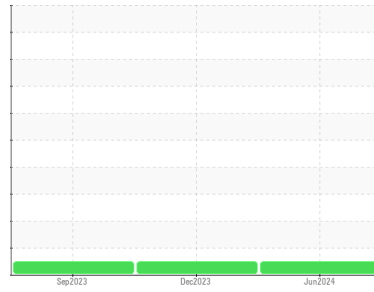


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
409
 Component
Diesel Engine
 Fluid
RED GIANT LOCOMOTIVE EO 20W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			PCA0092715	PCA0092700	PCA05995906
Sample Date	Client Info			20 Jun 2024	19 Dec 2023	25 Sep 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				NORMAL	NORMAL	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
Glycol	WC Method			NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	32	33	37
Chromium	ppm	ASTM D5185m	>15	2	1	2
Nickel	ppm	ASTM D5185m	>5	<1	0	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>10	6	4	6
Lead	ppm	ASTM D5185m	>75	6	6	7
Copper	ppm	ASTM D5185m	>90	19	18	24
Tin	ppm	ASTM D5185m	>30	8	9	10
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		<1	0	<1

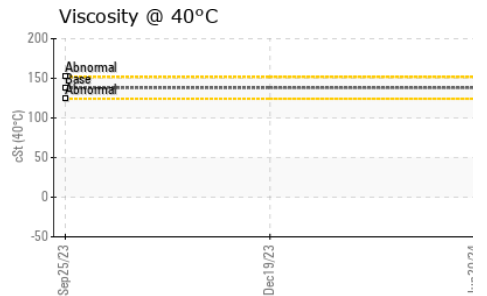
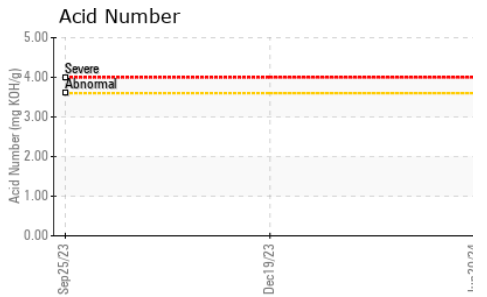
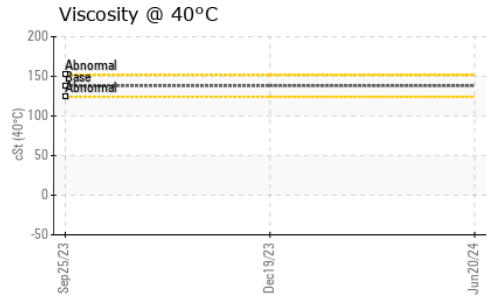
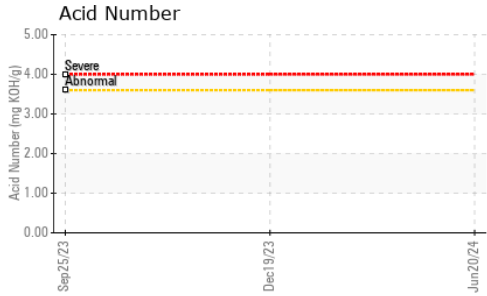
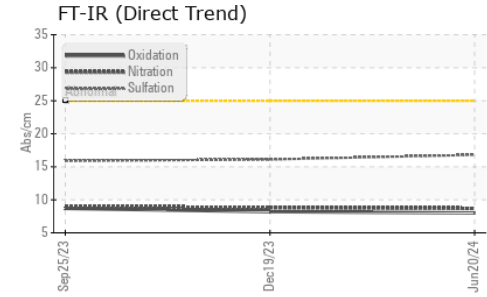
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		38	39	37
Barium	ppm	ASTM D5185m		0	0	<1
Molybdenum	ppm	ASTM D5185m		53	41	42
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		35	14	11
Calcium	ppm	ASTM D5185m		3286	3329	3285
Phosphorus	ppm	ASTM D5185m	0	41	8	7
Zinc	ppm	ASTM D5185m	0	30	0	0
Sulfur	ppm	ASTM D5185m	1900	3050	2839	3632

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>17	11	14	10
Sodium	ppm	ASTM D5185m		40	35	42
Potassium	ppm	ASTM D5185m	>20	3	0	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	0.9	0.8	0.8
Nitration	Abs/cm	*ASTM D7624	>20	8.7	8.8	9.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	16.8	16.1	15.9

