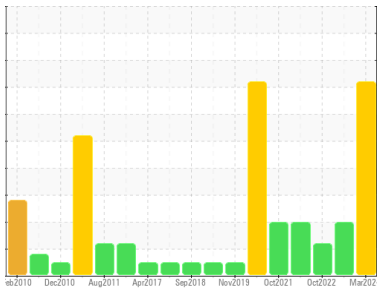
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
PIERCE M20901
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation
The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear
Aluminum ppm levels are severe. Piston wear is indicated.

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

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**DC0034124**	DC0028326	DC0022319
Sample Date		Client Info		**04 Mar 2024**	30 May 2023	17 Oct 2022
Machine Age	mls	Client Info		**77937**	73190	69950
Oil Age	mls	Client Info		**0**	0	0
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	ABNORMAL	ATTENTION

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**33**	36	15
Chromium	ppm	ASTM D5185m	>20	**4**	2	1
Nickel	ppm	ASTM D5185m	>4	**<1**	0	0
Titanium	ppm	ASTM D5185m		**2**	0	0
Silver	ppm	ASTM D5185m	>3	**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	▲ **54**	▲ 74	19
Lead	ppm	ASTM D5185m	>40	**<1**	0	<1
Copper	ppm	ASTM D5185m	>330	**3**	<1	2
Tin	ppm	ASTM D5185m	>15	**<1**	0	<1
Vanadium	ppm	ASTM D5185m		**<1**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	**4**	<1	0
Barium	ppm	ASTM D5185m	10	**0**	0	0
Molybdenum	ppm	ASTM D5185m	100	**3**	<1	2
Manganese	ppm	ASTM D5185m		**<1**	0	<1
Magnesium	ppm	ASTM D5185m	450	**39**	47	31
Calcium	ppm	ASTM D5185m	3000	**2310**	2510	2342
Phosphorus	ppm	ASTM D5185m	1150	**839**	999	841
Zinc	ppm	ASTM D5185m	1350	**993**	1254	983
Sulfur	ppm	ASTM D5185m	4250	**3882**	5160	4202

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**9**	6	5
Sodium	ppm	ASTM D5185m	>158	**3**	3	1
Potassium	ppm	ASTM D5185m	>20	**2**	2	0
Fuel	%	ASTM D3524	>5	▲ **5.6**	▲ 4.3	▲ 3.8

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.5**	0.4	0.4
Nitration	Abs/cm	*ASTM D7624	>20	**8.1**	7.8	8.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	**20.0**	18.9	19

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**10.6**	10.1	10
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**5.4**	6.5	7.5

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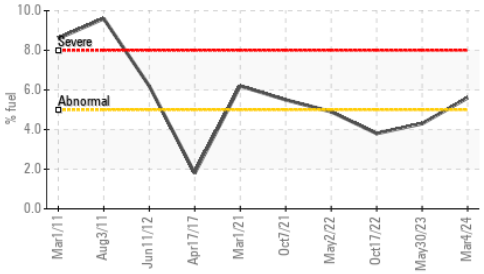
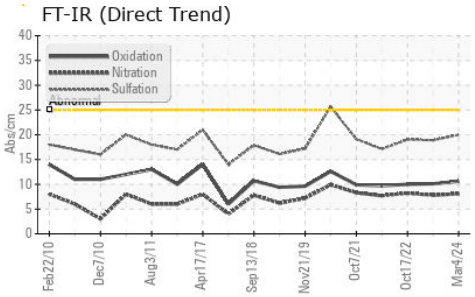
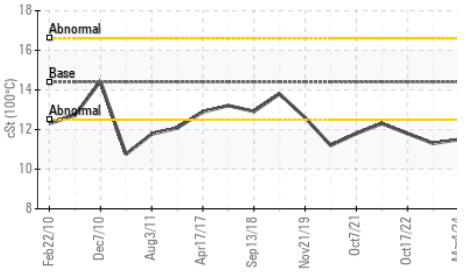
Fuel Dilution



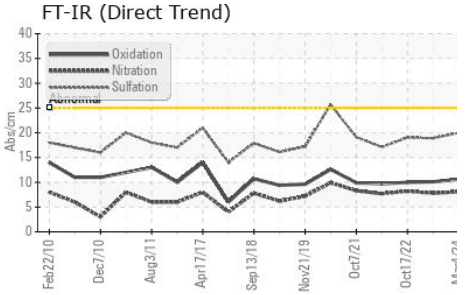
FT-IR (Direct Trend)



