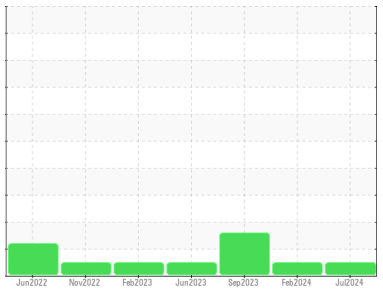
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## PM 2 (S/N MMV2-303)
Component
**Gearbox**
Fluid
**USPI FG GEAR 220 (--- GAL)**

## DIAGNOSIS

**Recommendation**
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 component. 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.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **USPM37050** | USPM17933 | USP227641 |
| Sample Date | | Client Info | | **01 Jul 2024** | 04 Feb 2024 | 15 Sep 2023 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | ATTENTION |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >200 | **1** | <1 | 2 |
| Chromium | ppm | ASTM D5185m | >15 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | >15 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **<1** | <1 | <1 |
| Lead | ppm | ASTM D5185m | >100 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >200 | **0** | 0 | <1 |
| Tin | ppm | ASTM D5185m | >25 | **0** | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Manganese | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | | **<1** | 0 | 2 |
| Calcium | ppm | ASTM D5185m | | **0** | 5 | 2 |
| Phosphorus | ppm | ASTM D5185m | | **572** | 520 | 583 |
| Zinc | ppm | ASTM D5185m | | **16** | 35 | 49 |
| Sulfur | ppm | ASTM D5185m | | **602** | 512 | 736 |

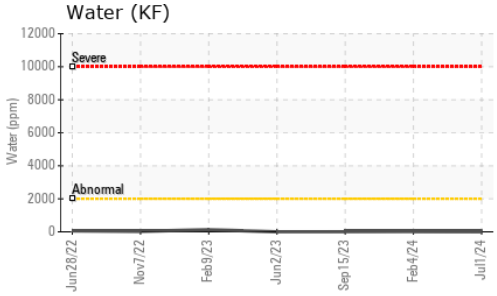
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >50 | **12** | 11 | 14 |
| Sodium | ppm | ASTM D5185m | | **0** | 0 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 0 | 2 |
| Water | % | ASTM D6304 | >0.2 | **0.001** | 0.001 | 0.001 |
| ppm Water | ppm | ASTM D6304 | >2000 | **4** | 12 | 1.1 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | **305** | 647 | 13323 |
| Particles >6µm | | ASTM D7647 | >5000 | **84** | 232 | 5672 |
| Particles >14µm | | ASTM D7647 | >640 | **13** | 40 | 1032 |
| Particles >21µm | | ASTM D7647 | >160 | **5** | 10 | 268 |
| Particles >38µm | | ASTM D7647 | >40 | **1** | 0 | 11 |
| Particles >71µm | | ASTM D7647 | >10 | **0** | 0 | 2 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | **15/14/11** | 17/15/12 | 21/20/17 |

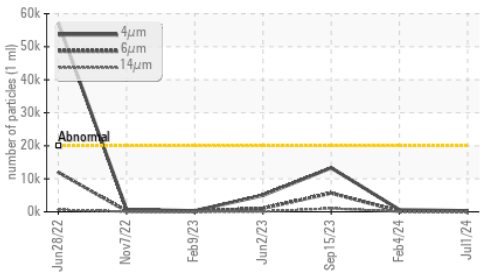
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **0.32** | 0.32 | 0.32 |

# OIL ANALYSIS REPORT

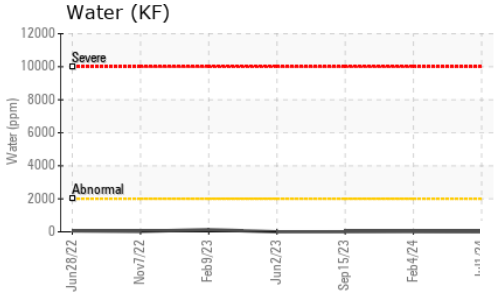
Water (KF)



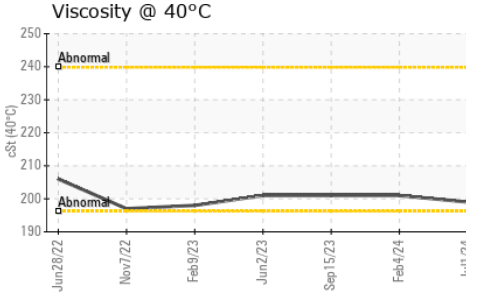

Particle Trend



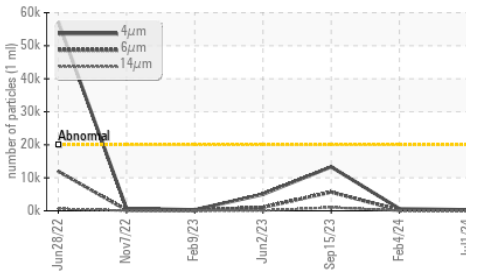

Water (KF)




Viscosity @ 40°C




Particle Trend



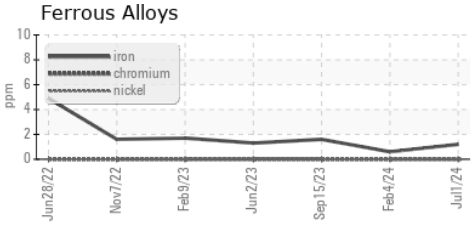

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | LIGHT |
| 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 |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | | **199** | 201 | 201 |

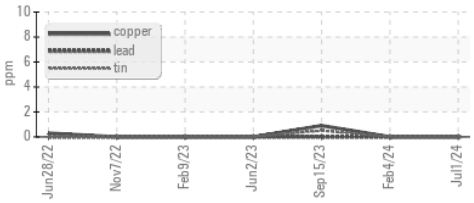
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |

## GRAPHS

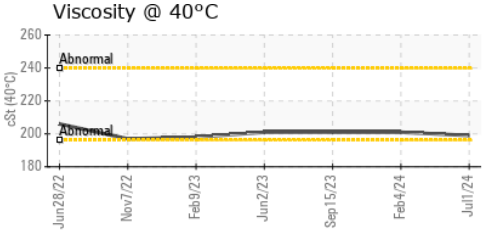
Ferrous Alloys



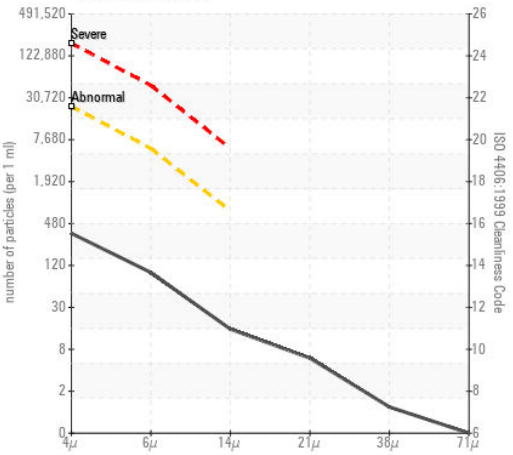

Non-ferrous Metals



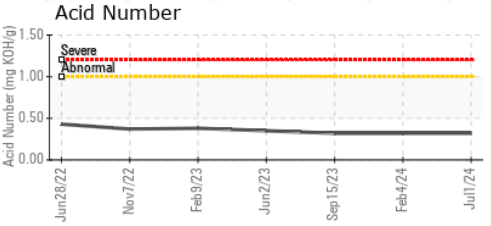

Viscosity @ 40°C




Particle Count




Acid Number




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : USPM37050
**Lab Number** : 06237810
**Unique Number** : 11126644
**Test Package** : IND 2

**Received** : 16 Jul 2024
**Tested** : 17 Jul 2024
**Diagnosed** : 18 Jul 2024 - Doug Bogart

Certificate L2367

*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)*

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