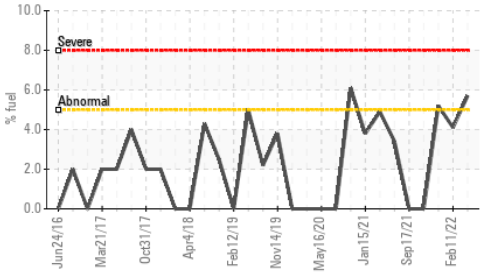
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**13.0**	13.2	13.2
Base Number (BN)	mg KOH/g	ASTM D2896*	9.8	**9.97**	9.51	9.78

VISUAL		method	limit/base	current	history1	history2
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

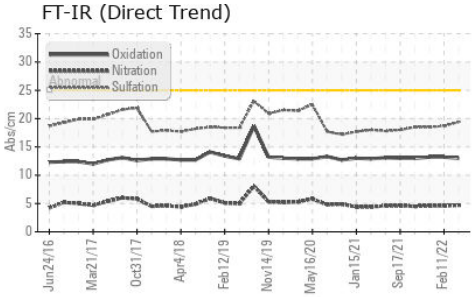
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	15.6	**13.0**	13.5	13.2

GRAPHS

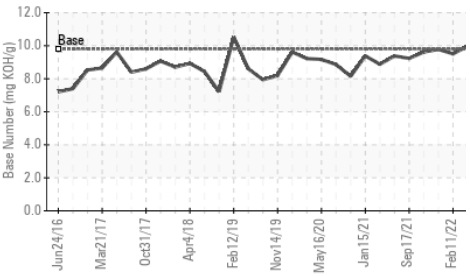
Fuel Dilution



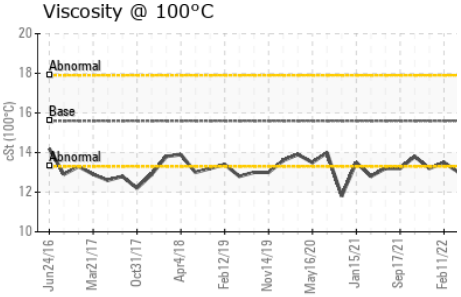
FT-IR (Direct Trend)



