MAR III

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	NORMAL
OIL CONDITION	NORMAL

Machine Id
Ship Service Generator #3 (S/N 15501188)
Component
Diesel Engine
Fluid
PETRO CANADA DURON HP 15W40 (62 LTR)

RECOMMENDATION

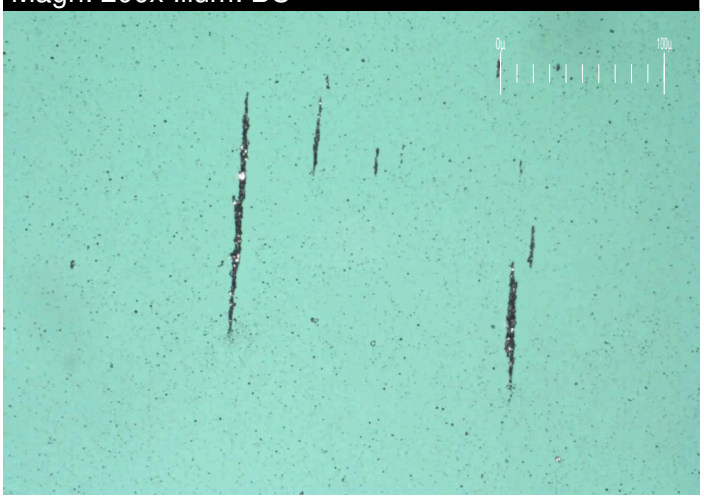
Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

WEAR

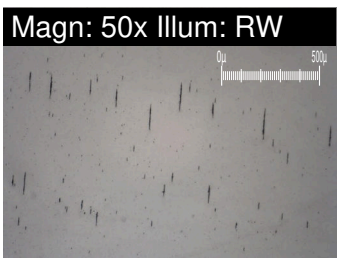
All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0772120	WC0700696	---
Sample Date		Client Info		21 Oct 2023	26 Feb 2023	---
Machine Age	hrs	Client Info		52337	50475	---
Oil Age	hrs	Client Info		329	511	---
Filter Age	hrs	Client Info		329	511	---
Oil Changed		Client Info		Not Changd	Changed	---
Filter Changed		Client Info		Not Changd	Changed	---
Sample Status				NORMAL	NORMAL	---
PQ		ASTM D8184*		0	0	---
Iron	ppm	ASTM D5185(m)	>100	9	18	---
Chromium	ppm	ASTM D5185(m)	>20	0	<1	---
Nickel	ppm	ASTM D5185(m)	>4	0	<1	---
Titanium	ppm	ASTM D5185(m)		0	<1	---
Silver	ppm	ASTM D5185(m)	>3	<1	0	---
Aluminum	ppm	ASTM D5185(m)	>20	<1	1	---
Lead	ppm	ASTM D5185(m)	>40	2	1	---
Copper	ppm	ASTM D5185(m)	>330	76	3	---
Tin	ppm	ASTM D5185(m)	>15	<1	<1	---
Vanadium	ppm	ASTM D5185(m)		0	0	---
Large Particles		DR-Ferr*		3.9	7.2	---
Small Particles		DR-Ferr*		1.6	5.7	---
Total Particles		DR-Ferr*	>---	5.5	12.9	---
Large Particles Percentage	%	DR-Ferr*		41.8	11.6	---
Severity Index		DR-Ferr*		9	11	---
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2	1	
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		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*		1		
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*				

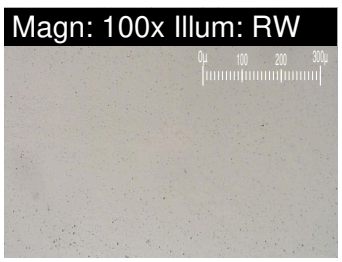
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW



CONTAMINANTS

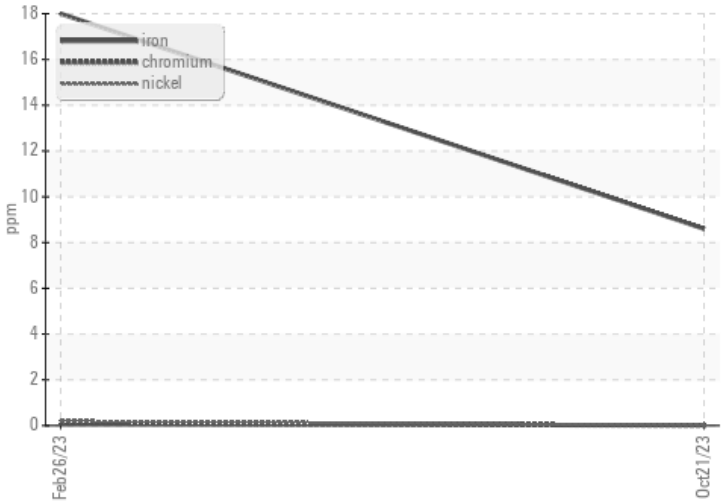
There is no indication of any contamination in the oil.

