



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

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

Machine Id
TITAN (S/N H32A0300036)
 Component
Hydraulic System
 Fluid
TRC HYDRAULIC OIL 15W (600 GAL)

RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor. Please note that this is a corrected copy for laboratory data and diagnostic comment updates.

WEAR

All component wear rates are normal.

CONTAMINATION

MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present. The amount and size of particulates present in the system are acceptable.

FLUID CONDITION

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|-----------------------|----------|--------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | TR06151968 | TR05563499 | TR05106331 |
| Sample Date | | Client Info | | 30 Mar 2024 | 03 Jun 2022 | 30 Oct 2020 |
| Machine Age | hrs | Client Info | | 109404 | 7488 | 12720 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | Not Changed | Not Changed | Not Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | MARGINAL | NORMAL | NORMAL |
| <hr/> | | | | | | |
| Iron | ppm | ASTM D5185m | >20 | 1 | 2 | 2 |
| Chromium | ppm | ASTM D5185m | >10 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >10 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >10 | 0 | 0 | 0 |
| Lead | ppm | ASTM D5185m | >10 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >75 | 3 | 3 | 5 |
| Tin | ppm | ASTM D5185m | >10 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| <hr/> | | | | | | |
| Silicon | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | 10 | 0 | 0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| MPC Varnish Potential | Scale | ASTM D7843 | >15 | 28 | --- | --- |
| Particles >4µm | | ASTM D7647 | >5000 | 1806 | 2607 | 604 |
| Particles >6µm | | ASTM D7647 | >1300 | 405 | 725 | 166 |
| Particles >14µm | | ASTM D7647 | >160 | 35 | 68 | 18 |
| Particles >21µm | | ASTM D7647 | >40 | 11 | 14 | 6 |
| Particles >38µm | | ASTM D7647 | >10 | 1 | 2 | 1 |
| Particles >71µm | | ASTM D7647 | >3 | 0 | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | 18/16/12 | 19/17/13 | 16/15/11 |
| 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 | >0.1 | NEG | NEG | NEG |
| <hr/> | | | | | | |
| Sodium | ppm | ASTM D5185m | | 3 | 0 | <1 |
| Boron | ppm | ASTM D5185m | | 0 | 0 | 2 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Manganese | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Magnesium | ppm | ASTM D5185m | | 0 | 0 | 4 |
| Calcium | ppm | ASTM D5185m | | 68 | 74 | 91 |
| Phosphorus | ppm | ASTM D5185m | | 627 | 678 | 697 |
| Zinc | ppm | ASTM D5185m | | 715 | 866 | 827 |
| Sulfur | ppm | ASTM D5185m | | 1766 | 1915 | 1782 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | 0.94 | 0.79 | 0.872 |
| Visc @ 40°C | cSt | ASTM D445 | 46 | 45.8 | --- | --- |
| Visc @ 100°C | cSt | ASTM D445 | 6.3 | 7.0 | 6.9 | 7.0 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | 110 | --- | --- |

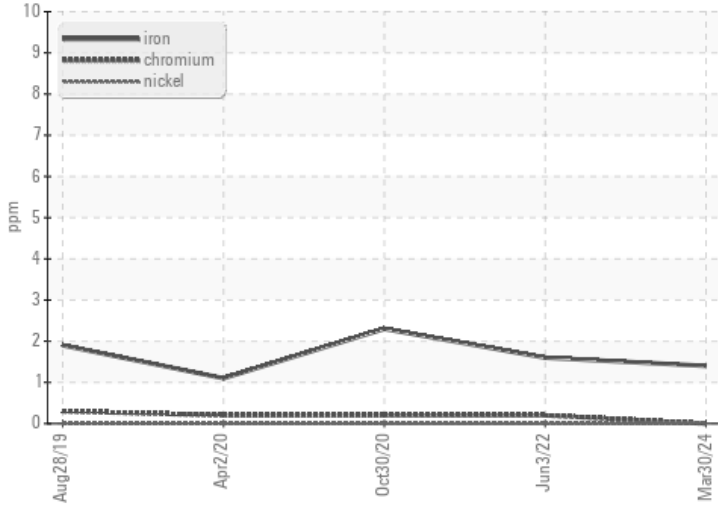
MPC (Varnish Test)



