

# **OIL ANALYSIS REPORT**



## Machine Id **TP 1** Component **Hydraulic System** Fluid **HOUGHTON HOUGHTO-SAFE 620 (--- GAL)**

#### DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

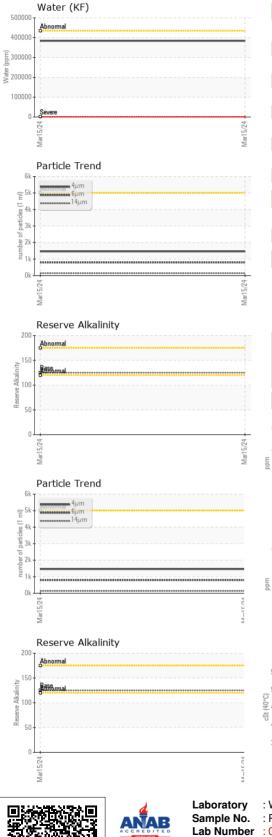
# Fluid Condition

The pH level of this fluid is within the acceptable limits at 9.0. The condition of the oil is acceptable for the time in service.

| SAMPLE INFORM   | MATION | method       | limit/base | current     | history1 | history2 |
|-----------------|--------|--------------|------------|-------------|----------|----------|
| Sample Number   |        | Client Info  |            | PTK0005349  |          |          |
| Sample Date     |        | Client Info  |            | 15 Mar 2024 |          |          |
| Machine Age     | hrs    | Client Info  |            | 0           |          |          |
| Oil Age         | hrs    | Client Info  |            | 0           |          |          |
| Oil Changed     |        | Client Info  |            | Not Changd  |          |          |
| Sample Status   |        |              |            | NORMAL      |          |          |
| WEAR METALS     |        | method       | limit/base | current     | history1 | history2 |
| Iron            | ppm    | ASTM D5185m  | >20        | 11          |          |          |
| Chromium        | ppm    | ASTM D5185m  | >20        | <1          |          |          |
| Nickel          | ppm    | ASTM D5185m  | >20        | <1          |          |          |
| Titanium        | ppm    | ASTM D5185m  |            | 0           |          |          |
| Silver          | ppm    | ASTM D5185m  |            | 0           |          |          |
| Aluminum        | ppm    | ASTM D5185m  | >20        | 5           |          |          |
| Lead            | ppm    | ASTM D5185m  | >20        | 0           |          |          |
| Copper          | ppm    | ASTM D5185m  | >20        | <1          |          |          |
| Tin             | ppm    | ASTM D5185m  | >20        | <1          |          |          |
| Vanadium        | ppm    | ASTM D5185m  |            | <1          |          |          |
| Cadmium         | ppm    | ASTM D5185m  |            | 0           |          |          |
| ADDITIVES       |        | method       | limit/base | current     | history1 | history2 |
| Boron           | ppm    | ASTM D5185m  |            | <1          |          |          |
| Barium          | ppm    | ASTM D5185m  |            | 0           |          |          |
| Molybdenum      | ppm    | ASTM D5185m  |            | 0           |          |          |
| Manganese       | ppm    | ASTM D5185m  |            | 0           |          |          |
| Magnesium       | ppm    | ASTM D5185m  |            | <1          |          |          |
| Calcium         | ppm    | ASTM D5185m  |            | 5           |          |          |
| Phosphorus      | ppm    | ASTM D5185m  |            | 4           |          |          |
| Zinc            | ppm    | ASTM D5185m  |            | 8           |          |          |
| Sulfur          | ppm    | ASTM D5185m  |            | 0           |          |          |
| CONTAMINANTS    |        | method       | limit/base | current     | history1 | history2 |
| Silicon         | ppm    | ASTM D5185m  | >15        | 1           |          |          |
| Sodium          | ppm    | ASTM D5185m  |            | 8           |          |          |
| Potassium       | ppm    | ASTM D5185m  | >20        | 2           |          |          |
| Water           | %      | ASTM D6304   | >43.5      | 38.4        |          |          |
| ppm Water       | ppm    | ASTM D6304   | >435000    | 384000      |          |          |
| FLUID CLEANLIN  | NESS   | method       | limit/base | current     | history1 | history2 |
| Particles >4µm  |        | ASTM D7647   | >5000      | 1461        |          |          |
| Particles >6µm  |        | ASTM D7647   | >1300      | 796         |          |          |
| Particles >14µm |        | ASTM D7647   | >160       | 135         |          |          |
| Particles >21µm |        | ASTM D7647   |            | 46          |          |          |
| Particles >38µm |        | ASTM D7647   | >10        | 7           |          |          |
| Particles >71µm |        | ASTM D7647   |            | 1           |          |          |
| Oil Cleanliness |        | ISO 4406 (c) | >19/17/14  | 18/17/14    |          |          |
|                 |        | (*)          |            | -           |          |          |