OIL CONDITION

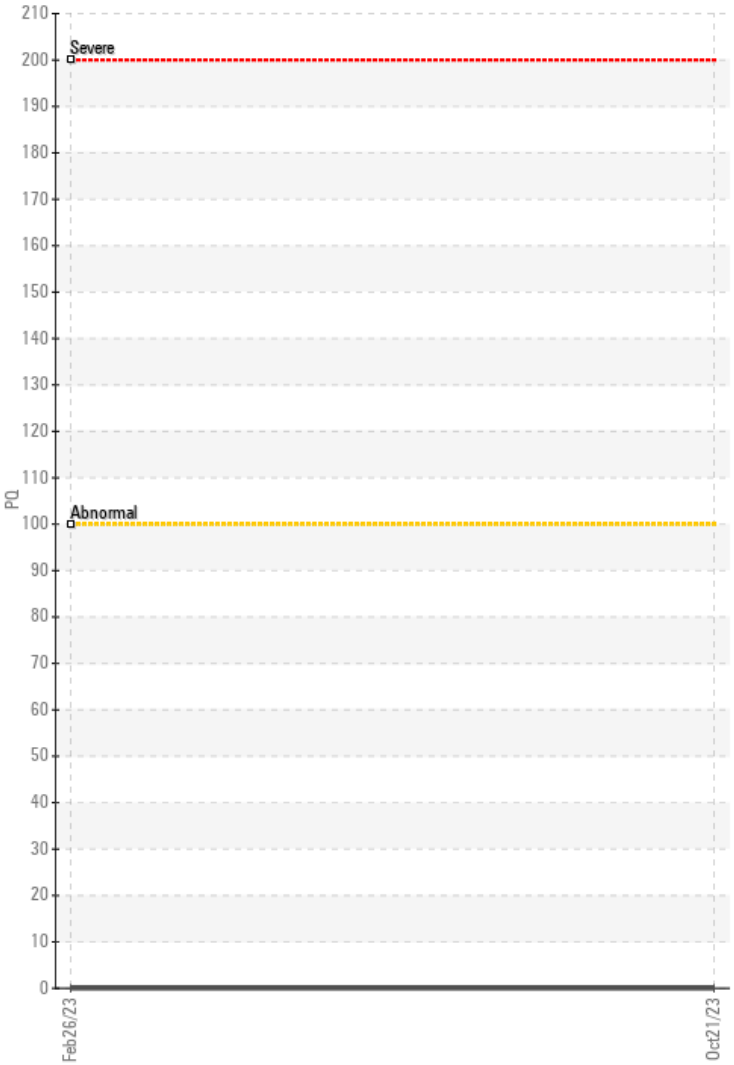
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Silicon	ppm	ASTM D5185(m)	>25	**5**	2	---
Potassium	ppm	ASTM D5185(m)	>20	**0**	<1	---
Fuel		WC Method	>5	**<1.0**	<1.0	---
Water		WC Method	>0.2	**NEG**	NEG	---
Glycol		WC Method		**NEG**	NEG	---
Soot %	%	ASTM D7844*	>3	**0**	0.1	---
Nitration	Abs/cm	ASTM D7624*	>20	**6.3**	7.7	---
Sulfation	Abs/.1mm	ASTM D7415*	>30	**19.6**	23.2	---
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	---
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**		
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	1	
Sodium	ppm	ASTM D5185(m)		**2**	2	---
Boron	ppm	ASTM D5185(m)	0	**3**	3	---
Barium	ppm	ASTM D5185(m)	0	**0**	0	---
Molybdenum	ppm	ASTM D5185(m)	60	**64**	65	---
Manganese	ppm	ASTM D5185(m)	0	**0**	<1	---
Magnesium	ppm	ASTM D5185(m)	1010	**998**	1063	---
Calcium	ppm	ASTM D5185(m)	1070	**1099**	1198	---
Phosphorus	ppm	ASTM D5185(m)	1150	**1024**	1130	---
Zinc	ppm	ASTM D5185(m)	1270	**1220**	1288	---
Sulfur	ppm	ASTM D5185(m)	2060	**2506**	2628	---
Oxidation	Abs/.1mm	ASTM D7414*	>25	**15.3**	16.1	---
Base Number (BN)	mg KOH/g	ASTM D2896*	9.8	**8.82**	8.91	---
Visc @ 100°C	cSt	ASTM D7279(m)	15.6	**14.4**	14.9	---
Lubricant Degradation	Scale 0-10	ASTM D7684*				

