

(P1019458) Preferred Service-Tractor Machine Id [Preferred Service-Tractor] 192A02034 Component

Diesel Engine

PETRO CANADA DURON SHP 10W30 (36 QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

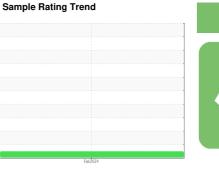
Metal levels are typical for a new component breaking in.

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.



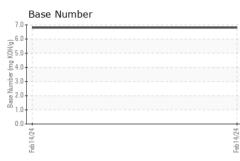


NORMAL

| Sample Number Client Info PCA0116696 ··· ··· Sample Date Client Info 14 Feb 2024 ··· ··· Machine Age mils Client Info 241181 ··· ··· Oil Age mils Client Info 15604 ··· ··· Oil Changed Client Info Changed ··· ··· ··· Sample Status Imathematical Content NORMAL ··· ··· ··· CONTAMINATION method Imathematical Content NORMAL ··· ··· Vater WC Method >0.0 <1.0 ··· ··· ··· Water WC Method >0.0 Status ··· ··· ··· Netar ppm ASTM 051555 >20 <1 ··· ··· Nickel ppm ASTM 051555 >22 <1 ··· ··· Nickel ppm ASTM 051555 >22 <1 ··· ··· <td< th=""><th>SAMPLE INFORI</th><th>MAT<u>ION</u></th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></td<> | SAMPLE INFORI | MAT <u>ION</u> | method | limit/base | current | history1 | history2 |
|---|---------------|----------------|-------------|------------|------------|----------|----------|
| Sample Date Client Info 14 Feb 2024 Machine Age mis Client Info 241181 Oil Age mis Client Info 15604 Sample Status Client Info Changed Sample Status method Imul/base current History1 history2 Fuel WC Method >6.0 <1.0 | | | | | PCA0116696 | | |
| Machine Age mils Client Info 241181 Oil Ghanged Client Info 15604 Sample Status I Immile Client Info Changed CONTAMINATION method Immile Current history1 Water WC Method >6.0 <1.0 Water WC Method >0.2 NEG Glycol WC Method >0.2 NEG Mater WC Method >0.2 NEG Chromium ppm ASIM D5185m >20 <1 Nickel ppm ASIM D5185m >22 <1 Aluminum ppm ASIM D5185m >22 <1 Silver ppm ASIM D5185m >22 1 Asim D5185m >25 5< | | | | | | | |
| Oil Age mis Client Info 15604 Oil Changed Client Info Changed Sample Status Imit/bass current history1 CONTAMINATION method imit/bass current history1 history2 Fuel WC Method >6.0 <1.0 Water WC Method >0.2 NEG Wear WC Method >0.2 NEG WEAR METALS method imit/bass current history1 history2 Iron ppm ASTM D5185m >20 <1 Nickel ppm ASTM D5185m >22 <1 Silver ppm ASTM D5185m >25 5 Copper ppm ASTM D5185m >40 1 Cadmium ppm ASTM D5185 | • | mls | | | | | |
| Oil Changed Client Info Changed NORMAL | • | | | | - | | |
| Sample Status NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >6.0 <1.0 Water WC Method >0.2 NEG Glycol WC Method >0.2 NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 Nickel ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >2 <1 Lead ppm ASTM D5185m >2 5 Lead ppm ASTM D5185m >30 1 Copper ppm ASTM D5185m <1 Cadmium ppm < | - | | | | | | |
| CONTAMINATION method limit/base current history1 history2 Fuel WC Method >0.2 NEG Water WC Method >0.2 NEG Glycol WC Method NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 Nickel ppm ASTM D5185m >20 <1 Silver ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >25 5 Lead ppm ASTM D5185m >330 12 Copper ppm ASTM D5185m >1 Yanadium ppm ASTM D5185m 0 0 Aboot < | - | | | | - | | |
| Fuel WC Method >6.0 <1.0 | - | ION | method | limit/base | current | historv1 | historv2 |
| Water WC Method >0.2 NEG Glycol WC Method NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 34 Chromium ppm ASTM D5185m >20 <1 | | | | >6.0 | | | |
| Glycol WE Method Imel/base current history1 history2 Iron ppm ASTM D5185m >100 34 Chromium ppm ASTM D5185m >20 <1 | | | | | | | |
| WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185m >100 34 Chromium ppm ASTM 05185m >20 <1 | | | | 20.L | | | |
| Iron ppm ASTM D5185m >100 34 Chromium ppm ASTM D5185m >20 <1 Nickel ppm ASTM D5185m >2 <1 Silver ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >2 <1 Lead ppm ASTM D5185m >25 5 Copper ppm ASTM D5185m >40 1 Cadmium ppm ASTM D5185m >330 12 Cadmium pm ASTM D5185m >1 <td< th=""><th>-</th><th>_</th><th></th><th></th><th>nea</th><th></th><th></th></td<> | - | _ | | | nea | | |
| Chromium ppm ASTM D5185m >20 <1 | WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Nickel ppm ASTM D5185m >2 <1 Titanium ppm ASTM D5185m >2 <1 | Iron | ppm | ASTM D5185m | >100 | 34 | | |
| Titanium ppm ASTM D5185m <1 Silver ppm ASTM D5185m >2 <1 | Chromium | ppm | ASTM D5185m | >20 | <1 | | |
| Silver ppm ASTM D5185m >2 <1 Aluminum ppm ASTM D5185m >25 5 Lead ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >330 12 Tin ppm ASTM D5185m >15 1 Cadmium ppm ASTM D5185m >15 1 Cadmium ppm ASTM D5185m <1 | Nickel | ppm | ASTM D5185m | >2 | <1 | | |
| Aluminum ppm ASTM D5185m >25 5 Lead ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >330 12 Tin ppm ASTM D5185m >15 1 Cadmium ppm ASTM D5185m <1 | Titanium | ppm | ASTM D5185m | | <1 | | |
| Lead ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >330 12 Tin ppm ASTM D5185m >15 1 Vanadium ppm ASTM D5185m <1 | Silver | ppm | ASTM D5185m | >2 | <1 | | |
| Copper ppm ASTM D5185m >330 12 Tin ppm ASTM D5185m >15 1 Vanadium ppm ASTM D5185m >15 1 Cadmium ppm ASTM D5185m <1 | Aluminum | ppm | ASTM D5185m | >25 | 5 | | |
| Tin ppm ASTM D5185m >15 1 Vanadium ppm ASTM D5185m <11 | Lead | ppm | ASTM D5185m | >40 | 1 | | |
| Vanadium ppm ASTM D5185m <1 Cadmium ppm ASTM D5185m <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 63 Magnese ppm ASTM D5185m 0 <11 Magnesium ppm ASTM D5185m 050 1007 Magnesium ppm ASTM D5185m 050 1114 Calcium ppm ASTM D5185m 1050 11142 Sulfur ppm ASTM D5185m 260 3317 Sulfur ppm ASTM D5185m 225 6 | Copper | ppm | ASTM D5185m | >330 | 12 | | |
| Cadmium ppm ASTM D5185m <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 0 63 Magnese ppm ASTM D5185m 0 <1 | Tin | ppm | ASTM D5185m | >15 | 1 | | |
| ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 50 63 Magnesium ppm ASTM D5185m 0 <1 | Vanadium | ppm | ASTM D5185m | | <1 | | |
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| Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 50 63 Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 950 1007 Calcium ppm ASTM D5185m 1050 1114 Calcium ppm ASTM D5185m 1050 1114 Phosphorus ppm ASTM D5185m 995 1142 Zinc ppm ASTM D5185m 995 1142 Sulfur ppm ASTM D5185m 2600 3317 Solicon ppm ASTM D5185m >25 6 Solicon ppm ASTM D5185m >20 4 Ntr D5185 >20 4 < | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 50 63 Manganese ppm ASTM D5185m 0 <1 | Boron | ppm | ASTM D5185m | 2 | 0 | | |
| Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 950 1007 Calcium ppm ASTM D5185m 1050 1114 Phosphorus ppm ASTM D5185m 995 1142 Zinc ppm ASTM D5185m 995 1142 Sulfur ppm ASTM D5185m 995 1142 Sulfur ppm ASTM D5185m 2600 3317 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 | Barium | ppm | ASTM D5185m | 0 | 0 | | |
| Magnesium ppm ASTM D5185m 950 1007 Calcium ppm ASTM D5185m 1050 1114 Phosphorus ppm ASTM D5185m 995 1142 Zinc ppm ASTM D5185m 995 1142 Sulfur ppm ASTM D5185m 180 1282 Sulfur ppm ASTM D5185m 2600 3317 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 Sulfation Abs/.1mm *ASTM D7415 | Molybdenum | ppm | ASTM D5185m | 50 | 63 | | |
| Calcium ppm ASTM D5185m 1050 1114 Phosphorus ppm ASTM D5185m 995 1142 Zinc ppm ASTM D5185m 1180 1282 Sulfur ppm ASTM D5185m 2600 3317 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 Nitration Abs/.mm *ASTM D7624 >20 9.4 Sulfation Abs/.imm *ASTM D7415 >30 20.7 FLUID DEGRADATION method | Manganese | ppm | ASTM D5185m | 0 | <1 | | |
| Phosphorus ppm ASTM D5185m 995 1142 Zinc ppm ASTM D5185m 1180 1282 Sulfur ppm ASTM D5185m 2600 3317 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/1mm *ASTM D7415 >30 20.7 FLUID DEGRADATION method limit | Magnesium | ppm | ASTM D5185m | 950 | 1007 | | |
| Zinc ppm ASTM D5185m 1180 1282 Sulfur ppm ASTM D5185m 2600 3317 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 4 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 FLUID DEGRADATION method limit/ba | Calcium | ppm | ASTM D5185m | 1050 | 1114 | | |
| SulfurppmASTM D5185m26003317CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>256SodiumppmASTM D5185m>203PotassiumppmASTM D5185m>204INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5NitrationAbs/cm*ASTM D7624>209.4SulfationAbs/limm*ASTM D7415>3020.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/limm*ASTM D7414>2517.5 | Phosphorus | ppm | ASTM D5185m | 995 | 1142 | | |
| CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>256SodiumppmASTM D5185m3PotassiumppmASTM D5185m>204INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5NitrationAbs/cm*ASTM D7624>209.4SulfationAbs/.tmm*ASTM D7614>3020.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.tmm*ASTM D7414>2517.5 | Zinc | ppm | ASTM D5185m | 1180 | 1282 | | |
| Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 3 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/rm *ASTM D7624 >20 9.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | Sulfur | ppm | ASTM D5185m | 2600 | 3317 | | |
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| Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | Silicon | ppm | ASTM D5185m | >25 | 6 | | |
| INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5NitrationAbs/cm*ASTM D7624>209.4SulfationAbs/.1mm*ASTM D7415>3020.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2517.5 | Sodium | ppm | ASTM D5185m | | 3 | | |
| Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | Potassium | ppm | ASTM D5185m | >20 | 4 | | |
| Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Nitration Abs/cm *ASTM D7624 >20 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | Soot % | % | *ASTM D7844 | >3 | 0.5 | | |
| FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | Nitration | Abs/cm | *ASTM D7624 | >20 | | | |
| Oxidation Abs/.1mm *ASTM D7414 >25 17.5 | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 20.7 | | |
| | FLUID DEGRA | DATION | method | limit/base | current | history1 | history2 |
| | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 17.5 | | |
| | | | | | 6.8 | | |

