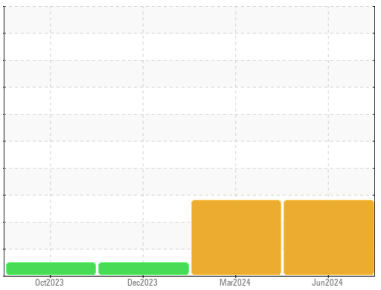
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
6323
Component
Diesel Engine
Fluid
RED GIANT LOCOMOTIVE EO 20W40 (--- GAL)

DIAGNOSIS

Recommendation
We advise that you check for possible coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
Sodium and/or potassium levels are high. Elemental level of silicon (Si) above normal indicating ingress of seal material.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PCA0092713**	PCA0092767	PCA0092709
Sample Date		Client Info		**24 Jun 2024**	25 Mar 2024	28 Dec 2023
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	ABNORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4	**<1.0**	<1.0	<1.0
Water		WC Method	>0.20	**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**25**	22	16
Chromium	ppm	ASTM D5185m	>15	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>5	**0**	0	0
Titanium	ppm	ASTM D5185m		**<1**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>10	**2**	2	2
Lead	ppm	ASTM D5185m	>75	**8**	7	6
Copper	ppm	ASTM D5185m	>90	**15**	11	10
Tin	ppm	ASTM D5185m	>30	**4**	2	3
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**79**	109	47
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**44**	54	42
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**14**	31	12
Calcium	ppm	ASTM D5185m		**3479**	3389	3390
Phosphorus	ppm	ASTM D5185m	0	**6**	22	5
Zinc	ppm	ASTM D5185m	0	**4**	22	0
Sulfur	ppm	ASTM D5185m	1900	**3313**	3422	2521

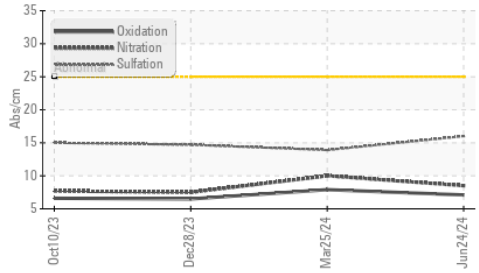
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>17	▲ **23**	▲ 27	7
Sodium	ppm	ASTM D5185m		▲ **249**	▲ 362	47
Potassium	ppm	ASTM D5185m	>20	**4**	3	<1
Glycol	%	*ASTM D2982		**NEG**	NEG	NEG

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.8**	0.8	0.7
Nitration	Abs/cm	*ASTM D7624	>20	**8.5**	10.0	7.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	**16.0**	13.9	14.7

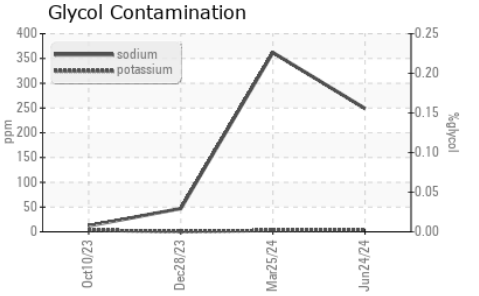
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**7.1**	7.9	6.5
Base Number (BN)	mg KOH/g	ASTM D2896	11	**10.39**	10.65	10.24

OIL ANALYSIS REPORT

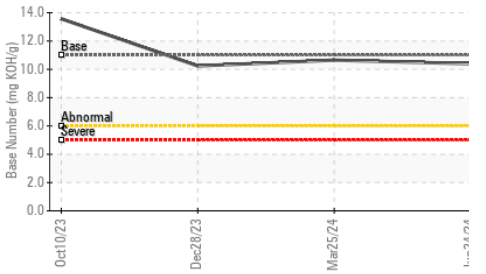
FT-IR (Direct Trend)



