



OIL ANALYSIS REPORT

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

Area  
**TPR-Houston Port**  
 Machine Id  
**481142 LIEBHERR LH60 112360**  
 Component  
**Diesel Engine**  
 Fluid  
**DIESEL ENGINE OIL 10W40 (--- GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>DJJ0023370</b>	DJJ0023390	DJJ0018824
Sample Date		Client Info		<b>14 Jun 2024</b>	20 Mar 2024	19 Jan 2024
Machine Age	hrs	Client Info		<b>13308</b>	12756	12112
Oil Age	hrs	Client Info		<b>150</b>	250	0
Filter Age	hrs	Client Info		<b>150</b>	0	0
Oil Changed		Client Info		<b>Changed</b>	Changed	N/A
Filter Changed		Client Info		<b>Changed</b>	Changed	N/A
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>4</b>	5	0
Chromium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>4	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>3	<b>0</b>	<1	0
Aluminum	ppm	ASTM D5185m	>20	<b>2</b>	2	1
Lead	ppm	ASTM D5185m	>40	<b>&lt;1</b>	<1	1
Copper	ppm	ASTM D5185m	>330	<b>&lt;1</b>	<1	0
Tin	ppm	ASTM D5185m	>15	<b>0</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

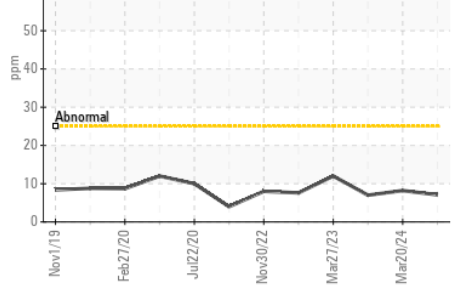
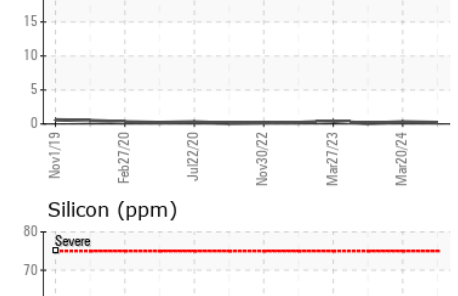
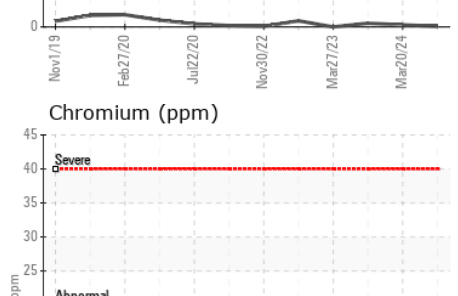
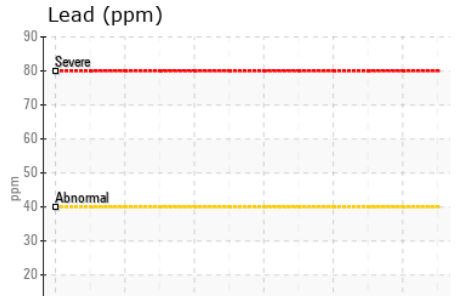
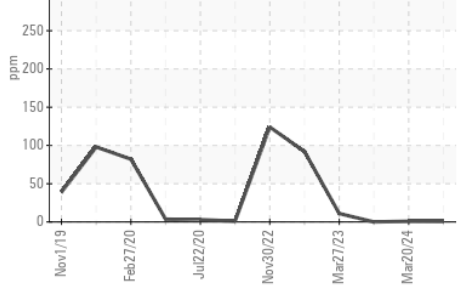
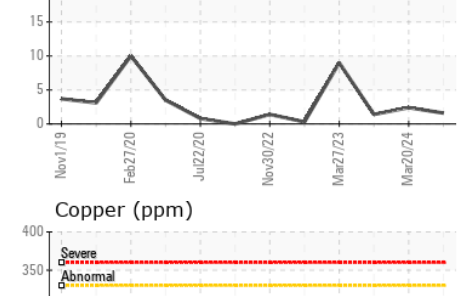
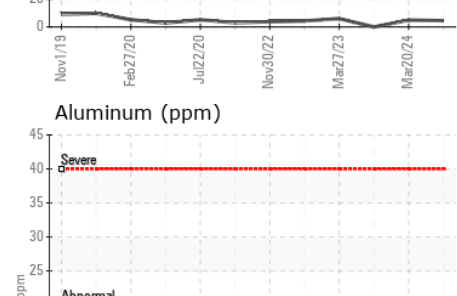
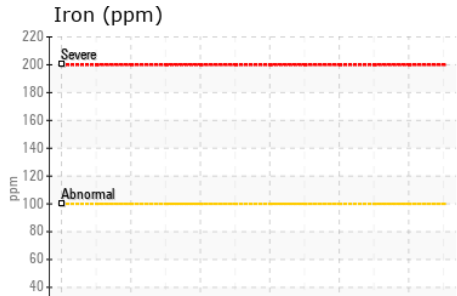
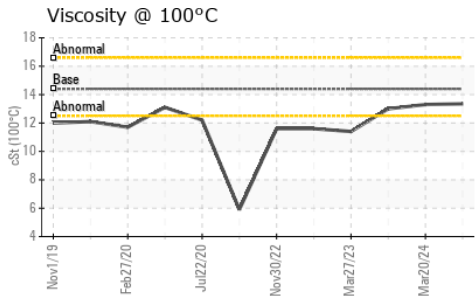
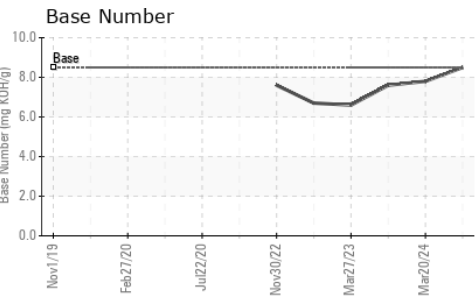
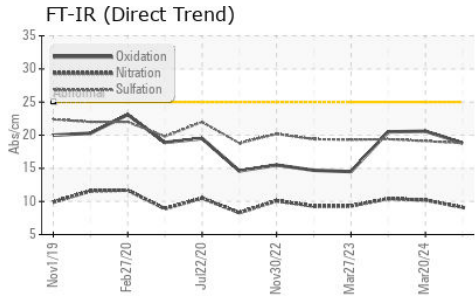
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	<b>7</b>	8	7