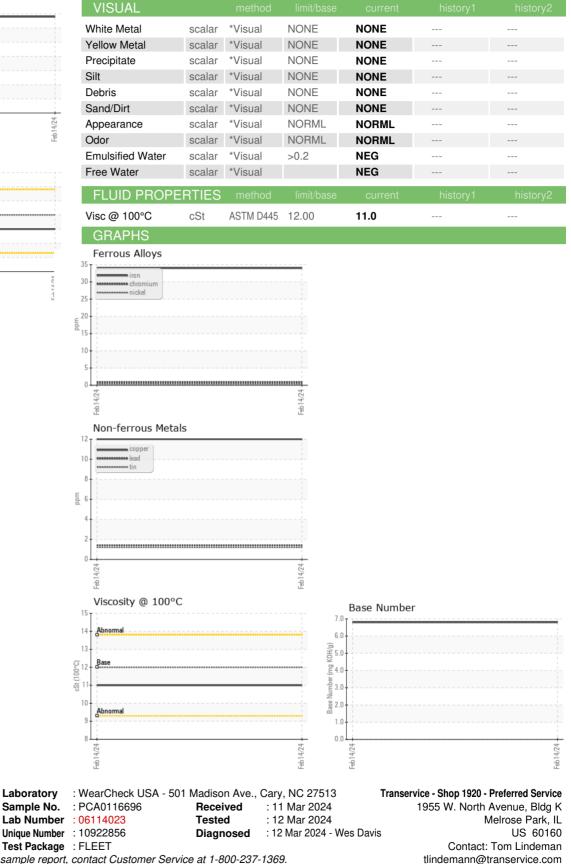


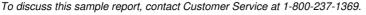
OIL ANALYSIS REPORT











* - 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)

Certificate L2367

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