



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	NORMAL
OIL CONDITION	NORMAL

Machine Id
HL2113 SME
Component
Starboard Main Engine
Fluid
PETRO CANADA BP ENERGOL DS3 153 (6500 LTR)

RECOMMENDATION

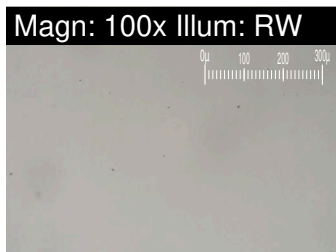
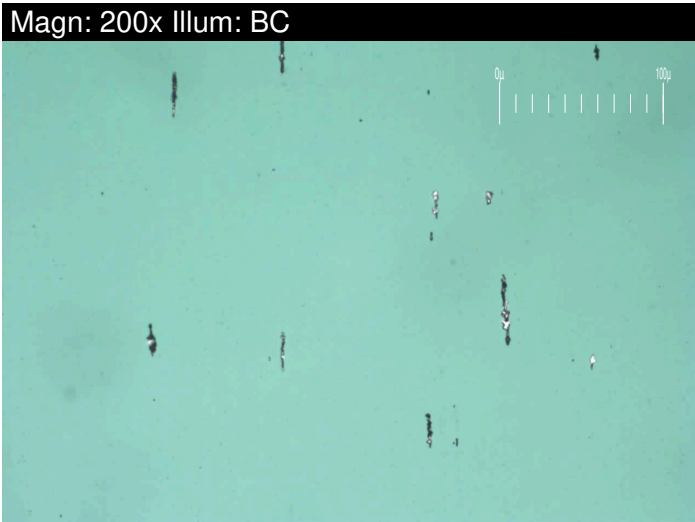
Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0807839	WC0807849	WC
Sample Date		Client Info		05 Jan 2024	21 Aug 2023	17 Oct 2022
Machine Age	hrs	Client Info		53133	52719	51404
Oil Age	hrs	Client Info		0	0	3700
Filter Age	hrs	Client Info		0	1000	1000
Oil Changed		Client Info		Not Chngd	N/A	N/A
Filter Changed		Client Info		Not Chngd	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>25	7	7	6
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Nickel	ppm	ASTM D5185(m)	>5	<1	0	0
Titanium	ppm	ASTM D5185(m)	>3	0	0	<1
Silver	ppm	ASTM D5185(m)	>2	0	0	0
Aluminum	ppm	ASTM D5185(m)	>10	2	2	1
Lead	ppm	ASTM D5185(m)	>5	0	0	0
Copper	ppm	ASTM D5185(m)	>5	2	2	2
Tin	ppm	ASTM D5185(m)	>5	<1	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
Large Particles		DR-Ferr*		4.7	2.1	6.4
Small Particles		DR-Ferr*		1.3	1.9	4.7
Total Particles		DR-Ferr*	>---	6	4	11.1
Large Particles Percentage	%	DR-Ferr*		56.7	5	15.3
Severity Index		DR-Ferr*		16	0	11
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2	1	2
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
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*				



CONTAMINANTS

There is no indication of any contamination in the oil.

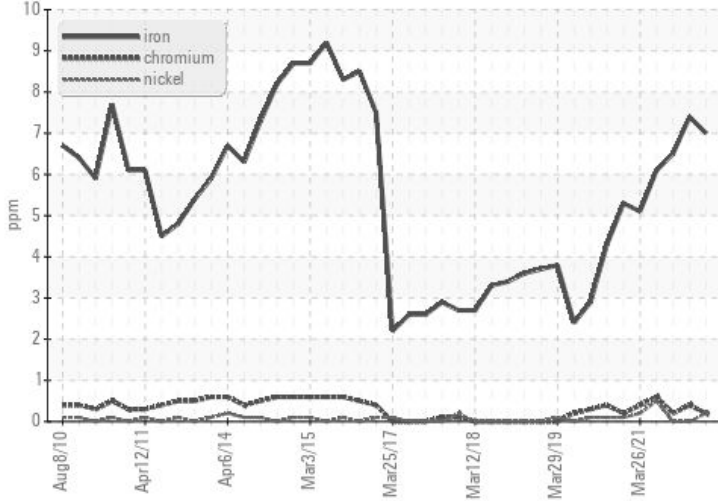
Silicon	ppm	ASTM D5185(m)	>20	5	5	6
Potassium	ppm	ASTM D5185(m)	>20	<1	<1	1
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	ASTM D7844*	>2	0.1	0	0
Nitration	Abs/cm	ASTM D7624*	>20	9.4	8.8	9.2
Sulfation	Abs/.1mm	ASTM D7415*	>30	14.6	15.2	14.9
Emulsified Water	scalar	Visual*	>0.1	NEG	NEG	NEG
Carbonaceous Material	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

