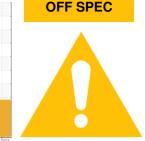


# **COOLANT REPORT**

## Sample Rating Trend

# **OFF SPEC**





**CATERPILLAR ELC (35 GAL)** 

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|---|----|----|----|---|---|
|---|----|----|----|---|---|

Findlay

Coolant

#### Recommendation

We recommend that you perform a partial drain and top off with straight antifreeze to increase level of glycol.

#### Corrosion

All metal levels are normal indicating no corrosion in the cooling system.

### Contaminants

There is no indication of any contamination in the coolant.

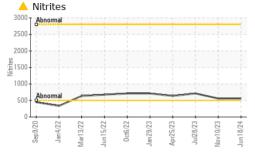
#### Coolant Condition

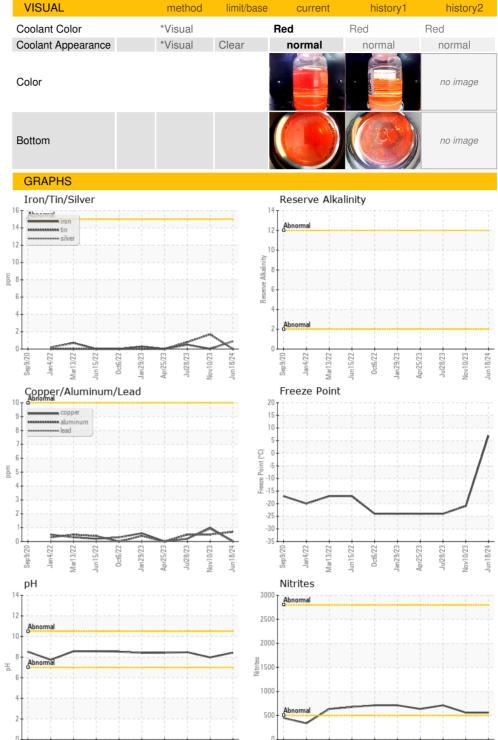
Carboxylate test failed. The glycol level is lower than acceptable. The nitrite level is acceptable. The pH level of this fluid is within the acceptable limits.

| SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Number         Client Info         WC0874649         WC0804916         WC0769018           Sample Date         Client Info         18 Jun 2024         10 Nov 2023         28 Jul 2023           Machine Age         hrs         Client Info         14075         9884         7914           Oil Age         hrs         Client Info         14075         9884         0           Oil Changed         Client Info         Oil Added         N/A         N/A           Sample Status         Client Info         Oil Added         N/A         N/A           PHYSICAL TEST RESULTS         method         limil/base         current         history1         history2           Glycol Type         FT-I-IR               Specific Gravity         ASTM D1287         8.43         7.97         8.47           Nitrites         ppm         AP-053-2009         560         560         712           Reserve Alkalinity         Sale 020         'ASTM D1212               Percezing Point         *F         A  |                        |            | Sep2020 Jan2 | 022 Marž022 Junž022 Octž( | 022 Jan2023 Apr2023 Jul2023 Nová | 023 Jun2024 |             |
|---|------------------------|------------|--------------|---------------------------|----------------------------------|-------------|-------------|
| Sample Date         Client Info         18 Jun 2024         10 Nov 2023         28 Jul 2023           Machine Age         hrs         Client Info         14075         9884         7914           Oil Age         hrs         Client Info         14075         9884         7914           Oil Changed         Client Info         Oil Added         N/A         N/A           Sample Status         Image: Client Info         Oil Added         N/A         N/A           ABNORMAL         NORMAL         NORMAL           PHYSICAL TEST RESULTS         method         limit/base         current         history1         history2           Glycol Type         FT-IR              Specific Gravity         "ASTM D1287"         8.43         7.97         8.47           Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         Scale 0:20" "ASTM D121"              Percentage Giycol         % ASTM D3321         7         -21         -24           Total Dissolved Solids         23.3         44.1         45.8           Freezing Point         "F         ASTM  | SAMPLE INFORM          | MATION     | method       | limit/base                | current                          | history1    | history2    |
| Machine Age         hrs         Client Info         14075         9884         7914           Oil Age         hrs         Client Info         14075         9884         0           Oil Changed         Client Info         Oil Added         N/A         N/A           Sample Status         NORMAL         NORMAL         NORMAL           PHYSICAL TEST RESULTS         method         limit/base         current         history1         history2           Glycol Type         FT-IR               Specific Gravity         "ASTM D1287"         8.43         7.97         8.47           Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         Scale 0:20" "ASTM D1212"               Percentage Glycol         % ASTM D3321         7         -21         -24         38.43         4.1         45.8           Freezing Point         "F         ASTM D3321         7         -21         -24         223.5         284.5         291.0           Total Dissolved Solids         Carboxylate         faill         fail         fail         fail         fai  | Sample Number          |            | Client Info  |                           | WC0874649                        | WC0804916   | WC0769018   |
| Oil Age         hrs         Client Info         14075         9884         0           Oil Changed         Client Info         Oil Added         N/A         N/A           Sample Status         Normal         ABNORMAL         NORMAL         NORMAL           PHYSICAL TEST RESULTS method         limit/base         current         history1         history2           Glycol Type         FT-IR              Specific Gravity         *ASTM D1287         8.43         7.97         8.47           Nitrites         ppm         AP-058;2009         560         560         712           Reserve Alkalinity         \$cale 0:20         *ASTM D1121              Percentage Glycol         %         ASTM D3321         7         -21         -24         -24           Treating Point         °F         ASTM D3321         7         -21         -24         -24           Total Dissolved Solids         Brass Method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         1         1         1         1           CORROSION INHIBITORS   | Sample Date            |            | Client Info  |                           | 18 Jun 2024                      | 10 Nov 2023 | 28 Jul 2023 |
| Oil Changed Sample Status         Client Info         Oil Added ABNORMAL         N/A         N/A           PHYSICAL TEST RESULTS method         limit/base         current         history1         history2           Glycol Type         FT-IR              Specific Gravity         ASTM D1298         1.038         1.060         1.062           pH         Scale 0-14         ASTM D1287         8.43         7.97         8.47           Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         Scale 0-14         ASTM D1221              Percentage Glycol         %         ASTM D3321         7         -21         -24           Freezing Point         °F         ASTM D3321         7         -21         -24           Total Dissolved Solids         223.5         284.5         291.0           Carboxylate         fail         fail         fail         fail           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         0         5   | Machine Age            | hrs        | Client Info  |                           | 14075                            | 9884        | 7914        |
| ABNORMAL         NORMAL         NORMAL           PHYSICAL TEST RESULTS         method         limit/base         current         history1         history2           Glycol Type         FT-IR              Specific Gravity         *ASTM D1298         1.038         1.060         1.062           pH         \$cale 0-14         ASTM D1297         8.43         7.97         8.47           Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         \$cale 0-20         *ASTM D1212              Percentage Glycol         %         ASTM D3321         7         -21         -24           Total Dissolved Solids         STM D3321         7         -21         -24           Total Dissolved Solids         STM D6130         0         1         11         10           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         1         11         10           CORROSION INHIBITORS         method         limit/base         current  | Oil Age                | hrs        | Client Info  |                           | 14075                            | 9884        | 0           |
| PHYSICAL TEST RESULTS   method   limit/base   current   history1   history2   | Oil Changed            |            | Client Info  |                           | Oil Added                        | N/A         | N/A         |
