ł 3 I I R R **CONSTRUCTION EQUIPMENT**

LIEBHERR LH50M 1203-75766 - Diesel Engine

Sample No: LH0243355

Oil Type: MOBIL DELVAC 1300 SUPER15W40

SAMPLE INFORMATION

| - SAMP | LE INTOK | MAIIVN | | | |
|------------------|----------------|---|-------------|-------------|-------------|
| Sample Number | | LH0243355 | LHMC96181 | LHMC96177 | LHMC79151 |
| Sample Date | | 27 Sep 2023 | 27 Dec 2018 | 30 Aug 2018 | 23 Jul 2018 |
| Machine Hours | | 20040 | 8936 | 7970 | 7646 |
| Oil Hours | | 150 | 300 | 300 | 329 |
| Oil Changed | | N/A | Changed | Changed | Changed |
| Sample Status | | ABNORMAL | NORMAL | NORMAL | NORMAL |
| | NDITION | | | | |
| Visc @ 100°C | cSt | <mark>)</mark> 11.5 | 13.38 | 13.25 | 0 13.48 |
| Base Number (BN) | mg KOH/g | 0 10.6 | | | |
| Oxidation (PA) | % | 76 | 85 | 84 | 85 |
| | AMINATI | <u> </u> | | | |
| Soot % | % | • | ÷ | ÷ | Ŭ |
| Nitration (PA) | % | - | - | \smile | 0 |
| Sulfation (PA) | % | | | Ŭ | Ŭ |
| Glycol | % | | | | |
| Fuel | % | • • • | | | |
| Silicon | ppm | U U | 0 | - | - |
| Sodium | ppm | | • | U | • |
| Potassium | ppm | 0 | 0 | 02 | 0 |
| | R METALS | N/A Changed Changed Changed Changed NoRMAL ABNORMAL NORMAL NORMAL NORMAL NORMAL NORMAL DITION | | | |
| Iron | ppm | 0 14 | 0 10 | 07 | 8 |
| Common | 10.10.100 | \frown | | | |

| Iron | ppm | 0 14 | 0 10 | 07 | 8 | |
|------------|-----|------------------|------|------|------|--|
| Copper | ppm | 0 2 | 01 | 0 1 | 0 1 | |
| Lead | ppm | <mark></mark> <1 | 0 | ◯ <1 | ◯ <1 | |
| Tin | ppm | <mark></mark> <1 | 0 | 0 | 0 | |
| Aluminum | ppm | <u> </u> | 0 4 | 0 4 | 3 | |
| Chromium | ppm | 01 | ○ <1 | ◯ <1 | ◯ <1 | |
| Molybdenum | ppm | 0 39 | 0 44 | 0 42 | 36 | |
| Nickel | ppm | 0 (| ○ <1 | ◯ <1 | ◯ <1 | |
| Titanium | ppm | 0 | 0 | <1 | <1 | |
| Silver | ppm | 0 (| 0 | <1 | 0 | |
| Manganese | ppm | ○ <1 | ◯ <1 | ◯ <1 | ◯ <1 | |
| Vanadium | mqq | <1 | 0 | 0 | 0 | |

| 0 | |
|---|--|

| | TIVES | | | | |
|------------|-------|--------|--------|--------|--------|
| Calcium | ppm | 0 1523 | 0 1781 | 0 1711 | 0 1556 |
| Magnesium | ppm | 474 | ○ 521 | ○ 509 | ◯ 480 |
| Zinc | ppm | 837 | 890 | 880 | 0 791 |
| Phosphorus | ppm | 694 | 681 | ○ 714 | 657 |
| Barium | ppm | 0 🔘 | 0 | 0 | 0 |
| Boron | ppm | 0 47 | 28 | 22 | 0 18 |







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Diagnosis

We advise that you check the fuel injection system. Resample at the next service interval to monitor. The aluminum level is abnormal. All other component wear rates are normal. There is a moderate amount of fuel present in the oil. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.





GRAPHS

Ferrous Alloys 35 iron chromium 30 - nickel 25 20 ppm 15 10 5 0 潮 Feb15/16 Apr10/17 Aug11/17 Dec1/17 Aug1/16 Dec12/16 Mar26/18 Aug30/18 Non-ferrous Metals 110 copper 100 nn lead 90 80 70 60 bpm 50 40 30 20 10 0 Apr10/17 Aug30/18 Aug11/17 Dec1/17 Feb15/16 Aug1/16 Dec12/16 Mar26/18 O Viscosity @ 100°C 18 17 Abnormal 16 9.0 15 8.0 Base Number (mg KOH/g) Base 7.0 () 100-01 13 12 6.0 Abnorma 5.0 4.0 11 10 9 8 Feb15/16-Aug1/16. Apr10/17. Aug11/17 Dec1/17 Dec12/16 Mar26/18 Aug30/18

Base Number 11.0 10.0 Base 3.0 2.0 1.0 0.0-Feb15/16 -Aug1/16 Aug11/17 Dec1/17 Apr10/17 Mar26/18 Dec12/16 Aug30/18

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Contact/Location: ROSS RICHARD - PACTOM