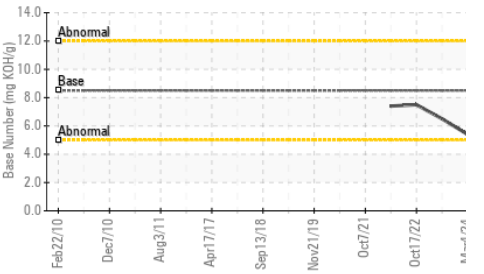
Viscosity @ 100°C



FT-IR (Direct Trend)



Base Number

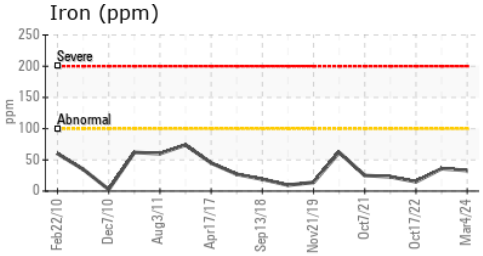


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

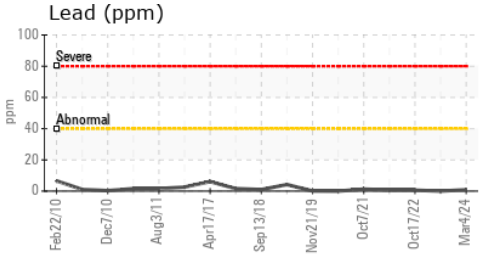
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	▲ **11.5**	▲ 11.3	● 11.8

GRAPHS

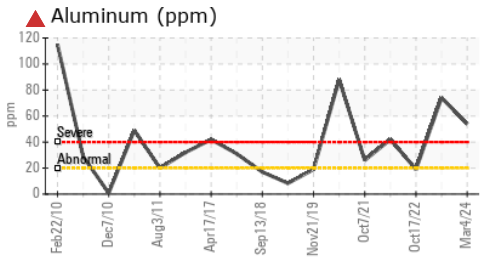
Iron (ppm)



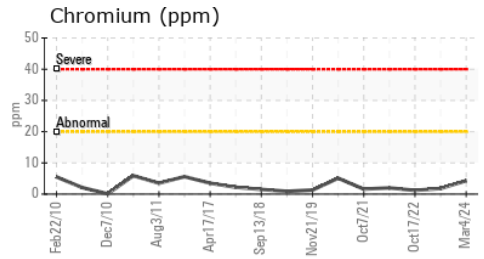
Lead (ppm)



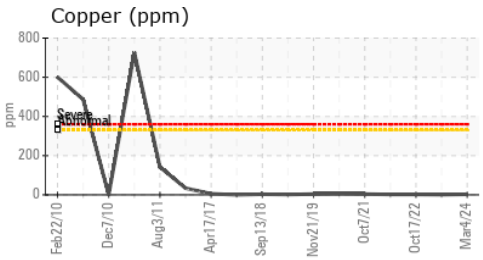
Aluminum (ppm)



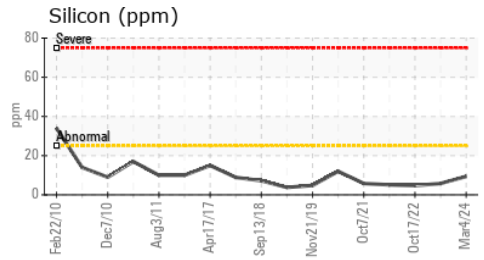
Chromium (ppm)



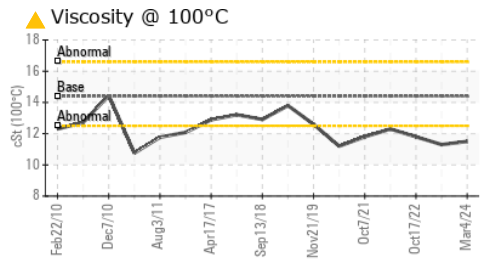
Copper (ppm)



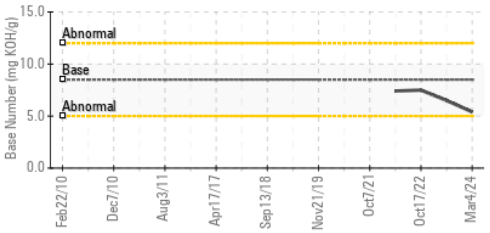
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : DC0034124 **Received** : 02 Apr 2024
Lab Number : 06136768 **Tested** : 08 Apr 2024
Unique Number : 10956233 **Diagnosed** : 08 Apr 2024 - Wes Davis
Test Package : MOB 1 (Additional Tests: FUELDILUTION, PercentFuel, TBN)

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)

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