| Specific Gravity  | Sample Status          |            |              |                           | ABNORMAL                         | NORMAL      | NORMAL      |
| Specific Gravity         "ASTM D1298"         1.038         1.060         1.062           pH         Scale 0.14         ASTM D1287         8.43         7.97         8.47           Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         Scale 0.20         "ASTM D1121               Percentage Glycol         %         ASTM D3321                Freezing Point         °F         ASTM D3321          7         -21         -24           Total Dissolved Solids   | PHYSICAL TEST R        | ESULTS     | method       | limit/base                | current                          | history1    | history2    |
| pH         Scale 0-14         ASTM D1287         8.43         7.97         8.47           Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         Scale 0-20         "ASTM D1121              Percentage Glycol         %         ASTM D3321         ↑         -21         -24           Total Dissolved Solids         Preezing Point         °F         ASTM D3321         7         -21         -24           Carboxylate         **         ASTM D3321         7         -21         -24           Carboxylate         **         **         ASTM D3321         7         -21         -24           Carboxylate         **<   | Glycol Type            |            | FT-IR        |                           |                                  |             |             |
| Nitrites         ppm         AP-053:2009         560         560         712           Reserve Alkalinity         Scale 0:20 'ASTM D1121 'ASTM D1121 'ASTM D1121 'ASTM D3321 'ASTM D431 | Specific Gravity       |            | *ASTM D1298  |                           | 1.038                            | 1.060       | 1.062       |
| Reserve Alkalinity         Scale 0-20         "ASTM D1121"  | рН                     | Scale 0-14 | ASTM D1287   |                           | 8.43                             | 7.97        | 8.47        |
| Percentage Glycol         %         ASTM D3321         ▲ 28.3         44.1         45.8           Freezing Point         °F         ASTM D3321         7         -21         -24           Total Dissolved Solids         223.5         284.5         291.0           Carboxylate         fail         fail         fail           CORROSION INHIBITORS method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         1         11         10           Phosphorus         ppm         ASTM D6130         0         0         5         0           Boron         ppm         ASTM D6130         0         0         5         0           Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         <1         <1         <1         <1         <1 <td>Nitrites</td> <td>ppm</td> <td>AP-053:2009</td> <td></td> <th>560</th> <td>560</td> <td>712</td>   | Nitrites               | ppm        | AP-053:2009  |                           | 560                              | 560         | 712         |
| Freezing Point         °F         ASTM D3321         7         -21         -24           Total Dissolved Solids         223.5         284.5         291.0           Carboxylate         fail         fail         fail           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         0         5         0           Boron         ppm         ASTM D6130         0         0         0         5         0           Boron         ppm         ASTM D6130         0         0         0         5         0           Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         <1   | Reserve Alkalinity     | Scale 0-20 | *ASTM D1121  |                           |                                  |             |             |
| Total Dissolved Solids  | Percentage Glycol      | %          | ASTM D3321   |                           | <b>28.3</b>                      | 44.1        | 45.8        |
| Carboxylate         fail         fail         fail         fail           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         1         11         10           Phosphorus         ppm         ASTM D6130         0         0         5         0           Boron         ppm         ASTM D6130         0         0         0         5           Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >15         <1   | Freezing Point         | °F         | ASTM D3321   |                           | 7                                | -21         | -24         |
| CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         1         11         10           Phosphorus         ppm         ASTM D6130         0         0         5         0           Boron         ppm         ASTM D6130         0         0         0         5           Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >15         <1   | Total Dissolved Solids |            |              |                           | 223.5                            | 284.5       | 291.0       |
| Silicon   | Carboxylate            |            |              |                           | fail                             | fail        | fail        |
| Phosphorus         ppm         ASTM D6130         0         5         0           Boron         ppm         ASTM D6130         0         0         5           Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >15         <1         0         <1           Aluminum         ppm         ASTM D6130         >10         <1         <1         <1           Copper         ppm         ASTM D6130         >10         0         1         <1         <1           Lead         ppm         ASTM D6130         >10         0         <1         <1         <1           Tin         ppm         ASTM D6130         >10         0         2         <1         <1           Zinc         ppm         ASTM D6130         0         1         0         0          1         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1   | CORROSION INH          | IBITORS    | method       | limit/base                | current                          | history1    | history2    |
| Boron         ppm         ASTM D6130         0         0         0         5           Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >15         <1         0         <1           Aluminum         ppm         ASTM D6130         >10         <1         <1         <1           Copper         ppm         ASTM D6130         >10         0         1         <1           Lead         ppm         ASTM D6130         >10         0         <1         <1           Tin         ppm         ASTM D6130         >10         0         2         <1           Zinc         ppm         ASTM D6130         0         1         0           CONTAMINANTS         method         limit/base         current         history1         history2           Chlorine         ppm         ASTM D6130         17         21         14           CARRIER SALTS         method         limit/base         current         history1         history2  | Silicon                | ppm        | ASTM D6130   | 0                         | 1                                | 11          | 10          |
