



WEAR  
CONTAMINATION  
FLUID CONDITION

**SEVERE**

**NORMAL**

**NORMAL**

Machine Id  
**HYUNDAI L-1**

Component  
**Front Differential**

Fluid  
**GEAR OIL SAE 80W90 (15 GAL)**

### RECOMMENDATION

The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

### WEAR

Copper and iron and tin ppm levels are severe. Chromium ppm levels are abnormal. Gear wear is indicated. Thrust washer and/or bearing/bushing wear is indicated.

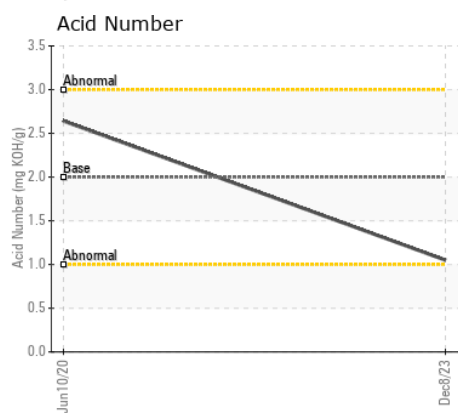
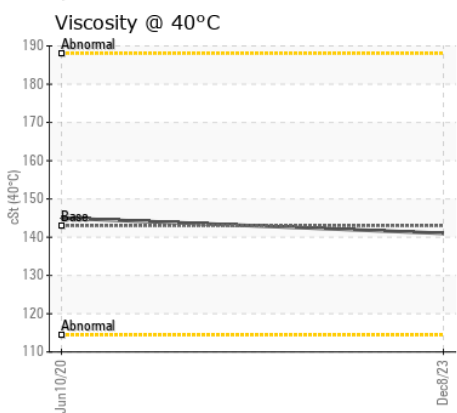
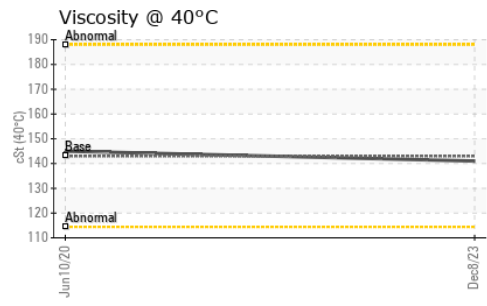
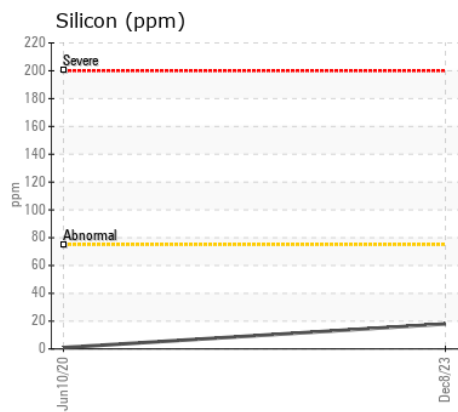
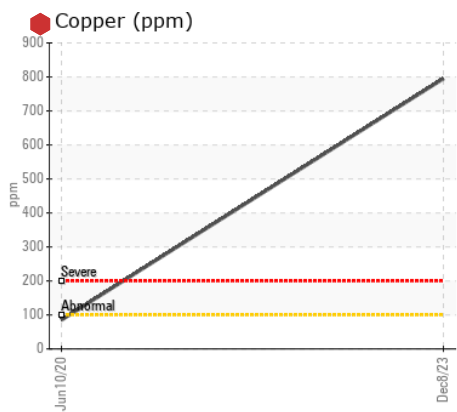
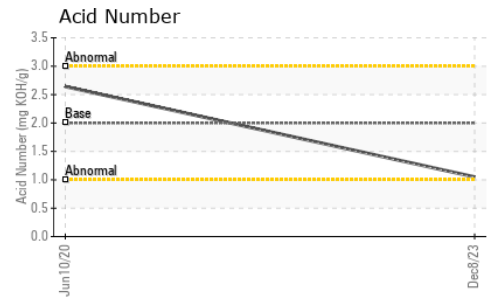
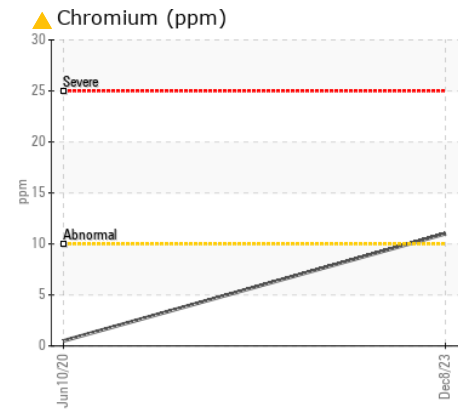
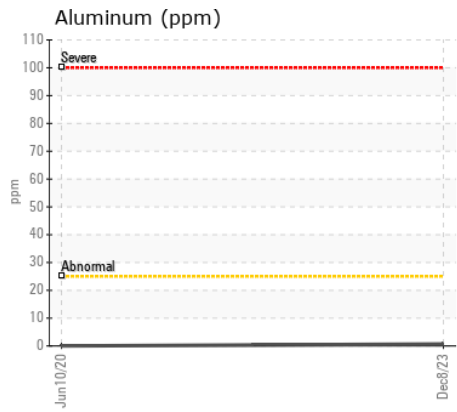
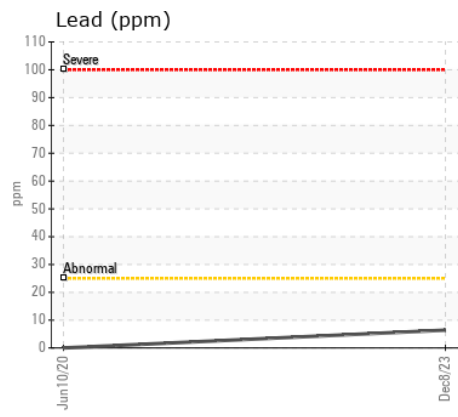
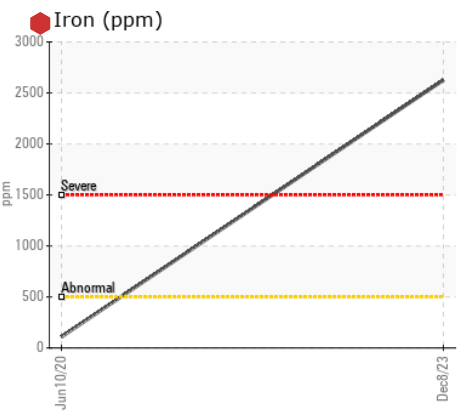
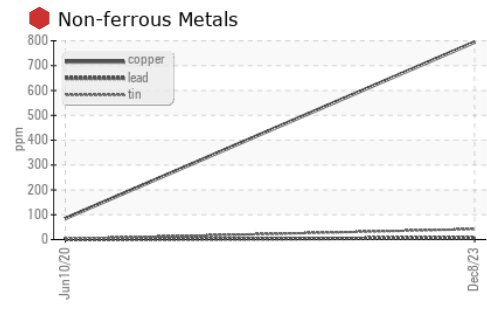
### CONTAMINATION

