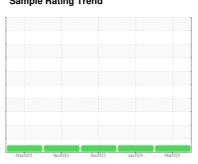


# **OIL ANALYSIS REPORT**

Sample Rating Trend



**NORMAL** 



## Machine Id **Abner Gap 1**

Component

**Natural Gas Engine** 

**CITGO PACEMAKER GAS ENGIN 1700 SE** 

## DIAGNOSIS

### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

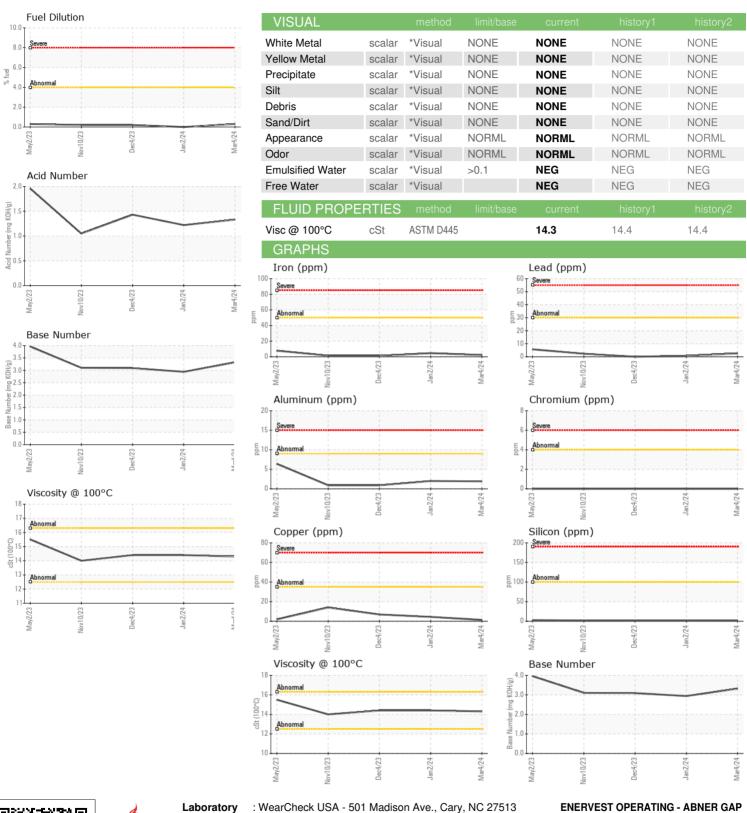
### **Fluid Condition**

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| Sample Number   Client Info   PCA0111853   PCA0111852   PCA011185   PCA01118 | RIES 40W (50 G <i>A</i>   | AL)       | May2023     | Nov2023     | Dec2023 Jan2024 | Mar2024     |             |   |
|--|---|-----------|-------------|-------------|-----------------|-------------|-------------|---|
| Client Info  | SAMPLE INFORM   | MATION    | method      | limit/base  | current         | history1    | history2    |   |
| Machine Age   hrs   Client Info   139072   137595   136903   Oli Age   hrs   Client Info   O   O   O   O   O   O   O   Olif Changed   Client Info   Not Changed   Not Changed   NormAL   NORMA | Sample Number   |           | Client Info |             | PCA0111853      | PCA0111852  | PCA0111849  |   |
| Oil Age     hrs     Client Info     Not Changd  | Sample Date   |           | Client Info |             | 04 Mar 2024     | 02 Jan 2024 | 04 Dec 2023 |   |
| Not Changed   Not Changed   Not Changed   Nor Changed    | Machine Age   | hrs       | Client Info |             | 139072          | 137595      | 136903      |   |
| NORMAL   NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history3   history4   history4   history4   history4   history4   history4   history5   hi | Oil Age   | hrs       | Client Info |             | 0               | 0           | 0           |   |
| CONTAMINATION     method     imit/base     current     history1     history2       Water     WC Method     >0.1     NEG       Lead     PPD     A   | Oil Changed   |           | Client Info |             | Not Changd      | Not Changd  | Not Changd  |   |
| Water     WC Method     >0.1     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     2     5     1       Chromium     ppm     ASTM D5185m     >4     0     0     0       Nickel     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >30     3     <1     0       Copper     ppm     ASTM D5185m     >30     3     <1     0       Copper     ppm     ASTM D5185m     >4     <1     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2 <td>Sample Status</td> <td></td> <td></td> <td></td> <td>NORMAL</td> <td>NORMAL</td> <td>NORMAL</td>  | Sample Status   |           |             |             | NORMAL          | NORMAL      | NORMAL      |   |
| WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     2     5     1       Chromium     ppm     ASTM D5185m     >4     0     0     0       Nickel     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >9     2     2     <1  | CONTAMINATI   | ON        | method      | limit/base  | current         | history1    | history2    |   |
| Chromium   | Water   |           | WC Method   | >0.1        | NEG             | NEG         | NEG         |   |
| Chromium   | WEAR METALS   | S         | method      | limit/base  | current         | history1    | history2    |   |
| Nickel   | ron   | ppm       | ASTM D5185m | >50         | 2               | 5           | 1           |   |
| Description  | Chromium  | ppm       | ASTM D5185m | >4          | 0               | 0           | 0           |   |
| Silver   | Nickel  | ppm       | ASTM D5185m | >2          | 0               | 0           | 0           |   |
| ASTM D5185m   SOCIETION   SO | Titanium  | ppm       | ASTM D5185m |             | 0               | 0           | 0           |   |
| Lead   | Silver  | ppm       | ASTM D5185m | >3          | 0               | 0           | 0           |   |
| Description    | Aluminum  | ppm       | ASTM D5185m | >9          | 2               | 2           | <1          |   |
| Property   Property  | _ead  | ppm       | ASTM D5185m | >30         | 3               | <1          | 0           |   |
