

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

## **CR1211** Component Hydraulic System AW HYDRAULIC OIL ISO 46 (--- GAL)

#### Recommendation

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

### Contamination

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

#### Fluid Condition

The oil viscosity is lower than normal. The AN level is acceptable for this fluid.

| SAMPLE INFORM  | ATION  |  |  |   |  | TIIStory2  |
|--|--|--|--|---|--|--|
| Sample Number  |  | Client Info  |  | WC0922251   | WC0809189  | WC0761844  |
| Sample Date  |  | Client Info  |  | 06 May 2024   | 04 May 2023  | 08 Nov 2022  |
| Machine Age  | hrs  | Client Info  |  | 8656  | 0  | 8127   |
| Oil Age  | hrs  | Client Info  |  | 1000  | 0  | 582  |
| Oil Changed  |  | Client Info  |  | Not Changd  | Not Changd   | Not Changd   |
| Sample Status  |  |  |  | ATTENTION   | ABNORMAL   | ATTENTION  |
|  |  |  |  | -   | -  |  |
| CONTAMINATIO   | N  | method   | limit/base   | current   | history1   | history2   |
| Water  |  | WC Method  | >0.1   | NEG   | NEG  | NEG  |
| WEAR METALS  |  | method   | limit/base   | current   | history1   | history2   |
| Iron   | ppm  | ASTM D5185m  | >20  | 1   | 4  | 3  |
| Chromium   | ppm  | ASTM D5185m  | >10  | 0   | 0  | <1   |
| Nickel   | ppm  | ASTM D5185m  | >10  | 0   | <1   | 0  |
| Titanium   | ppm  | ASTM D5185m  |  | 0   | 0  | 0  |
| Silver   | ppm  | ASTM D5185m  |  | 0   | 0  | 0  |
| Aluminum   | ppm  | ASTM D5185m  | >10  | 0   | 0  | 0  |
| Lead   | ppm  | ASTM D5185m  | >10  | <1  | 0  | <1   |
| Copper   | ppm  | ASTM D5185m  | >75  | 1   | 4  | 2  |
| Tin  | ppm  | ASTM D5185m  | >10  | <1  | 0  | <1   |
| Antimony   | ppm  | ASTM D5185m  |  |   |  |  |
| Vanadium   | ppm  | ASTM D5185m  |  | 0   | 0  | 0  |
| Cadmium  | ppm  | ASTM D5185m  |  | 0   | 0  | 0  |
|  |  |  |  |   |  |  |
| ADDITIVES  |  | method   | limit/base   | current   | history1   | history2   |
| ADDITIVES<br>Boron   | ppm  | method<br>ASTM D5185m  | limit/base<br>5  | current<br>0  | history1<br>0  | history2<br>1  |
| ADDITIVES<br>Boron<br>Barium   | ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m   | limit/base<br>5<br>5   | current<br>0<br>0   | history1<br>0<br>0   | history2<br>1<br>0   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum   | ppm<br>ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base<br>5<br>5<br>5  | current<br>0<br>0<br><1   | history1<br>0<br>0<br>2  | history2<br>1<br>0<br>2  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base<br>5<br>5<br>5  | current<br>0<br>0<br><1<br>0  | history1<br>0<br>0<br>2<br><1  | history2 1 0 2 0   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base<br>5<br>5<br>5<br>25  | current<br>0<br>0<br><1<br>0<br>3   | history1<br>0<br>0<br>2<br><1<br>1   | history2 1 0 2 0 16  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base<br>5<br>5<br>5<br>25<br>200   | current           0                 0           <1           0           3           572  | history1<br>0<br>2<br><1<br>1<br>46  | history2 1 0 2 0 16 157  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                             | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base<br>5<br>5<br>5<br>25<br>200<br>300  | Current<br>0<br>0<br><1<br>0<br>3<br>572<br>416   | history1<br>0<br>2<br><1<br>1<br>46<br>304   | history2 1 0 2 0 16 157 354  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base<br>5<br>5<br>25<br>200<br>300<br>370  | Current<br>0<br>0<br><1<br>0<br>3<br>572<br>416<br>484  | history1<br>0<br>2<br><1<br>1<br>46<br>304<br>385  | history2 1 0 2 0 16 157 354 458  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | methodASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185m  | limit/base<br>5<br>5<br>5<br>2<br>2<br>2<br>0<br>0<br>3<br>0<br>0<br>3<br>0<br>0<br>3<br>7<br>0<br>2<br>5<br>00                              | Current 0 0 <1 0 3 572 416 484 4267   | history1<br>0<br>2<br><1<br>1<br>46<br>304<br>385<br>3825  | history2 1 0 2 0 16 157 354 458 2263   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base<br>5<br>5<br>25<br>200<br>300<br>370<br>2500  | current           0           -0              -1           0           3           572           416           484           4267           current   | history1<br>0<br>2<br><1<br>1<br>46<br>304<br>385<br>3825<br>history1  | history2 1 0 2 0 16 157 354 458 2263 history2  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base<br>5<br>5<br>25<br>200<br>300<br>370<br>2500<br>2500  | current           0           -0           <1           0           3           572           416           484           4267           current           3  | history1<br>0<br>2<br><1<br>1<br>46<br>304<br>385<br>3825<br>history1<br>1   | history2 1 0 2 0 16 157 354 458 2263 history2 <  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | methodASTM D5185mASTM D5185m   | limit/base<br>5<br>5<br>25<br>200<br>300<br>370<br>2500<br>limit/base<br>>20   | current           0              0           <1           0           3           572           416           484           4267           current           3           1  | history1         0         0         2         <1         1         46         304         385         3825         history1         1         <1  | history2 1 0 2 0 16 157 354 458 2263 history2 <1 0   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m   | limit/base<br>5<br>5<br>25<br>200<br>300<br>370<br>2500<br>2500<br>limit/base<br>>20   | current           0           0           <1           0           3           572           