# **OIL ANALYSIS REPORT**



|                                           | VISUAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      | method                                           | limit/base                                                            | current                        | history1 | history2                           |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------|--------------------------------|----------|------------------------------------|
|                                           | White Metal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | scalar                               | *Visual                                          | NONE                                                                  | NONE                           |          |                                    |
|                                           | Yellow Metal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | scalar                               | *Visual                                          | NONE                                                                  | NONE                           |          |                                    |
|                                           | Precipitate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | scalar                               | *Visual                                          | NONE                                                                  | NONE                           |          |                                    |
|                                           | Silt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | scalar                               | *Visual                                          | NONE                                                                  | NONE                           |          |                                    |
|                                           | Debris                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | scalar                               | *Visual                                          | NONE                                                                  | NONE                           |          |                                    |
|                                           | Sand/Dirt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | scalar                               | *Visual                                          | NONE                                                                  | NONE                           |          |                                    |
| 5/24                                      | Appearance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | scalar                               | *Visual                                          | NORML                                                                 | NORML                          |          |                                    |
| Marl 5/2 4                                | Odor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | scalar                               | *Visual                                          | NORML                                                                 | NORML                          |          |                                    |
|                                           | Emulsified Water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | scalar                               | *Visual                                          | >43.5                                                                 | 0.2%                           |          |                                    |
|                                           | Free Water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | scalar                               | *Visual                                          |                                                                       | NEG                            |          |                                    |
|                                           | FLUID PROPER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TIFS                                 | method                                           | limit/base                                                            | current                        | history1 | history2                           |
|                                           | рH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Scale 0-14                           | ASTM D1287                                       |                                                                       | 9.00                           |          |                                    |
|                                           | Visc @ 40°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | cSt                                  | ASTM D1207                                       |                                                                       | 50.9                           |          |                                    |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  |                                                                       |                                |          |                                    |
|                                           | SAMPLE IMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | S                                    | method                                           | limit/base                                                            | current                        | history1 | history2                           |
| 5/24 -                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  |                                                                       |                                |          |                                    |
| Mar15/2                                   | Color                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                      |                                                  |                                                                       | o                              | no image | no image                           |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  |                                                                       |                                |          |                                    |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  |                                                                       |                                |          |                                    |
|                                           | Bottom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                                  |                                                                       |                                | no image | no image                           |
|                                           | Dottom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                                  |                                                                       |                                | ne mage  | no inago                           |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  |                                                                       |                                |          |                                    |
|                                           | GRAPHS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                                  |                                                                       |                                |          |                                    |
|                                           | Ferrous Alloys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                      |                                                  | 491,520                                                               | Particle Count                 |          | T <sup>26</sup>                    |
| Mar15/24                                  | iron                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |                                                  | 122,880                                                               |                                |          | +24                                |
| Mari                                      | E nickel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                  |                                                                       | Severe                         |          | 2.1                                |
