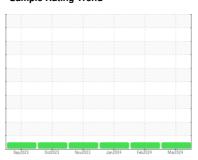


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id

Component **Natural Gas Engine** 

PETRO CANADA SENTRON LD 3000 (--- GAL)

### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

#### Wear

All component wear rates are normal.

#### Contamination

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

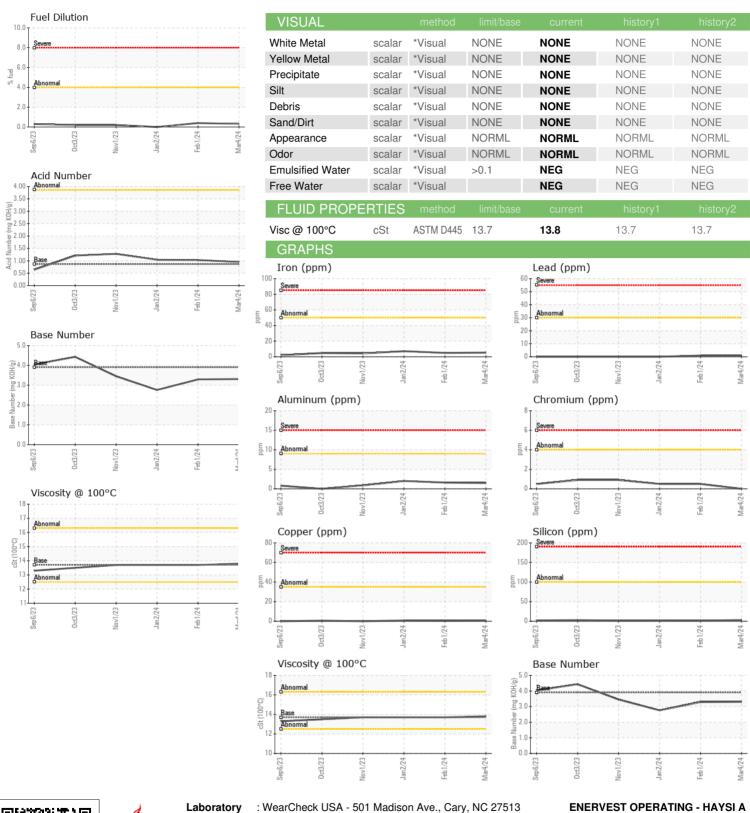
## **Fluid Condition**

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 INFORMATION   method   minit/base   current   mistory1  |             |             |                   |                 |             |          | AL)           |
|--|-------------|-------------|-------------------|-----------------|-------------|----------|---------------|
| Sample Number         Client Info         PCA0117183         PCA0117178           Sample Date         Client Info         04 Mar 2024         01 Feb 2024           Machine Age         hrs         Client Info         147147         146375           Oil Age         hrs         Client Info         4687         3915           Oil Changed         Client Info         Not Changd         Not Changd           Sample Status         Not Changd         Not Changd           CONTAMINATION         method         Imitibase         current         history1           Water         WC Method         >0.1         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >5.0         5         5           Chromium         ppm         ASTM D5185m         >4         0         <1           Nickel         ppm         ASTM D5185m         >2         <1         <1           Silver         ppm         ASTM D5185m         >3         0         0           Aluminum         ppm         ASTM D5185m         >30         1         <1           Copper         ppm <th></th> <th>Mar2024</th> <th>Jan 2024 Feb 2024</th> <th>Oct2023 Nov2023</th> <th>Sep 2023</th> <th>4471011</th> <th>,</th>   |             | Mar2024     | Jan 2024 Feb 2024 | Oct2023 Nov2023 | Sep 2023    | 4471011  | ,             |
| Sample Date   Client Info   04 Mar 2024   01 Feb 2024   Machine Age   hrs   Client Info   147147   146375   3915   Not Changd   Nor C | history2    | history1    | current           | limit/base      | method      | MATION   | SAMPLE INFORM |
| Machine Age  | PCA0112029  | PCA0117178  | PCA0117183        |                 | Client Info |          | Sample Number |
| Dil Age  | 02 Jan 2024 | 01 Feb 2024 | 04 Mar 2024       |                 | Client Info |          | Sample Date   |
| Contained   Cont | 145653      |             |                   |                 |             | hrs      |               |
| NORMAL   NORMAL  | 3193        |             |                   |                 |             | hrs      | · ·           |
| CONTAMINATION         method         limit/base         current         history1           Water         WC Method         >0.1         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >50         5         5           Chromium         ppm         ASTM D5185m         >4         0         <1   | Not Changd  |             |                   |                 | Client Info |          | -             |
| Water         WC Method         >0.1         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >50         5         5           Chromium         ppm         ASTM D5185m         >4         0         <1           Nickel         ppm         ASTM D5185m         >2         <1         <1           Titanium         ppm         ASTM D5185m         >3         0         0           Silver         ppm         ASTM D5185m         >9         2         2           Lead         ppm         ASTM D5185m         >9         2         2           Copper         ppm         ASTM D5185m         >30         1         <1         <1           Tin         ppm         ASTM D5185m         >35         <1         <1         <1           Vanadium         ppm         ASTM D5185m         >4         <1         <1         <1           Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         5         0         0           Barium<  | NORMAL      | NORMAL      | NORMAL            |                 |             |          | ·             |
| WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >50         5         5           Chromium         ppm         ASTM D5185m         >4         0         <1   | history2    | history1    | current           | limit/base      | method      | ON       | CONTAMINATI   |
