



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

Machine Id  
**HITACHI 470LC HCMJAG60J00061632**

Component  
**Diesel Engine**

Fluid  
**DIESEL ENGINE OIL SAE 40 (--- GAL)**

### RECOMMENDATION

Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>JR0198393</b>   | JR0188765   | JR0171644   |
| Sample Date    |     | Client Info |           | <b>11 Jan 2024</b> | 02 Oct 2023 | 12 Jun 2023 |
| Machine Age    | hrs | Client Info |           | <b>2491</b>        | 2491        | 1976        |
| Oil Age        | hrs | Client Info |           | <b>2491</b>        | 515         | 500         |
| Filter Age     | hrs | Client Info |           | <b>0</b>           | 0           | 500         |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | Changed     | Changed     |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | Changed     | Changed     |
| Sample Status  |     |             |           | <b>NORMAL</b>      | NORMAL      | NORMAL      |

### WEAR

All component wear rates are normal.

|              |        |             |      |              |      |      |
|--------------|--------|-------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185m | >100 | <b>14</b>    | 15   | 6    |
| Chromium     | ppm    | ASTM D5185m | >20  | <b>&lt;1</b> | <1   | <1   |
| Nickel       | ppm    | ASTM D5185m | >4   | <b>0</b>     | 0    | <1   |
| Titanium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | 0    | 0    |
| Silver       | ppm    | ASTM D5185m | >3   | <b>0</b>     | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185m | >20  | <b>5</b>     | 3    | 3    |
| Lead         | ppm    | ASTM D5185m | >40  | <b>&lt;1</b> | 1    | 0    |
| Copper       | ppm    | ASTM D5185m | >330 | <b>5</b>     | 3    | 1    |
| Tin          | ppm    | ASTM D5185m | >15  | <b>&lt;1</b> | <1   | <1   |
| Vanadium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | <1   | <1   |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

### CONTAMINATION

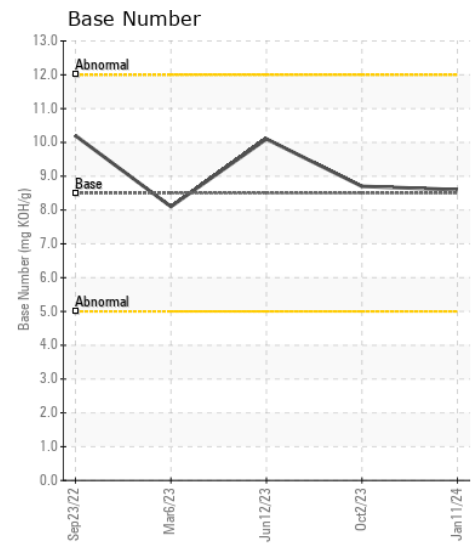
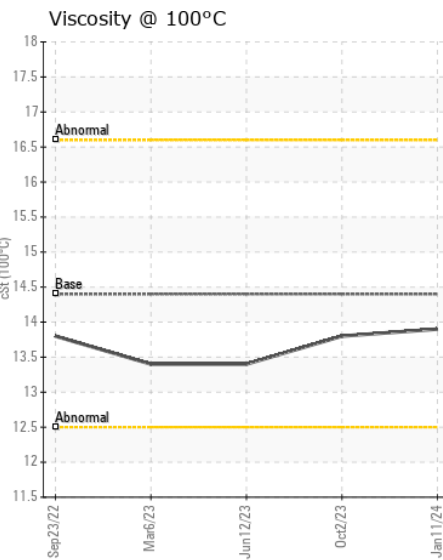
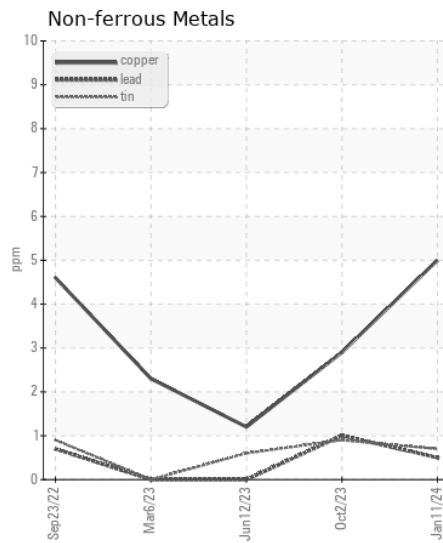
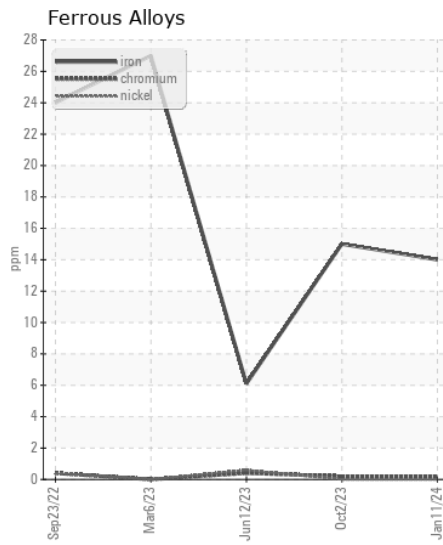
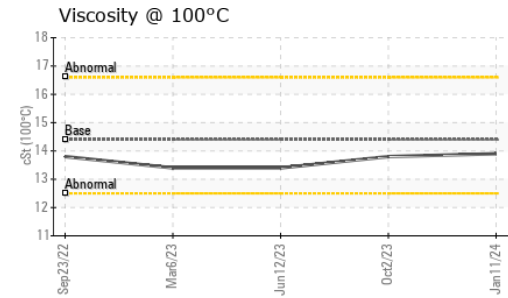
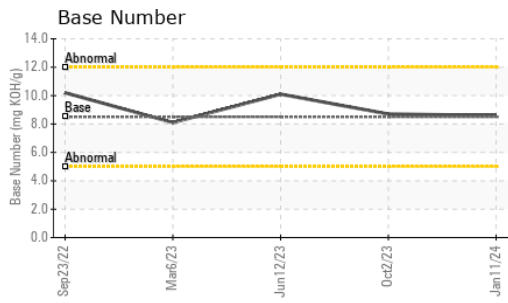
There is no indication of any contamination in the oil.

