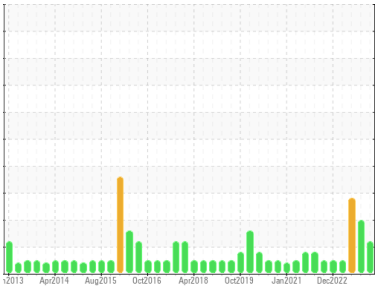
# PROBLEM SUMMARY

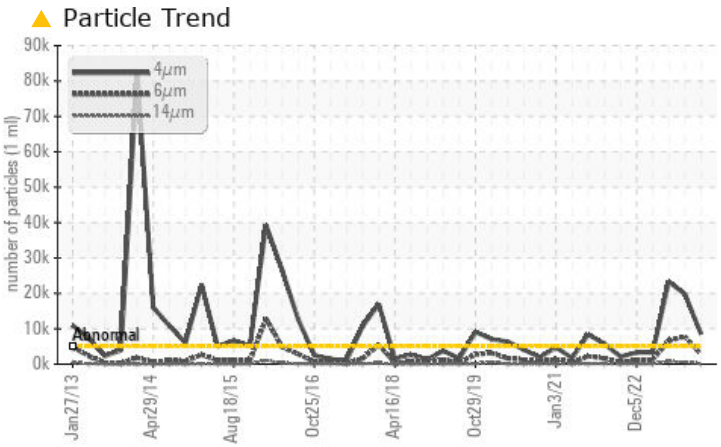
Sample Rating Trend



ISO

Area
## System 43 - Water Injection [13916194]
Machine Id
## Z-4305D Pump / Motor Lubricating Oil
Component
**Pump**
Fluid
**IRVING HYDRAULIC OIL LP 32 (1950 LTR)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **ABNORMAL** | ABNORMAL | ABNORMAL |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >5000 | ▲ **8554** | ▲ 19815 | ▲ 23293 |
| Particles >6µm | | ASTM D7647 | >1300 | ▲ **2753** | ▲ 7810 | ▲ 6538 |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | ▲ **20/19/14** | ▲ 21/20/16 | ▲ 22/20/17 |


**Customer Id:** HIBSTJ
**Sample No.:** PP
**Lab Number:** 02589629
**Test Package:** MAR 2

*To manage this report scan the QR code*

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gloria.gonzalez@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Filter | --- | --- | ? | We recommend you service the filters on this component. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |

## HISTORICAL DIAGNOSIS

**08 Aug 2023 Diag: Wes Davis**

ISO

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The water content is negligible. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

**11 Mar 2023 Diag: Wes Davis**

ISO

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.All component wear rates are normal. Oil Cleanliness are abnormally high. Particles >71µm are abnormally high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. Particles >4µm are abnormally high. Particles >38µm are abnormally high. Particles >6µm are abnormally high. The water content is negligible. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

**29 Dec 2022 Diag: Wes Davis**

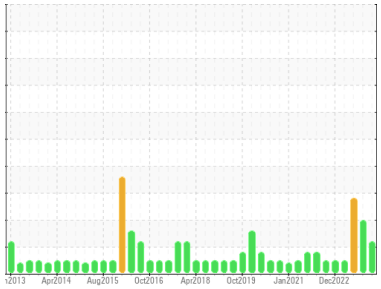
NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
## System 43 - Water Injection [13916194]
Machine Id
## Z-4305D Pump / Motor Lubricating Oil
Component
**Pump**
Fluid
**IRVING HYDRAULIC OIL LP 32 (1950 LTR)**

## DIAGNOSIS

**Recommendation**

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

**Wear**

All component wear rates are normal.

**Contamination**

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible.

