

# **OIL ANALYSIS REPORT**

## Sample Rating Trend

### NORMAL

Area

# 40 MILE [46004111]

TGY001223 - SHELL OMALA S5 WIND 320 (S/N BM0044)

New (Unused) Oil

Fluid

{not provided} (--- LTR)





#### DIAGNOSIS

### Recommendation

This is a baseline read-out on the submitted sample.

| Sample Number   Client Info   NX014222  |                 |        |              |            | Jun2024     |          |          |
|---|-----------------|--------|--------------|------------|-------------|----------|----------|
| Client Info   | SAMPLE INFORI   | MATION | method       | limit/base | current     | history1 | history2 |
| Machine Age   hrs   Client Info   0   | Sample Number   |        | Client Info  |            | NX014222    |          |          |
| Oil Age   | Sample Date     |        | Client Info  |            | 18 Jun 2024 |          |          |
| Cilichanged   Cilichanged   Cilichanged   NoRMAL   Collichanged   NoRMAL   Collichanged   Collichanged   NoRMAL   Collichanged   Collichan | Machine Age     | hrs    | Client Info  |            | 0           |          |          |
| WEAR METALS   | Oil Age         | hrs    | Client Info  |            | 0           |          |          |
| WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184         16             Iron         ppm         ASTM D5185m         0            Chromium         ppm         ASTM D5185m         0            Nickel         ppm         ASTM D5185m         0            Titanium         ppm         ASTM D5185m         0            Aluminum         ppm         ASTM D5185m         0            Aluminum         ppm         ASTM D5185m         0            Copper         ppm         ASTM D5185m         0            Copper         ppm         ASTM D5185m         0            Vanadium         ppm         ASTM D5185m         0            Vanadium         ppm         ASTM D5185m         0            Cadrium         ppm         ASTM D5185m         0            Boron         ppm         ASTM D5185m         0            Barium         ppm         ASTM D5185m         0 <td>Oil Changed</td> <td></td> <td>Client Info</td> <td></td> <td>Not Changd</td> <td></td> <td></td>   | Oil Changed     |        | Client Info  |            | Not Changd  |          |          |
| PQ         ASTM D8184         16             Iron         ppm         ASTM D5185m         0             Chromium         ppm         ASTM D5185m         0             Nickel         ppm         ASTM D5185m         0             Silver         ppm         ASTM D5185m         0             Silver         ppm         ASTM D5185m         0             Aluminum         ppm         ASTM D5185m         0             Copper         ppm         ASTM D5185m         0             Copper         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Barium         ppm         ASTM D5185m         0             Barium         ppm   | Sample Status   |        |              |            | NORMAL      |          |          |
| Chromium  | WEAR METALS     |        | method       | limit/base | current     | history1 | history2 |
| Chromium         ppm         ASTM D5185m         0             Nickel         ppm         ASTM D5185m         0             Titanium         ppm         ASTM D5185m         0             Silver         ppm         ASTM D5185m         0             Aluminum         ppm         ASTM D5185m         0             Aluminum         ppm         ASTM D5185m         0             Lead         ppm         ASTM D5185m         0             Copper         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0             Molybdenum </td <td>PQ</td> <td></td> <td>ASTM D8184</td> <td></td> <td>16</td> <td></td> <td></td>   | PQ              |        | ASTM D8184   |            | 16          |          |          |
| Nickel  | Iron            | ppm    | ASTM D5185m  |            | 0           |          |          |
| Titanium         ppm         ASTM D5185m         0             Silver         ppm         ASTM D5185m         0             Aluminum         ppm         ASTM D5185m         0             Copper         ppm         ASTM D5185m         0             Copper         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0             Molybdenum         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         0             Mag  | Chromium        | ppm    | ASTM D5185m  |            | 0           |          |          |
| ASTM D5185m   D   | Nickel          | ppm    | ASTM D5185m  |            | 0           |          |          |
| ASTM D5185m   Q   | Titanium        | ppm    | ASTM D5185m  |            | 0           |          |          |
| Lead  | Silver          | ppm    | ASTM D5185m  |            | 0           |          |          |
| Copper         ppm         ASTM D5185m         0             Tin         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0             Barium         ppm         ASTM D5185m         0             Molybdenum         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         3             Calcium         ppm         ASTM D5185m         513             Zinc         ppm         ASTM D5185m         0             Zinc         ppm         ASTM D5185m         0             Sulfur         ppm         ASTM D5185m         1             Sodium   | Aluminum        | ppm    | ASTM D5185m  |            | 0           |          |          |
| Tin         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0             Barium         ppm         ASTM D5185m         0             Molybdenum         ppm         ASTM D5185m         0             Manganese         ppm         ASTM D5185m         0             Manganesium         ppm         ASTM D5185m         3             Calcium         ppm         ASTM D5185m         3             Phosphorus         ppm         ASTM D5185m         513             Sulfur         ppm         ASTM D5185m         0             Sulfur         ppm         ASTM D5185m         2   | Lead            | ppm    | ASTM D5185m  |            | 0           |          |          |
| Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0             Barium         ppm         ASTM D5185m         0             Molybdenum         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         3             Calcium         ppm         ASTM D5185m         3             Phosphorus         ppm         ASTM D5185m         0             Zinc         ppm         ASTM D5185m         0             Zinc         ppm         ASTM D5185m         0             Sulfur         ppm         ASTM D5185m         2 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>0</td><td></td><td></td></t<>  | Copper          | ppm    | ASTM D5185m  |            | 0           |          |          |
| ADDITIVES   | Tin             | ppm    | ASTM D5185m  |            | 0           |          |          |
| ADDITIVES   | Vanadium        | ppm    | ASTM D5185m  |            | 0           |          |          |
| Boron   ppm   ASTM D5185m   0             Molybdenum   ppm   ASTM D5185m   0             Magnaese   ppm   ASTM D5185m   0             Magnaese   ppm   ASTM D5185m   0             Magnesium   ppm   ASTM D5185m   0             Calcium   ppm   ASTM D5185m   3           Phosphorus   ppm   ASTM D5185m   513           Sulfur   ppm   ASTM D5185m   0           Sulfur   ppm   ASTM D5185m   0           CONTAMINANTS   method   limit/base   current   history1   history2       Silicon   ppm   ASTM D5185m   2           Sodium   ppm   ASTM D5185m   1           Potassium   ppm   ASTM D5185m   20   0           Water   %   ASTM D6304   0.009           ppm Water   ppm   ASTM D6304   94           FLUID CLEANLINESS   method   limit/base   current   history1   history2       Particles > 4μm   ASTM D7647   >5000   779           Particles > 14μm   ASTM D7647   >100   158           Particles > 21μm   ASTM D7647   >40   6           Particles > 38μm   ASTM D7647   >10   0           Particles > 71μm   ASTM D7647   >3   0           Oil Cleanliness   ISO 4406 (c) > 19/17/14   17/14/11   | Cadmium         | ppm    | ASTM D5185m  |            | 0           |          |          |
| Barium  | ADDITIVES       |        | method       | limit/base | current     | history1 | history2 |
| Molybdenum   ppm   ASTM D5185m   0         Manganese   ppm   ASTM D5185m   0         Magnesium   ppm   ASTM D5185m   <1         Calcium   ppm   ASTM D5185m   3         Phosphorus   ppm   ASTM D5185m   513         Zinc   ppm   ASTM D5185m   0         Sulfur   ppm   ASTM D5185m   0         Sulfur   ppm   ASTM D5185m   4157         CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   2         Sodium   ppm   ASTM D5185m   1         Potassium   ppm   ASTM D5185m   2         Water   %   ASTM D6304   0.009         ppm Water   ppm   ASTM D6304   94         Particles >4μm   ASTM D6304   94         Particles >6μm   ASTM D7647   >5000   779         Particles >6μm   ASTM D7647   >160   16         Particles >21μm   ASTM D7647   >10   0         Particles >38μm   ASTM D7647   >10   0         Particles >71μm   ASTM D7647   >3   0         Oil Cleanliness   ISO 4406 (c)   >19/17/14   17/14/11  | Boron           | ppm    | ASTM D5185m  |            | 0           |          |          |
| Manganese         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         <1  | Barium          | ppm    | ASTM D5185m  |            | 0           |          |          |
| Magnesium         ppm         ASTM D5185m         <1             Calcium         ppm         ASTM D5185m         3             Phosphorus         ppm         ASTM D5185m         513             Zinc         ppm         ASTM D5185m         0             Sulfur         ppm         ASTM D5185m         4157             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         2             Sodium         ppm         ASTM D5185m         1             Potassium         ppm         ASTM D5185m         1             Potassium         ppm         ASTM D5185m         1             Water         %         ASTM D5185m         1             Particles >4µm         ASTM D6304         0.009             Particles >4µm         ASTM D7647         >5000         779  | Molybdenum      | ppm    | ASTM D5185m  |            | 0           |          |          |
| Calcium         ppm         ASTM D5185m         3             Phosphorus         ppm         ASTM D5185m         513             Zinc         ppm         ASTM D5185m         0             Sulfur         ppm         ASTM D5185m         4157             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         2             Sodium         ppm         ASTM D5185m         1             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D5185m         1             Particles >4µm         ASTM D6304         0.0099             Particles >6µm         ASTM D7647         >5000         779  | Manganese       | ppm    | ASTM D5185m  |            | 0           |          |          |
| Phosphorus   ppm   ASTM D5185m   0       Sulfur   ppm   ASTM D5185m   0       Sulfur   ppm   ASTM D5185m   0         Sulfur   ppm   ASTM D5185m   4157         Sulfur   ppm   ASTM D5185m   2         Sodium   ppm   ASTM D5185m   2         Sodium   ppm   ASTM D5185m   2           Sodium   ppm   ASTM D5185m   >20   0           Sulfur   ppm   ASTM D6304   0.009           Put   Pu   | Magnesium       | ppm    | ASTM D5185m  |            | <1          |          |          |
| Zinc   ppm   ASTM D5185m   Q       Sulfur   ppm   ASTM D5185m   A157       Sulfur   ppm   ASTM D5185m   A157         Sulfur   ppm   ASTM D5185m   Q         Sodium   ppm   ASTM D5185m   Q           Potassium   ppm   ASTM D5185m   ASTM D5185m   ASTM D5185m   ASTM D5185m   ASTM D6304   Q   Q   Q         Ppm Water   %   ASTM D6304   Q   Q   Q   Q         Ppm Water   ppm   ASTM D6304   Q   Q   Q   Q   Q   Pump Water   ppm   ASTM D6304   Q   Q   Q   Q   Pump Water   ppm   ASTM D6304   Q   Q   Q   Q   Pump Water   ppm   ASTM D7647   S   S   S   S   S   Pump Water   Particles > 6μm   ASTM D7647   >1300   158       Particles > 21μm   ASTM D7647   >160   16       Particles > 21μm   ASTM D7647   >40   6       Particles > 38μm   ASTM D7647   >10   Q       Particles > 71μm   ASTM D7647   >3   Q         Particles > 71μm   ASTM D7647   >3   Q           Oil Cleanliness   ISO 4406 (c)   >19/17/14   17/14/11             Oil Cleanliness   ISO 4406 (c)   >19/17/14   17/14/11   | Calcium         | ppm    | ASTM D5185m  |            | 3           |          |          |