|                  |          |             |       |                |       |       |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon          | ppm      | ASTM D5185m | >25   | <b>11</b>      | 10    | 5     |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>&lt;1</b>   | 3     | 2     |
| 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>0.3</b>     | 0.4   | 0.1   |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>9.2</b>     | 8.4   | 5.5   |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>23.1</b>    | 22.0  | 19.2  |
| 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 | >216 | <b>1</b>     | 3    | <1   |
| Boron            | ppm      | ASTM D5185m | 250  | <b>195</b>   | 134  | 31   |
| Barium           | ppm      | ASTM D5185m | 10   | <b>0</b>     | 0    | 0    |
| Molybdenum       | ppm      | ASTM D5185m | 100  | <b>261</b>   | 184  | 80   |
| Manganese        | ppm      | ASTM D5185m |      | <b>&lt;1</b> | <1   | <1   |
| Magnesium        | ppm      | ASTM D5185m | 450  | <b>912</b>   | 783  | 989  |
| Calcium          | ppm      | ASTM D5185m | 3000 | <b>1632</b>  | 1857 | 1126 |
| Phosphorus       | ppm      | ASTM D5185m | 1150 | <b>945</b>   | 1060 | 1054 |
| Zinc             | ppm      | ASTM D5185m | 1350 | <b>1241</b>  | 1358 | 1326 |
| Sulfur           | ppm      | ASTM D5185m | 4250 | <b>3053</b>  | 3198 | 3996 |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | <b>18.0</b>  | 16.9 | 14.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 8.5  | <b>8.6</b>   | 8.7  | 10.1 |
| Visc @ 100°C     | cSt      | ASTM D445   | 14.4 | <b>13.9</b>  | 13.8 | 13.4 |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : JR0198393 **Received** : 17 Jan 2024  
**Lab Number** : 06062514 **Diagnosed** : 18 Jan 2024  
**Unique Number** : 10833896 **Diagnostician** : Don Baldrige  
**Test Package** : CONST ( Additional Tests: TBN )

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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