

*'Providing Tribological Solutions'*

## WARNING

*As an added service a warning is provided when a test parameter is either tending to go out of specification or is out of specification. This is so that effective corrective action can be taken as soon as possible.*

*Because of the many differences between designs and consumables, these have to be generic. However, specific suggestions for any system can be provided on request. Just call, fax or e-mail your inquiries. Technical Notes are also available for many fluid topics.*

## HIGH METAL CONTENT

**Background:** New fluid has few trace metals as measured by ICP spectroscopy except for phosphorous. This is normal because phosphorous is one of the constituent elements in phosphate esters with the others being hydrogen, oxygen and carbon. Also, in this test method it is often common to get chromium but this is reportedly an artefact of the test method. No others should be present at more than about 1 ppm.

**Reason for Prompt Action:** High amounts of magnesium (Mg), calcium (Ca) or sodium (Na) may be from the purification media. These can lead to the formation of soaps and/or gels and have a negative effect on fluid foaming and/or air release times. The longer you wait and the higher they go, the more difficult it is to restore the fluid. The reason is that the metals can deposit in the system where can accelerate degradation of the fluid. If high, changing the purification media more often can make matters worse.

**Cause:** Usually a high or rising metal content indicates that the purification media is not being changed often enough and that as a result the acid number has risen too high. At low acid levels the metals are generally retained in the purification media but at high levels they can migrate, likely as phosphorous compounds such as soaps, salts or partial phosphates. The other source can be wear and/or corrosion so should be investigated.

**Action:** If the metals are present as dissolved compounds and are already too high, then reduce them by bleeding and feeding new fluid or to remove them with suitable ion exchange cartridges. If the metals are present as particles, then fine filtration might be effective. The root cause should be corrected so that the problem does not recur.