

## KEMP QUARRIES / NEOSHO WL111

## Front Differential <br> Fluid

PETRO CANADA PRODURO TO-4 SAE 50 (--- GAL)



## DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: PM-3 sampled fluid )

## Wear

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the oil.

## Fluid Condition

The condition of the oil is acceptable for the time in service.

| SAMPLE INFORMATION |  | method | limitbase | current | history 1 | history 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sample Number |  | Client Info |  | PCA0086322 | PCA0086073 | PCA0037717 |
| Sample Date |  | Client Info |  | 19 Jun 2023 | 21 Mar 2023 | 01 Jul 2022 |
| Machine Age | hrs | Client Info |  | 29243 | 28833 | 28351 |
| Oil Age | hrs | Client Info |  | 29243 | 28314 | 28351 |
| Oil Changed |  | Client Info |  | N/A | N/A | Not Changd |
| Sample Status |  |  |  | NORMAL | NORMAL | NORMAL |
| WEAR METALS |  | method | limitbase | current | history 1 | history 2 |
| Iron | ppm | ASTM D5185m | >500 | 187 | 117 | 67 |
| Chromium | ppm | ASTM D5185m | >3 | 0 | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >30 | <1 | 1 | 2 |
| Lead | ppm | ASTM D5185m | $>13$ | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >103 | 4 | 3 | 3 |
| Tin | ppm | ASTM D5185m | >5 | 0 | $<1$ | <1 |
| Vanadium | ppm | ASTM D5185m |  | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m |  | 0 | 0 | 0 |


| ADDITIVES |  | method | limitbase | current | history 1 | history 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Boron | ppm | ASTM D5185m | 2 | 0 | 0 | 2 |
| Barium | ppm | ASTM D5185m | 0 | 14 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 0 | <1 | 0 | <1 |
| Manganese | ppm | ASTM D5185m | 0 | 2 | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | 9 | 29 | 20 | 14 |
| Calcium | ppm | ASTM D5185m | 3114 | 3582 | 3412 | 3167 |
| Phosphorus | ppm | ASTM D5185m | 1099 | 1097 | 1003 | 911 |
| Zinc | ppm | ASTM D5185m | 1245 | 1389 | 1326 | 1118 |
| Sulfur | ppm | ASTM D5185m | 7086 | 5350 | 4874 | 4610 |
| CONTAMINAN | TS | method | limit/base | current | history 1 | history 2 |
| Silicon | ppm | ASTM D5185m | >100 | 21 | 18 | 15 |
| Sodium | ppm | ASTM D5185m |  | 1 | <1 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | 0 | 0 | 0 |
| VISUAL |  | method | limitbase | current | history 1 | history 2 |
| 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 |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >. 2 | NEG | NEG | NEG |
| Free Water | scalar | *Visual |  | NEG | NEG | NEG |
| FLUID PROPERTIES |  | method | limit/base | current | history 1 | history 2 |
| Visc @ $40^{\circ} \mathrm{C}$ | cSt | ASTM D445 | 213.9 | 187 | 188 | 187 |

OIL
DIAGNOSTICS

## OIL ANALYSIS REPORT



| SAMPLE IMAGES | method | limit/base | current | history 1 | history 2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Color |  |  | no image | no image | no image |
| Bottom |  |  | no image | no image | no image |




Aluminum (ppm)


Copper (ppm)


Chromium (ppm)



Viscosity @ $40^{\circ} \mathrm{C}$



Additives


Laboratory Sample No. Lab Number Unique Number Test Package