| Vanadium     ppm     ASTM D5185m     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Manganese     ppm     ASTM D5185m     <1     0     0       Magnesium     ppm     ASTM D5185m     8     8     10       Calcium     ppm     ASTM D5185m     1587     1650     1538       Phosphorus     ppm     ASTM D5185m     336     383     341       Zinc     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     2     0     4       Potassium     ppm     ASTM D5185m     2 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;35</td><td>1</td><td>4</td><td>7</td></t<>   | Copper  | ppm       | ASTM D5185m | >35         | 1               | 4           | 7           |   |
| Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     <1     1     <1     <1       Manganese     ppm     ASTM D5185m     <1     0     0     0       Magnesium     ppm     ASTM D5185m     8     8     10       Calcium     ppm     ASTM D5185m     1587     1650     1538       Phosphorus     ppm     ASTM D5185m     336     383     341       Zinc     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     2     0     4       Potassium     ppm     AST  | Γin   | ppm       | ASTM D5185m | >4          | <1              | 0           | 0           |   |
| ADDITIVES  | √anadium  | ppm       | ASTM D5185m |             | 0               | 0           | 0           |   |
| Boron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0   0  | Cadmium   | ppm       | ASTM D5185m |             | 0               | 0           | 0           |   |
| Barium   | ADDITIVES   |           | method      | limit/base  | current         | history1    | history2    |   |
| Molybdenum     ppm     ASTM D5185m     <1     1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>0</td>  | Boron   | ppm       | ASTM D5185m |             | 0               | 0           | 0           |   |
| Manganese     ppm     ASTM D5185m     <1     0     0       Magnesium     ppm     ASTM D5185m     8     8     10       Calcium     ppm     ASTM D5185m     1587     1650     1538       Phosphorus     ppm     ASTM D5185m     336     383     341       Zinc     ppm     ASTM D5185m     473     458     462       Sulfur     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     2     2       Godium     ppm     ASTM D5185m     >+100     2     2     2     2       Potassium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D5185m     >20     3     7     13       Fuel   | Barium  | ppm       | ASTM D5185m |             | 0               | 0           | 0           |   |
| Magnesium     ppm     ASTM D5185m     8     8     10       Calcium     ppm     ASTM D5185m     1587     1650     1538       Phosphorus     ppm     ASTM D5185m     336     383     341       Zinc     ppm     ASTM D5185m     473     458     462       Sulfur     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     2     2       Sodium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D5185m     >20     3     7     13       Fuel     % <td< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>&lt;1</td><td>1</td><td>&lt;1</td></td<>  | Molybdenum  | ppm       | ASTM D5185m |             | <1              | 1           | <1          |   |
| Calcium     ppm     ASTM D5185m     1587     1650     1538       Phosphorus     ppm     ASTM D5185m     336     383     341       Zinc     ppm     ASTM D5185m     473     458     462       Sulfur     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     2     2       Sodium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8 <td co<="" td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>&lt;1</td><td>0</td><td>0</td></td>  | <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>&lt;1</td> <td>0</td> <td>0</td> | Manganese | ppm         | ASTM D5185m |                 | <1          | 0           | 0 |
| Phosphorus     ppm     ASTM D5185m     336     383     341       Zinc     ppm     ASTM D5185m     473     458     462       Sulfur     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     2     2       Sodium     ppm     ASTM D5185m     2     0     4       Potassium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION     method     limit/base     current     history1     history2 <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>8</td> <td>8</td> <td>10</td>  | Magnesium   | ppm       | ASTM D5185m |             | 8               | 8           | 10          |   |
| Acid Number (AN)   Text   Color of the col | Calcium   | ppm       | ASTM D5185m |             | 1587            | 1650        | 1538        |   |
| Sulfur     ppm     ASTM D5185m     2510     2799     2585       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     2     2       Sodium     ppm     ASTM D5185m     >20     3     7     13       Potassium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0   | Phosphorus  | ppm       | ASTM D5185m |             | 336             | 383         | 341         |   |
| CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     2     2       Sodium     ppm     ASTM D5185m     2     0     4       Potassium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33 <t< td=""><td>Zinc</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>473</td><td>458</td><td>462</td></t<>  | Zinc  | ppm       | ASTM D5185m |             | 473             | 458         | 462         |   |
| Silicon   ppm   ASTM D5185m   >+100   2   2   2   2   2   2   2   2   2  | Sulfur  | ppm       | ASTM D5185m |             | 2510            | 2799        | 2585        |   |
| Sodium     ppm     ASTM D5185m     2     0     4       Potassium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43   | CONTAMINAN  | TS        | method      | limit/base  | current         | history1    | history2    |   |
| Potassium     ppm     ASTM D5185m     >20     3     7     13       Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43  | Silicon   | ppm       | ASTM D5185m | >+100       | 2               | 2           | 2           |   |
| Fuel     %     ASTM D3524     >4.0     0.3     0.0     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43   | Sodium  | ppm       | ASTM D5185m |             | 2               | 0           | 4           |   |
| INFRA-RED  | Potassium   | ppm       | ASTM D5185m | >20         | 3               | 7           | 13          |   |
| Soot %     %     *ASTM D7844     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43  | Fuel  | %         | ASTM D3524  | >4.0        | 0.3             | 0.0         | 0.2         |   |
| Nitration     Abs/cm     *ASTM D7624     >20     5.8     5.9     6.0       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION method limit/base current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43   | INFRA-RED   |           | method      | limit/base  | current         | history1    | history2    |   |
| Sulfation     Abs/.1mm     *ASTM D7415     >30     19.5     18.9     18.8       FLUID DEGRADATION method limit/base current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43  | Soot %  | %         | *ASTM D7844 |             | 0               | 0           | 0           |   |
| FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43  | Nitration   | Abs/cm    | *ASTM D7624 | >20         | 5.8             | 5.9         | 6.0         |   |
| Oxidation     Abs/.1mm     *ASTM D7414     >25     15.0     14.9     15.4       Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43  | Sulfation   | Abs/.1mm  | *ASTM D7415 | >30         | 19.5            | 18.9        | 18.8        |   |
| Acid Number (AN)     mg KOH/g     ASTM D8045     1.33     1.22     1.43  | FLUID DEGRAD  | OATION    | method      | limit/base  | current         | history1    | history2    |   |
|  | Oxidation   | Abs/.1mm  |             | >25         | 15.0            | 14.9        | 15.4        |   |
| Base Number (BN)     mg KOH/g     ASTM D2896     3.32     2.94     3.09  | Acid Number (AN)  | mg KOH/g  | ASTM D8045  |             | 1.33            | 1.22        | 1.43        |   |
|  | Base Number (BN)  | mg KOH/g  | ASTM D2896  |             | 3.32            | 2.94        | 3.09        |   |



# **OIL ANALYSIS REPORT**







Laboratory Sample No.

Lab Number

Unique Number: 10917198

: PCA0111853 : 06113701

Received **Tested** Diagnosed

: 08 Mar 2024

: 12 Mar 2024 : 12 Mar 2024 - Wes Davis

**ENERVEST OPERATING - ABNER GAP** 7556 SANDLICK ROAD

BEE, VA US 24217 Contact: Service Manager

Test Package : MOB 2 ( Additional Tests: FuelDilution, PercentFuel ) To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - 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)

T: F: