

## Machine Id FREIGHTLINER 1476 Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 5W40 (--- QTS)

## RECOMMENDATION

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

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All component wear rates are normal.

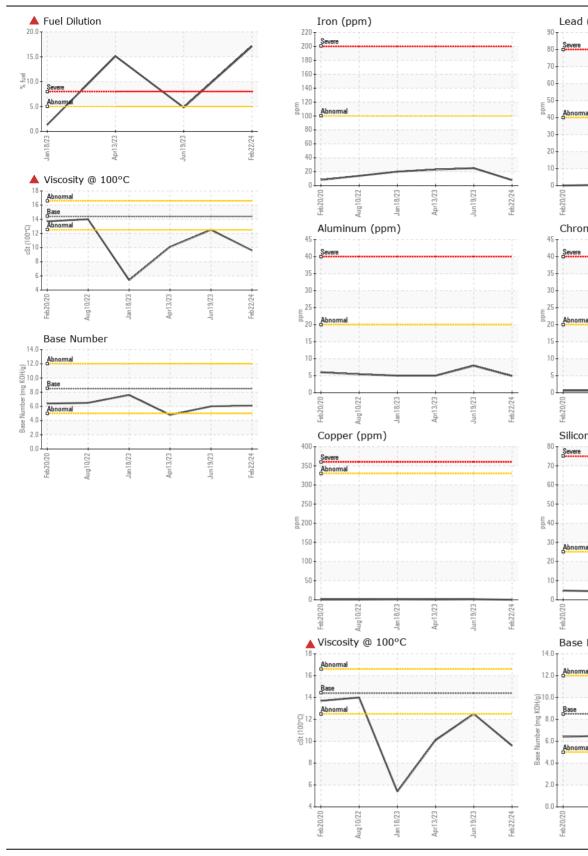
## CONTAMINATION

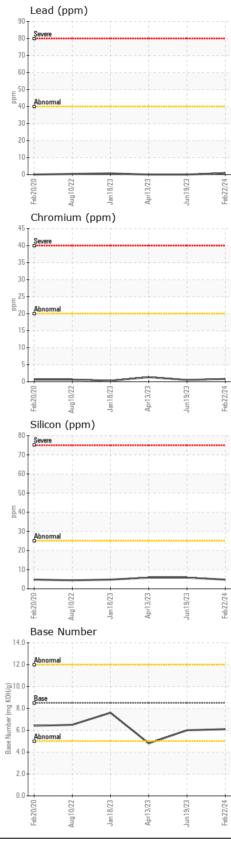
There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

## FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Sample Date Client Info 22 Feb 2024 19 Jun 2023 13 Apr 2023   Machine Age mls Client Info 229929 54387 220543   Oil Age mls Client Info 0 0 0   Filter Age mls Client Info 0 0 0   Oil Changed Client Info N/A Not Changd Not Changed					$\frown$		
Sample Date Client Info 22 Feb 2024 19 Jun 2023 13 Apr 2023   Machine Age mis Client Info 0 0 0   Oil Age mis Client Info 0 0 0   Oil Age mis Client Info N/A Not Change 0 0   Oil Changed Client Info N/A Not Change Not Change Not Change   Sample Status Client Info N/A Not Change Not Change   Sample Status Severe MAR(INAL Severe   Iron ppm ASTM D5185m >20 <1	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age mis Client Info 229929 54387 220543   Oil Age mis Client Info 0 0 0   Filter Age mis Client Info N/A Not Changed Not Change   Sample Status Client Info N/A Not Change Not Change Not Change   Iron ppm ASTM D5185m >100 8 25 23   Chromium ppm ASTM D5185m >20 <1 <1 1   Nickel ppm ASTM D5185m >20 <1 <1 0   Silver ppm ASTM D5185m >20 5 8 5   Lead ppm ASTM D5185m >20 5 8 5   Lead ppm ASTM D5185m >30 0 <1 1 0   Vanadium ppm ASTM D5185m >25 5 6 6 6   Potassium ppm ASTM D5185m >20 3 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>WC0906140</th> <th>WC0821381</th> <th>WC0806667</th>	Sample Number		Client Info		WC0906140	WC0821381	WC0806667
Oil Age mis Client Info O O O   Filter Age mis Client Info N/A Not Change Not Change   Oil Changed Client Info N/A Not Change Not Change   Sample Status Client Info N/A Not Change Not Change   Chromium ppm ASTM D5185m >100 8 25 23   Chromium ppm ASTM D5185m >24 0 0 <1   Nickel ppm ASTM D5185m >3 0 0 <1   Nickel ppm ASTM D5185m >3 0 0 0   Silver ppm ASTM D5185m >33 0 2 <1 0   Copper ppm ASTM D5185m >40 <1 0 0 <1 0   Vanadium ppm ASTM D5185m >20 3 8 3 3   Valedow Metal scalar 'Visual NONE NONE NONE NONE <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>22 Feb 2024</th> <th>19 Jun 2023</th> <th>13 Apr 2023</th>	Sample Date		Client Info		22 Feb 2024	19 Jun 2023	13 Apr 2023
Filter Age mis Client Info 0 0 0   Oil Changed Client Info N/A Not Changel Not Changel   Filter Changed Client Info N/A Not Changel Not Changel   Sample Status SEVERE MARGINAL SEVERE   Iron ppm ASTM D5185m >100 8 25 23   Chromium ppm ASTM D5185m >20 <1 <1 1   Nickel ppm ASTM D5185m >3 0 0 <1 0   Silver ppm ASTM D5185m >3 0 0 <1 0   Copper ppm ASTM D5185m >40 <1 0 0 <1   Vanadium ppm ASTM D5185m >40 <1 0 0 <1   Vanadium ppm ASTM D5185m >25 5 6 6 6   Vellow Metal scalar 'Visual NONE NONE NO	Machine Age	mls	Client Info		229929	54387	220543
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Filter Changed Sample StatusClient InfoN/ANot ChangelNot ChangelNot ChangelIronppmASTM D5185m>10082523IronppmASTM D5185m>20<1<11NickelppmASTM D5185m>20<1<11NickelppmASTM D5185m>300<10SilverppmASTM D5185m>30000AluminumppmASTM D5185m>3002<11LeadppmASTM D5185m>40<1000CopperppmASTM D5185m>1500<10VanadiumppmASTM D5185m>1500<10Vellow Metalscalar*VisualNONENONENONENONENONEVellow Metalscalar*VisualNONENONENONENONENONESiliconppmASTM D5185m>203833Fuel%ASTM D5185m>2038315.1WaterWC Method>0.2NEGNEGNEGNEGSiliconppmASTM D5185m>2010.411.312.4SuffationAbs/.tmm'ASTM D5185m2010.411.312.4SuffationAbs/.tmm'ASTM D5185m3019.521.626.4Silitscalar'	Filter Age	mls	Client Info		0	0	0
Sample Status SEVERE MARGINAL SEVERE   Iron ppm ASTM D5185m >100 8 225 23   Chromium ppm ASTM D5185m >20 <1 <1 1   Nickel ppm ASTM D5185m >20 <1 <1 1   Nickel ppm ASTM D5185m >30 0 <1 0   Silver ppm ASTM D5185m >30 0 <1 0   Lead ppm ASTM D5185m >30 0 2 <1   Tin ppm ASTM D5185m >15 0 0 <1   Vanadium ppm ASTM D5185m >15 0 0 <1   Vanadium ppm ASTM D5185m >25 5 6 6   Potassium ppm ASTM D5185m >20 3 8 3   Fuel % ASTM D5185m >20 3 8 3   Fuel <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th>Not Changd</th> <th>Not Chango</th>	Oil Changed		Client Info		N/A	Not Changd	Not Chango
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Titanium ppm ASTM D5185m O <1		ppm					
Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 5 8 5   Lead ppm ASTM D5185m >40 <1 0 0   Copper ppm ASTM D5185m >40 <1 0 0 <1   Vanadium ppm ASTM D5185m >15 0 0 <1 0   Vanadium ppm ASTM D5185m >15 0 0 <1 0   White Metal scalar "Visual NONE NONE NONE NONE   Silicon ppm ASTM D5185m<>25 5 6 6 9   Vellow Metal scalar "Visual NONE NONE NONE NONE   Sulicon ppm ASTM D5185m<>25 5 6 6 9   Sulicon MC Method >0.2 NEG NEG NEG NEG   Soot % %		ppm		>4		0	
