

Formula 1

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Formula 2

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Detailed Explanation

Factory Acceptance Testing (FAT) occurs at the vendor’s facility prior to equipment shipment and focuses on verifying hardware/software functionality, integration, redundancy, cybersecurity controls, alarm handling, and human-machine interface (HMI) behavior against the ROC design basis and IEC 62443/IEC 61511 compliance requirements. Site Acceptance Testing (SAT) is conducted after installation at the mine site and validates end-to-end system performance under real-world conditions—including network latency, telemetry fidelity, control loop response times, failover behavior, and interoperability with field devices (e.g., PLCs, SCADA, fleet management systems). The protocol mandates traceable test cases aligned with Functional Requirements Specifications (FRS) and System Architecture Documents, with pass/fail criteria defined quantitatively (e.g., <500 ms command-to-response time, 99.99% uptime over 72-hour stress test). The Sign-Off Sheet serves as auditable legal and contractual evidence, requiring sequential approval from Engineering, Operations, Safety, Cybersecurity, and Client representatives—each attesting to their domain-specific verification. Deviations are logged in a formal Non-Conformance Report (NCR) process with root-cause analysis and corrective action tracking before final acceptance.

Key Components

#	Component
1	Test Case Library (traceable to FRS)
2	Roles & Responsibilities Matrix

#	Component
3	Evidence Capture Template (screenshots, logs, timestamps)

Applications

#	Application
1	Pre-commissioning validation of ROC control systems
2	Regulatory compliance documentation for mining safety authorities (e.g., MSHA, DMRE)
3	Contractual milestone delivery and payment gatekeeping

Related Concepts

#	Concept
1	Functional Safety (IEC 61511)
2	Cybersecurity Assurance (IEC 62443-2-4)
3	Traceability Matrix (Requirements ? Tests ? Evidence)

Tags

mining, remote operations, acceptance testing, ROC, FAT, SAT
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ROC FAT/SAT Test Protocol & Sign-Off Sheet
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