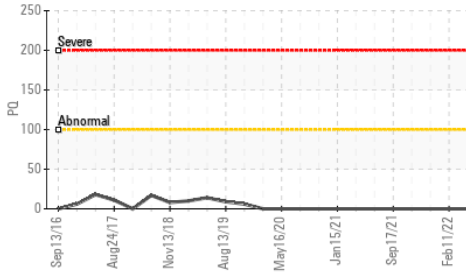
Base Number



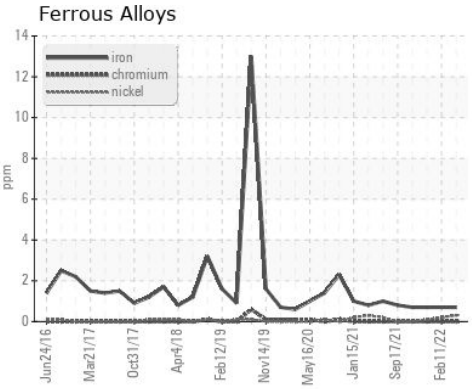
Viscosity @ 100°C



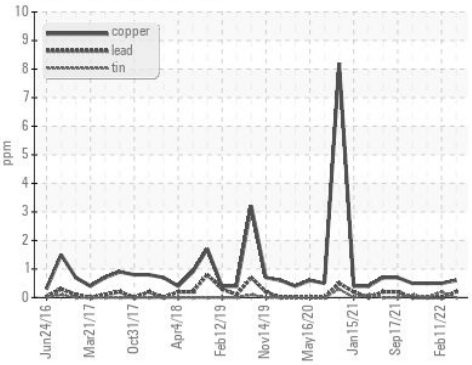
PQ



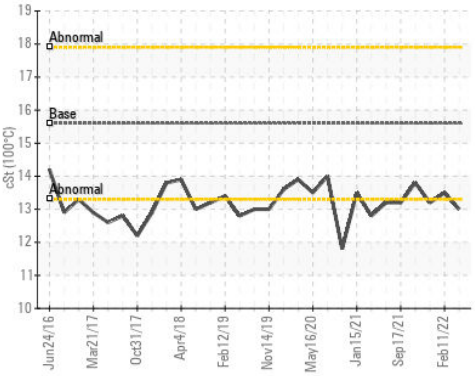
Ferrous Alloys



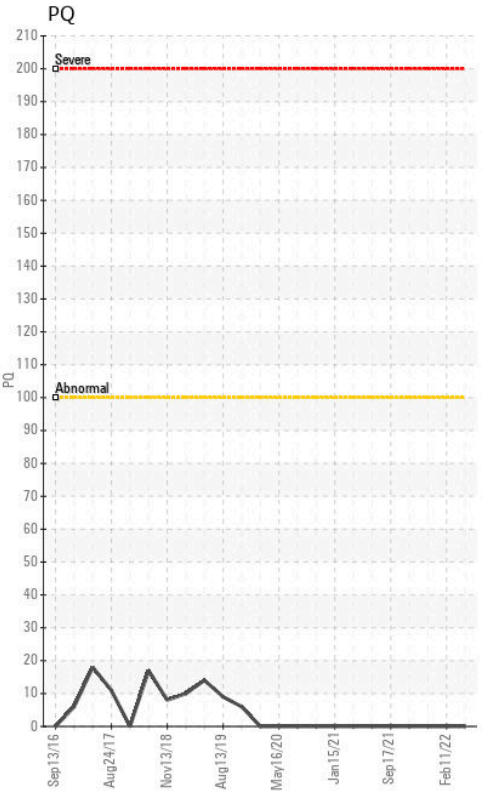
Non-ferrous Metals



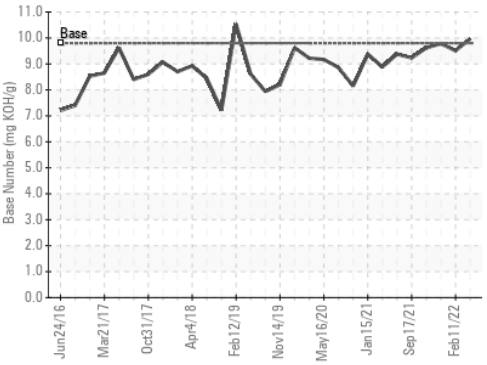
Viscosity @ 100°C



PQ



Base Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0603813
Lab Number : 02485779
Unique Number : 5386716
Test Package : MAR 3 (Additional Tests: FuelDilution, PercentFuel)

Received : 28 Apr 2022
Tested : 02 May 2022
Diagnosed : 02 May 2022 - Kevin Marson

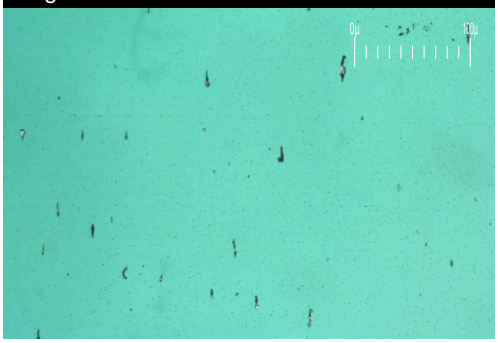
To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

CANADIAN COAST GUARD
CCGS GRIFFON, PO BOX 1000, 401 KING ST.W
Prescott, ON
CA K6V 5T3
Contact: Laurie Bosley
Laurie.Bosley@dfo-mpo.gc.ca
T:
F: (519)383-1994

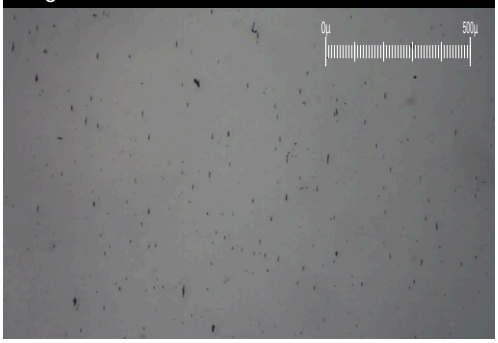
FERROGRAPHY REPORT

Machine Id
Emergency Generator (S/N 40601268)
Component
Diesel Engine
Fluid
PETRO CANADA DURON HP 15W40 (30 LTR)

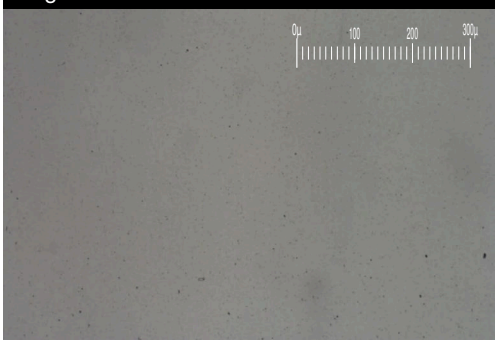
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW

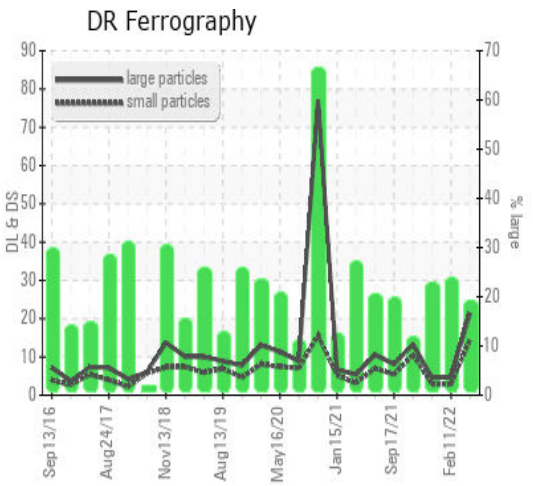


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		**21.4**	4.7	4.6
Small Particles		DR-Ferr*		**14.5**	2.9	2.9
Total Particles		DR-Ferr*	>---	**35.9**	7.6	7.5
Large Particles Percentage	%	DR-Ferr*		**19.2**	23.7	22.7
Severity Index		DR-Ferr*		**148**	8	8

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		**2**	2	1
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*		**1**		
Ferrous Rolling	Scale 0-10	ASTM D7684*		**1**	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	1	1

WEAR

Wear particle analysis indicates that the ferrous cutting particles are marginal. All other component wear rates are normal. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embeding themselves in softer materials (sand, etc.), and gouging out mating surfaces.



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