416           484           4267           current           3           1           0   | history1         0         0         2         <1         46         304         385         3825         history1         1         <1         2         <1         2   | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m   | limit/base<br>5<br>5<br>5<br>200<br>300<br>370<br>2500<br>2500<br>limit/base<br>>20<br>20<br>limit/base                                      | current         0            0         <1         0         3         572         416         484         4267         current         3         1         0         current         3         1         0  | history1         0         2         <1         1         46         304         385         3825         history1         1         2         41         2         history1         1         <1         2         history1   | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1         0         <1         history2  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m   | limit/base<br>5<br>5<br>25<br>200<br>300<br>370<br>2500<br>2500<br>limit/base<br>>20<br>limit/base<br>>5000                                  | current         0            0         <1         0         3         572         416         484         4267         current         3         1         0         current         3         1         0         current                                  | history1         0         2         <1         1         46         304         385         3825         history1         1         <1         2         history1   | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1         history2         5176  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >6µm  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m   | limit/base 5 5 25 200 300 370 25000 200 200 Imit/base >20 Imit/base >200 >1300   | current         0         <1         0         3         572         416         484         4267         current         3         1         0         current         3         1         0         current         7929         616                      | history1         0         2         <1         1         46         304         385         3825         history1         1         <1         2         history1         1         <1         2         history1   | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1         0         <1         bistory2         5176         1337  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >14µm   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m   | limit/base<br>5<br>5<br>25<br>200<br>300<br>370<br>2500<br>2500<br>limit/base<br>>20<br>limit/base<br>>20<br>limit/base<br>>20<br>limit/base | current         0         <1         0         3         572         416         484         4267         current         3         1         0         current         3         1         0         current         7929         616         24           | history1         0         2         <1         1         46         304         385         3825         history1         1         <1         2         history1         1         <1         2         history1   | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1         0         <1         0         <1         1         0         <1         0         <1         0         <1         0         <1         0         <3176         98 |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >14µm<br>Particles >21µm                                      | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m                       | limit/base 5 5 25 200 300 370 2500 2500 20 20 20 1mit/base >20 >1300 >160 >40  | current         0         <1         0         3         572         416         484         4267         current         3         1         0         current         3         1         0         current         7929         616         24         7 | history1         0         2         <1         1         46         304         385         3825         history1         1         <1         2         history1 <th>history2         1         0         2         0         16         157         354         458         2263         history2         &lt;1         0         &lt;21</th> | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <21                        |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >4µm<br>Particles >14µm<br>Particles >21µm<br>Particles >38µm | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m           ASTM D5185m | limit/base 5 5 5 20 200 370 2500 200 200 20 1000 >13000 >1600 >40 >10  | current         0         <1         0         3         572         416         484         4267         ourrent         3         1         0         current         3         1         0         current         616         24         7         1    | history1         0         2         <1         1         46         304         385         3825         history1         1         <1         2         history1 <th>history2         1         0         2         0         16         157         354         458         2263         history2         &lt;1         0         &lt;1         0         &lt;1         0         &lt;1         1337         98         21         2</th>   | history2         1         0         2         0         16         157         354         458         2263         history2         <1         0         <1         0         <1         0         <1         1337         98         21         2   |

