

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### LIEBHERR LH50M 1203-88008 - Diesel Engine

Sample No: LH0268331

Oil Type: LIEBHERR MOTOROIL 10W-40



**JR VINAGRO**  
2208 PLAINFIELD PIKE  
JOHNSTON, RI  
US 02919  
Contact: Service Manager



#### SAMPLE INFORMATION

|               |             |             |             |             |
|---------------|-------------|-------------|-------------|-------------|
| Sample Number | LH0268331   | LH0272191   | LH0229239   | LH0217421   |
| Sample Date   | 09 Feb 2024 | 01 Feb 2024 | 20 Jul 2022 | 05 Apr 2022 |
| Machine Hours | 10179       | 7000        | 7000        | 6268        |
| Oil Hours     | 500         | 6268        | 732         | 500         |
| Oil Changed   | Changed     | Changed     | Filtered    | Changed     |
| Sample Status | SEVERE      | NORMAL      | NORMAL      | NORMAL      |



#### OIL CONDITION

|                  |          |       |        |        |        |
|------------------|----------|-------|--------|--------|--------|
| Visc @ 100°C     | cSt      | ● 4.9 | ● 14.0 | ● 13.1 | ● 14.5 |
| Base Number (BN) | mg KOH/g | ● 5.0 | ● 11.6 | ● 16.2 | ● 12.1 |
| Oxidation (PA)   | %        | 81    | 81     | 80     | 90     |



#### CONTAMINATION

|                |     |        |       |       |      |
|----------------|-----|--------|-------|-------|------|
| Water          | %   | NEG    | NEG   | NEG   | NEG  |
| Soot %         | %   | ● 0.4  | ● 1.4 | ● 1.4 | ● 1  |
| Nitration (PA) | %   | 61     | 123   | 166   | 128  |
| Sulfation (PA) | %   | 53     | 62    | 68    | 65   |
| Glycol         | %   | NEG    | NEG   | NEG   | NEG  |
| Fuel           | %   | ● 38.7 | <1.0  | <1.0  | <1.0 |
| Silicon        | ppm | ● 6    | ● 8   | ● 8   | ● 6  |
| Sodium         | ppm | ● 0    | ● 3   | ● 2   | ● 1  |
| Potassium      | ppm | ● 2    | ● 0   | ● 2   | ● 0  |



#### WEAR METALS

|            |     |      |      |      |      |
|------------|-----|------|------|------|------|
| Iron       | ppm | ● 15 | ● 40 | ● 56 | ● 27 |
| Copper     | ppm | ● 19 | ● 38 | ● 42 | ● 17 |
| Lead       | ppm | ● 2  | ● 5  | ● 2  | ● 5  |
| Tin        | ppm | ● 2  | ● 5  | ● 5  | ● 2  |
| Aluminum   | ppm | ● 2  | ● 6  | ● 4  | ● <1 |
| Chromium   | ppm | ● <1 | ● <1 | ● 2  | ● <1 |
| Molybdenum | ppm | ● 2  | ● 10 | ● 4  | ● 31 |
| Nickel     | ppm | ● <1 | ● 0  | ● 0  | ● 0  |
| Titanium   | ppm | <1   | <1   | <1   | 0    |
| Silver     | ppm | ● 0  | ● 0  | <1   | 0    |
| Manganese  | ppm | ● <1 | ● <1 | ● <1 | ● <1 |
| Vanadium   | ppm | 0    | <1   | 0    | 0    |



#### ADDITIVES

|            |     |       |        |        |        |
|------------|-----|-------|--------|--------|--------|
| Calcium    | ppm | 871   | ● 2915 | ● 4893 | ● 2372 |
| Magnesium  | ppm | ● 468 | ● 576  | 84     | ● 643  |
| Zinc       | ppm | 552   | ● 1154 | ● 1315 | ● 914  |
| Phosphorus | ppm | 511   | ● 992  | ● 1111 | ● 811  |
| Barium     | ppm | ● 13  | ● 0    | ● 0    | ● 0    |
| Boron      | ppm | ● 95  | ● 128  | ● 192  | ● 135  |

