Cargo Airline Risk Register – Typical Risks for Safety System Benchmarking & Analysis

How to Use This Risk Register in Safety System Benchmarking & Analysis

- **Benchmarking**: Compare your cargo airline's risk exposures against industry best practices, EASA requirements, and peer organizations.
- **Analysis**: Prioritize risks based on likelihood and severity, evaluate existing controls, and identify gaps in hazard mitigation strategies.
- **Continuous Improvement**: Regularly review and update the risk register, integrating lessons from audits, incident reports, and operational feedback.
- **Training & Awareness**: Use the risk register to inform targeted training programs, safety campaigns, and leadership workshops.
- **Evidence for Compliance**: Demonstrate proactive risk management in your SMS, including evidence of hazard identification, risk assessment, mitigation planning, and performance monitoring.

Organizational and Administrative Risks

- **Inadequate Resource Management**: Insufficient staffing, fatigue risks, skills gaps, or poor manpower planning leading to operational stress.
- **Ineffective Policies & Procedures**: Outdated, incomplete, or poorly enforced SOPs causing inconsistencies in operations.
- **Organizational Culture Weaknesses**: Lack of safety reporting, poor safety leadership, or resistance to change hindering continuous improvement.
- **Leadership & Governance Failures**: Ineffective management oversight, unclear responsibilities, or failure to address safety priorities.
- **Ineffective SMS Implementation**: Poor hazard identification, risk assessment, safety performance monitoring, and continuous improvement.
- **Change Management Gaps**: Insufficient planning for equipment upgrades, process changes, or organizational restructuring.

Flight Operations Risks (Cargo Specific)

- **Incorrect Cargo Loading & Distribution**: Improper weight and balance calculations, unsecured cargo, or shifting loads during flight.
- **Undeclared or Misdeclared Dangerous Goods**: Dangerous goods improperly identified, packaged, or documented by shippers or freight forwarders.
- **Improper Handling of Lithium Batteries or Dry Ice**: Non-compliance with packaging, labelling, or stowage standards.
- **Inadequate Airworthiness Checks Before Dispatch**: Missed inspections or unaddressed defects impacting flight safety.
- **Obsolete or Incomplete Operational Documents**: Missing flight manuals, NOTAMs, or outdated charts.

- **Fuel Quality & Loading Errors**: Incorrect fueling, contamination risks, or quantity discrepancies.
- **Operational Deviations**: Response failures during rerouting, weather diversions, or airspace restrictions.
- **In-Flight Security Threats**: Cargo hold fire, smoke, or potential sabotage.

Ground Handling Risks

- **Equipment Misuse & Damage to Aircraft**: GSE collisions, improper docking, or failures during pushback or loading.
- **GSE Positioning Hazards**: Blocked escape routes, obstructed hydrant access, or unsecured equipment left near aircraft.
- **Ramp Congestion & Resource Shortages**: Overlapping ground activities, lack of equipment, or delays impacting aircraft turnaround.
- **Ground Personnel Competence Gaps**: Insufficient training, poor hazard awareness, or fatigue leading to errors.
- **De/Anti-Icing Errors**: Incorrect application procedures, fluid quality, or environmental contamination.

Maintenance & Engineering Risks

- **Inadequate Maintenance Oversight**: Poor QA processes, unapproved repairs, or gaps in maintenance documentation.
- **Incorrect Maintenance Practices**: Human factors errors, non-compliance with OEM procedures, or improper tool usage.
- **Deficient Reliability Monitoring**: Failure to detect emerging trends or systemic failures through reliability analysis.
- **Inadequate Spare Parts Control**: Use of unapproved or counterfeit parts, poor inventory management, or shortages.
- **Unscheduled Maintenance Impacts**: Unplanned defects leading to operational delays or safety concerns.

Cargo Operations Risks

- **Cargo Mis-Identification**: Dangerous goods not declared, incorrectly labelled, or misclassified.
- **Temperature-Controlled Cargo Failures**: Loss of temperature integrity in pharmaceutical or perishable shipments.
- **Shifting Loads or Load Collapse**: Improperly secured ULDs, pallets, or containers causing instability.
- **Container or Pallet Device Malfunction**: Fires from powered containers, battery issues, or dry ice sublimation risks.

- **Human Error in Cargo Documentation**: Incomplete or inaccurate cargo manifests impacting safety or regulatory compliance.

Security Risks

- **Cargo Security Breaches**: Unauthorized access to cargo, tampering, or smuggling attempts.
- **Insider Threats**: Potential for sabotage or theft by employees or contractors.
- **Terrorism & Sabotage**: Direct or indirect threats against aircraft, facilities, or cargo.
- **Inadequate Security Screening**: Failure to detect prohibited items or dangerous goods.
- **Cybersecurity Threats**: Risks of data breaches, ransomware, or system manipulation impacting flight safety or cargo integrity.

External & Environmental Risks

- **Adverse Weather Events**: Storms, lightning, or temperature extremes affecting cargo integrity or operations.
- **Natural Disasters**: Earthquakes, floods, or volcanic activity impacting infrastructure.
- **Third-Party Service Failures**: Disruptions from fueling, catering, cleaning, or de-icing contractors.
- **Regulatory Non-Compliance**: Failure to meet EASA, ICAO, IATA, or local authority requirements.
- **Geopolitical & Economic Instability**: Sanctions, conflicts, or economic shocks affecting operations or cargo flows.

Human Factors & Competency Risks

- **Fatigue Management Failures**: Insufficient rest periods, high workload, or poor shift scheduling.
- **Training Deficiencies**: Gaps in initial, recurrent, or emergency training across flight, ground, and cargo operations.
- **Communication Failures**: Misunderstandings between teams, unclear instructions, or language barriers.
- **Procedural Non-Compliance**: Shortcuts, workarounds, or "normalized deviance" leading to unsafe practices.

Technology & System Risks

- **IT System Failures**: Disruptions in flight planning, dispatch, or cargo management systems.

- **Automation Over-Reliance**: Complacency due to automation, leading to reduced situational awareness.
- **Data Integrity Risks**: Errors in weight and balance, flight plans, or cargo documentation.
- **Integration Failures**: Misalignment between systems (e.g., warehouse management and load planning).