COMPANY OVERVIEW

U.S. Well Services has been providing hydraulic fracturing services in oil and natural gas basins since 2012. They previously tracked their metrics via trained operators and manually created documents. Their recent goal was to transform their operations to create efficient well servicing operations, address critical equipment issues, minimize system failures, and optimize their capital equipment.

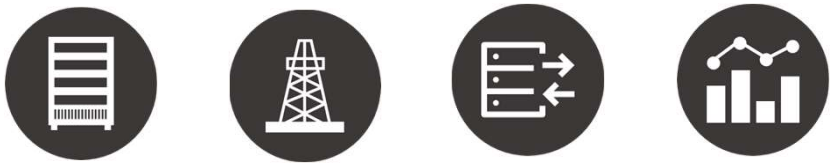
Key Success Metrics

- Alerting and reporting of all critical failures since system implementation.
- Per second data collection and cloud datalake archival of all equipment and fleet metrics.
- SMS text alerts for maintenance engineers & C-suite leaders
- Secure, custom websites for internal USWS decision makers and individual USWS customers.

SOLUTIONS

Grail Solutions worked with USWS to deliver:

- Pump vibration anomaly alerting
- Turbine efficiency monitoring
- Predictive maintenance scheduling
- Fleetwide alert management and response department
- Secure data connections to customer portals and third-party O&G applications.



BENEFITS

1 Maximizing Equipment Longevity
The Grail system calculated the minimum necessary maintenance intervals for maximum longevity of equipment subcomponents. Thus, minimizing costly maintenance and downtime and maximizing the ROI of equipment.

2 Enabled the Creation of a Response Team
The Grail system allowed for a response team to monitor delays and alerts via SMS text and be pro-active in their decision making.

3 Data Collection & Visualization
The Grail system collected hundreds of metrics every second. This enabled USWS' experts to analyze how to better operate and maintain capital equipment.

GRAIL SOLUTIONS

www.Grail.Solutions

Data Consulting

1429 NW 51st St. #4
Seattle, WA 98107

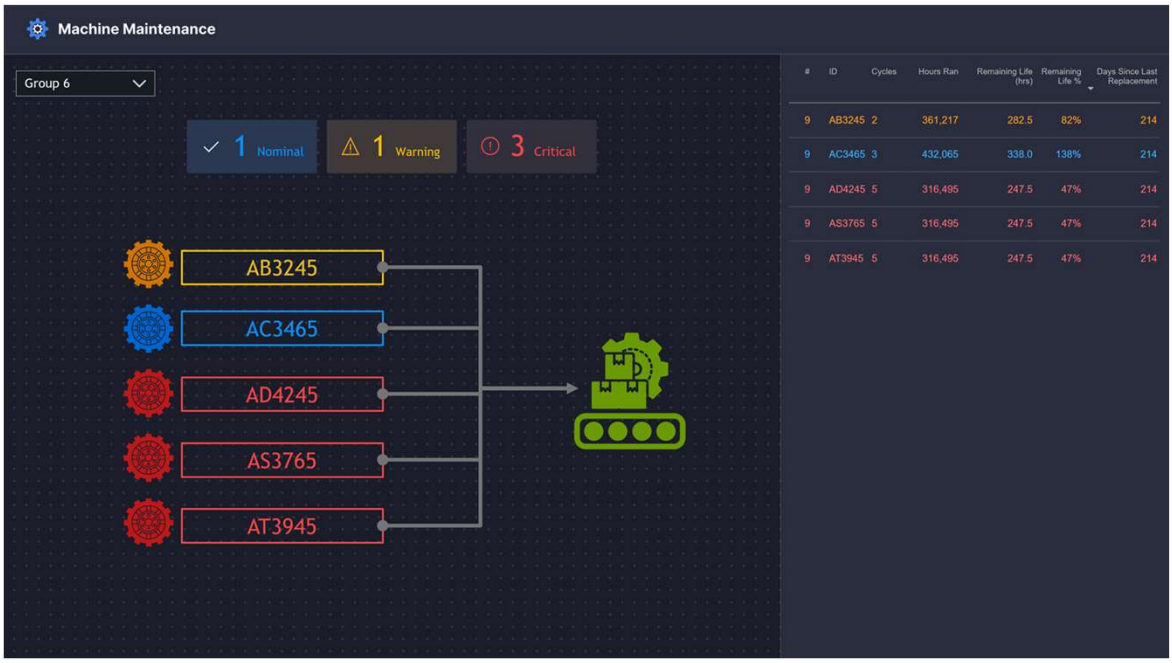
VISUALIZATION EXAMPLE

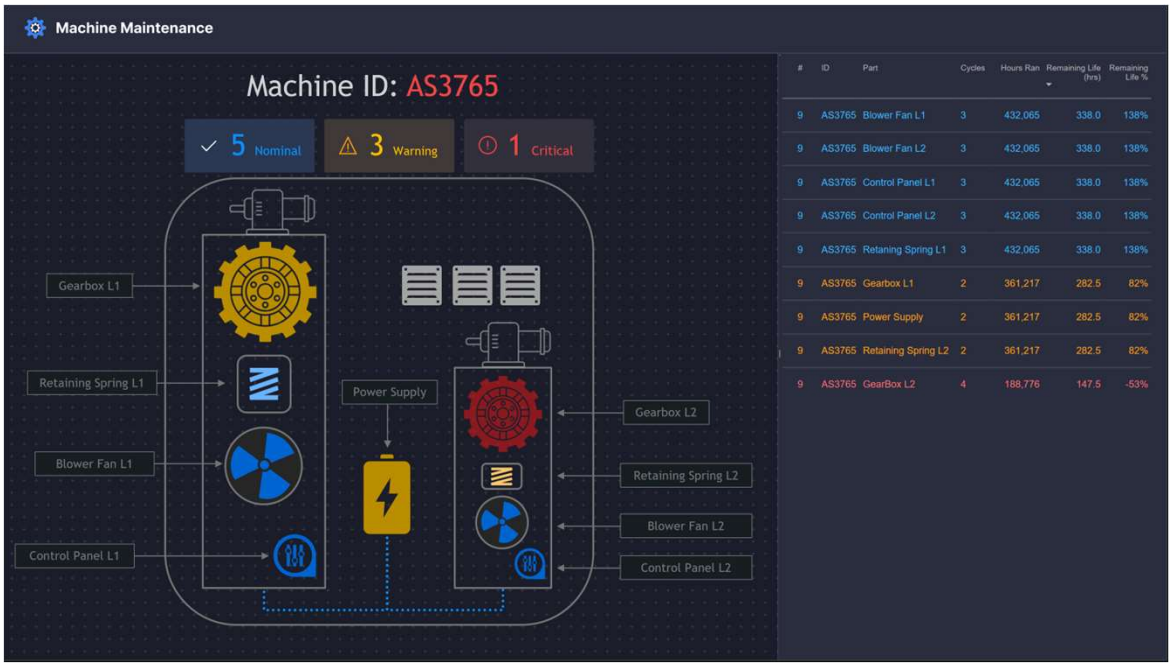
GRAIL SOLUTIONS

IDENTIFY **ANALYZE** **PLAN**

These visualizations were created so operational teams could plan equipment maintenance to minimize job downtime. These dashboards allow for the operational team to quickly and easily:

1. ***Identify*** *how many machines will require maintenance and how soon (nominal, warning, critical).*
2. ***Analyze*** *what parts of an individual machine will be requiring maintenance.*
3. ***Plan*** *the maintenance to minimize downtime and maximize reliability of equipment.*





Note: Data and system architecture have been anonymized and adopted for this case study