T:  
F:

#### Diagnosis

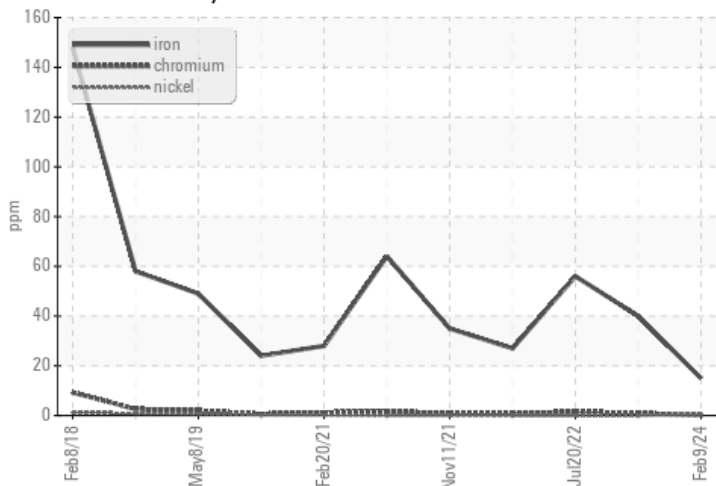
We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Depot: JRVJOH  
Unique No: 10873188  
Signed: Wes Davis  
Report Date: 14 Feb 2024

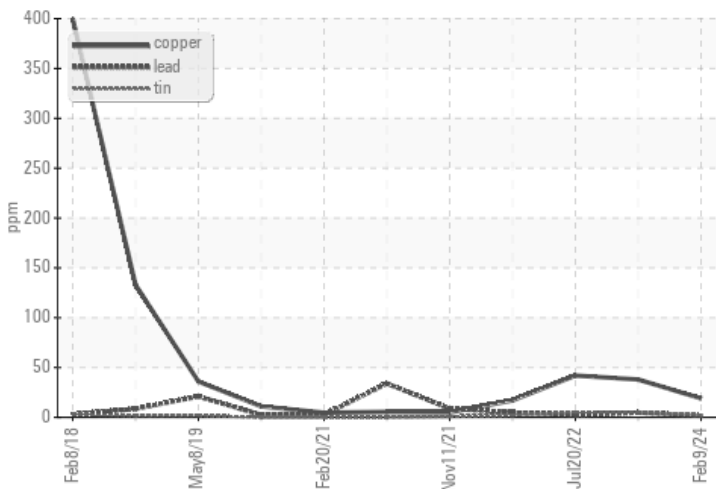


### GRAPHS

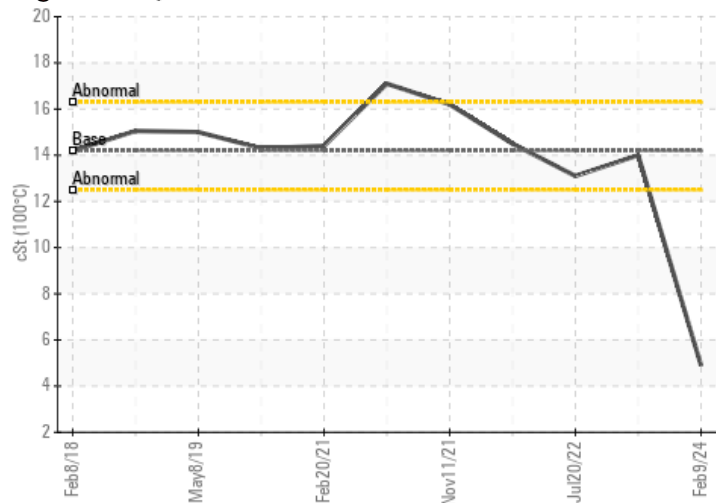
Ferrous Alloys



Non-ferrous Metals



● Viscosity @ 100°C



Base Number