OIL CONDITION

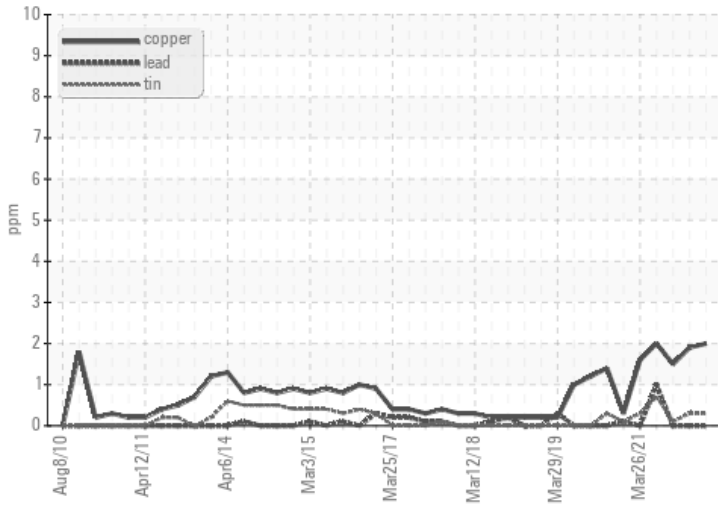
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185(m)	>75	1	1	1
Boron	ppm	ASTM D5185(m)		3	4	4
Barium	ppm	ASTM D5185(m)		0	0	0
Molybdenum	ppm	ASTM D5185(m)		1	2	2
Manganese	ppm	ASTM D5185(m)		0	<1	<1
Magnesium	ppm	ASTM D5185(m)		30	30	28
Calcium	ppm	ASTM D5185(m)		5088	5103	5396
Phosphorus	ppm	ASTM D5185(m)		838	886	878
Zinc	ppm	ASTM D5185(m)		942	985	950
Sulfur	ppm	ASTM D5185(m)		8901	8942	8834
Oxidation	Abs/.1mm	ASTM D7414*	>25	7.6	7.1	7.7
Base Number (BN)	mg KOH/g	ASTM D2896*	15	15.96	15.02	14.09
Visc @ 100°C	cSt	ASTM D7279(m)	11.5	11.2	11.3	11.4
Lubricant Degradation	Scale 0-10	ASTM D7684*				