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Lead ppm ASTM D5185m >40 <1					-	-	
Copper ppm ASTM D5185m >330 0 2 <1		ppm			-		
Tin ppm ASTM D5185m >15 0 0 <1		ppm				-	
Vanadium ppm ASTM D5185m  <1		ppm			-		
White Metal scalar *Visual NONE NONE NONE NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE   Silicon ppm ASTM D5185m<>25 5 6 6   Potassium ppm ASTM D5185m<>20 3 8 3   Fuel % ASTM D5185m >20 3 8 3   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method >0.2 NEG NEG NEG   Soot % % *ASTM D7844 >3 0.6 0.6 0.9   Nitration Abs/cm< *ASTM D7624 >20 10.4 11.3 12.4   Sulfation Abs/cm< *ASTM D715 >30 19.5 21.6 26.4   Silt scalar *Visual NONE NONE NONE NONE   Debris scalar *Visual NORE NORE NORE		ppm		>15	-	-	
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Boron ppm ASTM D5185m 250 25 28 21   Barium ppm ASTM D5185m 10 0 0 2   Molybdenum ppm ASTM D5185m 100 69 87 74   Manganese ppm ASTM D5185m 100 69 87 74   Magnesium ppm ASTM D5185m 450 111 69 34   Calcium ppm ASTM D5185m 3000 1824 2244 1897   Phosphorus ppm ASTM D5185m 1150 890 955 864   Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm<*ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8							
Barium ppm ASTM D5185m 10 0 0 2   Molybdenum ppm ASTM D5185m 100 69 87 74   Manganese ppm ASTM D5185m 100 69 87 74   Magnesium ppm ASTM D5185m 450 111 69 34   Calcium ppm ASTM D5185m 3000 1824 2244 1897   Phosphorus ppm ASTM D5185m 1150 890 955 864   Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm<*ASTM D7414	Sodium	ppm	ASTM D5185m	>44	2	3	3
Molybdenum ppm ASTM D5185m 100 69 87 74   Manganese ppm ASTM D5185m 100 69 87 74   Magnesium ppm ASTM D5185m 450 111 69 34   Calcium ppm ASTM D5185m 3000 1824 2244 1897   Phosphorus ppm ASTM D5185m 1150 890 955 864   Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm<*ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Boron	ppm	ASTM D5185m	250	25	28	21
Manganese ppm ASTM D5185m <1		ppm	ASTM D5185m	10	0	0	2
Magnesium ppm ASTM D5185m 450 111 69 34   Calcium ppm ASTM D5185m 3000 1824 2244 1897   Phosphorus ppm ASTM D5185m 1150 890 955 864   Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm *ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Molybdenum	ppm	ASTM D5185m	100	69	87	74
Calcium ppm ASTM D5185m 3000 1824 2244 1897   Phosphorus ppm ASTM D5185m 1150 890 955 864   Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm *ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 890 955 864   Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm *ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Magnesium	ppm	ASTM D5185m	450	111	69	34
Zinc ppm ASTM D5185m 1350 1066 1154 1046   Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm *ASTM D714 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Calcium	ppm	ASTM D5185m	3000	1824	2244	1897
Sulfur ppm ASTM D5185m 4250 2919 4199 3100   Oxidation Abs/.1mm *ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Phosphorus	ppm	ASTM D5185m	1150	890	955	864
Oxidation Abs/.1mm *ASTM D7414 >25 16.2 17.9 24.5   Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Zinc	ppm	ASTM D5185m	1350	1066	1154	1046
Base Number (BN) mg KOH/g ASTM D2896 8.5 6.1 6.0 4.8	Sulfur	ppm	ASTM D5185m	4250	2919	4199	3100
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.2	17.9	24.5
Visc @ 100°C cSt ASTM D445 14.4 ↓ 9.6 / 12.5 ▲ 10.1	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	6.1	6.0	4.8
	Visc @ 100°C	cSt	ASTM D445	14.4	9.6	12.5	<b>1</b> 0.1





WAKE COUNTY PUBLIC SCHOOL SYSTEM Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : WC0906140 Received 1551 ROCK QUARRY ROAD : 26 Feb 2024 Lab Number : 06100795 : 29 Feb 2024 RALEIGH, NC Tested : 29 Feb 2024 - Wes Davis US 27610 Unique Number : 10899025 Diagnosed Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel, TBN) Contact: DEVIN WEBER Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. dweber@wcpss.net \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (919)856-8076 F: x: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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Contact/Location: DEVIN WEBER - WCPRAL