



# WEAR CHECK

## OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**20109**  
Component  
**Diesel Engine**  
Fluid  
**SHELL 10W30 (--- QTS)**

### RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0916546</b>	WC0878603	WC0854047
Sample Date		Client Info		<b>07 May 2024</b>	15 Dec 2023	09 Oct 2023
Machine Age	mls	Client Info		<b>279502</b>	248898	233259
Oil Age	mls	Client Info		<b>30604</b>	15639	11164
Filter Age	mls	Client Info		<b>30604</b>	15639	11164
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>24</b>	7	8
Chromium	ppm	ASTM D5185m	>20	<b>2</b>	<1	<1
Nickel	ppm	ASTM D5185m	>4	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m	>3	<b>1</b>	0	0
Aluminum	ppm	ASTM D5185m	>20	<b>10</b>	4	3
Lead	ppm	ASTM D5185m	>40	<b>&lt;1</b>	0	0
Copper	ppm	ASTM D5185m	>330	<b>7</b>	3	3
Tin	ppm	ASTM D5185m	>15	<b>1</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

### CONTAMINATION

There is no indication of any contamination in the oil.

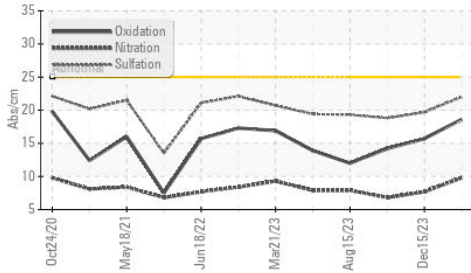
Silicon	ppm	ASTM D5185m	>25	<b>7</b>	3	4
Potassium	ppm	ASTM D5185m	>20	<b>16</b>	7	7
Fuel		WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.5</b>	0.3	0.3
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.8</b>	7.7	6.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>22.0</b>	19.7	18.8
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG

### FLUID CONDITION

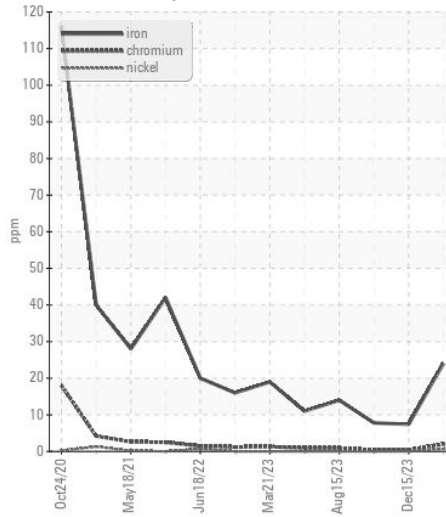
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		<b>4</b>	0	2
Boron	ppm	ASTM D5185m		<b>&lt;1</b>	2	1
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>82</b>	60	52
Manganese	ppm	ASTM D5185m		<b>1</b>	<1	0
Magnesium	ppm	ASTM D5185m	470	<b>1346</b>	985	858
Calcium	ppm	ASTM D5185m	1150	<b>1416</b>	1077	1197
Phosphorus	ppm	ASTM D5185m	94	<b>1383</b>	1122	1018
Zinc	ppm	ASTM D5185m	1030	<b>1727</b>	1331	1255
Sulfur	ppm	ASTM D5185m		<b>3969</b>	3180	3125
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>18.6</b>	15.7	14.2
Base Number (BN)	mg KOH/g	ASTM D2896	7.17	<b>7.7</b>	9.2	8.6
Visc @ 100°C	cSt	ASTM D445	10.90	<b>11.8</b>	11.6	11.7

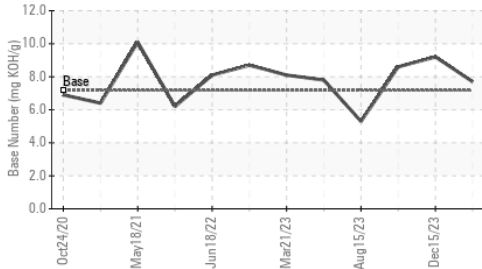
**FT-IR (Direct Trend)**



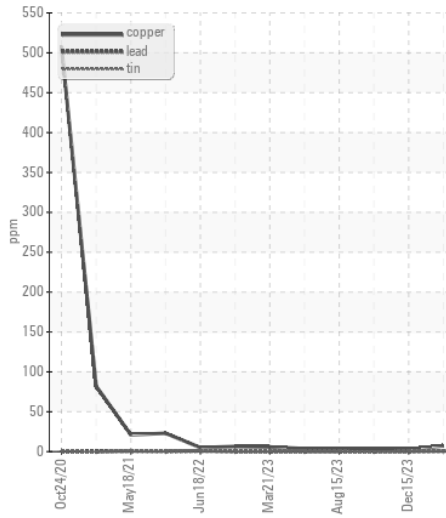
**Ferrous Alloys**



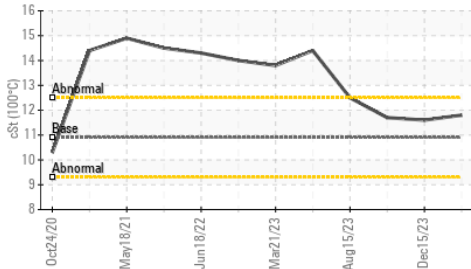
**Base Number**



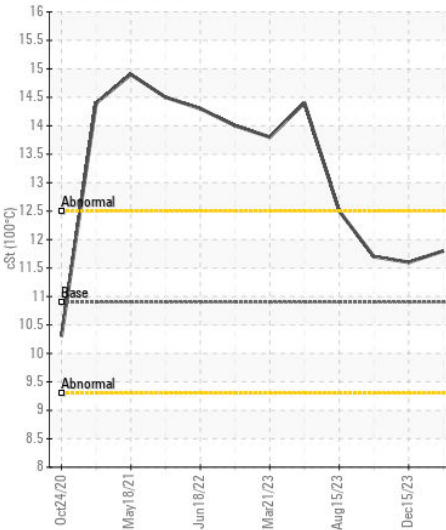
**Non-ferrous Metals**



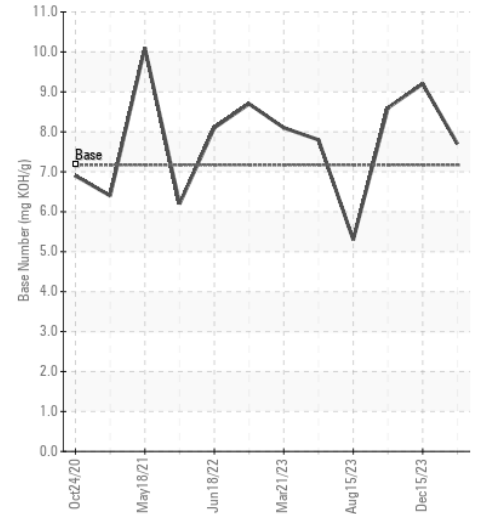
**Viscosity @ 100°C**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0916546  
**Lab Number** : 06191928  
**Unique Number** : 11048680  
**Test Package** : FLEET  
**Received** : 28 May 2024  
**Tested** : 29 May 2024  
**Diagnosed** : 30 May 2024 - Don Baldrige

**CARCO TRANSPORTATION**  
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 LITTLE ROCK, AR  
 US 72206  
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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)