



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
WESTERN STAR 289

Component
Diesel Engine

Fluid
SHELL ROTELLA T 15W40 (45 LTR)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0426091	WC105200	WC952294
Sample Date		Client Info		20 Feb 2024	16 Mar 2018	13 Oct 2016
Machine Age	kms	Client Info		682456	0	483957
Oil Age	kms	Client Info		0	0	0
Filter Age	kms	Client Info		0	0	0
Oil Changed		Client Info		N/A	Changed	N/A
Filter Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	ATTENTION	SEVERE

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185(m)	>200	9	44	152
Chromium	ppm	ASTM D5185(m)	>6	<1	4	16
Nickel	ppm	ASTM D5185(m)	>3	<1	1	<1
Titanium	ppm	ASTM D5185(m)	>2	0	<1	<1
Silver	ppm	ASTM D5185(m)	>2	0	<1	0
Aluminum	ppm	ASTM D5185(m)	>50	3	6	19
Lead	ppm	ASTM D5185(m)	>10	0	5	6
Copper	ppm	ASTM D5185(m)	>50	2	173	209
Tin	ppm	ASTM D5185(m)	>6	0	2	<1
Vanadium	ppm	ASTM D5185(m)		0	<1	<1

CONTAMINATION

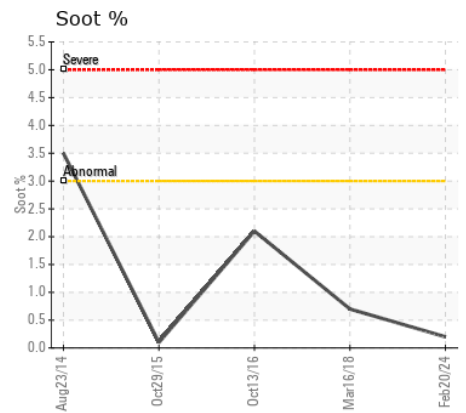
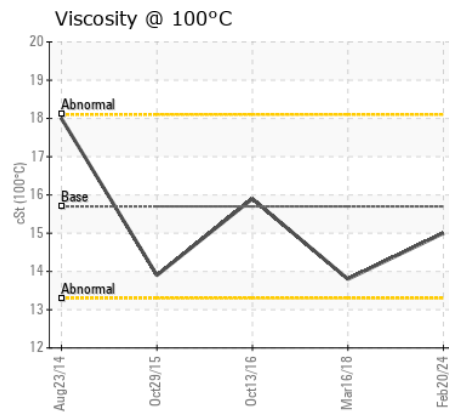
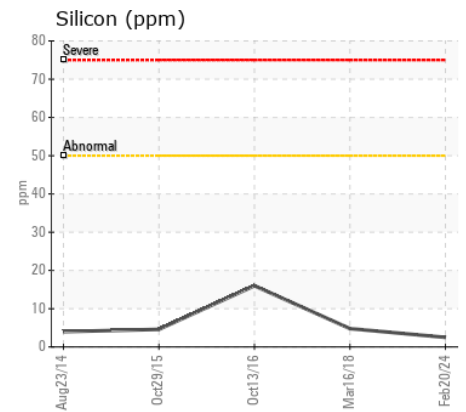
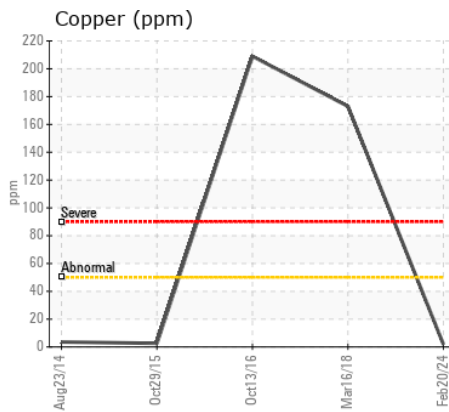
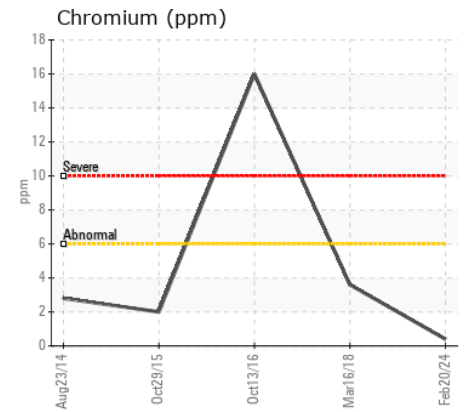
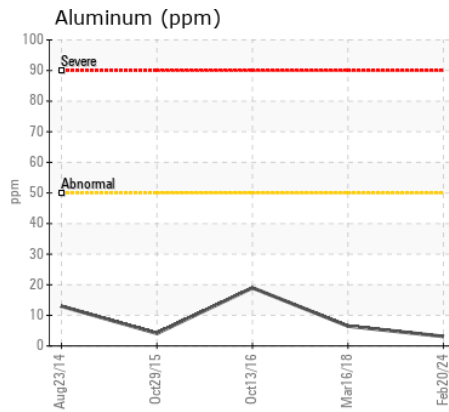
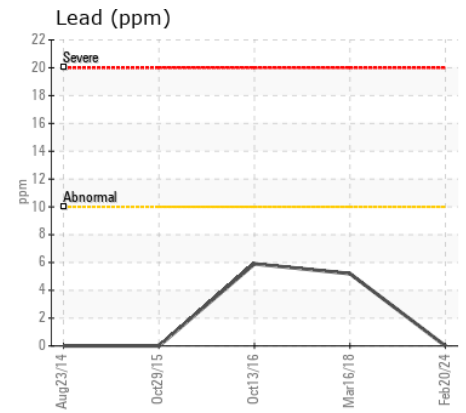
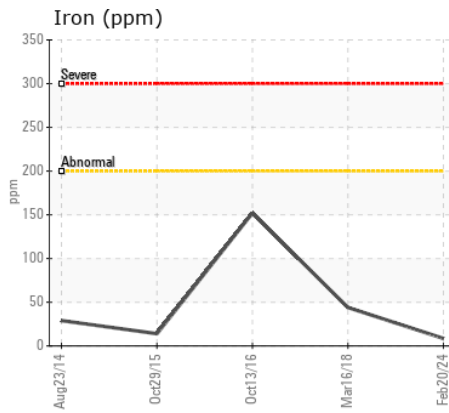
