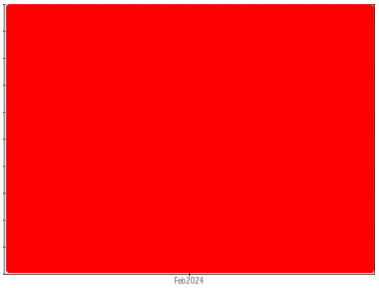
PROBLEM SUMMARY

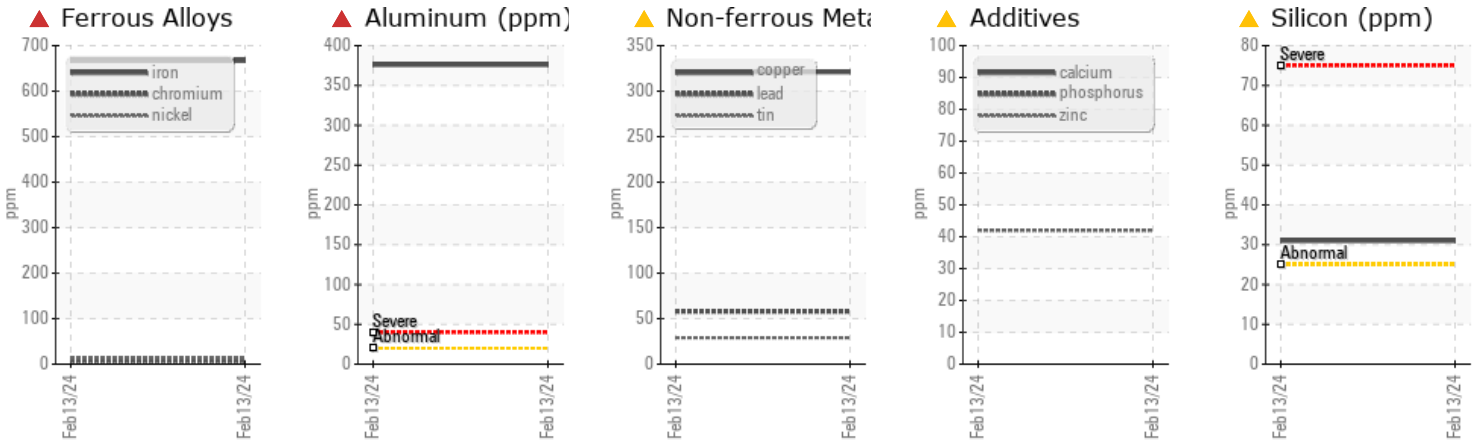
Sample Rating Trend



WEAR

Machine Id
CHS002
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

This is a baseline read-out on the submitted sample. Diagnostician`s Note: The fact that the wear particles are large, and chunky and show signs of tempering (discoloration due to heat), indicate that this was a rapid onset failure. All tests and evaluation performed at performed at WearCheck Canada.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	---	---
Iron	ppm	ASTM D5185m	>100	▲ **667**	---	---
Nickel	ppm	ASTM D5185m	>4	▲ **13**	---	---
Silver	ppm	ASTM D5185m	>3	▲ **4**	---	---
Aluminum	ppm	ASTM D5185m	>20	▲ **376**	---	---
Lead	ppm	ASTM D5185m	>40	▲ **58**	---	---
Tin	ppm	ASTM D5185m	>15	▲ **29**	---	---
Zinc	ppm	ASTM D5185m	1350	▲ **42**	---	---
Sulfur	ppm	ASTM D5185m	4250	▲ **99**	---	---
Silicon	ppm	ASTM D5185m	>25	▲ **31**	---	---

Customer Id: DIEWIL
Sample No.: WC0912385
Lab Number: 06097914
Test Package: MOB 3

To manage this report scan the QR code

To discuss the diagnosis or test data:
Doug Bogart +1 (800)237-1369 x4016
dougb@wearcheckusa.com

To change component or sample information:
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

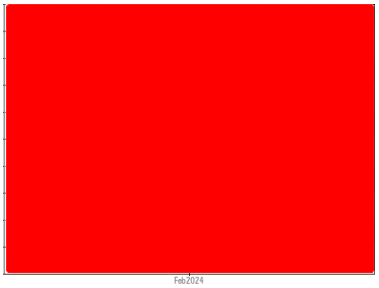
RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
CHS002
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

▲ Recommendation

This is a baseline read-out on the submitted sample. Diagnostician`s Note: The fact that the wear particles are large, and chunky and show signs of tempering (discoloration due to heat), indicate that this was a rapid onset failure. All tests and evaluation performed at performed at WearCheck Canada.

▲ Wear

Several wear particles were digested and analysed by ICP Spectroscopy. The particles were severe sliding and rolling fatigue wear particles. The most likely alloy matches are Precip Hardening Steel (AMS 6415), Grade 13 Lead Babbitt (Babbitt Grade 13), Red/Rose brass (Red/Rose brass), Aluminum Bronze CuAl10Fe5Ni5 (CuAl10Fe5Ni5), Phosphor Bronze C663 (C663) and Aluminum Bronze CuAl10Fe3 (CuAl10Fe3).

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0912385**	---	---
Sample Date		Client Info		**13 Feb 2024**	---	---
Machine Age	mls	Client Info		**156621**	---	---
Oil Age	mls	Client Info		**1006**	---	---
Oil Changed		Client Info		**Changed**	---	---
Sample Status				**SEVERE**	---	---

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	---	---
Water		WC Method	>0.2	**NEG**	---	---

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184		**6**	---	---
Iron	ppm	ASTM D5185m	>100	▲ **667**	---	---
Chromium	ppm	ASTM D5185m	>20	**8**	---	---
Nickel	ppm	ASTM D5185m	>4	▲ **13**	---	---
Titanium	ppm	ASTM D5185m		**0**	---	---
Silver	ppm	ASTM D5185m	>3	▲ **4**	---	---
Aluminum	ppm	ASTM D5185m	>20	▲ **376**	---	---
Lead	ppm	ASTM D5185m	>40	▲ **58**	---	---
Copper	ppm	ASTM D5185m	>330	**321**	---	---
Tin	ppm	ASTM D5185m	>15	▲ **29**	---	---
Antimony	ppm	ASTM D5185m		**1**	---	---
Vanadium	ppm	ASTM D5185m		**<1**	---	---
Beryllium	ppm	ASTM D5185m		**0**	---	---
Cadmium	ppm	ASTM D5185m		**1**	---	---

ADDITIVES		method	limit/base	current	history1	history2
Barium	ppm	ASTM D5185m	10	**15**	---	---
Molybdenum	ppm	ASTM D5185m	100	**2**	---	---
Manganese	ppm	ASTM D5185m		**7**	---	---
Magnesium	ppm	ASTM D5185m	450	**31**	---	---
Zinc	ppm	ASTM D5185m	1350	▲ **42**	---	---
Sulfur	ppm	ASTM D5185m	4250	▲ **99**	---	---
Lithium	ppm	ASTM D5185m		**<1**	---	---

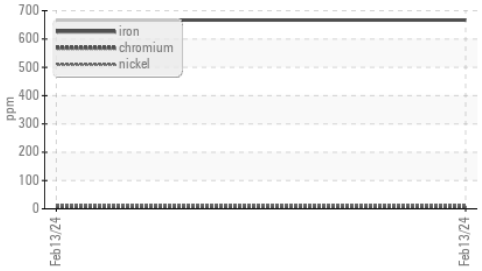
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	▲ **31**	---	---
Glycol	%	*ASTM D2982		**NEG**	---	---

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.2**	---	---
Nitration	Abs/cm	*ASTM D7624	>20	**6.1**	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	**18.0**	---	---

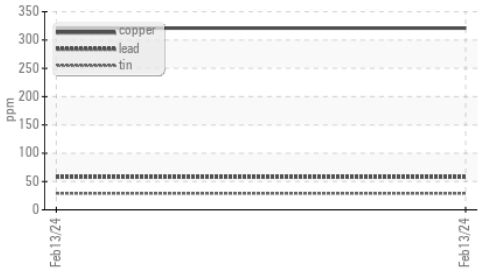
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**13.6**	---	---
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**10.65**	---	---

