



GTE

Greater Engineering™



Machine Audits for Enhanced Safety & Compliance

Project Background

Client: Multiple
Date: Ongoing since 2018
Location: Pilbara, Western Australia

Background

Major iron ore miners rely heavily on balanced machines—stackers, reclaimers and shiploaders at their processing and port locations. Machine audits, also known as SCS Proof Tests, Control and Protective Limit Audits, and Control and Protective Device Audits, play a crucial role in identifying latent failures in safety instrumented systems. These audits ensure compliance with industry safety regulations and maintain optimal operational performance.

Challenges

Mining operators needed a way to verify the functionality of critical safety systems to prevent machine failures and ensure compliance with safety standards. Key challenges included:

- **Safety Risks:** Unchecked sensor and switch failures could allow machines to exceed their design limits, posing severe safety hazards.
- **Environmental & Logistical Issues:** Conducting audits in the Pilbara region meant dealing with extreme temperatures, dust, and dynamic scheduling requirements during shutdowns.
- **Operational Constraints:** Machine audits needed to be conducted without causing significant disruption to production or shutdown schedules, requiring high flexibility from the audit team.



The Solution

GTE Group implemented a structured machine audit process to enhance safety, ensure compliance, and improve operational reliability. Key components included:

Comprehensive Compliance Standards

Adhering to AS 4024, AS 60261, AS 61508, and client specific standards.

Collaborative Issue Resolution

Immediate rectification of safety risks when possible, with ongoing recommendations for long-term system improvements.

Flexible Scheduling:

Adjusting audit schedules dynamically to align with client operations, including split shifts to accommodate access constraints.

Key Findings & Resolutions Implemented

Critical Issues Identified:

Failures in safety switches and sensors that allowed machines to operate beyond safe working limits.

Immediate Solutions:

Immediate fault escalation to client supervisors for rapid resolution, with on-site replacement and recalibration of sensors and switches where possible.

Long-Term Enhancements:

Recommended improvements to audit procedures and scheduling efficiency, reducing potential machine downtime.

Products & Technology Used

- Industry-standard compliance frameworks for safety validation
- Manual and automated sensor testing techniques
- SCADA-based diagnostic tools for real-time safety monitoring

Results and Impact

- **Enhanced Safety Compliance:** All tested machines were confirmed to operate within safe design limits.
- **Reduced Downtime:** Early detection of potential failures prevented costly machine breakdowns, production downtime and extended asset lifespan.
- **Improved Operational Efficiency:** Proactive audits minimised unexpected maintenance delays, streamlining production schedules.
- **Strengthened Client Trust:** Ongoing collaboration with clients for continued safety verification and operational support.

Project Outcome

Through structured machine audits and proactive risk management, GTE Group ensures the reliability and safety of mining equipment in the Pilbara region. The transition toward digital documentation and real-time reporting will further enhance the efficiency of future audits. Contact us today for more information on GTE Group's machine audit services.