|                                           | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                      |                                                  | 30,720                                                                |                                |          | -22                                |
|                                           | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                      |                                                  | 7,680                                                                 | Abnormal                       |          | -20                                |
|                                           | Mar15/24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                  | Mar15/24<br>1 ml<br>1 ml                                              | 1. A.                          |          | 10                                 |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  | 35                                                                    |                                |          | +20<br>+18<br>+16<br>+14           |
|                                           | Non-ferrous Meta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ls                                   |                                                  | offined 480                                                           |                                |          | -16                                |
|                                           | 8- copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                      |                                                  | ja 120-                                                               |                                |          | +14                                |
|                                           | E 6-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |                                                  | Ē                                                                     |                                |          | 112                                |
| 5                                         | £ 4-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |                                                  |                                                                       |                                |          |                                    |
|                                           | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                      |                                                  | 8                                                                     |                                |          | 10                                 |
| 41<br>16                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |                                                  | 5/24                                                                  |                                |          |                                    |
|                                           | Mar15/24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                  | 0 Mar15/24                                                            |                                |          | 6                                  |
|                                           | Viscosity @ 40°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                      |                                                  | 4                                                                     | <sup>µ 6µ</sup><br>Acid Number | 14μ 21μ  | 38µ 71µ                            |
|                                           | , -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                      |                                                  | 🕞 1.00                                                                |                                |          |                                    |
|                                           | 55 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |                                                  | ·                                                                     |                                |          |                                    |
|                                           | 55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                      |                                                  | Ng KOH                                                                |                                |          |                                    |
|                                           | 55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                      |                                                  | per (mg KOH                                                           |                                |          |                                    |
|                                           | 55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                      |                                                  | 0.00<br>I Number                                                      |                                |          |                                    |
|                                           | 55<br>50<br>40<br>40<br>35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |                                                  | Viting Number                                                         |                                |          |                                    |
| 294                                       | 55<br>50<br>40<br>40<br>35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |                                                  | ar15/24                                                               | ar15/24                        |          |                                    |
| H-tcok                                    | 55<br><b>Abnomal</b><br>45<br>40<br><b>Abnomal</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                      |                                                  | Mart 5/24                                                             | Mart 5/24                      |          | C<br>C                             |
|                                           | 55<br>50<br>(0,0)+) 45<br>40<br>35<br>+<br>52<br>(0,0)+) 45<br>40<br>40<br>35<br>+<br>52<br>51<br>(0,0)+) 45<br>40<br>40<br>52<br>51<br>40<br>55<br>40<br>55<br>40<br>55<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>40<br>56<br>56<br>56<br>56<br>56<br>56<br>56<br>56<br>56<br>56<br>56<br>56<br>56 | )1 Madieo                            | n Ave. Can                                       | Mar15/2.                                                              | Mar15/24                       |          |                                    |
| Laboratory<br>Sample No.                  | 55<br>50<br>40<br>40<br>35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | )1 Madiso<br>Recei                   | ived : 27                                        | v, NC 27513<br>7 Mar 2024                                             | Mar15/24                       |          | POLARI                             |
| Sample No.<br>Lab Number                  | 55<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Recei<br>Teste                       | ived : 27<br>d : 02                              | 7, NC 27513<br>7 Mar 2024<br>2 Apr 2024                               |                                | IOM      | <b>POLARI</b><br>NTICELLO, MI      |
| Sample No.<br>Lab Number<br>Unique Number | : WearCheck USA - 50<br>: PTK0005349<br>: 06130691<br>: 10950156                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Recei<br>Teste<br>Diagr              | ived : 27<br>d : 02<br>nosed : 02                | v, NC 27513<br>7 Mar 2024<br>2 Apr 2024<br>Apr 2024 Jonath            |                                |          | <b>POLARI</b><br>NTICELLO, M<br>US |
| Sample No.<br>Lab Number<br>Unique Number | : WearCheck USA - 50<br>: WearCheck USA - 50<br>: PTK0005349<br>: 06130691<br>: 10950156<br>: MOB 2 ( Additional T                                                                                                                                                                                                                                                                                                                                                                                                                               | Recei<br>Teste<br>Diagr<br>ests: KF, | ived : 27<br>d : 02<br>nosed : 02<br>pH, Reserve | v, NC 27513<br>7 Mar 2024<br>2 Apr 2024<br>Apr 2024 - Jonath<br>Alk ) |                                |          |                                    |

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Contact/Location: Service Manager - POLMONMN