OIL ANALYSIS REPORT

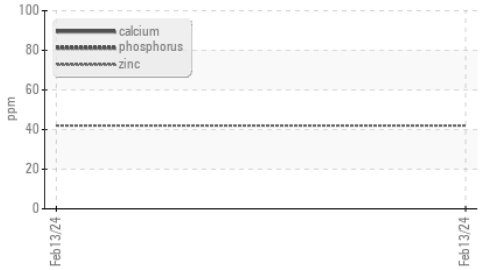
Ferrous Alloys



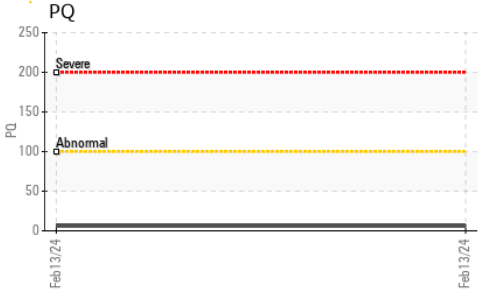
Non-ferrous Metals



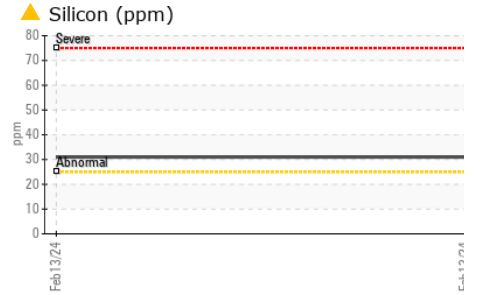
Additives



PQ



Silicon (ppm)

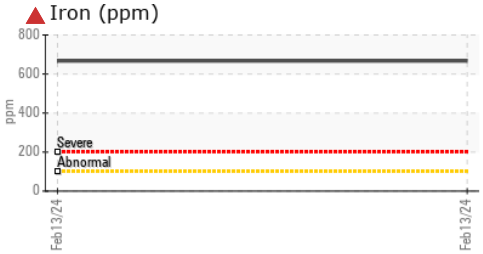


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	---	---
Yellow Metal	scalar	*Visual	NONE	**NONE**	---	---
Precipitate	scalar	*Visual	NONE	**NONE**	---	---
Silt	scalar	*Visual	NONE	**NONE**	---	---
Debris	scalar	*Visual	NONE	**NONE**	---	---
Sand/Dirt	scalar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

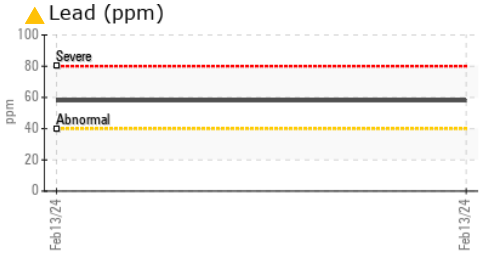
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	**13.7**	---	---

GRAPHS

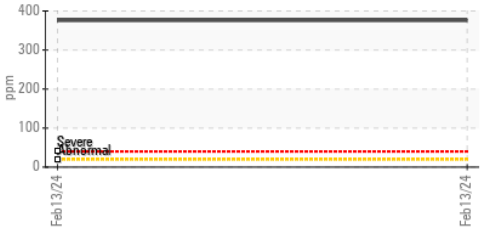
Iron (ppm)



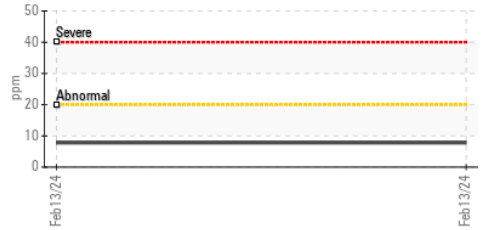
Lead (ppm)



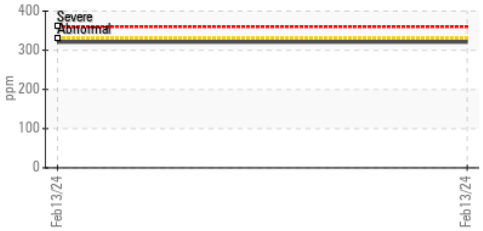
Aluminum (ppm)



Chromium (ppm)

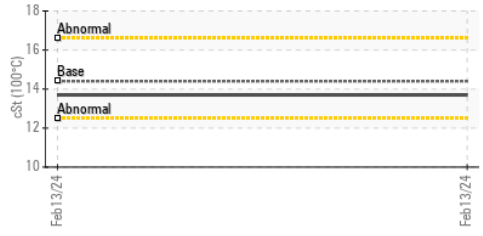


Copper (ppm)



Silicon (ppm)

Viscosity @ 100°C



Base Number

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0912385
Lab Number : 06097914
Unique Number : 10896144
Test Package : MOB 3 (Additional Tests: BOTTOMANALYSIS, FILTERPATCH, Glycol, ICP-DIESEL)

Received : 22 Feb 2024
Tested : 13 Mar 2024
Diagnosed : 13 Mar 2024 - Doug Bogart

DIESEL PARTS OF CAROLINA
5220 US HIGHWAY 421 NORTH
WILMINGTON, NC
US 28401
Contact: DIANE COLLINS
diane@ncdpc.com
T:
F:

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)