



| | |
|-----------------|---------------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |



Area
KEMP QUARRIES / HULBERT
Machine Id
ENG039
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | PCA0085950 | PCA0086870 | PCA0086817 |
| Sample Date | | Client Info | | 29 Apr 2024 | 02 Feb 2024 | 28 Oct 2023 |
| Machine Age | hrs | Client Info | | 36115 | 35574 | 35021 |
| Oil Age | hrs | Client Info | | 541 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 8 | 3 | 6 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | 0 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | 2 | 2 | <1 |
| Lead | ppm | ASTM D5185m | >40 | 2 | <1 | 1 |
| Copper | ppm | ASTM D5185m | >330 | 8 | 4 | 8 |
| Tin | ppm | ASTM D5185m | >15 | 1 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

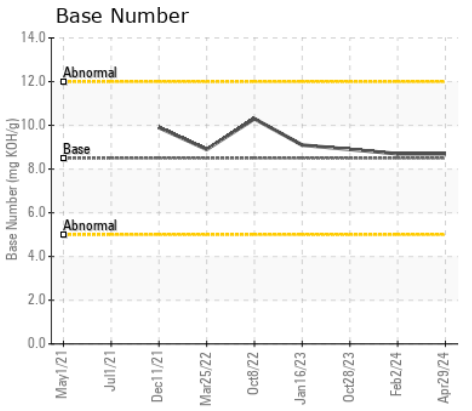
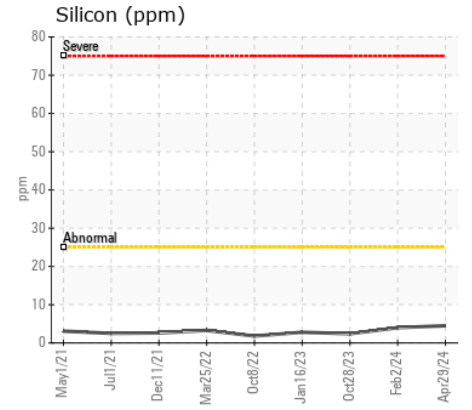
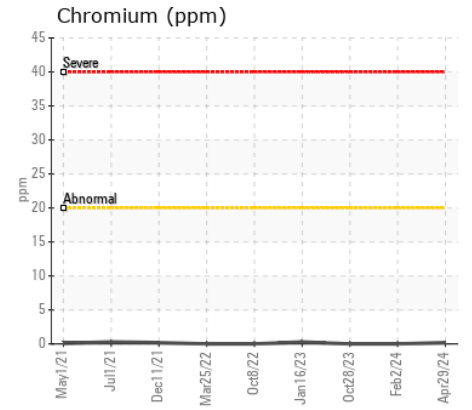
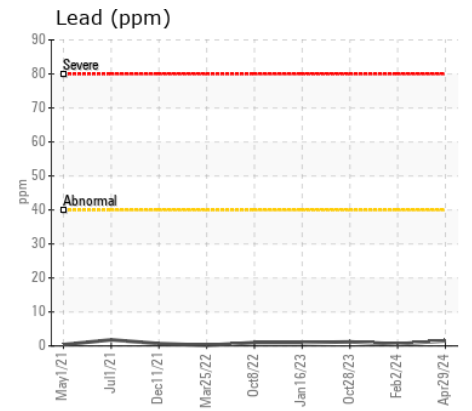
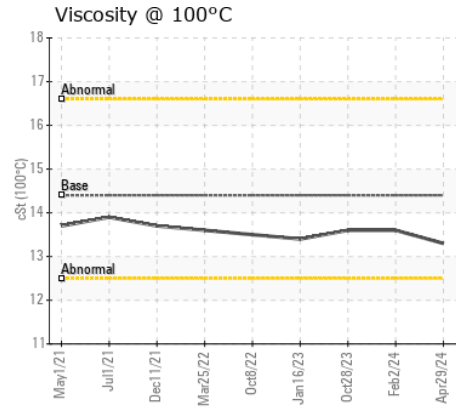
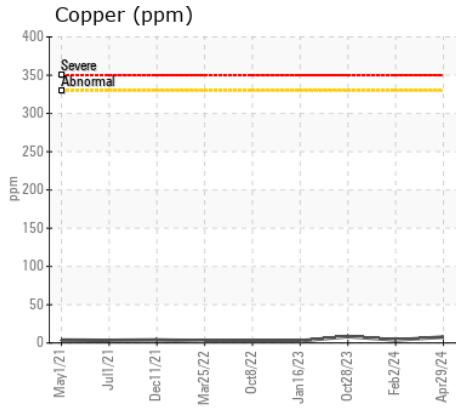
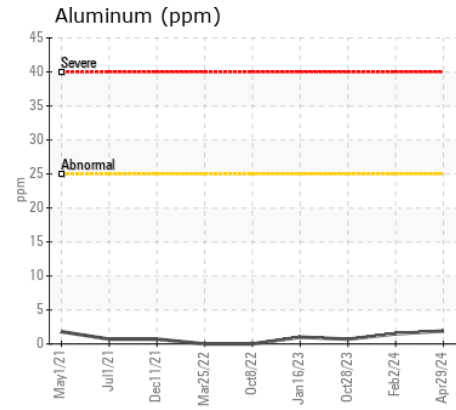
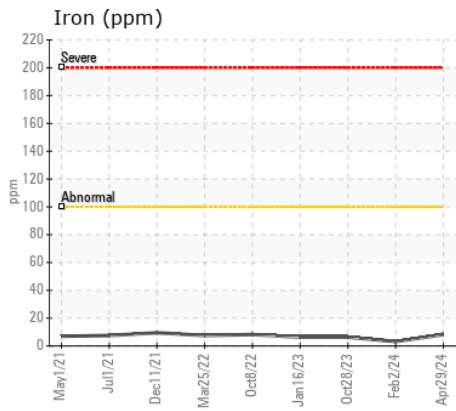
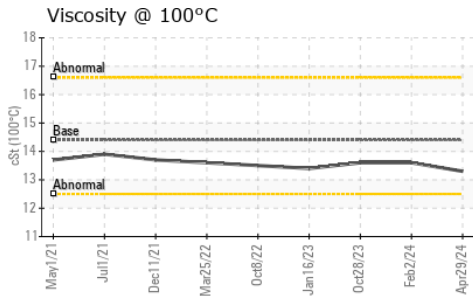
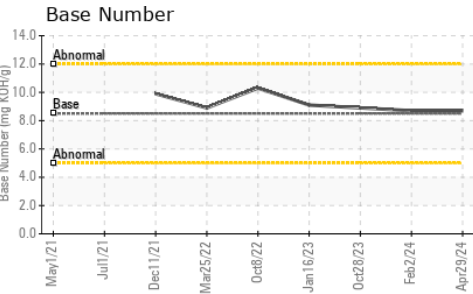
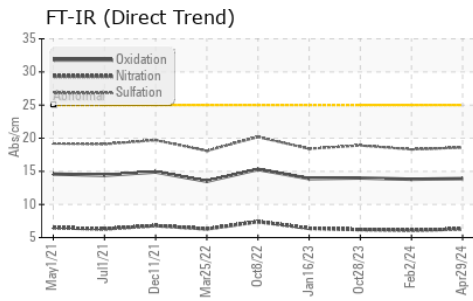
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >25 | 4 | 4 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | 3 | 1 | 1 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.3 | 0.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 6.3 | 6.1 | 6.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 18.6 | 18.3 | 18.9 |
