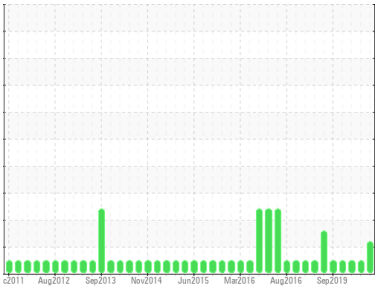
OIL ANALYSIS REPORT

Sample Rating Trend



VISUAL METAL

Area
Cranes [450207986]
Machine Id
Crane - Mid Ship Engine Crank Case (S/N Sample Tag MA-04002-S10)
Component
Diesel Engine
Fluid
PETRO CANADA DURON HP 15W40 (42 LTR)

DIAGNOSIS

Recommendation

We advise that you check for visible metal particles in the oil. We recommend that you change the oil at the next available stoppage or outage. We recommend an early resample to monitor this condition. We were unable to perform a particle count due to metal particles present in this sample.

Wear

Light concentration of visible metal present.

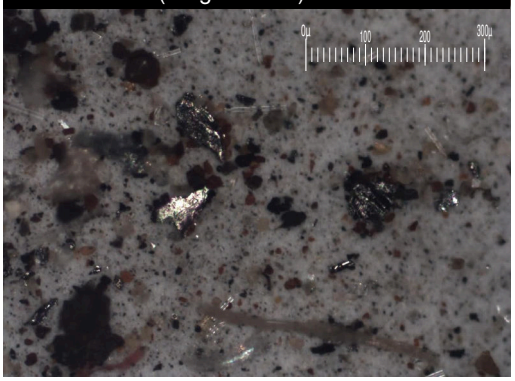
Contamination

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 oil is no longer serviceable as a result of the abnormal and/or severe wear.

Particle Filter (Magn: 100 x)



SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC**	PC0030625	PC0029606
Sample Date		Client Info		**04 Oct 2023**	20 May 2021	06 Jan 2021
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
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)	>100	**14**	2	5
Chromium	ppm	ASTM D5185(m)	>20	**<1**	0	<1
Nickel	ppm	ASTM D5185(m)	>4	**2**	<1	<1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)	>3	**<1**	<1	0
Aluminum	ppm	ASTM D5185(m)	>20	**2**	<1	1
Lead	ppm	ASTM D5185(m)	>40	**<1**	0	<1
Copper	ppm	ASTM D5185(m)	>330	**3**	<1	<1
Tin	ppm	ASTM D5185(m)	>15	**<1**	0	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	**2**	2	1
Barium	ppm	ASTM D5185(m)	0	**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)	60	**75**	57	61
Manganese	ppm	ASTM D5185(m)	0	**0**	<1	<1
Magnesium	ppm	ASTM D5185(m)	1010	**1042**	925	961
Calcium	ppm	ASTM D5185(m)	1070	**1119**	997	1004
Phosphorus	ppm	ASTM D5185(m)	1150	**1032**	1004	1001
Zinc	ppm	ASTM D5185(m)	1270	**1279**	1215	1216
Sulfur	ppm	ASTM D5185(m)	2060	**2527**	2704	2708
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**3**	4	3
Sodium	ppm	ASTM D5185(m)		**2**	2	2
Potassium	ppm	ASTM D5185(m)	>20	**0**	<1	<1

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0**	0	0
Nitration	Abs/cm	ASTM D7624*	>20	**11.2**	4.7	6.5
Sulfation	Abs/.1mm	ASTM D7415*	>30	**20.2**	18.1	18.1

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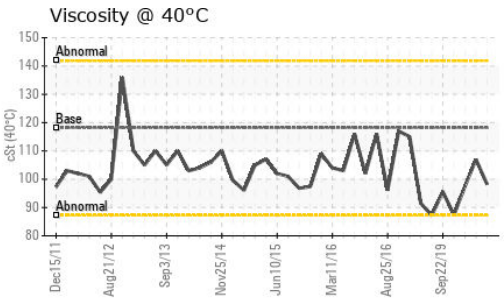
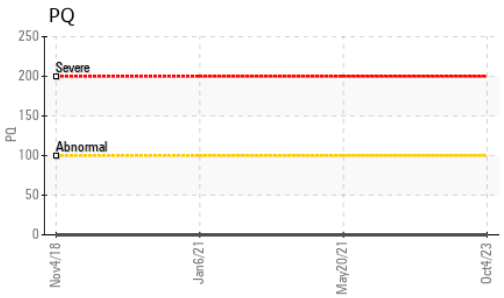
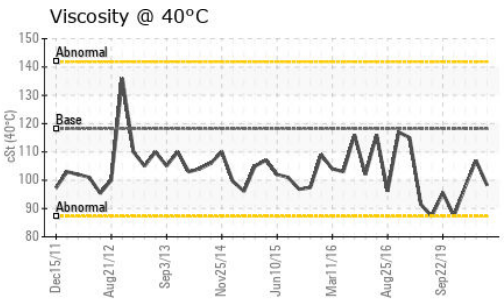
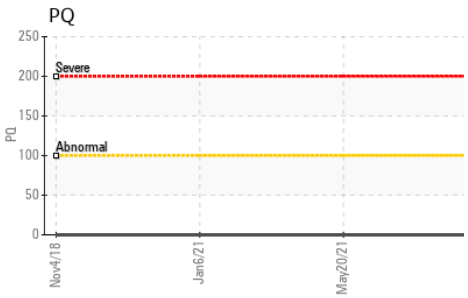








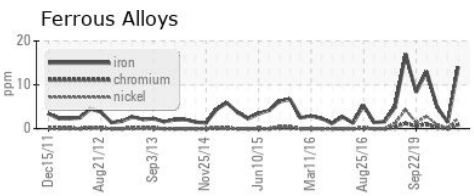
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	---	295478	409882
Particles >6µm	ASTM D7647	>5000	---	81733	133449
Particles >14µm	ASTM D7647	>640	---	349	347
Particles >21µm	ASTM D7647	>160	---	70	12
Particles >38µm	ASTM D7647	>40	---	2	0
Particles >71µm	ASTM D7647	>10	---	0	0
Oil Cleanliness	ISO 4406 (c)	>21/19/16	---	25/24/16	26/24/16

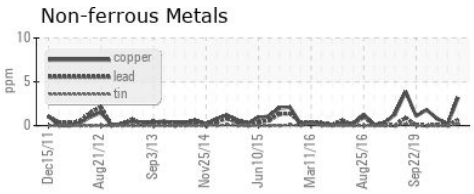
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**19.9**	12.7	14.6
Base Number (BN)	mg KOH/g	ASTM D2896*	9.8	**8.84**	9.40	9.94

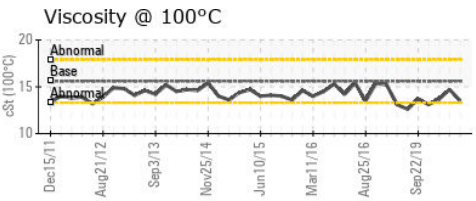
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	▲ **LIGHT**	NONE	---
Yellow Metal	scalar	Visual*	NONE	**NONE**	NONE	---
Precipitate	scalar	Visual*	NONE	**NONE**	NONE	---
Silt	scalar	Visual*	NONE	**NONE**	NONE	---
Debris	scalar	Visual*	NONE	**VLITE**	LIGHT	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	NONE	---
Appearance	scalar	Visual*	NORML	**NORML**	NORML	---
Odor	scalar	Visual*	NORML	**NORML**	NORML	---
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

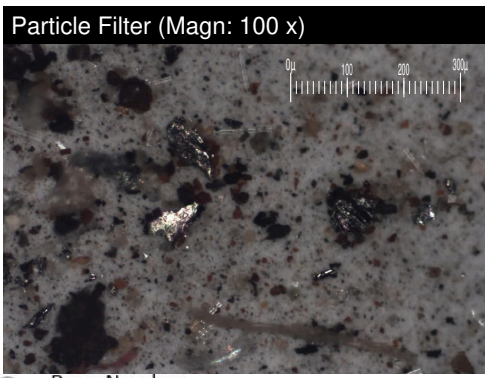
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	118.2	**98.2**	107	97.5
Visc @ 100°C	cSt	ASTM D7279(m)	15.6	**13.5**	14.7	13.7
Viscosity Index (VI)	Scale	ASTM D2270*	139	**137**	141	141

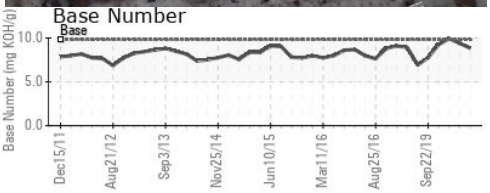
GRAPHS











ISO 17025:2017 Accredited Laboratory

Laboratory	: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9		
Sample No.	: PC	**Received**	: 18 Oct 2023
Lab Number	: 02589968	**Diagnosed**	: 22 Oct 2023
Unique Number	: 5659034	**Diagnostician**	: Kevin Marson
Test Package	: MOB 2 (Additional Tests: BottomAnalysis, FILTERPATCH, KV40, PQ, PrtCount, PrtFilter, VI, Visual)		

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.

Suncor - Terra Nova Projects
Scotia Centre, 235 Water Strret
St. John`s, NL
CA A1C 1B6
Contact: Josh Hynes
joshynes@suncor.com
T: (709)778-3575
F: (709)724-2835