There is no indication of any contamination in the oil.

### FLUID CONDITION

The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>LP0001370</b>	WCDB5042	---
Sample Date		Client Info		<b>08 Dec 2023</b>	10 Jun 2020	---
Machine Age	hrs	Client Info		<b>3050</b>	8606	---
Oil Age	hrs	Client Info		<b>1000</b>	0	---
Filter Age	hrs	Client Info		<b>1000</b>	0	---
Oil Changed		Client Info		<b>Changed</b>	Changed	---
Filter Changed		Client Info		<b>Changed</b>	N/A	---
Sample Status				<b>SEVERE</b>	NORMAL	---
Iron	ppm	ASTM D5185m	>500	<b>2626</b>	109	---
Chromium	ppm	ASTM D5185m	>10	<b>11</b>	<1	---
Nickel	ppm	ASTM D5185m	>10	<b>2</b>	<1	---
Titanium	ppm	ASTM D5185m		<b>0</b>	0	---
Silver	ppm	ASTM D5185m		<b>0</b>	0	---
Aluminum	ppm	ASTM D5185m	>25	<b>&lt;1</b>	0	---
Lead	ppm	ASTM D5185m	>25	<b>6</b>	0	---
Copper	ppm	ASTM D5185m	>100	<b>795</b>	85	---
Tin	ppm	ASTM D5185m	>10	<b>42</b>	3	---
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	---
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Silicon	ppm	ASTM D5185m	>75	<b>18</b>	1	---
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	0	---
Water		WC Method	>.2	<b>NEG</b>	NEG	---
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	---
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	---
Emulsified Water	scalar	*Visual	>.2	<b>NEG</b>	NEG	---
Sodium	ppm	ASTM D5185m	>170	<b>2</b>	<1	---
Boron	ppm	ASTM D5185m	400	<b>10</b>	50	---
Barium	ppm	ASTM D5185m	200	<b>0</b>	0	---
Molybdenum	ppm	ASTM D5185m	12	<b>6</b>	0	---
Manganese	ppm	ASTM D5185m		<b>26</b>	1	---
Magnesium	ppm	ASTM D5185m	12	<b>0</b>	2	---
Calcium	ppm	ASTM D5185m	150	<b>219</b>	16	---
Phosphorus	ppm	ASTM D5185m	1650	<b>590</b>	677	---
Zinc	ppm	ASTM D5185m	125	<b>188</b>	29	---
Sulfur	ppm	ASTM D5185m	22500	<b>31792</b>	19098	---
Acid Number (AN)	mg KOH/g	ASTM D8045	2.00	<b>1.05</b>	2.642	---
Visc @ 40°C	cSt	ASTM D445	143	<b>141</b>	145	---



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : LP0001370 **Received** : 26 Dec 2023  
**Lab Number** : 06045648 **Tested** : 28 Dec 2023  
**Unique Number** : 10806256 **Diagnosed** : 28 Dec 2023 - Angela Borella  
**Test Package** : MOB 2

**S.M. LORUSSO & SONS**  
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 merwin@smlorusso.com  
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Certificate L2367  
 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)