| Sulfur         ppm         ASTM D5185m         4157             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         2             Sodium         ppm         ASTM D5185m         1             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D5185m         1              Water         %         ASTM D5185m         20         0             Water         %         ASTM D6304         0.0099              Water         %         ASTM D6304         94              Particles >4µm         ASTM D7647         >5000         779              Particles >4µm         ASTM D7647         >160         16  | Phosphorus      | ppm    | ASTM D5185m  |            | 513         |          |          |
| CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         2             Sodium         ppm         ASTM D5185m         1             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D6304         0.0009             ppm Water         ppm         ASTM D6304         94             Particles >4µm         ASTM D7647         >5000         779             Particles >6µm         ASTM D7647         >1300         158             Particles >14µm         ASTM D7647         >160         16             Particles >21µm         ASTM D7647         >40         6             Particles >71µm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >19/17/14         17/14/11   | Zinc            | ppm    | ASTM D5185m  |            | 0           |          |          |
| Silicon   ppm   ASTM D5185m   2   | Sulfur          | ppm    | ASTM D5185m  |            | 4157        |          |          |
| Sodium   ppm   ASTM D5185m   1  | CONTAMINANTS    | 3      | method       | limit/base | current     | history1 | history2 |
| Sodium  | Silicon         | ppm    | ASTM D5185m  |            | 2           |          |          |
| Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D6304         0.009              ppm Water         ppm         ASTM D6304         94             FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         779             Particles >6μm         ASTM D7647         >1300         158             Particles >14μm         ASTM D7647         >160         16             Particles >21μm         ASTM D7647         >40         6             Particles >38μm         ASTM D7647         >3         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >19/17/14         17/14/11   | Sodium          | ppm    | ASTM D5185m  |            | 1           |          |          |
| Water         %         ASTM D6304         0.009   <  | Potassium       | ppm    |              | >20        | 0           |          |          |
| FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         779             Particles >6μm         ASTM D7647         >1300         158             Particles >14μm         ASTM D7647         >160         16             Particles >21μm         ASTM D7647         >40         6             Particles >38μm         ASTM D7647         >10         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >19/17/14         17/14/11  | Water           |        | ASTM D6304   |            | 0.009       |          |          |
| Particles >4μm       ASTM D7647       >5000       779           Particles >6μm       ASTM D7647       >1300       158           Particles >14μm       ASTM D7647       >160       16           Particles >21μm       ASTM D7647       >40       6           Particles >38μm       ASTM D7647       >10       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >19/17/14       17/14/11  | ppm Water       | ppm    | ASTM D6304   |            | 94          |          |          |
| Particles >6μm       ASTM D7647       >1300       158           Particles >14μm       ASTM D7647       >160       16           Particles >21μm       ASTM D7647       >40       6           Particles >38μm       ASTM D7647       >10       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >19/17/14       17/14/11  | FLUID CLEANLIN  | NESS   | method       | limit/base | current     | history1 | history2 |
| Particles >14μm       ASTM D7647       >160       16           Particles >21μm       ASTM D7647       >40       6           Particles >38μm       ASTM D7647       >10       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >19/17/14       17/14/11  | •               |        |              |            | 779         |          |          |
| Particles >21μm       ASTM D7647       >40       6           Particles >38μm       ASTM D7647       >10       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >19/17/14       17/14/11   | •               |        | ASTM D7647   |            |             |          |          |
| Particles >38μm       ASTM D7647       >10       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >19/17/14       17/14/11  | •               |        |              |            |             |          |          |
| Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >19/17/14       17/14/11   |                 |        |              | >40        | 6           |          |          |
| Oil Cleanliness ISO 4406 (c) >19/17/14 <b>17/14/11</b>  | Particles >38μm |        |              |            |             |          |          |
| · · ·   | Particles >71μm |        |              |            |             |          |          |
| FLUID DEGRADATION method limit/base current history1 history2   | Oil Cleanliness |        | ISO 4406 (c) | >19/17/14  | 17/14/11    |          |          |
|   | FLUID DEGRADA   | ATION  | method       | limit/base | current     | history1 | history2 |

