



# *NAS Fluid Filtration and Analysis Services*

Contamination of fluid power systems is one of the major causes of premature component failure in downhole and production equipment. Weatherford offers flexible, cost-effective filtration and analysis solutions that comply with the most stringent industry standards.

Weatherford's fluid filtration and analysis solutions comply with National Aerospace Standard (NAS) 1638, which establishes a method for counting the particles within a 100-ml sample of control line fluid. The U.S. National Aeronautics and Space Administration (NASA) uses this standard to ensure the reliability of hydraulic control systems in the space program. Weatherford uses the same standard to ensure that hydraulic fluid meets or exceeds the filtration level needed to keep downhole tools and production systems operating safely and efficiently.

A self-contained filtration unit filters water- or oil-based fluid. Trained and certified personnel collect samples from the filtration unit and analyze them at the company's laboratory or the remote location. All laboratory equipment used for analysis meets Aerospace Recommended Practice Specifications (ARP-598B).



Self-contained filtration unit requires minimal space.



Portable lab equipment meets ARP-598B specifications.

## *Applications*

Applications for Weatherford's NAS Fluid filtration and analysis services include:

- hydraulic control lines, intelligent completion downhole tools
- production control units and hydraulic fluid sample analysis—oil-based and water-based
- drilling, completion, and production systems

## *Features, Advantages and Benefits*

- Self-contained filtration unit requires minimal space and saves costs.
- Written certification and optional digital photographs provided with each sample exceed stringent record-keeping and reporting requirements.
- NAS-compliant filtration system ensures fluid cleanliness to maximize service life and safety of downhole tools and production systems.
- Samples can be collected and analyzed at remote locations to save time and improve accuracy of sample analysis.



Microscopic image of fluid sample before Weatherford NAS filtration service (NAS Class 8).



Microscopic image of fluid sample after Weatherford NAS filtration service (NAS Class 4).