| 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 | >0.2 | NEG | NEG | NEG |

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.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | >216 | 0 | 2 | <1 |
| Boron | ppm | ASTM D5185m | 250 | 0 | 2 | 0 |
| Barium | ppm | ASTM D5185m | 10 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | 60 | 58 | 58 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | 921 | 953 | 943 |
| Calcium | ppm | ASTM D5185m | 3000 | 1066 | 1023 | 1022 |
| Phosphorus | ppm | ASTM D5185m | 1150 | 1060 | 1088 | 1004 |
| Zinc | ppm | ASTM D5185m | 1350 | 1247 | 1291 | 1268 |
| Sulfur | ppm | ASTM D5185m | 4250 | 3615 | 3228 | 3021 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 13.9 | 13.8 | 14.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | 8.7 | 8.7 | 8.9 |
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | 13.3 | 13.6 | 13.6 |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0085950
Lab Number : 06178149
Unique Number : 11029475
Test Package : MOB 1 (Additional Tests: TBN)

Received : 13 May 2024
Tested : 14 May 2024
Diagnosed : 14 May 2024 - Wes Davis

Kemp Quarries - Kemp Stone - Hulbert
 17801 Hwy 80
 Hulbert, OK
 US 74441
 Contact: HULBERT NOTIFICATIONS
 hulbert@kempstone.com

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)