

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **PETERBILT 567 DT38** Component

Diesel Engine Fluid SHELL ROTELLA T3 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and 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 no indication of any contamination in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORM | IATION | method | limit/base | current | history1 | history2 |
|---|--|--|---|---|---|--|
| Sample Number | | Client Info | | PE0002261 | PE0000403 | PE0000450 |
| Sample Date | | Client Info | | 09 Oct 2023 | 02 Jan 2023 | 28 Oct 2022 |
| Machine Age | hrs | Client Info | | 11082 | 9511 | 9206 |
| Oil Age | hrs | Client Info | | 290 | 305 | 300 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | MARGINAL | ABNORMAL |
| CONTAMINATIO | N | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >3.0 | <1.0 | 4 .4 | 5 .6 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METALS | | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >90 | 16 | 9 | 11 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 2 | 1 | 2 |
| Lead | ppm | ASTM D5185m | >40 | <1 | <1 | 1 |
| Copper | ppm | ASTM D5185m | >330 | <1 | <1 | <1 |
| Tin | ppm | ASTM D5185m | >15 | <1 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | current 48 | history1 80 | history2 69 |
| ADDITIVES Boron Barium | ppm ppm | method ASTM D5185m ASTM D5185m | limit/base 10 0 | current 48 3 | history1 80 0 | history2 69 0 |
| ADDITIVES Boron Barium Molybdenum | ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m | limit/base 10 0 10 | current 48 3 30 | history1 80 0 57 | history2 69 0 58 |
| ADDITIVES Boron Barium Molybdenum Manganese | ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base 10 0 10 | current 48 3 30 <1 | history1 80 0 57 <1 | history2 69 0 58 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base 10 0 10 10 | current 48 3 30 <1 172 | history1 80 0 57 <1 367 | history2 69 0 58 <1 356 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base 10 0 10 10 2600 | Current 48 3 30 <1 172 1909 | history1 80 0 57 <1 367 1734 | history2 69 0 58 <1 356 1709 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base 10 10 10 2600 1050 | Current 48 3 30 <1 172 1909 897 | history1 80 0 57 <1 367 1734 954 | history2 69 0 58 <1 356 1709 930 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 10 2600 1050 1250 | current 48 3 30 <1 172 1909 897 1074 | history1 80 0 57 <1 367 1734 954 1209 | history2 69 0 58 <1 356 1709 930 1050 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 10 2600 1050 1250 3900 | current 48 3 30 <1 172 1909 897 1074 3117 | history1 80 0 57 <1 367 1734 954 1209 3493 | history2 69 0 58 <1 356 1709 930 1050 3429 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base 10 10 10 2600 1050 1250 3900 | current 48 3 30 <1 172 1909 897 1074 3117 current | history1 80 0 57 <1 367 1734 954 1209 3493 history1 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 10 2600 1050 1250 3900 limit/base >25 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 2600 1050 1250 3900 limit/base >25 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINANTS Silicon Sidium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 10 2600 1050 1250 3900 limit/base >25 >20 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 2 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 2 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 2600 1050 1250 3900 limit/base >20 limit/base | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 current | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 2 history1 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 10 2600 1050 1250 3900 limit/base >25 >20 limit/base >26 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 2 current 0.3 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 history1 0.3 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 history2 0.4 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base 10 10 10 2600 1050 1250 3900 limit/base >25 >20 limit/base >20 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 current 0.3 8.3 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 history1 0.3 8.8 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 history2 0.4 9.8 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D7844 *ASTM D7624 | imit/base 10 0 10 10 2600 1050 1250 3900 imit/base >25 imit/base >20 imit/base >20 20 >20 >300 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 current 0.3 8.3 18.9 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 history1 0.3 8.8 21.0 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 history2 0 2.8 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 method | limit/base 10 10 10 2600 1050 1250 3900 limit/base >25 20 limit/base >20 >20 20 20 20 20 20 20 20 20 20 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 current 0.3 8.3 18.9 current | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 history1 0.3 8.8 21.0 history1 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 history2 0.4 9.8 22.8 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D78444 *ASTM D78444 *ASTM D7415 method *ASTM D7414 | imit/base 10 0 10 2600 1050 1250 3900 imit/base >20 imit/base >6 >20 imit/base >300 | current 48 3 30 <1 172 1909 897 1074 3117 current 6 2 current 0.3 8.3 18.9 current 14.2 | history1 80 0 57 <1 367 1734 954 1209 3493 history1 3 2 history1 0.3 8.8 21.0 history1 17.1 | history2 69 0 58 <1 356 1709 930 1050 3429 history2 3 <1 0 history2 0.4 9.8 22.8 history2 18.6 |



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0ct28/22

OIL ANALYSIS REPORT

VISUAL



| | White Metal | scalar | *Visual | NONE | NONE | NONE | 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 |
| 2/23 | Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Jan | Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| C | Free Water | scalar | *Visual | | NEG | NEG | NEG |
| | | | mathad | limit/base | ourropt | biotonut | history () |
| | | IE3 | method | IIIIII/Dase | Current | TIISTOLA | TIIStOLY2 |
| | Visc @ 100°C | cSt | ASTM D445 | 15.5 | 13.6 | 12.6 | 12.3 |
| | GRAPHS | | | | | | |
| | Ferrous Alloys | | | | | | |
| | 14 iron | | | | | | |
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| |)ct28// | Jan2// | | 0ct9/ | | | |
| | Non-ferrous Metal | - | | | | | |
| | ¹⁰ T | | | | | | |
| | copper | | | | | | |
| | 8 annual tin | | | | | | |
| | 6 | | | | | | |
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| | Viscosity @ 100°C Base Number | | | | | | |
| | 19 Abnormal | | | 12. | Proc | | |
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| | -16 | | | B/HOX | 0 | | |
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| | 13 | | | 2 4. | 0 | | |
| | 12 | | | 2. | 0 | | |
| | 11 | | | | 0 | | |
| | 28/22 | n2/23 | | ct9/23 | 28/22 | n2/23 | ct9/23 |
| | 0 | ٩ | | Ō | 0 | P | õ |
| | WearCheck USA - 5 | 01 Madie | son Ave Ca | rv. NC 2751 | 3 4 | | NSTRUCTION |
| Sample No. | : PE0002261 | Received | d : 16 (| Oct 2023 | - - - - | | 299 US-101 |
| Lab Number | : 05980201 | Diagnos | ed : 18 (| Oct 2023 | | ŀ | Hoquiam, wa |
| Unique Number | : 10697496 | Diagnost | ician : Dor | n Baldridge | | | US 98550 |
| Certificate L2367 Test Package | CONST (Additional : | Iests: F | 1-IK, ICP, K 00-237-1360 | v 100, SCRE | EN, IBN) | Contact: Se | ervice Manager |
| * - Denotes test methods that a | re outside of the ISO 1 | 7025 sco | pe of accred | ,. litation. | UNCE | , woonenner CO | T: |
| Statements of conformity to spec | ifications are based on th | ne simple | acceptance of | decision rule (| (JCGM 106:2012) | | F: |

Contact/Location: Service Manager - SCHHOQ