



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



Machine Id  
**2009**  
Component  
**Diesel Engine**  
Fluid  
**SHELL ROTELLA T 15W40 (--- GAL)**

### RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>JR0195523</b>	JR0184903	JR0169874
Sample Date		Client Info		<b>06 Feb 2024</b>	13 Sep 2023	12 May 2023
Machine Age	hrs	Client Info		<b>12498</b>	11839	11170
Oil Age	hrs	Client Info		<b>3000</b>	500	2000
Filter Age	hrs	Client Info		<b>3000</b>	500	2000
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>MARGINAL</b>	ABNORMAL	ABNORMAL

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>200	<b>6</b>	5	5
Chromium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m		<b>0</b>	0	0
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>30	<b>2</b>	3	0
Lead	ppm	ASTM D5185m	>40	<b>&lt;1</b>	<1	0
Copper	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

### CONTAMINATION

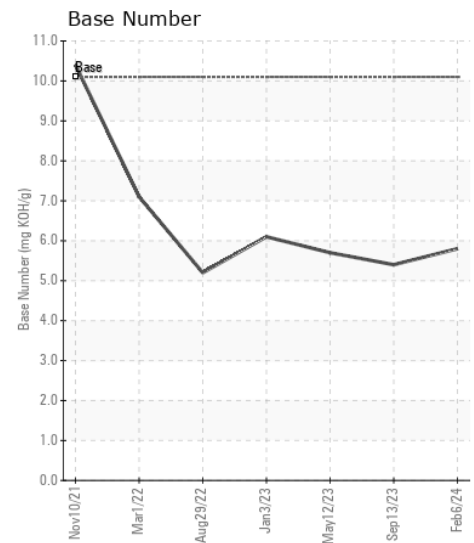
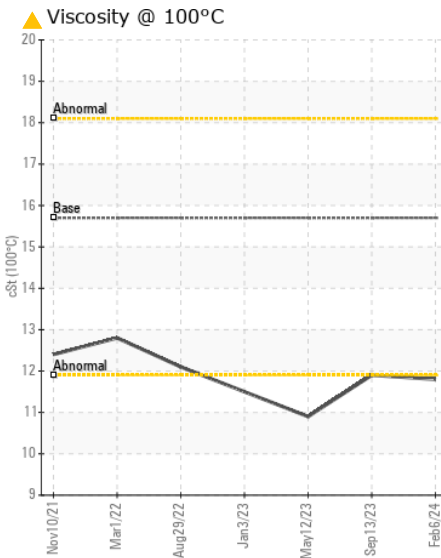
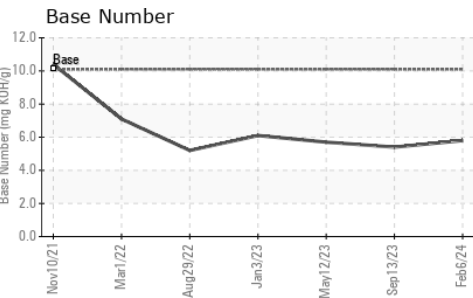
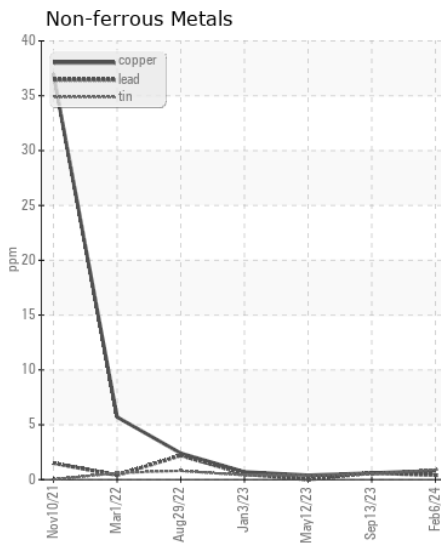
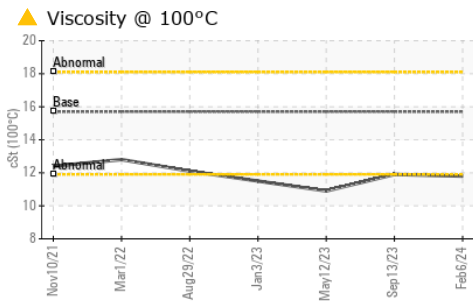
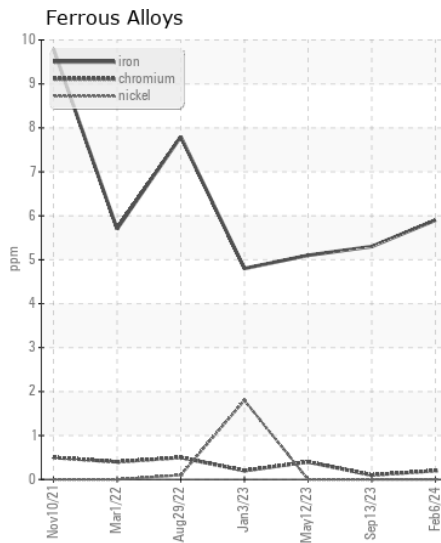
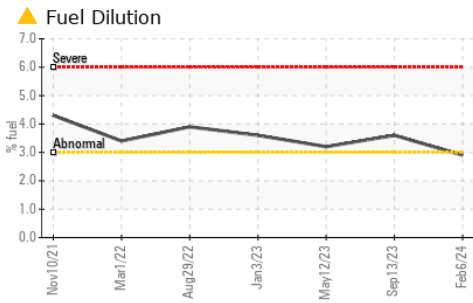
Light fuel dilution occurring.

Silicon	ppm	ASTM D5185m	>20	<b>5</b>	8	5
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	2	<1
Fuel	%	ASTM D3524	>3.0	<b>▲ 2.9</b>	▲ 3.6	▲ 3.2
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.2</b>	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>7.8</b>	7.9	8.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>19.4</b>	19.9	20.2
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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185m		<b>2</b>	<1	1
Boron	ppm	ASTM D5185m	316	<b>3</b>	2	2
Barium	ppm	ASTM D5185m	0.0	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	1.2	<b>4</b>	5	4
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Magnesium	ppm	ASTM D5185m	24	<b>70</b>	46	40
Calcium	ppm	ASTM D5185m	2292	<b>2063</b>	2199	2265
Phosphorus	ppm	ASTM D5185m	1064	<b>912</b>	842	898
Zinc	ppm	ASTM D5185m	1160	<b>1049</b>	1013	1061
Sulfur	ppm	ASTM D5185m	4996	<b>3667</b>	4057	4431
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>11.2</b>	11.9	12.1
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	<b>5.8</b>	5.4	5.7
Visc @ 100°C	cSt	ASTM D445	15.7	<b>▲ 11.8</b>	▲ 11.9	▲ 10.9



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : JR0195523 **Received** : 14 Feb 2024  
**Lab Number** : 06089412 **Tested** : 15 Feb 2024  
**Unique Number** : 10876857 **Diagnosed** : 16 Feb 2024 - Jonathan Hester  
**Test Package** : CONST ( Additional Tests: PercentFuel, TBN )

**PATRIOT DEVELOPMENT CORP**  
 27271 LADBROOK DRIVE STE 120  
 STERLING, VA  
 US 20166  
 Contact: ROBERT MOSS  
 robert.moss@patriotdev.net

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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F: