



# OIL ANALYSIS REPORT

WEAR  
CONTAMINATION  
FLUID CONDITION

**ABNORMAL**  
**SEVERE**  
**SEVERE**

Area

**Bill Quesnel**

Machine Id

**2022 LAND ROVER DEFENDER**

Component

**Gasoline Engine**

Fluid

**CASTROL EDGE FST 0W20 (--- GAL)**

## RECOMMENDATION

We advise that you check for faulty combustion and a possible overheat condition. We advise that you check the engine tuning and timing. We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

| Test           | UOM | Method      | Limit/Abn | Current     | History1 | History2 |
|----------------|-----|-------------|-----------|-------------|----------|----------|
| Sample Number  |     | Client Info |           | WC0900931   | ---      | ---      |
| Sample Date    |     | Client Info |           | 18 Jan 2024 | ---      | ---      |
| Machine Age    | kms | Client Info |           | 30000       | ---      | ---      |
| Oil Age        | kms | Client Info |           | 30000       | ---      | ---      |
| Filter Age     | kms | Client Info |           | 30000       | ---      | ---      |
| Oil Changed    |     | Client Info |           | Not Chngd   | ---      | ---      |
| Filter Changed |     | Client Info |           | Not Chngd   | ---      | ---      |
| Sample Status  |     |             |           | SEVERE      | ---      | ---      |

## WEAR

Silver ppm levels are abnormal.

|              |        |               |      |       |     |     |
|--------------|--------|---------------|------|-------|-----|-----|
| Iron         | ppm    | ASTM D5185(m) | >150 | 346   | --- | --- |
| Chromium     | ppm    | ASTM D5185(m) | >20  | 5     | --- | --- |
| Nickel       | ppm    | ASTM D5185(m) | >5   | 4     | --- | --- |
| Titanium     | ppm    | ASTM D5185(m) |      | 22    | --- | --- |
| Silver       | ppm    | ASTM D5185(m) | >2   | ▲ 14  | --- | --- |
| Aluminum     | ppm    | ASTM D5185(m) | >40  | 42    | --- | --- |
| Lead         | ppm    | ASTM D5185(m) | >50  | 2     | --- | --- |
| Copper       | ppm    | ASTM D5185(m) | >155 | 38    | --- | --- |
| Tin          | ppm    | ASTM D5185(m) | >10  | 2     | --- | --- |
| Vanadium     | ppm    | ASTM D5185(m) |      | 0     | --- | --- |
| White Metal  | scalar | Visual*       | NONE | NONE  | --- | --- |
| Yellow Metal | scalar | Visual*       | NONE | VLITE | --- | --- |

## CONTAMINATION

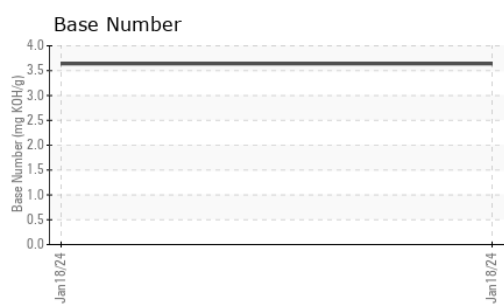
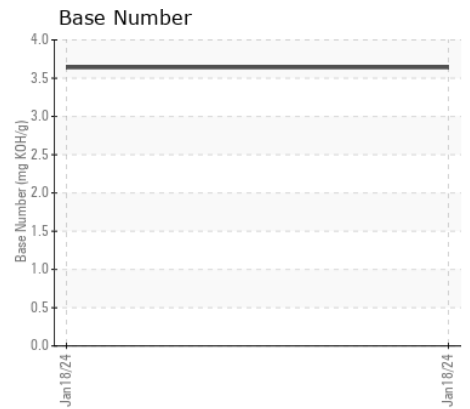
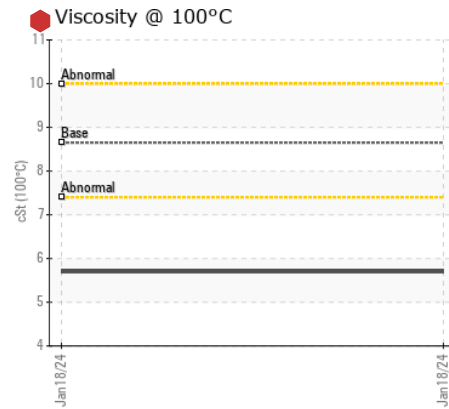
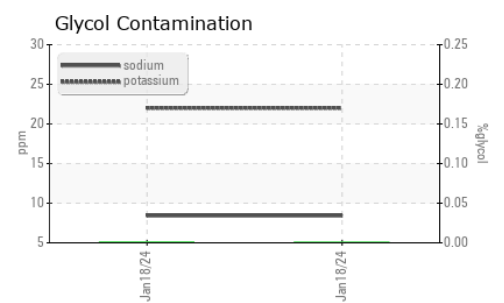
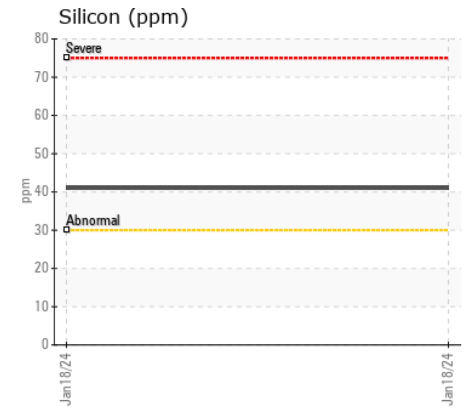
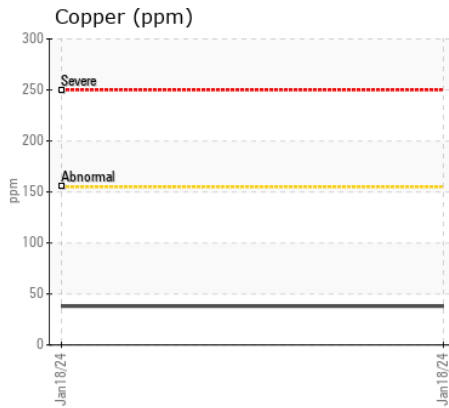
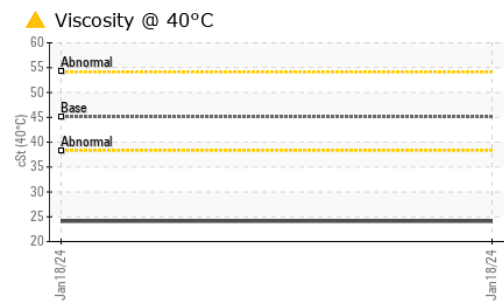
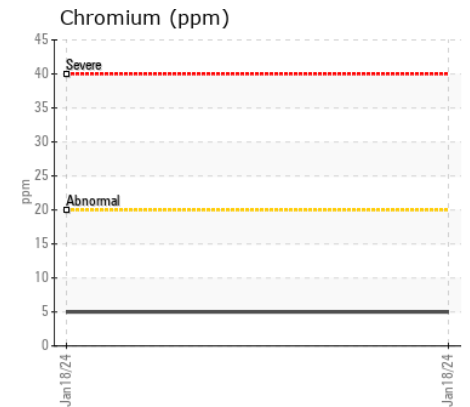
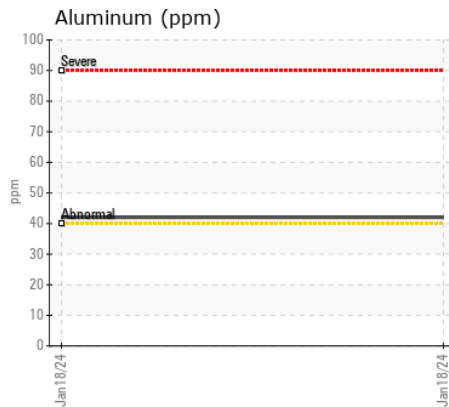
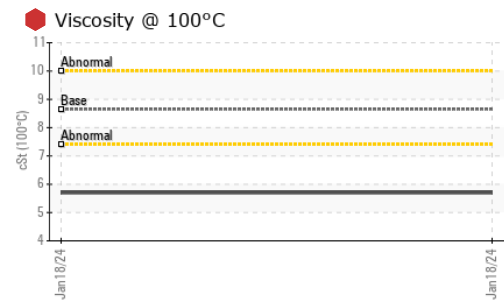
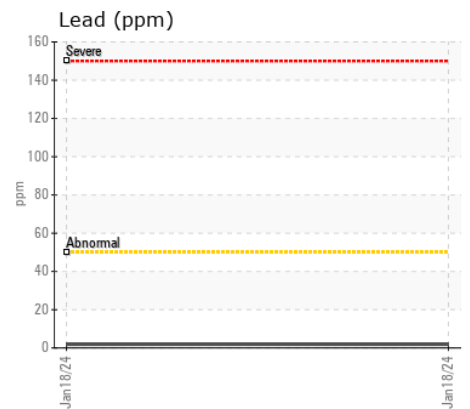
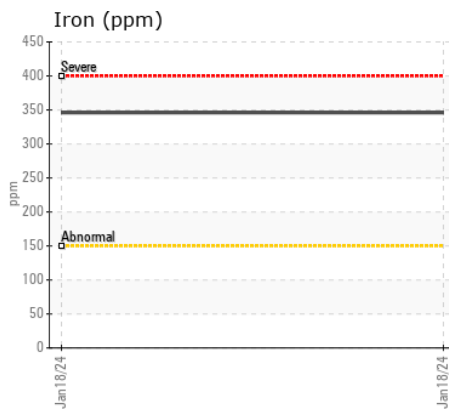
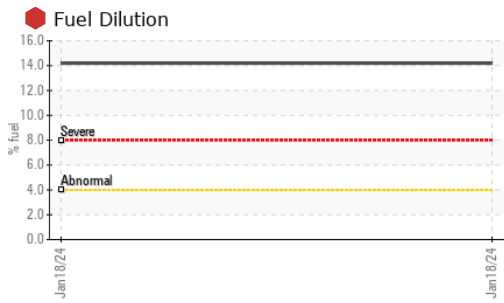
There is an abnormal level of nitration indicated. There is an abnormal level of sulfation indicated. There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

|                  |          |               |       |        |     |     |
|------------------|----------|---------------|-------|--------|-----|-----|
| Silicon          | ppm      | ASTM D5185(m) | >30   | 41     | --- | --- |
| Potassium        | ppm      | ASTM D5185(m) | >20   | 22     | --- | --- |
| Fuel             | %        | ASTM D7593*   | >4.0  | ◆ 14.2 | --- | --- |
| Water            |          | WC Method     | >0.2  | NEG    | --- | --- |
| Glycol           | %        | ASTM D7922*   |       | 0.0    | --- | --- |
| Soot %           | %        | ASTM D7844*   |       | 0      | --- | --- |
| Nitration        | Abs/cm   | ASTM D7624*   | >20   | ▲ 24.3 | --- | --- |
| Sulfation        | Abs/.1mm | ASTM D7415*   | >30   | ▲ 36.6 | --- | --- |
| Silt             | scalar   | Visual*       | NONE  | NONE   | --- | --- |
| Debris           | scalar   | Visual*       | NONE  | NONE   | --- | --- |
| Sand/Dirt        | scalar   | Visual*       | NONE  | NONE   | --- | --- |
| Appearance       | scalar   | Visual*       | NORML | NORML  | --- | --- |
| Odor             | scalar   | Visual*       | NORML | NORML  | --- | --- |
| Emulsified Water | scalar   | Visual*       | >0.2  | NEG    | --- | --- |

## FLUID CONDITION

A small degree of oil oxidation was indicated. 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 as a result of the abnormal and/or severe wear.

|                      |          |               |      |        |     |     |
|----------------------|----------|---------------|------|--------|-----|-----|
| Sodium               | ppm      | ASTM D5185(m) | >400 | 8      | --- | --- |
| Boron                | ppm      | ASTM D5185(m) |      | 33     | --- | --- |
| Barium               | ppm      | ASTM D5185(m) |      | <1     | --- | --- |
| Molybdenum           | ppm      | ASTM D5185(m) |      | <1     | --- | --- |
| Manganese            | ppm      | ASTM D5185(m) |      | 391    | --- | --- |
| Magnesium            | ppm      | ASTM D5185(m) |      | 22     | --- | --- |
| Calcium              | ppm      | ASTM D5185(m) | 745  | 1418   | --- | --- |
| Phosphorus           | ppm      | ASTM D5185(m) |      | 573    | --- | --- |
| Zinc                 | ppm      | ASTM D5185(m) | 840  | 778    | --- | --- |
| Sulfur               | ppm      | ASTM D5185(m) |      | 1615   | --- | --- |
| Oxidation            | Abs/.1mm | ASTM D7414*   | >25  | ▲ 44.5 | --- | --- |
| Base Number (BN)     | mg KOH/g | ASTM D2896*   |      | 3.64   | --- | --- |
| Visc @ 40°C          | cSt      | ASTM D7279(m) | 45.1 | ▲ 24.1 | --- | --- |
| Visc @ 100°C         | cSt      | ASTM D7279(m) | 8.65 | ◆ 5.7  | --- | --- |
| Viscosity Index (VI) | Scale    | ASTM D2270*   | 174  | 191    | --- | --- |



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0900931 **Received** : 18 Jan 2024  
**Lab Number** : 02609692 **Diagnosed** : 19 Jan 2024  
**Unique Number** : 5710778 **Diagnostician** : Bill Quesnel  
**Test Package** : MOB 2 ( Additional Tests: FuelDilution, Glycol, KV40, PercentFuel, VI )

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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.