



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
HANK S
Component
Main Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0064996	MW0057278	MW0035800
Sample Date		Client Info		12 Jun 2024	10 Jan 2024	26 Jul 2023
Machine Age	hrs	Client Info		13005	11191	9211
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	Not Changd	N/A
Filter Changed		Client Info		N/A	Not Changd	N/A
Sample Status				NORMAL	ABNORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	12	0	13
Chromium	ppm	ASTM D5185m	>8	1	<1	1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>3	8	14	16
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	<1	2	2
Lead	ppm	ASTM D5185m	>18	2	0	3
Copper	ppm	ASTM D5185m	>80	<1	0	<1
Tin	ppm	ASTM D5185m	>14	0	0	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

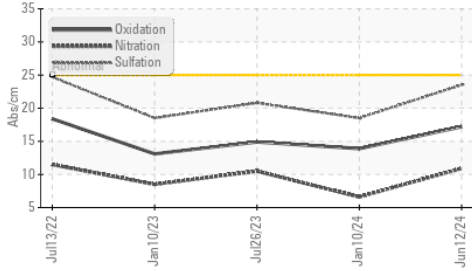
Silicon	ppm	ASTM D5185m	>20	4	5	4
Potassium	ppm	ASTM D5185m	>20	2	<1	8
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		1.4	0	1.1
Nitration	Abs/cm	*ASTM D7624	>20	10.9	6.6	10.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	23.5	18.5	20.8
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	>0.1	NEG	NEG	NEG

FLUID CONDITION

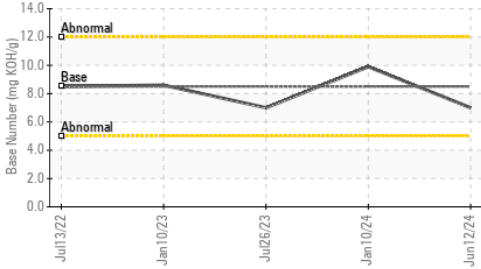
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>158	6	0	37
Boron	ppm	ASTM D5185m	250	87	111	38
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	35	24	38
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	450	665	749	683
Calcium	ppm	ASTM D5185m	3000	1532	1461	1529
Phosphorus	ppm	ASTM D5185m	1150	801	670	687
Zinc	ppm	ASTM D5185m	1350	897	789	809
Sulfur	ppm	ASTM D5185m	4250	3355	3604	2906
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.2	13.9	14.9
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	7.0	9.9	7.0
Visc @ 100°C	cSt	ASTM D445	14.4	13.9	▲ 18.53	13.5

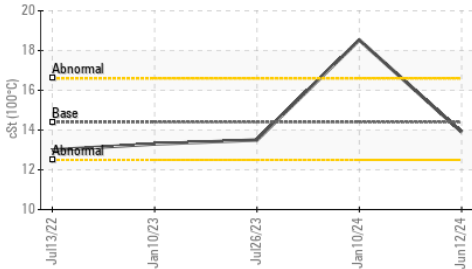
FT-IR (Direct Trend)



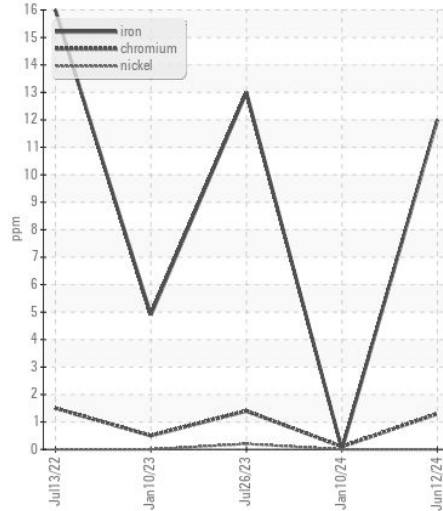
Base Number



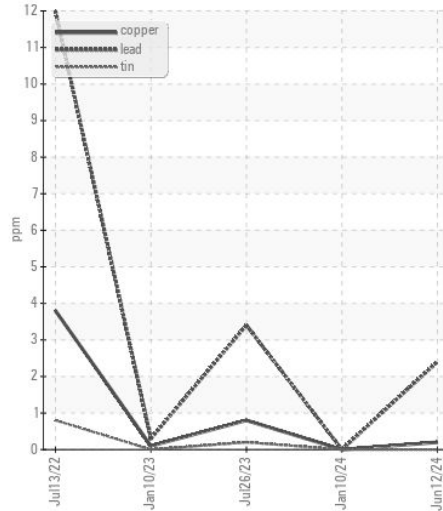
Viscosity @ 100°C



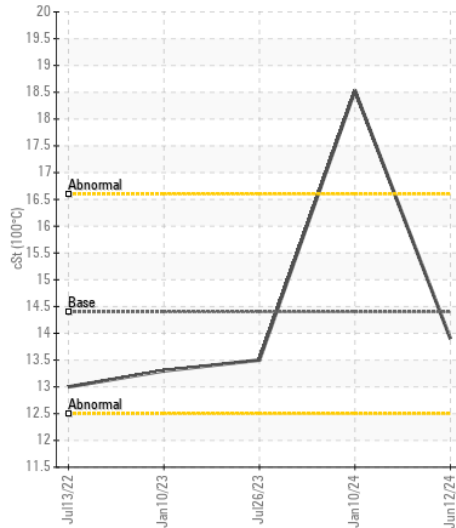
Ferrous Alloys



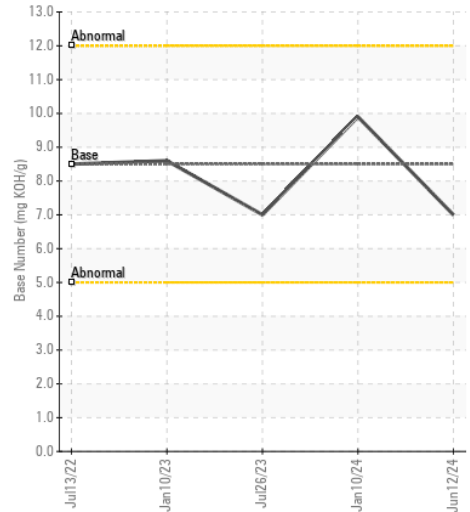
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : MW0064996
 Lab Number : 06235479
 Unique Number : 11124313
 Test Package : MAR 2

Received : 15 Jul 2024
 Tested : 15 Jul 2024
 Diagnosed : 15 Jul 2024 - Wes Davis

AMERICAN RIVER TRANSPORTATION CO.
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 ST. LOUIS, MO
 US 63111
 Contact: BRIAN GRIEWING
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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)