

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH110 1227-155752 - Hydraulic System

Sample No: LH0280584

Oil Type: TDH



KINDER MORGAN
4301 IVERSON
TRINITY, AL
US 35601
Contact: CHIP OAKES

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Sample Information

| Sample Number | LH0280584 | LH0280584 | LH0280573 | LH0280562 |
|---------------|-------------|-------------|-------------|-------------|
| Sample Date | 18 Apr 2024 | 19 Mar 2024 | 20 Feb 2024 | 11 Jan 2024 |
| Machine Hours | 1980 | 1544 | 1022 | 507 |
| Oil Hours | 0 | 0 | 0 | 0 |
| Oil Changed | Not Changd | Not Changd | Not Changd | Not Changd |
| Sample Status | ABNORMAL | NORMAL | NORMAL | ABNORMAL |



Oil Condition

| Visc @ 40°C | cSt | 46.8 | 43.3 | 44.2 | 45.1 |
|------------------|----------|------|------|------|------|
| Acid Number (AN) | mg KOH/g | 1.53 | 1.18 | 1.16 | 1.17 |



Contamination

| Water | % | NEG | NEG | NEG | NEG |
|-------------------|-----|-----|----------|----------|----------|
| Particles >4µm | | --- | 6586 | 6065 | 54035 |
| Particles >6µm | | --- | 1485 | 1136 | 14882 |
| Particles >14µm | | --- | 50 | 55 | 616 |
| ISO 4406:1999 (c) | | --- | 20/18/13 | 20/17/13 | 23/21/16 |
| Silicon | ppm | 7 | 6 | 5 | 4 |
| Sodium | ppm | <1 | 2 | 2 | 0 |
| Potassium | ppm | 2 | 0 | 0 | 1 |



Wear Metals

| | | | | | |
|------------|-----|----|----|----|----|
| Iron | ppm | 27 | 9 | 6 | 7 |
| Copper | ppm | 16 | 3 | 3 | 2 |
| Lead | ppm | <1 | 0 | 0 | 0 |
| Tin | ppm | 2 | 0 | 0 | 0 |
| Aluminum | ppm | 2 | 0 | 0 | 3 |
| Chromium | ppm | 1 | <1 | <1 | <1 |
| Molybdenum | ppm | 1 | 0 | 0 | 0 |
| Nickel | ppm | <1 | 0 | 0 | 0 |
| Titanium | ppm | <1 | 0 | <1 | 0 |
| Silver | ppm | <1 | 0 | 0 | 0 |
| Manganese | ppm | <1 | 0 | <1 | 0 |
| Vanadium | ppm | <1 | 0 | 0 | 0 |



Additives

| | | | | | |
|------------|-----|------|------|------|------|
| Calcium | ppm | 1343 | 1416 | 1310 | 1370 |
| Magnesium | ppm | 12 | <1 | 2 | 8 |
| Zinc | ppm | 730 | 683 | 620 | 740 |
| Phosphorus | ppm | 868 | 614 | 598 | 655 |
| Barium | ppm | 0 | 0 | 0 | 0 |
| Boron | ppm | <1 | 0 | 0 | 0 |

Diagnosis

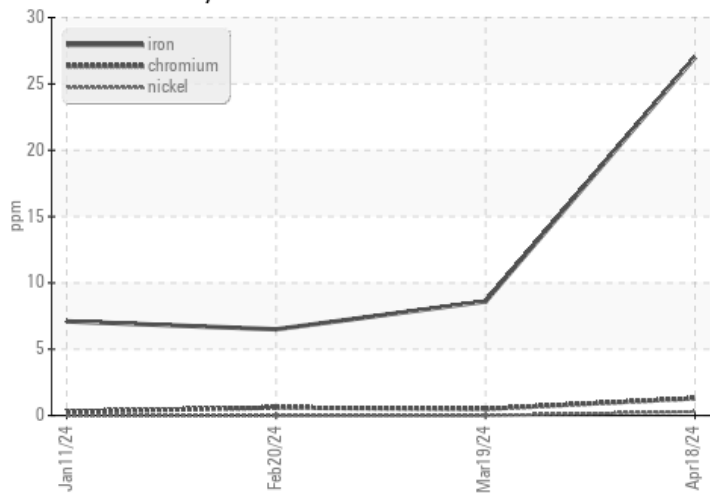
No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample. The copper level is abnormal. All other component wear rates are normal. There is a moderate amount of visible silt present in the sample. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

Depot: KINTRI
Unique No: 11031430
Signed: Don Baldrige
Report Date: 17 May 2024

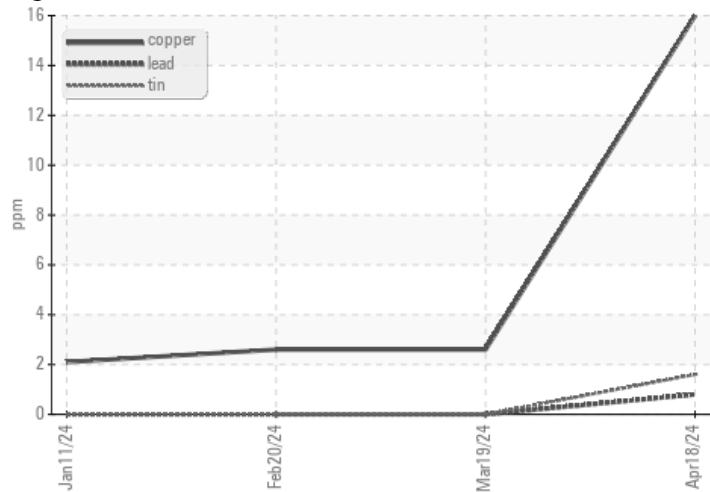


Graphs

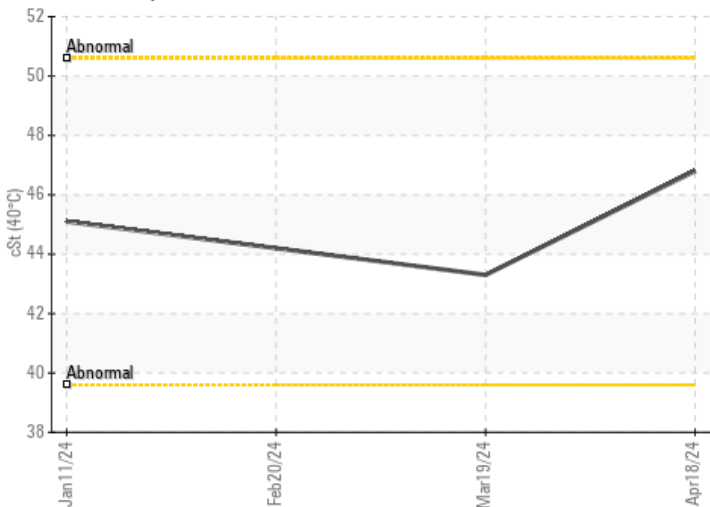
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C



Acid Number