**Fluid Condition**

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PP** | PP | PP |
| Sample Date | | Client Info | | **16 Oct 2023** | 08 Aug 2023 | 11 Mar 2023 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | ABNORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >75 | **0** | <1 | <1 |
| Chromium | ppm | ASTM D5185(m) | >5 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **<1** | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >5 | **0** | 0 | 0 |
| Lead | ppm | ASTM D5185(m) | >10 | **<1** | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >15 | **<1** | <1 | 0 |
| Tin | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | | **0** | 0 | <1 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

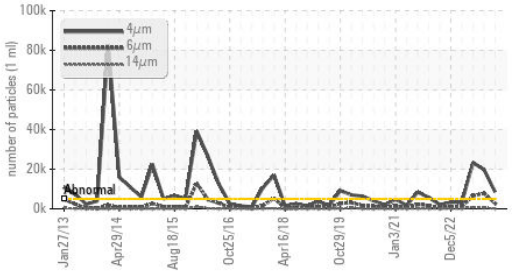
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | | **<1** | 0 | <1 |
| Barium | ppm | ASTM D5185(m) | | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | | **<1** | <1 | 1 |
| Calcium | ppm | ASTM D5185(m) | | **54** | 52 | 56 |
| Phosphorus | ppm | ASTM D5185(m) | | **335** | 354 | 368 |
| Zinc | ppm | ASTM D5185(m) | 400 | **424** | 416 | 414 |
| Sulfur | ppm | ASTM D5185(m) | | **864** | 855 | 929 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >20 | **0** | 0 | 0 |
| Sodium | ppm | ASTM D5185(m) | | **2** | 1 | 1 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | <1 | <1 |
| Water | % | ASTM D6304* | >.1 | **0.004** | 0.006 | 0.002 |
| ppm Water | ppm | ASTM D6304* | >1000 | **49.9** | 66.1 | 23.4 |

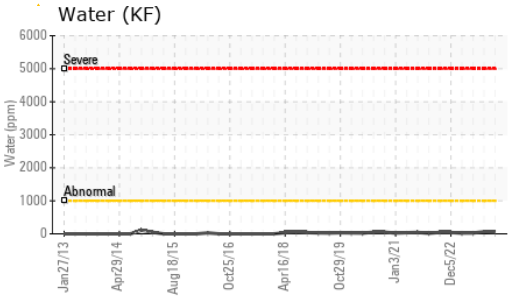
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >5000 | ▲ **8554** | ▲ 19815 | ▲ 23293 |
| Particles >6µm | | ASTM D7647 | >1300 | ▲ **2753** | ▲ 7810 | ▲ 6538 |
| Particles >14µm | | ASTM D7647 | >160 | **117** | ▲ 572 | ▲ 700 |
| Particles >21µm | | ASTM D7647 | >40 | **16** | ▲ 111 | ▲ 243 |
| Particles >38µm | | ASTM D7647 | >10 | **1** | 1 | ▲ 23 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | ▲ 6 |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | ▲ **20/19/14** | ▲ 21/20/16 | ▲ 22/20/17 |

# OIL ANALYSIS REPORT

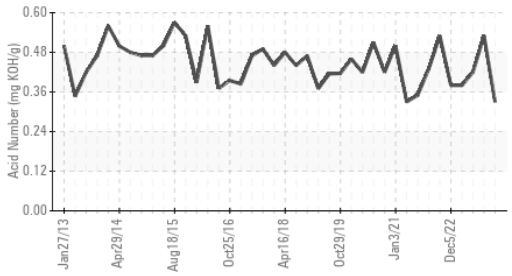
Particle Trend




Water (KF)