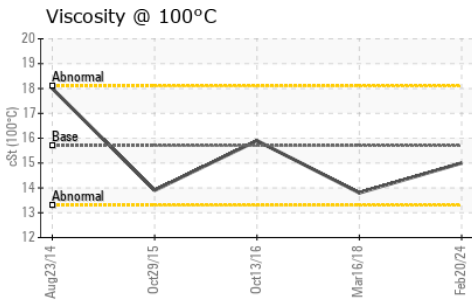
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185(m)	>50	2	5	16
Potassium	ppm	ASTM D5185(m)	>20	8	10	16
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	0.0	0.0
Soot %	%	ASTM D7844*	>3	0.2	0.7	2.1
Nitration	Abs/cm	ASTM D7624*	>20	9.3	10.6	11.3
Sulfation	Abs/.1mm	ASTM D7415*	>30	25.8	24.1	26.8
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG

FLUID CONDITION

The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185(m)		2	6	13
Boron	ppm	ASTM D5185(m)	35	47	21	13
Barium	ppm	ASTM D5185(m)	0	0	<1	<1
Molybdenum	ppm	ASTM D5185(m)	0	0	▲ 36	15
Manganese	ppm	ASTM D5185(m)	0	0	3	2
Magnesium	ppm	ASTM D5185(m)	10	17	▲ 452	11
Calcium	ppm	ASTM D5185(m)	2340	2367	1812	2490
Phosphorus	ppm	ASTM D5185(m)	1110	1014	▲ 718	920
Zinc	ppm	ASTM D5185(m)	1210	1211	▲ 888	1163
Sulfur	ppm	ASTM D5185(m)	3890	2969	▲ 1802	2513
Oxidation	Abs/.1mm	ASTM D7414*	>25	20.9	24.2	18.6
Visc @ 100°C	cSt	ASTM D7279(m)	15.7	15.0	13.8	15.9



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0426091
Lab Number : 02617618
Unique Number : 5734728
Test Package : MOB 1
Received : 23 Feb 2024
Tested : 23 Feb 2024
Diagnosed : 23 Feb 2024 - Wes Davis

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To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.