| Molybdenum         ppm         ASTM D6130         950         341         442         963           CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >15         <1  | Phosphorus             | ppm        | ASTM D6130   | 0                         | 0                                | 5           | 0           |
| CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >15         <1  | Boron                  | ppm        | ASTM D6130   | 0                         | 0                                | 0           | 5           |
| Iron         ppm         ASTM D6130         >15         <1         0         <1           Aluminum         ppm         ASTM D6130         >10         <1         <1         <1           Copper         ppm         ASTM D6130         >10         0         1         <1           Lead         ppm         ASTM D6130         >10         0         <1         <1           Tin         ppm         ASTM D6130         >10         0         2         <1           Zinc         ppm         ASTM D6130         0         1         0           CONTAMINANTS         method         limit/base         current         history1         history2           Chlorine         ppm         ASTM D6130         17         21         14           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1 </td <td>Molybdenum</td> <td>ppm</td> <td>ASTM D6130</td> <td>950</td> <th>341</th> <td>442</td> <td>963</td>  | Molybdenum             | ppm        | ASTM D6130   | 950                       | 341                              | 442         | 963         |
| Aluminum         ppm         ASTM D6130         >10         <1  | CORROSION              |            | method       | limit/base                | current                          | history1    | history2    |
| Copper         ppm         ASTM D6130 billion         >10         0         1         <1           Lead         ppm         ASTM D6130 billion         >10         0         <1   | Iron                   | ppm        | ASTM D6130   | >15                       | <1                               | 0           | <1          |
| Lead         ppm         ASTM D6130 > 10         0         <1         <1           Tin         ppm         ASTM D6130 > 10         0         2         <1   | Aluminum               | ppm        | ASTM D6130   | >10                       | <1                               | <1          | <1          |
| Tin         ppm         ASTM D6130 bloom         >10 bloom         2 classing         <1 classing           Zinc         ppm         ASTM D6130 bloom         0 bloom         1 classing         0 classing           CONTAMINANTS         method limit/base current         history1 bloom         history2 bloom           Chlorine         ppm         ASTM D6130 bloom         17 classing         21 classing           CARRIER SALTS         method limit/base current         history1 bloom         history2 bloom           Sodium         ppm         ASTM D6130 bloom         4 llo         16 llo           Potassium         ppm         ASTM D6130 bloom         4 limit/base current         history1 bloom           Calcium         ppm         ASTM D6130 bloom         14 llo         2 llo  | Copper                 | ppm        | ASTM D6130   | >10                       | 0                                | 1           | <1          |
| Zinc         ppm         ASTM D6130         0         1         0           CONTAMINANTS         method         limit/base         current         history1         history2           Chlorine         ppm         ASTM D6130         17         21         14           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D6130         2348         2718         5478           Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1  | Lead                   | ppm        | ASTM D6130   | >10                       | 0                                | <1          | <1          |
| CONTAMINANTS         method         limit/base         current         history1         history2           Chlorine         ppm         ASTM D6130         17         21         14           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D6130         2348         2718         5478           Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1  | Tin                    | ppm        | ASTM D6130   | >10                       | 0                                | 2           | <1          |
| Chlorine         ppm         ASTM D6130         17         21         14           CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D6130         2348         2718         5478           Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1   | Zinc                   | ppm        | ASTM D6130   |                           | 0                                | 1           | 0           |
| CARRIER SALTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D6130         2348         2718         5478           Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1  | CONTAMINANTS           |            | method       | limit/base                | current                          | history1    | history2    |
| Sodium         ppm         ASTM D6130         2348         2718         5478           Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1  | Chlorine               | ppm        | ASTM D6130   |                           | 17                               | 21          | 14          |
| Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1   | CARRIER SALTS          |            | method       | limit/base                | current                          | history1    | history2    |
| Potassium         ppm         ASTM D6130         4         16         1           SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         14         2         1   | Sodium                 | ppm        | ASTM D6130   |                           | 2348                             | 2718        | 5478        |
| Calcium         ppm         ASTM D6130         14         2         1   | Potassium              |            | ASTM D6130   |                           | 4                                | 16          | 1           |
| pp  | SCALE POTENTI          | AL         | method       | limit/base                | current                          | history1    | history2    |
|   | Calcium                | ppm        | ASTM D6130   |                           | 14                               | 2           | 1           |
|   | Magnesium              |            | ASTM D6130   |                           | 6                                | 4           | 4           |



## **COOLANT REPORT**









Certificate 12367

Laboratory Sample No. Lab Number : 06220312

: WC0874649

Unique Number : 11098509

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

: 25 Jun 2024 **Tested** : 27 Jun 2024

Diagnosed Test Package : COOL- ( Additional Tests: GlycolType, ICP, KF )

: 27 Jun 2024 - Jonathan Hester To discuss this sample report, contact Customer Service at 1-800-237-1369.

Contact: SHAWN MCCLASKEY stmcclaskey@marathonpetroleum.com T: (606)739-2416

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

F: x:

101 12TH ST

US 41169

CATLETTSBURG, KY

MARATHON PETROLEUM CO.