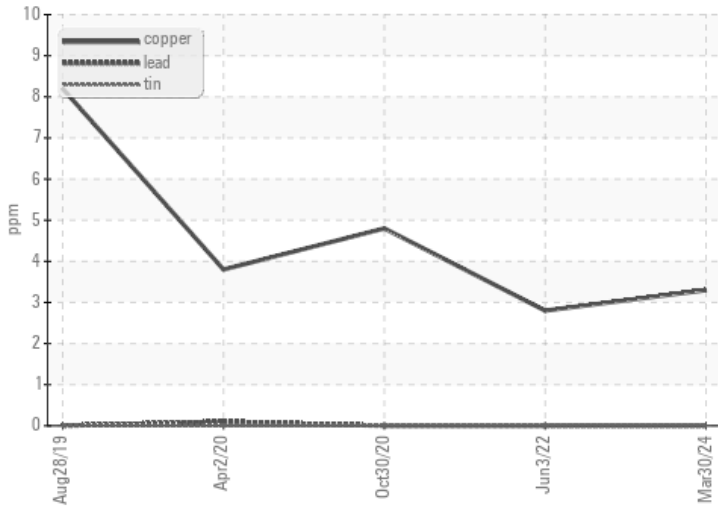
Sample Color & Clarity



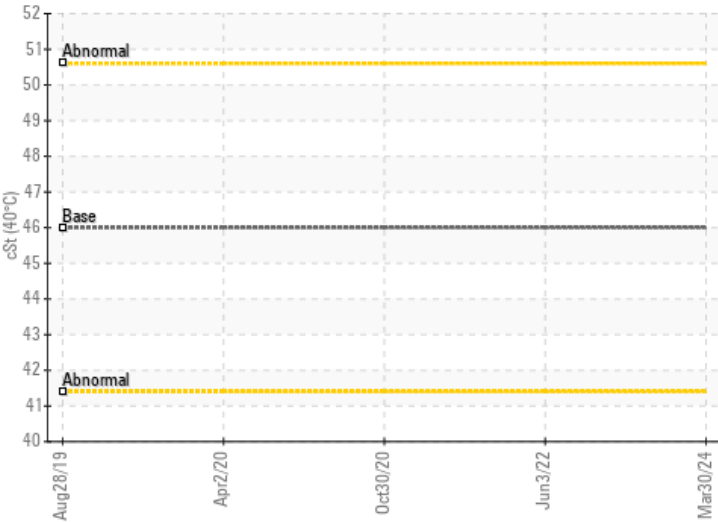
Ferrous Alloys



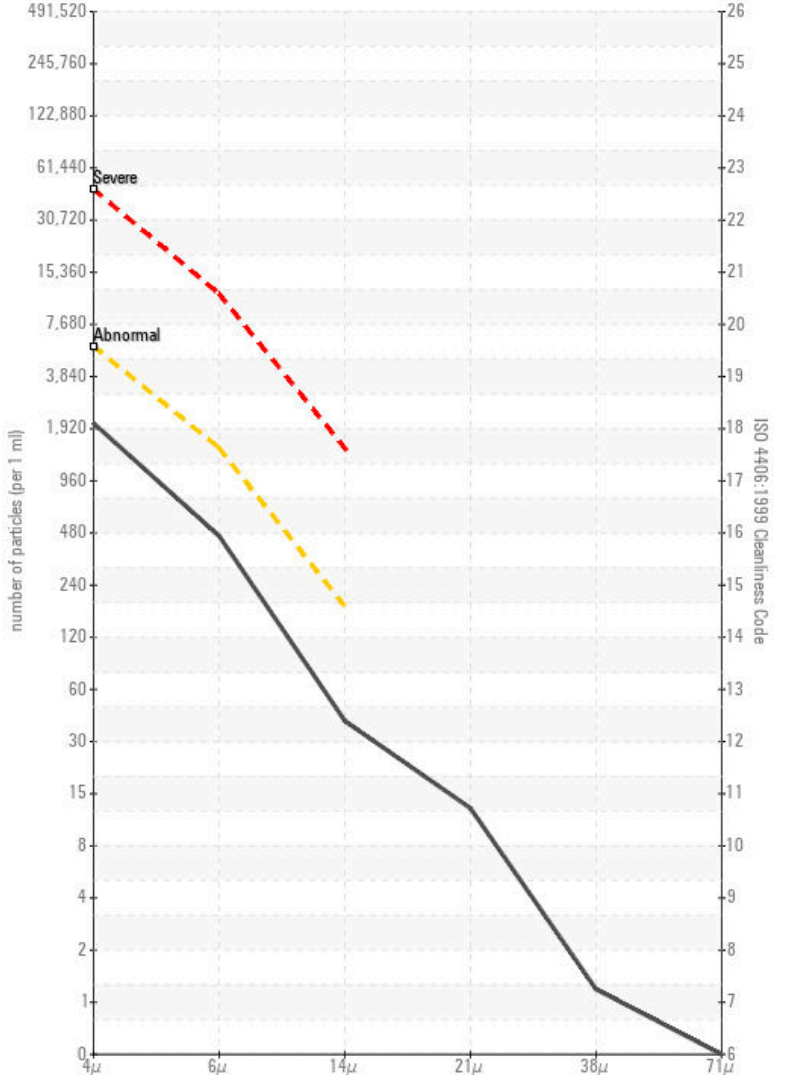
Non-ferrous Metals



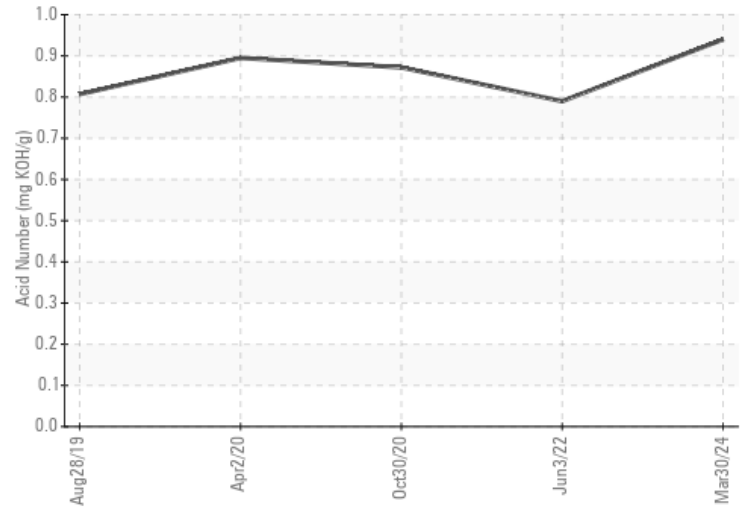
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06151968
Lab Number : 06151968
Unique Number : 10982046
Test Package : MOB 2 (Additional Tests: KV100, MPC, VI)

Received : 17 Apr 2024
Tested : 12 May 2024
Diagnosed : 12 May 2024 - Doug Bogart

PELICAN PRODUCTS INC
 23215 EARLY AVE
 TORRANCE, CA
 US 90505
 Contact: NORMAN MASSON

To discuss this sample report, contact Customer Service at 1-800-827-0711.

* - 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)

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