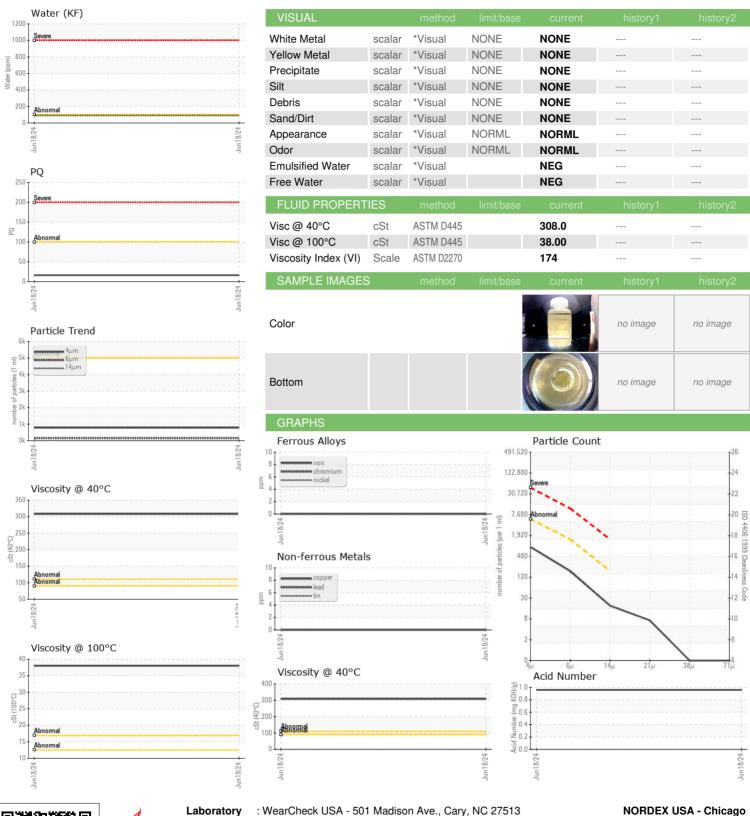
Acid Number (AN)

mg KOH/g ASTM D8045

0.96 --- ---



## **OIL ANALYSIS REPORT**







Certificate 12367

Report Id: NORDEX [WUSCAR] 06234381 (Generated: 07/16/2024 16:06:41) Rev: 1

Laboratory Sample No.

Lab Number

: NX014222 : 06234381 Unique Number : 11123215

 $^st$  - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 11 Jul 2024

**Tested** : 16 Jul 2024 Diagnosed : 16 Jul 2024 - Jonathan Hester

300 SOUTH WACKER DRIVE, SUITE 1500 CHICAGO, IL US 60606

Test Package : IND 2 ( Additional Tests: FT-IR, ICP-NewOil, KF, KV100, PQ, PrtCount, VI ) Contact: DEVIN LINEHAN To discuss this sample report, contact Customer Service at 1-800-237-1369.

DLinehan@nordex-online.com T: (312)386-4124

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: DEVIN LINEHAN - NORDEX

F: (312)386-7102