

Formula 1

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Formula 2

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Detailed Explanation

The ROC Contingency Plan Framework provides a systematic approach to identifying, prioritizing, and sustaining essential remote operations functions—including fleet monitoring, process control, safety interlock management, and emergency response coordination—when primary systems or locations fail. Unlike generic business continuity plans, it explicitly addresses ROC-specific dependencies such as low-latency satellite/5G connectivity, time-sensitive SCADA telemetry, cyber-physical system integrity, and regulatory reporting obligations under mining health and safety legislation (e.g., MSHA, DMRE). Core to the framework is the ROC Business Impact Analysis (ROC-BIA), which quantifies Maximum Acceptable Outage (MAO) and Minimum Business Continuity Objective (MBCO) per functional process—not just at the organizational level but down to individual control loops (e.g., haul truck dispatch latency < 500 ms). The framework mandates scenario-based testing across three tiers: technical (e.g., primary HMI failure), operational (e.g., loss of site-wide comms), and strategic (e.g., regional power grid collapse), with defined escalation paths, role-based activation checklists, and predefined fallback configurations (e.g., local edge controllers assuming limited autonomy during WAN loss). Continual improvement is enforced via post-incident reviews linked to ISO 22301 Clause 10 requirements, including metrics tracking mean time to restore (MTTR) for ROC-critical services and annual validation of recovery time objectives (RTOs) against evolving automation architecture (e.g., AI-driven predictive maintenance integration).

Key Components

#	Component
1	ROC-Specific Business Impact Analysis (ROC-BIA)

#	Component
2	Tiered Incident Response Playbooks (Technical/Operational/Strategic)
3	Geographically Redundant ROC Architecture with Failover Automation

Applications

#	Application
1	Activation of secondary ROC site during primary facility outage
2	Cybersecurity incident containment while preserving real-time equipment safety controls
3	Continued remote supervision of autonomous haulage during regional telecommunications disruption

Related Concepts

#	Concept
1	Business Continuity Management System (BCMS)
2	Mining Operational Technology (OT) Resilience
3	Remote Operations Center (ROC) Architecture

Tags

mining, business_continuity, ISO_22301, ROC, critical_infrastructure