

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### 042990-1491 - Hydraulic System

Sample No: LH0202820

Oil Type: TOTAL BIOHYDRAN SE 46



#### SAMPLE INFORMATION

Sample Number	LH0202820	LH0277803	LH0247050	LH0234924
Sample Date	12 Jan 2024	27 Nov 2023	16 Feb 2023	19 Jul 2022
Machine Hours	7070	6947	6512	5990
Oil Hours	0	0	0	0
Oil Changed	Not Changd	Not Changd	Not Changd	Not Changd
Sample Status	ABNORMAL	ABNORMAL	SEVERE	ABNORMAL

**Delsan - American Iron and Metal**  
 2187 Montee Masson  
 Laval, QC  
 CA H7B 0A6  
 Contact: MANNY MARQUES  
 mmarques@delsan-aim.com  
 T:  
 F:



#### OIL CONDITION

Visc @ 40°C	cSt	45.4	45.5	45.5	44.7



#### CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Particles >4µm		1492	11311	136946	14731
Particles >6µm		153	1636	44611	2289
Particles >14µm		11	82	154	55
ISO 4406:1999 (c)		18/14/11	21/18/14	24/23/14	21/18/13
Silicon	ppm	1	1	2	2
Sodium	ppm	<1	1	1	2
Potassium	ppm	<1	<1	<1	<1



#### WEAR METALS

PQ		0	0	1	2
Iron	ppm	78	68	68	123
Copper	ppm	4	3	4	11
Lead	ppm	<1	<1	<1	2
Tin	ppm	1	<1	2	1
Aluminum	ppm	1	<1	<1	1
Chromium	ppm	3	2	3	4
Molybdenum	ppm	0	0	0	0
Nickel	ppm	<1	<1	<1	0
Titanium	ppm	0	0	0	0
Silver	ppm	0	<1	0	<1
Manganese	ppm	<1	0	1	3
Vanadium	ppm	0	0	0	<1



#### ADDITIVES

Calcium	ppm	7	5	14	111
Magnesium	ppm	<1	<1	1	2
Zinc	ppm	38	36	44	297
Phosphorus	ppm	367	353	399	358
Barium	ppm	0	0	0	<1
Boron	ppm	1	<1	<1	2

#### Diagnosis

We recommend that you drain the oil from the component if this has not already been done. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. Iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

**Depot:** DEL782MON  
**Unique No:** 5710106  
**Signed:** Kevin Marson  
**Report Date:** 17 Jan 2024

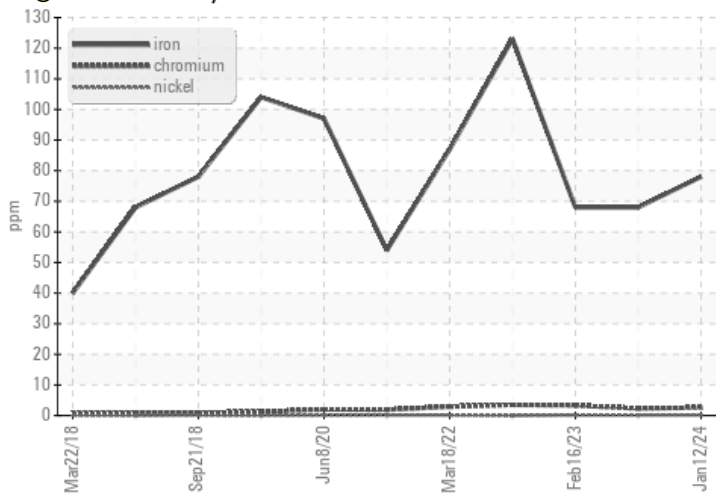
# LIEBHERR

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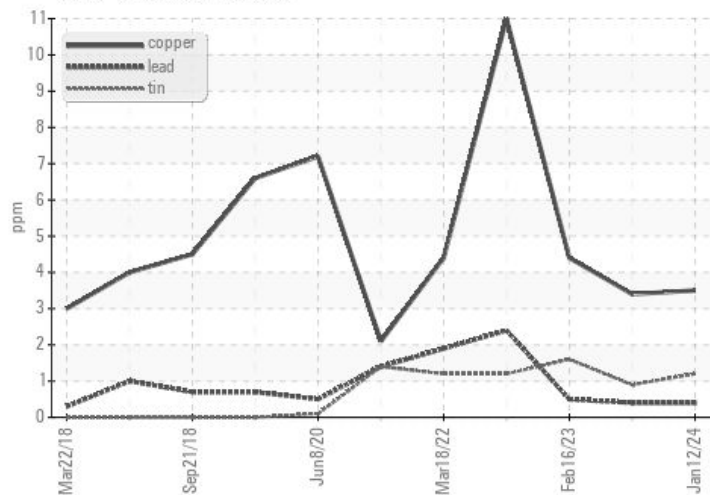


### GRAPHS

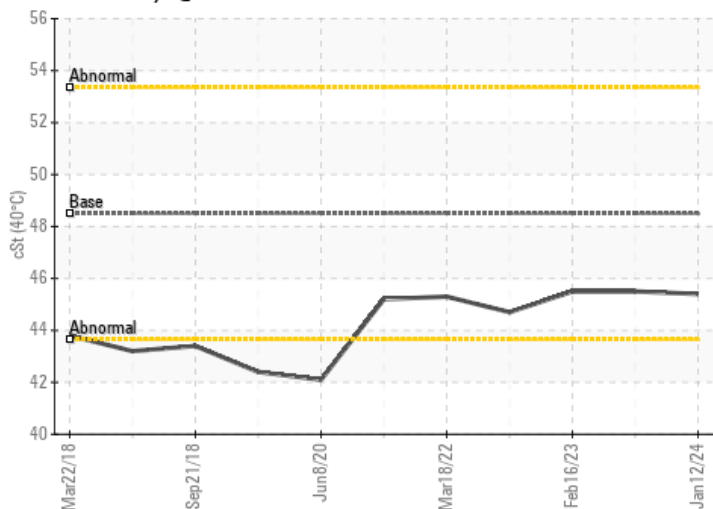
#### ● Ferrous Alloys



#### Non-ferrous Metals



#### Viscosity @ 40°C



#### Particle Count