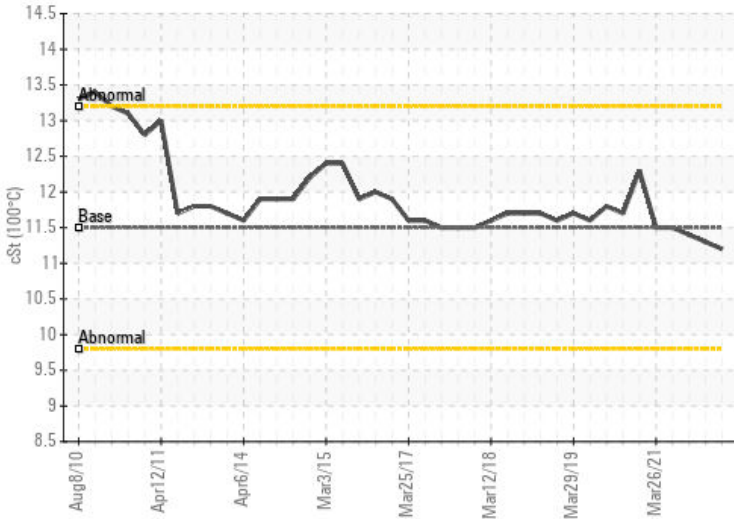
Ferrous Alloys



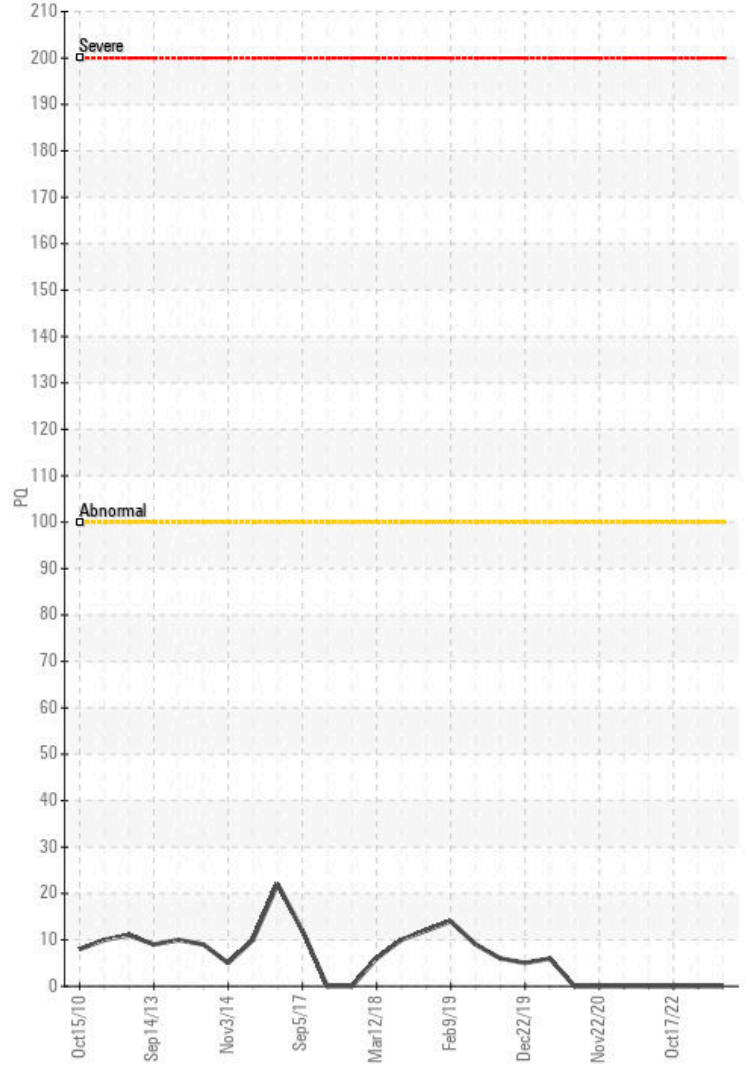
Non-ferrous Metals



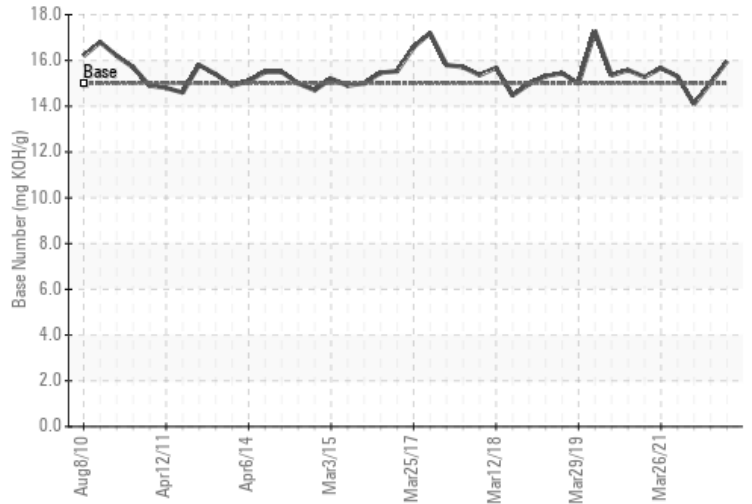
Viscosity @ 100°C



PQ



Base Number



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0807839
Lab Number : 02608409
Unique Number : 5709495
Test Package : MAR 3

CANADIAN COAST GUARD
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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.

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