| ASTM D5185m   Solution   Soluti | NEG         | NEG         | NEG               | >0.1            | WC Method   |          | Water         |
| Chromium         ppm         ASTM D5185m         >4         0         <1           Nickel         ppm         ASTM D5185m         >2         <1  | history2    | history1    | current           | limit/base      | method      | S        | WEAR METALS   |
| Nickel   | 7           | 5           | 5                 | >50             | ASTM D5185m | ppm      | ron           |
| Titanium   | <1          | <1          | 0                 | >4              | ASTM D5185m | ppm      | Chromium      |
| Silver   | 0           | <1          | <1                | >2              | ASTM D5185m | ppm      | Nickel        |
| Aluminum   | 0           | 0           | 0                 |                 | ASTM D5185m | ppm      | Titanium      |
| Lead   | 0           | 0           | 0                 | >3              | ASTM D5185m | ppm      | Silver        |
| Copper         ppm         ASTM D5185m         >35         <1         <1           Tin         ppm         ASTM D5185m         >4         <1   | 2           | 2           | 2                 | >9              | ASTM D5185m | ppm      | Aluminum      |
| Tin  | 0           | <1          | 1                 | >30             | ASTM D5185m | ppm      | Lead          |
| Vanadium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         5         0         0           Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         1         0         0           Manganese         ppm         ASTM D5185m         1         <1         <1           Magnesium         ppm         ASTM D5185m         5         10         12           Calcium         ppm         ASTM D5185m         1220         1220         1501           Phosphorus         ppm         ASTM D5185m         298         271         342           Zinc         ppm         ASTM D5185m         350         333         417           Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m <td>&lt;1</td> <td>&lt;1</td> <th>&lt;1</th> <td>&gt;35</td> <td>ASTM D5185m</td> <td>ppm</td> <td>Copper</td>  | <1          | <1          | <1                | >35             | ASTM D5185m | ppm      | Copper        |
| Cadmium         ppm         ASTM D5185m         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         5         0         0           Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         1         <1  | 0           | <1          | <1                | >4              | ASTM D5185m | ppm      | Tin           |
| ADDITIVES  | 0           | 0           | 0                 |                 | ASTM D5185m | ppm      | Vanadium      |
| Boron   ppm   ASTM D5185m   5   0   0   0  | 0           | 0           | 0                 |                 | ASTM D5185m | ppm      | Cadmium       |
| Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         2         4         <1   | history2    | history1    | current           | limit/base      | method      |          | ADDITIVES     |
| Molybdenum         ppm         ASTM D5185m         2         4         <1           Manganese         ppm         ASTM D5185m         1         <1   | 0           | 0           | 0                 | 5               | ASTM D5185m | ppm      | Boron         |
| Manganese         ppm         ASTM D5185m         1         <1         <1           Magnesium         ppm         ASTM D5185m         5         10         12           Calcium         ppm         ASTM D5185m         1220         1501           Phosphorus         ppm         ASTM D5185m         298         271         342           Zinc         ppm         ASTM D5185m         350         333         417           Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm  | 0           | 0           | 0                 | 1               | ASTM D5185m | ppm      | Barium        |
| Magnesium         ppm         ASTM D5185m         5         10         12           Calcium         ppm         ASTM D5185m         1220         1501           Phosphorus         ppm         ASTM D5185m         298         271         342           Zinc         ppm         ASTM D5185m         350         333         417           Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM   | 2           | <1          | 4                 | 2               | ASTM D5185m | ppm      | Molybdenum    |
