INCIDENT ROOT CAUSE ANALYSIS

A structured approach to containment, RCA, and CAPA follow-through

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INCIDENT COVER

Incident ID

Incident name and unique identifier for traceability across RCA, CAPA, and audits

Severity rating

Incident severity rating aligned to your reliability and safety classification rubric

RCA lead escalation

RCA lead role, contact, and escalation path for timely decision-making

Event date & timezone

Date of event plus timezone to anchor timeline accuracy and evidence integrity

PROBLEM STATEMENT AND CONTAINMENT

Observable failure mode

Observable failure mode: measurable operational behavior that occurred during the incident

Event context

System, asset, site, and operational context during the event

Impacted stakeholders

Customers, internal users, workers, or downstream processes impacted by the incident

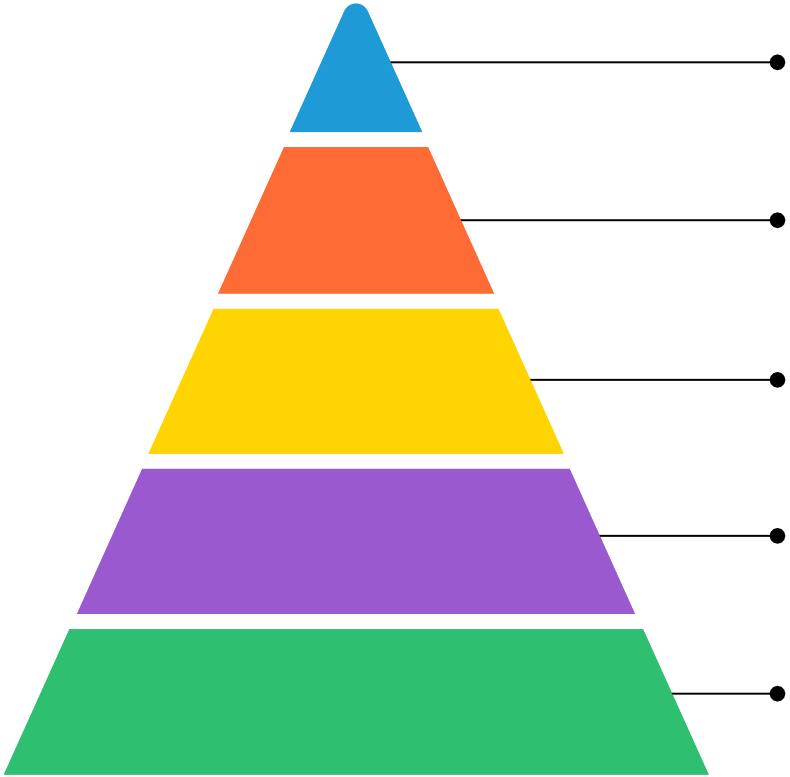
Immediate containment actions

Actions taken to stop escalation and preserve evidence during immediate containment

MINUTE-BY-MINUTE INCIDENT TIMELINE

T0-0M	T0-5M	T0-15M	T0-30M	T0-END
Observed trigger	**Initial response**	**Failure propagation**	**Mitigation attempts**	**Stabilization and evidence**
Trigger observed; initial alarms, signals, or operator cues recorded	Response begins; containment steps, handoffs, and system states captured	Failure propagates; key parameter deviations and interlocks noted	Mitigation attempts; what changed, what failed, and why documented	Stabilization; root evidence locked and post-incident data collected

5-WHYS ITERATIVE DRILL-DOWN



Why 4
The systemic root cause across governance, design, or control ownership

Why 3
The process gap or decision flaw that permitted the condition

Why 2
The upstream condition that enabled the mechanism

Why 1
The immediate mechanism that allowed the symptom to occur

Symptom
What directly failed and how it manifested in operations

FISHBONE CATEGORIZATION

People

Training, competency, staffing levels, shift handoff quality, and decision authority

Process

Standard work adherence, change management, approvals, and escalation logic

Technology

Monitoring coverage, sensor reliability, automation logic, and system integration

Environment

Temperature, humidity, site constraints, noise, vibration, and utilities stability

Materials

Component quality, versioning, lubrication/consumables, and supply variability

ROOT CAUSE VS CONTRIBUTING FACTORS

Primary systemic failure

A direct primary systemic failure is the single causal driver that, if removed, prevents recurrence

Secondary catalysts

Secondary catalysts are enabling factors that worsen impact or allow propagation but are not sufficient alone

CAPA TRACKING TABLE

Corrective task	Owner	Deadline	Verification metric
Implement control change to remove root cause mechanism	Reliability Engineering	TBD	Reduction in recurrence rate or failure mode frequency
Update standard work and verification checks to prevent bypass	Operations Lead	TBD	Audit pass rate and completion of competency sign-offs
Improve monitoring coverage and alarm logic for early detection	Automation/IT	TBD	Time-to-detect improvement and alarm quality metrics
Strengthen change management gates for affected systems and interfaces	Process Governance	TBD	Decrease in unauthorized or incomplete change events

VERIFICATION AND POST-MORTEM SIGN-OFF

Leading and lagging indicators

Define leading and lagging indicators to confirm stability after CAPA rollout for monitoring metrics

SOPs, controls, and training

Evidence that SOPs, controls, training, and system configurations are updated for process change confirmation

Residual risks and gaps

Document residual risks, boundary conditions, and remaining gaps for follow-up for operational learning

CAPA adequacy and closure

Sign-off that CAPA is adequate, resourced, and tracked to closure for executive approval