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	8.0	8.2	8.7
Base Number (BN)	mg KOH/g	ASTM D2896	11	9.59	9.37	14.22

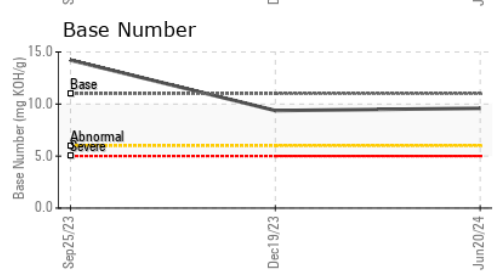
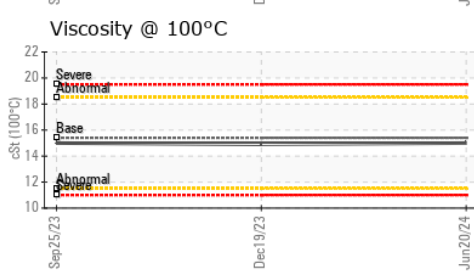
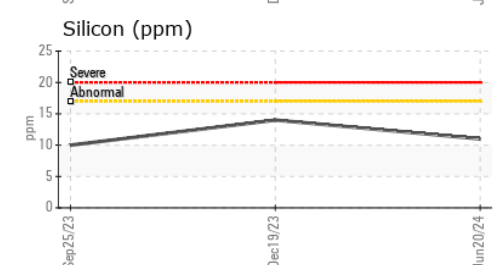
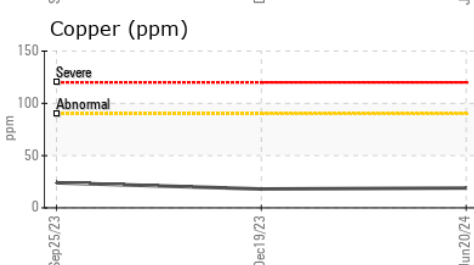
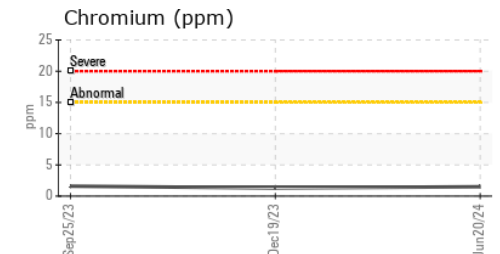
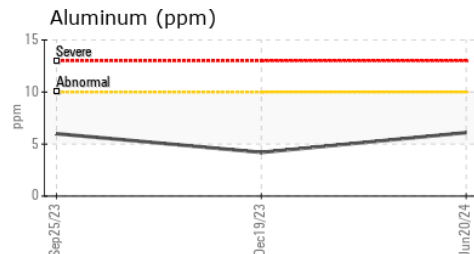
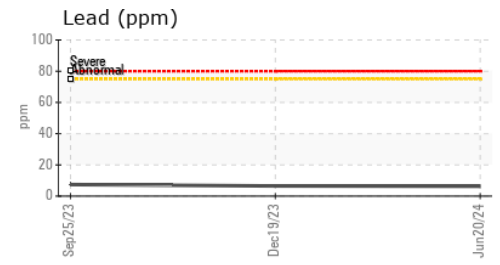
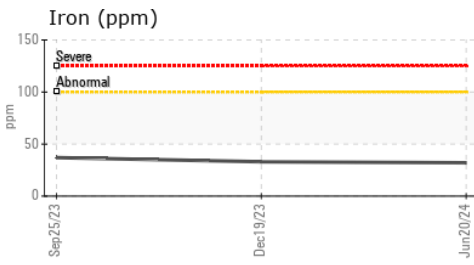
OIL ANALYSIS REPORT



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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	15.0	14.9

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0092715 **Received** : 01 Jul 2024
Lab Number : 06224683 **Tested** : 03 Jul 2024
Unique Number : 11102880 **Diagnosed** : 03 Jul 2024 - Angela Borella
Test Package : MOB 2 (Additional Tests: KV40, TAN Man)

U.S. SUGAR CORP
 1731 S W.C. OWEN AVENUE
 CLEWISTON, FL
 US 33440-3032
 Contact: MAT RUDD
 mrudd@ussugar.com

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)