ISO 4406 (c) >19/17/14 **20/16/12** 

**Oil Cleanliness** 

20/18/14



umber of particles (1 ml)

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r of particles (1 6 4 2 Ok

55

ŝ 3! 30 25

Mav6/71

Particle Trend

. 4. um

Viscosity @ 40°C

Acid Number

Abnormal

Abnormal 50 Ba 45 (0°04) (0°04) (0°04)

Abnorma

Mav6/71

1.00

(B).80 KOH/8)

Ê 0.60

e 0.40

Pig 0.20

0.00

Al

Mav6/7

Particle Trend

14µm

ov8/22

Nov8/22

Jnv8/22

Nov8/22 -

Mav4/23

Mav4/23

Mav4/23

May4/23 -

# **OIL ANALYSIS REPORT**

| FLUID DEGRADA    | ATION    | method     | limit/base | current       | history1 | history2 |
|------------------|----------|------------|------------|---------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.57       | 0.37          | 0.32     | 0.43     |
| VISUAL           |          | method     | limit/base | current       | history1 | history2 |
| White Metal      | scalar   | *Visual    | NONE       | NONE          | 🔺 MODER  | NONE     |
| Yellow Metal     | scalar   | *Visual    | NONE       | NONE          | NONE     | NONE     |
| Precipitate      | scalar   | *Visual    | NONE       | NONE          | NONE     | NONE     |
| Silt             | scalar   | *Visual    | NONE       | NONE          | NONE     | NONE     |
| Debris           | scalar   | *Visual    | NONE       | NONE          | NONE     | NONE     |
| Sand/Dirt        | scalar   | *Visual    | NONE       | NONE          | NONE     | NONE     |
| Appearance       | scalar   | *Visual    | NORML      | NORML         | NORML    | NORML    |
| Odor             | scalar   | *Visual    | NORML      | NORML         | NORML    | NORML    |
| Emulsified Water | scalar   | *Visual    | >0.1       | NEG           | NEG      | NEG      |
| Free Water       | scalar   | *Visual    |            | NEG           | NEG      | NEG      |
| FLUID PROPER     | TIES     | method     | limit/base | current       | history1 | history2 |
| Visc @ 40°C      | cSt      | ASTM D445  | 46         | <b>A</b> 37.9 | ▲ 38.34  | 41.8     |
| SAMPLE IMAGES    |          | method     | limit/base | current       | history1 | history2 |
|                  |          |            |            |               |          |          |

Color



Bottom



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 **BUCKNER HEAVY LIFT** : WC0922251 Sample No. Received : 09 May 2024 4732 NC 54 EAST ġ, Lab Number : 06174581 Tested : 10 May 2024 GRAHAM, NC Unique Number : 11020634 Diagnosed : 13 May 2024 - Don Baldridge US 27253-9215 144 Test Package : CONST Contact: MICHAEL LAWSON Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. michaell@bucknercompanies.com T: (336)376-8888 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. F: (336)376-4090

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

Report Id: BUCGRA [WUSCAR] 06174581 (Generated: 05/20/2024 10:04:17) Rev: 1

Contact/Location: MICHAEL LAWSON - BUCGRA

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