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	4	3
Fuel		WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.1</b>	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.1</b>	10.2	10.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>18.8</b>	19.1	19.4
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 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		<b>2</b>	2	2
Boron	ppm	ASTM D5185m	250	<b>129</b>	109	96
Barium	ppm	ASTM D5185m	10	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	100	<b>0</b>	3	<1
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	450	<b>831</b>	808	908
Calcium	ppm	ASTM D5185m	3000	<b>1418</b>	1365	1477
Phosphorus	ppm	ASTM D5185m	1150	<b>831</b>	821	933
Zinc	ppm	ASTM D5185m	1350	<b>951</b>	938	1032
Sulfur	ppm	ASTM D5185m	4250	<b>4562</b>	4074	4530
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>18.8</b>	20.6	20.5
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	<b>8.5</b>	7.8	7.6
Visc @ 100°C	cSt	ASTM D445	14.4	<b>13.35</b>	13.3	13.0



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : DJJ0023370 **Received** : 02 Jul 2024  
**Lab Number** : 06225906 **Tested** : 08 Jul 2024  
**Unique Number** : 11109399 **Diagnosed** : 09 Jul 2024 - Jonathan Hester  
**Test Package** : MOBCE ( Additional Tests: TBN )

**TEXAS PORT RECYCLING - HOUSTON PORT**  
 8945 MANCHESTER ST  
 HOUSTON, TX  
 US 77012  
 Contact: Dale Shaw  
 dale.shaw@tmrecycling.com  
 T:  
 F: (713)921-5545

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)