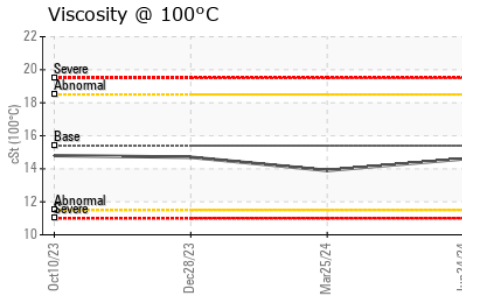
Glycol Contamination



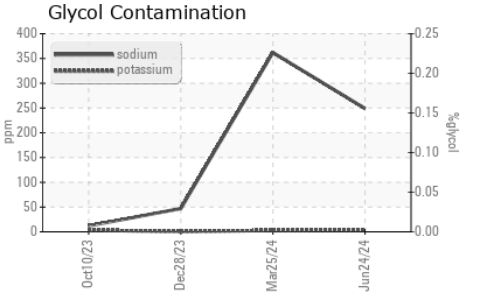
Base Number



Viscosity @ 100°C



Glycol Contamination

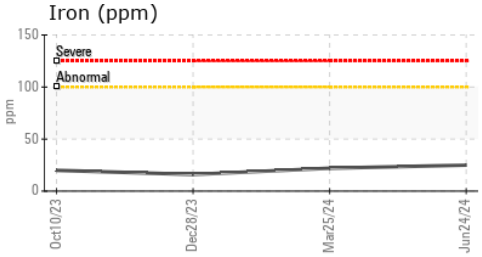


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.20	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

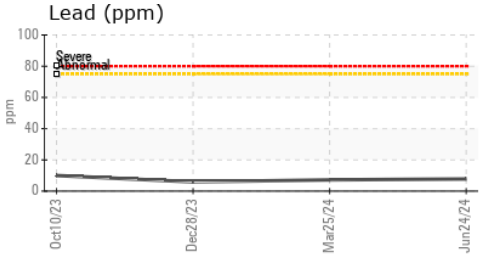
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**14.6**	13.9	14.7

GRAPHS

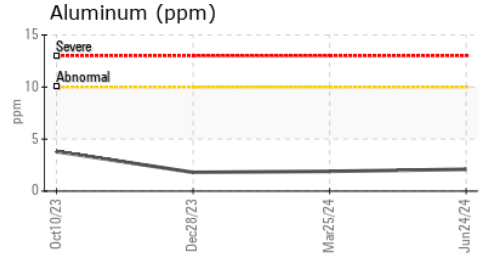
Iron (ppm)



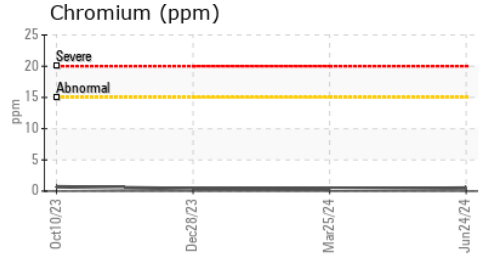
Lead (ppm)



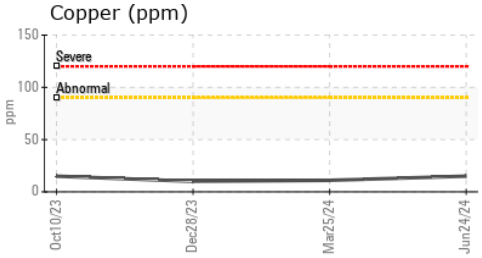
Aluminum (ppm)



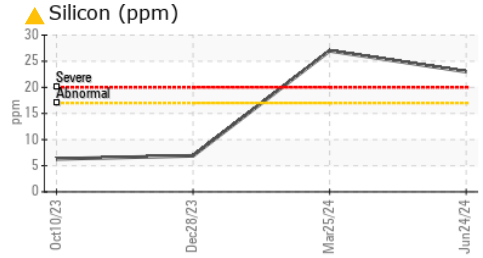
Chromium (ppm)



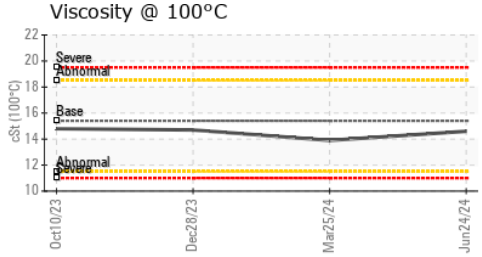
Copper (ppm)



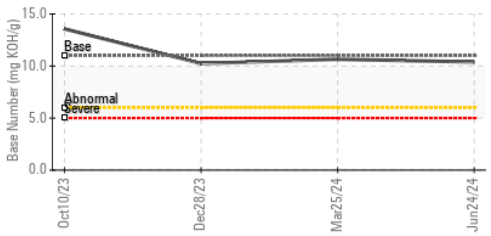
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0092713 **Received** : 16 Jul 2024
Lab Number : 06238011 **Tested** : 19 Jul 2024
Unique Number : 11126845 **Diagnosed** : 19 Jul 2024 - Jonathan Hester
Test Package : MOB 2 (Additional Tests: Glycol)

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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