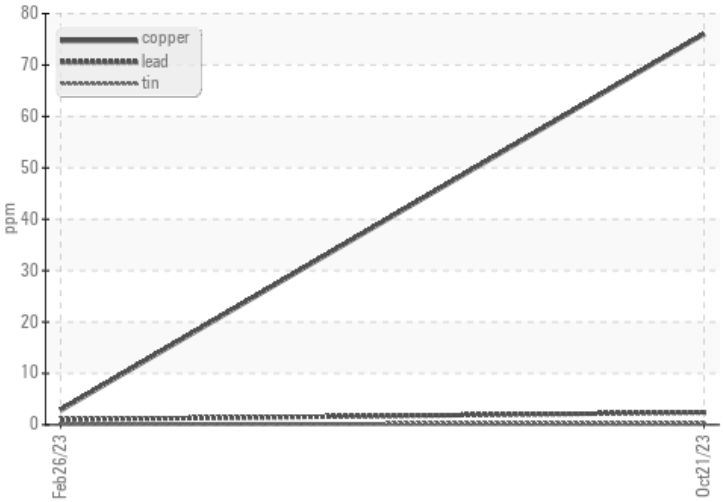
Ferrous Alloys



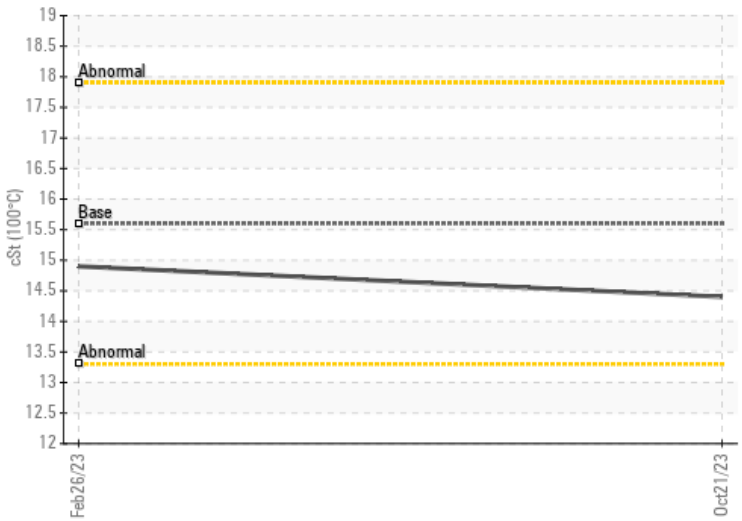
PQ



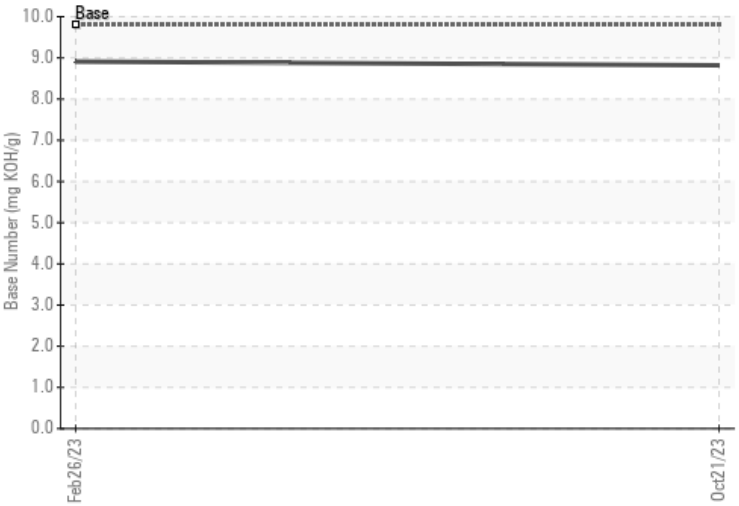
Non-ferrous Metals



Viscosity @ 100°C



Base Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0772120
Lab Number : 02591344
Unique Number : 5668423
Test Package : MAR 3

Received : 24 Oct 2023
Tested : 30 Oct 2023
Diagnosed : 30 Oct 2023 - 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.

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