Acid Number

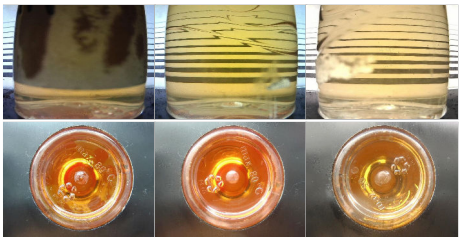



| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **0.33** | 0.53 | 0.42 |

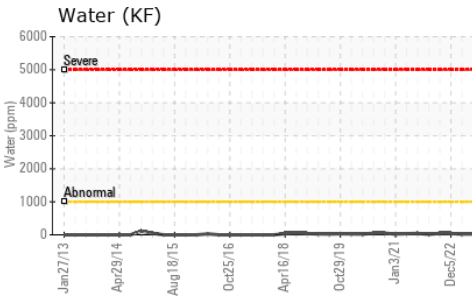
| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Silt | scalar | Visual* | NONE | **NONE** | VLITE | NONE |
| Debris | scalar | Visual* | NONE | **VLITE** | VLITE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | **NONE** | NONE | VLITE |
| Appearance | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >.1 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 31.9 | **31.3** | 31.1 | 31.1 |

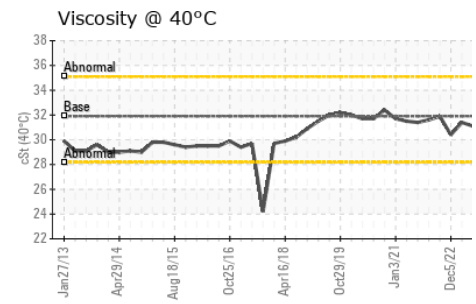
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |



Water (KF)

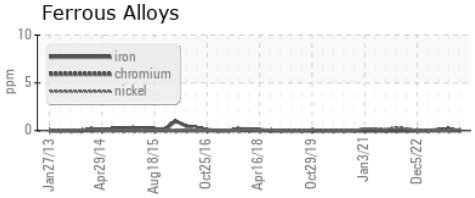



Viscosity @ 40°C

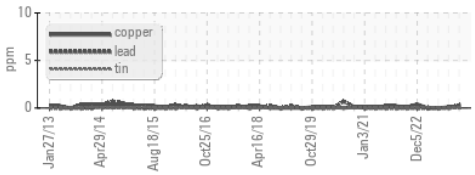



## GRAPHS

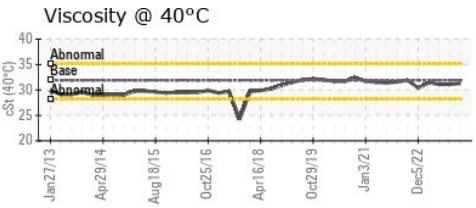
Ferrous Alloys



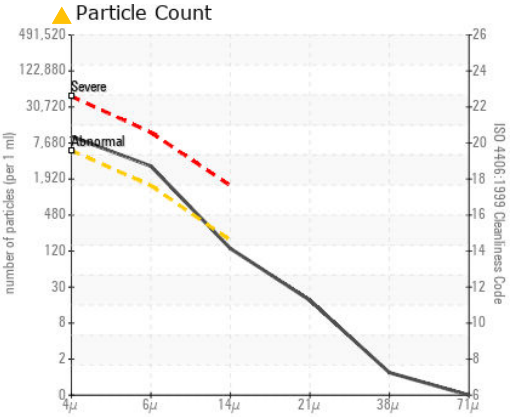

Non-ferrous Metals



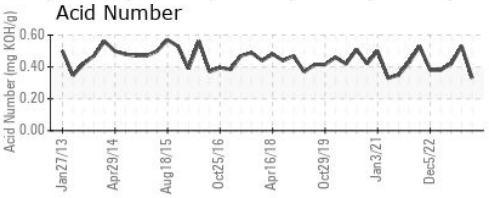

Viscosity @ 40°C




Particle Count




Acid Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : PP
**Lab Number** : 02589629
**Unique Number** : 5658695
**Test Package** : MAR 2 ( Additional Tests: KF )

**Received** : 17 Oct 2023
**Diagnosed** : 18 Oct 2023
**Diagnostician** : Wes Davis

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*

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Report Id: HIBSTJ [WCAMIS] 02589629 (Generated: 10/18/2023 09:32:31) Rev: 1

Submitted By: ?