| Calcium         ppm         ASTM D5185m         1220         1220         1501           Phosphorus         ppm         ASTM D5185m         298         271         342           Zinc         ppm         ASTM D5185m         350         333         417           Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8  | 0           | <1          | <1                | 1               | ASTM D5185m | ppm      | Manganese     |
| Phosphorus         ppm         ASTM D5185m         298         271         342           Zinc         ppm         ASTM D5185m         350         333         417           Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 10          | 12          | 10                | 5               | ASTM D5185m | ppm      | Magnesium     |
| Zinc         ppm         ASTM D5185m         350         333         417           Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8  | 1516        | 1501        | 1220              | 1220            | ASTM D5185m | ppm      | Calcium       |
| Sulfur         ppm         ASTM D5185m         1995         2074         2634           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 343         | 342         | 271               | 298             | ASTM D5185m | ppm      | Phosphorus    |
| CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 390         | 417         | 333               | 350             | ASTM D5185m | ppm      | Zinc          |
| Silicon         ppm         ASTM D5185m         >+100         3         2           Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 2648        | 2634        | 2074              | 1995            | ASTM D5185m | ppm      | Sulfur        |
| Sodium         ppm         ASTM D5185m         7         2           Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | history2    | history1    | current           | limit/base      | method      | TS       | CONTAMINAN    |
| Potassium         ppm         ASTM D5185m         >20         29         2           Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8  | 2           | 2           | 3                 | >+100           | ASTM D5185m | ppm      | Silicon       |
| Fuel         %         ASTM D3524         >4.0         0.3         0.4           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 0           | 2           | 7                 |                 | ASTM D5185m | ppm      | Sodium        |
| INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8  | 2           | 2           | 29                | >20             | ASTM D5185m | ppm      | Potassium     |
| Soot %         %         *ASTM D7844         0         0           Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 0.0         | 0.4         | 0.3               | >4.0            | ASTM D3524  | %        | Fuel          |
| Nitration         Abs/cm         *ASTM D7624         >20         7.9         5.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8  | history2    | history1    | current           | limit/base      | method      |          | INFRA-RED     |
| Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 0           | 0           | 0                 |                 | *ASTM D7844 | %        | Soot %        |
| Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         16.8   | 5.3         | 5.2         | 7.9               | >20             | *ASTM D7624 | Abs/cm   | Vitration     |
| FLUID DEGRADATION method limit/base current history1   | 16.4        |             |                   | >30             |             |          |               |
|  | history2    | history1    | current           | limit/base      | method      | ATION    | FLUID DEGRAD  |
| Oxidation  | 10.0        | 10.2        | 13.3              | >25             | *ASTM D7414 | Abs/.1mm | Oxidation     |
| Acid Number (AN) mg KOH/g ASTM D8045 0.86 0.95 1.03  | 1.04        |             |                   |                 |             |          |               |
| Base Number (BN) mg KOH/g ASTM D2896 3.9 3.31 3.29   | 2.76        |             |                   |                 |             |          | , ,           |



## **OIL ANALYSIS REPORT**







Laboratory Sample No. Lab Number

: PCA0117183 : 06113694 Unique Number: 10917191

Diagnosed Test Package: MOB 2 (Additional Tests: FuelDilution, PercentFuel)

Received

**Tested** 

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)

: 12 Mar 2024 - Wes Davis

: 08 Mar 2024

: 12 Mar 2024

**ENERVEST OPERATING - HAYSI A** 

1242 WEST WIND ROAD

HAYSI, VA US 24256

Contact: CHARLES GREGORY cgregory@usacompression.com

Contact/Location: CHARLES GREGORY - ENEHAYA

T:

F: